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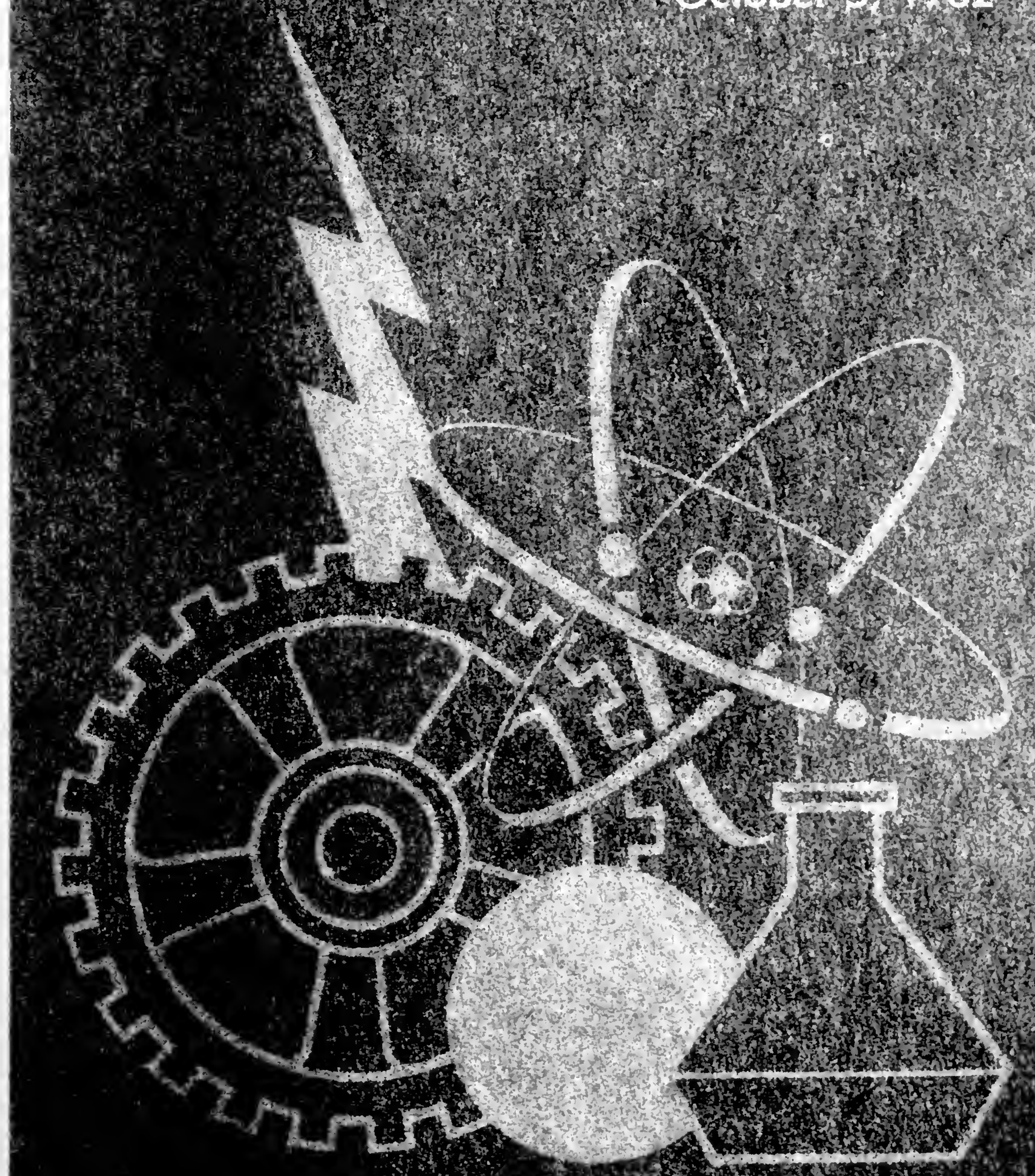
Route to:

PATENTS

October 5, 1982



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	300.00
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner*
of Patents & Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,121,507, Re. S.N. 349,499, Filed Feb. 17, 1982, Cl. 99/275, APPARATUS FOR MIXING A CARBONATED BEVERAGE, Alexander Kuckens, Owner of Record: *Dagma Deutsche Automaten und Getrankemaschinen GmbH & Co., Reinfeld/Holst, Germany,* Attorney or Agent: Dale R. Small, et al., Ex. Gp.: 242

4,207,414, Re. S.N. 399,788, Filed July 19, 1982, Cl. 536/1, POLYSACCHARIDE ANTIGENS, Dennis L. Kasper, Owner of Record: *Inventor,* Attorney or Agent: R. W. Furlong, Ex. Gp.: 123

4,215,366, Re. S.N. 401,693, Filed July 26, 1982, Cl. 358/124, SUBSCRIBER-LIMITED RECEPTION TELEVISION BROADCAST SECURITY ENCODER-DECODER SYSTEM, Richard A. Davidson, Owner of Record: *Feature Film Services, Skokie, Ill.,* Attorney or Agent: Robert L. Lindgren, et al., Ex. Gp.: 222

4,236,061, Re. S.N. 399,764, Filed July 19, 1982, Cl. 219/265, QUICK-ACTING ELECTRIC CIGAR LIGHTER, Lawrence E. Fenn, et al., Owner of Record: *Inventors,* Attorney or Agent: H. Gibner Lehmann, et al., Ex. Gp.: 213

4,250,971, Re. S.N. 399,982, Filed July 19, 1982, Cl. 173/23, PARTICULATE MATERIAL INTERCEPTING ARRANGEMENT FOR A HAND-HELD TOOL, Wilbert Reibetanz, et al., Owner of Record: *Robert Bosch, GmbH, Stuttgart, Germany,* Attorney or Agent: Michael T. Stricker, Ex. Gp.: 323

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,093,140, Reexam. No. 90/000,250, Requested: Aug. 30, 1982, Cl. 242/56.2, METHOD OF RECOILING SLIT MATERIAL, Douglas S. Matsunaga, Owner of Record: *Braner Enterprises, Inc., Schiller Park, Ill.,* Attorney or Agent: Oltsch, Knoblock & Hall, Ex. Gp.: 245, Requester: Owner of Record

COMMISSIONER ORDERED REEXAMINATIONS

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

3,464,799, Reexam. No. 90/000,251, Ordered Sept. 8, 1982, Cl. 422/91, GAS DETECTOR, Charles L. Kimbell, Owner of Record: *Inventor,* Attorney or Agent: Harold Levine & Alfred Hall, c/o Sigalos & Levine, Ex. Gp.: 177, Requester: Commissioner of Patents and Trademarks

Department of the Treasury
United States Customs Service
(T.D. 82-151)

Notice of Recordation of Trade Name
"BRITCHES GREAT OUTDOORS"

On May 19, 1982, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "BRITCHES GREAT OUTDOORS" was published in the Federal Register (47 FR 21672). The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than 60 days from the date of publication of the notice. No responses were received in opposition to the application.

The name "BRITCHES GREAT OUTDOORS" is hereby recorded as the trade name of Canterbury Tales, Inc., a corporation organized under the laws of the District of Columbia, located at 1321 Leslie Dr., Alexandria, Va. 22301. The trade name is used in connection

with the following merchandise which is manufactured in Hong Kong and Taiwan: Men's and women's clothing; shoes, slippers, down booties and shoe trees; umbrellas; key rings; brass accessories; gift items; wallets; leather goods; attaches; luggage; clocks, watches and watch bands; sunglasses; razors; smoker's accessories; knives; games; books; food products; pens and ink; fabric; camping equipment; and retail clothing store services.

DONALD W. LEWIS,
Aug. 20, 1982. *Director, Entry Procedures*
and Penalties Division.

Revised Regulations and Procedures for Visitors to the Patent and Trademark Office

Effective Oct. 1, 1982, all visitors to the Patent and Trademark Office (PTO) will be required to obtain and display a visitor pass while using PTO facilities. Passes will be available in building CP3, Room 1A01.

The current User Agreement will be replaced by the following Regulations for Visitors to the PTO:

These regulations are established for members of the public using the facilities of the PTO and will be enforced by designated officials of the PTO.

All persons using the facilities of the PTO are subject to regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 (41 CFR §§101-20.300 through 101-20.314).

Packages, briefcases and other personal effects brought into the PTO are subject to search by authorized personnel for reasonable cause.

All persons must comply with posted Official Notices.

User Passes

1. Individuals visiting any area of the PTO must obtain and display a valid, non-transferable User Pass at all times while on the premises.
2. Permanent User Passes may be obtained from the Manager of the Patent Public Search Room. The first User Pass is issued at no charge. Duplicate or replacement User Passes will be provided at a cost of $5.00 per Pass. Temporary User Passes may be obtained at no cost and are valid through the expiration date stamped thereon.
3. Permanent and Temporary User Passes must be surrendered to authorized PTO officials upon request for cause.

Use of Search Areas

4. When searching in a patent examining organization, visitors must register with the designated representative and sign a log indicating time entering and leaving the area, User Pass number, and class(es) and subclass(es) searched.
5. Documents removed from the files must be promptly returned to their proper location after use. No documents may be removed from the area in which they were obtained without specific authorization from a Group Director or a Supervisory Patent Examiner.
6. Use of Patent Examining Group search areas is strictly limited to searching materials unavailable in the Patent Public Search Room or the Scientific Library. Examining Group search areas may be used only when such use does not conflict with the regular business of the organization.
7. Trademark registrations may not be removed from the secured bundles in the registered file. Photocopying from bound volumes of trademarks is prohibited.

Prohibitions

8. Smoking and consumption of food or beverages in other than designated areas.
9. Loud talking or any conduct which is disruptive to others.
10. Use of radios, typewriters, photographic equipment, dictation equipment, and like items without permission from a designated official of the PTO.
11. Improper use, mutilation, destruction or removal of patent or trademark records or government property.
12. Reserving seats or work areas.
13. Affixing messages to walls, telephone booths or other government property, except designated message boards.
14. Use of the PTO as a mailing address, and use of PTO stationery.

Hours of Operations

15. Use of PTO facilities is limited to the following hours on regular business days:

Patent Public Search Room, High Ceiling Area	8:00 am-6:00 pm
Low Ceiling Area and Mezzanine	8:00 am-8:00 pm
Trademark Search Library	8:00 am-5:30 pm
Scientific Library, Assignment Search Room, Microfilm Center, Patent Examining Organizations, and all other public access areas of the PTO	8:45 am-4:45 pm

THERESA A. BRELSFORD,
Sept. 8, 1982. *Acting Assistant Commissioner*
for Administration.

Service of Court Papers on the Commissioner of Patents and Trademarks

Those having occasion to serve papers associated with court proceedings by mail are reminded that a special mailing address has been established to provide prompt forwarding to the Office of the Solicitor. The use of this address will ensure that the papers will not be delayed in dispatch. In court proceedings in which the Commissioner is a party, the notices of appeal to the U.S. Court of Appeals for the Federal Circuit and all service copies of papers filed in courts should be addressed:

Solicitor
Box 8
U.S. Patent and Trademark Office
Washington, D.C. 20231

Service copies of briefs and papers hand-carried to the Mail Room of the Patent and Trademark Office should likewise be addressed as shown above.

Joseph Nakamura,
Sept. 10, 1982. Solicitor.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 2

[Docket No. 2816-154]

Trademark Applications, Filing Dates

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: This document amends the rules of practice in trademark cases. The amendments are needed to reduce both the special handling required to process and control applications not entitled to a filing date and the delays such handling imposes on other applications. The amendments clarify the requirements for an application and allow the Office to return applications that fail to meet these requirements. The amendments also define with greater specificity the nature of the drawing and specimens which must accompany an application in order for it to be entitled to a filing date.

EFFECTIVE DATE: Oct. 4, 1982.

FOR FURTHER INFORMATION CONTACT: Alan B. Davidson by telephone at (703) 557-3916, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking concerning the amendment of 37 CFR 2.21, 2.52, 2.54, and 2.57 and the deletion of §2.55 was published in the Federal Register on Oct. 7, 1981 (46 FR 49602). Interested parties were requested to submit written comments on or before Jan. 5, 1982. Comments were received from thirteen individuals and organizations and were given careful consideration.

One commenter suggested that the final sentence of §2.54, providing for correction of drawings by the Office, should not be deleted. The individual reasoned that minor alterations are more expeditiously handled by sending the drawing to the Office draftsman rather than returning it to the applicant. The administrative overhead of such a procedure was thought to be more costly than the correction process. This suggestion has not been adopted. Under the existing practice, simple deletions from drawings are made by Examiners and clerical personnel using gummed labels and opaque correction fluid. Due to the lack of facilities, drawings have not been sent to the Drafting Branch for correction for two years.

One commenter questioned whether the proposed revision of paragraph (d) of §2.52 required a date of first use for applications filed under the provisions of Section 44 of the Lanham Act. The revision was not intended to extend the use date requirement to such applications. Paragraph (d) has been reworded to eliminate any possible confusion.

Three commenters expressed unequivocal support for the proposed amendments. While two other commenters found them to be beneficial both to the Office and to applicants, they expressed some concern as to how the new practice will be implemented. One asked about the availability of proof of the initial date of filing should the papers be improperly returned by the Office. The other directed attention to the possibility that a self-addressed postcard, often submitted by an applicant, would be sent back bearing a mail date stamp and a serial number, and the application papers would be returned subsequently as incomplete.

The procedures that have been developed to implement the proposed changes should eliminate both of these concerns. All papers which constitute an application will be date stamped in the Mail Room prior to a review of their completeness. If an application fails to meet the requirements for receiving a filing date, a second stamp will be added to indicate that the papers are informal. A notation will also be placed on the application to indicate the nature of the omission that resulted in denying a filing date. Should the initial determination prove to be erroneous, reinstating the filing date should be a simple matter. Only applications deemed to be sufficient to receive a filing date will reach the processing stage at which a serial number is assigned and the postcard returned. Hence, there should be no instances in which the papers are returned but the self-addressed postcard indicates they are accepted.

One commenter recommended further revisions to §§2.21(a)(6) and 2.52(d). The individual thought an application based on Sections 44(d) or 44(e) of the Lanham Act should be required to include complete information on the foreign application or registration claimed. In addition, the country of origin, the application or registration number, and relevant dates were suggested as required components of the heading of the drawing. These recommendations have not been adopted. Such information, while helpful, is not essential to the initial examination of an application. Much of the information is available from the certification or certified copy of the foreign registration that must accompany the application papers. While placing Section 44 information on the drawing may be of some convenience, it is not needed in order to perform a normal search.

The principal area of concern to commenters involved the revisions of §§2.52(d) and 2.21(a)(6) which make the heading on the drawing a requirement for receiving a filing date. The six commenters who addressed themselves to this issue believed the changes placed form over substance and imposed a penalty too severe for a strictly administrative problem. They believed that the potential impact of the new procedure on applicants' substantive rights far outweighed the current inconvenience to the Office. Alternative proposals were advanced for eliminating the problem of clerks interrupting classification work to add or complete headings on drawings. One called for imposing a penalty fee for applications with incomplete drawings. Another would require the Office to hold such applications for a reasonable time while the applicant corrected the deficiency. The original filing date would be awarded once compliance was achieved. One suggestion would allow an application to receive a filing date upon substantial compliance with the drawing requirements.

A survey conducted by the Patent and Trademark Office recently showed additional processing was required to add or complete the headings on the drawings in 14% of all applications. This means remedial action is necessary for approximately 8500 applications annually. Each time an application clerk is required to add or complete the heading on a drawing, processing of other applications is slowed. As a result, the mailing of filing receipts and the filing of copies of the application drawings in the Trademark Search Library cannot be accomplished in the most timely manner.

Inadequate preparation of drawings affects the public as well as the Office. Users of the Trademark Search Room need certain basic information about each new mark in order to identify marks likely to cause confusion with other pending and registered marks. Unless this information is displayed on the drawings, the searcher must attempt to locate the application files, the only alternative source of the information.

The imposition of penalty fees or the establishment of a grace period for correcting deficiencies would not eliminate the potential difficulties for Search Library users. If drawings without complete headings were held pending correction, the search copies of all application drawings received by the Office on a given day would not be filed at the same time in the Search Library. The potential impact on a party making a search could be severe should a conflicting mark bearing a filing date a month or more old appear after a search that should have revealed it has been conducted. For these reasons, the suggestions were not adopted.

One commenter explicitly stated, and others implied, a fear of overzealous enforcement of the amended rules. The Office will make every effort to interpret the rules sensibly. The Office will make every effort to interpret the rules sensibly. For instance, an application will not be denied a filing date because of the absence of a zip code or other non-critical part of an address. No letter-by-letter comparison of an applicant's name appearing on the drawing and in the application will be made. Detailed procedures and guidelines for the Office's clerical personnel should ensure a reasonable and evenhanded approach. The implementation of the rules will be monitored carefully for the first several months.

Environmental and Other Considerations

This rule changes will not have any significant impact on the quality of the human environment or the conservation of energy resources.

These rule changes will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*) The rule changes will clarify application requirements, simplify existing procedures, and expedite procedings before the Patent and Trademark Office.

The Patent and Trademark Office has determined that these rule changes do not constitute major rules as defined in Section 1(b) of Executive Order 12291 (45 FR 13193), since they would benefit trademark applicants and reduce the burdens on the Office.

These rule changes will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed on the public.

List of Subjects in 37 CFR Part 2

Administrative practice and procedure, Trademarks.

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Amendment to Regulations

In consideration of the comments received and pursuant to the authority of the Commissioner of Patents and Trademarks under 15 U.S.C. 1123, Part 2 of Title 37, Code of Federal Regulations is amended as set forth below.

1. Section 2.21 is revised to read as follows:

§2.21 Requirements for receiving a filling date.

(a) Materials submitted as an application for registration of a mark will not be accorded a filing date as an application until all of the following elements are received:

(1) Name of the applicant;

(2) A name and address to which communications can be directed;

(3) A drawing of the mark sought to be registered containing the information required by paragraph (d) of §2.52;

(4) An identification of goods or services;

(5) At least one specimen or facsimile of the mark as actually used;

(6) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the Trademark Act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the Act:

(7) The required filing fee for at least one class of goods or services. Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which all of the elements set forth in paragraph (a) of this section are received in the Patent and Trademark Office.

(c) If the papers and fee submitted as an application do not satisfy all of the requirements specified in paragraph (a) of this section, the papers will not be considered to constitute an application and will not be given a filing date. The Patent and Trademark Office will return the papers and any fee submitted therewith to the person who submitted the papers. The Office will notify the person to whom the papers are returned of the defect or defects which prevented their being considered to be an application.

2. Section 2.52 is amended by revising paragraph (d) to read as follows:

§2.52 Requirement for drawings.

* * * * *

(d) *Heading.* Across the top of the drawing, beginning one inch (2.5 cm.) from the top edge and not exceeding one fourth of the sheet, there must be placed a heading, listing in separate lines, applicant's complete name, applicant's post office address, the dates of first use of the mark and first use of the mark in commerce (except for an application filed under section 44 of the Trademark Act), and the goods or services recited in the application or a typical item of the goods or services if a number of items are recited in the application. This heading should be typewritten.

* * * * *

3. Section 2.54 is revised to read as follows:

§2.54 Informal drawings.

A drawing not in conformity with §2.51 or paragraphs (a), (b), (c), or (e) of §2.52 or §2.53 may be accepted for purpose of examination, but the drawing must be corrected or a new one furnished, as required, before that mark can be published or the application allowed.

§2.55 [Removed]

4. Section 2.55 is removed.
5. Section 2.57 is revised to read as follows:

§2.57 Facsimiles.

(a) When, due to the mode of applying or affixing the trademark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8-1/2 inches (21.6 cm.) wide and 13 inches (33.0 cm.) long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

(b) A purported facsimile which is merely a reproduction of the drawing submitted to comply with §2.51 will not be considered to be a facsimile depicting the mark as actually used on or in connection with the goods or in connection with the services.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Aug. 13, 1982.

[FR Doc. 82-24158 Filed 9-1-82; 8:45 am]

BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of Oct. 5, 1982

3,693,480
4,038,475
4,156,939
4,158,667
4,183,894
4,204,989
4,215,621
4,232,061
4,233,068
4,234,792
4,237,045
4,237,218
4,250,513
4,252,662
4,256,444
4,263,325
4,266,387
4,267,096
4,267,936
4,274,721
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4,290,055
4,293,494
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4,293,725
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4,328,167
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4,341,602
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4,341,941
4,342,215
4,342,593
4,342,799
4,342,834
4,342,894
4,343,071
4,343,079
4,343,450
4,343,456
4,343,560
4,343,818
4,344,011
4,344,059
4,344,175
4,344,942

Disclaimers

4,044,977.—*Dennis D. Feucht,* Morton, Ill. BUSHING TYPE MOUNT WITH TRIPLE SPRING RATE. Patent dated Aug. 30, 1977. Disclaimer filed Aug. 20, 1982, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1 through 9 of said patent.

4,277,399.—*Eugen Diethelm,* Triesen, Liechtenstein. PROCESS FOR PREPARING PYRENZEPINE. Patent dated July 7, 1981. Disclaimer filed Mar. 23, 1982, by the assignee, *Grissman Chemicals Ltd.*

Hereby enters this disclaimer to all claims of said patent.

4,286,011.—*Andrew H. Wong,* St. Paul, Minn. POLYESTER FILMS WITH IMPROVED PROCESSABILITY AND TEAR RESISTANCE. Patent dated Aug. 25, 1981. Disclaimer filed Aug. 13, 1982, by the assignee, *Minnesota Mining and Manufacturing Co.*

Hereby enters this disclaimer to all claims of said patent.

4,332,442.—*Kaneyas Ookawa,* Tokyo, Japan. REPRODUCING OBJECTIVE FOR VIDEO DISKS. Patent dated June 1, 1982. Disclaimer filed July 20, 1982, by the assignee, *Olympus Optical Co. Ltd.*

The term of this patent subsequent to March 24, 1998 has been disclaimed.

Dedication

3,829,348.—*Jacob Spiegel,* Philadelphia, Pa. and *Albert R. Miller,* Somerdale, N.J. DECORATIVE THREE-DIMENSIONAL OBJECTS. Patent dated Aug. 13, 1974. Dedication filed July 26, 1982, by the assignee, *Gilbreth International Corp.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers and Dedications

Re. 30,028.—*David L. Purdy,* Indiana, *George J. Magovern,* Pittsburgh, Pa., and *Nicholas P. D. Smyth,* Washington, D.C. HEART PACER. Patent dated June 12, 1979. Disclaimer and Dedication filed Jan. 15, 1982, by the assignee, *Coratomic, Inc.*

The term of this patent subsequent to Oct. 19, 1990 has been disclaimed and dedicated to the Public.

4,211,085.—*Lewis Tyree, Jr.,* Oak Brook, Ill. SYSTEMS FOR SUPPLYING TANKS WITH CRYOGEN. Patent dated July 8, 1980. Disclaimer and Dedication filed Oct. 20, 1980, by the inventor.

Hereby disclaims and dedicates all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 322-4572
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	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
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New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-30-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,204,251 to 3,209,368, inclusive
Plant Patents	Numbers 2,552 to 2,557 inclusive

REEXAMINATIONS

OCTOBER 5, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,449,567 (22nd)

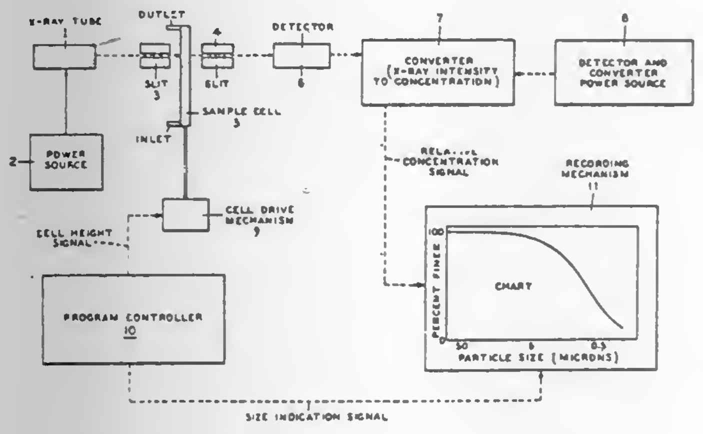
APPARATUS AND PROCESS FOR DETERMINING PARTICLE SIZE BY X-RAY ABSORPTION ANALYSIS

James Peter Oliver; George K. Hickin, Macon, Ga., assignors to Freeport Minerals Company, New York, N.Y.

Reexamination Request No. 90/000,065, Sep. 8, 1981.

Reexamination Certificate for Patent No. 3,449,567, issued Jun. 10, 1969, Ser. No. 610,841, Jan. 23, 1967.

U.S. Cl. 250/362 Int. Cl.^{3} G01T 1/20.



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2, 3 and 5 is confirmed.

Claims 1 and 4 are determined to be patentable as amended:

1. A process for automatically and rapidly determining particle size distribution of finely divided particles in suspension in a liquid medium based on the application of Stokes' Law of sedimentation, comprising

continuously determining the concentration of particles at continuously decreasing sedimentation distances by means of continuously measuring the transmittance of X-rays through the suspension,

continuously converting this transmittance measurement to a quantity proportional to the concentration of suspended material in the X-ray beam at a particular instant, and

continuously recording the concentration on one ordinate of a graph [with] *and continuously recording particle size on* the other ordinate*; the location on said other ordinate, being recorded,* automatically [positioned] *moving with decreasing sedimentation distance at every instant* to indicate simultaneously particle size at every instant.

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 5, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,301

USE OF POLYETHYLENE WAXES TO CONTROL METAL ORIENTATION IN PAINTS

Kenneth R. Walker, 11 Conway Dr., Billinge, Wigan, Lancs, England

Filed Oct. 29, 1981, Ser. No. 316,370
Int. Cl.^{3} C08K *5/09*
U.S. Cl. 524—556
No Drawing. 7 Pages Specification

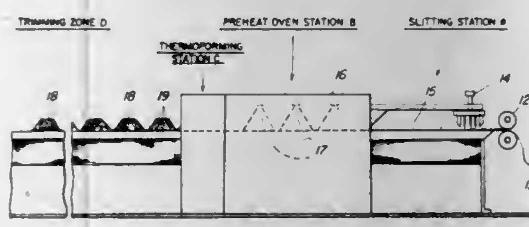
This invention relates to a method of preparing dispersions of low density polyethylene waxes which can be a chemically modified polyethylene wax or low molecular weight unmodified polyethylene wax and their use in metallic paints. The use of these dispersions prevents hard settling of the metal flake in the liquid paint which was measured to be better than the use of a dispersion made from an ethylene vinyl acetate wax dispersion (AC 405 wax). Also the use of such an Epolene wax dispersion allowed the paint to be sprayed rapidly while maintaining better appearance and smoothness than without any wax or an ethylene vinyl acetate wax dispersion.

T102,302

METHOD FOR THE PRODUCTION OF APERTURES IN POLYSTYRENE FOAM SHEET

Nicholas D. Commisso, 19 Dryer Ave., Victor, N.Y. 14564

Continuation of Ser. No. 88,788, Oct. 29, 1979, abandoned, which is a continuation of Ser. No. 951,547, Oct. 16, 1978, abandoned, which is a continuation of Ser. No. 829,126, Aug. 30, 1977, abandoned, which is a continuation of Ser. No. 633,777, Nov. 20, 1975, abandoned. This application Sep. 2, 1981, Ser. No. 298,709
Int. Cl.^{3} B12B *1/48*
U.S. Cl. 264—154
4 Sheets Drawing. 18 Pages Specification



A method and apparatus for producing apertures such as ventilation holes and the like in a preformed sheet of polystyrene foam which comprises forming slits which extend completely through the foam structure, the slits being arranged in a predetermined pattern, and passing the preslit foam through a heating zone such as a preheat oven used in plastic thermoforming operations. The resultant heated sheet of foam, as it emerges from the oven, is characterized by having a plurality of openings or apertures in locations corresponding to the slits which were made in the foam prior to preheating. The aperture containing sheets may be subsequently subjected to a thermoforming operation whereby thermoformed objects such as produce containers are produced having ventilation openings, i.e. apertures, located in a predetermined disposition around the thermoformed tray structure.

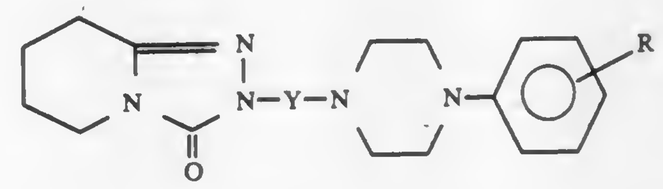
T102,303

5,6,7,8-TETRAHYDROTRIAZOLO{4,3-ALPHA}-PYRIDIN-3(2H)-ONES

Duane F. Morrow, 8200 Berry Dr., Evansville, Ind. 47710

Filed Jun. 8, 1981, Ser. No. 271,296
Int. Cl.^{3} C07D *403/06*
U.S. Cl. 544—362
No Drawing. 10 Pages Specification

5,6,7,8-Tetrahydrotriazolo{4,3-a}pyridin-3(2H)-one derivatives containing a 4-(optionally substituted phenyl)piperazinyl component attached to the 2- position of the tetrahydrotriazolo{4,3-a}pyridinone component via an alkylene chain of 3 or 4 carbon atoms are disclosed. Examples are compounds having the formula



wherein R is lower alkyl or alkoxy (each having 1 to 4 carbon atoms inclusive), cyano, halogen, or trifluoromethyl; and Y is an alkylene chain of 3 or 4 carbon atoms. The compound in which R is 3-Cl and Y is trimethylene exhibits central nervous system pharmacological properties in standard laboratory tests which are predictive of useful anti-psychotic, antidepressant, and antianxiety action.

REISSUES

OCTOBER 5, 1982

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

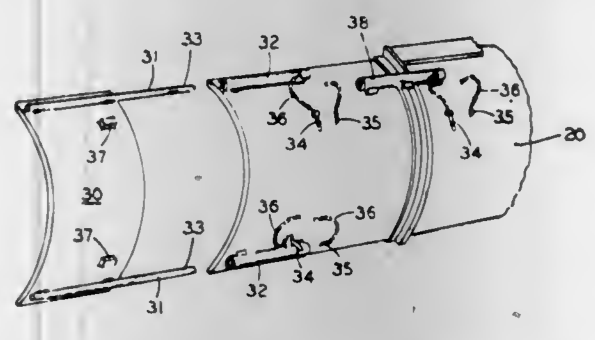
Re. 31,045
SNOWPLOW BLADE EXTENSION

Albert E. Essell, deceased, late of Twinsburg, Ohio; by Virginia G. Essell, executrix, 9324 Ravenna Rd., Twinsburg, Ohio 44087; Robert A. T. Essell, 6158 State Rte. 303, Ravenna, Ohio 44266, and Christopher W. Essell, 9324 Ravenna Rd., Twinsburgh, Ohio 44087

Original No. 4,073,077, dated Feb. 14, 1978, Ser. No. 756,148, Jan. 3, 1977. Application for reissue Feb. 22, 1980, Ser. No. 123,671

Int. Cl.^{3} E01H *5/00*

U.S. Cl. 37—281 10 Claims



1. The combination of a snowplow blade on a motorized vehicle, with a tubular socket which extends longitudinally of the blade on its back surface and which is an immovable part of the blade structure, and with a removable extension of a shape corresponding to that of the blade and from which projects a longitudinal stud fitting the socket for removably holding the extension in a working position beyond an end of the blade, and a locking device for preventing unintended motion of the stud out of the socket.

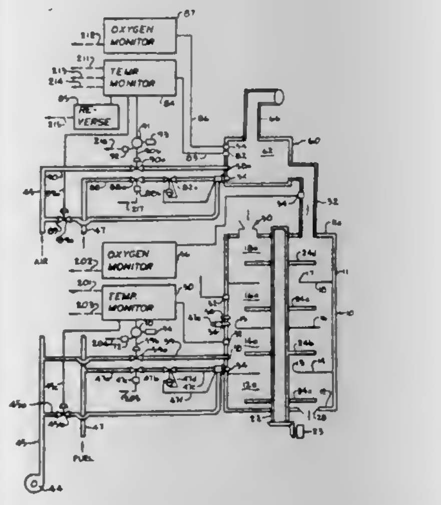
Re. 31,046
INCINERATION METHOD AND SYSTEM

Luis A. Lombana, and Jose G. Campos, both of Belmont, Calif., assignors to Lurgi Corporation, Belmont, Calif.

Original No. 4,013,023, dated Mar. 22, 1977, Ser. No. 645,063, Dec. 29, 1975. Application for reissue Aug. 15, 1979, Ser. No. 66,701

Int. Cl.^{3} F23G *5/12*

U.S. Cl. 110—187 13 Claims



25. A method of incinerating partially dewatered sewage sludge containing organic wastes in a multiple hearth furnace equipped with an afterburner connected to receive gases and vapors from the furnace, said method comprising the following steps:

a. introducing the partially dewatered wastes into the multiple hearth furnace and moving the same downwardly therethrough by rabbling;

b. introducing air and fuel into the furnace to pyrolyze the wastes and regulating the introduction of the air and fuel so that the atmosphere within the furnace is deficient in oxygen and so that the organic substances which are pyrolyzed from the wastes are only partially oxidized;

c. introducing air into the afterburner in quantities in excess of that required to complete the oxidation of the partially oxidized substances carried by the gases and vapors from the furnace and regulating the quantity of air introduced into the afterburner to maintain temperatures therein within a predetermined range;

d. introducing fuel into said afterburner when the temperature within said afterburner falls below a first predetermined value; and

e. monitoring the oxygen content of the gases and vapors within the afterburner and stopping the introduction of fuel into the afterburner when the monitoring oxygen content is less than a predetermined value and the temperature in the afterburner is above said first predetermined value.

Re. 31,047
HOSE STRUCTURE

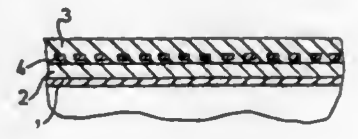
John A. Ross, Tandragee, Northern Ireland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Original No. 4,157,101, dated Jun. 5, 1979, Ser. No. 867,215, Jan. 5, 1978. Continuation-in-part of Ser. No. 854,572, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 691,731, Jun. 1, 1976, abandoned. Application for reissue Jan. 24, 1980, Ser. No. 114,859

Claims priority, application United Kingdom, Jun. 6, 1975, 24505/75; Jun. 29, 1977, 27180/77

Int. Cl.^{3} F16L *11/00*

U.S. Cl. 138—130 17 Claims



1. A large diameter suction and discharge hose comprised of elastomeric material incorporating reinforcing elements comprising an innertube of elastomeric material, at least two radially spaced windings of monofilament lying outwardly of said innertube and wound at an angle of 50°–60° to the axis of the hose with said windings being of opposite hand orientation, a layer of elastomeric material having a thickness of at least 5% of the hose diameter between the windings of monofilament, a cover layer of elastomeric material around the outer surface of the hose, at least one layer of aramid fabric positioned in the wall of the hose between the innertube and cover layer adjacent to at least one of the windings of monofilament, and an elastomeric adhesive layer between the monofilament and aramid fabric to effect a bond between the two upon vulcanization of the integral structure.

11. A large diameter suction and discharge buoyant hose comprised of elastomeric material incorporating reinforcing elements comprising an innertube of elastomeric material, at least two radially spaced windings of monofilament lying outwardly of said innertube and wound at an angle of 50°–60° to the axis of the hose with said windings being of opposite hand orientation, a layer of cellular polymeric foam material between the windings of monofilament and taken from the

group comprising natural rubber, styrene butadiene rubber, polychloroprene rubber, cross-linked polyethylene, cross-linked ethylene vinylacetate copolymer, polyurethane or plasticized polyvinyl chloride, the density being in the range of 0.01 to 0.75 grms/ml and a thickness of at least 5% of the hose diameter, and a cover layer of elastomeric material around the outer surface of the hose, the completed hose being vulcanized into an integral structure.

Re. 31,048
TREE DESTROYER

Leward N. Smith, Remus, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Original No. 3,661,333, dated May 9, 1972. Application for reissue Jan. 24, 1978, Ser. No. 871,783

Int. Cl.³ B02C *18/22;* **B27L** *11/02*

U.S. Cl. 241—281 **49 Claims**

Before the filing of this reissue application a disclaimer under 35 U.S.C. 253 in U.S. Letters Patent No. 3,661,333 disclaiming Claims 1–3, 7–12, 14–16, 18, 19, 34, 35, 38 and 39 of that patent.

1. (*Disclaimed as of March 24, 1976*). Tree destroying apparatus for reducing a felled tree, having attached limbs and branches, to chips comprising:

a longitudinally extending frame having front and rear ends;

chipping means thereon for chipping said tree into chips at a chipping station having a generally rearward facing entrance opening for passing trees thereto trunk-first;

means on said frame for feeding said tree in a longitudinal path of travel toward said chipping means including;

a generally horizontal, tree supporting feed bed including power driven, longitudinally extending conveyor means;

a generally laterally extending, endlessly driven member having tree engaging surfaces supported above said feed bed and cooperating with said conveyor means to form a tree feeding drive nip rearwardly of said entrance opening for securely gripping vertically opposite sides of a tree positioned on the feed bed to crush branches vertically toward the tree trunk and to move the tree forwardly toward said chipping means;

means on said frame supporting said member for endless travel;

upstanding, laterally spaced, limb and branch folding members positioned on opposite sides of said conveying means for engaging the branches on opposite sides of a tree supported on said feed bed and folding the tree branches laterally toward the tree trunk, said upstanding branch folding members having tree engaging surfaces positioned laterally inwardly of the lateral sides of said member to insure that laterally extending branches are folded inwardly toward the tree trunk and can enter said entrance opening; and

drive means on said frame for driving said member and conveying means at coordinated tree feeding speeds.

3. (*Disclaimed as of March 24, 1976*). The apparatus as set forth in claim 1 in which directing means is provided on one of said conveyor means or member for moving a tree toward centered position on said feed bed.

4. (*Disclaimed as of March 24, 1976*). The apparatus as set forth in claim 3 in which said laterally extending member comprises a roll and directing means for moving a tree toward centered position on said feed bed is provided thereon.

Re. 31,049
FUEL-OPERATED DEVICE

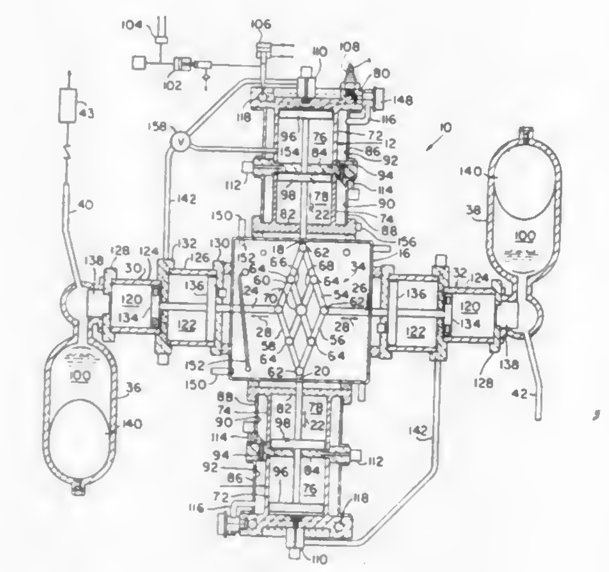
William S. Brian, 25 Landing Rd., Huntington, N.Y. 11743

Original No. 4,093,405, dated Jun. 6, 1978, Ser. No. 764,751, Feb. 2, 1977. Application for reissue May 7, 1981, Ser. No. 246,654

Int. Cl.³ F04B *17/00, 35/00*

U.S. Cl. 417—343 **6 Claims**

1. An improved fuel-operated device comprising a pair of combustion cylinders having pistons therein each having slidably disposed piston rods extending therefrom operatively arranged in opposing facing relation to each other such that said piston rods are urged through power strokes towards each other along a first movement path, means for admitting a gas-producing type fuel for said combustion cylinders effective to cause an initially maximum pressure expanding gas in said cylinders for powering said piston rods through said power strokes, a pair of pressure transfer fluid cylinders having pistons therein each having slidably disposed piston rods extending therefrom operatively arranged in opposing facing relation to each other such that said *transfer cylinder* piston rods are urged through fluid pressure strokes away from each other along a second movement path oriented perpendicularly and in crossing relation to said first movement path, passage means connected from said pressure transfer fluid cylinders to a storage means for flowing said pressure transfer fluid thereto, an outlet connection from said storage means to a pressure fluid-operated motor for allowing said pressure transfer fluid to power said motor in operation in the performance of work utilizing said pressure transfer fluid energy, and a coupling linkage means strategically located at the intersection of said first and second movement paths operatively interconnected between said piston rods of said combustion and said pressure transfer fluid cylinders so as to produce said fluid pressure strokes in the latter in response to said power strokes of the former, said coupling linkage means [including pivotally interconnected links in a diamond-shaped configuration] *comprising a first criss-crossing pair of links pivotally interconnected to each other at an intersection therebetween and a second cooperating group of an additional four links bounding a diamond-shaped configuration and in the interior thereof having the free ends of said criss-crossing pair of links respectively pivotally connected to a medial location to each said link of said additional group of four links such that the links defining the four ends of said diamond shape are adapted to be urged through movement in opposite directions along first and second movement paths and wherein the interconnection of said links in said diamond-shaped configuration is* effective to initially cause an amplification of said movement occurring along said first movement path in said corresponding extent of movement occurring along said second movement path and subsequently a reversal therein, whereby despite an initial maximum pressure in said expanding gas of said fuel there is produced in said fluid a pressure at a desirable starting minimum value which subsequently builds up therein to thereby contribute to the efficiency of the conversion of said fuel energy into usable pressure fluid energy.



Re. 31,050
HOISTING DEVICE

Manfred Harig, Lindlar-Linde, Fed. Rep. of Germany, assignor to N.V. Western Gear Europe, S.D., Aartselaar, Belgium

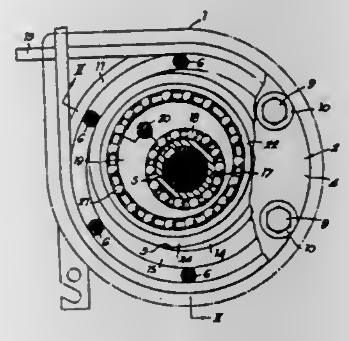
Original No. 4,074,582, dated Feb. 21, 1978, Ser. No. 722,764, Sep. 13, 1976. Application for reissue Nov. 8, 1978, Ser. No. 958,696

Claims priority, application Belgium, Sep. 26, 1975, 254583; Dec. 1, 1975, 254684

Int. Cl.³ F16H *55/36, 55/62*

U.S. Cl. 474—10 **37 Claims**

1. Hoisting device, characterized by the fact that it mainly consists of a housing to which [the load is] *a load is adapted to be* suspended and in this housing a driving pulley *rotatable about a first axis and* consisting of two half pulleys for a cable, which is *adapted to be* suspended from a fixed point, whereby this [driving] pulley is provided with means which *continuously* press the cable *substantially* uniformly [or practically uniformly] into the [driving] pulley [over] *throughout* a large arc, and with means which *continuously* press aforesaid half pulleys away from each other [at] *with respect to said first axis throughout a smaller arc which extends between* the locations where the cable enters and leaves the pulley, in such a manner that *substantially* no friction occurs when the cable enters or leaves the [driving] pulley, whereby this pressing apart is performed in such a manner that *substantially* no [or practically no] increase of pressure occurs on the cable on the other side of the pulley *and whereby the sum of the large arc and the smaller arc equals 360 degrees.*



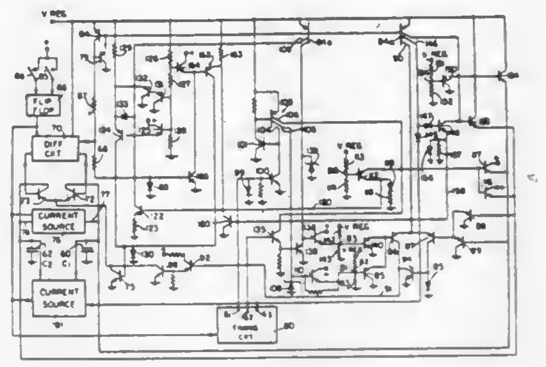
Re. 31,051
REGULATOR FOR CONTROLLING CAPACITOR CHARGE TO PROVIDE COMPLEX WAVEFORM

William F. Davis; Howard G. Shumway, both of Tempe, Ariz., and Thomas M. Frederiksen, San Jose, Calif., assignors to Motorola Inc., Schaumburg, Ill.

Original No. 3,727,081, dated Apr. 10, 1973, Ser. No. 189,630, Oct. 15, 1971. Application for reissue Apr. 10, 1975, Ser. No. 566,868

Int. Cl.³ H03K *4/02, 4/12*

U.S. Cl. 307—260 **51 Claims**



1. A circuit for developing across a capacitor a waveform having a plurality of different voltage levels at least one of which is greater than the preceding level and at least one of which is less than the preceding level, such circuit including in combination, reference means providing a plurality of reference voltages representing the different voltage levels of the waveform, regulator means coupled to said reference means and to the capacitor for selectively holding the voltage thereacross at a value associated with one of the reference voltages, *said regulator means including a differential amplifier,* discharge circuit means connected to the capacitor and to said regulator means and adapted to be rendered operative by said regulator means to discharge the capacitor and reduce the voltage thereacross until a selected one of the voltage levels is reached, and current source means connected to the capacitor and adapted to operate to supply current thereto to increase the voltage thereacross until another one of the voltage levels is reached.

PLANT PATENTS

GRANTED OCTOBER 5, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,892
ROSE PLANT

Charles P. Elliott, 2208 Monterey Ave., Santa Clara, Calif. 95051

Filed Jan. 29, 1981, Ser. No. 229,771
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—28 1 Claim

1. A new and distinct cultivar of rose, substantially as described and pictured herein, characterized by its small ruffled red-pink blooms, vigorous growth and persistence.

4,893
NECTARINE TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Jan. 12, 1981, Ser. No. 224,164
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—41 1 Claim

1. A new and distinct variety of nectarine tree, substantially as shown and described, characterized in comparison to the May Grand nectarine by a tree which is more productive and fruit which is in harvest approximately one week later, the fruit being more rounded and of smoother configuration.

PATENTS

GRANTED OCT. 5, 1982

ERRATA

For CLASS	See PATENT NO.
114–363	4,352,218
464–109	4,352,276
374–110	4,352,290
114–344	4,352,668
525–149	4,352,749
523–156	4,352,750
549–258	4,352,755
549–497	4,352,756
549–513	4,352,757
549–521	4,352,758
378–014	4,352,986
378–150	4,352,987

PATENTS

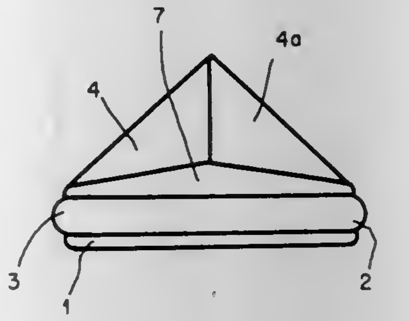
GRANTED OCTOBER 5, 1982

GENERAL AND MECHANICAL

4,352,211

CARDIAC VALVE PROSTHESIS

Roberto Parravicini, Corso Genova, 13, 20100 Milan, Italy
Filed Jan. 12, 1981, Ser. No. 224,297
Claims priority, application Italy, Jan. 16, 1980, 19242 A/80
Int. Cl.^{3} A61F *1/22*
U.S. Cl. 3—1.5 **4 Claims**

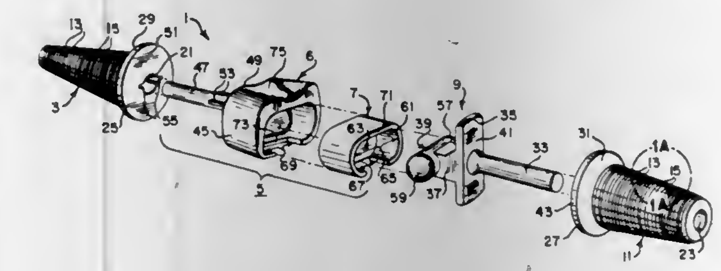


1. An artificial cardiac valve which comprises a first ring member (1) capable of acting as a valve seat, a second plastic material ring member (3) encompassing the first ring member and acting as an anchoring member for tying the cardiac valve to the host tissue, two arcuated valve members (4, 4*a*) capable of acting as a shutter, each arcuated valve member being provided in the center of its edge with a lug (5, 15), said lug being integral with each of said valve members and having a ball-point portion (6, 16) at the end thereof, said first ring member (1) being provided with seats on the inner wall thereof at diametrically opposite positions, said lug being insertable into said seats with a clearance sufficient to permit free movement of the lug.

4,352,212

JOINT PROSTHESIS

David J. Greene, Boston, Mass., and Peter S. Waiker, Ridgewood, N.J., assignors to Howmedica, Inc., New York, N.Y.
Continuation of Ser. No. 17,486, Mar. 5, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,503
Int. Cl.^{3} A61F *1/03*
U.S. Cl. 3—1.91 **31 Claims**

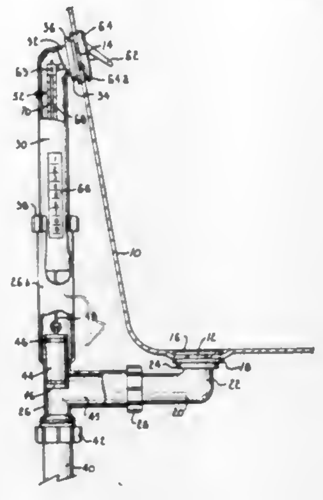


1. A finger joint prosthesis for a finger joint of a first bone with a second bone comprising a first component, a second component in articulatory bearing relationship with said first component, said first component capable of being operatively connected to said first bone, and said second component capable of being operatively connected to said second bone, wherein the connections of said first and second components to said first and second bones, respectively, is such as to provide in normal use for mechanically unrestrained relative movement between each of said components and its bone longitudinally of said bone.

4,352,213

LINKAGE ADJUSTMENT ARRANGEMENT FOR A BATHTUB DRAIN ASSEMBLY

Robert R. Watts, Rte. 2, Box 153, Blue Springs, Mo. 64015
Filed Nov. 7, 1980, Ser. No. 205,002
Int. Cl.^{3} E03C *1/232*
U.S. Cl. 4—199 **4 Claims**



2. In a bathtub drain arrangement for a bathtub having a drain opening and an overflow opening, the improvement comprising:
- a drain pipe adapted for connection with the drain opening;
- a pair of telescoping tubes adapted to extend generally vertically between the overflow opening and drain pipe, said tubes interfitting in a telescoping manner to permit variation of the combined effective length thereof to accommodate variations in the distance between the drain and overflow openings;
- a scale on one of said tubes cooperating with an indicator portion of the other tube to provide an indication of the combined effective length of said tubes;
- a valve for controlling drainage through the drain opening;
- a linkage for controlling the position of the valve, said linkage including a pair of links adapted to extend within said tubes, said links interfitting in a threaded manner to permit variation in the length of said linkage to accommodate variations in the combined effective length of said tubes;
- a trip lever for actuating said linkage to adjust the position of said valve; and
- a scale on one of said links cooperating with an indicator portion of the other link to provide an indication of the length of said linkage, thereby permitting adjustment of said links until the indications on said scales correspond to effect the linkage length required to properly position said valve for control of the drainage through the drain opening.

4,352,214

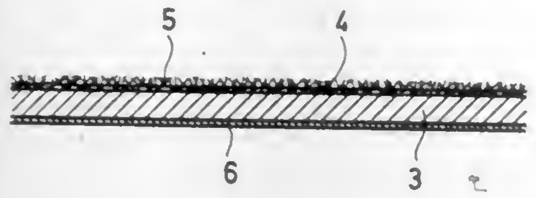
TOILET SEAT COVER

Roland Belz, Finkenweg 20, 7021 Leinfelden-Echterdingen, Fed. Rep. of Germany
Division of Ser. No. 872,580, Jan. 26, 1978, Pat. No. 4,261,066. This application Jul. 11, 1980, Ser. No. 167,707
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703005
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.^{3} A47K *13/14*
U.S. Cl. 4—243 **15 Claims**

1. Toilet seat cover in the form of a blank consisting of at least one layer having a central opening, which layer com-

prises a non-porous flexible foil of a material which is soluble in an aqueous medium, fibrous material means bonded to one side of said foil, the fibres of said fibrous material means being freely exposed on the surface of the foil cover over part of their length, for providing at least a minimum barrier against moisture penetrating to the foil, and a sealing layer of waterproof and water insoluble material on that side of the foil which is remote from the fibres, wherein said fibrous means comprises individual fibres which are flocked to said foil to be bonded thereto over part of their length, and wherein said individual fibres are released when said cover is placed in water and said foil dissolves.

15. A multiple layer sheet material comprising a non-porous flexible foil of a material which is soluble in an aqueous medium, fibrous material means bonded to one side of said foil for providing at least a minimum barrier against moisture penetrating to the foil, said fibrous material means comprising a plurality of individual fibres bonded to said foil over part of their length and being freely exposed on the surface of the foil over part of their length, and a sealing layer of waterproof and water insoluble material on that side of the foil which is remote from the fibres, wherein said individual fibres are released when said material is placed in water and said foil dissolves, wherein said sealing layer is insoluble in substantially neutral aqueous solutions but at least partly soluble in one of an acid and alkaline solution, and in which one of an acid and basic substance is incorporated in the foil for dissolving said sealing layer.



4,352,215

JET STREAM DEVICE

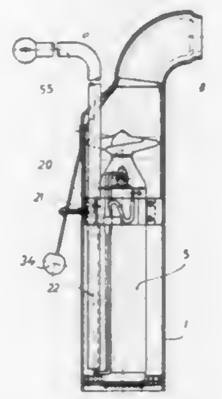
Karsten Laing, Herrenstrasse 57, 7500 Karlsruhe, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,219

Claims priority, application Austria, Apr. 17, 1979, 2863/79

Int. Cl.^{3} E04H ***3/16***

U.S. Cl. 4—492 **6 Claims**



1. Jet stream device for a swimming pool, the device comprising a longitudinally extending housing having at one end an inlet and at the other end an outlet nozzle, a flow-constricting necking situated between the inlet and the nozzle, an axial impeller rotatable by an underwater motor with said impeller being situated in the necking with its axis of rotation extending parallel to the longitudional axis of the housing and to the left of a central plane passing through the housing and nozzle when rotatable in an anticlockwise direction when viewed through the nozzle and to the right of said central plane when rotatable in a clockwise direction when viewed through the nozzle, the smallest cross-sectional area of the necking being approximately the same size as that of the nozzle and the width of the housing being approximately the same size as that of the nozzle, two tubular suspension elements extending into the housing and bent to rest directly on the edge of a pool parallel thereto, means for adjustable attachment of the device to the suspension means, and means for keeping the device at a distance from a vertical wall of a swimming pool, the device being tiltable about a horizontal axis and consequently its outlet nozzle being tiltable about said horizontal axis.

4,352,216

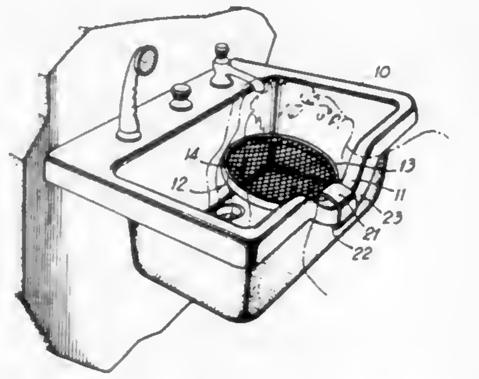
PERMANENT WAVE HEADREST ATTACHMENT

Dale D. Grim, 511 Stanley St., Perry, Ga. 31069

Filed Sep. 2, 1980, Ser. No. 183,213

Int. Cl.^{3} A47K ***3/12***

U.S. Cl. 4—523 **1 Claim**



1. A two part permanent wave headrest attachment for a sink comprising a one part foraminous panel adapted to bear the weight of the head of a subject with the head substantially centered over the well of the sink, so as to relieve uncomfortable pressure from the back of a subject's neck during rinsing, said panel being approximately horizontal during use, the forward end of the panel having an integral depending extension including a substantially vertical surface to bear against the interior of the sink front wall, and said extension having a substantially vertical slot formed therethrough substantially at right angles to the plane of said panel, a one part hanger element for the headrest formed separately from the panel and having a substantially vertical portion engageable adjustably through said slot and an upper terminal hook portion adapted to engage a forward flange of the sink, and cooperating means integral with said panel and said hanger respectively for adjustably securing said substantially vertical portion of the hanger element in said slot at different selected positions, said cooperating adjusting means comprising a projection on said extension in alignment with said vertical slot and cooperative spaced recessed portions in the substantially vertical portion of said hanger that are adapted to receive selectively said projection.

4,352,217

WATER BED BASE

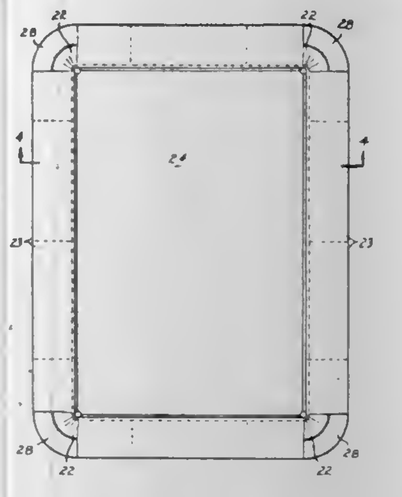
Peter W. O'Rourke, 65 Wattle St., Fullarton, South Australia, Australia

Filed Mar. 21, 1980, Ser. No. 132,527

Int. Cl.^{3} A47C ***27/08***

U.S. Cl. 5—451 **7 Claims**

1. Water mattress support means comprising a water mattress base having a flat bottom wall formed of flexible waterproof sheet material, raised sides extending around the periphery of the bottom wall, and corner flaps interposed between the sides, each side comprising a sleeve of flexible waterproof sheet material and resilient bolster (infill) means inserted therein, the resilient bolster means comprising corner members, the bottom wall and the peripheral wall sides cooperatively defining together a recess the dimensions of which are such that it can accommodate a water mattress, and the corner flaps engaging against the bolster corner members such that the water mattress base comprises a leakproof receptacle.



4,352,218

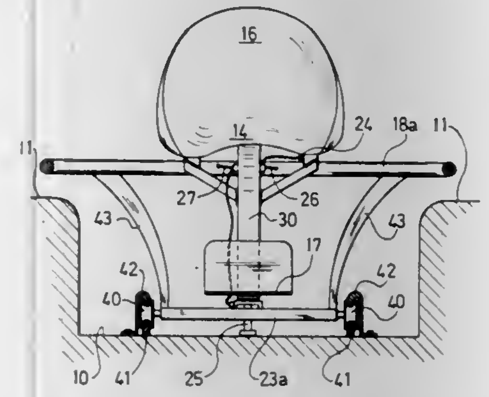
MOBILE CHAIR

Lars Lundberg, Box 28, Fjällbacka, Sweden (45071)

Filed Oct. 18, 1979, Ser. No. 86,148

Int. Cl.^{3} B63B ***29/00***

U.S. Cl. 114—363 **6 Claims**



1. A mobile chair as used in a boat having a fore and aft running well and thwarts located sidewards thereof and having a seat and a foot-rest and further comprising:

two parallel guide rails mounted longitudinally at said well,

a base plate having means for displacement along said guide rails,

a vertical trunnion for pivotably mounting said foot-rest at said base plate,

an arcuate guide, concentric with said trunnion and having a full annular extension,

means for carrying said arcuate guide freely suspended above said base plate and permitting movement together with the same in the direction of said guide rails, and

a back-stay directed away from said base plate and having means for mounting said seat upon said arcuate guide for sliding movement thereupon, said arcuate guide having a diameter permitting the seat to be swung to positions above either thwart.

4,352,219

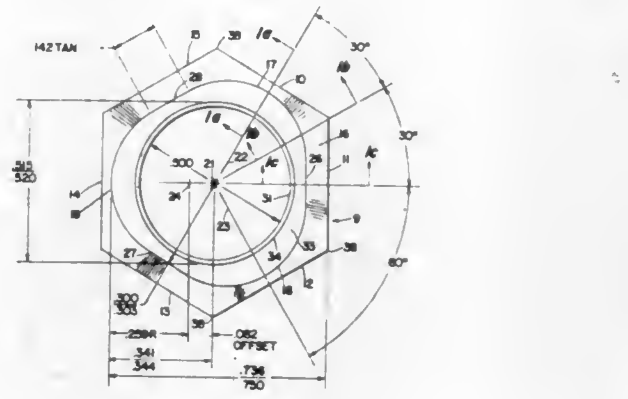
PREVAILING TORQUE LOCK NUT AND METHOD OF FORMING SAME

John C. McMurray, 6957 N. Meadow Dr., Painesville, Ohio 44077, and Arthur G. Kudelko, 7434 Crown Ct., Mentor, Ohio 44060

Division of Ser. No. 17,611, Mar. 5, 1979, Pat. No. 4,291,737. This application Apr. 7, 1981, Ser. No. 251,779

Int. Cl.^{3} B21D ***53/20***

U.S. Cl. 10—86 A **4 Claims**



1. A method of producing hexagonal prevailing torque lock nuts comprising forming a tubular blank with a load face at one end, a cone portion at the other end and a hexagonal wrenching portion therebetween wherein said cone portion is formed with three peripherally positioned lobes each of which is substantially a portion of a right circular cone having an axis parallel to and eccentric with respect to the central axis of said blank, said lobes being joined by substantially tangential portions and each being aligned with a flat of said wrenching portion, threading said blank with a uniform diameter thread, and thereafter applying a staking force to said cone portion with a tool having a blank engaging surface operable to deform said lobes at least along the end thereof to a substantially circular shape in the vicinity of locking zones and to displace portions of said thread within said lobes radially inward to produce three locking sections which provide an interference fit with a mating threaded fastener.

4,352,220

METHOD FOR THE CONSTRUCTION OF A CABLE-STAYED OR REIN-GIRTH BRIDGE

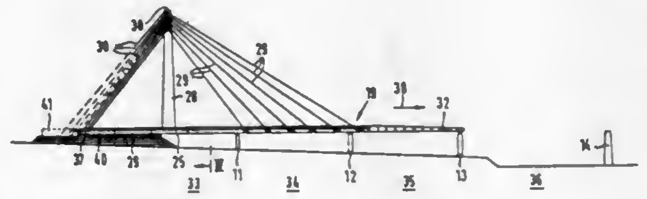
Hans Wittfoht, Kelkheim, Fed. Rep. of Germany, assignor to Polensky & Zollner, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 181,963

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938029

Int. Cl.^{3} E01D ***1/00***

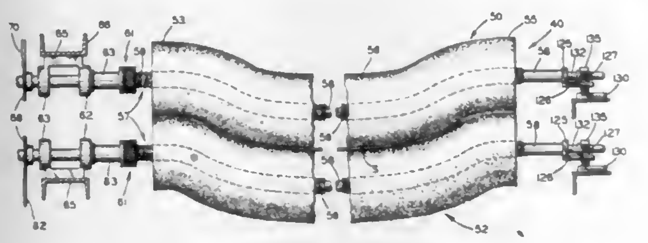
U.S. Cl. 14—1 **6 Claims**



1. A method of constructing a cable-stayed or rein-girth bridge having opposite ends and including stiffening beam means comprised of a plurality of beam sections in ridigly joined end-to-end relationship between said opposite ends, pylon means extending upwardly relative to a given one of said beam sections between said ends and having an upper end, a plurality of tension means extending from said pylon means to spaced locations along said stiffening beam means, and upright pier means between said opposite ends and underlying said given one of said beam sections and said pylon means, compris-

ing the steps of: constructing said pier means, constructing said beam sections individually at at least one of said opposite ends of said bridge and to include anchoring means for said tension means on beam sections forwardly and rearwardly of said given section with respect to the direction from said one end of said bridge toward the other, sequentially joining individual beam sections at said one end including said sections forwardly of said given section, supporting said joined sections at said one end and progressively displacing said joined sections in said forward direction, erecting upright support means at said one end of said bridge and on said given one of said beam sections, sequentially joining and progressively displacing additional beam sections in said forward direction including said sections rearwardly of said given section, securing said tension means to said upright support means while said given beam section is at said one end of said bridge and securing portions of said tension means to said anchoring means on said beam sections forwardly and rearwardly of said given section, and continuing to sequentially join and progressively displace beam sections in said forward direction until said given beam section and said upright support means thereon are positioned over said pier means.

4,352,221
APPARATUS FOR WASHING CURVED SHEETS
Robert G. Revells, and John N. Eggert, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed May 1, 1981, Ser. No. 259,683
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—77 **10 Claims**



1. An apparatus for washing curved glass sheets comprising: a frame, a cluster of brushes mounted on said frame and including at least a pair of opposed rotary brushes above and below the path of movement of a curved glass sheet advanced therebetween, each of said brushes having bent central portions conforming to the shape of the glass sheets being washed, each of said brushes mounted on a composite shaft formed of a fixed, bent inner core member and an outer, flexible rotatable sleeve, and means for rotating said sleeves about said inner core members, respectively.

4,352,222
HINGE
Bernhard Mages, Dornbirn, and Erich Röck, Höchst, both of Austria, assignors to Julius Blum Gesellschaft m. b. H., Höchst, Austria
Filed Feb. 7, 1980, Ser. No. 119,369
Claims priority, application Austria, Feb. 22, 1979, 1361/79; May 3, 1979, 3337/79
Int. Cl.³ E05D *3/06*
U.S. Cl. 16—287 **10 Claims**

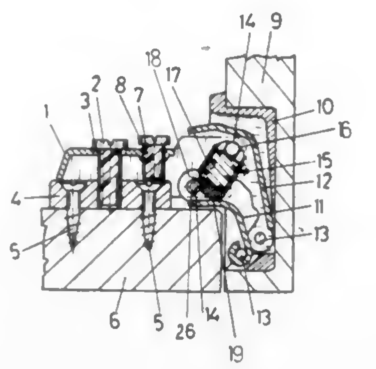
1. A hinge comprising:

a hinge arm adapted to be mounted on an article of furniture, said hinge arm including a pair of hinge axles;

a hinge casing adapted to be mounted on a door of the article of furniture, said hinge casing including a pair of hinge axles;

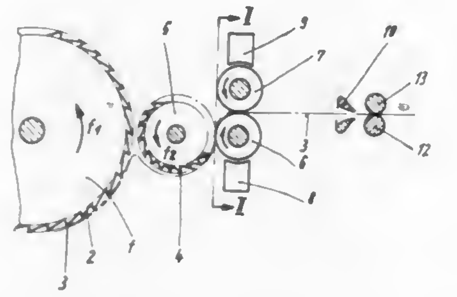
a pair of hinge links pivotally mounted to said hinge axles of said hinge arm and to said hinge axles of said hinge casing, thereby mounting said hinge casing and the door to be pivotable with respect to said hinge arm and the article of furniture between open and closed positions of said hinge casing and the door;

a bush-like member mounted about a first end thereof for pivotal movement; and



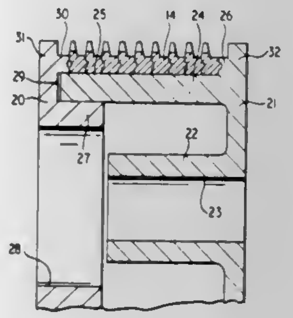
spring means, operating on said member, for urging a second end of said member in directions to primarily abut with one of said hinge links when said hinge casing is in said closed position and to primarily abut one said hinge axle of said one hinge link when said hinge casing is in said open position.

4,352,223
WEB CRUSHING ARRANGEMENT FOR A CARD WEB
Graf Felix, Winterthur; Armin Wirz, Ossingen, and Giancarlo Mondini, Winterthur, all of Switzerland, assignors to Rieter Machine Work, Ltd., Winterthur, Switzerland
PCT No. PCT/EP79/00062, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 18, 1980, PCT Pub. No. WO80/00458, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 10, 1979, Ser. No. 189,848
Claims priority, application Switzerland, Aug. 31, 1978, 9186/78
Int. Cl.³ D01G *15/96*
U.S. Cl. 19—65 CR **13 Claims**



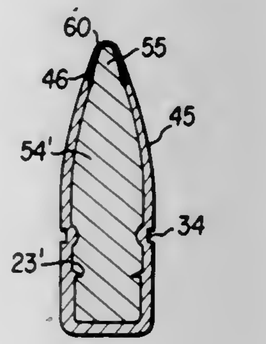
1. Web crushing apparatus for a card web comprising cooperating rolls, a pressing member which is pressable against one roll with facing complementary surfaces on the pressing member and the roll, and means for supplying air under pressure to the facing complementary pressing surfaces on the whole length of the rolls such that due to compressed air supplied, an air film is formed between the pressing member and the one roll, which film transmits the load from the pressing member to the roll and wherein the pressing member is formed by a substantially rigid member which is guided for radial movement with respect to the one roll and which is pressed against the one roll by resilient loading means.

4,352,224
OPENING ROLLER FOR OPEN-END SPINNING APPARATUS
Keith Grimshaw, Todmorden, and Roger C. Spratt, Shipley, both of England, assignors to The English Card Clothing Company Ltd., Huddersfield, England
Filed May 3, 1979, Ser. No. 35,593
Claims priority, application United Kingdom, May 4, 1978, 17648/78
Int. Cl.³ D01G *15/14*
U.S. Cl. 19—97 **7 Claims**



1. An improved card clothed opening roller for use in an open-end spinning apparatus and comprising two roller body parts, each having an inwardly facing abutment and being secured together against axial separation in a closed position, at least one pre-set helical coil of metallic wire type card-clothing located radially on an external cylindrical surface provided by said two roller body parts in the closed position, the end flanks of said coil(s) engaging respectively with said two abutments, the improvement wherein said abutments so constrain said coil(s) axially that adjacent convolutions of said coil(s) are brought into compressive abutting relationship, whereby the axial length of the coil determines the axial length of said roller in the closed position.

4,352,225
JACKETED BULLET AND METHOD OF MANUFACTURE
Charles J. Schreiber, Grand Island, Nebr., assignor to Hornady Manufacturing Company, Grand Island, Nebr.
Division of Ser. No. 934,184, Aug. 16, 1978, Pat. No. 4,336,756. This application Jun. 27, 1980, Ser. No. 163,728
Int. Cl.³ B21K *21/06*
U.S. Cl. 29—1.23 **7 Claims**



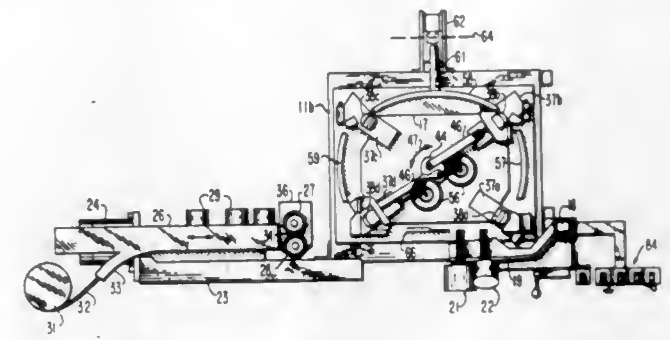
1. A method of making a bullet comprising the steps of:

forming a substantially cylindrical jacket having an internally-extending shoulder between a lower thicker portion and an upper thinner portion;

compressing the lower thicker portion against the upper thinner portion to shape said shoulder into an inwardly-extending annular ring; and

forcing a core downwardly into the jacket, whereby said ring is deformed downwardly and the inside of the jacket underneath said ring and above said ring are filled.

4,352,226
SYSTEM FOR APPLYING AND TENSIONING AN IMPLOSION PROTECTING BAND TO A CRT WITH A TENSION BETWEEN SELECTED LIMITS
Laurence B. Kimbrough, Lititz, and Leonard P. Wilbur, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.
Filed Oct. 24, 1980, Ser. No. 200,539
Int. Cl.³ H01J *9/24*
U.S. Cl. 29—25.19 **20 Claims**



1. A system for applying a tensioning band to an article with a tension between selected limits, comprising: a stationary base and a worktable moveably supported by said base;

a plurality of support means for supporting a article having a generally polygonal cross section on said worktable and for positioning said article in a desired orientation with respect to said worktable, at least a portion of said support means also including means for centering said article with respect to said worktable;

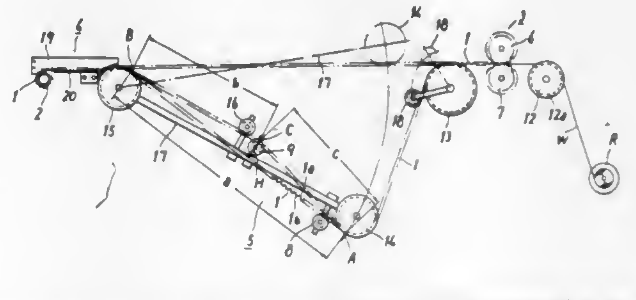
segmented band guide means for guiding said band about said article including a plurality of curved segments having a channel-shaped cross section, said segments being arranged between said support means to guide said band about said article, said guide means also including corner guide segments moveably supported by said support means to guide said band between said curved segments around the corners of said article;

means for feeding said band about said article and for removing slack from said band prior to tensioning said band;

means for applying a known tension to said band, said tension being applied in the same direction as said worktable moves with respect to said base to prevent deflection of said worktable in response to said tension; and

means for holding the free end of said band when said slack is being removed and when said tension is being applied.

4,352,227
APPARATUS FOR PRODUCING A FINNED TUBE FOR HEAT TRANSFER
Masami Ogata; Motoshi Yoshihara, both of Hirakata, and Masahira Tada, Osaka, all of Japan, assignors to Nishiyodo Air Conditioner Co., Ltd., Osaka, Japan
Filed Jul. 14, 1980, Ser. No. 167,873
Claims priority, application Japan, May 20, 1980, 55-67354
Int. Cl.³ B21C *37/26*
U.S. Cl. 29—33 F **7 Claims**



1. An apparatus for producing a finned tube suitable for heat transfer which comprises

wire-fin-forming means comprising wire supply means for supplying a plurality of continuous wires having good thermal conductivity, said supply means including a first grooved roll having a plurality of annular grooves in the periphery thereof for receiving and guiding said wires in side-by-side, parallel relationship, and a pair of meshing gears positioned forwardly of said supply means, said gears receiving and passing said wires therebetween in side-by-side parallel relationship and being effective to shape said wires into upright, wavy wires composed of alternating arch-shaped upper portions and trough-shaped bottom portions as said wires are moved forwardly,

wire-fin-guiding means positioned forwardly of said pair of gears for guiding forward movement of said wavy wires from said fin-forming means in an upright state and in said side-by-side parallel relationship, said fin-guiding means having at least two different guide paths of different lengths wherein the difference between the path lengths is maintained constant, and means for feeding different groups of said wavy wires in said side-by-side parallel relationship through the respective guide paths so that the respective groups of said wavy wires are moved out of phase with each other,

wire-fin-delivery means positioned forwardly of said fin-guiding means for delivering said wavy wires in side-by-side, laterally spaced, parallel relationship with said arch-shaped upper portions being upright, said wire-fin-delivery means including a plurality of guide plates,

tube feeding means for feeding a revolving tube across the forward end of said wire-fin-delivery means in a direction transverse to the direction of forward movement of said wavy wires,

tension control means for applying tension to said wavy wires so that said wavy wires can be helically wound around the surface of said revolving tube with said trough-shaped bottom portions contacting the tube surface and said arch-shaped portions being flexible and upright thereby to form plural helixes having a helix pitch which is the same as the lateral spacing of said wavy wires at the forward end of said wire-fin-delivery means, and

fin welding means for securing said trough-shaped bottom portions of said helically wound wavy wires to the surface of the tube.

4,352,228

APPARATUS FOR ROTATABLY DRIVING A SHELL-TYPE ROLL FOR USE IN A PAPER MAKING MACHINE OR THE LIKE

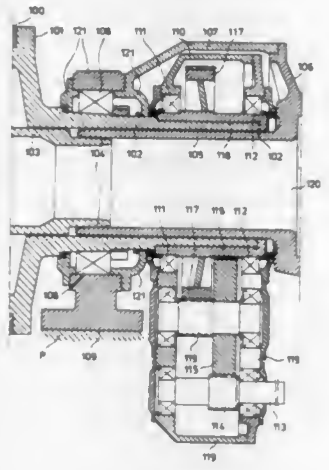
Kalevi Iso-Aho, Jyväskylä, Finland, assignor to Valmet OY, Finland

Filed Mar. 28, 1980, Ser. No. 135,199

Claims priority, application Finland, Mar. 29, 1979, 791063

Int. Cl.³ B21B *13/02;* B60B *15/16*

U.S. Cl. 29—115 **9 Claims**



1. In mechanical drive apparatus for rotating the cylindrical shell of a roll, such as a suction or deflection-compensated roll utilized in paper machines, wherein an elongate member, such as a tubular shaft in the case of a suction roll or a massive axle in the case of a deflection-compensated roll, extends longitudinally through the interior of said shell, including transmission gears through which rotative power is supplied to the shell from an input shaft thereof, the improvement comprising:

a support member having an annular portion disposed around one end of the elongate member;

unitary bearing means disposed around said annular portion of said support member;

toothed drive gear means rotatably mounted on said unitary bearing means, said drive gear means being situated within a housing;

a set of meshing transmission gears adapted to transmit rotative power from the input shaft to said toothed drive gear means;

means interconnecting said drive gear means and roll shell for transferring the rotational power from the former to the latter in a manner such that changes in position of the roll shell relative to said drive gear means can be accommodated within limits; and

wherein the transmission gears of the gear transmission are disposed within the same housing as said drive gear means and wherein said housing provides support for the elongate member extending through said shell interior.

4,352,229

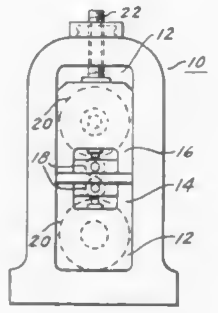
BEARING RETAINING AND POSITIONING MEANS

Edward A. Moore, Jr., Valparaiso, Ind., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Sep. 18, 1980, Ser. No. 188,415

Int. Cl.³ F16C *35/078*

U.S. Cl. 29—116 R **4 Claims**



1. In combination with a roll having a tapered journal portion and a cylindrical end portion having a diameter less than said tapered journal portion, improved means to retain and position a journal sleeve relative to said tapered journal portion comprising:

(a) a journal sleeve having an inside surface which has a taper about equal to the taper of said tapered journal portion,

(b) an extractor sleeve slidably mounted on said cylindrical end portion,

(c) a circumferential groove in said cylindrical end portion,

(d) a plurality of rollers positioned in said circumferential groove, each roller having its longitudinal axis substantially parallel to the longitudinal axis of said roll and a diameter greater than the depth of said circumferential groove,

(e) a longitudinal groove in said cylindrical end portion extending outwardly from said circumferential groove to allow said rollers and a locking key to be placed in and removed from said circumferential groove,

(f) an extractor body attached to the outer end of said journal sleeve and having an inside surface which is slidably mounted on said extractor sleeve, and

(g) a first hydraulic cavity between said extractor sleeve and said extractor body whereupon supplying hydraulic pressure to said first hydraulic cavity initially forces said extractor sleeve against the ends of said rollers and thereafter causes said extractor body to force said journal sleeve onto said tapered journal portion.

4,352,230

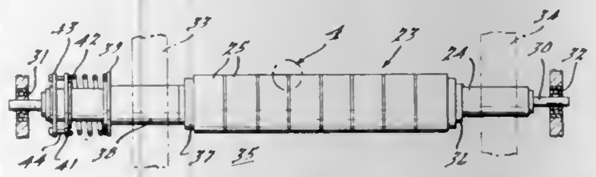
FIBER COVERED ROLLER FOR HIGH TEMPERATURE APPLICATIONS

Robert J. Sukenik, Bloomfield Hills, Mich., assignor to New Hudson Corporation, New Hudson, Mich.

Filed Jan. 11, 1980, Ser. No. 111,219

Int. Cl.³ B21B *31/08;* B60B *7/04, 11/04*

U.S. Cl. 29—125 **6 Claims**



1. A high temperature roller comprising an elongated cylindrical metal mandrel, a series of relatively short monolithic shell sub-assemblies each mounted on said mandrel, each sub-assembly being fabricated of fibers taken from the group comprising aluminum silicate, glass, or mineral wool and a binder, structural spacers inserted between adjacent monolithic sub-assemblies and separating said sub-assemblies whereby transverse bending of said mandrel will be accommodated by relative angular shifting of said sub-assemblies, and means holding said sub-assemblies on said mandrel while accommodating differences in thermal expansion.

4,352,231

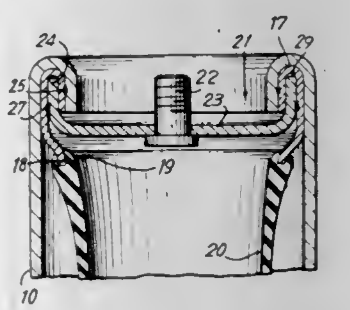
METHOD OF FORMING A LOW PRESSURE LOW COST ACCUMULATOR

A. A. Jacobellis, Woodland Hills, Calif., assignor to VSI Corporation, Pasadena, Calif.

Division of Ser. No. 93,041, Nov. 13, 1979, Pat. No. 4,280,533. This application Mar. 30, 1981, Ser. No. 248,858

Int. Cl.³ B21D *53/00;* B21K *29/00;* B23P *15/26*

U.S. Cl. 29—157 R **3 Claims**



1. The method of manufacturing an accumulator device which comprises the steps of providing a generally cylindrical pressure vessel having a closed end including an oil port and having an open end, providing a bladder subassembly including an axially elongated cylindrical skirt having a bladder bonded to one end thereof, providing a cylindrical cap member having a cylindrical side wall and an end wall having a gas charging valve assembly formed therein, axially inserting said cap member into said skirt with said end wall nearest said bladder, forming an annular weld connection between said side wall of said cap and said skirt at a position axially displaced from the junction of said skirt and bladder while the inner and outer surfaces of said skirt and cap member, at said weld line, are exposed to cooling influences, thereafter inserting said skirt and attached cap into the interior of said pressure vessel, thereafter forming an annular weld connection between said skirt and said vessel at a position intermediate the open end of said vessel and the weld line connecting said cap and said skirt, and thereafter deforming said open end portion of said vessel inwardly into overlapping position of said skirt, dependably to secure said skirt in said pressure vessel.

4,352,232

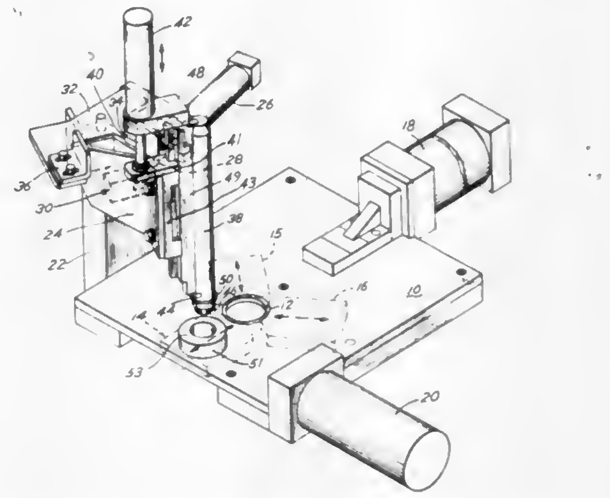
CLIP LOADING AND FEED DEVICE

Gordon R. Winders, Oak Ridge, Tenn.; Fredric M. MacKay, Raleigh, and Thomas E. Whittlesey, Apex, both of N.C., assignors to Tipper Tie, Inc., Apex, N.C.

Filed Feb. 12, 1981, Ser. No. 233,972

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—243.56 **9 Claims**



1. In a clip attachment device for affixing generally circular clips about a mass, said device of the type including a base, an opening in the base for receipt of the mass, a set of clip engaging dies positioned about the opening to engage a clip and movable toward a point in the opening to form the clip about the mass, the improvement of means for positioning an individual clip for gripping by the dies prior to appication of the clip to the mass, said improvement comprising in combination:

(a) a support arm pivotally mounted on the base;

(b) a mandrel for receipt of a plurality of clips, said mandrel attached to the support arm, said arm and mandrel being pivotal between a first position for maintaining the mandrel over the opening and a second position;

(c) means for translating the mandrel toward the opening when said mandrel is in the first position to thereby position a single clip intermediate the dies; and

(d) means for closing the dies on a clip when intermediate the dies, said mandrel being elastically deformable and permitting retention of the clip by the dies upon removal of the mandrel by translation away from the opening, the remaining clips being retained on the expanded mandrel.

4,352,233

LOW COST FLEXURE ASSEMBLY

Walter J. Krupick, Succasana, N.J., assignor to The Singer Company, Little Falls, N.J.

Division of Ser. No. 941,990, Sep. 13, 1978, Pat. No. 4,270,392, which is a continuation of Ser. No. 716,602, Aug. 23, 1976, abandoned. This application Jul. 11, 1980, Ser. No. 168,952

Int. Cl.³ B23P *15/00;* G01C *19/22*

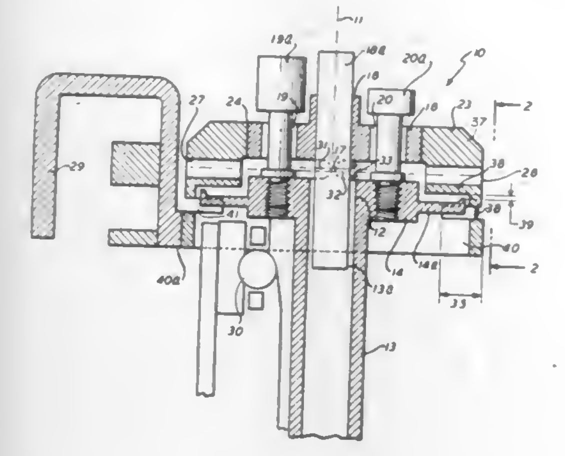
U.S. Cl. 29—434 **2 Claims**

1. The method of constructing a two axis assembled flexure assembly unit for a two axis, tuned rotor gyro, said assembled flexure assembly unit having a spin axis and including an outer flexure assembly and an inner flexure assembly coaxially disposed along the spin axis, said outer flexure assembly having a gimbal having only two flexures separated by 180° from each other, said outer flexures being coaxial along an outer flexure axis, said outer flexures being disposed between two outer slots, said inner flexure assembly having a gimbal having only two flexures separated by 180° from each other, said inner flexures being coaxial along an inner flexure axis, said inner flexures being disposed between two inner slots, said outer

flexure axis being separated by 90° from said inner flexure axis, said method comprising:

clamping the gimbal of the outer flexure assembly to the gimbal of the inner flexure assembly against a fixture workpiece;

machining the flexure slots at the same time in both the gimbals of the outer and inner flexure assemblies;



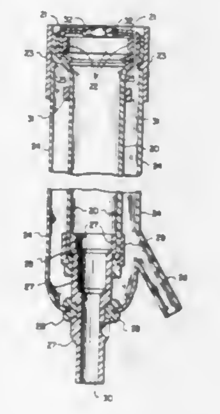
rotating the outer and inner flexure assemblies 90° relative to each other, and

displacing the outer flexure assembly from the inner flexure assembly by separating the outer and inner flexure axis a controlled axial distance along the spin axis to achieve gimbal balance.

4,352,234

METHOD OF MAKING INFLATION FOR TEAT CUP ASSEMBLY

Daniel O. Noorlander, 508 W. 630 South, Orem, Utah 84057
Division of Ser. No. 36,562, May 7, 1979, Pat. No. 4,280,446. This application Jan. 9, 1981, Ser. No. 223,706
Int. Cl.^{3} B23P *11/02*
U.S. Cl. 29—450 14 Claims

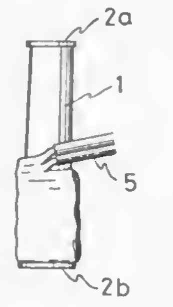


1. A method of making an inflation for use in a teat cup assembly of an automatic milking machine, said method comprising bonding a tubular mouth-forming member made of a resilient, flexible, elastic material to one end of an elongate, tubular, body-forming member which is also made of resilient, flexible, elastic material, said mouth-forming member having a cross-sectional circumference smaller than the cross-sectional circumference of the body-forming member, and then expanding said one end of the elongate, tubular, body-forming member to which the mouth-forming member is attached over the outer circumference of an annular expansion ring which has a circumference substantially greater than the cross-sectional circumference of the elongate, tubular, body-forming member, to hold said one end of the tubular body-forming member in an enlarged circular configuration which has a circumference substantially larger than the cross-sectional circumference of the unexpanded portion of said body-forming member, and to expand the end of the mouth-forming member which is bonded to the tubular body-forming member outwardly toward the perimeter of the expansion ring, with the other end of said mouth-forming member being extended inwardly toward the longitudinal axis of said body-forming member, whereby said mouth-forming member forms a diaphragm having a central opening which has a circumference less than the cross-sectional circumference of the unexpanded portion of said elongate tubular member, with said central opening being positioned adjacent to the enlarged end of said body-forming member and substantially coaxial with the longitudinal axis of said body-forming member.

4,352,235

METHOD OF PRODUCING A DECORATIVE, CYLINDRICAL, COATED ARTICLE

Kazuo Masuda, 52-1, Saiwaicho 4 chome, Tachikawashi, Tokyo, Japan
Filed Sep. 15, 1980, Ser. No. 187,047
Claims priority, application Japan, Dec. 28, 1979, 54-170370
Int. Cl.^{3} B21B *1/46*
U.S. Cl. 29—527.4 9 Claims

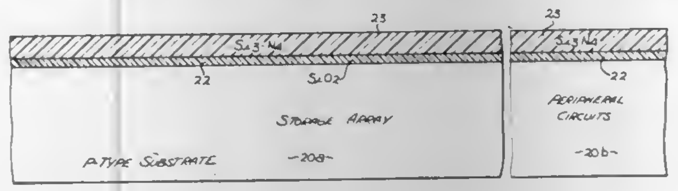


1. A method for producing a decorative article, comprising the steps of:
   (a) forming flange portions on a cylindrical base member wherein said flange portions are positioned at either end of said cylindrical base member and extend outward from an outer surface of said cylindrical base member to form an outer lip surface at each end of said cylinder;
   (b) roughening said surface of said cylindrical base member;
   (c) rotating said cylindrical member axially;
   (d) applying an epoxy resin colored with a pigment to the surface of said cylindrical base member while rotating, wherein an outer surface of said epoxy extends outward from the surface of the cylindrical base member beyond the outer lip surface of the flange portions, said epoxy coating the entire surface of said cylindrical base member;
   (e) heating said colored epoxy resin coating to between 23° C. to 37° C. during said applying step while continuing to rotate said cylindrical base member;
   (f) continuing to rotate said cylindrical body member until said colored epoxy resin has stabilized and has returned to room temperature;
   (g) heating the resulting coated cylindrical body member to a temperature between 50° C. to 120° C. in order to dry said colored epoxy resin;
   (h) shaving away said outer surface of said colored epoxy resin to the extent that said outer surface of said epoxy resin extends outward from the surface of said cylindrical base member to the same extent as said outer lip surfaces;
   (i) polishing the resulting outer surfaces of said lips and said colored epoxy resin.

4,352,236

DOUBLE FIELD OXIDATION PROCESS

John L. McCollum, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Filed Jul. 24, 1981, Ser. No. 286,578
Int. Cl.^{3} H01L *21/22*
U.S. Cl. 29—571 12 Claims



1. In the fabrication of a metal-oxide-semiconductor memory on a silicon substrate which substrate includes a first area for a storage array and a second area for peripheral circuits, an improved process comprising the steps of:

growing an oxide on said substrate at predetermined first regions of said first area forming first oxide regions and simultaneously growing an oxide at predetermined second regions of said second area forming second oxide regions, said first and second oxide regions being grown to a thickness of approximately 3000 A, or less;

forming polysilicon members on said substrate in at least said first area of said substrate;

growing an oxide on said polysilicon members in said first area while simultaneously thickening said second oxide regions;

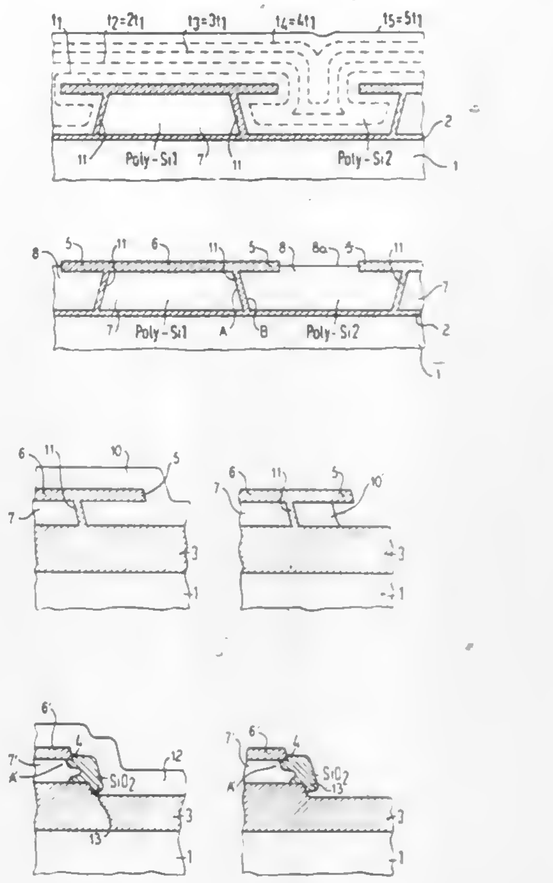
whereby a memory is fabricated having thinner oxide regions in the storage array and thicker oxide regions for the peripheral circuits, thereby reducing the area required for the storage array.

4,352,237

METHOD FOR MANUFACTURE OF INTEGRATED SEMICONDUCTOR CIRCUITS, IN PARTICULAR CCD-CIRCUITS, WITH SELF-ADJUSTING, NONOVERLAPPING POLYSILICON ELECTRODES

Dietrich Widmann, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 16, 1980, Ser. No. 187,773
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939456
Int. Cl.^{3} H01L *21/20, 21/283*
U.S. Cl. 29—577 C 1 Claim

1. In a method for manufacturing self-adjusted nonoverlapping polysilicon electrodes (poly-Si-1 and poly-Si-2) in integrated CCD semiconductor circuits wherein the lateral extent of the electrodes is comparable in magnitude to the layer thickness, and wherein a polysilicon-1-electrode (7) is first formed with a masking layer thereon of SiO_2 or Si_3N_4, said method further comprising:
   (a) etching the polysilicon-1-electrodes (7) during the presence of said masking layer (**5, 6**) of SiO_2 or Si_3N_4 in covering relation thereto,
   (b) carrying out the etching of the polysilicon-1-electrodes (7) to such degree that lateral underetching occurs at the edges (**5*a*, 5*b***) of the masking layer (**5, 6**) covering the polysilicon-1-electrodes (7) to form overhangs (**5**) of the masking layer (**5, 6**) with the overhangs (**5**) of the masking layer (**5, 6**) having a prescribed minimum length,
   (c) carrying out a thermal oxidation step whereby the edges (A) of the polysilicon-1-electrodes are covered with SiO_2 layers (**11**), and
   (d) applying a second polysilicon layer by means of a chemical vapor deposition step known per se, for producing polysilicon-2-electrodes (**8**) and carrying out this applying step such that not only are the hollows under the overhangs (**5**) filled with silicon but also where the edges (**5*a*, 5*b***) have a spacing of a magnitude comparable to the layer thickness, the interstice between the polysilicon-1-electrodes (7) is also completely filled with silicon; and



   (e) eroding the second polysilicon layer by means of an etching step known per se to such degree that the surface of the second polysilicon layer terminates substantially with the surface of the SiO_2 or Si_3N_4 masking layer (6) covering the polysilicon-1-electrodes (7).

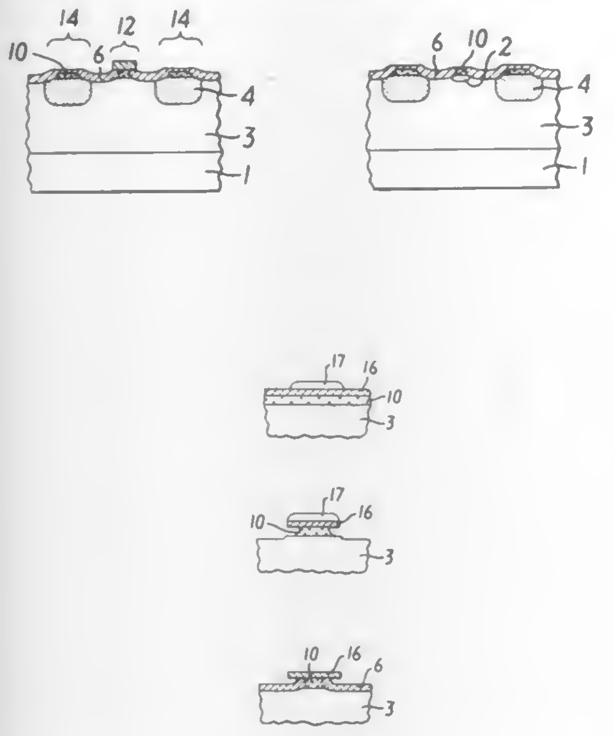
4,352,238

PROCESS FOR FABRICATING A VERTICAL STATIC INDUCTION DEVICE

Masafumi Shimbo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Apr. 14, 1980, Ser. No. 139,754
Claims priority, application Japan, Apr. 17, 1979, 54/46898
Int. Cl.^{3} H01L *21/225, 29/72*
U.S. Cl. 29—579 2 Claims

1. A method of fabricating a vertical static induction-type semiconductor device having main electrode regions, a channel region and a gate region, wherein one of the main electrode regions and the gate region are formed on a surface of the channel region, said method comprising the steps of:
   (a) providing a semiconductor substrate having a first conductivity type and a low resistivity, said semiconductor substrate defining a first main electrode region of the vertical static induction-type semiconductor device;
   (b) forming a single crystal silicon layer of the first conductivity type and having a high resistivity on a surface of the semiconductor substrate, said single crystal silicon layer defining the channel region of the vertical static induction-type semiconductor device;
   (c) depositing a polycrystalline silicon film having a lower impurity concentration that that of the channel region on a major surface of said single crystal silicon layer;
   (d) forming an insulating film comprised of silicon nitride on said polycrystalline film;
   (e) selectively etching said insulating film for forming islands of the insulating film overlying the portions of the channel region surface at which the gate region and one of the main electrode regions are to be formed;

(f) side-etching said polycrystalline film using the island of said insulating film as a mask to narrow the portions of said polycrystalline film overlying the gate region;
(g) selectively oxidizing the side-etched polycrystalline film and exposed regions of the channel region surface using the insulating film as a mask;
(h) selectively removing portions of the insulating film to form a window through the selectively oxidized oxide on the polycrystalline film overlying the gate region;
(i) introducing impurity atoms having a conductivity type opposite that of the channel region through the window in the oxide on the polycrystalline film and into the gate region, the impurity atoms being effective to impart to the gate region a conductivity type opposite that of the channel region, the impurity atoms penetrating the polycrystalline film as they are introduced into the gate region, and the penetration of the polycrystalline film being carried out under conditions effective to oxidize the polycrystalline film; and
(j) forming one of the main electrode regions at the surface of the channel region by removing a portion of the insulating film and introducing impurity atoms of the first conductivity type through the polycrystalline film into the surface region of the channel region where the main electrode region is to be formed.

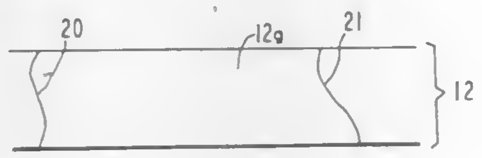


4,352,239

PROCESS FOR SUPPRESSING ELECTROMIGRATION IN CONDUCTING LINES FORMED ON INTEGRATED CIRCUITS BY CONTROL OF CRYSTALLINE BOUNDARY ORIENTATION

John M. Pierce, Palo Alto, Calif., assignor to Fairchild Camera and Instrument, Mountain View, Calif.

Filed Apr. 17, 1980, Ser. No. 141,040
Int. Cl.³ H01L *21/477*
U.S. Cl. 29—590 2 Claims



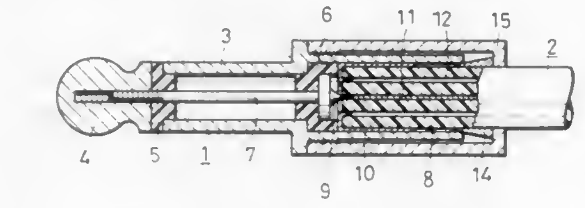
1. A method for fabricating a polycrystalline interconnection on a semiconductor structure, which interconnection resists electromigration, the method comprising the steps of:
(a) forming a polycrystalline interconnection on the semiconductor structure by depositing a line of aluminum to create a line having grain boundaries extending both along the length of the line and across the width of the line, and
(b) reorienting the grain boundaries of the interconnection to extend only across the width of the line by heating the interconnection at approximately 480° C. for approximately 50 minutes in order to expand the grains to a width greater than the width of the line, whereby electromigration along the length of the line is suppressed by removing boundaries that extend along the length of the line.

4,352,240

METHOD OF CONNECTING A COAXIAL CABLE TO AN ELECTRICAL CONNECTOR

Hitoshi Komada, 28-3, Oaza Saito Aza Shimoiseji Fuso-cho, Niwa-gun, Aichi-ken, Japan

Continuation-in-part of Ser. No. 41,298, May 22, 1979, abandoned. This application Jul. 24, 1980, Ser. No. 171,954
Claims priority, application Japan, Jun. 13, 1978, 53-71657
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—854 1 Claim



1. A method of electrically and mechanically connecting a coaxial cable having a central positive conductor and a circumferential ground shield radially spaced and insulated therefrom to an electrical connector having an axial bore for receiving said coaxial cable, a projecting positive terminal axially provided in the center and a plurality of ground terminals projecting axially opposite said positive terminal and spaced radially therefrom in conformity with radiuses of a plurality of concentric ground conductors in the cable of various standards of cable, said positive terminal and said ground terminals being insulated from each other, said method comprising the steps of:
severing an end of said coaxial cable smoothly normal to the longitudinal axis thereof expossing only the end faces of said terminal and ground conductors;
axially moving said severed end of said coaxial cable into contact with said electrical connector;
connecting said positive terminal and said ground terminals of said wiring appliance axially with the central and ground conductors respectively exposed on said severed end of said coaxial cable;
and securing said coaxial cable to said electrical connector.

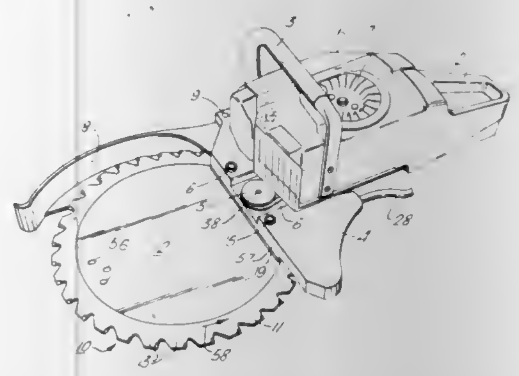
4,352,241

DEVICE RELATING TO A CIRCULAR SAW BLADE OF CENTERLESS TYPE

Mats A. Johansson, Ekliden 6, S-667 00, Forshaga, Sweden

Filed Feb. 27, 1981, Ser. No. 238,824
Claims priority, application Sweden, Mar. 25, 1980, 8002265; Oct. 14, 1980, 8007185
Int. Cl.³ B27B *5/14*
U.S. Cl. 30—123.4 10 Claims

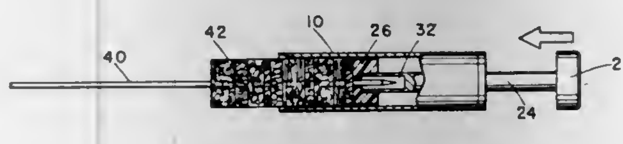
1. Device relating to a circular saw blade of centreless type with a sawing depth greater than the radius of the circle, comprising an annular blade and at least one central disc provided inside the annular blade, characterized in that said central disc contains at least one conduit or passage for a fluid, e.g. for a coolant or a flushing agent to the part of the disc which lies within the region of the maximum sawing depth.



4,352,242

APPARATUS FOR PRODUCING A SKEWERED STACK OF FOOD

Catherine Plet, 945 Cordova St., San Diego, Calif. 92107
Continuation of Ser. No. 126,976, Mar. 3, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,585
Int. Cl.³ B26B *27/00*
U.S. Cl. 30—130 1 Claim



1. A gourmet press for producing skewered stacks of food morsels, comprising:
an elongated hand-held tube,
the first end of said tube having an internally bevelled cutting edge for cutting food morsels and facilitating the entry of the cut morsels into the tube,
a removable plug mountable in the second end of said tube,
a shaft retained by and axially slideable through said plug, and having its first end insertable into said tube,
a plunger fixed on the first end of said shaft and slideable within said tube,
said plunger and shaft being houseable within said tube and plug when said shaft is fully inserted into said tube,
said plunger having a central opening therein,
the first end of said shaft having a skewer receiving socket axially aligned with said plunger opening,
said plunger opening and socket defining a passage for receiving the end of a skewer inserted through the first end of said tube,
a finger engageable knob fixed on the second end of said shaft, and
said plug, shaft, plunger and knob comprising a plunger assembly which is removable from said tube to facilitate the cleaning of said press.

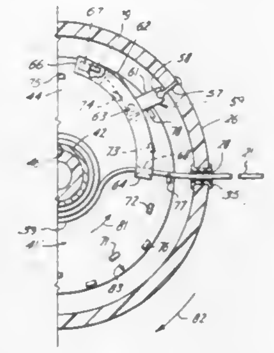
4,352,243

APPARATUS FOR CUTTING VEGETATION

Marco H. Lombard, Austin, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 132,382, Mar. 21, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,458
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 20 Claims

17. An apparatus for cutting vegetation, comprising:
(a) a head rotatable about an axis of rotation and said head having at least one peripheral aperture;
(b) said head carrying a cavity providing a storage area for cutting line;
(c) spool means mounted in said cavity and journaled therein for rotation about the rotational axis of said head and carry a plurality of angularly disposed escapement teeth;
(d) a supply of flexible non-metallic cutting line disposed in a coiled portion about said spool means with one end secured thereto and with a free end extending outwardly from said head through said aperture into a cutting plane;
(e) an escapement lever carrying an anchor for selectively engaging said escapement teeth and in a first position securing said spool means against rotation in said head when said cutting line at said free end in said cutting plane has a predetermined maximum length;



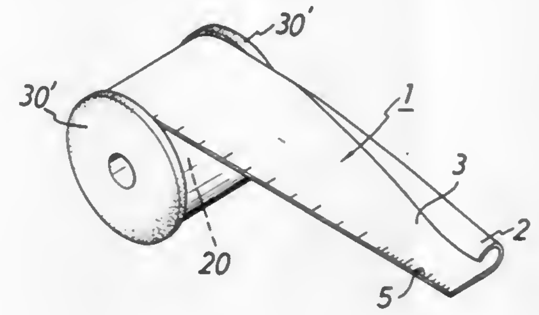
(f) said escapement lever in a second position stepping said anchor between said escapement teeth on said spool means to permit incremental rotation of said spool means for uncoiling said cutting line for extension from said head through said aperture into the cutting plane; and,
(g) toggle pivot means including a lever cam mounted on said head and connected to said escapement lever, said lever cam being actuated by centrifugal force for shifting said escapement lever to said second position from said first position during head rotation whenever said cutting line is shortened to less than the predetermined maximum length, whereby said cutting line is extended in length during the cutting of vegetation.

4,352,244

STRAIGHTLY EXTENSIBLE MEASURING TAPE

Yasushi Tomuro, No. 11-3, Tamagawa Denencho-fu 2-Chome, Setagaya-ku, Tokyo, Japan

Filed May 19, 1980, Ser. No. 151,106
Claims priority, application Japan, Jun. 15, 1979, 54-74600
Int. Cl.³ G01B *3/10*
U.S. Cl. 33—137 R 4 Claims



1. A straightly extensible measuring tape, comprising an elongated element to effect measuring, said element being adapted to be extended from a flattened wound position to an extended position so that the element maintains a straight extension, said element upon being extended from its wound position forming along the extended position a cross-sectional shape having a flattened portion and a curved portion contiguous with said flattened portion, throughout the entire extended length, said curved portion being continuously formed during

the extending of the tape without a need to apply a curve-forming force thereto and being flattened when the element is retracted to said wound position and said curved portion forming an arc of at least 180°.

4,352,245
DISTANCE INDICATING DEVICES

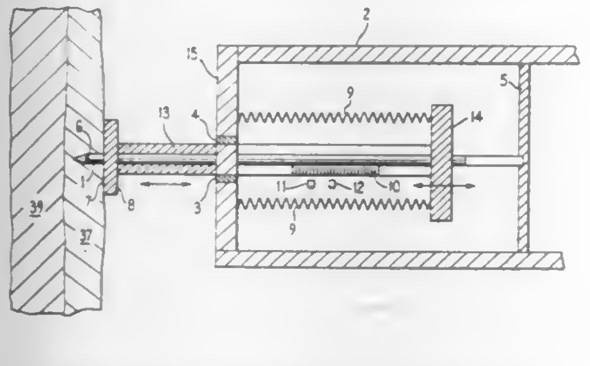
John B. Hennessy, Ahuroa, North Auckland, and Rodney J. Twizell, Auckland, both of New Zealand, assignors to John B. Hennessy, North Auckland and The Development Finance Corporation of New Zealand, Wellington, both of, New Zealand

Filed Oct. 24, 1980, Ser. No. 200,338

Claims priority, application New Zealand, Oct. 30, 1979, 190605

Int. Cl.^{3} G01B *5/02, 11/06*

U.S. Cl. 33—169 B **3 Claims**



1. A distance measuring device comprising:
a probe;
a first reference point associated with said probe;
a second reference point movable relative to said probe;
a light source associated with said probe;
light sensitive element means, associated with said probe, for receiving light from said source reflected from the surroundings of said probe and for generating an electrical signal representative of the level of said reflected light;
a first storage means for storing a first signal representative of the maximum reflected light received by said light sensitive element means;
second storage means for storing a second signal indicative of the light received by said light sensitive element means representative of the minimum level of reflected light;
selection means for selecting a signal level between said stored first and second signals; and
measuring means for measuring the distance between said first and second reference points when said electrical signal from said light sensitive element means reaches the level of said selected signal.

4,352,246
TRACER HEAD FOR MACHINE TOOLS

Ulrich Hauert, Schnottwil, Switzerland, assignor to ETA A.G. Ebauches-Fabrik, Grenchen, Switzerland

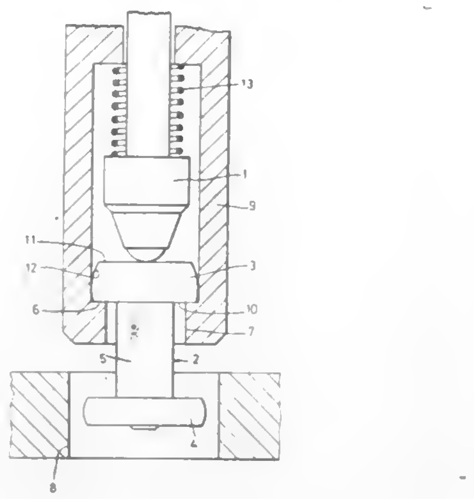
Filed Jul. 15, 1980, Ser. No. 169,094

Claims priority, application Switzerland, Jul. 17, 1979, 6644/79

Int. Cl.^{3} G01B *7/00, 7/28*

U.S. Cl. 33—174 L **2 Claims**

1. A tracer head for machine tools mounted in the Z-axis of a measuring machine comprising a cylindrical casing, an axially movable tracer placed in said casing and movable against the action of a coil and a radially movable tracer which is separate from said axially movable tracer, the longitudinal axis of said radially movable tracer lying in the Z-axis when the radially movable tracer is in its inoperative position, said radially movable tracer further comprising a ball head having the form of a ball zone, a feeler disc to be pressed against a workpiece to be measured or a template to be contacted and a stem connecting said ball head with said feeler disc, said stem passing with a certain amount of play through a bore provided in the bottom of said casing, said ball head having a lower flat surface resting on the bottom surface of said casing, an upper flat surface forming a contact surface with said axially movable tracer and a ball-like circumference surface lying free from play on the inside wall of said casing, wherein the axially movable tracer contacts the upper flat surface of the ball head of the radially movable tracer only in one point lying always in the Z-axis.



4,352,247
SQUARE LEVEL FOR DRAWING ANGLES AND PARALLELS

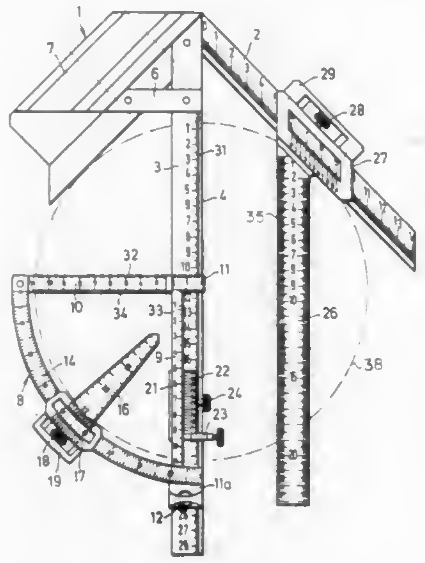
Norbert-Josef Rohde, Am Kleekamp 23, 5024 Pulheim, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,443

Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918321

Int. Cl.^{3} B43L *7/00*

U.S. Cl. 33—428 **8 Claims**



1. A square for drawing angles and parallels, comprising in combination:
two contact arms which are joined at one end and which subtend a right angle;
a center arm attached to the intersection area of the two contact arms and having a longitudinal edge forming the bisector of said right angle;
a protractor frame attached at a right angle to said center arm, said protractor frame including a first frame piece which slides longitudinally along said center arm and a second frame piece perpendicular to the center arm;
a jig plate attached to said first frame piece and having an abutment perpendicular to the longitudinal edge of the center arm; and
said two frame pieces being connected by an arc-shaped piece which subtends at least a 90° arc.

4,352,248
BONNET TYPE STEAMER

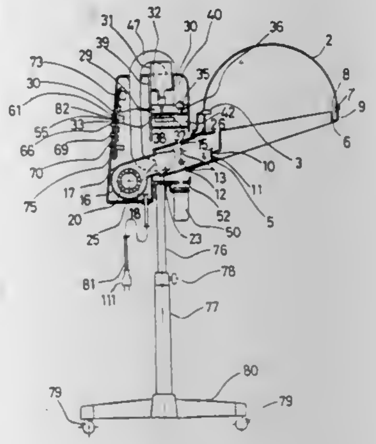
Takehiro Kobayashi, Sakai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,162

Claims priority, application Japan, Jun. 6, 1979, 54-77332[U]; Aug. 31, 1979, 54-121304[U]; Jan. 8, 1980, 55-855[U]

Int. Cl.^{3} A45D *20/44*

U.S. Cl. 34—88 **16 Claims**



1. A bonnet type steamer comprising:
a bonnet having a fluid passageway;
an atomizer means for generating a mist at room temperature;
means for supplying the mist from said atomizer means to said bonnet through said fluid passageway and
heater means provided in said fluid passageway for heating said mist from said atomizing means to generate steam.

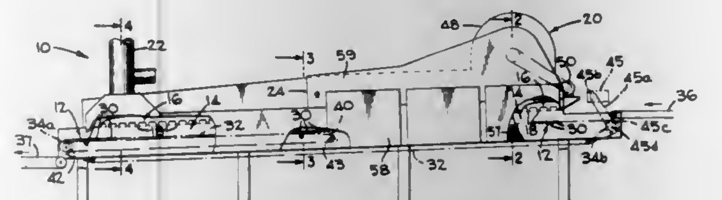
4,352,249
FRUIT DRYER

Boyd W. Rose, Riverside, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Oct. 9, 1980, Ser. No. 195,466

Int. Cl.^{3} F26B *15/12*

U.S. Cl. 34—212 **9 Claims**



1. A dryer for fruit or the like, comprising:
means defining a drying chamber;
means defining an endless roller conveyor having an upper fruit supporting run extending substantially the full length of said chamber,
said roller conveyor including a plurality of individual rollers mounted in spaced relation to define air passages therebetween and which are free to rotate about their own axes;
means for driving said conveyor;
means defining a plenum chamber disposed longitudinally above the conveyor, said plenum chamber having a plurality of narrow generally rectangular nozzle openings extending transversely substantially the full width of said conveyor for directing a narrow curtain of high velocity heated and pressurized air from each nozzle for quickly evaporating moisture from the fruit;
air fan means for supplying heated air under pressure to the plenum chamber;
means for imparting rotary motion to individual rollers for no more than half of their residence time within the drying chamber, with the major portion of said rotary motion occurring during the latter portion of the residence time therein,
the heated air discharged from said nozzle openings being in the form of narrow curtains of high velocity air which contact the upper exposed surfaces of the fruit and then move through passages between adjacent exposed surfaces of the fruit and the passages between said rollers for quickly evaporating moisture from the fruit in said chamber while the fruit is supported by said rollers,
said rotary motion of the rollers being effective to turn the fruit for exposing all areas of the fruit to be heated by said high velocity air for evaporating substantially all moisture from the fruit prior to moving the fruit out of the drying chamber.

4,352,250
SUCTION DREDGER INSTALLATION

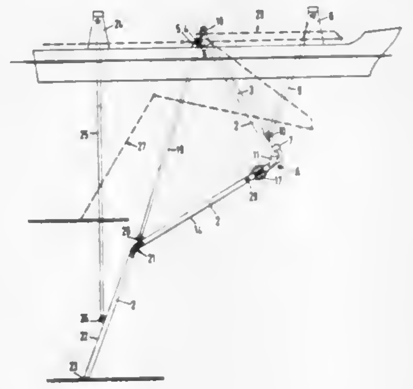
Huibert de Vries, Alblasserdam, Netherlands, assignor to Koninklijke Bos Kalis Westminster Group N.V., Papendrecht, Netherlands

Filed Dec. 3, 1980, Ser. No. 212,744

Claims priority, application Netherlands, Dec. 12, 1979, 7908959

Int. Cl.^{3} E02F *3/90*

U.S. Cl. 37—58 **3 Claims**



1. In a dredger installation carried by a floating vessel, a suction pipe comprising first, second and third pipe sections, the first pipe section being supported by and movable with a ladder pivoted at its upper end to the vessel for swinging movement about a horizontal axis which is transverse to the vessel, a pivotal coupling between the first and second pipe sections permitting these sections to enclose a mutual angle between 0° and 180° in lazy tong relationship, means for controlling the position of the second pipe section relative to the first pipe section, said means including a lifting device carried on the ladder adjacent said horizontal axis and an elongated flexible line connected between the lifting device and the second pipe section, and a pivotal connection between the second pipe section and the third pipe section.

4,352,251
HAND OPERATED SUCTION DREDGE HEAD AND HYDRAULIC SUBMERSIBLE PUMP ASSEMBLY

Albert H. Sloan, 4200 Kean Rd., Fort Lauderdale, Fla. 33314

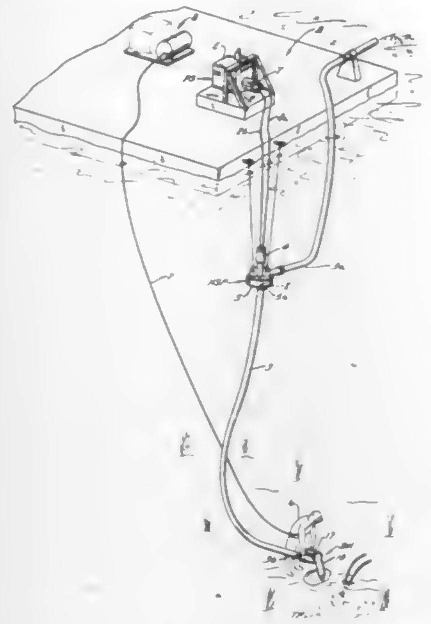
Filed Jan. 5, 1981, Ser. No. 222,742

Int. Cl.^{3} E02F *3/88*

U.S. Cl. 37—58 **27 Claims**

1. A portable, lightweight, hand operated dredge head and for being held by the arms of a diver operator for underwater excavating, comprising, a tubular suction nozzle having a lower inlet end and an open upper end for the entry of water therein, a tubular discharge branch extending from said nozzle

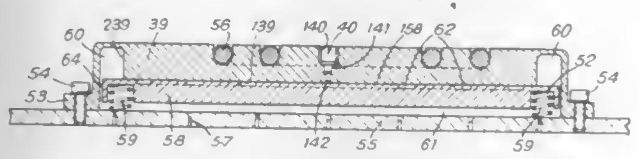
and at a point intermediate the length of said tubular nozzle, said tubular branch having a discharge end for connection to a suction pipe for conveying excavated material away from said head, swivel coupling means between said discharge end of said branch and said suction pipe whereby said head can be rotationally swivelled relative to said suction pipe and quickly detachably connected thereto, and a hand operated valve pivotally mounted in said nozzle adjacent its upper end, an operator's handle secured to said valve and extending from said nozzle for permitting the diver operator to move said valve to any adjusted position between a closed position and an open position and for thereby varying the amount of water introduced through said valve and into said nozzle to thereby vary the suction at said lower inlet end of said nozzle.



4,352,252

STEAM GENERATOR WITH DIRECT EVAPORATION

Claude G. Brenot, 36, Chemin de la Cybellerie, Poitiers, France
Filed Jul. 24, 1980, Ser. No. 171,716
Claims priority, application France, Aug. 3, 1979, 79 20025
Int. Cl.³ D06F *71/34*
U.S. Cl. 38—16 **11 Claims**



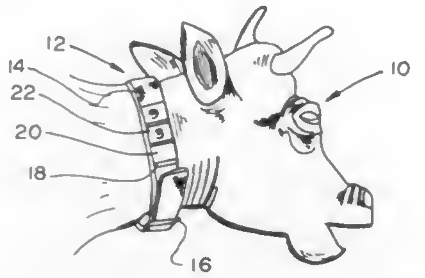
11. A steam press equipped with a generator with direct evaporation, without accumulation of pressurised steam, comprising:

a press sole,
a first plate fast with the press sole and provided with an inlet channel for a pressurized fluid to be evaporated,
a second plate independent of the first plate and located therebeneath
a steam recovery cavity in communication with a peripheral part of the first and second plates,
a steam chamber located under the second plate immediately above the press sole and communicating with the steam recovery cavity,
elastic return means abutting on the press sole and exerting a pressing action on the second plate to apply the latter against the lower face of the first plate, and
an electric heating resistor located at least approximately in a plane parallel to said first and second plates, wherein the pressurized fluid inlet channel opens out freely from the first plate perpendicularly thereto and to the second plate, into a central part of the generator, and has an outlet diameter greater than about 2.5 mm.

4,352,253

LIVESTOCK IDENTIFICATION SYSTEM

William L. Oswalt, 5316 E. W Ave., Vicksburg, Mich. 49097
Filed Mar. 13, 1981, Ser. No. 243,549
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—300 **11 Claims**



1. An animal marking system for cattle and the like comprising:

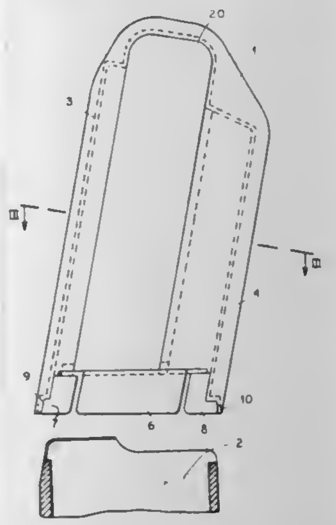
a flexible strap having two ends and of a length sufficient to fit around the neck of an animal;
means for adjustably fastening the ends of the strap to form a loop of adjustable diameter to secure the strap around the animal's neck;
at least one pair of first patches bearing identical numbers;
two sets of second patches having a surface of a different identifiable color;
means for removably securing each of the at least one pair of first patches and a pair of second patches to the flexible strap at two separate locations on the strap such that the first and second patches will be positioned on opposite sides of the loop formed by the strap when the loop is positioned around an animal's neck, whereby the first and second patches are both visible from opposite sides of an animal when the strap is positioned on the animal; and
the removably securing means comprises:
  a plurality of resiliently deformable hook-shaped elements secured to one of the flexible strap and the first and second patches; and
  a plurality of loop elements secured to the other of the flexible strap and the first and second patches, the resiliently deformable, hook-shaped elements internally engaging the loop elements when the hook-shaped elements are pressed against the loop elements.

4,352,254

CARTRIDGE PACKAGE FOR RAPID LOADING OF A MAGAZINE OR CLIP FOR AUTOMATIC AND SEMIAUTOMATIC WEAPONS

Kurt Peter, Donaustrasse 101/12, A-2344 Maria Enzersdorf-/Südstadt, and Gerhard Muck, Peter Jordanstrasse 159, A-1180 Wien, both of Austria
Filed May 27, 1980, Ser. No. 153,828
Int. Cl.³ F42B *39/06*
U.S. Cl. 42—88 **5 Claims**

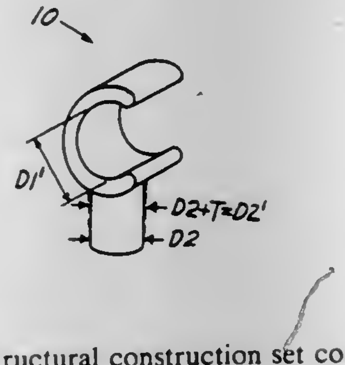
1. A reloading package for the rapid feed of a stack of cartridges into a magazine of an automatic or semiautomatic weapon, said package comprising a generally U-shaped frame formed with an open end and having a pair of mutually parallel shanks having inwardly open guide channels for guiding opposite ends of the cartridges of said stack toward said open end, said shanks being spaced apart to define a window affording access to said stack whereby said cartridges can be fed into said magazine, said open end of said frame being formed with a funnel-shaped mouth adapted to receive an end of said magazine, said mouth being asymmetrical with respect to a median plane through said frame parallel to the plane thereof whereby the mouths of a plurality of similar packages can interfit upon a stacking thereof.



4,352,255

GROUP USE TOY STRUCTURAL CONSTRUCTION SET

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211
Filed Dec. 4, 1980, Ser. No. 212,832
Int. Cl.³ A63H *33/10*
U.S. Cl. 46—16 **6 Claims**



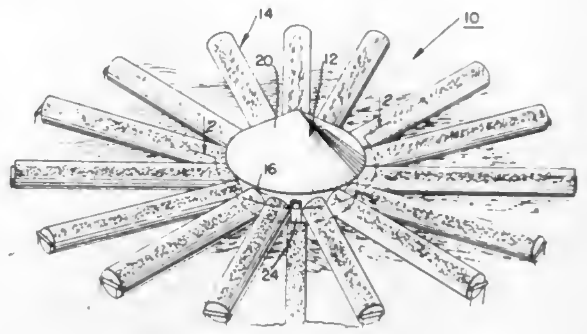
1. Group use toy structural construction set comprising:

a. straight tubes, each having a tubular member body of resilient plastic, each of said tubes having at each end portion at least one saw-cut type slot through its wall parallel to the longitudinal axis thereof;
b. circular hoops, each having a tubular member body of resilient plastic, with the outside diameter of said tubular member body of said hoops being the same as that of said tubular member body of said tubes;
c. tubular member body-to-tube end connector means including C-shaped means for releasable external engagement with the tubular member body of one of said tubes or of one of said hoops and insertable means for releasable internal engagement with an end of one of said tubes;
d. tubular member body-to-tubular member body connector means including two C-shaped means for releasable external interengagement of said tubular member bodies of two of said tubes, two of said hoops, or one of said tubes and one of said hoops;
e. tube end-to-tube end connector means including at least two insertable means for releasable internal interengagement of of ends of a plurality of said tubes, with said interengagement occurring at a common junction point;
f. a wheel hub block having a plurality of equally spaced spoke holes disposed radially around the periphery of said hub block and with the axes of said spoke holes being in a common plane, said spoke holes having a depth and diameter sufficient to receive and frictionally hold said slotted ends of said tubes, said hub block also having an axle hole passing through its center and normal to said plane of said axes of said spoke holes, the diameter of said axle hole being slightly more than the outside diameter of said tubes, whereby said axle hole can pass one of said tubes as an axle so as to permit said hub block to be free to revolve around one of said tubes.

4,352,256

GREENHOUSE STRUCTURE

Dale P. Kranz, 1305 Third Ave., S., Great Falls, Mont. 59405
Filed Feb. 27, 1981, Ser. No. 238,709
Int. Cl.³ A01G *9/14*
U.S. Cl. 47—17 **10 Claims**



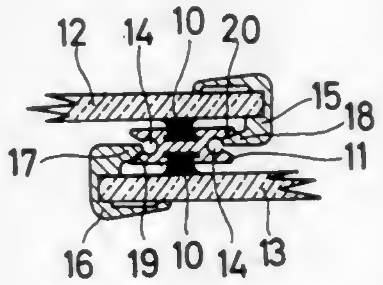
1. A greenhouse structure comprising:

a central hub;
a stationary foundation located within said hub;
an upstanding stanchion mounted on said foundation;
a planar floor rotatably mounted on said stanchion;
a workbench mounted on said floor;
a plurality of stationary elongate greenhouse growth chambers connected to said hub, said growth chambers radiating outwardly from said central hub and being adapted for plant care and storage;
a plurality of rails in each growth chamber;
a plurality of trays supportable on said rails, each of said trays having coupling means thereon for releasably coupling said each tray to an adjacent tray;
means for rotating said floor with respect to said foundation so that said workbench can be aligned with rails in each growth chamber;
means for moving a tray to and from said workbench; and
overhead hoist means for lifting trays from said workbench.

4,352,257

SLIDING WINDOW FOR VEHICLES

Shunichi Nakamura, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan
Filed Jan. 29, 1980, Ser. No. 116,416
Claims priority, application Japan, Feb. 8, 1979, 54-13963
Int. Cl.³ E06B *3/32*
U.S. Cl. 49—406 **3 Claims**

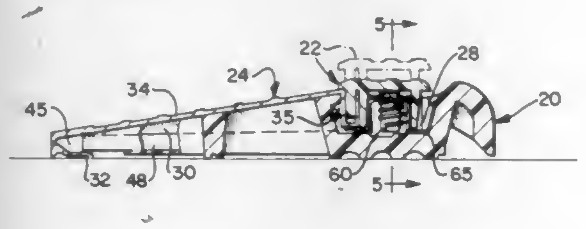


1. A sliding window arrangement comprising two overlapping sliding windows adapted to be guided for movement in a main frame, a sash bar disposed between the overlapping portions of the two windows and extending parallel to the edges of the overlapping window portions, weather-strip means on opposite side surfaces of said sash bar in engagement with said windows and edge frame means secured to the edges of each

overlapping window portion, said edge frame means and said sash bar having complimentary beveled engaging means for firmly holding each window against said weather-strip means when said windows are in the closed position, said complimentary beveled engaging means being comprised of two oppositely extending pairs of spaced projections on said sash bar and a projecting leg on said edge frame means on each window adapted to engage a respective projection on said sash bar, said space between each pair of projections defining a pair of apertures extending the entire length of the sash bar to provide holes at opposite ends thereof for receiving screws for securing said sash bar to said main frame.

4,352,258
ADJUSTABLE SILL AND THRESHOLD

William M. Bursk, Middletown, Ohio, and Jacob G. Doll, Batesville, Ind., assignors to Pease Company, Fairfield, Ohio
Filed Aug. 4, 1980, Ser. No. 174,761
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—468 **1 Claim**

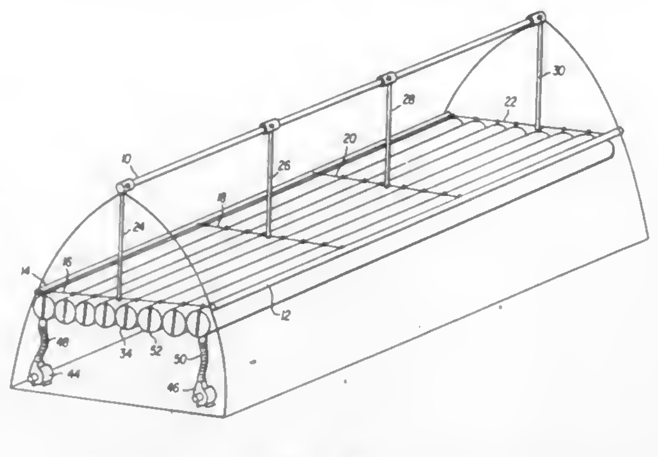


1. In an adjustable sill and threshold assembly for a door in which a stationary sill base is provided with a longitudinally upwardly opening groove therein and in which a threshold is received in the groove and adapted for adjustable vertical movement therein, the improvement comprising:
- said threshold being formed of a yieldable plastic material having a cap portion;
- a plurality of generally vertically extending longitudinally spaced adjusting screws, means in said threshold rotatably capturing each of said screws in depending relation therefrom, and including a pair of opposed inwardly facing semi-circular ledges defining with said cap portion a shoulder-receiving clearance space proportioned to receive the head of one of said screws, the minimum transverse space between said ledges being somewhat less than the diameter of said head, said ledges being formed with curved opposed tapered surfaces which decrease in diameter toward said recess to accommodate said head and to deflect upon force applied to said screw to receive and capture said head in said clearance space;
- each of said screws having means engageable with said threshold for supporting said threshold thereon,
- means in said threshold defining apertures for driver-access to said screws, and
- a plurality of sheet metal channel-shaped screw retainer nuts received in said base in spaced relation corresponding to the spacing of said screws and having means therein defining an opening for receiving one of said screws therein, whereby rotation of said screws through said aperture causes raising and lowering movement of said threshold.

4,352,259
MOVABLE INFLATABLE CEILING OR PARTITION FOR GREENHOUSE USE

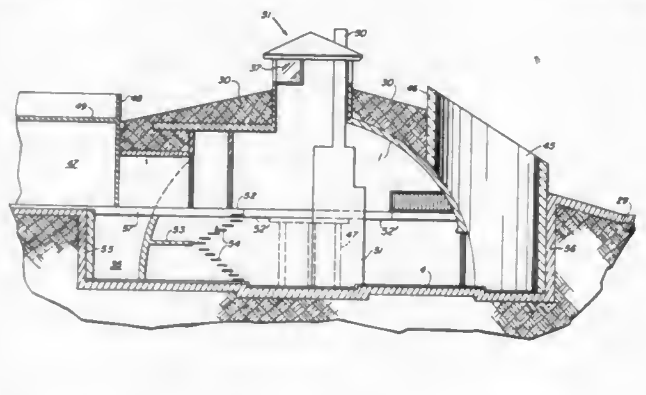
Richard W. Smith, Rumson, and Robert H. Frank, Freehold, both of N.J., assignors to X. S. Smith, Inc., Red Bank, N.J.
Filed Mar. 24, 1980, Ser. No. 133,390
Int. Cl.³ E04B *1/34*
U.S. Cl. 52—2 **16 Claims**

1. Apparatus for reducing the interior volume of a structure, comprising:
- a plurality of flexible inflatable tubes movably arranged within the structure;
- a plurality of rigid tubular jumper means each having a central through passage affixed in holes formed in the longitudinal side walls of adjacent ones of said plurality of tubes and being located a predetermined distance from the ends of said tubes for placing said tubes in mutual fluid communication;
- inflation means connected to at least one of said tubes, selectably operable for causing said tubes to be in an inflated state;
- means for constraining the extent of movement of said tubes, both in the inflated state and the deflated state, whereby upon inflation said tubes are constrained to form a substantially planar surface; and
- said movement constraining means includes means arranged vertically within the structure for locating said plurality of tubes substantially parallel to the walls of the structure and for constraining the movement of said tubes to be in a substantially vertical plane.



4,352,260
UNDERGROUND HOUSE AND CONSTRUCTION METHOD

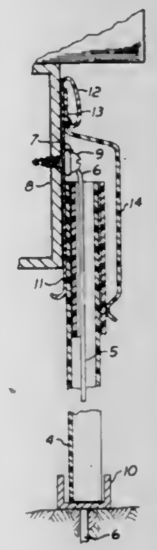
Leroy G. Pearcey, 333 W. Dunlap, #236, Phoenix, Ariz. 85021, and Dale A. Pearcey, 3730 S. Mill Ave., #E106, Tempe, Ariz. 85282
Filed Mar. 14, 1980, Ser. No. 130,559
Int. Cl.³ E04B *1/32, 7/08*
U.S. Cl. 52—80 **13 Claims**



1. An underground residential structure comprising:
- a. a solid floor slab;
- b. a generally dome-shaped outer wall;
- c. a plurality of curved arch members for supporting said outer wall, each arch member having an upper end and a lower end;
- d. lower attaching means for rigidly attaching the lower ends of said arch members to peripheral portions of said floor slab;
- e. upper attaching means for rigid attachment to the upper ends of said arch members to hold said plurality of arch members in a dome-like configuration over said floor slab; said outer wall including
  - i. an inner layer of semi-rigid mesh,
  - ii. a layer of fabric supported by said mesh,
  - iii. a plurality of reinforcing rods disposed adjacent to the outer surface of said fabric, at least some of said reinforcing rods being supported by various ones of said arch members,
  - iv. connecting means for connecting a plurality of points of said mesh to various ones of said reinforcing rods to support said mesh and said fabric,
  - v. a layer of solid cementitious material disposed on said fabric, said cementitious material covering said reinforcing rods and embedding a plurality of said reinforcing rods in said cementitious material,
- f. a roofed structure disposed over said upper attaching means, said upper attaching means being substantially ring-shaped and having a sufficiently large opening to admit a substantial amount of outside light into said underground residential structure, said roofed structure having window means for allowing said outside light to reach said opening in said upper attaching means;
- g. an upper floor disposed above said floor slab, said floor slab being disposed substantially lower than the earth surface generally surrounding said residential structure, an upper portion of said outer wall being above said earth surface, a layer of earthen material being disposed on a major portion of said outer wall to cover said major portion, said major portion extending to said roofed structure; and
- h. a first atrium, said first atrium having a substantially vertical wall, earthen material abutting a lower portion of the outer surface of said vertical wall, an upper portion of said vertical wall extending above the abutting earthen material to prevent entry of any of the abutting earthen material into said first atrium, said vertical wall adjoining said outer wall having a first opening therein for admitting outside light from said first atrium into said residential structure.

4,352,261
SKIRT CONSTRUCTION FOR MOBILE HOME

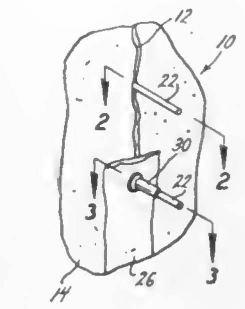
Louis Wargo, 5255 State Rd., No. 89, Ashtabula, Ohio 44004
Filed Jul. 30, 1980, Ser. No. 173,857
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—169.12 **2 Claims**



1. Skirt construction for a mobile home having a body supported in spaced relation above the ground, said construction comprising skirt means positioned in the space between the body and the ground, and positioning means engaging said means and extending from the body downwardly and into the ground to prevent lateral displacement of the skirt means, whilst permitting at least limited vertical movement of portions of said skirt means, said skirt means comprising a series of individual panels having interlocking connection with each other to form a continuous skirt, and the positioning means extend within the connection of at least certain of said panels from the body downward and into the ground.

4,352,262
METHOD OF SEALING CRACKS AND APPARATUS THEREFOR

Frank E. Edelmann, 344 N. Park Rd., LaGrange Park, and James R. Post, 147 N. Park Rd., LaGrange, both of Ill. 60525
Filed Aug. 18, 1980, Ser. No. 178,877
Int. Cl.³ E04B *1/41*
U.S. Cl. 52—744 **11 Claims**



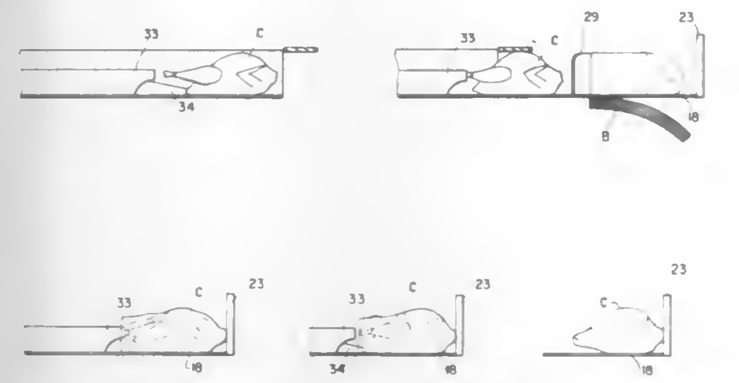
1. A method of repairing cracks in structures, particularly of concrete, to prevent leakage and structural deterioration, comprising the steps of:
- inserting rods in the crack at spaced intervals therealong, said rods being inserted with one end bound within the crack to support the rod with a portion of the rod extending outwardly from the outer wall surface, the portion of the rod extending from said wall being of sufficient length to support a port member thereover;
- applying a surface seal so as to extend partially into the crack near the outer wall surface and to cover the wall surface adjacent the crack and around the rods, so that the surface seal defines a surface barrier for the filler to be injected;
- placing port members having hollow shaft portions and a flange portion over said rods with the flange portions near the wall surface and at least partially embedded in said surface seal;
- applying surface seal over said port member flanges and onto said previously applied surface seal to embed substantially the entire flange in said surface seal;
- allowing said surface seal to cure to define an outer wall surface barrier for the filler to be injected, and removing the rods from the crack and port members, the port members then defining ports communicating with the crack cavity behind the surface seal;
- after allowing said surface seal to cure, injecting filler into the port members to fill substantially the entire cavity of the crack behind the surface seal; and
- plugging said port member after injecting said filler.

4,352,263
METHOD OF PACKAGING FOWL WITHIN STRETCH BAGS

H. David Andrews, Jr., College Park, Ga., assignor to Star Packaging Corporation, College Park, Ga.
Continuation-in-part of Ser. No. 60,939, Jul. 26, 1979, Pat. No. 4,219,989. This application May 30, 1980, Ser. No. 154,678
Int. Cl.³ B65B *5/04, 39/10*
U.S. Cl. 53—436 **1 Claim**

1. A method of packaging fowl within stretch bags comprising:
- A. Inverting a fowl carcass such that the breast is topmost and the legs protrude rearwardly above the tail;
- B. Axially advancing by centrally pushing the tail of said carcass in a longitudinal direction;
- C. Stretching open an open-ended bag within the path of pushing of the carcass;
- D. Engaging and pushing both legs of the carcass, so as to longitudinally advance said carcass into the open-ended bag;
- E. Interposing a restraining force in the path of longitudinal advance and at the forward end of said carcass, such that

the leg joints of the carcass are broken and the legs are made to conform to the body of the carcass; and



F. Again centrally pushing said carcass, so as to retain said carcass within said bag, while withdrawing pushing of both legs and stretching of said bag.

4,352,264

MACHINE FOR WRAPPING AND BATCHING PRODUCTS

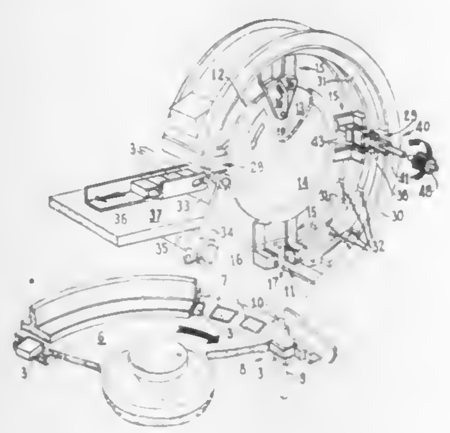
Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy

Filed Apr. 1, 1980, Ser. No. 136,299

Claims priority, application Italy, May 4, 1979, 3392 A/79

Int. Cl.^{3} B65B *35/30, 11/28*

U.S. Cl. 53—531 **4 Claims**



1. An improved machine for wrapping, selectively orienting and packaging articles of parallel piped configuration, comprising:

a wrapping wheel, means to intermittently rotate said wheel about an axis from an article entry position through an article overturning position and to an article discharging position seriatim, said wheel carrying a plurality of radially extending article grippers, each of said plurality of grippers being adapted to grasp at the free ends thereof an article together with a sheet of wrapping material;

means for infeeding each said article with it's sheet of wrapping material simultaneously to one of said grippers at said article entry position;

means, disposed along the path taken by said grippers between said entry and overturning positions, for folding said sheet of wrapping material to wrap said article therein;

overturning means for grasping an article brought to said overturning position by said gripper and for rotating by 90° said article at said article overturning position after said grippers are opened and while said grippers are temporarily stopped thereat, and then for causing said grippers to re-grip said now turned by 90° article and for releasing said grasping means;

gripper operating means including either one of a first and a second ring-shaped cams, said first cam comprising means for opening and closing said grippers at said article entry and discharging positions and said second cam comprising part of said overturning means and means for opening and closing said grippers at said article entry, discharging and overturning positions while said grippers are temporarily stopped thereat, said gripper operating means operating in synchronization with the intermittent rotation of said wrapping wheel;

said overturning grasping and rotating means being operative only when said gripper operating means is equipped with said second ring-shaped cam which allows said grippers to operate at said article overturning position as well as at said article entry and discharging positions,

means for pushing said articles which have been transferred to said article discharging position thereby removing said wrapped articles from said grippers while they are stopped temporarily at said article discharging position; and

means, disposed in alignment with the path taken by said pushing means, for guiding a succession of said removed, wrapped articles so that a predetermined number of said articles are secondarily wrapped as a whole into a final package,

whereby the selection of said first or second ring-shaped cam permits said machine to produce selectively two different types of packages of said wrapped articles, one type of package being characterized by the arrangement of said articles with their major faces facing each other, and the other type characterized by the arrangement with their major faces in line.

4,352,265

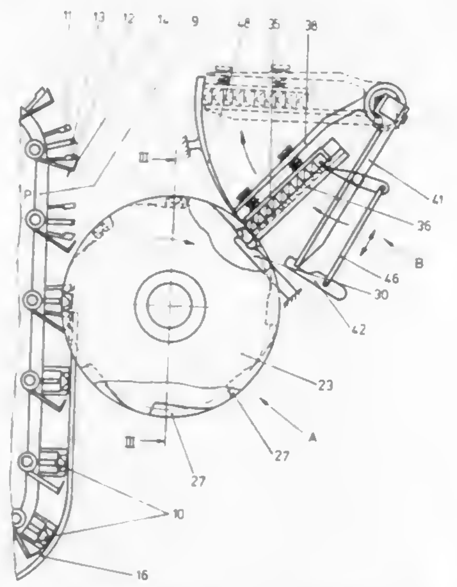
APPARATUS FOR PRODUCING BAR PACKAGES OF PREFERABLY INDIVIDUALLY WRAPPED SWEETS OR SIMILAR PIECES OF CONFECTIONERY

Otto Hänsel, Hanover; Hans Lesch, and Hans-Bernd Lesch, both of Germisch-Partenkirchen, all of Fed. Rep. of Germany, assignors to Otto Hänsel GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,807

Int. Cl.^{3} B65B *35/52*

U.S. Cl. 53—541 **7 Claims**



1. Apparatus for producing bar-shaped packages from preferably individually wrapped pieces of candy or similar confections, comprising: a continuously revolving packing head; candy pickups and wrapping-material folders mounted on said continuously revolving packing head for wrapping said candy pieces; feeder means for supplying said candy grippers and folders with pieces of candy; transfer means and stacker means, said transfer means transferring pieces of candy from said pickups to said stacker means; stack packaging means for wrapping stacks of candy formed in the stacker means in an outer wrapping; said transfer means having two disks rotating constantly on a common axis, said disks having outward-opening recesses on the periphery of their facing sides, said recesses being as deep radially as a piece of candy is thick, said recesses comprising holding chambers for the candy, each chamber comprising radial walls formed by said disks and extending parallel to the direction of rotation and a chamber bottom merging gradually into the periphery of the disk in a direction opposite to the direction of rotation of the disk; spring means for pressing said disks against each other axially so that said holding chambers grasp pieces of candy between them and move them to said stacker means; stationary stop means located near said stacker means and between said disks for transferring a piece of candy, as it is carried along in a chamber revolving between the disks, radially, outwardly along the sloping bottom of the diameter into said stacker means; so that a plurality of individually wrapped pieces of candy are positioned in a stack in sequence along the longitudinal axis of the bar-shaped package and wrapped together in one package with an outer wrapping.

4,352,266

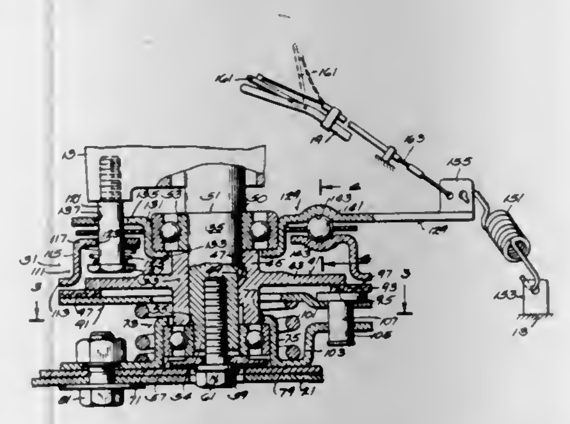
LAWN MOWER BRAKE AND CLUTCH DEVICE

Ronald B. Lloyd, Gilson, and Gerald H. Wick, Galesburg, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 25, 1981, Ser. No. 247,403

Int. Cl.^{3} A01D *69/10*

U.S. Cl. 56—11.3 **2 Claims**



1. A rotary lawn mower comprising a blade housing supported for travel over the ground, a prime mover mounted on said blade housing, a cutter blade, and a combined clutch and brake located between said prime mover and said cutter blade and comprising a drive assembly including a driving member driven by said prime mover for rotation about an axis, and a driving disk fixedly extending on said driving member for common rotation therewith and against axial movement therebetween, a driven assembly connected to said cutter blade, means mounting said driven assembly from said drive assembly for relative rotation therebetween and against axial movement therebetween, a ring member located in encircling relation to said driving member between said disk and said driven assembly and including a friction surface having a radially inner portion in facing relation to said disk and a radially outer portion having an outer perifery, means biasing said ring axially towards said disk for driving engagement by said disk with said inner portion of said friction surface, brake means fixed against rotary movement and movable axially between a retracted position and a braking position engaged with said outer portion of said friction surface so as to disengage said ring from said disk against the action of said biasing means and so as to prevent rotation of said ring, one or more studs extending from said ring in parallel relation to the rotary axis in the direction away from said disk, and in radially outward relation from said biasing means and in radial inward relation from said outer perifery of said ring member, and a corresponding one or more fingers extending fixedly from said driven assembly and including apertures receiving said studs to afford common rotary movement therewith and relative axial movement therebetween.

4,352,267

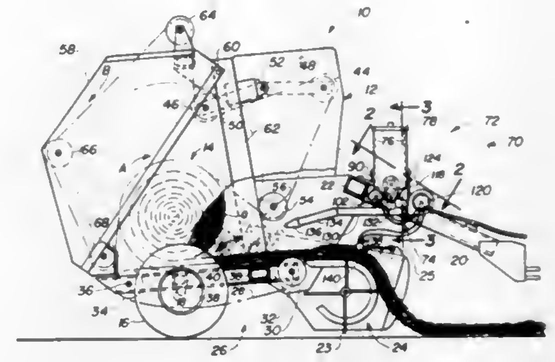
CHEMICAL DISPENSER FOR A ROUND BALER

Paul B. Mellinger, Willow Street, Pa., assignor to Mellinger Manufacturing Co., Inc., Willow Street, Pa.

Filed Dec. 31, 1980, Ser. No. 221,842

Int. Cl.^{3} A01D *39/00*

U.S. Cl. 56—341 **9 Claims**



1. An improved dry particulate chemical dispenser for a round baler having a mobile frame adapted to move across a field of crop material, a bale forming chamber carried by said frame and adapted to wrap a continuous mat of crop material about itself in forming a large cylindrical bale, and pick-up means mounted on said frame for gathering crop material from the field and delivering a mat of crop material to said bale forming chamber, said chemical dispenser comprising:

(a) a hopper mounted on said frame for temporary storage of dry particulate chemicals therein, said hopper being rectangular-shaped and formed from contiguous walls including two transversely spaced sidewalls, a front wall, a rear wall, and with the lower portions of the front and rear walls sloping inwardly toward one another for mating with a hollow tube member which is transversely disposed between the lower end portions of said sidewalls in thereby forming the bottom of said hopper;

(b) a pair of transversely spaced inlet openings provided in the upper surface of said tube member and a pair of transversely spaced discharge openings provided in the lower surface of said tube member, respective ones of said upper inlet openings and said lower discharge openings being laterally offset from one another so as to prevent chemicals stored above said upper surface of said tube member from having a straight flow path from said inlet openings down through said discharge openings;

(c) a transverse auger supported for rotation within said hollow tube member, upon rotation of said auger, chemicals which enter into said tube member through said upper inlet openings are conveyed along a portion of said tube member and are discharged out through said lower discharge openings;

(d) a blower having a discharge spout disposed below said hopper and being operable to produce a positive airstream out through said discharge spout, said discharge spout being provided with a pair of receiving openings interconnected and in flow through communication with said discharge openings of said hopper whereby chemicals are dispensed directly from said discharge openings of said hopper into the positive airstream produced by said blower; and

(e) direction means connected to the discharge spout of said blower for channeling the dry particulate chemicals dispersed within said positive airstream rearwardly toward said bale forming chamber for discharge of same in the form of a plume onto the crop material.

4,352,268
HAYMAKING MACHINES

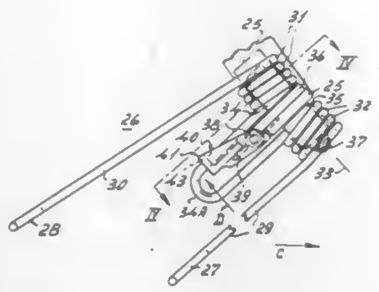
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Dec. 19, 1980, Ser. No. 218,099

Claims priority, application Netherlands, Dec. 21, 1979, 7909234

Int. Cl.³ A01D *79/06*

U.S. Cl. 56—370 **14 Claims**



1. A haymaking machine comprising a frame and at least one rotatable rake member supported on said frame, said rake member having at least one tine group connected to an outer fastening part of a spoke, said group including at least two tines with respective connecting means and said fastening part being located between the connecting means to support said group, the leading sides of said connecting means and fastening part being relatively smooth with respect to the normal direction of rotation of said member, whereby crop adhesion to the rake member is reduced, said connecting means comprising respective coils for said tines and said spoke extending inwardly towards the rotational axis of said rake member from said coils away from the tine group, means clamping said group to the fastening part, said coils substantially covering the outer portion of the fastening part and protecting the clamping means from fouling crop.

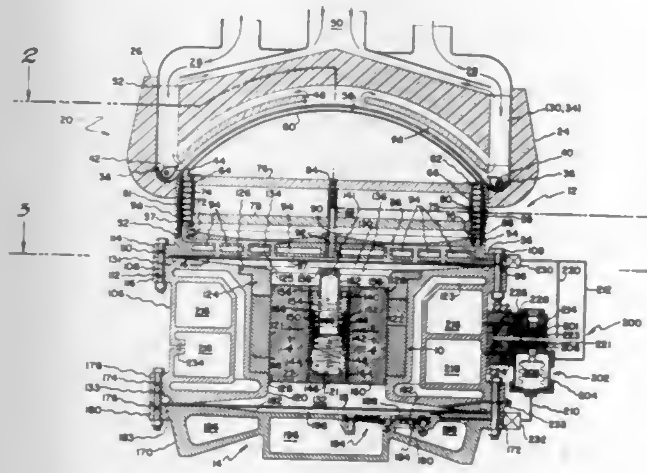
4,352,269
STIRLING ENGINE COMBUSTOR

John J. Dineen, Durham, N.H., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,372

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—517 **10 Claims**



1. A gaseous fuel combustor for a Stirling engine, comprising:

a shell having lower portions adapted to engage a Stirling engine heater head;

air inlet and exhaust ports formed in said shell;

a heat recuperator having inlet and exhaust channels opening at one end communicating with said inlet and exhaust ports;

an annular burner disposed in said shell lower portions and having gas flame apertures facing radially inwardly at the radial extremities of said heater head and communicating with the inlet channel at the other end of said heat recuperator;

a dome-shaped, centrally apertured partition closely spaced from said heater head and forming therewith a first dome-shaped gap;

a dome-shaped insulating cap disposed over said partition and forming therewith a second dome-shaped gap communicating with the first dome-shaped gap through said central aperture of said first dome partition, and with the exhaust channels of said other end of said heat recuperator.

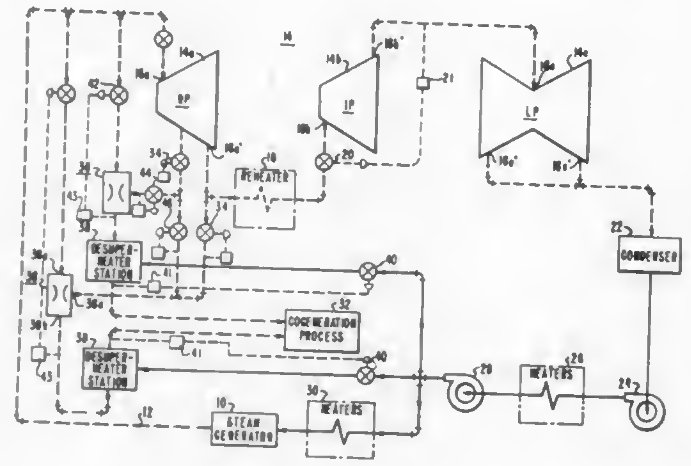
4,352,270
METHOD AND APPARATUS FOR PROVIDING PROCESS STEAM OF DESIRED TEMPERATURE AND PRESSURE

George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1980, Ser. No. 163,043

Int. Cl.³ F01K *17/00*

U.S. Cl. 60—648 **4 Claims**



1. A cogeneration system comprising:

a turbine apparatus having a first section and a second section, said first section having an inlet port and exhaust port, said second section having an inlet port;

means for fluidly connecting the first turbine section's exhaust port with the second turbine section's inlet port, said fluid connecting means including means for reheating the steam exhausting from the first turbine section's exhaust port prior to its entry into the second turbine section's inlet port, said fluid connecting means further including means for regulating steam flow through said reheating means;

means for generating steam;

means for transmitting steam from said steam generating means to said first turbine section's inlet port;

means for reducing the pressure of steam extracted from said first turbine section's exhaust port;

means for increasing the pressure of steam extracted from said turbine apparatus;

means for mixing steam extracted from said turbine apparatus with selected water flow rates;

means for utilizing said steam from said mixing means; and

means for fluidly connecting said mixing means and said steam utilizing means.

4,352,271
STEAM FEEDING APPARATUS FOR A MULTICYLINDER STEAM ENGINE

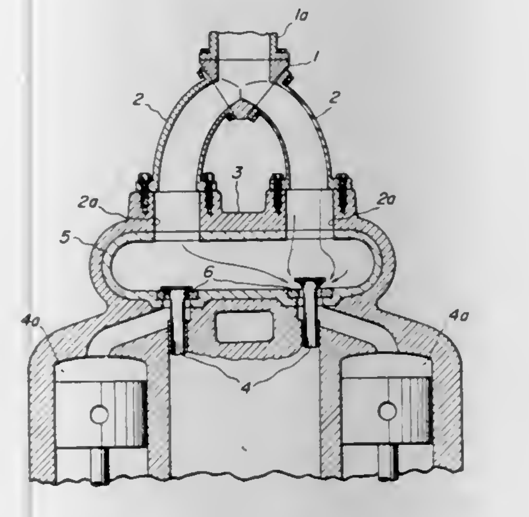
Yuji Hirabayashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 7, 1979, Ser. No. 101,242

Claims priority, application Japan, Dec. 22, 1978, 53-174855[U]

Int. Cl.³ F01K *21/00*

U.S. Cl. 60—670 **4 Claims**



1. A multicylinder steam engine having an engine body for relatively movable connection with a steam generator through steam feed conduits, the steam feed conduits being connected with the cylinders of the engine, respectively, and a steam chamber of sufficient volume formed adjacent to each inlet valve of each cylinder and communicating with each steam feed conduit to suppress pressure pulsation in the conduit, the volume of the steam chamber being more than one half of the total displacement of the cylinders.

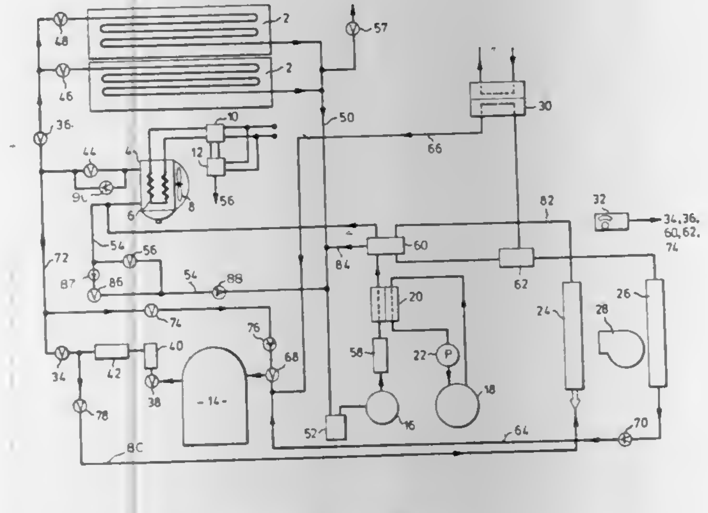
4,352,272
HEAT PUMP SYSTEM

James W. Taplay, 62 Salem Ave., Hamilton, Ontario, Canada (L9A 3W3)

Filed Apr. 3, 1980, Ser. No. 137,036

Int. Cl.³ F25B *27/00, 41/04*

U.S. Cl. 62—235.1 **8 Claims**



1. A heat pump system comprising:

(a) first and second heat exchangers having respective first and second refrigerant receiving spaces and operative in the system heating mode as respective refrigerant evaporators extracting heat from their surroundings with vaporization of liquid refrigerant therein;

(b) a third heat exchanger having a respective third refrigerant receiving space and also operative in the system heating mode as a refrigerant condenser so as to deliver heat to its surroundings;

(c) a refrigerant compressor;

(d) pipe means connecting the said first, second and third exchangers and the compressor to receive vaporized refrigerant from said first and second exchangers and to deliver compressed refrigerant to the third exchanger;

(e) defrost heat supply means for supply of defrost heat to at least the said first exchanger space;

(f) a pressure containment valve between the first exchanger space and the compressor and when operative adapted to maintain the refrigerant vapor in the first space at a pressure and temperature above that at which defrosting will take place, and to release refrigerant vapor at a greater pressure to the compressor; and

(g) control means operative to produce a defrost cycle, said control means actuating the said defrost heat supply means to supply defrost heat to the first space and also rendering the pressure containment valve operative.

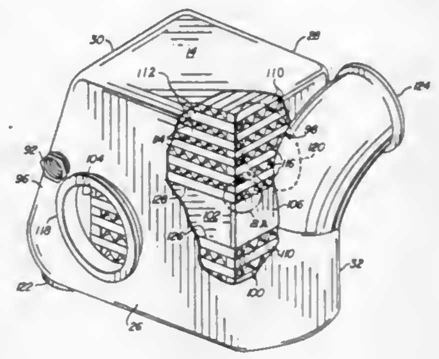
4,352,273
FLUID CONDITIONING APPARATUS AND SYSTEM

Robert C. Kinsell, Los Angeles; Michael P. Saba, Huntington Beach, and James E. Strang, Fountain Valley, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed May 22, 1979, Ser. No. 41,451

Int. Cl.³ F25B *9/00;* **F28F** *3/00*

U.S. Cl. 62—87 **17 Claims**



1. Fluid conditioning apparatus defining a fluid flow path for working fluid from a source thereof to a point of use, comprising:

(a) fluid energy conditioning means having fluid inlet means for working fluid and fluid discharge outlet means for conditioned fluid;

(b) fluid supply conduit means coupling said inlet means to a source of working fluid;

(c) heat exchange means comprising heat exchange element means defining first and second fluid passageway means thereof and arranged for heat exchange between the fluids therein;

(d) first duct means coupling one end of said first passageway means to said discharge outlet means of said fluid energy conditioning means;

(e) second duct means coupling the other end of said first passageway means to a point of use for said working fluid;

(f) bypass duct means coupling said one end of said first passageway means to said other end thereof to provide a bypass passageway means around said first passageway means for fluid admitted thereinto at said one end thereof, said bypass duct means disposed intermediate said heat exchange element means to form a part of, and integral with, said heat exchange means; and

(g) heater means disposed adjacent said one end of said first passageway means of said heat exchange element means, said heater means defining tubular passageway means having working fluid inlet means coupled to said fluid supply means.

4,352,274

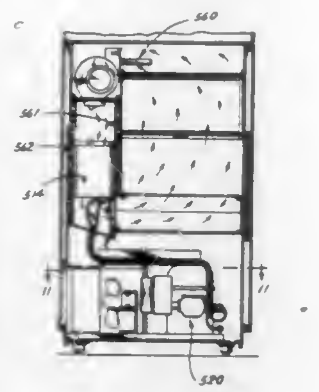
CIRCUIT BOARD MOUNTING AND COOLING ASSEMBLY

Jared A. Anderson, Woodside; Robert V. Van Gelder, Berkeley; Lauren F. Yazolino, Oakland, and Jimmy E. Braun, Orange, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 894,925, Apr. 10, 1978. This application Jun. 2, 1980, Ser. No. 155,695

Int. Cl.^{3} **F25B** *1/00;* **F25D** *17/04*

U.S. Cl. 62—229 **6 Claims**



1. A card assembly for housing a plurality of removable electronic circuit boards comprising, in combination:

a pair of substantially planar, parallel, vertically oriented, spaced-apart side-panels;

a bottom grill plate extending between the bottom edges of said side panels, said grill plate being shaped to form an array of regularly spaced guide channels separated by cooling apertures;

connector support means extending between the rear edges of said side-panels for mounting a plurality of vertically oriented circuit board connectors, each of said connectors being adapted to engage with one of said cards; and

a plurality of spaced, horizontal guide support members extending between the upper edges of said side-panels, each of said support members defining a plurality of horizontally spaced, forwardly-directed, pointed guide fingers, adjacent pairs of said guide fingers being positioned to horizontally align one of said circuit boards for centering the engagement with one of said connectors.

4,352,275

REMOVABLE DUCT PANEL FOR MULTIBAND OPEN FRONT DISPLAY CASE

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 221,375, Dec. 30, 1980, abandoned, which is a continuation of Ser. No. 76,568, Sep. 18, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,326

Int. Cl.^{3} **A47F** *3/04*

U.S. Cl. 62—256 **14 Claims**

1. A refrigerated display case comprising:

an outer cabinet having a bottom portion which slopes downwardly to form a drain region for collecting fluid material by gravity flow;

an inner cabinet within said outer cabinet and spaced therefrom, said inner and outer cabinets having aligned access openings to permit access to the display space in the inner cabinet;

means intermediate said inner and outer cabinets for dividing the space between said cabinets into adjacent first and second conduits, each conduit having respective outlets and inlets on opposite sides of the aligned cabinet access openings, wherein said intermediate means for dividing the space between the inner and outer cabinets comprises a first relatively fixed bottom panel member and a second removable panel member;

air circulating means for propelling air through said first and second conduits between their respective inlets and outlets and across the aligned access openings between the respective conduit outlets and inlets;

means for refrigerating the air flowing through at least one of the first and second conduits;

means at one end region of the first bottom panel member for loosely receiving therein one end portion of the second panel member;

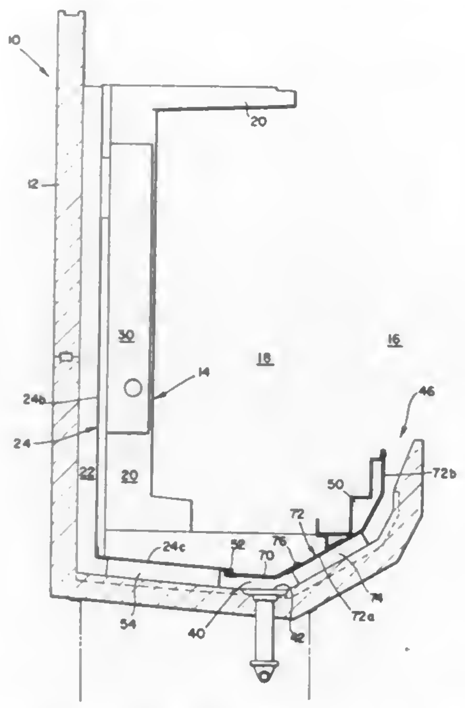
support means located on the underside of the second panel member for supporting said second panel member on the bottom portion of the outer cabinet in spaced relation thereto;

inlet grill means;

grill support means for loosely supporting said inlet grill means in a position to cover the first and second conduit inlets; and

a removable bottom shelf defining the bottom of the inner cabinet and display space;

said inlet grill means including means for loosely supporting at least a portion of the removable bottom shelf.



4,352,276

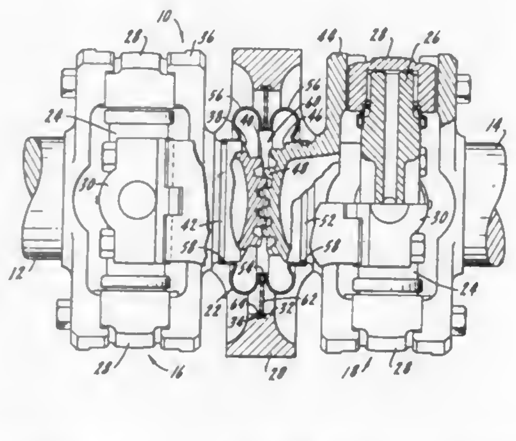
CONSTANT VELOCITY UNIVERSAL JOINT WITH IMPROVED CENTERING DEVICE AND BOOT SEAL

Grant H. Smith, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 15, 1980, Ser. No. 216,225

Int. Cl.^{3} **F16D** *3/26, 3/30, 3/84*

U.S. Cl. 464—109 **8 Claims**



1. A constant velocity universal joint for coupling first and second rotatable shafts, said constant velocity universal joint comprising first and second cardan joints respectively engaged with said first and second shafts, a centering device engaged with said first and second cardan joints, said centering device including first and second gear yokes defining first and second sets of annular gear teeth concentric about the axes of said first and second shafts, said gear teeth being constructed and arranged to mesh in the homokinetic plane, said centering device also including a coupling yoke defining an inwardly facing surface, and a boot seal having a central portion, first and second boot portions in sealing engagement respectively with said first and second gear yokes, and a diaphragm portion secured to said central portion and extending outwardly into sealing engagement with said surface, said boot seal being constructed and arranged such that said boot portions simultaneously flex and roll along said gear yokes as said universal joint articulates.

4,352,277

APPARATUS FOR APPLYING A TREATING SOLUTION TO A CLOTH AS FOAMS CONTINUOUSLY

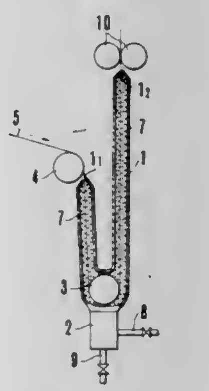
Yoshikazu Sando; Hiroshi Ishidoshiro, and Eiichi Nakano, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Nov. 17, 1980, Ser. No. 207,778

Claims priority, application Japan, Nov. 21, 1979, 54-151085

Int. Cl.^{3} **D06B** *3/10*

U.S. Cl. 68—175 **3 Claims**



1. An apparatus for continuously applying a treating solution as foam to a cloth, comprising a U-shaped foam tank for storing foam of a treating solution such as a dye solution, said U-shaped foam tank having a pair of upwardly extending legs and connected at the bottom of a bight section, an apparatus for generating foam of the treating solution connected to the bight section of said U-shaped foam tank, guide rolls for transporting a cloth to be treated continuously through the foam tank first downwardly through one of said legs and then upwardly through the other one of said legs so as to adhere the foam of the treating solution to the cloth while the cloth is passing therethrough, and a means for controlling the amount of foam adhered to the cloth in removing the cloth from the foam tank.

4,352,278

ANTI-THEFT DEVICES ON MOTOR VEHICLES

Guy Neyret, Oullins, France, assignor to Sodex-Magister, Societe d'Exploitation des Brevets Neiman, Croissy, France

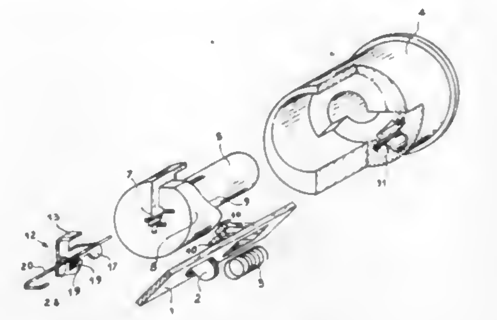
Filed Sep. 30, 1980, Ser. No. 192,402

Claims priority, application France, Oct. 12, 1979, 79 25408

Int. Cl.^{3} **B60R** *25/02*

U.S. Cl. 70—252 **8 Claims**

1. In an anti-theft device for a motor vehicle, of the type comprising a bolt restored by a spring to the position for locking an element essential to the motion of the vehicle, a lock comprising a stator and a rotor which is actuated by a coded key and which in the course of its rotation causes the bolt to be drawn back into the unlocked position, in opposition to the action of the said spring, and a safety device interacting with the key in order to prevent the bolt from returning to the locked position as long as the key has not been at least partly extracted from the rotor, the provision of a lever serving as said safety device accommodated in the rotor and partly projecting into the key channel of the rotor, the said lever pivoting about an axis perpendicular to the said rotor axis, elastic means for keeping the lever in its two positions, the said lever comprising a boss interacting with the point of the key, a supplementary part interacting with a ramp in order to tilt the lever from the first to the second position under the thrust of the point of the key on the said boss, the said lever also comprising a tooth, accommodated in the key channel in the second position and releasing the said key channel in the first position, the key comprising a through-slot in which the tooth of the said lever is accommodated in its second position.



4,352,279

DEVICE FOR MOUNTING CLOSURES ON DOOR PANELS

Gerard G. Parlebas, and Solange Lebars-Parlebas, both of 11 ave. Junot, 14 Hameau des Artistes, 75018 Paris, France

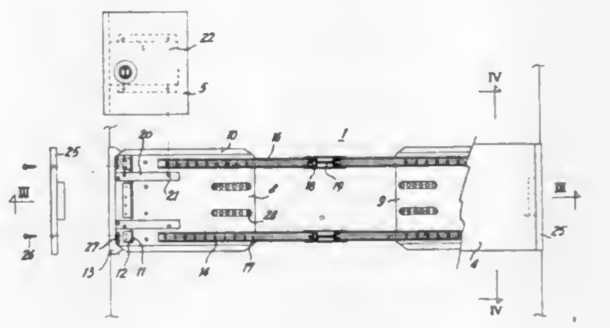
PCT No. PCT/FR79/00082, § 371 Date May 19, 1980, § 102(e) Date May 19, 1980, PCT Pub. No. WO80/00589, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 18, 1979, Ser. No. 196,796

Claims priority, application France, Sep. 19, 1978, 78 26780

Int. Cl.^{3} **E05B** *9/08*

U.S. Cl. 70—451 **11 Claims**



1. A bracket for mounting a closure on a door, comprising two pairs of rigid platens, a flexible strap bent in U shape and securing together the platens of each pair, traction tightening elements extending from the platens of one pair to the platens of the other pair, means for adjusting the length of the traction tightening elements to draw the pairs of platens toward each other to clamp them securely to a door, means defining slideways on the edges of the platens, and covering bands having portions complementary to said slideways to slide in said slideways to cover the platens and tightening elements.

4,352,280

COMPRESSION FORMING OF SHEET MATERIAL

Amit K. Ghosh, Westlake Village, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1980, Ser. No. 150,472

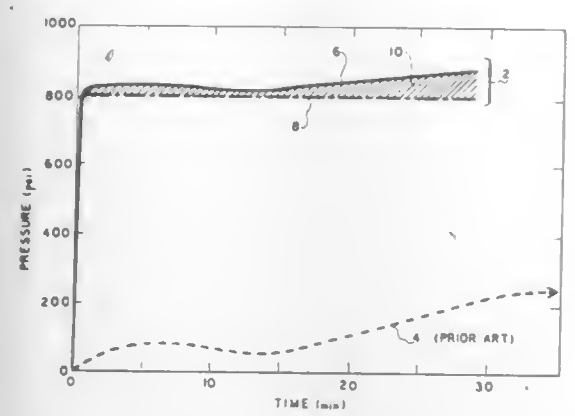
Int. Cl.^{3} **B21B** *9/00*

U.S. Cl. 72—38 **12 Claims**

1. A method of compression forming a sheet of material having plastic properties, comprising:

holding said sheet opposite a surface of a die;

applying fluid pressure concurrently to both sides of said sheet to create a compressive stress in said sheet in the through thickness direction which at least equals the stress at which the material begins to flow plastically;



maintaining said pressure higher on one side of said sheet than on the other side so that said sheet bends toward said surface and forms plastically by said compressive stress against the said surface of said die.

4,352,281
METHOD AND APPARATUS FOR BENDING PIPES

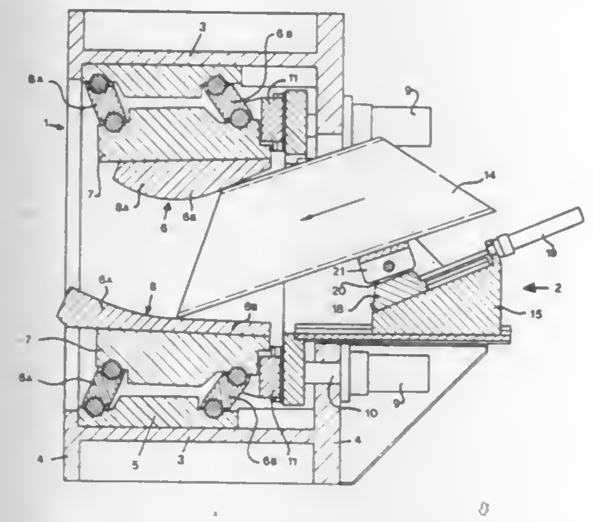
Christian Ragettli, Alstetterstrasse 149, 8048 Zurich, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,590

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943960

Int. Cl.^{3} B21D *7/08, 7/14*

U.S. Cl. 72—131 **8 Claims**



2. Apparatus for bending straight pipe sections into pipe elbows having a predetermined length and angle comprising:

means for measuring the straight pipe sections to make the sections correspond to the predetermined length of a finished elbow;

cutting means to cut the straight pipe ends at an angle to the center axis of the pipe, which angle will determine and assure that a planar face of a flange which is to be fitted to the ends of a finished elbow will be perpendicular to the axis of the tube, the angle being 38.146° for a 90° elbow, 21.440° for a 45° elbow, and less than 21° for less than a 45° elbow;

carriage means for supporting said cut pipe sections and for feeding said sections into a pressing station and into a calibrating station along an inclined plane in a direction of successive mechanical pressing of the pipe in a first pressing stage to an ellipse and in a second pressing stage to a circle cross section;

first deforming means operated by hydraulic piston-cylinder units and levers in said first pressing station where the elliptical cross section is formed;

a plurality of inwardly pressing arcuately shaped segments arranged radially along a circle in equidistant positions with pressing ends of said segments bearing inwardly against said pipe operated by said first deforming means;

a second deforming means;

a calibrating means positioned beyond said first deforming means, the contour of said calibrating means conforming to the final shape of the elbow formed by said second deforming means with respect to roundness and angle;

said second deforming means having a plurality of inwardly pressing elements;

said inwardly pressing elements of said first deforming means being pressed against said pipe at an angle of less than 90° to the center axis of the pipe;

said calibrating means being operated at an angle which is perpendicular to the axis of said pipe whereby the final deformation of said section with respect to the angle and roundness of the elbow is carried out;

the first pressing by said first deforming means being carried out at an angle less than 90° converting said straight pipe into an elliptical shape while said second pressing step after alters said elliptical shape into a round shape; and

said calibrating means holding and supporting one end of said pipe while it is mechanically shaped and calibrated to complete said elbow before the carriage moves to discharge said pipe.

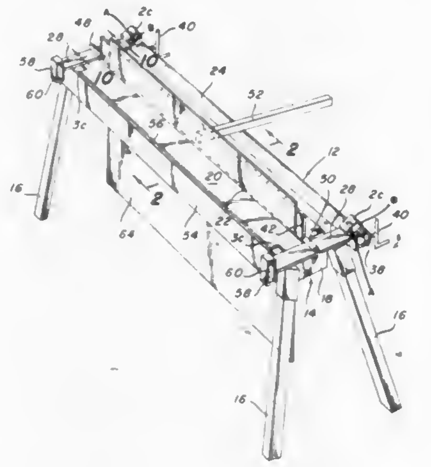
4,352,282
SHEET METAL PANEL BRAKE

Ervin Buske, Gowrie, and Gerd Buske, Onawa, both of Iowa, assignors to Buske Industries, Inc., Gowrie, Iowa

Filed Jan. 21, 1981, Ser. No. 226,945

Int. Cl.^{3} B21D *5/04*

U.S. Cl. 72—321 **5 Claims**



1. A sheet metal panel brake, comprising:

a frame having laterally spaced opposite ends and front and rear sides,

a first jaw fixed to the frame and extending from end to end on said frame, said first fixed jaw having a straight edge disposed toward the front side of the frame,

a second jaw fixed to the frame and extending from end to end on said frame and spaced toward the front side of the frame from the first fixed jaw, said second fixed jaw having a curved edge spaced from and disposed toward the straight edge of the first fixed jaw,

a movable jaw extending from end to end of said frame and disposed between said edges of the fixed jaws and means for mounting said movable jaw on said frame for forward and rearward reciprocating movement between the fixed jaws said movable jaw having clamping surfaces on opposite sides thereof,

and means for reciprocating said movable jaw forwardly and rearwardly for selectively holding a sheet against either the straight edge of the first fixed jaw or the curved edge of the second fixed jaw by engaging a respective clamping surface against said straight edge or said curved edge,

a braker bar,

and means for pivotally mounting opposite ends of said braker bar on respectively opposite ends of said frame so that said braker bar can bend a sheet against either the straight edge of the first fixed jaw or the curved edge of the second fixed jaw.

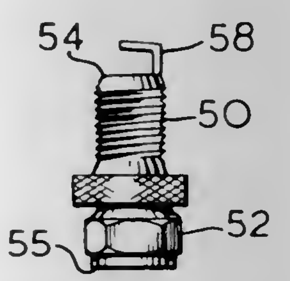
4,352,283
METHOD OF FORMING SPARK PLUG BODIES

Robert J. Bailey, Enfield, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1981, Ser. No. 241,145

Int. Cl.^{3} B21D *22/00*

U.S. Cl. 72—354 **4 Claims**



1. A method of cold extruding a spark plug body having a cylindrically shaped central portion, a cylindrically shaped first end portion with a diameter less than said central portion and a hexagonally shaped second end portion with a maximum cross-sectional measurement less than the diameter of said central portion comprising the steps of:

forcing a steel blank into a first cylindrical die to shape said blank into a cylindrical blank of a first diameter and having first and second defined ends;

forcing said first end of said cylindrical blank into a second cylindrical die to form a first cylindrically shaped end portion having a second diameter that is less than said first diameter; and

forcing said second end of said cylindrical blank into a hexagonally shaped die and around a biased mandrel to form a hollow hexagonally shaped portion thereon having a maximum cross-sectional measurement that is less than said first diameter.

4,352,284
VERTICAL PRESS

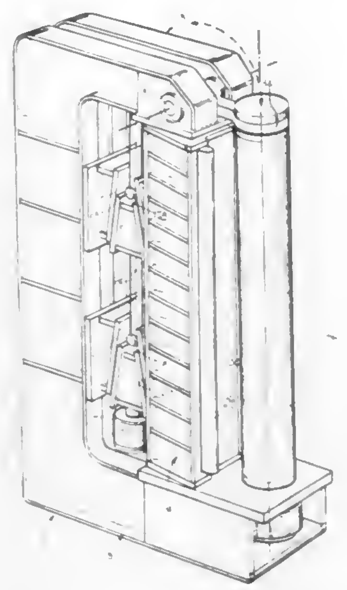
Thomas W. Woods, Toronto, Australia, assignor to T. W. Woods Constructions Pty. Limited, Australia

Filed May 28, 1980, Ser. No. 154,084

Int. Cl.^{3} B21J *9/18*

U.S. Cl. 72—452 **2 Claims**

1. A vertical press comprising a frame of generally C-shaped configuration having a vertically extending main part and two vertically spaced generally horizontally extending arms, a vertical mandrel extending between said arms in spaced parallel relationship to said main part and being connected to said arms, a movable member parallel to said mandrel extending between said arms and located between said main part and mandrel, said member being movably engaged with said arms so as to be horizontally movable toward said mandrel, power means to move the movable member in a pressing action toward said mandrel, said power means including two pairs of vertically spaced opposing reaction inclined converging surfaces, one of each pair of surfaces being fixed to said main part and the other surface of each pair being fixed to the movable member, the two pairs of surfaces converging in the same direction toward one of said arms of said frame, a movable wedge disposed between each pair of said surfaces and engaging said surfaces slidably to cause displacement of the surfaces fixed to the movable member responsive to simultaneous movement of the wedges in one direction along the axis of taper of the wedges and toward one of said arms, the surfaces of the pairs and opposing coacting surfaces of the wedges arranged to define predetermined equal acute angles and all such surfaces being inclined to the vertical, said power means



including cylinder means connected between one of said arms and said wedges to move the wedges in unison along their common axis of taper without relative movement, and rigid means between spaced end faces of the wedges assuring their movement in unison under influence of said cylinder means.

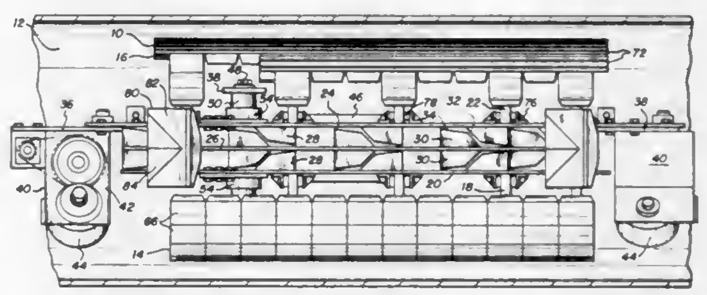
4,352,285
HYDRAULIC WEDGE MANDREL

Forrest N. LaRue, Sand Spring, Okla., and Lionel H. Wheeler, Houston, Tex., assignors to Crutcher Resources Corporation, Houston, Tex.

Filed Sep. 6, 1979, Ser. No. 73,022

Int. Cl.^{3} B21D *9/01*

U.S. Cl. 72—466 **15 Claims**



1. A mandrel for insertion in a pipe to prevent distortion during bending of said pipe comprising:

(a) top, middle and bottom spring plates normally positioned one above the other in parallel planes;

(b) segment means secured above said top plate and secured below said bottom plate forming upper and lower cylindrical contact surfaces;

(c) driven wedge means on the bottom of said top plate and the top of said bottom plate, said driven wedge means having a wedge surface of decreasing inclination;

(d) drive wedge means on said middle plate, said drive wedge means having a wedge surface of decreasing inclination and confronting the wedge surfaces of said driven wedge means; and

(e) means to translate said middle plate longitudinally of said top and bottom plates to move said drive wedge means relative to said driven wedge means to engage the confronting wedge surfaces thereby moving said segments into contact with the inner wall of said pipe preparatory to bending the same in the region of contact.

4,352,286

COMBUSTIBLE GAS DETECTING ELEMENT

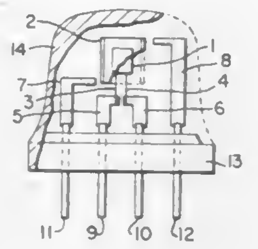
Yoshihiko Nakatani, Osaka; Masayuki Sakai, Katano; Seiichi Nakatani, Neyagawa, and Michio Matsuoka, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 19, 1980, Ser. No. 208,478

Claims priority, application Japan, Nov. 24, 1979, 54-152329

Int. Cl.^{3} G01N *27/12*

U.S. Cl. 73—23 7 Claims



1. A combustible gas detecting element comprising a gas sensing body comprising a sintered body or film of an amorphous semiconductor comprising a metal oxide, a sulfate and halide.

4,352,287

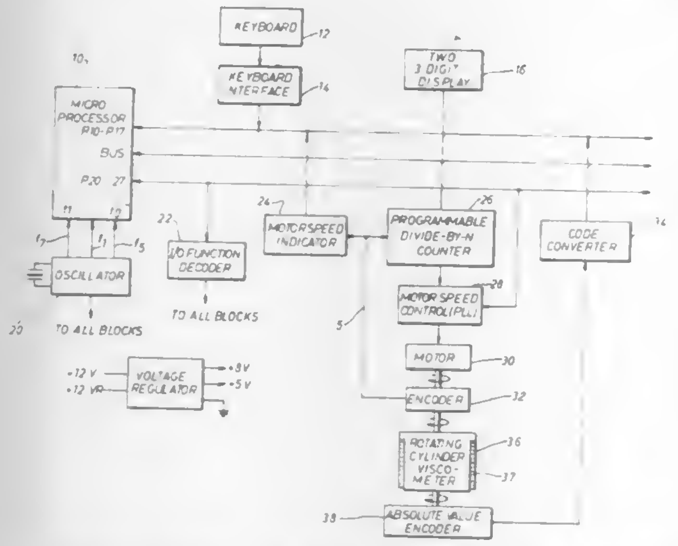
ROTATIONAL VISCOMETER

Heinz W. Orth, and James W. Sloot, both of Calgary, Canada, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 23, 1980, Ser. No. 162,137

Int. Cl.^{3} G01N *11/14*

U.S. Cl. 73—60 32 Claims



1. A rotating-cylinder viscometer for measuring the shear stress at a given shear rate of a fluid contained between a rotatable outer cylinder and a rotatable inner cylinder, the inner cylinder rotating in response to forces produced in the fluid by rotation of the outer cylinder, and where the amount of rotation of the inner cylinder is related to the shear stress of the fluid, the viscometer comprising:

(a) a system clock, for providing system clock signals;
(b) a microprocessor unit responsive to said system clock, for inputing and outputing data signals to select the shear rate of rotation of the outer cylinder and to obtain during measurement intervals a plurality of readings of the amount of angular rotation of the inner cylinder at each selected shear rate;
(c) a shear rate controller responsive to said clock and the shear rate selecting data from said microprocessor, for rotating the outer cylinder at a predetermined constant angular velocity;
(d) a position indicator connected to the inner cylinder for rotation therewith, for indicating the angular position of the inner cylinder;
(e) a function selector means connected to said microprocessor, for inputing to said microprocessor the mode of operation for the viscometer, and for inputing the preselected shear rates at which the outer cylinder is to be rotated; and
(f) display means responsive to said microprocessor, for displaying both a measured shear stress and the angular velocity of the outer cylinder at which the displayed shear stress was measured, said microprocessor determining from the average angular readings for the plurality of angular position readings of the inner cylinder for each measurement interval when the steady state shear stress has been reached, the steady state shear stress obtaining when the average angular readings for consecutive measurement intervals differ by no more than a predetermined amount.

4,352,288

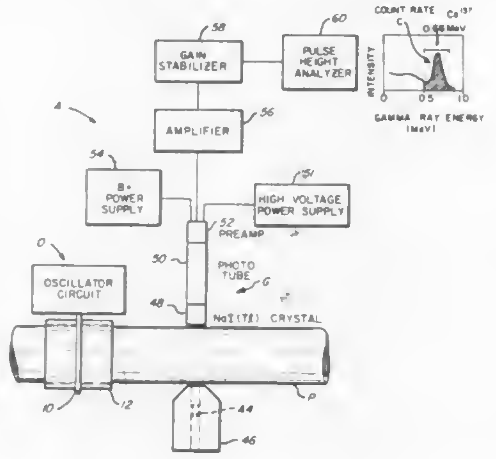
MEASUREMENT OF SALT CONTENT IN PETROLEUM FLOW LINES

Hans J. Paap, Houston; Richard A. Meador, Spring, and Dan M. Arnold, Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,766

Int. Cl.^{3} G01N *33/26*

U.S. Cl. 73—61 R 17 Claims



1. A method for analysis of a fluid flowing in a conduit to determine the salt content of the fluid comprising the steps of:

(a) measuring the conductivity of the fluid;
(b) measuring the density of the fluid;
(c) obtaining a measure of the liquid phase fraction of the fluid based on the density of the fluid; and
(d) obtaining from the conductivity and the liquid phase fraction the concentration of salt in the liquid phase of the fluid.

4,352,289

FUEL CONSUMPTION INDICATOR

Bernhard Stier, Kelkheim-Fischbach, and Gerhard Ruschek, Hattersheim, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 220,163

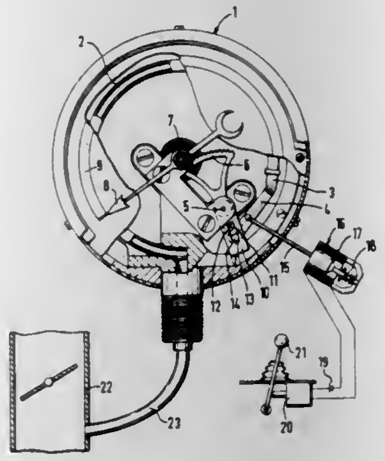
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952268

Int. Cl.^{3} G01L *23/24*

U.S. Cl. 73—114 **4 Claims**

1. Apparatus for the indication of fuel consumption per distance unit of a motor vehicle with an Otto engine and a gearshift mechanism, in which an indication manometer having a tube spring is attached to engine manifold vacuum via a suction pipe for the measurement of the engine manifold vacuum, and is connected, via a pointer mechanism, with a pointer shaft, and with electromagnetically controlled means for influencing the indication in dependence on the gear inserted of the gearshift mechanism, wherein:

the electromagnetically controlled means includes
a coil;
a plunger; and
a key switch connected to control excitation of the coil in dependence on the gear selected; and



connecting means between the tube spring and pointer shaft adjustable by the plunger of the electromagnetically controlled means such that at the insertion of at least two gear stages, the same scale for the fuel consumption per distance unit applies.

4,352,290

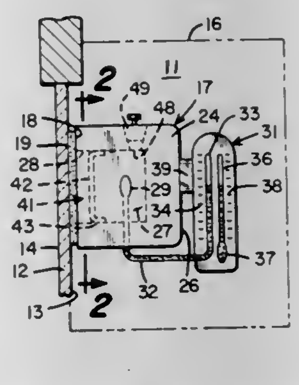
HEAT TRANSFER MEASURING APPARATUS

John J. Neils, Rte. 6, Box 97X, Priest River, Id. 83856

Filed Mar. 20, 1980, Ser. No. 132,280

Int. Cl.^{3} G01K *13/00, 3/08*

U.S. Cl. 374—110 15 Claims



1. A heat transfer measuring and indicating apparatus for a windowpane of a room, said apparatus comprising a body portion having one end adapted to fit against part of the inside surface of such a windowpane, said body portion having wall portions defining an enclosed chamber adjacent such pane and inside such room when said one end is fitted against the pane, said body portion having a construction thermally insulating said chamber from the temperature within such room and providing a chamber temperature responsive to both the actual temperature of such pane and the relative transfer of energy through such pane to and from said chamber, a temperature sensing element positioned within the chamber of said body portion at a location therein spaced inwardly from said one end and from such pane, and a temperature indicator operatively connected to the temperature sensing element and conveniently visible to a nearby user inside such room.

4,352,291

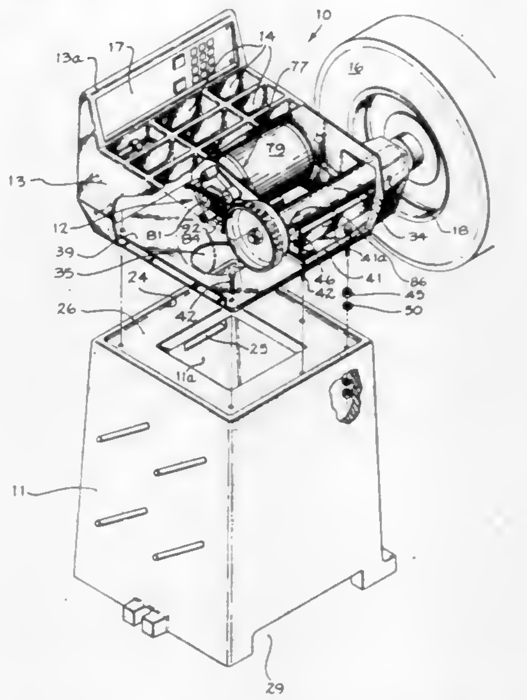
WHEEL BALANCING MACHINE

Donald B. Curchod, Saratoga, and Arthur K. Arnold, San Jose, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 42,144, May 24, 1979, abandoned, which is a continuation of Ser. No. 907,593, May 19, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,919

Int. Cl.^{3} G01M *1/22*

U.S. Cl. 73—462 20 Claims



1. In a wheel balancing machine comprising a rigid base, an elongate rigid bearing housing, bearing means carried within said housing at axially spaced positions, a drive shaft supported for rotation by said bearing means, one end of said shaft being disposed and adapted to readily removably receive a wheel to be balanced, a drive motor carried by said housing and disposed to move therewith independently of said base, means interposed between said housing and said base at first and second axially spaced positions along said housing serving to confine movement of said housing to a plane substantially parallel to said base, said housing, motor and the last named means all lying substantially entirely within the periphery of the tire projected laterally therefrom coaxially of said bearing housing, the last named means being disposed to be subjected to imbalance forces derived from rotation of an unbalanced wheel on said shaft, said forces acting in said plane and in a plurality of spaced parallel planes disposed substantially parallel to and spaced from a plane of rotation of the wheel, and means carried by the second named said means to generate signals proportional to the imbalance forces acting thereon.

4,352,292

INSTRUMENT FOR MEASURING DYNAMIC VISCOELASTIC PROPERTIES

Walter M. Madigosky, and Gilbert F. Lee, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1980, Ser. No. 172,585

Int. Cl.^{3} G01N *29/00*

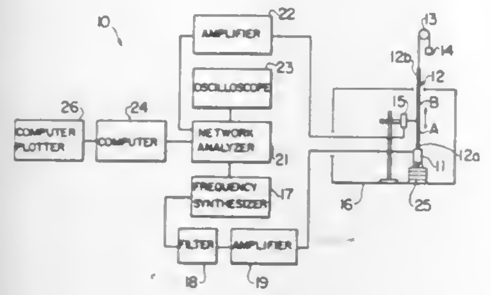
U.S. Cl. 73—575 **19 Claims**

1. An instrument for measuring the viscoelastic properties of rubber compounds, comprising:

means generating an extensional acoustic wave in the rubber compound at one or more frequencies;
means monitoring the rubber compound for deformation, said monitoring means being positioned at a first distance from the generating means; and
means varying the distance between the generating means and the monitoring means, said varying means providing a

second distance between the generating means and the monitoring means;

whereby the generating means creates an extensional acoustic wave in the rubber compound which deforms the compound at the one or more frequencies, the monitoring means monitors the deformation of the compound at the one or more frequencies for amplitude and phase at the first distance relative to the phase of the wave at the generating means, the varying means provides for a second distance between the generating means and the monitoring means and the monitoring means monitors the deformation at the one or more frequencies for amplitude and phase at the second distance relative to the phase of the wave at the generating means.



4,352,293
METHOD OF DIAGNOSING VIBRATION OF ROTARY MACHINE

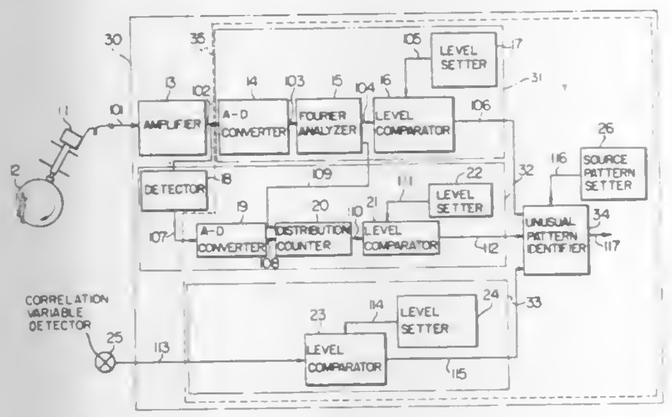
Nobuo Kurihara, Hitachiota; Mitsuyo Nishikawa, Hitachi; Yoshitoshi Nagahashi, Hitachi, and Masafumi Takechi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,583

Claims priority, application Japan, Aug. 24, 1979, 54-107086

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—593 **10 Claims**



1. A method of diagnosing vibration of a rotary machine for determining unusual vibration thereof, comprising the steps of:

detecting vibration of a rotary shaft of the rotary machine and producing a shaft vibration signal representative thereof;

analyzing said shaft vibration signal and producing a frequency spectrum signal indicative of the level of at least one of predetermined frequency components of said shaft vibration;

providing a spectrum setting signal representing a predetermined level of said frequency component;

comparing said frequency spectrum signal with said spectrum setting signal and producing an unusual spectrum signal indicative of whether said frequency spectrum signal exceeds said spectrum setting signal;

converting said shaft vibration signal into an occurrence-frequency distribution signal representative of a distribution pattern of values measured in a predetermined time interval by time-related analysis of at least one component of the shaft vibration signal;

providing an occurrence-frequency distribution pattern setting signal;

comparing said occurrence-frequency distribution signal with at least one of individual predetermined distribution patterns represented by said occurrence-frequency distribution pattern setting signal and producing an unusual occurrence-frequency distribution pattern signal indicative of when said occurrence-frequency distribution signal substantially corresponds with a specific one of said individual distribution patterns represented by the occurrence-frequency distribution pattern setting signal;

providing a source pattern signal; and

comparing respective portions of at least one of predetermined source patterns represented by said source pattern signal respectively with the unusual spectrum signal and the unusual occurrence-frequency distribution pattern signal for producing a source pattern identification signal representative of a source of unusual vibration of the rotary machine.

4,352,294
OPTICAL SYSTEM FOR SCANNING A PART WITH A BEAM AND ESPECIALLY AN ULTRASONIC OR ELECTROMAGNETIC BEAM

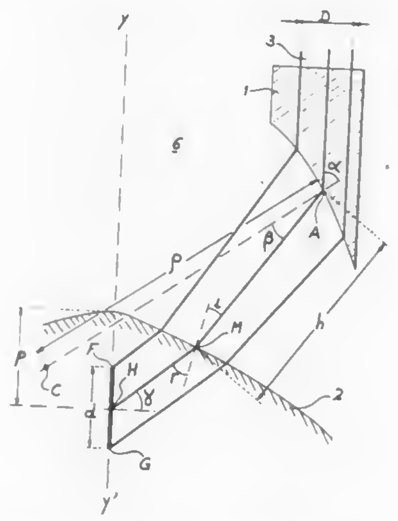
Jean Perodjon, Saint Ismier, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 30,866, Apr. 17, 1979, abandoned. This application Sep. 9, 1980, Ser. No. 185,517

Claims priority, application France, Apr. 20, 1978, 78 11670

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—642 **7 Claims**



1. An optical system for scanning a part with a multiplicity of beams, wherein the constructional arrangement and position of the optical system with respect to the part are such that the caustic formed by said system within said part by refraction of the beam is concentrated on an axis at right angles to said part, by means of a lens opposite to said part which is contoured relative to the surface of the part, the angle of incidence of the refracted beams being constant with regard to said axis, the caustic being normal to the entry surface of the beam in the part, at the intersection between the caustic and the entry surface.

4,352,295
INSTANTANEOUS TORQUE DETERMINING APPARATUS

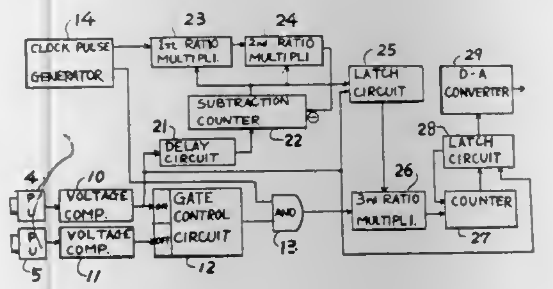
Osamu Maehara, and Tooru Sasaki, both of Kawasaki, Japan, assignors to Ono Sokki Co., Ltd., Yaguchi, Japan

Continuation-in-part of Ser. No. 893,037, Apr. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 755,213, Dec. 29, 1976, abandoned. This application Jun. 14, 1979, Ser. No. 48,493

Claims priority, application Japan, May 22, 1976, 51-59777; May 22, 1976, 51-59778

Int. Cl.³ G01L *3/10*

U.S. Cl. 73—862.34 **5 Claims**



2. In an instantaneous torque determining apparatus having a first and a second voltage comparator electrically connected with a torque detector for converting AC voltage signals transmitted from said torque detector into corresponding pulse signals for every cycle of said AC voltage signals, and

a delay circuit receiving said pulse signal from said first voltage comparator and delaying said pulse signal for a constant period of time;

a clock pulse generator producing a clock pulse signal at a constant frequency;

a first ratio multiplier electrically connected to said clock pulse generator and multiplying the clock pulse output by a ratio value preset at a ratio value setting terminal;

a second ratio multiplier electrically connected to said first ratio multiplier and multiplying the pulse output of said first ratio multiplier by a ratio value preset at a ratio value setting terminal;

a subtraction counter electrically connected to output terminals of said second ratio multiplier and said delay circuit and also electrically connected to the ratio value setting terminals of said first and second ratio multipliers, said subtraction counter being reset by an output pulse of said delay circuit to start subtractive counting of the output pulses of said second ratio multiplier and providing the output during the subtractive counting to the ratio value setting terminals of said first and second ratio multipliers;

a latch circuit arrangement electrically connected to said first voltage comparator and said subtraction counter for receiving said pulse signal and latching the count of said subtraction counter by said pulse signal; and

a D-A converter electrically connected to said latch circuit arrangement and converting the value latched thereby into a corresponding analog signal.

4,352,296
CHATTER FREE GEAR DRIVEN CAM ACTUATED VACUUM PUMP

Paul O. Wendler, Saginaw, and Donald L. Dzioba, Frankenmuth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 18, 1980, Ser. No. 188,483

Int. Cl.³ F16H *53/06, 25/08*

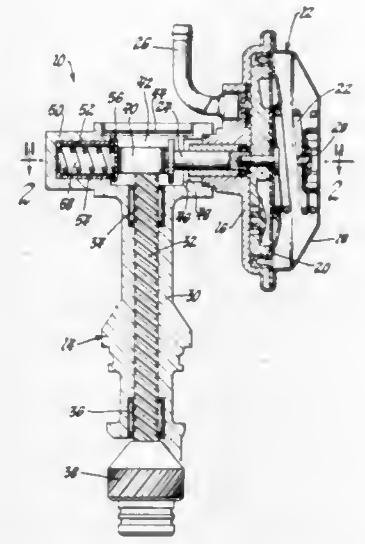
U.S. Cl. 74—55 **5 Claims**

1. A chatter free gear driven cam actuated vacuum pump having

a housing supporting a drive shaft carrying a lobed cam and a drive gear for driving the cam,

a vacuum pumping element driven by a push rod carried by the housing,

a return spring biasing the push rod into engagement with the lobed cam for reciprocably moving the push rod and pumping element upon rotation of the cam, the rates of cam lift and return and the force of the return spring together with vacuum forces on the pumping element being sufficiently great to apply alternately opposite torque loadings on the drive shaft capable of creating in operation torque reversals and resultant chatter causing oscillation of the drive gear, and



a torque counterbalancing mechanism carried in the housing and operative to apply to the drive shaft torque loadings opposed to those applied by the push rod, said counterbalancing mechanism comprising

a plunger reciprocably carried in the housing and a balance spring biasing the plunger into engagement with the lobed cam at a position of cam motion phased in opposition to that of the push rod,

the biasing force of the balance spring and the shape of the cam being such that the reverse torque loads applied to the drive shaft are reduced below a level capable of creating torque reversals and chatter causing oscillation of the drive gear.

4,352,297
MECHANISM FOR VARYING THE RELATIVE ANGULAR VELOCITY OF TWO SHAFTS, IN A PROPORTIONALLY CONTINUOUS MANNER

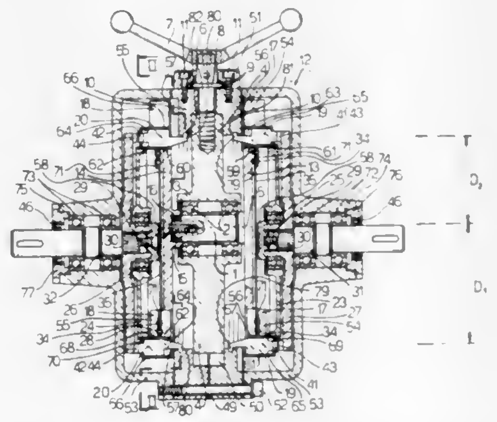
Giovanni Nardi, Pisa, Italy, assignor to Whitehead Motofides S.p.A., Leghorn, Italy

Filed Jun. 20, 1979, Ser. No. 50,472

Claims priority, application Italy, Jul. 5, 1978, 68576 A/78

Int. Cl.³ F16H *25/04*

U.S. Cl. 74—63 **6 Claims**



1. A mechanism for varying the angular velocity of two rotary shafts relative to one another in a proportionally continuous manner, the mechanism comprising: an element rotatable

about an axis of rotation parallel with the axes of rotation of said two shafts and arranged therebetween, and a first and a second plurality of connecting members assembled on opposite sides of said rotatable element; each said connecting member angularly connecting said rotatable element to one of said shafts only when arranged in a limited number of angular connection engagement positions associated with a restricted range of angular positions about said axis of said one of said two shafts; the distance of said members from the axis of said one of said two shafts being constant during rotation, the distance of said members from the axis of said rotatable element being variable during rotation, and the distance of the axis of said rotatable element from the axes of said two shafts being able to be varied, when said members are in said limited number of angular connection engagement positions, by adjustment means in order to vary the relative angular velocity of said two shafts in a proportionally continuous manner; and means for compelling said connecting members to rotate with said rotatable element, including respective cavities provided in said rotatable element for housing respective connecting members, wherein said connecting members, in said respective cavities, can move in directions radial to the axis of the rotatable element, said radial movement being determined by said adjustment means.

4,352,298

APPARATUS FOR THE ACCUMULATION AND RELEASE OF ENERGY

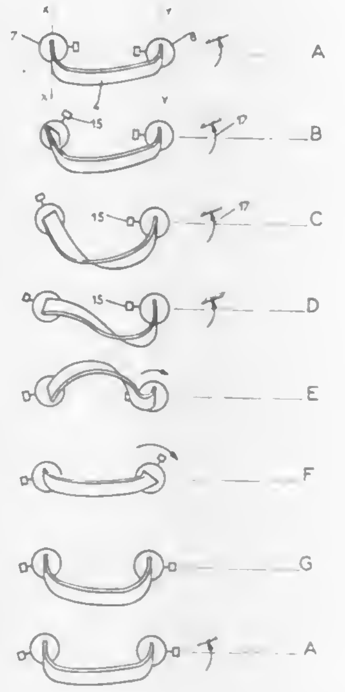
Francois Duveau, Courbevoie, France, assignor to Pompes Essa Mico, Carriere sur Seine, France

Filed Apr. 11, 1980, Ser. No. 139,559

Claims priority, application France, Apr. 13, 1979, 79 09404

Int. Cl.^{3} F16H *27/04, 33/02*

U.S. Cl. 74—84 R **5 Claims**



1. Apparatus for the accumulation and periodic release of mechanical energy comprising:

a spring, said spring being in the form of an elongated metal band having a longitudinal axis, said spring having first and second ends, said spring being elastically deformed between said first and second ends without any twisting thereof about its lontitudinal axis, said spring defining an open loop in the unstressed state;

drive means, said drive means being affixed to said spring first end, said drive means being rotatable about a first axis to thereby impart a twisting moment to said spring about its axis; and

driven means, said driven means being affixed to said second end of said spring, said driven means being rotatable in a first direction about a second axis to periodically relieve forces stored during twisting of said spring first end, said driven means including means for preventing rotation of said second end of said spring in a second direction opposite to said first direction, the axes of rotation of said drive and driven means being substantially parallel.

4,352,299

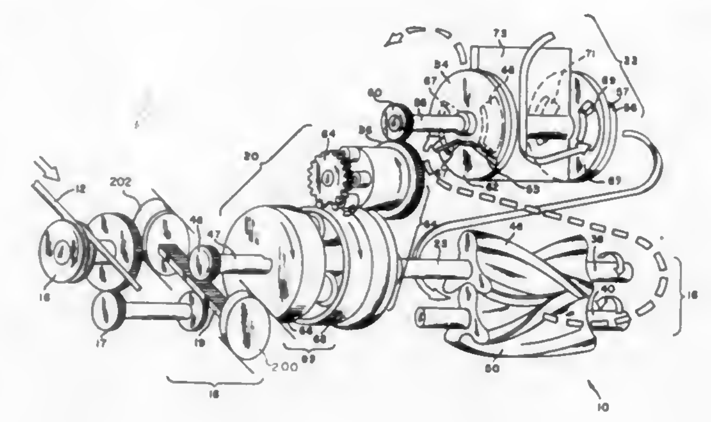
INTERMITTENT MOTION GEAR APPARATUS

Robert R. Riggs, South Bend, and Paulmer D. Hunt, Mishawaka, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 952,029, Oct. 16, 1978, Pat. No. 4,249,453. This application Apr. 21, 1980, Ser. No. 142,205

Int. Cl.^{3} F16H *27/04*

U.S. Cl. 74—84 R **3 Claims**



1. An intermittent motion gear apparatus comprising:

a shaft fixed to a housing;

a first gear located on said shaft and having a first plurality of gear teeth;

a second gear located on said shaft;

a hub for connecting said first gear to said second gear;

a plurality of post members fixed to said second gear;

an input gear rotatable about an axis from a first position through a second position to a third position in response to an operational input signal;

a sector gear secured to said input gear, said sector gear having a second plurality of gear teeth thereon for engaging said first plurality of teeth on said first gear during the rotation of said input gear from said first position to said second position to provide said second gear with angular motion; and

a cam member secured to said input gear and having an annular circumferential surface with a recessed contour thereon, said recessed contour engaging at least one of said plurality of post members at said second position of rotation of said input gear for aligning said sector gear with said first gear to synchronize the meshing of said first and second plurality of gear teeth, said annular circumferential surface engaging at least two of said plurality of post members during the rotation of said input gear from said second position to said third position to maintain said second gear in a substantially fixed angular position.

4,352,300

COMBINED LINEAR AND CIRCULAR DRIVE MECHANISM

Johannes H. L. H. Esch, Aalten, Netherlands, assignor to Vitafin N.V., Curacao, Netherlands Antilles

Filed Aug. 21, 1980, Ser. No. 180,004

Int. Cl.^{3} F16H *27/02, 29/02*

U.S. Cl. 74—89.15 **8 Claims**

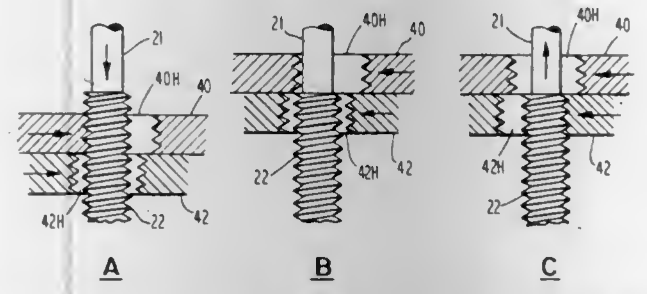
1. A drive mechanism for driving a spindle, said spindle having a threaded portion of a predetermined diameter and unthreaded portions bounding each side of said threaded portion, said mechanism comprising:

(a) A generally cylindrical spindle carrier, having a longitudinal opening through which said spindle extends, said opening being eccentrically positioned in said carrier;

(b) A cylindrical bushing having a bushing opening, said spindle carrier being positioned concentrically within said bushing opening, and bearing means for movably bearing said spindle carrier within said bushing;

(c) Nut means for engaging said threaded portion of said spindle, said nut means having two nut components, each component having an internally threaded longitudinal opening, said spindle extending through each of said nut openings, said nut components being integrally fixed to and carried in said bushing opening, said nut component openings having a greater diameter than said spindle diameter and having respective different center axes such that when said spindle threaded portion engages the internal threaded opening of one of said nut components it is free of the internal opening of the other nut component; and

(d) Whereby rotation of said bushing in a clockwise direction causes one of said nut components to drive said spindle in a first longitudinal direction and rotation in a counter clockwise direction causes the other of said nut components to drive said spindle in the reverse longitudinal direction, and said spindle is moved in a circular path about the center axis of said bushing while said bushing is rotated.



4,352,301

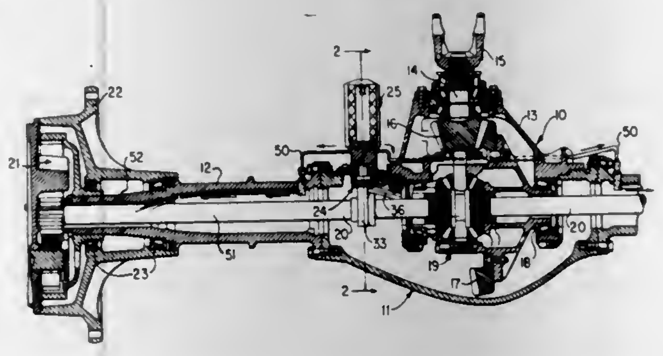
LUBRICATION PUMP & FILTER FOR AXLE ASSEMBLIES

Edward Fleury, Headingly, Canada, assignor to Versatile Cornat Corporation, Vancouver, Canada

Filed Mar. 14, 1980, Ser. No. 130,441

Int. Cl.^{3} F16H *57/04, 1/40;* **F01M** *9/10*

U.S. Cl. 74—467 **5 Claims**



1. In an axle assembly which includes a differential assembly, a differential assembly housing for said differential assembly adapted to hold a supply of lubricating oil, half shaft casings extending from each side of said housing, half shafts within said casings, and bearing means operatively mounting the outer end portions of each of said half shafts for rotation within said casings; the improvement comprising the combination: an oil pump mounted on said axle assembly, oil intake means on said pump, an inlet tube extending from said oil intake means to said oil supply within said housing, oil outlet means on said pump, oil filter means connected to said outlet means, conduit means operatively extending from the outlet of said oil filter means to adjacent said bearings of said half shafts to convey oil, under pressure, from said filter means to said bearings, and cam means on one of said half shafts operatively connected to drive said oil pump, said oil pump, said oil intake means, said oil outlet and said filter means being removably mounted on said axle assembly externally thereof.

4,352,302

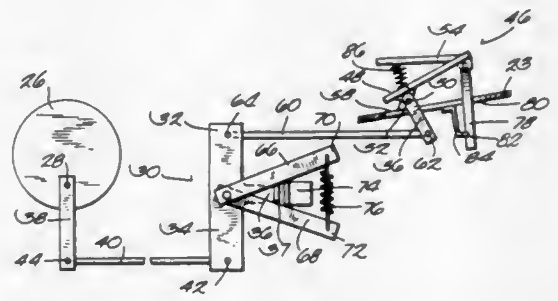
CONTROL FOR HYDROSTATIC TRANSMISSION

Gerald N. McAuliffe, and Richard E. Pearce, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 4, 1980, Ser. No. 183,942

Int. Cl.^{3} G05G *1/14, 5/06, 7/00*

U.S. Cl. 74—474 **9 Claims**



1. A control for a hydrostatic transmission having selectable positions for controlling the flow of fluid to achieve forward, reverse and neutral positions and to govern the output speed, said control including a control member operatively connected to the transmission for selectively moving the transmission between forward, neutral and reverse positions in response to movement of said control member, a pivotally movable member, actuating means mounted for movement between forward, neutral and reverse positions, means connecting said actuating means with said movable member for pivoting said movable member in response to movement of said actuating means, and connecting said actuating means and said control member for moving the transmission between forward, neutral and reverse positions in response to movement of said actuating means, and means for urging said control member toward the neutral position including first and second arms mounted coaxially with said movable member for independent pivotal movement relative to said movable member and having outer free ends located in spaced relationship to each other, means on said movable member engageable with said second arm so as to displace said second arm in a first pivotal direction in response to movement of said actuating means from the neutral to the forward positions and so as to displace said first arm in a second pivotal direction opposite to said first pivotal direction in response to movement of said actuating means from the neutral position to the reverse position, spring means biasing said arms toward each other, and means disposed between said arms for engaging said first arm so as to prevent pivotal movement of said first arm in the first direction when said second arm is pivoted by said movable member in the first direction against the biasing force of said spring means, and for engaging said second arm so as to prevent pivotal movement of said second arm in the second direction when said first arm is pivoted by said movable member in the second direction against the biasing force of said spring means.

4,352,303

GAS CONTROL GRIP FOR THE STEERING DEVICE OF A MOTOR-DRIVEN DOUBLE-WHEELED VEHICLE

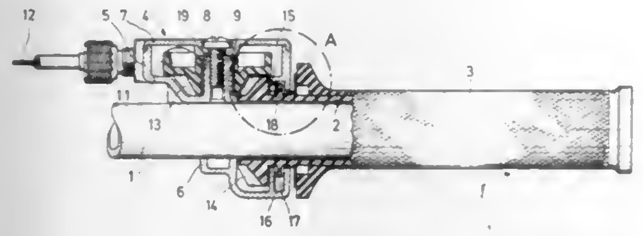
Heinz Christner, Hülben, Fed. Rep. of Germany, assignor to Gustav Magenwirth GmbH & Co., Urach, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,985

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012034

Int. Cl.^{3} B62K *23/06;* **G05G** *7/02*

U.S. Cl. 74—489 **4 Claims**



1. A gas control grip for the steering device of a motor cycle or the like in which a rotatable tubular handle formed of plastic is rotatably mounted on the steering device and in which a sectional housing is secured to the steering device around one end of the tubular handle in such a way that an annular flange on the housing fits into an annular groove in the handle to secure the handle against axial shifting characterized in the provision of a semicircular clip removably attached to the flange, said clip being so constructed and arranged as partially to cover the lateral faces of the flange extending into the groove.

4,352,304

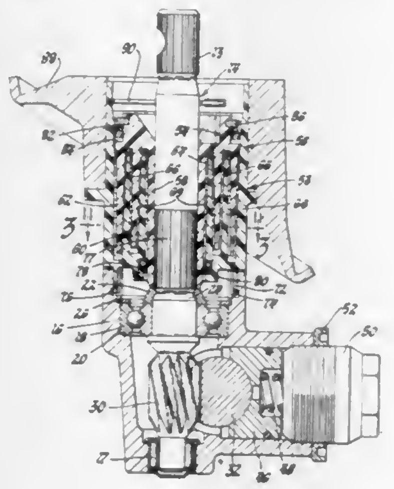
VISCOUS DAMPING OF STEERING SHAFT

Laurence A. Warner, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1980, Ser. No. 207,439

Int. Cl.^{3} B62D *1/20, 3/12;* **F16D** *57/00*

U.S. Cl. 74—498 **3 Claims**



1. A steering gear for a vehicle having a manual steering shaft and a pair of output members steerably moved in response to manual turning inputs to said steering shaft comprising input gear means operatively connected to said steering shaft, output gear means meshing with said input gear means and drivingly connected to said output members, said input gear means having an elongated shaft operatively connected thereto for rotation with said steering shaft, a housing for said input and output gear means, first viscous damper means secured to said housing and disposed around a portion of said elongated shaft of said input gear means, second viscous damper means secured to said elongated shaft and nested within said first viscous damper means, said first and second damper means having relatively movable wall means spaced from one another to form a viscous fluid shear area therebetween, and a viscous fluid in said shear area for damping oscillatory input motion transmitted from said output members of said steering gear which causes the oscillating relative movement of said first and second wall means resulting in the viscous shear of said fluid in said shear area.

4,352,305

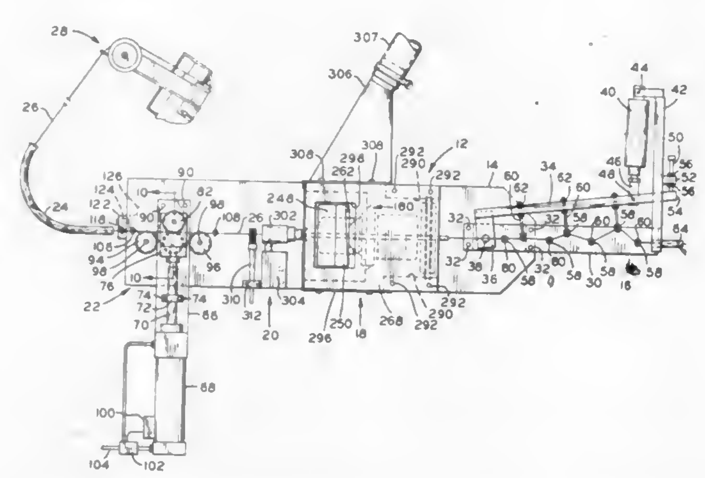
APPARATUS FOR STRIPPING INSULATION FROM WIRE

Philip G. Rodenbeck, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Aug. 5, 1980, Ser. No. 175,442

Int. Cl.^{3} H02G *1/12*

U.S. Cl. 81—9.51 **30 Claims**



1. Apparatus for stripping the insulation off wire comprising:

a support frame,

wire guide means connected to said support frame for guiding wire along a predetermined normal wire travel path,

a blade assembly mounted on said frame comprising a plurality of circularly spaced blades encircling the wire travel path, and means for rotating said blades about an axis coaxial with the wire travel path, said blade assembly further comprising blade actuation means in engagement with said blades for causing said blades, while rotating, to move radially inwardly toward the wire travel path by a predetermined radial distance, whereby when wire is in the travel path, it will have the insulation stripped therefrom by the rotating blades,

said wire guide means including puller means for engaging wire traveling along the travel path and distorting the normal wire travel path so as to pull a predetermined length of wire through the rotating blades, whereby the blades strip the insulation off the predetermined length of the wire.

4,352,306

SOCKET WRENCH WITH INTERCHANGEABLE SOCKETS STORED IN HANDLE

Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509

Filed Jul. 20, 1981, Ser. No. 284,952

Int. Cl.^{3} B25G *1/08*

U.S. Cl. 81—177 N **10 Claims**

1. Socket member storage means for a set of interchangeable sockets of a socket wrench of the type which has a head with a socket mounting stub, said storage means comprising:

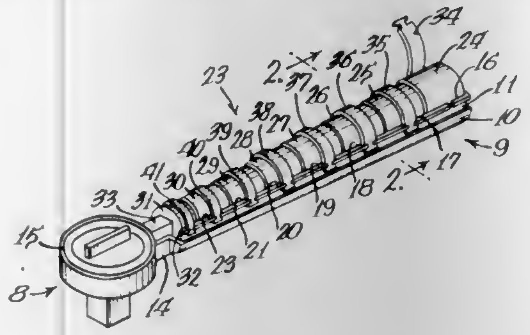
a longitudinal wall defining a long, narrow storage cavity which has an entrance opening along one side, said storage cavity having several distinct portions along its length each of which receives one socket member of a set;

a separate retaining strap operatively associated with each such portion;

a hinge connecting a first end of each retaining strap to the wall at one side of the portion with which it is associated;

and fastening means detachably connecting the other end of each retaining strap to the wall opposite said hinge,

each of said retaining straps being of a length to snugly embrace the socket member in said portion when its fastening means is connected to the wall, whereby detachment of one strap connecting means from the wall permits removal of a single socket member from the storage cavity independently of any other socket member.



4,352,307

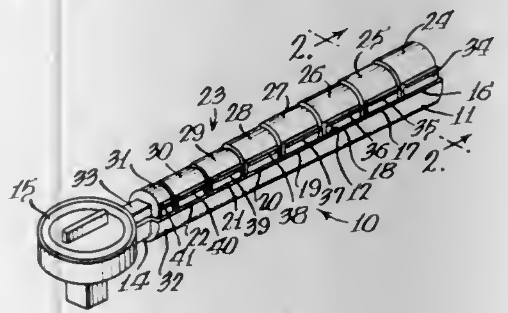
SOCKET WRENCH WITH INTERCHANGEABLE SOCKETS STORED IN HANDLE

Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509

Filed Jul. 20, 1981, Ser. No. 284,953

Int. Cl.^{3} B25G *1/08*

U.S. Cl. 81—177 N **6 Claims**



1. Socket member storage means for a set of interchangeable sockets of a socket wrench of the type which has a head with a socket mounting stub, said storage means comprising:

a longitudinal wall defining a long, narrow storage cavity which has an entrance opening along one side, said storage cavity having several distinct portions along its length each of which receives one socket member of a set;

and a resilient member in each such portion which extends more than half-way around the socket member in said portion so as to frictionally grip and retain the socket member in the storage cavity, each said resilient member having an extremity projecting above one side of the wall, said extremity being adapted to be flexed outwardly to release the socket member for removal from the storage cavity independently of any other socket member.

4,352,308

METHOD OF CUTTING CAST IRON WITH SI_3N_4 COMPOSITE CUTTING TOOL MATERIAL

Shyam K. Samanta, Ypsilanti; Krishnamoorthy Subramanian, Inkster; Andre Ezis, Grosse Ile, and David Moskowitz, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

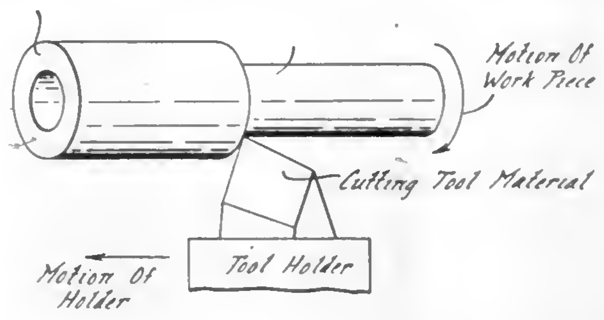
Division of Ser. No. 911,255, May 31, 1978. This application Mar. 10, 1980, Ser. No. 129,151

Int. Cl.^{3} B23B *1/00*

U.S. Cl. 82—1 C **8 Claims**

1. A method of machining cast iron, comprising:

deploying a ceramic as a cutting tool in continuous or interrupted machine cutting of cast iron at surface speeds of 50–7500 sfm and at depths of cut of at least 0.02 inches, wherein said ceramic cutting tool is a hot pressed Si_3N_4 based ceramic cutting tool containing only one metal oxide member of the group consisting of Y_2O_3, ZrO_2 and MgO.



4,352,309

TRIMMING AND/OR FIN CUTTING TOOLS WITH INTERCHANGEABLE CUTTING EDGES

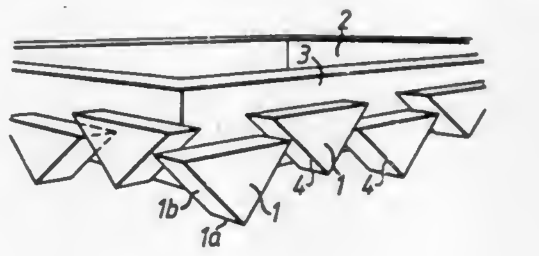
Peeter Thalström, Trangsund, and Karl G. Westin, Bromma, both of Sweden, assignors to AB Westin & Backlund, Stockholm, Sweden

Filed Jun. 3, 1980, Ser. No. 156,061

Claims priority, application Sweden, Jun. 8, 1979, 7905030

Int. Cl.^{3} B26D *1/00*

U.S. Cl. 83—697 **7 Claims**



1. A trimming/fin cutting tool comprising a tool body, and a number of cutting plates detachably mounted on said tool body and providing effective cutting edges which define at least one cutting line of the tool, wherein the cutting plates are attached to said tool body in a plane directed in the working direction of the tool so as to present cutting edges of "saw tooth" like form along said cutting line, wherein said cutting plates for said cutting line are attached to said tool body in rows at different heights relative to a base so as to define spaces between them for the passage of chips produced during cutting, and wherein the cutting plates at one height are staggered in relation to the cutting plates of another height so that the separate effective cutting edges of the cutting plates overlap each other.

4,352,310

PORTABLE KEYBOARD MUSICAL INSTRUMENT

Franco Orlandoni, 1 Crossley Pl., Park Ridge, N.J. 07056

Filed Jun. 27, 1980, Ser. No. 163,637

Int. Cl.^{3} G10H *1/00;* **G10C** *3/12*

U.S. Cl. 84—1.01 **15 Claims**

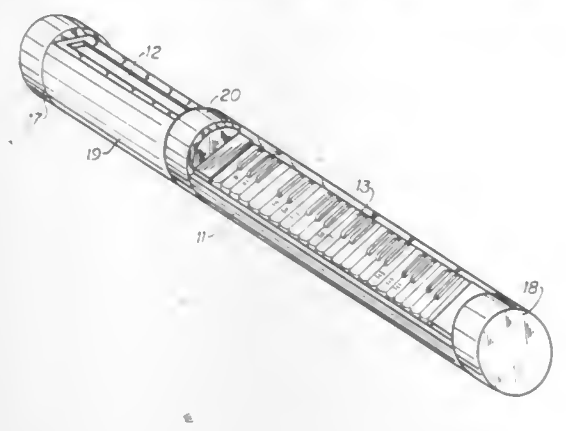
1. A portable keyboard instrument comprising two hollow tubes,

a. each tube having a cut out section, a first end section and a second end section;

b. at least one of said two hollow tubes having electronic key board means affixed to said cut out section of said tubes;

c. a pair of removable end cap means, each end cap means of said pair of end cap means being secured to an end section;

d. a connecting member means, said connecting member means being dimensioned for releasably locking together, alternatively said second end sections of said two hollow



tubes said first end sections of said two hollow tubes, or a first end section and a second end section of said two hollow tubes, each end cap means of said pair of end cap means being secured to an end section which is not releasably locked to another end section.

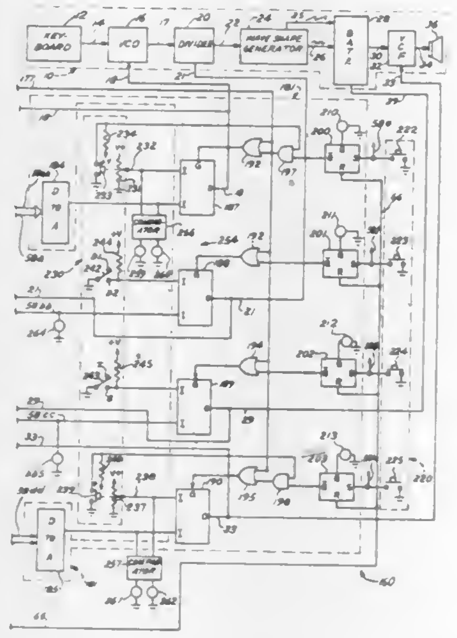
4,352,311
SYNTHESIZER PRESET EDITING TECHNIQUES

David A. Luce, Clarence Center, and James Scott, Trumansburg, both of N.Y., assignors to Norlin Industries, Inc., White Plaines, N.Y.

Continuation of Ser. No. 921,786, Jul. 3, 1978, abandoned. This application May 22, 1980, Ser. No. 152,431

Int. Cl.³ G10H *1/06*

U.S. Cl. 84—1.19 **24 Claims**



1. In an electronic musical synthesizer including multiple parameter circuits capable of synthesizing a timbre of sound in response to stored parameter signals, improved apparatus for editing the parameter signals comprising:

adjustment means for generating an adjusted parameter signal suitable for replacing a chosen one of said stored parameter signals;

comparator means for generating an indicating signal having a value depending on the relative magnitude of the chosen parameter signal and adjusted parameter signal; and

indicator means responsive to the indicating signal for indicating when the adjustment means has been adjusted to generate an adjusted parameter signal having a predetermined magnitude with respect to the chosen parameter signal.

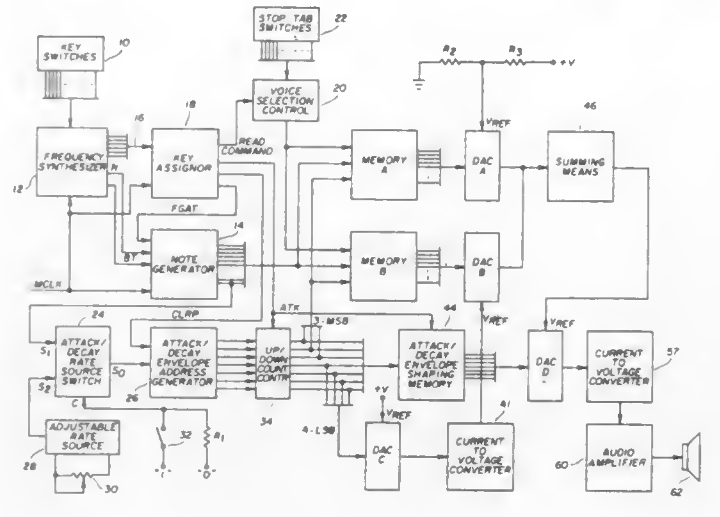
4,352,312
TRANSIENT HARMONIC INTERPOLATOR FOR AN ELECTRONIC MUSICAL INSTRUMENT

John T. Whitefield, Harleysville, and Robert P. Woron, Allentown, both of Pa., assignors to Allen Organ Company, Macungie, Pa.

Filed Jun. 10, 1981, Ser. No. 272,223

Int. Cl.³ G10H *1/057, 1/08, 7/00*

U.S. Cl. 84—1.21 **24 Claims**



1. In an electronic musical instrument having a greater number of selectively actuable switches than note generators to cause the production of sounds corresponding to the respective notes of a musical scale, an apparatus for interpolating between harmonic structures of a waveform stored in memory during the transient periods of said waveform comprising;

at least first and second memories having a number of locations or zones in each memory, said number of zones being equivalent to the number of harmonic structures;

a fixed harmonic structure in each zone of the first memory;

a difference value in each zone of the second memory, said difference value equal to the difference between the fixed harmonic structures in adjacent zones of the first memory;

means for generating addresses for selectively reading out from each said memory the contents of each zone, said zone address being the upper segment of the generated address, for selectively controlling the scaling of the difference values read out from each zone of said second memory by a digital to analog converting means, said digital to analog converting means address being the lower segment of the generated address, and for selectively reading out of a transient waveform envelope memory a transient waveform envelope, said transient waveform envelope address being said generated address;

means for converting and scaling the fixed harmonic structure read out of a selected zone of the first memory having a scaling factor being a fixed value;

means for converting and scaling the difference value read out of a selected zone of the second memory having a scaling factor varying in accordance with the lower segment of the generated address;

summing means for combining the converted and scaled fixed harmonic structures read out of the selected zones of the first memory with the converted and scaled difference values read out of the selected zones of the second memory and generating an output;

means for converting and scaling the generated transient waveform envelope having a scaling factor in accordance with the generated output of the summing means; and,

amplifying means for producing the interpolated transient harmonic structures of the waveform as sound through an audio transducing means.

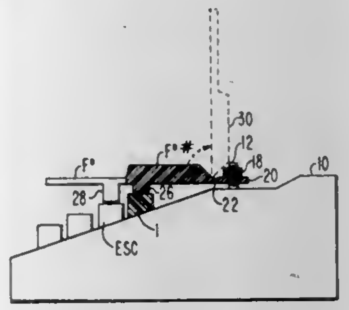
4,352,313
MUSICAL KEYBOARD FOR HOME COMPUTER

Nils O. Ny, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,836

Int. Cl.³ G10C *3/12*

U.S. Cl. 84—425 **6 Claims**



1. The combination of an alpha-numeric keyboard, a piano-like keyboard including an elongated support and a plurality of side-by-side piano-like keys each hinged at one end to said support; and means for attaching said support to said alpha-numeric keyboard with the piano-like keys extending over respective keys of the alpha-numeric keyboard such that manual depression of each piano-like key causes direct physical contact with, and depression of, a respective alpha-numeric key.

4,352,314
DEVICE FOR RELEASABLY SECURING A COUPLING HEAD TO AN EXTERNAL LOAD MOUNTED ON AN AIRCRAFT

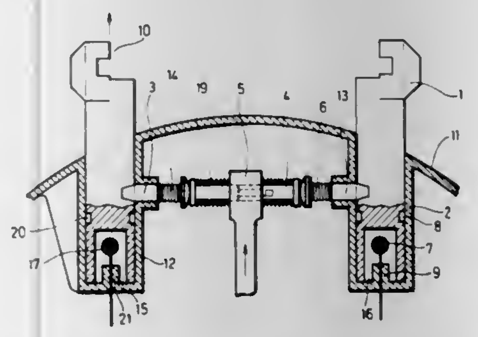
Herbert Engel, Munich, and Thomas Hähnel, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,737

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827781

Int. Cl.³ F41F *5/02;* **B64D** *1/04*

U.S. Cl. 89—1.5 F **8 Claims**



1. Device for securing external loads, such as missiles, on aircraft or similar mounting members, comprising a housing, a coupling head releasably securable to said housing, wherein the improvement comprises first means forming a socket-like recess extending inwardly from said housing and open on the outer surface of said housing for receiving said coupling head, second means mounted within said housing for releasably securing said coupling head in said socket-like recess, third means in operative engagement with said second means for releasing said second means from securing said coupling head in said socket-like recess and fourth means independent from said third means for ejecting said coupling head from said socket-like recess when said second means are released from secured engagement with said coupling head.

4,352,315
BARREL SEAL

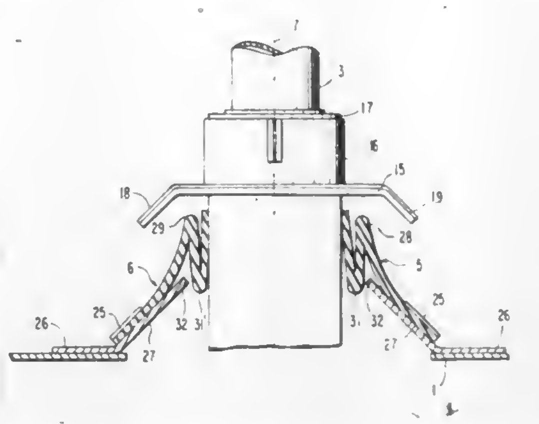
Tore Ingestrand, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 1, 1980, Ser. No. 192,657

Claims priority, application Sweden, Oct. 2, 1979, 7908150

Int. Cl.³ F41H *5/20*

U.S. Cl. 89—36 L **6 Claims**



1. In a weapon cupola having an aperture through which a gun barrel extends, a seal between said weapon barrel and aperture comprising:

an elongate elastic bellows having at least three outwardly extending folds, said bellows having first and second ends connected to the edge of said aperture, said bellows divided along a centrally located ridge into first and second halves, said halves abutting said gun barrel periphery and each other along said ridge a distance away from said barrel, said ridge located in a plane coincident with the plane of said gun barrel motion in elevation, whereby motion of said barrel in elevation forces said halves apart in the region adjacent said barrel while maintaining a sealing relationship between halves at a distance away from said barrel.

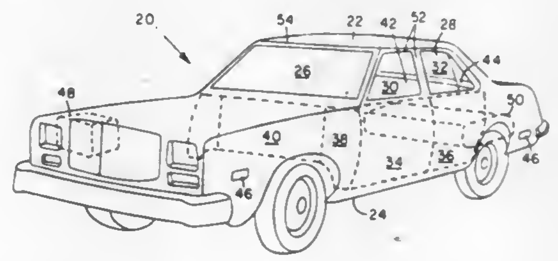
4,352,316
LIGHTWEIGHT ARMORED VEHICLE AND METHOD OF MAKING SAME USING WOVEN POLYESTER GLASS PROTECTIVE SHEETS

Richard C. Medlin, 2562 Stirling Rd., Hollywood, Fla. 33021

Continuation-in-part of Ser. No. 920,715, Jun. 30, 1978, Pat. No. 4,316,404. This application Dec. 24, 1980, Ser. No. 220,134

Int. Cl.³ F41H *5/04*

U.S. Cl. 89—36 A **17 Claims**



1. A protective layer designed and constructed to dissipate at least a portion of the kinetic energy of a high velocity projectile comprising:

a plurality of woven ballistic sheets comprised of ballistic strands;

a sizing material and a bonding material which imperfectly bond with each other;

said sizing material applied to said plurality of sheets;

said plurality of sized sheets being layered next to each other and bound into a protective layer by said bonding material;

said protective layer being effective to dissipate at least a portion of the kinetic energy of a high velocity projectile impacting upon said protective layer;

said size sheets are laminated together by said bonding material;

said laminated sized sheets are designed and constructed to delaminate when impacted by a high velocity projectile;

said delamination is effective to dissipate a portion of the kinetic energy of said projectile;

said sheets contain at least some hard filaments to dissipate at least a portion of the kinetic energy of said high velocity projectile by deforming said projectile;

said sheets containing at least some filaments of high tensile strength to dissipate at least a portion of the kinetic energy of said high velocity projectile by causing the formation of said sheet to penetration by said projectile; and

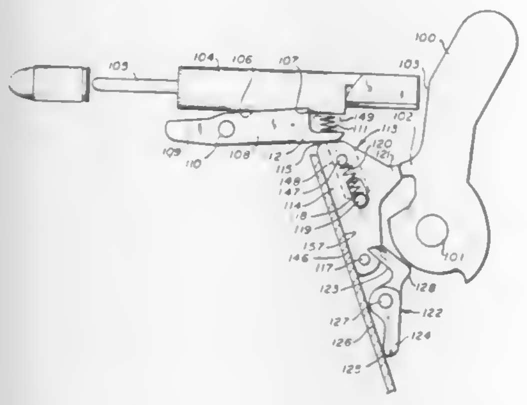
said strands are comprised of a mixture of polyester filaments and glass filaments.

4,352,317
HAMMER SAFETY BLOCK

Gary Wilhelm, Hamden, Conn., assignor to Llama Gabilonda y. Cia. S.A., Vitoria, Spain

Division of Ser. No. 951,967, Oct. 20, 1978, Pat. No. 4,275,640.
This application Aug. 6, 1980, Ser. No. 175,896
Int. Cl.³ F41C *17/04*

U.S. Cl. 89—154 **7 Claims**



1. A firing pin and hammer safety mechanism for a gun of the type in which a hammer is allowed to strike a firing pin in response to the movement of a trigger, the safety mechanism comprising:

firing pin safety lever means having one end pivotal about an axis and another end releasably engaging the firing pin to prevent forward movement of the firing pin, said lever means being biased out of engagement with the firing pin;

hammer safety block means comprising an elongated body having a camming surface at one end thereof, said camming surface urging the lever means into engagement with the firing pin, said hammer safety block means including on one side thereof hammer abutment means;

abutment means positioned on the hammer, said abutment means of the hammer aligned with the abutment means of said hammer safety block means to prevent striking of the firing pin by the hammer when the hammer safety block means is urged upwardly; and

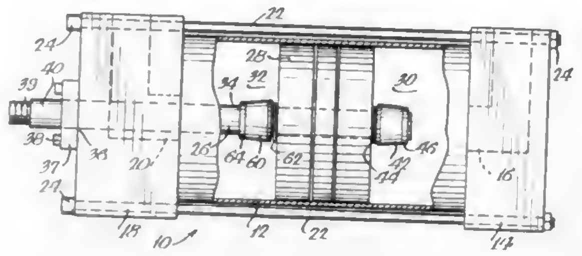
means for moving the hammer safety block means downwardly to provide for disengagement of the firing pin by the safety lever means and to move said two abutment means out of alignment to allow the hammer to strike the firing pin and to move the firing pin forward.

4,352,318
EXPANDABLE CUSHION PLUNGER FOR PISTON AND CYLINDER DEVICES

Abel E. Kolchinsky, Glenview; John F. Bowbin, Elmhurst, and Wayne M. Davis, Lake Zurich, all of Ill., assignors to Miller Fluid Power Corporation, Bensenville, Ill.

Filed Mar. 6, 1980, Ser. No. 128,357
Int. Cl.³ F15B *15/22*

U.S. Cl. 91—395 **14 Claims**



1. In a piston and cylinder device having wall means defining a piston chamber with a discharge fluid port at one end of the chamber, and piston means movable in said chamber toward and from said port, improved cushion means on said piston means movable into said port for controlling fluid flow outwardly therethrough to cushion movement of the piston means toward said port, said cushion means comprising

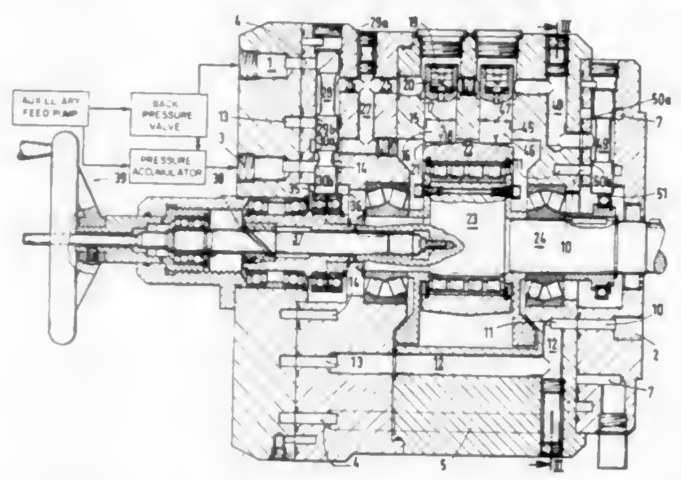
a resiliently expandable sleeve, said sleeve defining a distal end fixed to said piston means and an annular skirt extending toward said piston means from said distal end, said skirt defining a pressure space radially inwardly of said skirt communicating freely with said piston chamber, a major portion of the radially outer surface of the skirt narrowing toward said distal end of the sleeve and having a preselected configuration cooperating with the increased fluid pressure in said pressure space resulting from movement of the piston means toward said port with said cushion means extending into said port to effect a controlled closing of the port by said cushion means as a direct function of both expansion of the skirt caused by said increased fluid pressure thereon and the amount of piston means travel to provide a correspondingly decreasing velocity of the piston means movement toward said port.

4,352,319
POSITIVE CONTROL FOR HYDROSTATIC MOTORS, ESPECIALLY RADIAL PISTON MOTORS

Fritz Wegerdt, Wagnerstr. 26, 7987 Weingarten, and Kurt Woelk, Mainzer Str. 121, 5300 Bonn-Bad Godesberg, both of Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,455
Int. Cl.³ F01B *1/06*

U.S. Cl. 91—483 **25 Claims**



1. A positive control for hydrostatic motors, especially

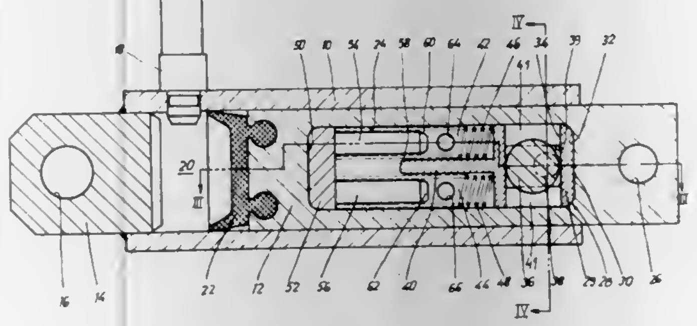
radial piston motors, comprising two sets of working cylinders distributed in a ring-like manner each in a stationary housing part with two sets of working pistons moving therein and acting via eccentric or like drive connections on the motor shaft and two sets of slide valves, the slide valves of the one set being associated each with a working cylinder of the one set and provided with a single pair of control edges for controlling the connection of the associated working cylinder with the pressure medium intake and the pressure medium outlet and with a common actuating eccentric which, relative to the eccentric of the working pistons, is arranged in fixed phase-displaced relation on the motor shaft, whilst the slide valves associated with the other set of working cylinders of the second set of slide valves, in addition to a first pair of control edges controlling the connection of the associated working cylinder with the pressure medium intake, have also a second pair of control edges for connecting the associated working cylinder at least during coverage of the first pair of control edges with a pressure equalizing conduit, all of said pressure equalizing conduits being in constant free flow communication with a common pressure equalizing channel and the phase relation between the eccentric of the working pistons and a driving eccentric actuating the slide valves of the second set of slide valves being adjustable during operation of the motor, the arrangement being such that with any setting of the phase relation a predetermined torque is maintained, the positive control being further characterized in that when the pressure medium intakes and the pressure medium outlets of the two sets of slide valves are separated one from the other, the pressure medium intakes are arranged in parallel and via forced conduits are connected with a common pressure source that in the branch conduit leading to the intake of the slide valves having two pairs of control edges there are provided a pressure reducing means and downstream of the same a junction channel leading to the other branch channel in which junction channel there is arranged a device elevating the pressure of the pressure medium emanating from the junction channel to the working pressure of the pressure medium source.

4,352,320
SINGLE-ACTING OPERATING CYLINDER

Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,999
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926258
Int. Cl.³ F15B *15/24;* F01B *31/00*

U.S. Cl. 92—13 **6 Claims**



1. A single-acting operating cylinder assembly comprising a cylinder having an operating chamber and a piston of rectangular cross section, wherein the piston contains an axial recess which has a first end wall remote from the operating chamber of the cylinder, a spring arrangement in said axial recess for urging the piston into a retracted working position, said spring arrangement being supported on the piston and on a stop mechanism which is connected to the cylinder, and further comprising the improvement wherein:

(a) the axial recess in the piston also has a second end wall adjacent the operating chamber of the cylinder;

(b) the stop mechanism extends through the axial recess transversely of the longitudinal axis of the cylinder and includes end stops for limiting both the extension and retraction directions of movement of the piston, the stop mechanism including a stop block which carries the said end stop for limiting the extension movement of the piston;

(c) the spring arrangement comprises a plurality of side-by-side coil compression springs which are clamped between the stop block and the second end wall of the axial recess; and

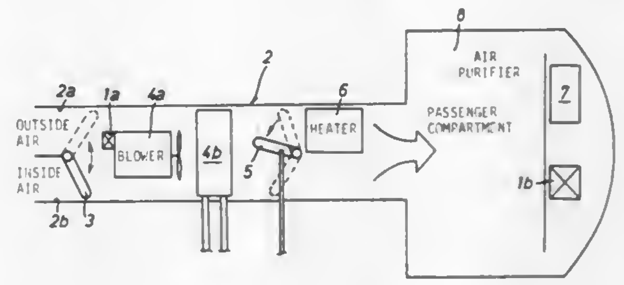
(d) said end stop for limiting the extension movement of the piston is formed by at least one partition wall, which partition wall lies between a pair of the compression springs and defines separate spring chambers receiving said springs.

4,352,321
ELECTRONIC CONTROL METHOD AND APPARATUS FOR AUTOMOBILE AIR CONDITIONING SYSTEM WITH AIR PURIFIER

Tomonori Fukui, Kariya, and Osamu Eguchi, Anjyo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 10, 1981, Ser. No. 272,102
Claims priority, application Japan, Jun. 17, 1980, 55-81883
Int. Cl.³ B60H *3/00*

U.S. Cl. 98—2.11 **6 Claims**



1. An electronic control method of controlling an automobile air conditioning system which includes an electrically operated switch door arranged in its first position to allow the flow of outside air into a passenger compartment through an air duct of said system and arranged in its second position to allow the flow of inside air recirculating into said compartment through said air duct, and which system is associated with an electrically operated air purifier for purifying the air in said compartment, said control method comprising the steps of:

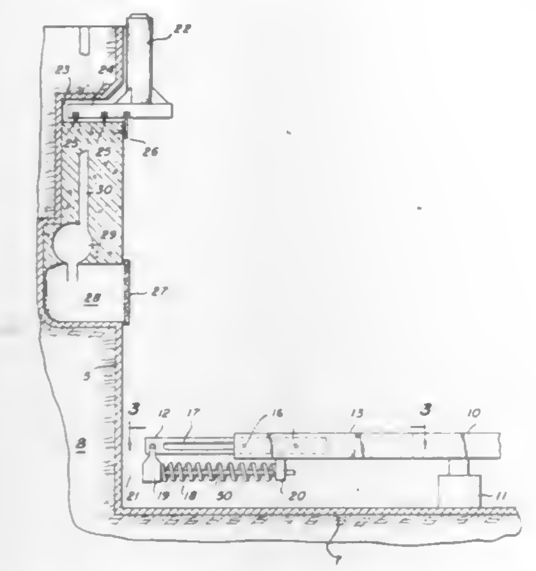
producing at a predetermined time interval a series of first electric signals indicative of the degree of pollution of outside air flowing into said compartment through said air duct and detecting a first difference value between the preceding and following first electric signals;

producing at said time interval a series of second electric signals indicative of the degree of pollution of inside air in said compartment and detecting a second difference value between the preceding and following second electric signals;

switching over said switch door from its first position to its second position when said first difference value is larger than a predetermined first standard value under a first set of control conditions where said switch door is manually set in its first position, and subsequently either energizing said air purifier when said second difference value is larger than a predetermined second standard value or energizing said air purifier when said second difference value is larger than said second standard value under a second set of control conditions where said switch door is manually set in its second position.

4,352,322
PREFABRICATED VEHICLE MAINTENANCE APPARATUS

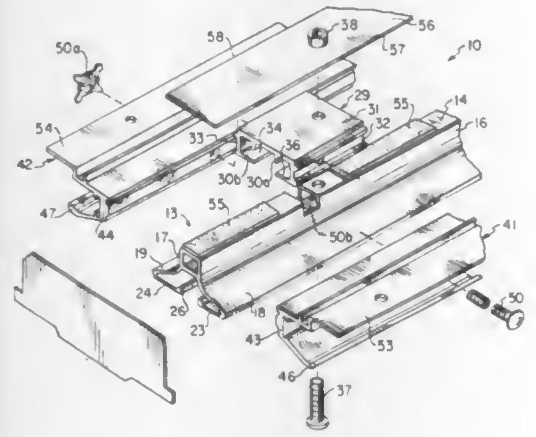
Roger L. Brauer, 602 W. Austin St., Tolono, Ill. 61880
Filed Apr. 17, 1981, Ser. No. 255,184
Int. Cl.^{3} F24F *13/00*
U.S. Cl. 98—33 R **9 Claims**



1. Vehicle service apparatus, comprising
(a) a unitary housing including a bottom wall, and opposed pairs of parallel spaced vertical side and end walls, respectively, secured at their lower edges with said bottom wall, said housing being adapted for insertion within a pit formed in the ground, said side walls being spaced a distance less than the spacing distance between corresponding wheels of the vehicle, whereby the vehicle can be positioned in straddling relation above the housing;
(b) horizontal platform means arranged in said housing for supporting a mechanic beneath the vehicle, said platform means normally having effective width and length dimensions corresponding generally with the spacing distances between said housing side and end walls, respectively;
(c) platform lifting means for vertically displacing said platform means between upper and lower levels relative to said housing bottom wall; and
(d) means for varying at least one of the effective width and length dimensions of said platform means to define an opening for providing access to the portion of the housing bottom wall arranged beneath said platform means.

4,352,323
AIR DIFFUSER

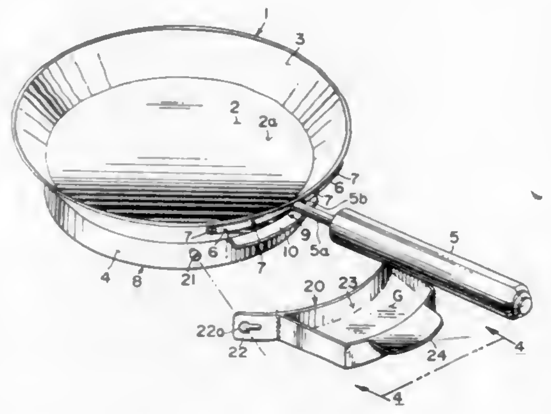
Jack L. Burkarth, Dallas, Tex., assignor to Gulton Industries, Inc., Plano, Tex.
Continuation of Ser. No. 934,907, Aug. 18, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 175,639
Int. Cl.^{3} F24F *13/06*
U.S. Cl. 98—40 D **1 Claim**



1. A linear air diffuser for distributing a volume of air under pressure in a uniform output flow of controlled velocity and direction comprising:
a frame structure defining a pair of longitudinal air carrying channels situated in substantially parallel side by side relationship, each of said channels having an input orifice progressively narrowing in width along the length thereof for controlling the input of air to said channel substantially linearly along the length of the channel and having a lower portion which extends obliquely to the plane of its input orifice such that the channels diverge laterally outwardly in substantially opposite directions, said input orifices being defined in part by the lateral peripheral edges of a flat plate affixed to the frame and overlying a predetermined portion of a respective input side of each of said channels;
a side rail, extending longitudinally parallel to and defining one side of each of said channels, said rail having a downwardly directed side wall and a lower flange;
a defelctor vain, extending longitudinally parallel to and defining another side of each of said channels, said vain having an air turning surface merging into a laterally outwardly directed lower section which extends to a lateral edge thereof below the lower flange of the side rail to define an air output nozzle that delivers the air traversing said channel in a principally lateral direction.

4,352,324
FRYING PAN WITH A REMOVABLE GREASE CATCHER

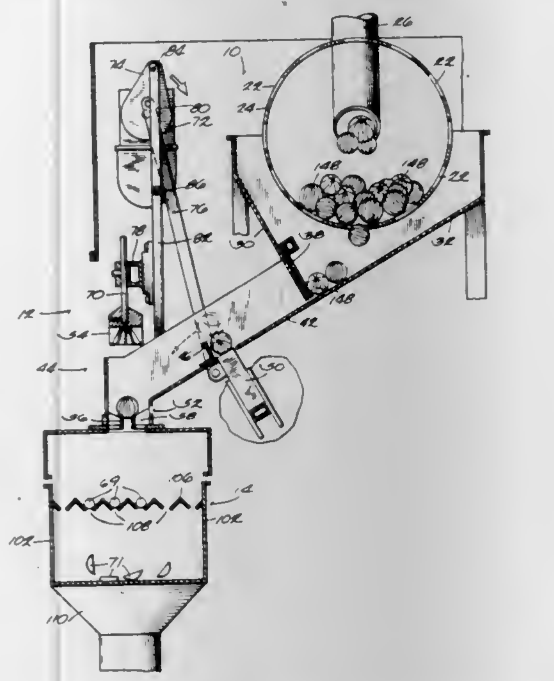
Edwin C. S. Noh, 628 Pana Pl., Honolulu, Hi. 96816
Filed Nov. 10, 1980, Ser. No. 205,664
Int. Cl.^{3} A47J *37/10*
U.S. Cl. 99—425 **2 Claims**



1. A frying pan with a removable grease catcher comprising a base with a frying surface, a flared side wall, a bottom flange, a handle, a handle brace, means to secure the handle to the flared side wall, a grease opening in the flared side wall, a flanged lip at the bottom of the grease opening, a grease catcher, and means to removably secure the grease catcher to the bottom flange; the grease opening is centrally located with respect to the handle, the flanged lip extends from the bottom of the grease opening into the grease catcher, and the grease catcher is centrally located with respect to the grease opening; and the means to removably secure the grease catcher includes two flanges with keyhole openings and two screws, one flange is connected to each side of the container of the grease catcher and the keyhole openings face in the same direction, and the two screws are secured to the bottom flange in a location so that they will be in alignment with the wide portion of the keyhole openings and so that when the grease catcher is removably secured to the bottom flange, the top of the grease catcher will be no higher than the base.

4,352,325
APPARATUS FOR PROCESSING WHOLE BEETS

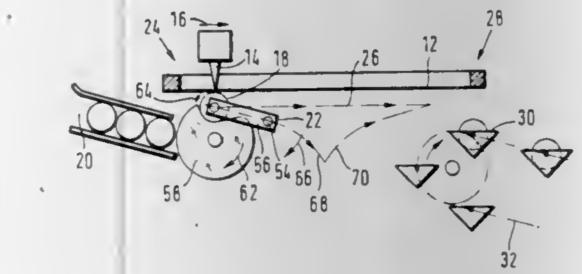
Edwin F. Pleus, 2001 Wisconsin Ave., Sun Prairie, Wis. 53590
Filed Oct. 10, 1980, Ser. No. 196,039
Int. Cl.^{3} A23N *3/00;* **A47J** *25/00*
U.S. Cl. 99—483 **16 Claims**



1. Apparatus for processing whole beets comprising:
(1) a plurality of beet cutting assemblies for cutting whole beets into a cylindrical plug member and a plurality of segment members;
(2) feeding means for feeding a supply of whole beets to said beet cutting assemblies;
(3) grading means for separating the plugs from the segments; and
(4) beet plug slicing means for slicing the cylindrical beet plugs into a plurality of circular disc-shaped slices.

4,352,326
SCREEN PRINTING MACHINE

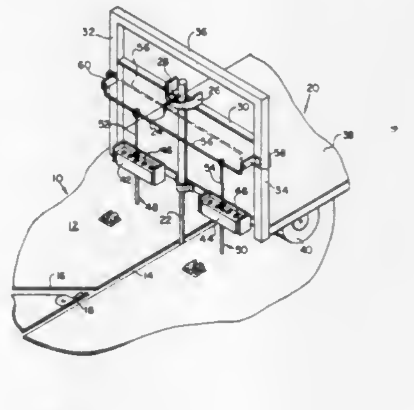
Wilfried Kammann, Bünde, Fed. Rep. of Germany, assignor to Werner Kammann Maschinenfabrik GmbH, Bünde, Fed. Rep. of Germany
Filed Aug. 4, 1980, Ser. No. 175,267
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932099
Int. Cl.^{3} B05C *17/04, 17/06;* **B41L** *13/18*
U.S. Cl. 101—123 **27 Claims**

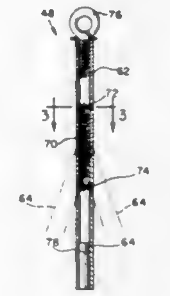


1. A screen printing machine comprising: means for mounting a screen printing stencil; a squeegee means; carrier means, comprising two carrier members, for engaging an article to be printed in two spaced regions thereof, with one carrier member being engageable with said article at one region thereof, and the other carrier member being engageable with said article at another region thereof spaced from said one region, means for reciprocating the carrier means in a path between a first station for receiving an article to be printed and a second station for discharge of the printed article; and a connecting member interconnecting the two carrier members and extending substantially parallel to the direction of the spacing between the two carrier members and substantially perpendicular to the path of the carrier means, the connecting member being arranged so that the paths of the carrier members are located between the connecting member and the stencil mounting means; and means for pivoting the connecting member so that in both said stations it is located in a position remote from a position below said article; and in which the axis of the pivotal movement of the connecting member moves with the carrier means as the carrier means moves in said path between the first and second stations.

4,352,327
TOW TRUCK SELECTOR PIN

Craig Sleep, Bangor, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.
Filed Jan. 23, 1978, Ser. No. 871,680
Int. Cl.^{3} B61B *12/00*
U.S. Cl. 104—170 **9 Claims**





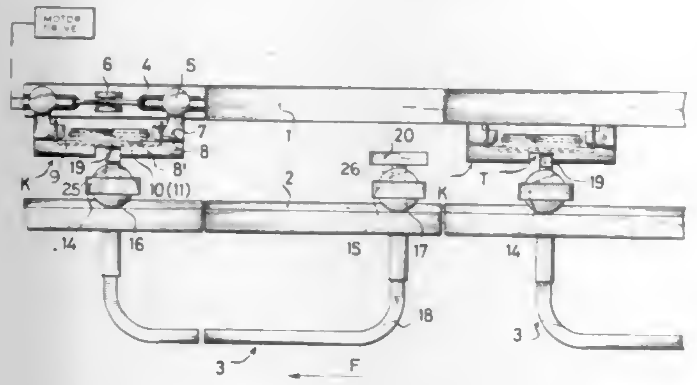
1. A selector pin comprising first and second tubes aligned end to end, a coil spring within said tubes, the outer diameter of said spring being closely adjacent to the inner diameter of said tubes, one end of said spring being anchored to said first tube and the other end of said spring being anchored to said second tube in a manner so that the spring is under tension and maintains the juxtaposed end faces in coaxial contact while permitting the second tube to pivot relative to the first tube when the second tube is subjected to a laterally directed force exceeding the spring tension, and means connected only to said first tube for enabling said tubes to be supported on a vehicle in an upright position.

4,352,328
COUPLING ASSEMBLY FOR OVERHEAD RAIL MATERIALS-TRANSPORT SYSTEM

Erwin Grube, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany
Filed Jun. 10, 1980, Ser. No. 158,126
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923890
Int. Cl.^{3} B65G *17/12;* **B61B** *10/02*
U.S. Cl. 104—172 S **6 Claims**

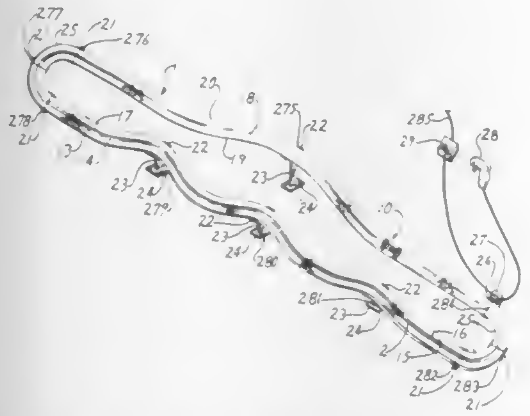
1. A materials-handling system comprising:
a multiplicity of carriers;
track means including at least one endless rail for supporting said carriers upon motion thereof along said rail;
drive means juxtaposed to said track means for driving said carriers along said rail;

entraining means including a plurality of spaced grippers on said drive means for at least temporarily securing at least some of said carriers thereto to form a train of carriers for the transport of goods;
coupling means on each of said carriers for engaging and forming locks with said grippers to connect the respective carriers to said drive means; and
uncoupling means including actuators on each of said carriers for engaging, upon the approach of a train of carriers toward a stationary carrier, said entraining means to release the lock formed between a gripper and the coupling means of a first carrier in such approaching train, whereby said stationary carrier may become entrained via the released gripper, said grippers each including a pair of juxtaposed elongated jaws extending in the direction of movement of said drive means and hingedly secured to said drive means for pivoting at least partially under the influence of gravity, about respective axes parallel to said actuators including separating means for spreading said jaws simultaneoulsy in opposite senses transverse to said direction, said jaws confronting one another transversely of said direction.



4,352,329
TOY ROADWAY SYSTEM

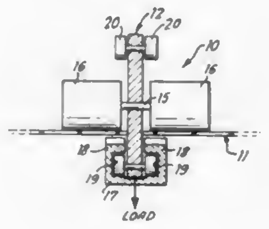
Warren N. Fetty, and Rosabelle M. Fetty, both of P.O. Box #306, Altadena, Calif. 91001
Filed Apr. 21, 1980, Ser. No. 142,001
Int. Cl.^{3} B60L *15/00*
U.S. Cl. 104—305 **21 Claims**

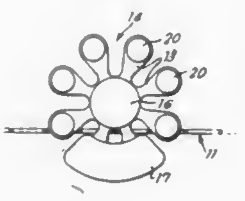


1. A roadway system comprising
a length of flat material defining a straight roadway section having an endless recess extending longitudinally of said material on the flat surface centerline thereof and an endless recess including inwardly protruding flanges spaced on each side of said centerline recess, said three recesses extending the length of said material on the same flat surface, said material being relatively rigid transversally of said material and relatively flexible longitudinally of said material for ease of abrupt bending;
two lengths of flat flexible conductive strips horizontally mounted flat and confined by said flanges in each of said two spaced recesses, each said strip being freely and independently slidable in its respective recess, each said strip exposing a flat unceasing electrical contact surface, said conductive strip material being relatively thin for ease of abrupt bending;
a length of material defining a curved roadway turn section having three endless recesses extending longitudinally of said material on the same flat surface thereof, a length of flat conductive strip horizontally mounted flat and confined by inwardly protruding flanges in two of said recesses, each said strip exposing a flat unceasing electrical contact surface, said curved roadway section having a non-curved short portion at each end thereof;
an attachable means inwardly directed along each side-edge of said straight roadway section and said curved roadway section for use when attaching roadway sections together, said means extending longitudinally the length thereof;
a connector means having inwardly directed means endwise engaging with said attachable means for joining two sections of said roadway in end to end conformity;
a support means having resilient clamping means for engaging with said side-edge attachable means of said roadway sections;
a vehicle movably mounted on the flat surface of said roadway;
a motor means mounted on said vehicle conductively linked to an electrical contact means;
an electrical contact means mounted on the underside chassis of said vehicle for establishing contact with said conductive strips for transmitting electrical power from said strips to said motor means;
a drive means mounted on said chassis having wheels with thread in frictional contact with said flat surface of said roadway;
a means for transmitting mechanical drive force from said motor means to said drive means;
a laterally movable skid-limiting means mounted rearwardly on said vehicle chassis engaging with said recess of said roadway;
means for transmitting electrical power from a source of power to said conductive strips; and
a guide means downwardly directed and forwardly mounted on said vehicle chassis engaging with two said recesses of said roadway.

4,352,330
APPARATUS FOR SUSPENDING, LOCATING, MOVING OR FASTENING LOADS

Alan W. Tupper, The Weavers House, Castle Combe, Wiltshire SN14 7HX, England
Filed Mar. 31, 1980, Ser. No. 135,443
Claims priority, application United Kingdom, Apr. 6, 1979, 7912213
Int. Cl.^{3} B61B *3/00, 12/02*
U.S. Cl. 104—96 **13 Claims**



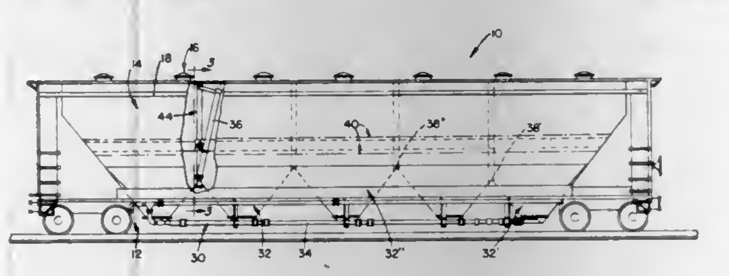


1. A system for locating a load from a support area, which system comprises:

(a) a longitudinally and laterally extensive network formed of a first series of rigid or semi-rigid, generally parallel elongate elements and a second series of rigid or semi-rigid, generally parallel elongate elements extending transversely of the elements of the first series, for location in a desired position for the attachment of a load thereto, and
(b) an attachment device comprising
(i) at least one rotatable wheel which is formed with recesses in its periphery to receive elements of the network, the recesses being evenly spaced around the wheel and adjacent recesses being separated by a projecting part of the wheel and the wheel being engaged with the network with the general plane of the wheel substantially perpendicular to the general plane of the network,
(ii) a location member mounted on the wheel at a peripheral part thereof, and on the side of the network remote from the axis of the wheel, the wheel and the location member having cooperating relatively rotatable surfaces allowing the wheel to rotate about its axis relative to the location member with said elongate elements of either series thereof being received, guided and passed in at least one of said recesses while being located with respect to the wheel by the location member,
(iii) means to attach a load to the location member, and
(iv) means mounted on the wheel, bridging a plurality of said elongate elements of the network to bear against and to ride over surface areas of the network on both sides of the wheel, on the side of the network remote from the location member,
the spacing of the elongate elements in both said series thereof being arranged to provide continuous engagement with the attachment device while said means mounted on the wheel continuously bear against and ride over the surface of the network remote from the location member.

4,352,331
RAILWAY HOPPER CAR

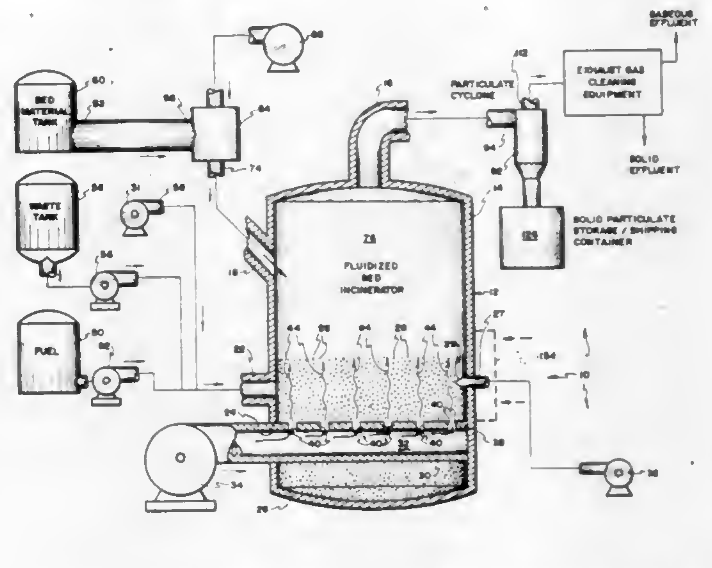
Arthur I. Anderson, St. Paul, and Louis J. Harvatin, Minneapolis, both of Minn., assignors to North American Car Corporation, Chicago, Ill.
Filed Apr. 29, 1980, Ser. No. 144,848
Int. Cl.^{3} B61D *7/00, 7/32;* **B65G** *53/04*
U.S. Cl. 105—248 **23 Claims**



1. A railroad car comprising:
an elongate shell having an upper section and a lower section;
extension means interposed between said shell upper and lower sections to increase the volume of the railroad car;
lateral support means extending laterally of said shell for supporting said extension means; and
longitudinal support means intersecting said lateral support means and contacting said shell at said extension means, and extending longitudinally of said shell for substantially preventing pressure established internally of said shell from being applied to said extension means.
20. A railroad car comprising:
an elongate shell having an upper section and a lower section;
extension means interposed between said shell upper and lower sections to increase the volume of the railroad car;
lateral support means extending laterally of said shell for supporting said extension means; and
longitudinal support means intersecting said lateral support means and contacting said shell at said extension means and extending longitudinally of said shell.

4,352,332
FLUIDIZED BED INCINERATION OF WASTE

Virgil F. Baston, Idaho Falls, Id., assignor to Energy Incorporated, Idaho Falls, Id.
Division of Ser. No. 51,777, Jun. 25, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 161,181
Int. Cl.^{3} G21F *9/14*
U.S. Cl. 110—346 **4 Claims**


GASEOUS EFFLUENT
EXHAUST GAS CLEANING EQUIPMENT
PARTICULATE CYCLONE
BED MATERIAL TANK
WASTE TANK
FUEL
SOLID EFFLUENT
SOLID PARTICULATE STORAGE / SHIPPING CONTAINER
FLUIDIZED BED INCINERATOR
28

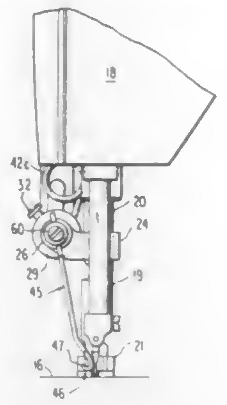
1. A method of treating waste including phosphorus without precipitating difficulties due to creation of phosphoric acid, coating of parts causing reduced efficiency and contamination of bed particles comprising the steps of:
introducing fuel into a vessel;
introducing air into the vessel adequate to support fluidization and combustion;
introducing waste comprising phosphorus material into the vessel;
providing the vessel with a fluidized bed material comprising calcium and a vapor space above the fluidized bed;
elevating the temperature of the fluidized bed to an elevated level within a range on the order of 750° C. to 950° C.;
elevating the temperature of the vapor space to an elevated level within a range on the order of 600° C. to 900° C.;
causing the waste to be placed in the bed simultaneously causing incineration of waste and formation of dry solid stable inert calcium phosphate.

4,352,333
SEWING MACHINE HAVING THREAD CUTTING DEVICE

Masayuki Yamazawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 17, 1980, Ser. No. 169,692
Claims priority, application Japan, Jul. 17, 1979, 54-098923[U]
Int. Cl.^{3} D05B *65/02*
U.S. Cl. 112—291 **8 Claims**

1. A sewing machine comprising a bed including a throat plate, an overhanging arm extending from said bed and terminating in a head, a needle bar mounted for reciprocatory movement in said head, a needle carried by said needle bar, a presser bar mounted for vertical reciprocatory movement in said head rearwardly of said needle bar, a presser foot pivotally mounted on said presser bar for holding a workpiece against said throat plate, a presser bar control lever means for moving said presser foot in the vertical direction with said presser bar between a raised position and a lowered position, cutting means for cutting off a needle thread and a bobbin thread simultaneously below said throat plate upon completion of a sewing operation

and thereafter locating said needle at its uppermost position and a thread cutting device for cutting off the free end of said needle thread at the beginning of a subsequent sewing operation.



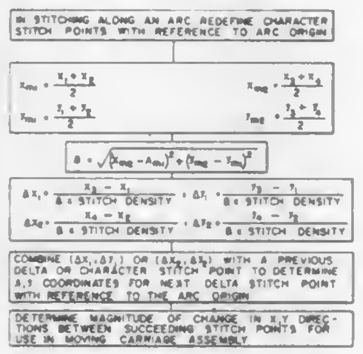
4,352,334
METHOD AND APPARATUS FOR STITCHING MATERIAL ALONG A CURVE

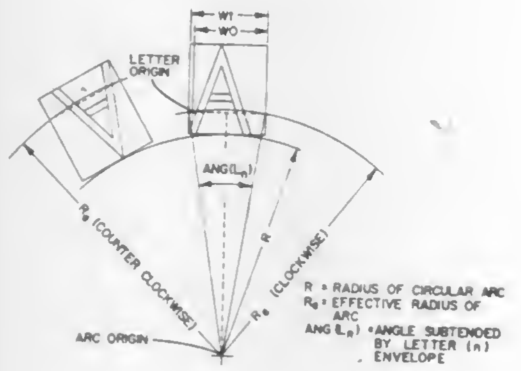
William R. Childs, 77 S. Adams, Apt. No. 1504, Denver, Colo. 80209, and Randall Melton, 24150 E. 160th Ave., Brighton, Colo. 80601

Filed Aug. 3, 1981, Ser. No. 289,825

Int. Cl.^{3} D05C *5/02*

U.S. Cl. 112—266.1 **7 Claims**


IN STITCHING ALONG AN ARC REDEFINE CHARACTER STITCH POINTS WITH REFERENCE TO ARC ORIGIN
STITCH DENSITY
COMBINE (ΔX1, ΔY1) OR (ΔX2, ΔY2) WITH A PREVIOUS DELTA OR CHARACTER STITCH POINT TO DETERMINE X,Y COORDINATES FOR NEXT DELTA STITCH POINT WITH REFERENCE TO THE ARC ORIGIN
DETERMINE MAGNITUDE OF CHANGE IN X,Y DIRECTIONS BETWEEN SUCCEEDING STITCH POINTS FOR USE IN MOVING CARRIAGE ASSEMBLY


W1
WO
LETTER ORIGIN
ANG(Ln)
R
Re (COUNTER CLOCKWISE)
Re (CLOCKWISE)
ARC ORIGIN
R = RADIUS OF CIRCULAR ARC
Re = EFFECTIVE RADIUS OF ARC
ANG (Ln) = ANGLE SUBTENDED BY LETTER (n) ENVELOPE

1. A method of stitching material along a curve using digital circuitry and memory means, comprising the steps of:

positioning the material to be stitched in a desired location relative to a threaded needle;

selecting one or more characters to be stitched along the curve from the memory means, all of the selected characters to be stitched being defined having a plurality of points in the memory means;

providing a magnitude of curvature of the curve along which each selected character is to be stitched;

determining the magnitude of an angle for each of the selected characters to be stitched, the magnitude of each angle of each selected character to be stitched determined using the magnitude of curvature;

sensing the position of the needle with respect to the material;

moving the material or the needle to determined locations when the needle is out of the material based upon a determination of stitch locations using each determined angle in order to stitch each selected character along the curve; and

stitching the material at the determined locations when the needle is in the material so that each selected character is stitched along the curve.

4,352,335
YACHT KEELS

Keith C. Sugden, 99 Ringley Rd. West, Outwood, Radcliffe, Manchester, M26 9DW, England

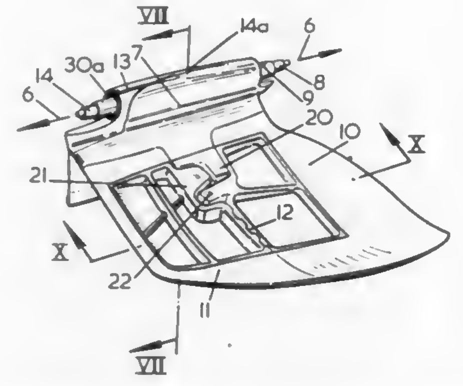
PCT No. PCT/GB78/00014, § 371 Date May 16, 1979, § 102(e) Date May 16, 1979, PCT Pub. No. WO79/00151, PCT Pub. Date Mar. 22, 1979

PCT Filed Sep. 14, 1978, Ser. No. 127,213

Claims priority, application United Kingdom, Sep. 16, 1977, 38676/77

Int. Cl.^{3} B63B *41/00*

U.S. Cl. 114—143 **13 Claims**



1. A keel, comprising: two mutually inclined fins forming a unitary structure which is mounted on a support secured to a hull such that the fin structure is pivotal about an axis extending longitudinally of the hull and through the support, and means for establishing the angular position of the fin structure relative to the support, said means for establishing the angular position of the fin structure relative to the support comprising locking means which are releasable such that the fin structure can pivot freely relative to the support and are engageable to lock the support and fin structure in any of a plurality of relative angular positions to which the fin structure has pivoted relative to the support, said support comprising a central hub pivotally supported by the hull, the fins being connected to the hub.

4,352,336
ADJUSTABLE CLEAT

Ramon Tostado, 915 W. Kensington Rd., Los Angeles, Calif. 90026

Filed Jul. 21, 1980, Ser. No. 170,590

Int. Cl.^{3} B63B *21/08*

U.S. Cl. 114—218 **8 Claims**

1. A cleat comprising:

a base;

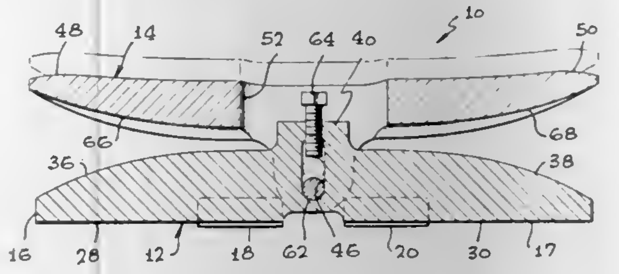
a plurality of feet on said base for attaching said base;

first and second arms on said base, said arms being directed away from each other, said feed being positioned below said arms so that when said feet are attached to a surface, said arms are spaced from the surface;

an opening through said base and between said arms in a direction transverse to said arms, said opening being a slot extending in a direction away from said feet in a direction substantially normal to said arms;

a head having first and second depending flanges thereon, said first and second flanges embracing said base on each side thereof at said slot through said base, a pivot pin extending through said flanges and through said slot opening so that said head is rockably mounted on said base on said pivot pin, an adjustment screw threadedly engaged in said base and extending into said slot to limit the opening of said slot to adjustably limit the upward motion of said pivot pin in said slot;

first and second horns on said head, said first and second horns being respectively positioned adjacent said first and second arms to respectively coact with said arms to clamp a line therebetween, said horns being divergent from said arms in a direction away from said pivot pin so that the jaws defined by said horns and said arms are capable of receiving and clamping lines of different sizes, so that lines of different sizes can be secured in said cleat and adjustment of said screw in said slot provides for cleat securement of a broad range of line size.



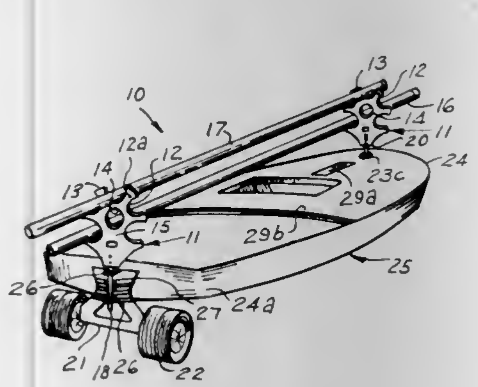
4,352,337
MAST AND BOOM CARRIER COMBINATION FOR SAILING VESSELS

Frank J. Wyoral, 7315 Lahser, Birmingham, Mich. 48010

Filed May 1, 1980, Ser. No. 145,840

Int. Cl.^{3} B63B *17/00*

U.S. Cl. 114—343 **5 Claims**



1. A mast and boom carrier for sailing vessels, comprising a pair of support members for removably supporting masts and booms, each of said support members having a body with a plurality of outwardly facing openings in a side peripheral edge thereof for receiving mast and boom portions; first means for removably attaching one of said pair of support members to a stern of a vessel; and second means for removably attaching the other of said pair of support members to a relatively forward portion of a vessel, each of said first and second means for attaching said pair of support members including a pin secured to each said body, said second means including a cylindrical holder receiving said pin and having a plurality of radially outwardly extending portions on the bottom end thereof, said radially outwardly extending portions extending radially outwardly different distances so as to enable said cylindrical holder to be accommodated in various diameters of mast openings in a sailing vessel.

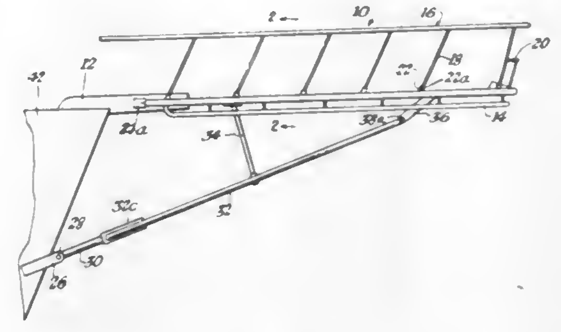
4,352,338
PULPIT

Gerald H. Wilson, 1712 SW. 24th St., Ft. Lauderdale, Fla. 33315

Filed Aug. 29, 1980, Ser. No. 182,807

Int. Cl.^{3} B63B *17/00, 17/04*

U.S. Cl. 114—364 **4 Claims**



1. A knock-down pulpit for a boat, comprising: a first brace connectable to the forward deck of the boat; a body support platform; a frame means for supporting said body support platform, said frame means removably connected to said first brace; a rail projecting upwardly from said frame means; means for removably connecting said rail to said frame means; a second brace connectable to the bow of the boat; a support means having one end removably connected to said second brace and the other end removably connected to said frame means, said frame means includes a first upper elongated U-shaped, and a second lower elongated U-shaped tubular member of lesser diameter than said first upper tubular member connected to said upper tubular member, said rail includes a third, elongated U-shaped tubular member with a plurality of support struts extending downwardly therefrom; and said means for connecting said rail to said frame means includes a plurality of rail sockets connected to said frame means; said rail sockets engaged with the free ends of said support struts; means for securing said support struts within said rail sockets.

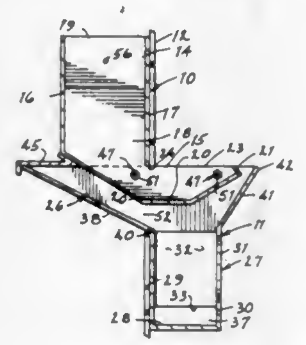
4,352,339
RABBIT FEEDER

Howard Lewis, 16820 Crowder Rd., SE., Tenino, Wash. 98589

Filed Jan. 23, 1981, Ser. No. 227,632

Int. Cl.^{3} A01K *5/01*

U.S. Cl. 119—18 **10 Claims**



10. A bunny feeder for mounting to a rabbit hutch below a rabbit creep feeder in which the creep feeder includes a feed trough with a front lip, the bunny feeder being mountable through an opening having a prescribed vertical dimension in an upright wall of a rabbit hutch, said bunny feeder comprising:

an upwardly open bunny feed hopper having a front wall and a back wall spaced apart by end walls;

a front edge along the bunny feed hopper front wall;

mounting means on the bunny feed hopper adapted to mount the creep feeder with its feed trough situated within the bunny feed hopper and with the front edge of the bunny feed hopper spaced forwardly of the creep feeder trough front lip;

a bunny feed trough communicating with the bunny feed hopper positioned below the front hopper edge and adapted to receive feed spilled over the lip of the creep feeder feed trough;

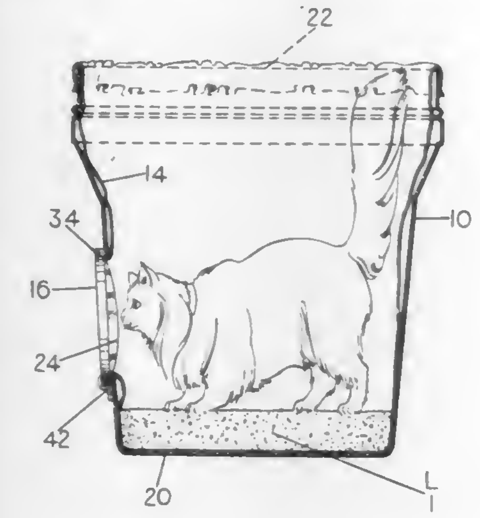
guide surfaces between the front and back walls of the bunny feed hopper; and

a cover slidably engaging the guide surfaces and movable thereon between a position partially covering the bunny feed hopper and another position to one side of the bunny feed hopper.

4,352,340

DISPOSABLE LITTER DEVICES

John R. Strubelt, 9025 Condor Ave., St. Louis, Mo. 63114
Filed Jul. 3, 1980, Ser. No. 165,503
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—1 **4 Claims**



1. An animal litter device comprising a shell and a cover, said shell including a flat base and an upwardly extending enclosing wall of substantial height, said upwardly extending wall being provided with an access aperture sized for passage of the animal therethrough, said access aperture being located in the wall intermediate the base and the upper periphery thereof,

a disposable bag disposed in the shell covering the base and the inner faces of the wall, and extending over the upper periphery thereof,

said lid being adapted for snug fitting engagement over the upper periphery of the shell whereby to hold the bag in place and also including a vent,

and clamping means for securing the bag along the margins of the access aperture.

4,352,341

WASTE HEAT BOILER AND STEAM SUPERHEATER SYSTEM

James R. Styslinger, Houston, Tex., assignor to The M.W. Kellogg Company, Houston, Tex.
Filed Apr. 6, 1981, Ser. No. 251,616
Int. Cl.³ F22D *1/00*
U.S. Cl. 122—7 R **10 Claims**

1. In a system comprising a waste heat boiler, a steam drum, a steam superheater, means for passing water through said waste heat boiler to produce steam, means for passing the steam to said steam drum, means for passing steam from said steam drum through said steam superheater to produce superheated steam and means for passing a process stream through the shell of said waste heat boiler, the improvement which comprises:

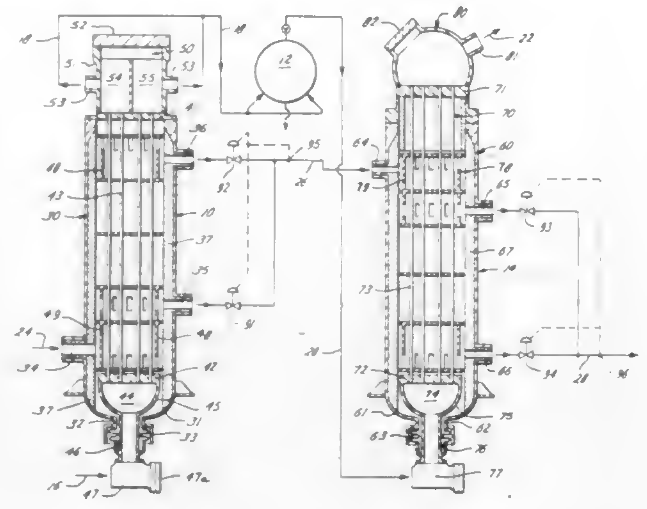
a waste heat boiler comprising

a shell having at the lower end a portion of reduced cross-section containing an expansion joint,

a tube bundle within said shell, the top of said bundle affixed to said shell and the bottom being a hollow floating head,

a head at the upper end of said shell having a plurality of steam outlets,

pipe means attached to said floating head, said pipe means extending through said lower end portion of reduced cross-section of said shell and attached to said shell below said expansion joint for introducing water to said tubes of said tube bundle,



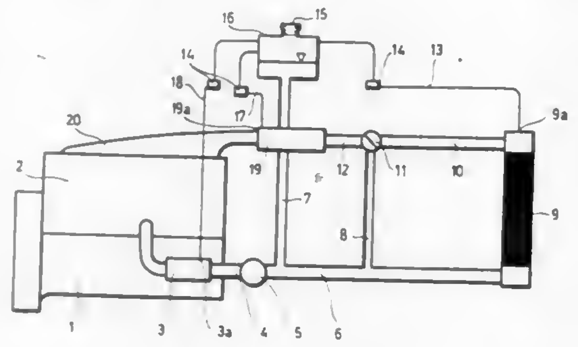
inlet means in said shell for passing a process stream in indirect cocurrent exchange with the water in said tubes, and

outlet means in said shell for removal of said process stream.

4,352,342

AUTOMATIC VENTILATION APPARATUS FOR LIQUID SYSTEMS WITH FORCED FLOW

Gyula Cser, and Arpad Pataki, both of Budapest, Hungary, assignors to Autoipari Kutato Intezet, Budapest, Hungary
Filed Nov. 29, 1979, Ser. No. 98,510
Claims priority, application Hungary, Nov. 30, 1978, AU 414
Int. Cl.³ F01P *3/22*
U.S. Cl. 123—41.54 **3 Claims**



2. An automatic venting liquid-coolant engine-cooling system for a combustion engine of a motor vehicle, comprising:

an engine having liquid-coolant spaces, means forming a circulating path for liquid coolant connected with said spaces and a pump in said path, said path having a plurality of geodetic high points at which air can accumulate;

an expansion tank having a fall pipe connected to said pump at an intake side thereof;

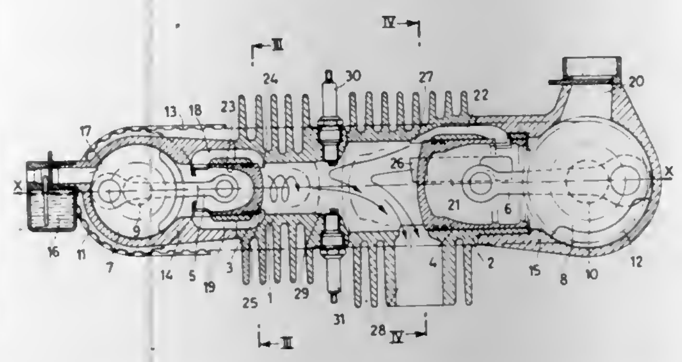
respective vent pipes each connecting one of said geodetic high points to said expansion tank; and

a respective variable flow throttle in each of said vent pipes provided with means affording substantially free flow of gas past the flow throttle to said expansion tank but generating a flow-throttling effect upon traversal by liquid during the forced displacement thereof by said pump, said housing being formed with a whirl-generating element imparting vortex flow to liquid traversing said chamber.

4,352,343

CONSTRUCTIONAL IMPROVEMENTS IN A TWO-STROKE OPPOSED PISTON ENGINE OPERATING WITH STRATIFIED CHARGE

Giovanni Batoni, Pontedera, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy
Filed Jul. 21, 1980, Ser. No. 171,235
Claims priority, application Italy, Nov. 27, 1979, 27599 A/79
Int. Cl.³ F02B *25/12*
U.S. Cl. 123—51 BA **2 Claims**

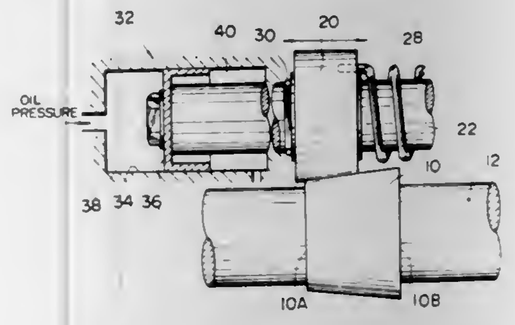


1. A two-stroke engine with opposed pistons moving in cylinders of different before having a common axis, which are each fed separately by a relative crankcase-pump, the cylinder of smaller bore being fed with richer fuel-air mixture, and the cylinder of greater bore being fed with less rich mixture, the two cylinders communicating to form a combustion chamber, wherein the two cylinders are connected by a bell-shaped portion constituting the combustion chamber, and transfer ducts for the richer mixture open into the cylinder of smaller bore tangentially at its lateral wall, wherein the lateral wall surface of said combustion chamber is a surface of revolution, having a generating curve which is formed substantially by arcs of a circle which are tangential to each other, said generating curve being inclined to the axis by an angle of about 3°–7° at that end which connects to the smaller bore cylinder forming a first surface whereas this angle is about 70°–80° at that end which connects to the other cylinder forming a second surface, wherein at least one spark plug is located substantially at a junction of the first and second surfaces.

4,352,344

VALVE OPERATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

Shunichi Aoyama, and Kazuyuki Miisho, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jun. 27, 1980, Ser. No. 163,910
Claims priority, application Japan, Jul. 3, 1979, 54-84273
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.18 **3 Claims**

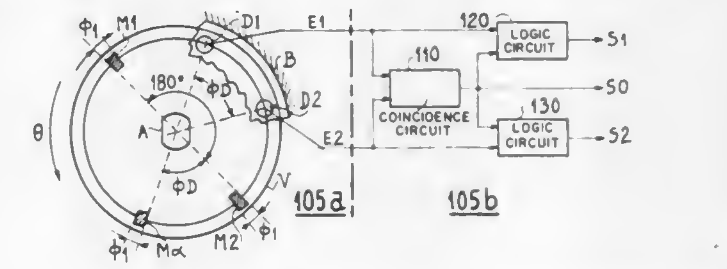


2. A valve operating mechanism of an internal combustion engine comprising a first cam rotatable about an axis in timed relation to the engine speed, a rocker arm operatively engaged with the valve of the engine and rockable to open and control closing of said valve, a second cam rockable about an axis parallel to the axis of said first cam and interposed between said first cam and said rocker arm to provide an operative connection therebetween, said first and second cams having mating cam faces which taper axially thereof, and means for shifting one of said first and second cams axially thereof relative to the other thereby varying the angular position of said second cam independently of that of said first cam in response to variation of the engine operating condition, in which said shifting means comprises a camshaft which is arranged axially movable and on which said second cam is journaled, a retaining ring attached to said camshaft to limit the axial movement of said second cam in one direction thereof, said second cam being pushed against said retaining ring by the effect of said tapered cam faces of said first and second cams and by a return spring so that said second cam is movable together with said camshaft, and a control device controlling the axial position of said camshaft and therefore of said second cam in accordance with the engine speed.

4,352,345

SHAFT POSITION SENSOR FOR INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN ELECTRONIC IGNITION SYSTEM

Christian Menard, and Philippe Gaches, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Sep. 25, 1979, Ser. No. 78,808
Claims priority, application France, Sep. 29, 1978, 78 27923
Int. Cl.³ F02D *5/16*
U.S. Cl. 123—414 **4 Claims**



1. Internal combustion engine fitted with M cylinders having an electronic ignition system including a position sensor for pistons comprising a set of M+1 conductive members, all identical, synchronously rotated by the engine's crankshaft, this set of conductive members comprising M members equally spaced from each other, and the +1 member being angularly displaced from one of said M members, two fixed adjacent detectors that supply identical electrical signals out of phase by an angle that is substantially larger than the maximum ignition advance angle of the motor, electronic means for processing the output signal of these two detectors: including first means for supplying a synchronisation signal for the cycle igniting the motor, a second means for supplying two representative synchronisation signals of the static advance and of the maximum dynamic advance during ignition.

4,352,346

ELECTRONIC CONTROL SYSTEM FOR A CARBURETOR

Hisashi Osano, Koganei, and Takuro Morozumi, Hachioji, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan
Filed Mar. 27, 1980, Ser. No. 134,612
Claims priority, application Japan, Mar. 28, 1979, 54-36411
Int. Cl.³ F02M *1/08*
U.S. Cl. 123—440 **7 Claims**

1. An electronic control system for a carburetor of an internal combustion engine having an induction passage means and an air-fuel mixture supply means, comprising:

a choke valve disposed in said induction passage means,

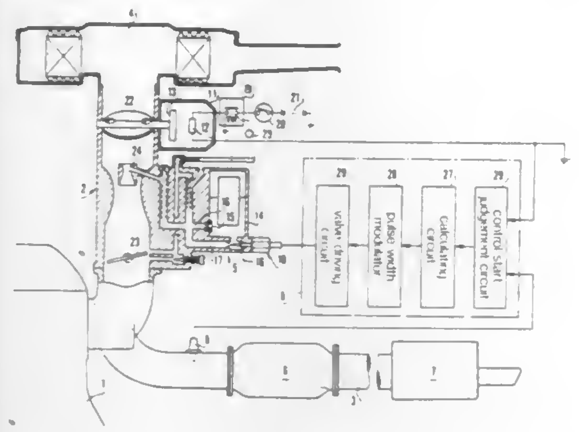
bimetal means for actuating said choke valve,

a heater for heating said bimetal means,

detecting means for detecting the content of exhaust gases,

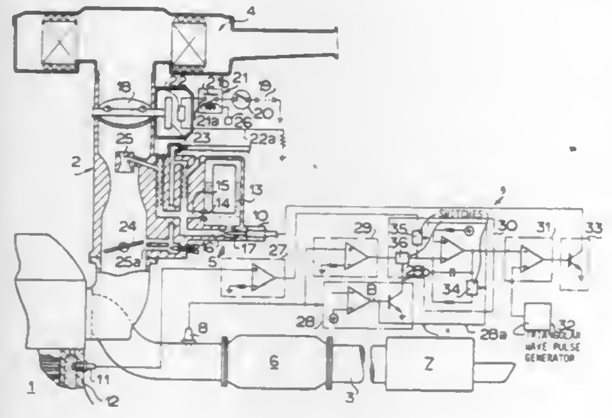
control means for controlling the air-fuel ratio of the mixture supplied by said air-fuel mixture supply means, electronic control means for actuating said air-fuel ratio control means,

said electronic control means for being responsive to current passing through said heater and to an output signal from said detecting means, respectively, such that the air-fuel ratio is controlled to a value providing satisfactory cold engine operating performance by said current passing through said heater, and is controlled to the stoichiometric air-fuel ratio by said output signal from said detecting means when the engine has been warmed-up, respectively.



4,352,347
ELECTRONIC CONTROL SYSTEM FOR A CARBURETOR

Hisashi Osano, Koganei, and Takuro Morozumi, Hachioji, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan
Filed Aug. 1, 1980, Ser. No. 174,379
Claims priority, application Japan, Aug. 2, 1979, 54-98916; Aug. 2, 1979, 54-98917
Int. Cl.³ F02M *7/18*
U.S. Cl. 123—440 **9 Claims**



1. An electronic control system for a carburetor of an internal combustion engine having an induction passage, engine cooling water and means for supplying an air-fuel mixture to said induction passage, comprising

means for converting the temperature of the engine cooling water to a first voltage signal,

a choke valve disposed in said induction passage,

bimetal means for actuating said choke valve,

means comprising a positive temperature coefficient heater for heating said bimetal means,

circuit means for producing a second voltage signal dependent on the resistance of said positive temperature coefficient heater,

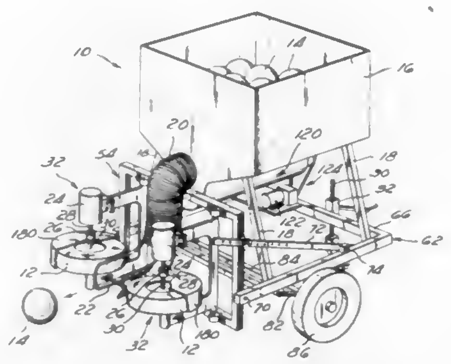
air-fuel ratio control means for controlling the air-fuel ratio of the mixture supplied by said air-fuel mixture supplying means,

a calculating circuit means for combining said voltage signals from said converting means and said circuit means, respectively, and

electronic control means for controlling said air-fuel ratio control means, said electronic control means being responsive to output electric signals of said calculating circuit means such that the air-fuel ratio is controlled to a value providing satisfactory cold engine and warming up operating performance.

4,352,348
SOCCER BALL PRACTICE MACHINE

Lawrence L. Griffith, 4720 Nambe Dr., Las Vegas, Nev. 89121
Filed Jun. 3, 1980, Ser. No. 155,950
Int. Cl.³ F41B *15/00*
U.S. Cl. 124—78 **3 Claims**



1. A soccer ball practice machine, comprising:

a pair of rotating wheels separated by a distance sufficient to engage a soccer ball between them and propel it toward a soccer player to facilitate the practice of soccer skills;

a hopper for containing a large number of said soccer balls;

guide means for conducting said soccer balls in said hopper from said hopper to said wheels; and

a pair of mounting members for individually mounting said wheels, said mounting members being rotatably mounted to provide means for selectively increasing or decreasing said distance between said wheels to accommodate soccer balls of various diameters;

a rod between said mounting members to provide means for adjusting the rotational position of said mounting members so that said wheels are separated by a distance sufficient to engage and propel said soccer balls of various diameters; and

tension means on said rod for (i) permitting said mounting members to spread apart in response to a larger soccer ball to increase said distance between said wheels by an amount sufficient to propel said larger soccer ball without damaging it, and (ii) automatically restoring said mounting members to their original position after said larger soccer ball has been propelled.

4,352,349
CONTROL CIRCUIT FOR AIR CONDITIONING SYSTEMS

Robert W. Yoho, 10606 49th St., North, St. Petersburg, Fla. 33520
Filed Nov. 14, 1979, Ser. No. 94,103
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 R **10 Claims**

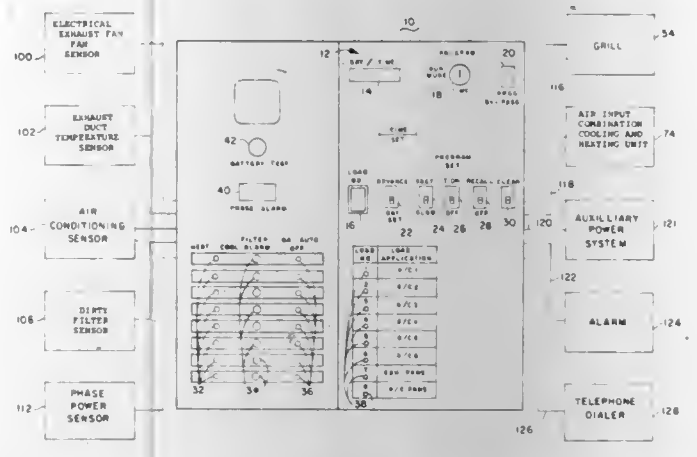
1. A control system for controlling the operation of a forced air input cooling and heating unit including an input fan which forces outside air into a building and for controlling the operation of a grill and an exhaust unit including an exhaust duct and an exhaust fan which vents vapors from the grill to the outside of the building, comprising in combination:

an exhaust fan sensor for sensing the electrical input to the exhaust fan;

a first temperature sensor disposed within the exhaust duct for sensing the temperature in the exhaust duct;

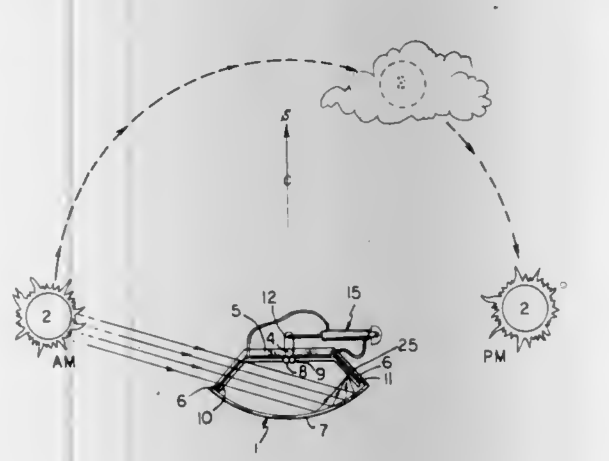
grill control means for controlling the operating state of the grill;

an interlock means connected to said exhaust fan sensor and said first temperature sensor and said grill control means for inhibiting the operation of the grill and the exhaust fan when said exhaust fan sensor senses the absence of electrical input to the exhaust fan or when said temperature sensor senses a temperature rise in the exhaust duct above a normal operating temperature upon inoperation of the exhaust fan.



4,352,350
MEANS FOR TRACKING THE SUN

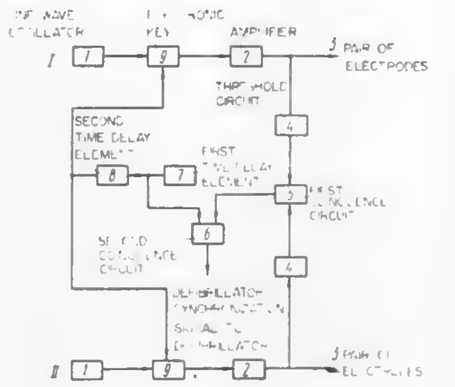
Carl W. Johnson, Rte. 3-Box 93, North Judson, Ind. 46366
Filed Nov. 19, 1979, Ser. No. 95,349
Int. Cl.³ F24V *3/02*
U.S. Cl. 126—425 **16 Claims**



1. An assembly supported for movement in order to accurately direct a solar collector to follow the motion of the sun, comprising a pair of heat responsive boiler means, a pair of heat responsive branch elements extending in an outward direction in relation to said heat responsive boiler means and operatively associated therewith, image means for focusing the rays of the sun simultaneously against both of said heat responsive boiler means for heating the latter when the assembly is correctly aimed at the sun, and control means responsive to any differentials in the heated conditions of said heat responsive boiler means whereby to impart motion to the assembly to cause said image means to follow the sun and thereby substantially continuously focus its rays simultaneously against both of said heat responsive boiler means.

4,352,351
ELECTRONARCOSIS APPARATUS

Igor V. Venin, ulitsa Pozharskogo, 2, korpus 1, kv. 9; Tatyana V Vidershain, ulitsa Valovaya, 19, kv. 6; Vladimir I. Rodionov, ulitsa Zayachkivskogo, 7, kv. 27; Andrei A. Smerdov, ulitsa Tudora, 14, kv. 6, all of Lvov, and Viktor Y. Tabak, ulitsa Vyshnyakovskaya, 33, kv. 115, Moscow, all of U.S.S.R.
Filed Sep. 24, 1980, Ser. No. 190,329
Claims priority, application U.S.S.R., Jan. 25, 1978, 2573685
Int. Cl.³ A61N *1/34*
U.S. Cl. 128—1 C **1 Claim**



1. Electronarcosis apparatus, comprising

first and second channels each having a sine wave oscillator having an output, an electronic key electrically connected to the output of said oscillator and having a control input and an output, an amplifier electrically connected to the output of said key and having an output, and a pair of electrodes electrically connected to the output of said amplifier;

a first threshold circuit having an input electrically connected to the output of the amplifier of said first channel and an output;

a second threshold circuit having an input electrically connected to the output of the amplifier of said second channel and an output;

a first coincidence circuit having a first input electrically connected to the output of said first threshold circuit, a second input electrically connected to the output of said second threshold circuit and an output;

a second coincidence circuit having a first input electrically connected to the output of said first coincidence circuit, a second input and an output;

a first time delay element having an output electrically connected to the second input of said second coincidence circuit; and

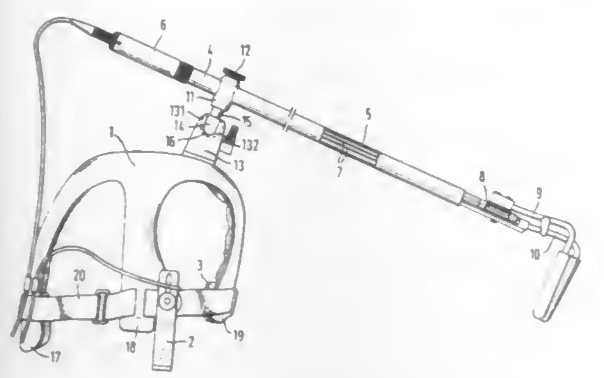
a second time delay element having an input electrically connected to the output of said first time delay element and an output electrically connected to the control inputs of said electronic keys, said second coincidence circuit providing at its output an output signal for triggering defibrillator synchronization.

4,352,352
HEAD GEAR MANIPULATOR FOR INVALIDS

Franz Janovsky, Flachsweg 6, Vienna A-1220, and Erhard Demmer, Weinberggasse 41, Vienna A-1190, both of Austria
Filed Apr. 23, 1981, Ser. No. 256,791
Claims priority, application Austria, May 13, 1980, 2564/80
Int. Cl.³ A61F *5/08*
U.S. Cl. 128—76 R **9 Claims**

1. A head gear manipulator for invalids, comprising a helmet, an arm carrying gripping means mounted on the helmet, electro-motor drive means operating the gripping means in response to muscle movements of an invalid wearing the helmet, wherein the helmet consists of a blank of thermoplastically deformable sheet material having a center portion and a plurality of arms radiating from the center portion, the arms

having free ends, and a longitudinally adjustable circular band mounted over the free arm ends and connecting the same, and



a mounting affixed to the center portion for holding the arm carrying the gripping means.

4,352,353
PROTECTIVE CLOTHING

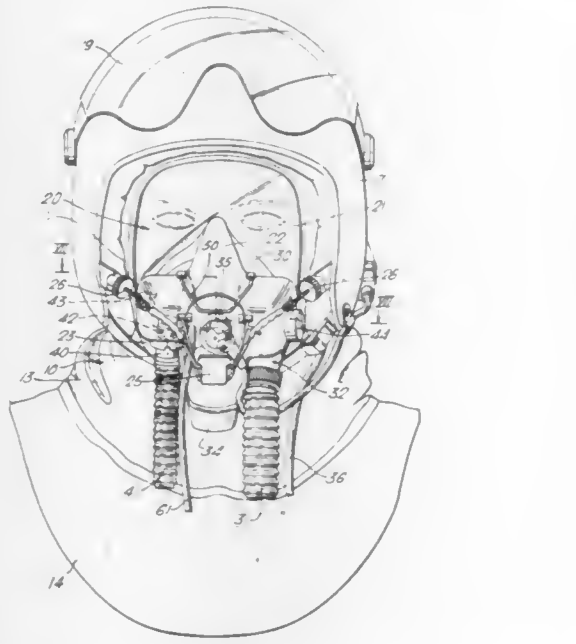
Colin B. Bolton, Fleet; Alan J. Miles, Camberley, and Robert E. Simpson, Fleet, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation-in-part of Ser. No. 795,624, May 10, 1977, abandoned. This application Jan. 31, 1980, Ser. No. 116,028

Claims priority, application United Kingdom, May 14, 1976, 20135/76

Int. Cl.³ A61M *15/00;* **A62B** *18/00*

U.S. Cl. 128—201.24 **47 Claims**



1. A respirator for wearing beneath a protective helmet and for protection against an undesirable substance in a local atmosphere and comprising

a hood with a neck aperture and made of a flexible material,
a visor,
said hood and said visor both being made of material impervious to the undesirable substance and attached one to another in a manner impervious to the undesirable substance to form a respirator assembly adapted to envelop and fit closely the head of a wearer,
said visor having a transparent visual portion for covering the visual field of a wearer and a breathing mask carrying portion recessed to accommodate and carry a breathing mask,
a breathing mask carried by said visor mask carrying portion,
means mounted on said visor for supplying purge gas to the interior of said respirator,
means for directing purge gas onto said transparent visual portion,
means for permitting egress of purge gas, and
seal means around the neck aperture for preventing atmosphere exterior thereto reaching the interior of said respirator assembly via a neck aperture thereof.

4,352,354
WINGED RETENTION NEEDLE

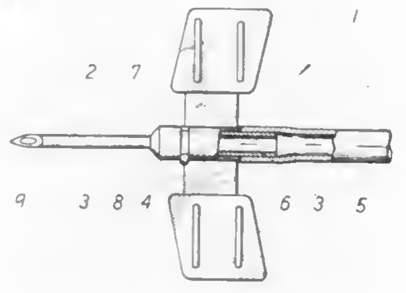
Yoshio Ujihara, Nara, Japan, assignor to Nissho Corporation, Osaka, Japan

Filed Mar. 4, 1981, Ser. No. 240,596

Claims priority, application Japan, Oct. 30, 1980, 55-155681[U]

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 R **4 Claims**



1. A winged retention needle comprising
a hollow needle having a beveled edge at its tip,
a hub made of a hard synthetic resin material for fixing and supporting the base of the hollow needle, the head of the hub having a larger diameter than the remaining portion,
a winged supporting cylinder made of a flexible synthetic resin material for rotatably and frictionally supporting the hub inserted thereinto, the rear end portion of the hub protruding through the winged cylinder to provide a fitting portion to be inserted into a flexible tube, and
a means composed of a set of a groove and a pin movable in the groove for restricting the rotation of the hub such that the hub can only be rotated 180° in the circumferential direction and the edge surface faces up or down when the pin is positioned at either end of the groove.

4,352,355
DIAPER WITH CONTOURED PANEL AND CONTOURED ELASTIC MEANS

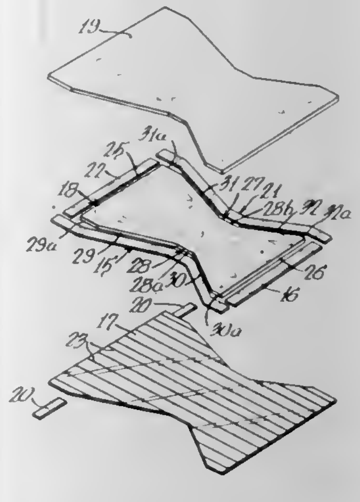
Frederick K. Mesek, and Virginia R. Mesek, both of Oak Forest, Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 892,628, Apr. 3, 1978, abandoned. This application May 5, 1980, Ser. No. 146,838

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **4 Claims**

1. A disposable diaper comprising: a moisture pervious facing layer adapted to be positioned adjacent the skin of an infant, a moisture impervious backing layer secured to said facing layer, an absorbent batt positioned between said facing and backing layers, said batt being smaller than said facing and backing layers and spaced inwardly from the ends and sides thereof, said batt having a length dimension greater than its width dimension, the end portions of said batt being wider than an intermediate portion thereof and said intermediate portion being offset longitudinally toward one end of the batt, said batt having longitudinal side edges including parallel side edge segments defining said intermediate portion and further outwardly extending side edge segments from opposite ends of said parallel side edge segments terminating in still further parallel side edge segments extending from the ends of said outwardly extending side edge segments and terminating at the ends of said batt, said still further parallel side edge segments at opposite sides of said batt being spaced equally from the longitudinal center line of the batt, said outwardly extending side edge segments forming straight lines at opposite sides of said batt being spaced equally from the longitudnal center line of the batt and disposed at an equal angle, whereby said batt is symmetrical about its longitudinal center line, and continuous longitudinally extending elastic means secured at each side of the diaper immediately adjacent the batt and parallel to a respective said longitudinal side edge, whereby the sides of said diaper are gathered and said diaper has improved fit between the thighs when applied to an infant.



4,352,356
URINARY INCONTINENCE GARMENT

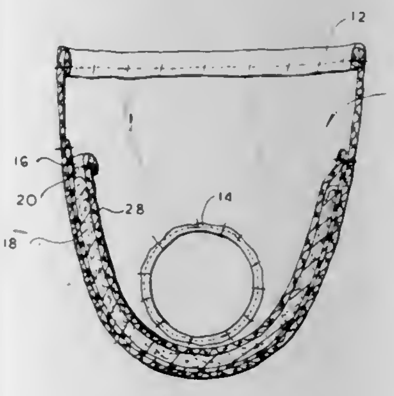
David P. Tong, Nuneaton, England, assignor to Humanicare International Inc., East Brunswick, N.J.

Filed Nov. 10, 1980, Ser. No. 205,105

Claims priority, application United Kingdom, Jan. 25, 1980, 8002635

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—288 **35 Claims**



1. A urinary incontinence garment in the form of a brief or the like comprising a body portion with leg openings and a pouch connected to the interior of said body portion extending between said leg openings, said pouch being adapted to receive an absorbent urinary incontinence pad therein, said body portion comprising a knitted fabric, said fabric comprising interlocked courses of a staple fiber yarn and of a bulked continuous filament yarn.

4,352,357
TIMED DIATHERMOCAUTERY COMPRISING A TIMER UNAFFECTED BY DISTURBANCES OF ELECTROMAGNETIC ORIGIN

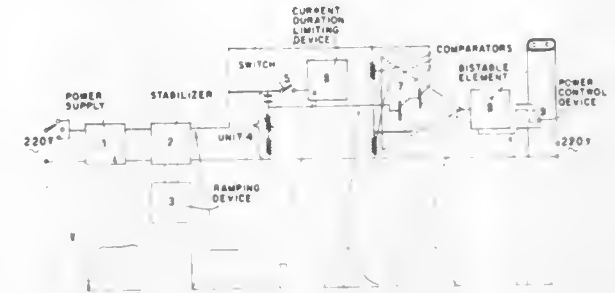
Sergio Capurro, Via Rimassa, 51, Genoa, Italy

Filed Jan. 16, 1980, Ser. No. 112,788

Claims priority, application Italy, Jan. 23, 1979, 12432 A/79

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.13 **6 Claims**



1. The combination of a timing device and a diathermocautery apparatus for use on a patient and including a power supply in which power is selectively supplied to a load from said power supply, said apparatus having a switch movable between an operate position and a non-operate position, said timing device being immune to electromagnetic disturbances and comprising:

comparator means for establishing threshold levels of a timing voltage above which said power is supplied to said load;
timer means for supplying said timing voltage to said comparator means, said timer means comprising a series connected capacitance and resistance in parallel across said power supply; and
current duration limiting means for activating said timer means when said switch is moved to said operate position and for limiting the amount of time that said timing voltage is supplied to said comparator means when said switch is in said operate position and for providing a set time before which said timer means may be reactivated;
whereby said timer means may not be accidentally reactivated prior to said set time because of dirty or faulty switch contacts or because of vibrations, and whereby electromagnetic disturbances may not affect the timing device as in electronic timing devices of the integrated circuit type.

4,352,358
APPARATUS FOR EFFECTING ANASTOMOTIC PROCEDURES

Jean P. Angelchik, 1728 W. Glendale Ave., Phoenix, Ariz. 85021

Continuation of Ser. No. 107,765, Dec. 28, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,205

Int. Cl.³ A61B *17/11*

U.S. Cl. 128—334 R **1 Claim**

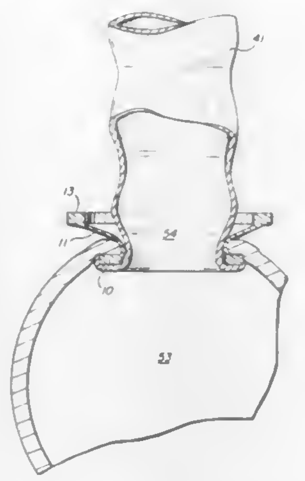
1. Apparatus for use in effecting anastomotic procedures, to join a first hollow body member at an opening in its wall to a second hollow member and establish fluid communication therebetween, said apparatus comprising:

(a) a deformable annular member having a generally ring-shaped peripheral portion and a central opening therein and having at least two operative modes, including:
  (i) a deformed mode in which said annular member is shaped to be inserted through the opening in the wall of said first hollow member and be completely received therewithin, and
  (ii) a normal mode in which said annular member is shaped to be retained against the inner surface of said first hollow body member around the opening in the wall thereof;
(b) a second hollow tubular member having at least one open end, joined at said open end thereof to said annular mem-

ber and dimensioned, when said annular member is retained with said first hollow body member, to extend from the interior of said first hollow body member, from the central opening in said annular member, to the exterior of said first hollow body member, to provide fluid communication between the interior of said first hollow body member and the interior of said second hollow member;

(c) a liquid-impermeable tubular elastic membrane with an unbroken continuous side wall, disposed concentrically around said second hollow tubular member and having one open end thereof attached to said annular member and dimensioned, when said annular member is retained within said first hollow body member, to extend from said annular member, through said opening in the wall of said first hollow body member, to the exterior of said first hollow body member; and

(d) means for radially tensioning said membrane to continuously sealingly engage the edge of the opening in the wall of said first hollow body member completely around the periphery thereof without suturing.



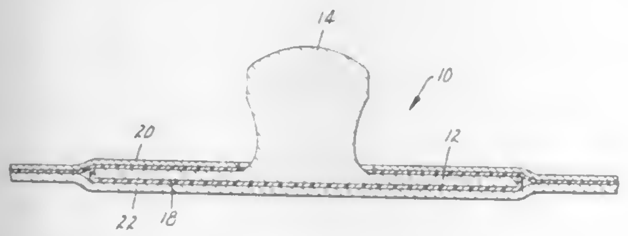
4,352,359
BIOMEDICAL ELECTRODE

Franklin C. Larimore, Shoreview, and Steven M. Heilmann, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 940,734, Sep. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 825,870, Aug. 19, 1977, abandoned. This application Jun. 2, 1980, Ser. No. 155,191

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **13 Claims**



1. In an essentially dry disposable biomedical electrode comprising an electrode plate having an upper surface and a lower body-contacting surface, said upper surface having means for electrically connecting said electrode plate to a lead wire, and a conductive material on said body-contacting surface of said electrode plate for enhancing electrical connection with the skin, the improvement wherein said conductive material comprises a dermally-nonirritating, conformable, cohesive, synthetic hydrophilic polymer containing at least 5 mole percent of monomer units containing a salt of a carboxylic acid, said electrode having an impedance of 500 Kohms or less at a frequency of 10 Hertz.

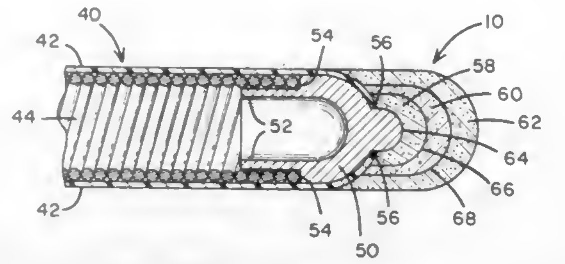
4,352,360
SEMICONDUCTOR LOW-THRESHHOLD ELECTRODE

Wendell L. King, North Oaks, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 30, 1981, Ser. No. 248,766

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **10 Claims**



1. A body implantable lead comprising:

a conductor having a proximal end and a distal end;

a sheath of body compatible material covering said conductor;

an electrical connector coupled to said proximal end of said conductor; and

an electrode coupled to said distal end of said conductor, comprising:

a metallic element of a metallic material coupled to said conductor;

a first intermediate element of a material having a resistivity greater than the resistivity of the material of said metallic element and less than 10^5 microohm cm, covering said metallic element; and

a distal element of body compatible material which is a semiconductor and has a resistivity in the range of 10^5 to 10^{10} microohm cm, covering said intermediate element.

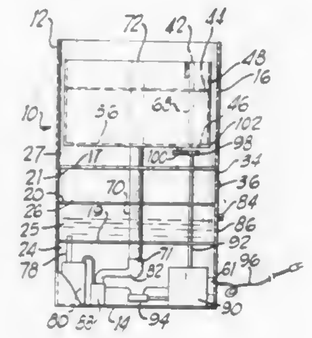
4,352,361
DENTAL APPLIANCE CLEANING DEVICE

Richard Chesler, 531 Main St., Roosevelt Island, N.Y. 10044

Filed Sep. 2, 1980, Ser. No. 183,226

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—58 R **14 Claims**



1. A dental appliance cleaning device which consists of:

(a) a housing having an open top and at least one chamber therein;

(b) a receptacle insertable into said chamber of said housing, said receptacle capable of receiving at least one dental appliance therein;

(c) spray means for cleaning said dental appliance within said receptacle with a cleaning fluid, said cleaning fluid being in liquid contact with said dental appliance; and

(d) means for rotating said receptacle within said housing.

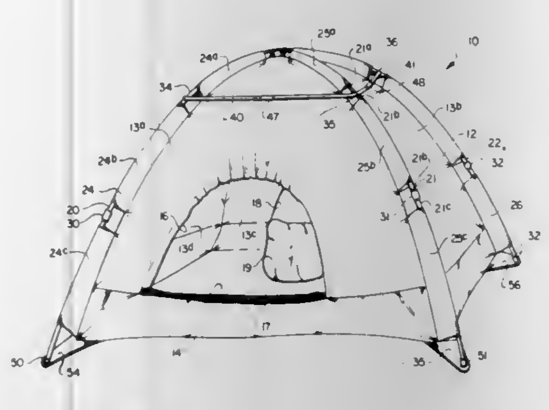
4,352,362
TENT APPARATUS AND METHOD

Philip T. Nichols, P.O. Box 151362, Salt Lake City, Utah 84115

Filed Sep. 10, 1980, Ser. No. 185,710

Int. Cl.³ A45F *1/16*

U.S. Cl. 135—3 E **20 Claims**



1. A tent comprising:

a fabric tent shell comprising a plurality of sidewalls, each sidewall joined to the adjacent sidewall in side-by-side relationship along a seam, and an integral floor structure joined to a lower edge of said sidewall;

web means mounted to the fabric tent shell;

a tab extending from the floor adjacent each web means, the tab being coplanar with the floor;

a foldable tent pole means secured to the web means;

coupling means for joining the upper ends of the tent pole means;

attachment means at the lower end of the tent pole means for attaching the tent pole means to each of said tabs; and

rib means extending transversely between each of adjacent said tent pole means, each of said rib means having sufficient length to bend said adjacent tent pole means outwardly.

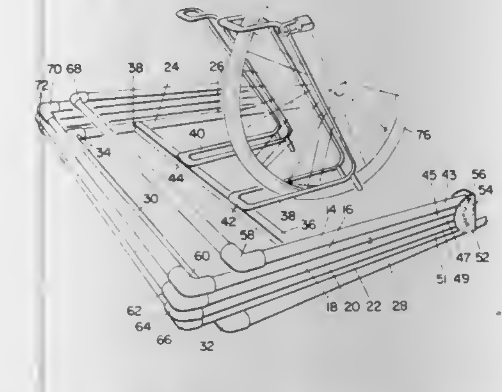
4,352,363
COLLAPSIBLE BICYCLE STORAGE ASSEMBLY

Ralph A. Wilson, 29500-4 Heathercliff Rd., Malibu, Calif. 90265

Filed Aug. 11, 1980, Ser. No. 177,112

Int. Cl.³ B62H *5/00;* **B62J** *19/00*

U.S. Cl. 135—7 **6 Claims**



1. A collapsible bicycle storage assembly comprising:

a frame structure including at least one bicycle support means for supporting bicycles in the upright position;

lock means associated with said bicycle support means for locking said bicycles to said frame structure;

collapsible cover means mounted on said frame structure and movable between a collapsed position, and a covering position for entirely covering and protecting said bicycles;

said frame structure including a horizontal base having two outwardly extending legs mounted at right angles to at least one cross piece, with at least one of said cross pieces having said bicycle supports mounted thereon;

said collapsible cover means including a cover means for protecting the bicycles, a plurality of cover supports, each having a first end hinged to one of said base legs and a second end hinged to the other base leg by hinge means whereby said cover supports may be moved between said collapsed position where said cover supports are adjacent each other collapsed on said frame structure and a covering position where said cover supports are at spaced locations to support said cover over said bicycles;

said frame structure and cover supports being made from lightweight plastic pipe;

said plastic pipe being releasably connected together by press fittings which are standard plastic pipe connectors;

said cover means being formed of lightweight flexible plastic sheet material; and

said assembly including means for removably mounting said cover means on said cover supports.

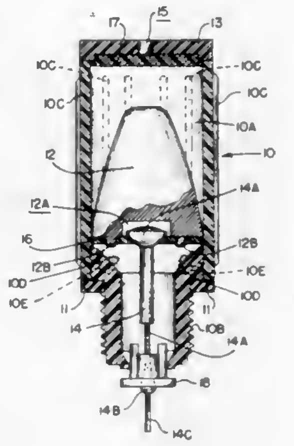
4,352,364
NONSPILL VENTED CLOSURE ASSEMBLY FOR STORAGE BATTERY

Joseph A. Orsino, Diamond Bar; Ernest R. Sawyer, Solana Beach, and Ronald J. Hollet, Glendora, all of Calif., assignors to Concorde Battery Corp., West Covina, Calif.

Continuation of Ser. No. 80,441, Oct. 1, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,358

Int. Cl.³ F16K *17/36*

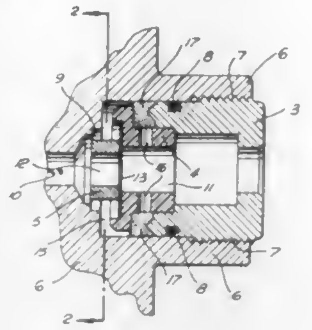
U.S. Cl. 137—43 **1 Claim**



1. A nonspill closure assembly for a wet cell storage battery comprising: a casing having an orifice at one end thereof and forming an annular valve seat around the orifice; a cover mounted at the other end of the casing having a vent hole therein; a tiltable lead weight supported in said casing, said weight having a cavity formed in the bottom thereof; a disc mounted on the bottom of said lead weight enclosing said cavity, said disc having an opening therein of a diameter less than the diameter of the cavity; a valve stem having a ball-like member formed on one end thereof, said ball-like member being positioned in said cavity and supported on said disc, with the portion of said disc surrounding said cavity forming a bearing surface for the ball, and with the stem extending through the opening in the disc; a valve member mounted on said arm in position to be drawn against said annular valve seat when the lead weight tilts away from its vertical position; and an hydrophobic porous filter mounted in said casing adjacent to the underside of said cover to prevent any liquid from leaking through the vent hole in said cover.

4,352,365
PRESSURE VESSEL SAFETY VALVE

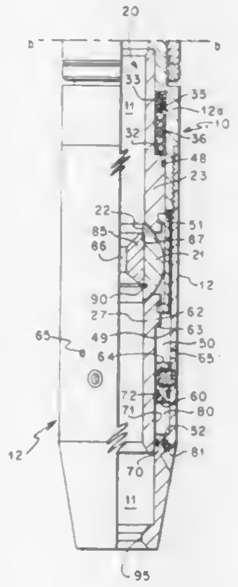
Hector O. M. Boccardo, Toorak, and Thomas W. Jolly, East Reservoir, both of Australia, assignors to The Commonwealth Industrial Gases Limited, Australia
Filed Oct. 27, 1980, Ser. No. 200,631
Claims priority, application Australia, Nov. 1, 1979, PE1165
Int. Cl.^{3} F16K *13/04*
U.S. Cl. 137—68 R **3 Claims**



1. A safety valve for a pressure vessel having an exterior and an interior, said safety valve comprising a plug assembly having a first end and a second end and adapted to be mounted on a vessel in an opening with the plug assembly first end on the vessel interior and the plug assembly second end on the vessel exterior; means defining a first port and a second port in said plug assembly, said first port being in fluid communication with said plug assembly first end and said second port being in fluid communication with said plug assembly second end; means defining a first passage providing fluid communication between said first port and said second port; a first member positioned in said first passage to normally obstruct fluid flow therethrough and rupturable in response to a selected pressure arising inside the vessel to permit fluid flow through said plug assembly via said first passage; means defining a second passage providing fluid communication between said first port and said second port; and a second member positioned in said second passage to normally obstruct fluid flow therethrough and fusible in response to a selected temperature to permit fluid flow through said plug assembly via said second passage.

4,352,366
VELOCITY OPERATED STANDING VALVE

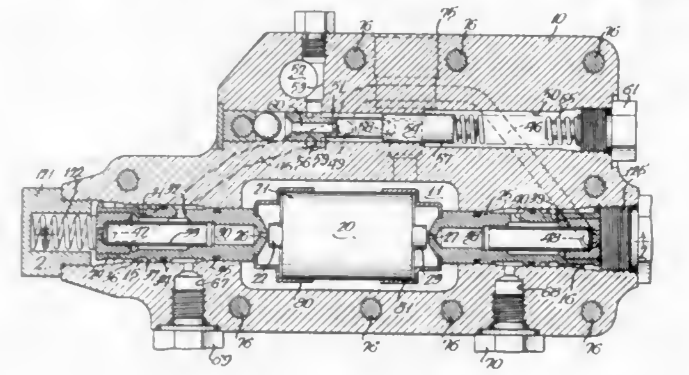
Ernest P. Fisher, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Feb. 5, 1980, Ser. No. 118,722
Int. Cl.^{3} F16K *13/04*
U.S. Cl. 137—71 **16 Claims**



1. A valve for controlling fluid flow through a well flow conductor, comprising:
a. a housing;
b. means for securing the housing to the flow conductor;
c. a longitudinal flow passage extending through the housingl;
d. a valve closure means, disposed within the longitudinal flow passage, having a first position blocking fluid flow therethrough, a second position allowing fluid communication through the longitudinal flow passage and the valve closure means, and a third position allowing fluid to communicate between the longitudinal flow passage and the exterior of the housing;
e. an operating sleeve, slidably disposed within the longitudinal flow passage, forming a part of the valve closure means to shift the valve closure means between its first and second positions;
f. means for biasing the operating sleeve to shift the valve closure means to its first position; and
g. means for forming a seal with the valve closure means preventing fluid flow in the other direction through the longitudinal flow passage when the valve closure means is in its first position and allowing fluid to communicate between the longitudinal flow passage and the exterior of the housing when the valve closure means is in its third position.

4,352,367
ELECTRO-HYDRAULIC CONTROL STRUCTURE

Frederic W. Pollman, Ames, Iowa, assignor to Sundstrand Corporation, Rockford, Ill.
Filed Jul. 18, 1980, Ser. No. 170,084
Int. Cl.^{3} F16K *31/04*
U.S. Cl. 137—82 **14 Claims**



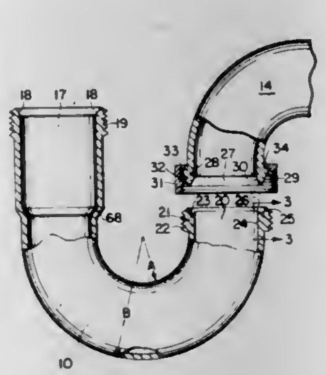
12. An electro-hydraulic control structure having a housing with a chamber and a bore at one side of the chamber, a nozzle movably mounted in said bore and having a nozzle port opening toward said chamber, a linear electric motor movably positioned in said chamber and having an armature extendable from an end of the motor and operable to a position to control the rate of fluid flow through the nozzle port, and a coupler in non-contacting relation with the housing and extending from an end of the motor and engageable with said nozzle to maintain a fixed distance between said motor and said nozzle.

4,352,368
PLUMBING APPARATUS

Gerald Landgarten, Framingham, Mass., assignor to Sanitary-Dash Manufacturing Company, Inc., North Grosvenor Dale, Conn.
Continuation-in-part of Ser. No. 865,972, Dec. 30, 1977, abandoned. This application May 4, 1981, Ser. No. 260,385
Int. Cl.^{3} F16K *9/00*
U.S. Cl. 137—247.45 **4 Claims**

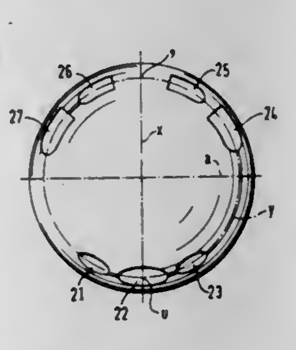
1. A tubular trap adapted to conduct liquids, interconnect an upstream, tubular, liquid-conducting member to a downstream, tubular, liquid-conducting member and retain a pool of trapped liquid when liquid is not being conducted therethrough:
said trap comprising a tubular structure having an inside and an outside surface and a generally U-shaped bend;

a first opening at one end; and
a second opening at the other end;
said first opening comprising a threaded outer annular rim having an inner annular bearing surface adapted to intimately contact a mating surface of an inlet opening of a downstream liquid conducting member; and an inner annular rim having an outer bearing surface adapted to intimately contact a mating surface of an inlet opening of a downstream liquid-conducting member; said inner bearing surface of said outer annular rim and said outer bearing surface of said inner annular rim together forming a generally V-shaped cross-sectional configuration;
said inner and outer annular rims of said first opening of said trap being situated with respect to one another as to permit said first opening of said trap member to be fastened to an inlet opening of a downstream member which comprises an annular inlet rim element having a diameter between the largest diameter of said inner annular bearing surface of said outer annular rim and the smallest diameter of said outer annular bearing surface of said inner annular rim of said trap,
whereby intimate contact between the inner surface of the outer annular rim of the trap with a mating surface of the inlet opening of a downstream liquid-conducting member, and intimate contact between the outer surface of the inner annular rim of the trap with a mating surface of the inlet opening of a downstream liquid-conducting member provides a double seal against leakage when said first opening of said trap is fastened to the inlet opening of a downstream member;
said second opening of said trap comprising a threaded annular rim having a diameter equal to the diameter of the threaded annular rim of said first opening so that both threaded annular rims are adapted to be engaged by fastening means of the same size.



4,352,369
MIXING VALVE FOR LIQUIDS

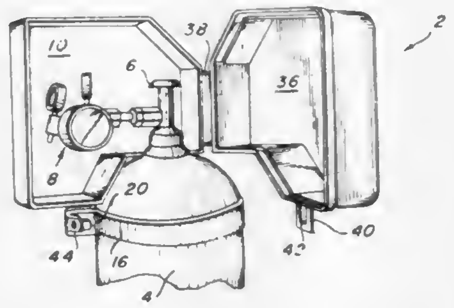
Werner Lorch, Hammergraben 84/1, D-7230 Schramberg, Fed. Rep. of Germany
Filed Jan. 31, 1980, Ser. No. 117,415
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904131
Int. Cl.^{3} F16K *11/08*
U.S. Cl. 137—270 **18 Claims**



1. A mixing valve for liquids, comprising:
a spherical plug having two sets of openings, one set having an even number of said openings and the other set having an odd number of said openings, the openings communicating with one another through the plug;
a valve housing having a valve face adapted to the spherical plug;
means for connecting a discharge pipe and two intake pipes for the liquids to be mixed through the valve face, to at least two of the openings of the spherical plug;
an operating rod connected to the spherical plug by means of which the plug is pivotable for varying the quantity of the outflowing liquid and is rotatable about an operating rod axis for varying the mixing ratio of the inflowing liquids, the sets of openings of the spherical plug being arranged substantially on the same latitude of the plug with respect to the operating rod axis but on opposite sides thereof, the openings of each set being bilaterally symmetrical with respect to a plane of symmetry passing through the operating rod axis and at right angles to the pivot axis; and,
an intermediate area on the side of the spherical plug having the even number of openings, traversed by the plane of symmetry and bounded longitudinally by the innermost openings of the even numbered set, the intermediate area being wider longitudinally than the internal diameter of one of the intake pipes issuing into the valve housing, whereby in a first set of operating positions the even numbered set of openings are inlet openings and the odd numbered set of openings are outlet openings, and in a second set of operating positions the even numbered set of openings are outlet openings and the odd numbered set of openings are inlet openings, such that when the spherical plug is displaced by 180° about the operating rod axis, the directions of rotational movement necessary for changing the mixing ratio are reversed.

4,352,370
PRESSURE VESSEL VALVE HOUSING

Steve Childress, P.O. Box 853, Richland, Va. 24641
Filed Oct. 16, 1980, Ser. No. 197,478
Int. Cl.^{3} F16K *35/00*
U.S. Cl. 137—382 **1 Claim**

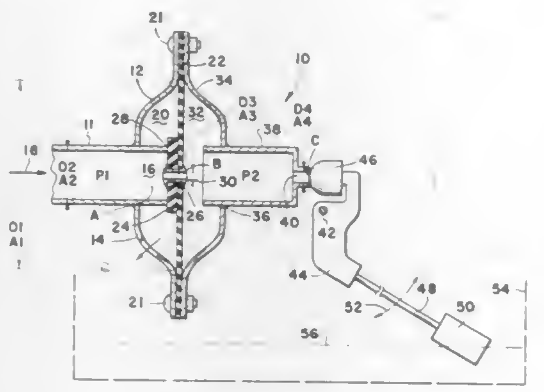


1. In combination a cylindrical pressure vessel having a valve on one end thereof, a housing for enclosing said valve, said housing comprising;
a strap embracing the cylindrical pressure vessel and comprised of two semi-cylindrical parts pivoted together at one end and having mating radially-outwardly extending ears on their other ends,
nut and bolt means for clamping said ears together,
a shell comprised of first and second mating shell parts, the first of said shell parts being affixed to one of the strap parts and extending upwardly therefrom, the second of such shell parts being pivotally attached to the first shell parts so as to swing between closed and open positions whereby to enclose and expose the valve,
the second of said shell parts having a projection rigid therewith and extending downward therefrom, said projection, in the closed position of said second shell part, being disposed in blocking position over the nut and bolt means such as to prevent unbolting thereof and in the open posi-

tion of such second said shell part being disposed in unblocking position with respect to said nut and bolt means, and lock means for releasably holding said second shell part in said closed postion.

4,352,371
LOW-HIGH FLOW RATE VALVE

William R. Walters, 910 W. Caddo, Cleveland, Okla. 74020
Continuation-in-part of Ser. No. 128,446, Mar. 10, 1980, Pat. No. 4,298,022. This application Apr. 8, 1980, Ser. No. 138,583
Int. Cl.³ F16K *31/18*
U.S. Cl. 137—414 **10 Claims**



1. A float-operated valve for controlling the flow of liquid from a conduit carrying said liquid under pressure, P1, to a vessel, comprising:

(a) a conduit carrying said liquid, terminating in a first flange of selected diameter D1, having a first control opening of D2, where D1 is large compared to D2; a second opening in said first flange;

(b) a flexible diaphragm of diameter D1 adapted to be clamped over said flange and to cover said first opening; said diaphragm flexible enough to have its first surface pressed against said first opening to close off flow through said first opening;

(c) a first small orifice of selected diameter D3 through the center of said diaphragm and having an area A3, from its first surface to its second surface, where D3 is small compared to D2;

(d) a second flange adapted to be clamped over said second surface of said diaphragm to said first flange, enclosing said diaphragm in a liquid tight seal; said second flange having an opening, and attached over said opening is a first end of a short second pipe;

(e) a second small orifice of area A4 closing off the second end of said short second pipe, and rigidly attached to said conduit, where A4 is larger than A3 the inside of said second flange is opened to the atmosphere through said second small orifice;

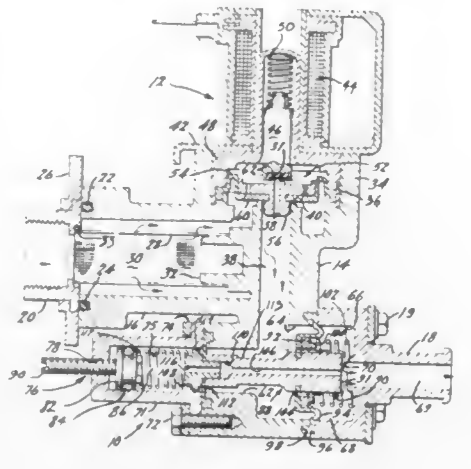
(f) float-operated closure means to vary the area of said second small orifice as a function of liquid level in said vessel; and in which

(g) the effective area of said second small orifice comprises at least two positions; at least one of said positions extends outwardly from said valve farther than the at least other of said positions;

said elastomeric closure tip moves toward said second small orifice, responsive to the rising of said float, to first contact a first portion of said small orifice to define at least one of said positions and because of the compliance of said closure tip, it is indented into a contact face of said closure tip and is closed; and with further movement of said closure tip the contact face closes a second portion of said second small orifice to define said at least other position; and as said portions of said second small orifice are successively closed, the area of said second small orifice is progressively reduced, to zero.

4,352,372
PRECISION FLOW CONTROL DEVICE

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 17, 1980, Ser. No. 207,110
Int. Cl.³ G05D *7/01*
U.S. Cl. 137—504 **21 Claims**



1. A flow control device, said device comprising:

(a) housing means, said housing means including structure defining,
  (i) a fluid inlet,
  (ii) a fluid outlet,
  (iii) a fluid chamber in fluid communication with said inlet and said outlet,
  (iv) a pressure compensating chamber,
  (v) a flow control orifice in the path of fluid flow from said fluid chamber to said fluid outlet;

(b) pressure responsive means movable disposed in said fluid chamber, said pressure responsive means including a valve member having an upstream portion in fluid communication with said compensating chamber, and a valve surface portion movable toward and away from said control orifice for throttling flow therethrough;

(c) first seal means dividing said fluid chamber into an upstream portion and a downstream portion;

(d) second seal means sealing between said valve member upstream portion and said pressure compensating chamber;

(e) said pressure responsive means further including means defining at least one flow restricting passageway for communicating fluid past said first seal means;

(f) means defining a passageway for communicating fluid pressure from said fluid chamber to said compensating chamber;

(g) means for biasing said valve member toward said control orifice; and

(h) said valve member movable in response to the net force from fluid flow therepast and said biasing means such that said valve surface portion is positioned relative to said control orifice for controlling flow therethrough to a predetermined rate.

4,352,373
DISC-REEL SOUND SUPPRESSOR

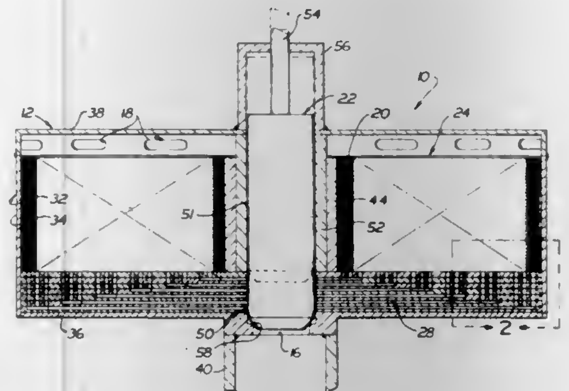
George Kay, Anaheim, and Alan Keskinen, Van Nuys, both of Calif., assignors to Vacco Industries, South El Monte, Calif.
Filed Aug. 21, 1980, Ser. No. 180,145
Int. Cl.³ F16K *47/08*
U.S. Cl. 137—561 A **16 Claims**

1. A sound suppressing fluid handling device for conducting a pressurized fluid relatively noiselessly through a substantial pressure drop, comprising:

a housing having fluid inlet and outlet ports and fluid passage communicating said ports;

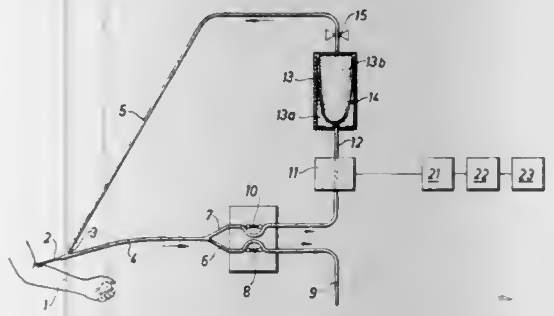
a sound suppressing reel positioned within and laterally spanning a longitudinal portion of said passage with the central axis of the reel aligned longitudinally of said passage portion comprising a relatively thin spiral, imperforate band having its adjacent turns disposed face to face laterally of said passage portion in fixedly spaced apart relationship to define laterally discrete passages between said adjacent turns; and

means integral with said band determining the spacing between said adjacent turns and forming a myriad of tortuous fluid energy dissipating flow paths extending through said discrete passages from one end of the reel to the other, said passages having inlet ends opening through the reel end adjacent said inlet port and outlet ends opening through the opposite reel end, whereby fluid flow occurs from said inlet port through said reel passages to said outlet passage port, and said means dissipate energy in said fluid to suppress cavitation noise and the like.



4,352,374
APPARATUS FOR DILUTING A CONCENTRATED SOLUTION

Ulf T. G. Nylen, Lund, Sweden, assignor to Gambro AB, Sweden
Continuation of Ser. No. 855,603, Nov. 29, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,873
Claims priority, application Sweden, Nov. 29, 1976, 7613374
Int. Cl.³ E03B *7/07*
U.S. Cl. 137—564.5 **5 Claims**



1. Apparatus for use in the continuous analysis of a mixture of a minor amount of a concentrated solution dissolved in a major amount of a diluent comprising

a housing including adjacent first and second chambers separated from each other by a movable flexible wall membrane so that liquid in said first chamber cannot enter said second chamber, said second chamber including said diluent and said first chamber adapted to receive said mixture, said movable flexible wall membrane being adapted to move solely in response to said mixture being supplied to said first chamber so as to increase the volume of said first chamber and simultaneously decrease the volume of said second chamber, thereby expelling a proportionate amount of said diluent therefrom so that said diluent may be utilized to produce said mixture,

supply means for supplying said mixture produced from said diluent to said first chamber, the total amount of said diluent comprising a predetermined fluid amount,

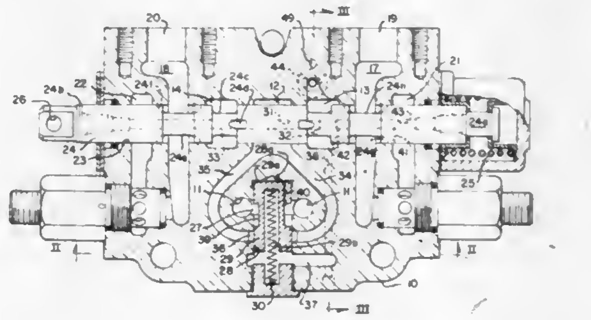
concentrated solution supply means for supplying said concentrated solution at a predetermined rate,

mixing means for mixing said diluent expelled from said second chamber with said concentrated solution supplied by said concentrated solution supply means so as to provide said mixture to be supplied to said first chamber, and

removal means for withdrawing a portion of said mixture from said supply means at a rate proportional to said predetermined rate, whereby said predetermined fluid amount remains substantially constant.

4,352,375
CONTROL VALVES

Arthur J. Williams, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio
Filed Apr. 14, 1980, Ser. No. 140,173
Int. Cl.³ F15B *13/08*
U.S. Cl. 137—596.13 **16 Claims**



1. In a multiple section control valve bank, a control valve working section and an inlet section that are operatively connected to provide smooth proportional metering control over a wide band of operating pressures and simultaneous metering operation of two or more fluid actuated devices from a single fluid pressure source, said control valve working section having a pressure fluid inlet port, a pressure inlet chamber spaced from and connected to said inlet port, check valve means between said inlet port and inlet chamber, first and second work ports adapted to be connected to a fluid actuated device, first and second work chambers connected to said ports and spaced on opposite sides of said inlet chamber, first and second exhaust chambers on opposite sides of said work chambers from the inlet chamber, a pair of metering and logic chambers with one chamber on each side of the inlet chamber between the inlet chamber and the work chambers, a main bore extending through and interconnecting all of said chambers, a valve element movable in said bore from a neutral position to first and second work positions for selectively connecting said chambers and establishing fluid communication therebetween whereby in a work position fluid flows from the inlet port through said metering and logic chambers to one of said work ports, said inlet section having an inlet port adapted to be connected to a source of fluid pressure, an outlet port and chamber connected to said inlet port and to a valve section inlet port, an exhaust port, a spaced by-pass chamber connected to said exhaust port, and a signal chamber between said exhaust port and by-pass chamber, a bore extending through and connecting said chambers in said inlet section, a valve member movable in said bore between said signal chamber and said by-pass chamber effective to control fluid communicating from the inlet to the outlet port and being movable to a by-pass position by-passing fluid from the inlet through the by-pass chamber to said exhaust port, biasing means opposing the movement of said valve member to said by-pass position, a connection between said outlet port of said inlet section and said inlet port of said control valve section delivering fluid therebetween, logic means connecting the signal chamber of said inlet section and a metering and logic chamber of said control valve whereby the pressure in said signal chamber is

varied in accordance with the difference between the pressure in the inlet port of the inlet section and the fluid pressure at said metering and logic chamber to vary the biasing means opposing movement of said inlet section valve member whereby the flow of fluid from the inlet port to the outlet port of the inlet section is varied by by-passsing fluid.

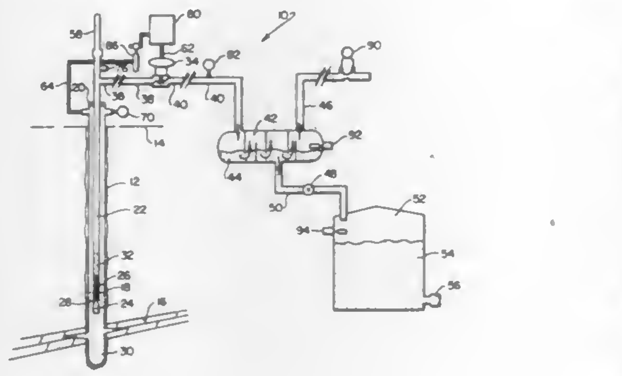
4,352,376
CONTROLLER FOR WELL INSTALLATIONS

William L. Norwood, Columbus, Ohio, assignor to Logic Controls Corp., Converse, Tex.

Filed Dec. 15, 1980, Ser. No. 216,781

Int. Cl.^{3} F21B *34/16*

U.S. Cl. 137—624.15 **45 Claims**



35. A controller for use in the control of well installations wherein a control valve regulating the flow of fluid hydrocarbon is selectively actuated between on and off states in response to corresponding control inputs thereto and wherein operational parameter monitoring devices are actuable to provide external signals, comprising:

display means selectively energizable to provide visible digital characters representative of select components of time;

manual input means selectively actuable to provide numeric output conditions, each representing a number and further actuable to provide a delay output condition;

terminal means connectable for reception of said external signals as state change inputs;

control circuit means responsive to said manual input means numeric output conditions for deriving actuation signals defining selectively timed said on and off states, responsive to a said delay output condition and a subsequently asserted said numeric output condition to define a select delay interval;

said control circuit means being responsive to a said external signal state change input and to a delay output condition when occurring prior to said external signal for deriving a said actuating signal following an interval of time corresponding with said select delay interval; and

valve means responsive to said actuation signals to derive said control inputs.

4,352,377
COMPRESSOR DISCHARGE VALVE

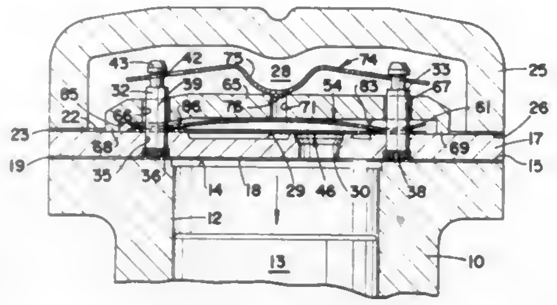
Jack F. Fritchman, Cullman, Ala., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jul. 27, 1981, Ser. No. 287,354

Int. Cl.^{3} F16K *15/14*

U.S. Cl. 137—851 **9 Claims**

1. A discharge valve for a refrigeration compressor comprising a valve plate defining a substantially flat, planar surface, a single discharge port in said valve plate, said port defining a valve seat coplanar with said valve plate surface, a flat, elongated valve reed having first and second ends, said valve reed being normally in contact with said valve plate surface and in sealing engagement with said valve seat, said valve reed being positioned so that said valve seat is closer to said second end that to said first end, a valve spring substantially coextensive with and overlying said valve reed, said valve spring being of sheet material with the middle portion being bowed upwardly away from said valve reed and with the ends in abutting engagement with said valve reed, and a stop member fixedly mounted with respect to said valve plate and having a stop surface overlying said valve spring and in abutting engagement with said bowed portion of said valve spring, the portion of said stop surface adjacent said second end of said valve reed being spaced further from said valve plate surface than the portion of said stop surface adjacent said first end of said valve reed.



4,352,378
RIBBED CONSTRUCTION ASSEMBLED FROM SHEET METAL BANDS FOR IMPROVED HEAT TRANSFER

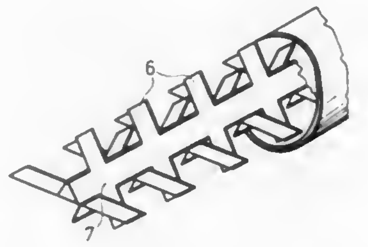
György Bergmann; Mihaly Horvath; György Palfalvi; Gabor Tomcsanyi; Gyula Kovacs, all of Budapest, and Kardy Laszlo, Jaszbereny, all of Hungary, assignors to TRANSELEKTRO Magyar Villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary

Filed Jul. 16, 1980, Ser. No. 169,318

Claims priority, application Hungary, Jul. 16, 1979, EE 2679

Int. Cl.^{3} F28B *3/02*

U.S. Cl. 138—38 **11 Claims**



1. In a heat exchanger pipe, a ribbed construction for heat transfer mounted in said heat exchanger pipe comprising at least three metal bands adjoining one another and each having a plurality of projecting teeth defining indentations therebetween, the projecting teeth of one adjoining metal band extending into said indentations of another adjoining metal band, said metal bands defining a longitudinal central channel in said pipe extending the length of the bands.

4,352,379
PRESSURE VESSEL TUBE SEALING AND SUPPORT METHOD

Gordon C. Larson, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 784,993, Apr. 6, 1977, Pat. No. 4,290,543. This application Apr. 20, 1981, Ser. No. 255,913

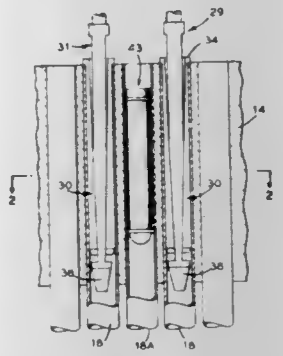
Int. Cl.^{3} F16L *55/18*

U.S. Cl. 138—97 **4 Claims**

1. A method for sealing a leaky tube disposed in a pressure vessel, the tube being one of a plurality of fluid conveying tubes whose ends are connected to tube sheet means arranged transversely within the pressure vessel, comprising the steps of:

inserting explosive activated plugs into the ends of the leaky tube,

inserting support plugs into the ends of tubes adjacent to the leaky tube,



detonating the explosive to fix the activated plugs to the surrounding tube walls thereby sealing the ends of the leaky tube, and

removing the support plugs from said adjacent tubes.

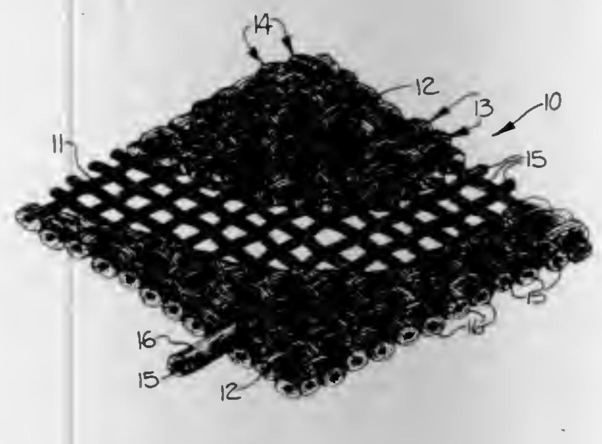
4,352,380
DECORATIVE SHEETING FABRIC

James G. Owen, and John M. Grimes, both of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Filed Jul. 22, 1980, Ser. No. 171,250

Int. Cl.^{3} D03D *15/00, 15/06*

U.S. Cl. 139—426 R **13 Claims**



1. A decorative woven sheeting fabric characterized by having relatively open, sheer areas of an appearance contrasting with adjacent, substantially heavier areas to define a patterned effect in the fabric, said fabric comprising warp and weft yarns of corespun construction interwoven with one another to form a substantially uniform woven fabric construction of a weight of about 3.7 to about 4.4 ounces per square yard, each of said corespun warp and weft yarns having a continuous multifilament core portion and having a sheath portion formed of staple fibers helically wrapped about the core portion to substantially surround and encase the same, the portions of the corespun warp and weft yarns which extend throughout said sheer areas having the multifilament core portions thereof exposed and being substantially devoid of sheath fibers and thus being smaller than adjacent portions of the yarns in said heavier areas, and the sheer areas in said fabric thus being thinner than the adjacent heavier areas to provide further contrast with the adjacent heavier areas.

4,352,381
TOOL HEAD AND HANDLE INTERCONNECTION

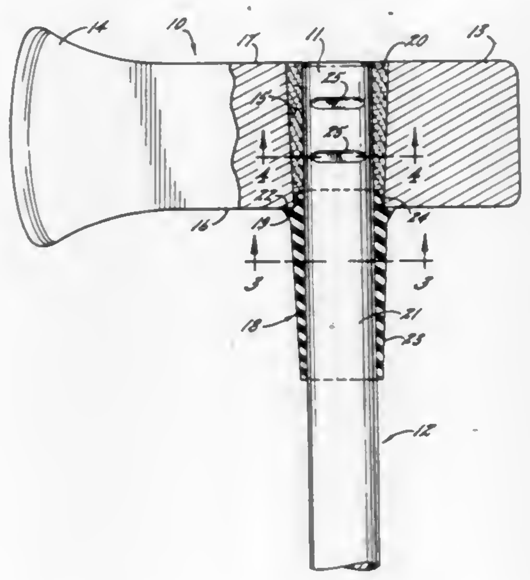
Michael A. Provi, Rockford, Ill., assignor to Dasco Products, Inc., Rockford, Ill.

Filed Aug. 25, 1980, Ser. No. 181,090

Int. Cl.^{3} B25G *3/34;* **B21H** *7/06*

U.S. Cl. 145—2 R **3 Claims**

1. In a tool having an elongated handle and a working head attached to one end portion of the handle, the combination of, a bore of preselected size extending through said head from the lower side thereof to the upper side, said end portion being smaller in cross section than said bore and projecting into said bore from said lower side of said head, a sleeve made of a resilient and flexible material and having a cross section generally similar to the cross section of said handle with the natural internal cross section of the sleeve being smaller than the cross section of said handle adjacent said end portion, said sleeve being stretched over said handle and disposed immediately below said end portion with the resiliency of the sleeve holding the latter in place on the handle, a flange formed on the upper end portion of said sleeve and having an upwardly facing surface engaging said lower side of said head and being larger than said bore around the entire periphery thereof to seal the lower end of the bore, an extension formed on said sleeve above said flange and projecting into said bore, said extension being tapered upwardly and inwardly from a base portion adjacent said surface on said flange with the natural cross section of said base portion being larger than the cross section of said bore and with the cross section of the upper portion of the extension being smaller than the cross section of the bore, said base portion of said extension being compressed as said head is placed on said end portion with the lower side of the head abutting said upwardly facing surface on said flange, said surface and said base portion of said extension cooperating to position said head properly on said handle in both the horizontal and vertical planes and to center said end portion in said bore, and an adhesive filling the space in said bore around said end portion of said handle.



4,352,382
TIRE PROTECTION CHAIN

Erhard A. Weidler, Aalen-Unterkochen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Aalen, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,435

Claims priority, application Switzerland, Jul. 26, 1979, 6907/79

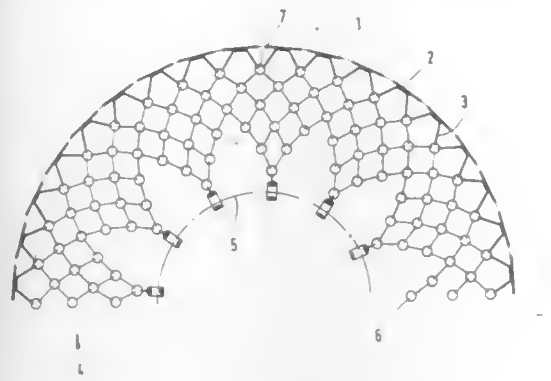
The portion of the term of this patent subsequent to Mar. 19, 1998, has been disclaimed.

Int. Cl.^{3} B60C *27/00*

U.S. Cl. 152—189 **8 Claims**

1. A tire protection chain with plate-shaped components which cover the tread of the tire to be protected and are connected, at least at their ends located on the outside of the tire, to a chain network including horizontal and vertical chain links covering the sidewall of the tire, the chain network (**4**) being provided with a number of overload safeguards (**7**, **8**, **9**, **14**, **18**, **22**) which are located at points intended for some of the

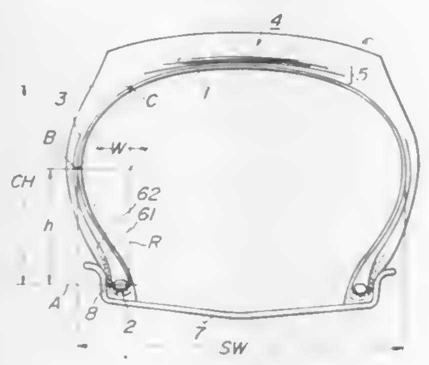
horizontal or vertical chain links and form a parting seam which, when the chain network is overloaded, opens without



fragments being released, before the ultimate strength of the horizontal or vertical chain links (3,6) is reached.

4,352,383
HEAVY DUTY PNEUMATIC RADIAL TIRE

Kenji Matsumoto, Kodaira, and Yasuo Suzuki, Akigawa, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1981, Ser. No. 277,374
Claims priority, application Japan, Jul. 2, 1980, 55-89257
Int. Cl.^{3} B60C *3/00, 9/08*
U.S. Cl. 152—352 R **1 Claim**



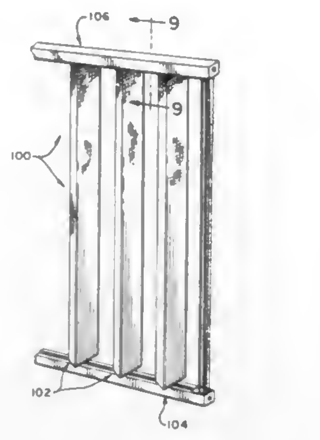
1. In a heavy duty pneumatic radial tire having a carcass consisting of at least one cord ply, which is arranged in the substantial radial plane of the tire, the outer periphery of said carcass being surrounded with a belt consisting of at least 2 metal cord layers, the cords of which are inclined at a relatively small angle with respect to the equatorial plane of the tire and crossed with each other, to reinforce rigidly just under the tread and to form a reinforced crown portion; and reinforced bead portions at both ends of the carcass, each of said reinforced bead portions being formed by turning up the end portion of the carcass ply around the bead core from the inside to the outside together with a rubber stock arranged between the bead core and the carcass ply; and said bead portions being assembled on a rim having a flange rising substantially perpendicular to the rotating axis of the tire, the improvement comprising said tire having, in its assembled state on the rim,

(a) a ratio of SW/CH being within the range of $1.6<SW/CH<2.0$, wherein SW is the maximum width of the carcass, and CH is the height of the intersecting point C of a radial line R, which contacts with the carcass in the inside of the bead core, with the carcass from a base line A, which passes through the center of the bead core in a direction parallel to the rotation axis of the tire; and

(b) a ratio of h/CH being within the range of $0.55<h/CH<0.61$, and a ratio of W/CH being within the range of $0.23<W/CH<0.28$, wherein h is the vertical distance of the maximum width point B of the carcass from the base line A, and W is the distance of the maximum width point B from the radial line R.

4,352,384
SLATTED WINDOW INSULATING INSERT

Oval O. McCoy, Jr., 4204 Manila, Jonesboro, Ark. 72401
Filed Apr. 20, 1981, Ser. No. 255,509
Int. Cl.^{3} E06B *9/30*
U.S. Cl. 160—172 **1 Claim**



1. A thermally insulative insert assembly adapted to be mounted within a window frame in spaced relation with respect to a window pane, the assembly comprising:

elongated, upper and lower pantograph mounting members adapted to be secured in generally parallel, spaced-apart relation within said window frame at top and bottom locations respectively therewithin;

a plurality of rotatable elongated slats comprised of thermally insulative material extending vertically between said upper and lower mounting members for pivotal, concurrent rotation between an open and a closed coplanar position thereby, the slats being of generally parallelogram cross section to permit rotation between said open and closed positions without interference with one another and to facilitate edgewise slat to slat sealing contact when rotated to said closed position;

stationary, non rotatable end slats forming sides of said insert and extending vertically between said upper and lower mounting members at opposite sides thereof, the end slats angularly adapted to contact the outermost angled edges of adjacent rotatable slats when said rotatable slats are moved to a closed position; and,

the slats, when in a closed position, forming a flat continuous surface spaced apart from the window mounted within said frame.

4,352,385
TILTER MECHANISM

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International, N.V., Curacao, Netherlands Antilles
Continuation-in-part of Ser. No. 43,696, May 30, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 114,080
Int. Cl.^{3} E06B *9/38*
U.S. Cl. 160—177 **17 Claims**

1. A tilter mechanism for the slats of a venetian blind, said mechanism comprising, in combination:

(a) a housing;

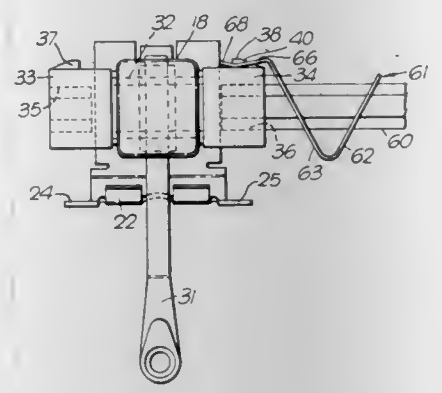
(b) a bracket for mounting said housing to a venetian blind headrail;

(c) an externally operable worm rotatably mounted on said housing;

(d) a wormwheel rotatably mounted on said housing in operative engagement with said worm;

(e) an axial extension at each axial end of said wormwheel;

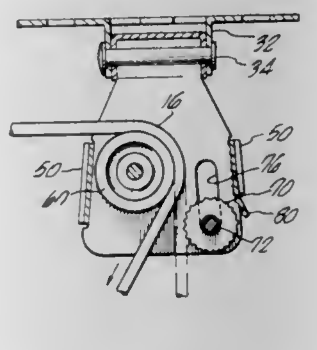
(f) a blind recess in each extension adapted to receive the end of a tilt rod, whereby the tilt rod can be selected to extend either to the left or to the right of said wormwheel;



(g) engaging means on each of said extensions, each being engageable by a locking device to hold said tilt rod in place.

4,352,386
AUTOMATIC CORD LOCK DEVICE

John Butler, Long Beach; L. George Valle, Huntington Beach, and Donald E. Wall, Mission Viejo, all of Calif., assignors to Liken Home Furnishings, Westminster, Calif.
Filed Dec. 31, 1979, Ser. No. 108,343
Int. Cl.^{3} E06B *9/38, 9/324*
U.S. Cl. 160—178 C **1 Claim**



1. A cord lock device having a housing, a first cylindrical roller and a pull cord trained about said roller with a substantially vertically hanging portion, comprising:

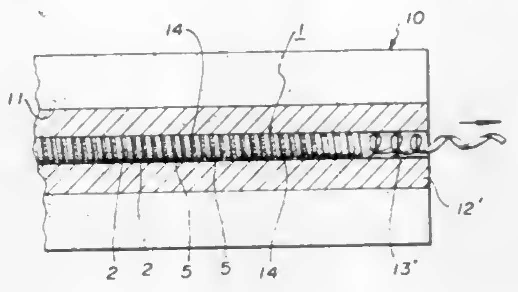
the housing including walls defining a pair of parallel facing elongated slots, said slot extending along a substantially straight-line path from an upper limit downwardly and outwardly of the vertically hanging cord to a lower limit;

a second roller having its end portions received within the respective housing slots, said end portions being of such dimensions as to permit rotating and sliding along the slots, and the central portion of the second roller being larger in cross-section than said end portions and having its peripheral surface formed to include a plurality of longitudinally extending raised ridges and when said second roller is located at the lowermost limit of the housing slots the raised ridges of said second roller contact the substantially vertically hanging portion of the pull cord; and

a wall mounted to the housing having a first surface facing the cord and extending substantially parallel to the slots straight-line path to a point spaced upwardly from the lowermost slot ends and a second surface integral with said first surface directed at an angle outwardly away from the first surface, said first and second surfaces including a set of teeth dimensioned to engage the raised ridges on the second roller whereby the second roller raised ridges securingly engages the cord and has the roller raised ridges received within the wall teeth throughout all positions of said second roller along the first wall surface, and on moving of the second roller downwardly to engage the teeth of the wall second surface the degree of engagement decreases until total disengagement occurs on the second roller being located at the lowermost positions of the slots.

4,352,387
PROCESS FOR PRODUCING A HOLLOW CAST PRODUCT

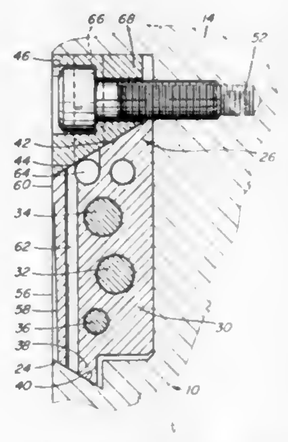
Shinjiro Yamaguchi, Kawaguchi, Japan, assignor to Sankyo Oilless Industry, Inc., Fuchu, Japan
Filed May 24, 1979, Ser. No. 42,130
Int. Cl.^{3} B22D *29/00*
U.S. Cl. 164—132 **5 Claims**



1. A process for producing a hollow cast metal product comprising the steps of positioning a hollow flexible mandrel in a crucible of a mold with one end of the mandrel extending out of the mold, said hollow flexible mandrel comprising a single helically wound metal strip including a plurality of windings each having a shoulder and a recess with the shoulder of each winding being partially received in the recess of the respectively adjacent winding to thereby define grooves between the windings, to provide a concavo-convex peripheral surface of the mandrel, filling the concaves in the peripheral surface of the mandrel up with casting sand to provide a smooth peripheral surface on the mandrel, introducing molten metal into said crucible of the mold and allowing the metal to solidify and removing said hollow flexible mandrel from said mold by pulling the mandrel at one end to thereby provide a hollow cast product.

4,352,388
DIE VENT FOR MOLD CAVITIES

Guido Perrella, Senneville, Canada, assignor to DBM Industries Limited, Lachine, Canada
Filed Apr. 29, 1981, Ser. No. 258,850
Claims priority, application Canada, Jan. 26, 1981, 369317
Int. Cl.^{3} B22D *17/20*
U.S. Cl. 164—305 **1 Claim**



1. A device for venting a mold cavity comprising a body adapted for mounting in a die block and having an entrance end in communication with said mold cavity and an exit end open to the atmosphere to allow gas in said cavity to escape to the atmosphere when the cavity is being filled with casting metal or the like, said body comprising a plurality of vent strips joined together in face to face relation, each strip having a

narrow portion along most of its upper edge to provide a plurality of longitudinal gaps extending substantially the length of said body; a longitudinal recess along each strip in communication with said gap and the entrance and exit ends of said body; and the upper surfaces of said strips having a progressively narrowing taper from the entrance end of the body to the end of the gaps between said strips, said taper providing a channel on the surface of the body to communicate with a similar channel in a die block in which the body is mounted.

4,352,389

DEVICE FOR THE ADJUSTABLE COUPLING OF AT LEAST ONE SIDE WALL OF A CHILL-MOLDING MACHINE TO ITS OPERATING MEMBER

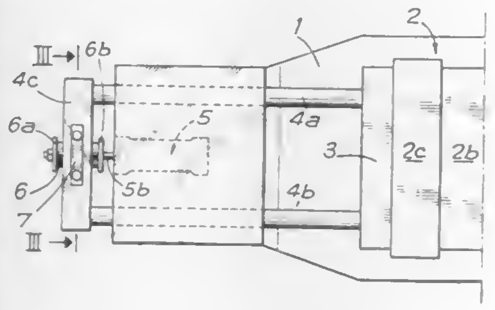
Alain Le Bozec, Ivry, France, assignor to Etablissements A. Voisin, Puteaux, France

Filed May 6, 1980, Ser. No. 147,159

Claims priority, application France, Dec. 20, 1979, 79 31324

Int. Cl.³ B22D *15/04, 17/26*

U.S. Cl. 164—343 **2 Claims**



1. In a chill-molding machine having a support bed for the fixed and movable parts of the mold and a hydraulic jack the body of which is secured to the bed and having a rod for moving one of said movable parts with respect to said fixed parts, a device for adjustably coupling said one movable part to said hydraulic jack including a yoke secured to said one movable part, said yoke having a transverse part formed with an opening through which said jack rod extends for sliding movement relative to said transverse part of said yoke, a shoulder on said rod between said transverse part and the body of the jack, and a gripping clamp carried by said transverse part for immobilizing said rod with respect to the transverse part of the yoke.

4,352,390

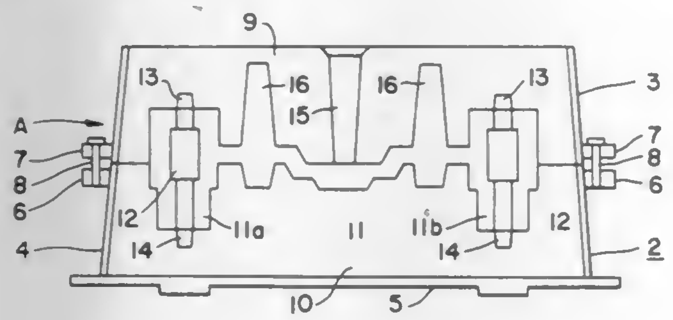
PRECISION SILICA CONES FOR SAND CASTING OF STEEL AND IRON ALLOYS

David L. Larson, Chagrin Falls, Ohio, assignor to Sherwood Refractories, Inc., Cleveland, Ohio

Division of Ser. No. 966,070, Dec. 4, 1978, Pat. No. 4,236,568. This application Sep. 12, 1980, Ser. No. 186,415

Int. Cl.³ B22C *1/00*

U.S. Cl. 164—351 **21 Claims**



1. A hollow extruded and fired ceramic core for sand casting of ferrous alloys consisting essentially of refractory material and a mineralizer and having a modulus of rupture at 1500° C. of at least 60 kilograms per square centimeter and a porosity of 25 to 55 volume percent, said refractory material comprising 50 to 70 percent by weight of refractory silica grains with a particle size of 50 to 150 microns bonded together by insitu-formed crystalline silica, wherein said silica grains comprise at least 80 percent by weight of partially devitrified high-purity silica and 5 to 15 percent by weight of crystalline silica concentrated near the outer surface portions of the grains, the percentage by weight of crystalline silica in the bond region between grains being at least several times that in said grains, said refractory material further comprising at least 20 percent by weight of fine vitreous silica particles with a particle size up to 20 microns, and at least 15 percent by weight of the refractory silica particles having a particle size less than 10 microns.

4,352,391

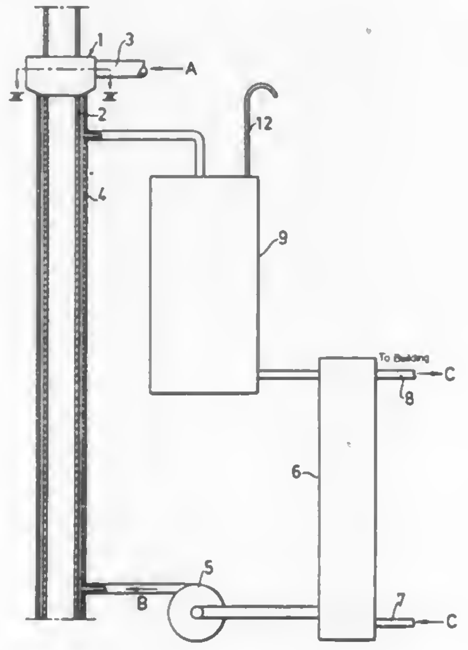
METHOD AND APPARATUS FOR RECOVERING HEAT IN WASTE WATER

Kurt A. Jönsson, Nynäshamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Jul. 8, 1980, Ser. No. 167,190

Int. Cl.³ F24H *3/00;* **F28F** *9/02*

U.S. Cl. 165—1 **5 Claims**



1. A method of recovering heat from waste water from a building as it flow downwardly through a substantially vertically oriented waste pipe, comprising supplying a flowing medium to an inlet communicating with the outside of said waste water pipe, supplying incoming waste water to the interior of said pipe at a location in said pipe which is elevated relative to the location of said inlet of said flowing medium, said waste water supplying step including the step of forcing the incoming waste water toward the inner wall of said pipe for flow along a substantial circumferential portion of said inner wall to increase the transfer of heat from said incoming waste water through the wall of said pipe to the flowing medium outside of said pipe as said waste water flows downwardly along the inner wall of said pipe past said medium.

4,352,392

MECHANICALLY ASSISTED EVAPORATOR SURFACE

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

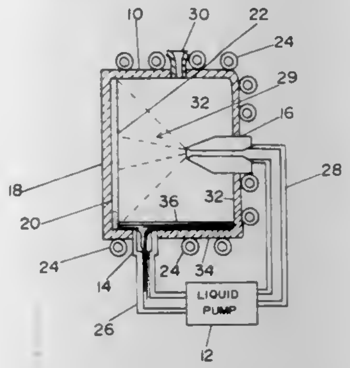
Filed Dec. 24, 1980, Ser. No. 220,020

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.25 **5 Claims**

1. An evaporative cooling system comprising:

a heat conductive capillary layer of less than three millimeters in thicknesses to which heat is supplied for dissipation by evaporative cooling; and



spraying means oriented to spray liquid upon and saturate the capillary layer with liquid.

4,352,393

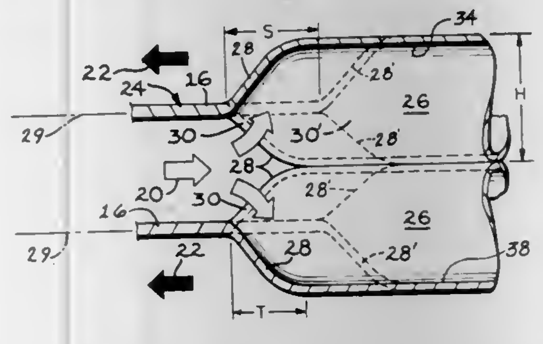
HEAT EXCHANGER HAVING A CORRUGATED SHEET WITH STAGGERED TRANSITION ZONES

Gonzalo D. Vidal-Meza, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 2, 1980, Ser. No. 183,513

Int. Cl.³ F28C *1/00*

U.S. Cl. 165—166 **5 Claims**



1. In a heat exchanger **(24)** including a plurality of sheets **(10)** arranged in a stack **(12)**, each of said sheets **(10)** including a centrally disposed corrugated portion **(14)** and first and second flattened edge portions **(16,18)** to facilitate flow of first and second fluid media **(20,22)** alternately between and generally longitudinally across said sheets **(10)**, each corrugated portion **(14)** including a plurality of convolutions **(26)** individually having a transition zone **(28)** intermediate said corrugated portion **(14)** and each of said edge portions **(16,18)**, the improvement comprising:

locating said transition zones **(28)** at different longitudinal positions transversely across said sheet **(10)** to define a plurality of staggered flow path ends **(52,54)** of a construction sufficient for reducing flow blockage of the fluid media **(20,22)** thereat.

4,352,394

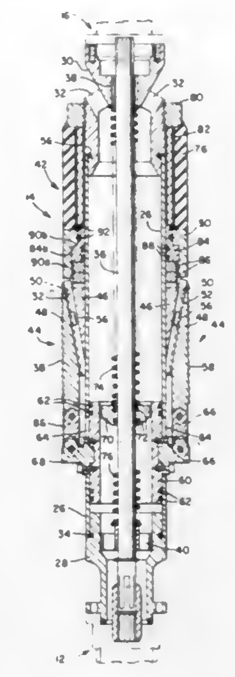
CABLE-SUSPENDED WELL PUMPING SYSTEMS

James N. Zehren, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 1, 1980, Ser. No. 174,616

Int. Cl.³ E21B *33/128*

U.S. Cl. 166—106 **14 Claims**



9. A packer assembly for a well pumping system comprising a generally cylindrical packer housing, packing means carried exteriorly of said housing for cooperation with a well casing, said packing means including at least two circumferentially spaced axially movable slips and cooperating slip-body means fixed relative to said housing, said slips and said slip-body means having interengaging ramp surfaces for effecting radial expansion and contraction of said slips by axial movement of said slips on said slip-body means, means associated with said assembly for moving said slips on said slip-body means in a direction radially expanding said slips, and said packing means further including a resilient packing sleeve surrounding said housing, means fixing one end of said packing relativve to said housing, a collar means surrounding said housing and connected to the other end of said packing sleeve, said collar means being axially movable relative to said housing, and means providing abutting contact between said collar means and said slips for moving said collar means in a direction axially contracting and radially expanding said sealing sleeve responsive to radial expanding movement of said slips on said slip-body means.

4,352,395

PROCESS FOR SELECTIVELY REDUCING THE PERMEABILITY OF A SUBTERRANEAN FORMATION

Robert D. Sydansk, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 28, 1980, Ser. No. 210,969

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—292 **8 Claims**

1. A process for selectively reducing the permeability of at least one relatively highly permeable zone of a subterranean formation to improve vertical conformance and flow profiles of fluids injected into or produced from the subterranean formation, the formation being penetrated by a well bore in fluid communication therewith, the process comprising:

injecting via said well bore into said at least one relatively highly permeable zone in an environment near an injection surface, an aqueous solution having magnesium hydroxide suspended therein, said magnesium hydroxide significantly and relatively permanently reducing the permeability of said at least one relatively highly permeable zone.

4,352,396

METHOD FOR SELECTIVE PLUGGING USING RESIN EMULSIONS

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Houston, Tex.

Filed Nov. 20, 1980, Ser. No. 208,657

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—295 **10 Claims**

2. A method for selectively plugging water-rich strata of a relatively high-temperature subterranean formation containing strata which are water-rich and other strata which are oil-rich, and said strata having at least one borehole therein, comprising:

providing an aqueous resin emulsion comprising a water-insoluble, oil-soluble resin, an acid-sensitive emulsifier, a water-soluble first acid, and a water-soluble ester of a second acid, said second acid being a stronger acid than said first acid;

passing said emulsion into said borehole;

injecting said emulsion into said formation at a pressure sufficient to overcome the natural formation pressure;

hydrolyzing the said ester by reacting it with the first acid in-situ in said high temperature formation to form its corresponding second acid;

demulsifying the resin emulsion in-situ by reacting the second acid with the acid-sensitive emulsifier to effect subsequent coalescence of the resin, said coalescence product being effective to greatly reduce permeability of said water-rich strata, over a relatively long distance and over a relatively long period of time.

4,352,397

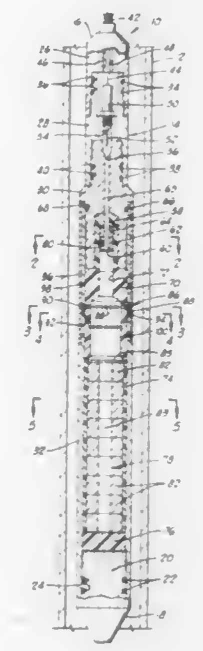
METHODS, APPARATUS AND PYROTECHNIC COMPOSITIONS FOR SEVERING CONDUITS

Glenn B. Christopher, Forth Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed Oct. 3, 1980, Ser. No. 193,856

Int. Cl.^{3} E21B *29/02*

U.S. Cl. 166—297 **54 Claims**



1. A method of severing a conduit along a plane extending transversely to the axis thereof comprising the steps of:

confining a solid gas-forming pyrotechnic fuel composition within a fuel chamber in an elongated housing sized for insertion in the conduit, said fuel composition comprised of a mixture of a metal selected from the group consisting of aluminum, magnesium, niobium, titanium and mixtures thereof, a metal oxide selected from the group consisting of ferric oxide, ferrous oxide, ferrosoferric oxide, cupric oxide, chromium trioxide and mixtures thereof and a gas-forming component which vaporizes to form a gas when heated to the temperature at which said metal and said metal oxide react when ignited, said housing including a plurality of spaced radially extending discharge nozzles communicated with said fuel chamber and positioned to direct fuel reaction products in directions transverse to the axis of said housing;

positioning said housing inside said conduit with said discharge nozzles thereof adjwacent the desired location of severance of said conduit; and

igniting the fuel composition confined in said fuel chamber so that reaction products formed therefrom exit said housing by way of said discharge nozzles and impact said conduit thereby severing said conduit.

42. Apparatus for severing a conduit in a plane extending transversely through the conduit comprising:

an elongated cylindrical housing adapted to be removably positioned within said conduit, said housing forming a fuel chamber therewithin and having a plurality of discharge nozzles communicated with said fuel chamber disposed transversely through the sides of said housing; said discharge nozzles being positioned in spaced relationship around the periphery of said housing wherein a first portion of said discharge nozzles lie in a single plane extending transversely to the axis of said housing and a second portion of said discharge nozzles are positioned obliquely through said housing with the outer ends thereof lying in a single plane extending transversely through the axis of said housing; and

means attached to said housing for igniting fuel contained in said fuel chamber whereby reaction products formed therefrom exit said housing by way of said discharge nozzles.

4,352,398

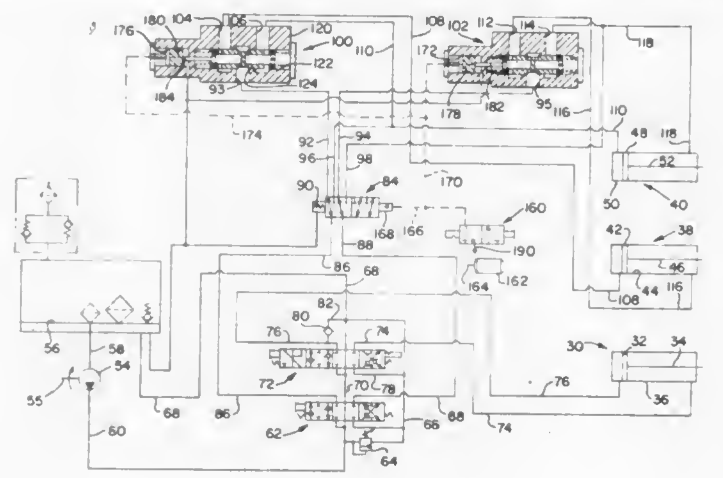
CIRCUIT FOR PITCH AND TILT OF DOZER BLADE

Ronald K. Schantz, Libertyville, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Feb. 27, 1980, Ser. No. 124,875

Int. Cl.^{3} E02F *3/85;* **F15B** *11/22*

U.S. Cl. 172—812 **4 Claims**



1. In a tractor having a hydraulic circuit including a pump and a reservoir, and a dozer blade mounted on push arms with a pair of hydraulic rams having head and rod ends extending between the blade and each of said push arms, an improved control for pitching said blade comprising:

a directional control valve selectively connecting selected ends of said rams of said pump and reservoir for simultaneous extension or simultaneous retraction of the rams;

a first diverter-combiner spool valve interposed between said pump and reservoir and the head ends of said rams and operative to provide equal flow to said rams during extension thereof while combining the flow therefrom during retraction of the rams;

a second diverter-combiner spool valve interposed between said pump and said revervoir and the rod ends of said rams and operative to combine the flow from said rams during extension thereof and to provide equal flow thereto during retraction of the rams; and

a selector valve positioned downstream of said control valve, said selector valve having two positions, one in which communication of said pump and reservoir is achieved with both rams through said diverter-combiner valves and the other in which communication of said pump and reservoir is achieved with only one ram independently of said diverter-combiner valves.

4,352,399

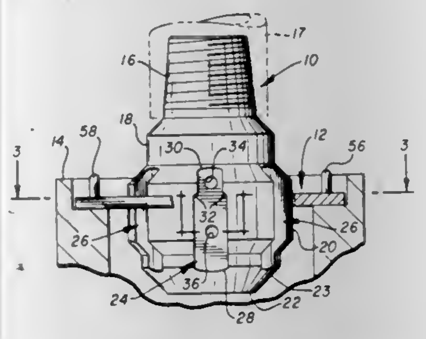
BIT BREAKER AND HANDLE

Kenneth Davis, P.O. Box 7906, Midland, Tex. 79703

Filed Oct. 31, 1980, Ser. No. 202,687

Int. Cl.^{3} E21B *10/00*

U.S. Cl. 175—315 **9 Claims**



1. In a drill bit for use in a rotary drilling rig, said bit having a main body which terminates in a formation engaging face at the lower end thereof and in a threaded fastener at the upper end thereof, said bit having a plurality of circumferentially spaced, external, outwardly opening passageways formed in said main body and communicating the lower end with the upper end of the bit, the combination with said bit of a bit breaker for making up and breaking out the threads of the bit with respect to the threads of a drill pipe;

said external passageways include spaced sidewalls which are joined to a bottom wall, said sidewalls of a marginal length of said passageway commencing at the lowermost end thereof are spaced from one another a greater distance respective to the sidewalls of the upper marginal terminal end of the external passageway thereby forming a shoulder at the sidewalls between the upper and lower marginal terminal ends;

said bit breaker has an outer perimeter in the form of a polygon which is of a complementary configuration respective to the geometrical configuration of the kelly drive of the rig, so that when the bit breaker is placed within the kelly drive of the rig, the rig turntable rotates the bit breaker about the central axis thereof;

said bit breaker has an axial passageway formed therethrough of a size to slidably receive said main body in a telescoping manner; a plurality of lugs affixed to said bit breaker and extending radially into the bit breaker axial passageway; said lugs being of a size to be received in close tolerance relationship within the lower marginal terminal end of said external passageway so that the lug abuttingly engages said shoulder and precludes further passage of the bit through the bit breaker;

whereby said bit breaker is placed within the kelly drive, said bit is seated within said bit breaker, so that the rotary table can turn the bit and bit breaker while a drill pipe is held stationary, to thereby enable the bit to be threadedly made up and broken out respective to the drill pipe.

4,352,400

DRILL BIT

Richard H. Grappendorf, Riverton; Gordon G. Sirrine, and John S. Davis, both of Sandy, all of Utah, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Dec. 1, 1980, Ser. No. 211,884

Int. Cl.^{3} E21B *10/48, 10/54, 10/56*

U.S. Cl. 175—330 **11 Claims**

1. A rotary drill bit comprising:

a body of predetermined axial length and maximum diameter with opposite cutting and drive ends rotatable about a central longitudinal axis thereof including:

a plurality of relatively strong short stubby spiral finger like portions with leading and trailing sides thereon angularly spaced about the central longitudinal axis and an internal core receiving bore of relatively short axial depth adjacent the cutting end of the body and the finger like portions,

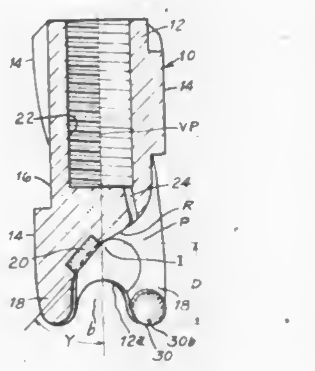
a plurality of reinforcing web portions extending circumferentially and away from the cutting ends on trailing sides of the spiral finger like portions,

a plurality of angularly spaced overlapping outer spiral stabilizer lands including leading and trailing spiral side edges and surfaces extending exteriorly and helically opposite to direction of bit rotation substantially the axial length of the body between the opposite cutting and drive ends thereof,

a plurality of angularly spaced spiral grooves extending between the spiral lands and connected to the short internal core receiving bore,

an inclined core ejection passage including an inclined internal surface extending radially outwardly and inclined toward the opposite drive end of the body from a closed inlet end adjoining an inner surface portion of a spiral finger portion and the central core receiving bore to an opposite outlet end connected with a spiral groove and situated between a pair of adjacent spiral finger like portions, and

connecting means adjacent the drive end of the body adapted for attaching means to rotatably drive the drill bit,



preformed cutting elements attached to support surfaces on the leading sides of the spiral finger portions and each having

a back side adjacent a support surface and a cutting side including a cutting edge opposite the back side, and

a preformed hard core cutter element fixed within a pocket provided at the closed inlet end of the core ejection port and having an inclined cutting edge diverging from a point thereof situated adjacent an intersection of the inclined internal surface of the core ejection passage and plane of the longitudinal axis of the body.

4,352,401

MOTOR-CAR CONTROL GROUP

Massimo Vitaloni, Rivalta, Italy, assignor to Viel Elettromeccanica S.p.A., Chiusa S. Michele, Italy

Filed Nov. 29, 1979, Ser. No. 98,580

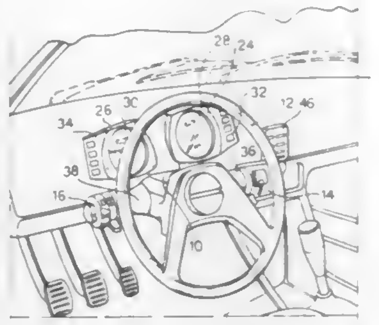
Claims priority, application Italy, Nov. 30, 1978, 53941/78[U]; Feb. 13, 1979, 52948/79[U]; Feb. 13, 1979, 52949/79[U]; Feb. 13, 1979, 52950/79[U]; Sep. 14, 1979, 53565/79[U]; Sep. 14, 1979, 53566/79[U]; Nov. 12, 1979, 53739/79[U]

Int. Cl.^{3} B60R *16/02*

U.S. Cl. 180—90 **33 Claims**

1. A control group for auxiliary services of a motor vehicle, including at least one elongate control assembly and a support structure connected to one end of the control assembly and attachable to a structural part of the vehicle, in use, to support the control assembly so that the latter extends into a zone immediately behind the steering wheel rim, the control assembly including manual controls for the auxiliary services, at least some of said manual controls including rotatable rings, wherein the control assembly includes a central tubular sup-

port element which extends along the axis of elongation of the assembly and which has a longitudinal slit, one end of the tubular support element being carried by the support structure and at least one of said control rings being mounted for rotation on the tubular support element and about the axis of the latter, and wherein the control assembly further includes at least one annular element fixed to the tubular support element, one adjacent each control ring, each annular element and adjacent ring having adjacent annular faces and carrying respective cooperating electrical contacts on said adjacent annular faces, and electrical cables connected to the contacts of each annular element and extending from said contacts, through said longitudinal slit, into the central tubular support element and through the latter for connecting the contacts to control respective services of the vehicle.



4,352,402

SAFETY CIRCUIT FOR AN APPARATUS FOR REGULATING THE TRAVELING SPEED OF A VEHICLE

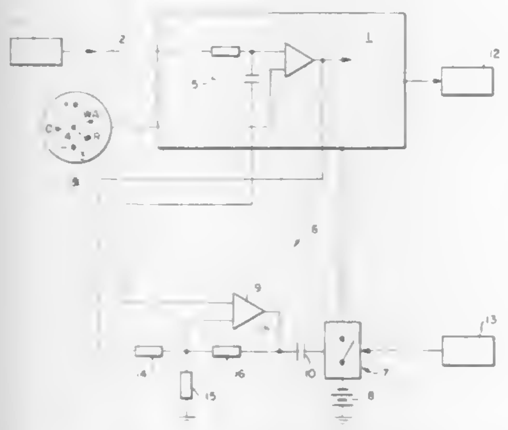
Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,866

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925580

Int. Cl.^{3} B60K *31/00*

U.S. Cl. 180—170 **7 Claims**



1. In a speed control system for a vehicle, comprising means (**11**) for generating a signal dependent on vehicle speed, an engine throttle control device (**12**), speed regulator means (**1**) connected to the signal generating means and the control device for regulating vehicle speed, a vehicle brake device (**13**), disconnect memory means (**7**) connected to the brake device and the regulator means for interrupting vehicle speed regulation by the regulator means in response to actuation of the brake device, and threshold switch means (**6**) connected to the disconnect memory means for preventing said vehicle speed regulation under control of said vehicle speed dependent signal, the improvement residing in means (**5**) connected to the regulator means for transforming the speed dependent signal into an acceleration dependent signal applied to the threshold switch means, said threshold switch means including amplifier means (**9**) to which said acceleration dependent signal is applied for disabling the regulator means in response to vehicle acceleration in excess of a predetermined threshold value, until reset.

4,352,403

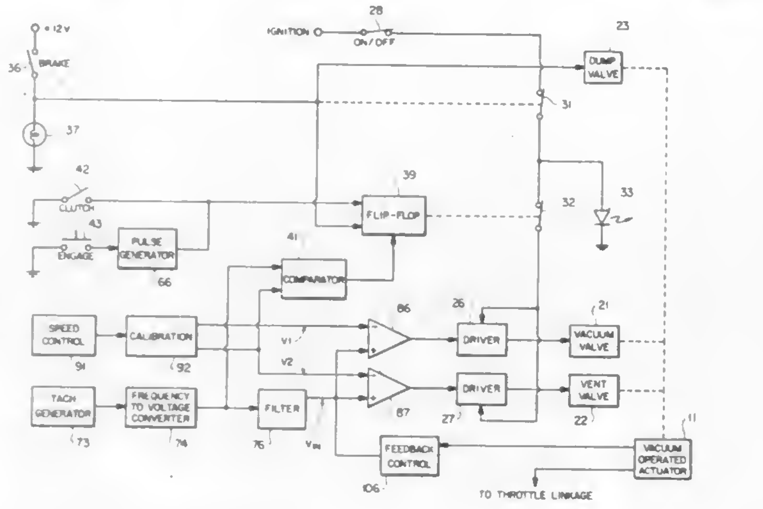
VEHICLE SPEED CONTROL SYSTEM

Charles F. Burney, Milpitas, Calif., assignor to Travel Accessories Manufacturing Co., Inc., Orland, Calif.

Filed Mar. 22, 1979, Ser. No. 23,027

Int. Cl.^{3} B60K *31/00*

U.S. Cl. 180—176 **17 Claims**



1. In a system for controlling the speed of a vehicle having throttle and brake controls: means for providing an input signal which varies cyclically in amplitude about a DC level which corresponds to the speed of the vehicle, said signal lying in a predetermined range between first and second reference levels when the vehicle is moving at a desired speed and extending outside said range when the vehicle speed differs from the desired speed, said range being wider than the amplitude variations of the input signal, and the portion of an input signal cycle during which the input signal is outside the predetermined range varying in accordance with the speed of the vehicle and increasing as the DC level approaches one of the reference levels, means for sensing when the input signal is outside the predetermined range, and means connected to the throttle control for adjusting the vehicle speed toward the desired speed when the input signal is outside the predetermined range, the amount of adjustment increasing as the vehicle speed moves farther from the desired speed and decreasing as the vehicle speed approaches the desired speed.

4,352,404

DEVICE FOR THE CONTROL OF THE TRAVELING SPEED OF A MOTOR VEHICLE

Bernhard Stier, Kelkheim-Fischbach, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,826

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844829

Int. Cl.^{3} B60K *31/00, 41/20*

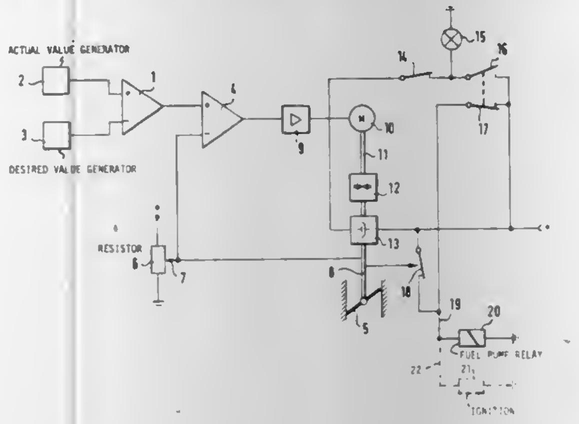
U.S. Cl. 180—179 **7 Claims**

1. In a device for the control of the traveling speed of a motor vehicle with an electrical controller having a first input connected to an actual speed signal generator, a second input connected to a settable desired speed signal generator, and an output stage which contains a servomotor in operative connection with an element, preferably the throttle valve, which element influences the ratio of the fuel-air mixture that is supplied to the vehicle engine, the output stage being electrically connected to a first switch which is coupled to the foot brake to switch into an inoperative condition if the foot brake is actuated, the improvement comprising

a second switch actuatable by means of the foot brake,

a third switch in operative connection with said element,

an electrical control means for influencing the rotational speed of the vehicle engine, said electrical control means being electrically actuatable by said second switch and said third switch in the sense of a reduction of the rotational speed of the engine if the brake is actuated and the element is outside of the idling position.



4,352,405

CONTROL DEVICES FOR SPEED REDUCERS

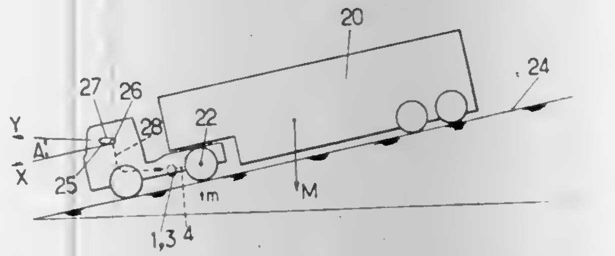
Andre Marandet, Saint-Gratien, France, assignor to Labavia - S.G.E., Paris, France

Filed Mar. 31, 1980, Ser. No. 135,287

Claims priority, application France, Apr. 10, 1979, 79 09098

Int. Cl.^{3} B60T *8/014*

U.S. Cl. 180—282 **6 Claims**



1. A control device for a speed reducer adapted to brake an axle of a heavy vehicle, comprising means for automatically neutralizing at least partially the speed reducer when the deceleration of the empty or lightly loaded vehicle exceeds a predetermined threshold beyond which the wheels of said axle risk skidding, these neutralization means being arranged so as to use the inertial movements of a mass carried by the vehicle and responsive to the deceleration of this latter, wherein said mass is arranged and mounted so as to be able to move along a ramp whose mean line, rising towards the front of the vehicle, is disposed in a longitudinal vertical plane of this vehicle and is inclined with respect to the longitudinal axis thereof by an acute angle A substantially such that $A = \text{Arctan}([m/M] \text{tg}\ \alpha)$, in which formula M is the total unladen mass of the vehicle, m the unladen mass applied to the axle braked by the speed reducer and tg α the coefficient of adhesion between the wheels of said axle and the ground.

4,352,406

SELECTIVELY ENGAGEABLE AND DISENGAGEABLE DRIVE FOR WHEELED DEVICES SUCH AS GRAIN AUGERS OR THE LIKE

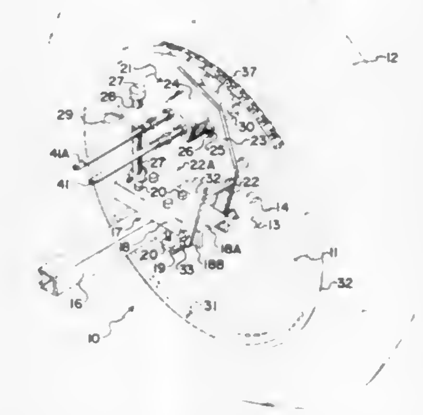
Anthony Fahrenschon, No. 10 Highway East, Swan River, Manitoba, Canada (R0L 1Z0)

Filed Aug. 4, 1980, Ser. No. 175,145

Int. Cl.^{3} B60K *7/00*

U.S. Cl. 180—308 **11 Claims**

1. Selectively engageable drive means for a ground engaging wheel mounted upon an axle component and comprising in combination a support bracket, a source of power mounted on said bracket, means rotatable by said source of power, further means on said ground engaging wheel selectively engageable and disengageable with said means rotatable by said source of power, to selectively drive said ground engaging wheel, and means mounting said bracket to said axle component for selective engagement and disengagement of said means rotatable by said source of power, to said further means on said ground engaging wheel, said means mounting said bracket to said axle including means whereby said bracket and said source of power can be raised and lowered relative to said axle component, to engage and disengage said source of power with said ground engaging wheel, said means mounting said bracket to said axle component including a vertically situated, fixed member mounted upon said axle component, said bracket being mounted for slidable vertical movement upon said fixed member and lock means selectively engaging with said fixed member to detachably lock said bracket in the uppermost position with said source of power operatively engaging said ground engaging wheel, said fixed member comprising a shaft, said bracket being journalled upon said shaft for said vertical movement and also for pivotal movement in a substantially horizontal plane, and means detachably restraining said bracket from said pivotal movement.



4,352,407

DIAPHRAGMS FOR ACOUSTIC INSTRUMENTS AND METHOD OF PRODUCING THE SAME

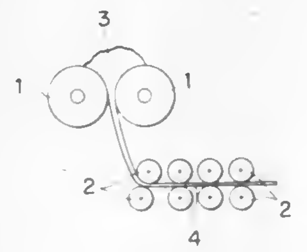
Tsunehiro Tsukagoshi; Shinichi Yokozeki; Toshikazu Yoshino, and Yasuyuki Arai, all c/o Pioneer Electronic Corporation Ohmori Factory, No. 4-15-5, Ohmori-nishi, Ohta-ku, Tokyo, Japan (143)

Filed Sep. 24, 1979, Ser. No. 78,045

Claims priority, application Japan, Sep. 29, 1978, 53-120283

Int. Cl.^{3} G10K *13/00*

U.S. Cl. 181—167 **13 Claims**



2. An acoustic diaphragm formed of a homogeneous composite material consisting essentially of a thermoplastic resin and graphite powder particles, the graphite powder particles being substantially parallel oriented in said diaphragm.

4,352,408
DEVICE FOR CONDUCTING AWAY THE EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

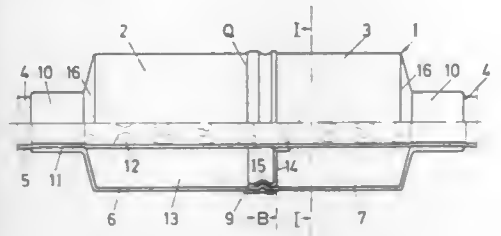
Jean Hardt, Benken, and Jakob Widrig, Winterthur, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 2, 1980, Ser. No. 155,458

Claims priority, application Switzerland, Jun. 6, 1979, 5250/79

Int. Cl.^{3} F01N *1/02*

U.S. Cl. 181—249 **1 Claim**



1. An aluminum exhaust system for conducting away exhaust gases from an internal combustion engine comprising an exhaust pipe, a sleeve-shaped silencer enclosing a portion of said exhaust pipe and forming a chamber around said exhaust pipe wherein said portion of said exhaust pipe enclosed by said silencer is provided with perforations, said silencer having two sleeve-shaped parts joined together, said sleeve-shaped parts being provided on one end thereof with collars for fitting said sleeve-shaped parts on said exhaust pipe and on the other end thereof with locking means for joining said sleeve-shaped parts together, said locking means comprises a profiled shape extending around the circumference of said sleeve-shaped parts wherein the profiled shape on one of said two sleeve-shaped parts is telescopically received in the profiled shape on the other of said two sleeve-shaped parts such that said sleeve-shaped parts are joined together radially to their longitudinal axis.

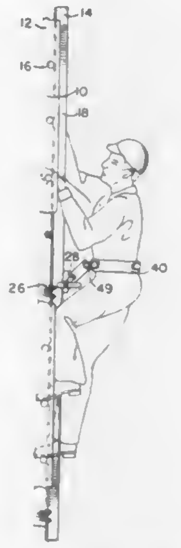
4,352,409
CLIMBING SAFETY DEVICE

Cecil D. Fountain, 8403 Jackson Springs Rd., Tampa, Fla. 33615

Filed Jan. 21, 1981, Ser. No. 226,802

Int. Cl.^{3} E06C *5/36;* A62B *1/16;* E06C *7/18;* F16G *11/00*

U.S. Cl. 182—8 **20 Claims**



1. A device for arresting the fall of a climber ascending or descending along a vertically disposed rail comprising a support member having an opening therein for receiving said rail therethrough, a clamping member supported on said support member and engageable with a vertical surface of said rail in clamping relation therewith, at least one connecting link pivotally connected to said support member, and an actuating lever pivotally connected to said connecting link, said actuating lever having one end thereof engageable with said clamping member and an opposite end thereof connectable to said climber where upon a sudden downward movement of said climber, as when the climber may be caused to fall, the climber connecting end of said actuating lever shall be caused to pivot downwardly, forcing said clamping member and said support member into gripping engagement with said rail, thereby arresting the downward movement of said climber.

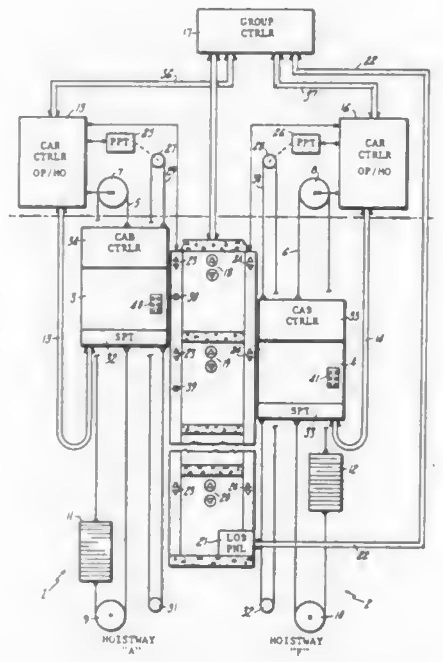
4,352,410
OPERATIONAL CONTROL OF ELEVATOR CAR CALLS

Joseph Bittar, Simsbury, and Frederick H. Nowak, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,076

Int. Cl.^{3} B66B *1/16*

U.S. Cl. 187—29 R **2 Claims**



1. An elevator system including a group of elevators movable in shaftways for servicing a plurality of floor landings in a building, comprising:

group controller means for providing group demand controlling signals to said elevators to cause said elevators to move to selected landings;

each of said elevators including:

a car disposed for movement in the related one of said shaftways, a car call panel disposed in said car and having passenger-actuable means for providing car call button signals indicative of landings at which elevator stops are requested by passengers and indicator means for providing visual indication of landings for which car calls have been requested, and signal processing means for providing registered car call signals in response to said car call button signals;

car motion means for providing and arresting motion of said car;

a car controller, disposed in said building, interconnected with said car and with said car motion means for providing signals to said car motion means to cause movement of said car to landings indicated by said registered car call signals and said group demand controlling signals;

characterized by

said group controller means comprising means for providing special service signals to each of said elevators and for providing modified service signals to each of said elevators, said service signals designating landings corresponding thereto;

said car controller means comprising means for providing inhibit car call buttons signals in response to said special service signals provided thereto by said group controller means, for providing a floor reset signal indicative of said car motion means bringing said car to a landing for a service stop thereat, for providing a reset all car calls signal and force car calls signals, indicative of landings at which service stops are to be made, in response to said special service signals provided thereto by said group controller means, and for providing group car call inhibit signals in response to said modified service signals provided thereto by said group controller means; and

said signal processing means comprising means for providing a register of permitted call signals designating floors for which registered car calls are permitted, for providing registered car call signals in response to ones of said call button signals corresponding to floors designated in said register of permitted call signals, for eliminating all floor designating signals in said register of permitted call signals in response to said inhibit car call buttons signal being provided thereto, for eliminating all of said registered car call signals in response to said reset all car calls signals, for eliminating ones of said registered car call signals corresponding to floors at which a service stop is to be made as indicated by said floor reset signal, for providing registered car call signals corresponding to floors designated by said force car calls signals, for providing a register of inhibit car call signals in response to said group car call inhibit signals, for eliminating selected ones of said registered car call signals in response to said register of inhibit car call signals, and for providing said registered car call signals, as modified in response to said reset all car calls signals, said floor reset signal, said force car calls signals, and said inhibit car call signals, to said car controller and to said indicator means.

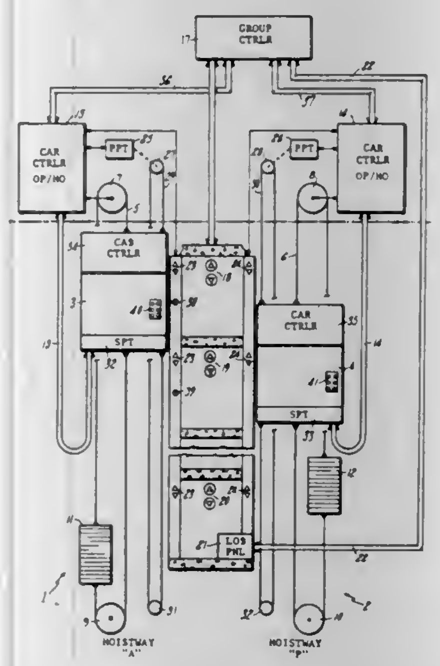
4,352,411
ELEVATOR FLOOR CUTOFF

Frederick H. Nowak, Southington, and Joseph Bittar, Simsbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,077

Int. Cl.^{3} B66B *1/18*

U.S. Cl. 187—29 R **3 Claims**



1. An elevator system including a group of elevators movable in shaftways for servicing a plurality of floor landings in a building, comprising:

group controller means for designating one or more specific elevators which are to be excluded from providing service to selected cutoff floors and for providing floor cutoff signals indicative thereof to each one of said specific elevators;

each elevator including a car, a car call panel having passenger-actuable means for providing car call button signals indicative of landings at which elevator stops are requested by passengers and for providing visual indications to the passengers of landings for which car calls have been requested, motion means for moving and stopping said car in the related shaftway for servicing the landings, and signal processing means interconnected with said motion means and responsive to said car call button signals for providing registered car call signals, and for providing signals to said motion means to cause movement of said car to landings corresponding to said registered car call signals;

characterized by:

each of said signal processing means comprising means responsive to said floor cutoff signals provided thereto by said group controller means for eliminating those registered car call signals corresponding to floors designated by said floor cutoff signals as being inaccessible.

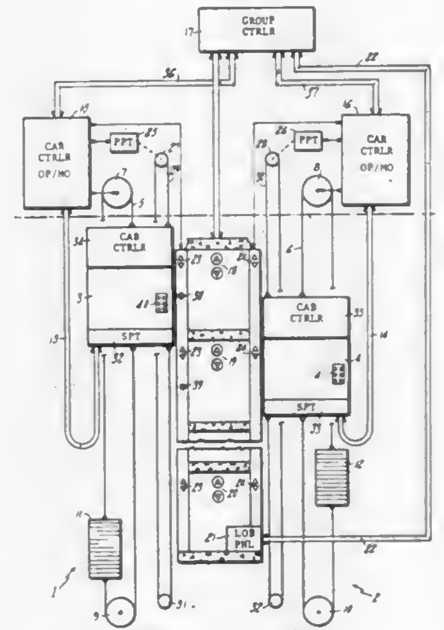
4,352,412
ELEVATOR EXPRESS PRIORITY SERVICE

Joseph Bittar, Simsbury, and Frederick H. Nowak, Southington, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 13, 1981, Ser. No. 234,080

Int. Cl.^{3} B66B *1/18*

U.S. Cl. 187—29 R **8 Claims**



1. An elevator system having a plurality of elevators movable in respective shaftways between a plurality of floor landings in a building for servicing said landings, comprising:

a plurality of request means, each corresponding to one of said landings, each selectively actuable for providing an EPS request signal indicative of a request for express priority service to said corresponding one of said landings;

a group controller, interconnected for signal communication with each of said elevators and each of said request means, for registering all of said EPS request signals, and cyclicly operable in a repetitive sequence for providing available cars signals indicative of elevators which may be assigned to respond to EPS requests, for providing a plurality of landing signals in a repetitive, successive sequence from a first landing through a last landing, for assigning a selected one of said elevators which is indicated by said available cars signals as being available, to respond to one of said EPS calls by providing EPS assignment signals, indicative of the one of said elevators so assigned and the landing of the EPS request, in response to said available cars signals, said EPS signals and said landing signals, and for communicating said EPS assignment signal to the elevator indicated thereby;

each of said elevators including means responsive to said EPS assignment signals provided thereto by said group controller to proceed to the landing designated thereby to service said landing;

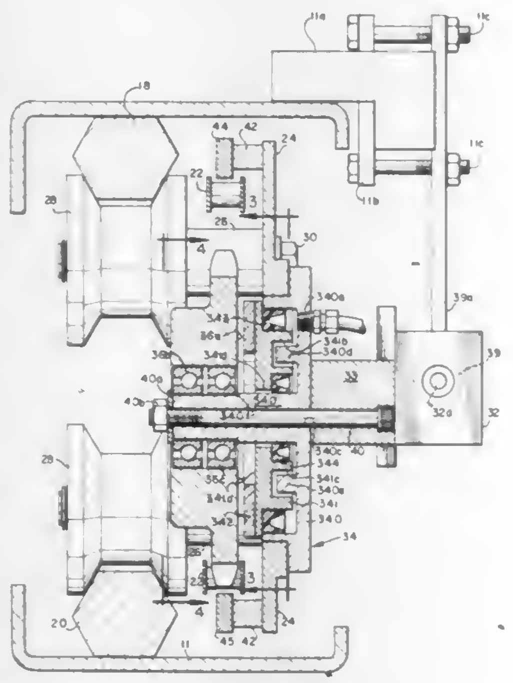
characterized by:

said group controller means comprising means for providing, in each cycle, a next landing signal indicative of the landing in said sequence in response to which said EPS assignment signal is to be provided first in said subsequent cycle, for iteratively, in each cycle, testing the EPS signal for one or more landings beginning with the landing designated by said next landing signal and proceeding with successive landings in said sequence, either to said last landing in cycles of a first condition in which there is no EPS signal, for any landing from the one designated by said next landing signal to said last landing, for which there is no concurrent available car signal, or, in cycles of a second condition to a landing for which there is a corresponding EPS request signal concurrently with no available car signal, for providing said assignment signals for any EPS request signal tested in cycles of said first condition, for providing said next landing signal to designate said first landing after testing for said last landing in cycles of said first condition, and for providing said next landing signal to designate the next landing in said sequence subsequent to the one for which an EPS request cannot be assigned for lack of an available car, after testing for such landing in cycles of said second condition.

4,352,413

AIR BRAKE

Joseph F. Weishew, 3934 Davisville Rd., Hatboro, Pa. 19040
Division of Ser. No. 888,190, Mar. 20, 1978, Pat. No. 4,227,421.
This application Apr. 18, 1980, Ser. No. 125,760
Int. Cl.³ F16D *55/12*
U.S. Cl. 188—72.4 **1 Claim**

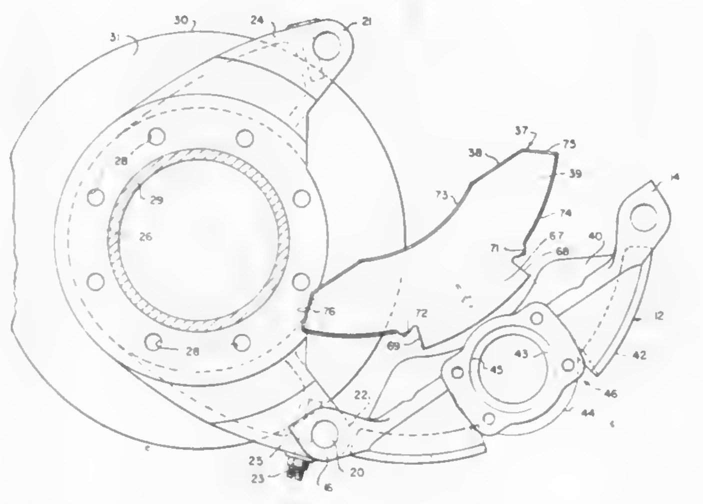


1. A fluid operated brake comprising:
a cylinder provided with
  an axially extending hub,
  two cylindrical bosses each of which extends parallel to said hub and each of which is radially spaced from said hub along a common diameter, and
  a fluid port;
a cylindrical piston which is arranged to be carried by said hub and said bosses and which is provided with
  a central aperture through which said hub extends,
  two cylindrical recesses each of which extends parallel to said aperture and each of which is radially spaced therefrom along a common diameter and into each of which a respective one of said bosses extends,
  a first annular groove radially spaced a first distance from said aperture, and
  a second annular groove radially spaced a second distance from said aperture;
a first annular fluid seal within said first annular groove which seal engages a surface of the hub and a surface of the piston;
a second annular fluid seal within said second annular groove which seal engages a surface of the cylinder and a surface of the piston; and
a friction liner secured to a surface of the piston.

4,352,414

FRICTION PAD AND SUPPORT FOR A DISC BRAKE

James P. Scott, Fort Wayne, Ind., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Dec. 1, 1980, Ser. No. 212,001
Int. Cl.³ F16D *55/224, 65/02*
U.S. Cl. 188—73.34 **7 Claims**



1. In a disc brake, a rotor having oppositely disposed friction surfaces, a caliper including a leg extending radially inward adjacent a friction surface of said rotor, a wall extending radially inward adjacent the other friction surface of said rotor and a bridge straddling the periphery of said rotor and joining said leg and said wall, load applying means carried by said wall, a friction pad intermediate said leg of said caliper and said adjacent friction surface of said rotor, a friction pad intermediate said load applying means and said other friction surface of said rotor, each said friction pad comprising a backing plate and friction material secured to part of said backing plate, each said backing plate being defined by circumferentially spaced lateral edges and having a tab of substantial circumferential length less than the distance between said lateral edges extending radially therefrom, means mounting said friction pads to said caliper comprising an aperture in said bridge defined on two sides by circumferentially spaced, axially extending, radially converging edges, said radially extending tabs being bounded by circumferentially-spaced converging edges slidably carried by said aperture edges and an access slot extending radially through at least one of said aperture edges the circumferential length of said access slot and said aperture together being adequate to radially pass the tab of said brake pad backing plate to permit installation and removal thereof.

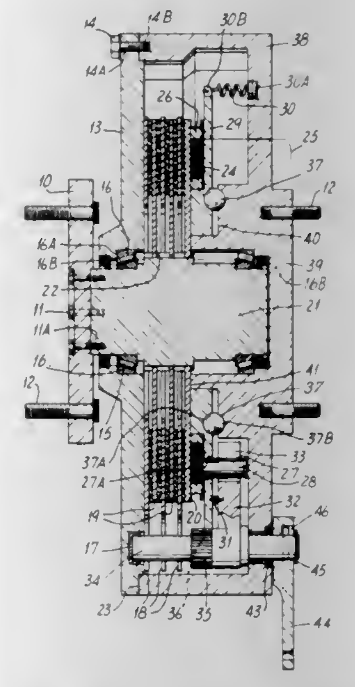
4,352,415

BRAKES

Ralph E. Powell, Drapers Rd., Gordonvale, Queensland, Australia (4865)
Filed Oct. 17, 1979, Ser. No. 85,704
Claims priority, application Australia, Oct. 17, 1978, PD6422; Apr. 27, 1979, PD8563
Int. Cl.³ F16D *65/36*
U.S. Cl. 188—156 **5 Claims**

1. A brake assembly including:
a brake housing;
a wheel shaft rotatable in the housing;

an armature plate in the housing, secured to and rotatable with the shaft;
a movable actuator in the housing, movable axially from an inoperative position to an operative position closer to the armature plate;
an electromagnet housed in an electromagnetic housing and adapted, when energized, to rotate, and thus urge the actuator to rotate, with the armature plate, from its inoperative position to its operative position;
a lever member operatively attached to the electromagnet housing and adapted to be actuated by actuation of said electromagnet, said lever member having gear means associated therewith rotatably engaging the movable actuator;



a rotatable brake disc in the housing, rotatable with the shaft; and
a non-rotatable brake member in the housing; the movable actuator being adapted, when moved by said lever to the operative position by the interengagement of the gear means with the lever member upon actuation of said electromagnetic, to force the rotatable brake disc and the nonrotatable brake member into frictional contact to brake the rotation of the said disc and the shaft to which it is connected.

4,352,416

CAST IRON RAILROAD BRAKE SHOES

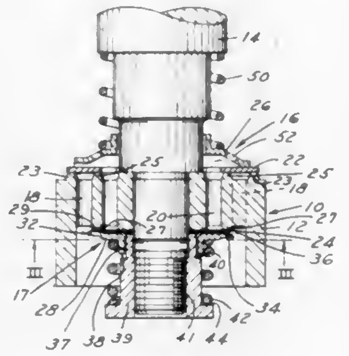
Hugo R. Larson, Ridgewood, and Chandi P. Biswas, Ramsey, both of N.J., assignors to Abex Corp., Columbus, Ohio
Continuation-in-part of Ser. No. 759,231, Jan. 18, 1977, abandoned. This application Dec. 12, 1977, Ser. No. 859,259
Int. Cl.³ F16D *69/02*
U.S. Cl. 188—251 M **2 Claims**

1. A cast iron railroad brake shoe consisting essentially of about (weight %):
Carbon—2.5 to 3.5;
Silicon—1.6 to 2.2;
Phosphorus—more than 2 and up to 10;
Sulfur and Manganese both present in the ratio of weight % S>weight % Mn/1.8;
balance essentially iron except for impurities and tramp elements;
the amount of sulfur in excess of weight % Mn/1.8 accounting for increased wear resistance in proportion to said excess.

4,352,417

CONTROL VALVE FOR SHOCK ABSORBER PISTONS AND THE LIKE

Jonathan D. Stinson, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 3, 1980, Ser. No. 193,555
Int. Cl.³ F16F *9/50*
U.S. Cl. 188—322.15 **6 Claims**



1. A piston rebound control valve for controlling the flow of liquid through a rebound passageway in a piston housing comprising:
a flexible valve disc covering said passageway;
a valve seat abutting said valve disc when said disc is in a seated position thereagainst;
a biasing means for resiliently biasing said valve seat against said valve disc;
said valve seat having a debossed section spaced away from said seated valve disc when said disc is in its seated position;
said valve disc constructed to flex toward said debossed section of said valve seat in response to a predetermined pressure in said passageway to provide initial flow from said passageway by said valve disc, said predetermined pressure being less than the pressure needed to lift said valve seat against its biasing means.

4,352,418

HUB CLUTCH

Masao Teraoka, Sano, Japan, assignor to Tochigi-Fuji Sangyo Kabushiki Kaisha, Tochigi, Japan
Filed Jul. 28, 1980, Ser. No. 172,851
Claims priority, application Japan, Jun. 24, 1980, 55-88453[U]
Int. Cl.³ F16D *11/10*
U.S. Cl. 192—36 **6 Claims**

1. A hub clutch for use in a wheel drive assembly of a four-wheel drive vehicle, the assembly being of the type including a drive shaft selectively operable in a driving mode and rotating to transmit a rotational driving force and in a non-driving mode to interrupt such rotational driving force, and a hub positively driven when the drive shaft is in the driving mode thereof and freely rotatable when the drive shaft is in the non-driving mode thereof, said hub clutch comprising:
a sleeve drive clutch member adapted to be fixed to a drive shaft to rotate therewith during the driving mode thereof;
a driven clutch member positioned radially outwardly of said drive clutch member and adapted to be fixed to a hub, said driven clutch member including a single set of circumferentially spaced first teeth;
a slide clutch member positioned radially between said drive clutch member and said driven clutch member, said slide

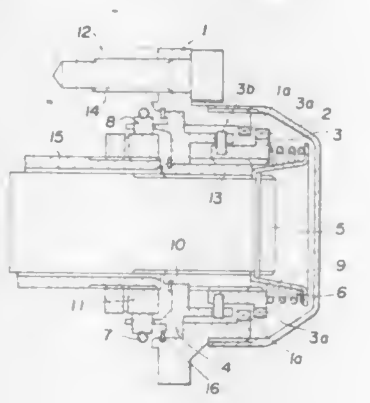
clutch member including a set of circumferentially spaced second teeth, said slide clutch member being mounted on said drive clutch member for rotation therewith and for axial movement relative thereto between an engaged first position whereat said second teeth are in engagement with said first teeth, thereby to transmit rotation of said drive clutch member to said driven clutch member, and a disengaged second position whereat said second teeth are out of engagement with said first teeth;

a retainer mounted about said drive clutch member for rotation with said slide clutch member and adapted to be mounted on a nonrotatable portion of the assembly, the axial position of said retainer with respect to said drive clutch member being fixed;

brake means for applying a predetermined braking pressure to said retainer, thereby for retarding rotation of said retainer and creating a limited relative rotation between said slide clutch member and said retainer;

resilient means for biasing said slide clutch member to move axially of said drive clutch member in a first direction; and

cam means associated with said slide clutch member and said retainer for, upon rotation being imparted to said slide clutch member by one of said drive clutch member or said driven clutch member and the operation of said brake means to create said limited relative rotation between said slid clutch member and said retainer, allowing axial movement of said slide clutch member in said first direction, and for, upon rotation being imparted to said slide clutch member by the other of said driven clutch member or said driven clutch member and the operation of said brake means to create said limited relative rotation between said slide clutch member and said retainer, moving said slide clutch member axially in a second direction against the force of said resilient means, said axial movement of said slide clutch member in said first direction being from one of said first or second positions to the other of said first or second positions, and said axial movement in said second direction being from said other of said first or second positions to said one of said first or second positions, said cam means comprising a contoured cam surface formed on one of said retainer or said slide clutch member and a pin member fixed to the other of said retainer or said slide clutch member, said pin member being biased into contact with said contoured cam surface by said resilient means, such that upon said limited relative rotation between said slide clutch member and said retainer said pin member follows the contour of said cam surface, thereby achieving axial movement of said slide clutch member.



4,352,419

SELF CENTERING CLUTCH THRUST BEARING

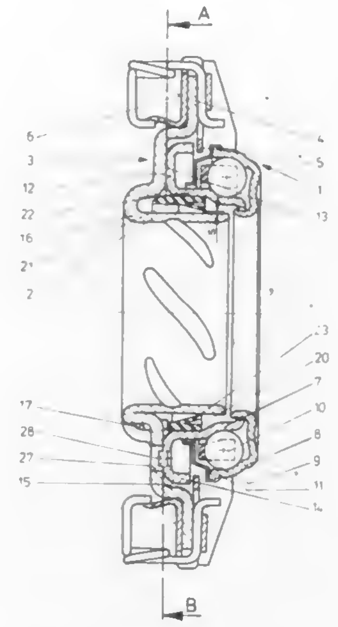
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 16, 1980, Ser. No. 169,627

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1979, 2931022

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 9 Claims



1. In a self centering clutch thrust bearing having rotating outer bearing ring means with an annular surface adapted to engage a clutch lever, fixed inner bearing ring means axially extending toward the clutch side of said bearing, a plurality of rolling bodies in a cage between said rotating and fixed bearing rings, a sliding housing having a sliding sleeve, and a surface adapted to axially engage said inner bearing ring means and have limited radial and circumferential movement with respect thereto, and a damping ring of resilient material between said inner bearing ring means and sliding sleeve, said damping ring having resilient fingers extending toward said sleeve, and wherein said inner ring means and sleeve are spaced sufficiently to permit radial play therebetween; the improvement wherein said damping ring, on the side thereof axially extending away from said clutch, has axially directed first projection means and axially directed second projection means, said projection means engaging recesses in said housing with play, said second projection means having less resiliency than said first projection means and being adapted to engage the sides of the respective recesses in said housing after said first projection means have engaged the sides of their respective recesses upon turning movements in said bearing.

4,352,420

FRICTION CLUTCH DRIVEN PLATE

Ian C. Maycock, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 6, 1980, Ser. No. 147,186

Claims priority, application United Kingdom, May 10, 1979, 7916306

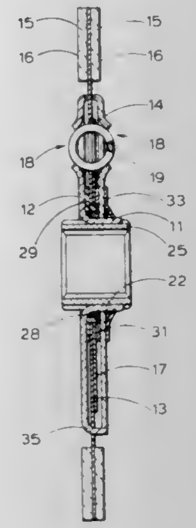
Int. Cl.³ F16D *3/66*

U.S. Cl. 192—106.2 **7 Claims**

1. A friction clutch driven plate having a hub with a circumferential flange thereon, said hub comprising:

an annular metal plate having a central cylindrical neck, and an annular central insert having inner splines for mating with a shaft and outer teeth for engagement on the neck, the insert being a force fit into the neck to hold the insert against axial movement and by engagement of its outer teeth on the neck to hold the insert against rotational movement relative to the plate, said plate then constituting a hub flange;

an annular friction facing carrier co-axial with the hub and arranged to one side of the flange;



a retainer plate rotationally fast with the flange and arranged on the opposite side of the carrier to said flange so as to sandwich the carrier therebetween;

and a spring ring forced over said neck to hold the retainer axially in position.

4,352,421

ARRANGEMENT FOR THE ORIENTED FEEDING OUT OF CAPS

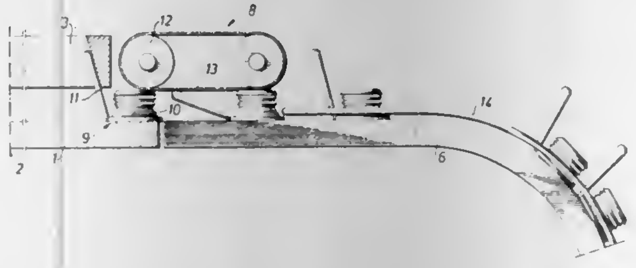
Alvar Olsson, Dalby, and Peter Giacomelli, Lund, both of Sweden, assignors to Tetra Pak Developpement SA, Switzerland

Filed Dec. 5, 1980, Ser. No. 213,469

Claims priority, application Sweden, Dec. 11, 1979, 7910169

Int. Cl.³ B65G *47/14, 29/00*

U.S. Cl. 198—392 6 Claims



1. Apparatus for the oriented feeding out of caps of the type having a cap body and a projection arranged at an angle thereto, comprising:

a rotating disc with a planar working surface onto which the caps are fed in random orientation;

a guide rail, in the form of a continuous ring arranged coaxially with the disc and a lower periphery of the ring being spaced at a uniform continuous height above the working surface of the disc, for guiding the caps upon rotation of the disc so that the cap body projects under the guide rail and the projection contacts the guide rail to stop the cap; and

feeding-out means arranged adjacent the guide rail to engage the cap body and pull the cap beneath and past the guide rail with the projection being bent downwardly when clearing the ring.

4,352,422

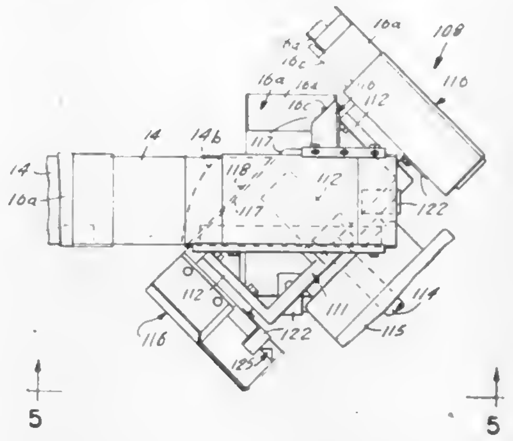
BOX TRANSFER APPARATUS

George L. Meyers, Menasha, and Thomas M. Gorshe, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 29,685, Apr. 13, 1979, abandoned, which is a division of Ser. No. 845,224, Oct. 25, 1977, Pat. No. 4,164,171. This application Sep. 26, 1980, Ser. No. 191,342

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—404 1 Claim



1. Transfer means for transferring flat-sided boxes between a pair of first and second conveyors disposed in different horizontal planes, the first of the conveyors moving a box in the process of being folded along a folding mandrel toward a discharge end of the mandrel and the second conveyor receiving the folded box discharged from the mandrel for transporting the received box to a filling machine, the second conveyor extending along a different path beneath the first conveyor, and comprising:

a plurality of mutually spaced box carriers supported by arms attached to a horizontal shaft for rotational movement about an axis disposed between said planes at the end of the conveyor associated with the mandrel which axis extends at a first 45° angle as respects the horizontal axis of the direction of travel of the first conveyor in its horizontal plane of travel, said carriers being disposed at a second 45° angle as respects the rotational plane of movement of said arms about said axis so that when said shaft is rotated 360° the axis of each carrier is sequentially aligned first to the axis of said first conveyor and 180° later is at right angles to the axis of the first conveyor,

an indexing means for effecting incremental movement of said first conveyor and like incremental movement of said box carriers about said axis of said horizontal shaft in unison to accommodate feed of said boxes from the discharge end of said mandrel individually to related ones of said container carriers for transfer individually to the second of said conveyors, thereby to invert and turn said boxes 180° about their longitudinal axes and 90° about their transverse axes, respectively, with respect to said first conveyor;

each carrier being pocket-shaped in cross section and presentable to the discharge end of said mandrel laterally to receive and to hold a box in provision of its transposition and transfer between said conveyors, each said carrier being presentable in juxtaposed relation to and above said other conveyor to discharge a box radially from a related carrier to said other conveyor, and means effective at the time of juxtaposition to transfer a box from each said carrier to said other conveyor upon completion of inverting the box 180° and turning said box through said 90° angle;

the discharge end of said mandrel being defined by a 45° angle when viewed in top plan and the end adjacent thereto of each carrier being defined by a mating 45° angle so the horizontal axis of each pocket is substantially coincident to the horizontal axis of the mandrel each time a 45° end of a pocket is mated to the 45° end of the mandrel.

4,352,423

CONVEYING APPARATUS

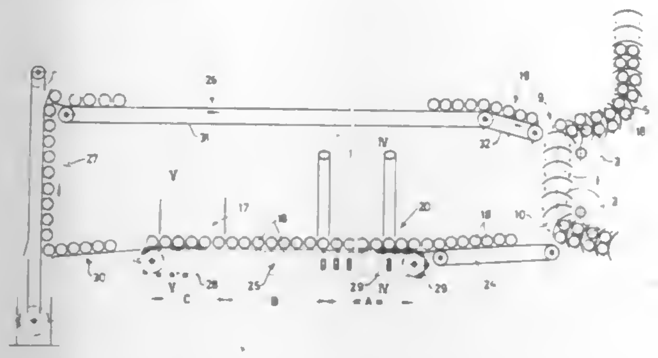
Salomon Santen, Amsterdam, Netherlands, assignor to Stork Amsterdam B.V., Netherlands

Filed Jul. 31, 1980, Ser. No. 174,175

Claims priority, application Netherlands, Aug. 1, 1979, 7905925

Int. Cl.^{3} B65G *37/00*

U.S. Cl. 198—472 **7 Claims**



1. Conveying apparatus for the thermal treatment of commodities packed in containers, said conveying apparatus comprising an elongate, flexible conveyor and means for conveying said flexible conveyor along a closed path of travel, carriers for containers to be treated being attached to said flexible conveyor at spaced intervals therealong for moving therewith, at one location along said path of travel is a loading unit for loading a said carrier with containers to be treated as said carrier moves past said loading unit and at a second location spaced from the one location is an unloading unit for unloading treated containers from a said carrier as that said carrier moves past said unloading unit, said loading unit comprising means for forming sticks of containers and means for pushing a said stick into a sheath, and loading means at one side of said conveyor for loading each carrier in one single action from said one side of said conveyor with at least two sheaths and said unloading unit comprising means for unloading the at least two sheaths from each said carriers in one single action from one side of said conveyor.

4,352,424

DEVICE FOR CONVEYING MOLDED PIECES

Yoshiyuki Ichizawa, Sohka, and Tsugio Nomoto, Higashi Kurume, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 56,990, Jul. 12, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,659

Claims priority, application Japan, Jul. 13, 1978, 53/85541

Int. Cl.^{3} B65G *47/34*

U.S. Cl. 198—482 **2 Claims**

1. A device for conveying molded pieces used for forming bottle-shaped containers, each of said pieces having a body, a flange formed on one end of said body and a body bottom formed on the end opposite said flange, said device comprising:

piece supply means for slidably feeding said pieces to a near vertically inclined endless conveyor, said conveyor comprising;

a chain-engaged drive sprocket;

drive means for driving said sprocket at a constant speed in a predetermined direction;

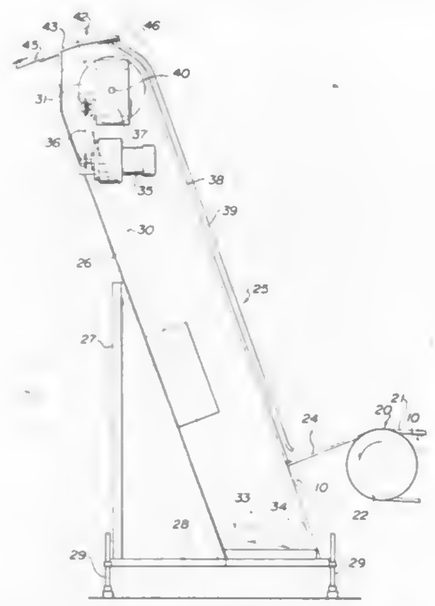
a guide sprocket, either said guide sprocket or said drive sprocket being a top sprocket located at the top of said endless conveyor;

an endless drive chain connecting said drive sprocket and said guide sprocket;

supporting-pushing attachments attached at equal, predetermined intervals along said drive chain, said attachments being capable of supporting the body bottoms of the pieces;

upper and lower pairs of guide rails, said lower pair of guide rails being closer to said drive chain than said upper pair, said guide rails being parallel to and outside said chain, located so that the portion of said drive chain nearest said guide rails moves upwardly, said guide rails surrounding the flange of said piece when said piece is pushed upwardly by said attachments, said lower pair of guide rails being in contact with or immediately adjacent to said piece supply means so that the flange of a piece located at the end of said piece supply means nearest said endless conveyor contacts the lower pair of guide rails;

piece exhaust means for slidably feeding said pieces from said endless conveyor at the top of said conveyor by engaging said flanges, said attachments extending outwardly from said chain a distance less than the vertical distance encompassed by said pieces when positioned along the top sprocket and supported by said piece exhaust means;



a piece delivery portion for conveying out the piece conveyed to the top of said endless conveyor into said exhaust means, said piece delivery portion having a piece transfer chute plate secured to the tops of said guide rails, said guide rails being slightly bent along the peripheral surface of the top sprocket toward the piece delivery portion to provide an uppermost piece conveying position, said chute plate extending to said exhaust means directly above the top sprocket, said chute plate having a piece passing hole formed therein of a size to allow the flange of the pieces to pass therethrough.

4,352,425

BELT CLEANER

Ray Childress, and Steve Childress, both of P.O. Box 853, Richlands, Va. 24641

Filed Apr. 22, 1981, Ser. No. 256,536

Int. Cl.^{3} B65G *45/00*

U.S. Cl. 198—499 **5 Claims**

1. A cleaner for an endless belt having upper and lower runs movably mounted on a support, comprising

a cross shaft,

means for rotatably mounting the cross shaft on the support for rotation about an axis extending transversely to the lower belt run,

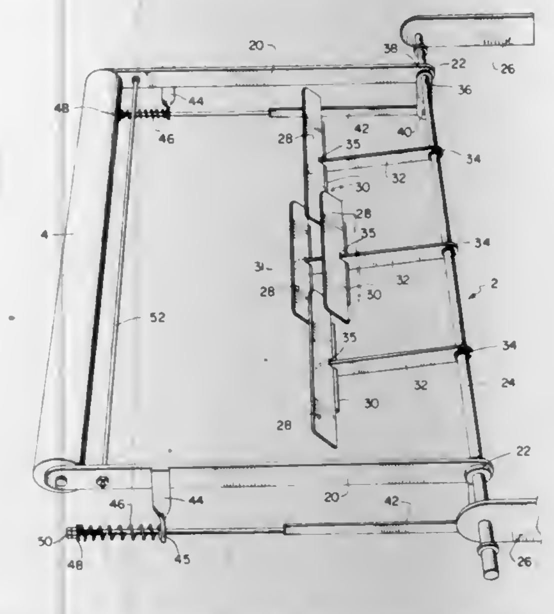
lever means having an inner end portion affixed on the cross shaft for rotation therewith,

blade means mounted on an outer end portion of said lever means for scraping against the lower side of the lower belt run,

roller means for riding along the upper side of said lower belt run,

elongate arms having inner end portions rotatably mounted on said cross shaft and outer end portions rotatably supporting said roller means whereby the arms are pivoted about said cross shaft by the roller means when the latter follows upward and downward belt deflections,

crank arm means having inner end portions affixed on the cross shaft for rotation therewith,



and force-transmitting means engaging between said elongate arms and the crank arm means whereby to rock the cross shaft and thereby move the blade means upwardly and downwardly with said belt run in response to upward and downward deflections of said lower belt run.

4,352,426

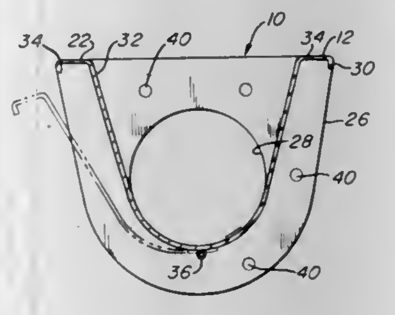
AUGER FEED DEVICE

Russell I. Peterson, Jr., Oil City, Pa., assignor to Conair, Inc., Franklin, Pa.

Continuation of Ser. No. 44,507, Jun. 1, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,490

Int. Cl.^{3} B65G *33/00, 21/08*

U.S. Cl. 198—657 **13 Claims**



1. An auger feed device comprising: an elongated auger rotatable about the central longitudinal axis thereof and having a discharge end; an elongated trough assembly having a longitudinally extending upwardly open trough portion; said auger extending longitudinally within said trough portion and cooperable therewith to convey material received within said trough portion to a discharge opening in one end of said trough assembly adjacent said discharge end; said trough portion comprising a pair of transversely adjacent longitudinally extending trough sections with one of said trough sections being a rigid portion of said trough assembly and the other of said trough sections being pivotably movable with respect to said one of said trough sections about an axis located at least below said central axis and extending longitudinally throughout at least the major longitudinal extent of said trough portion; and biasing means carried by said trough assembly which is operative to normally bias said other of said trough sections in cooperative operating relationship with said auger while permitting said other of said trough sections to pivot away from said one of said trough sections when said bias is overcome.

4,352,427

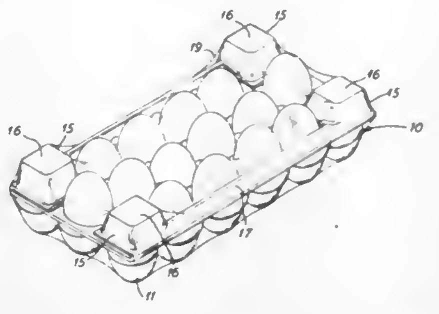
STACKABLE EGG CARTON HAVING OVERWRAP OVER EGGS SUFFICIENTLY TAUT TO RIGIDIFY CARTON

Connie Lake, Tinley Park, Ill., assignor to S. Eisenberg & Co., Division of Creative Industries, Inc., Bridgeview, Ill.

Filed Dec. 10, 1980, Ser. No. 215,110

Int. Cl.^{3} B65D *65/16, 81/16, 85/32*

U.S. Cl. 206—45.33 **7 Claims**



1. A molded plastic carton for eggs or other fragile articles containing the articles to be viewed by the purchaser without opening the carton or touching the articles contained therein, comprising a tray section having a plurality of rows of upwardly opening cells therein, each formed to generally conform to the articles to be carried in the carton, said carton having corner protective and stacking bolsters at each corner thereof, hinged to extend over the corner articles carried in the carton, said cells each being of a lesser depth than the height of the articles carried in the carton, and said tray section having an outer rim extending thereabout, a common integral hinge line extending along said rim along each side of the carton, hinging said bolsters to be pivoted along the sides of the carton to cover the articles in the corner cells thereof, said bolsters being cup-like in form when in open positions and having relatively flat top portions when extending over the corner articles, spaced a substantial distance above the height of the articles carried in the carton, and side panels connecting said bolsters together and hinged to the sides of the carton along the common hinge lines and extending upwardly along said bolsters for a portion of the height thereof and the eggs carried between said bolsters, and stopping short of the tops of said bolsters, embossments extending upwardly of the top rim of the tray section of the carton along the side edges thereof, and limiting inward movement of said side panels connecting the bolsters together, and means retaining said bolsters to extend over the corner cavities when loaded with eggs and retaining said side panels to extend upwardly along the eggs carried in said carton.

4,352,428

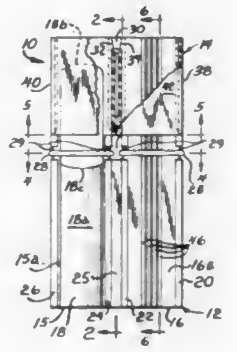
REED HOLDER

Vito S. Pascucci, and Elmer J. Aiello, both of Kenosha, Wis., assignors to G. Leblanc Corporation, Kenosha, Wis.

Filed Jan. 15, 1981, Ser. No. 225,258

Int. Cl.^{3} B65D *51/26, 41/00;* **A45C** *11/00;* **B65D** *85/20*

U.S. Cl. 206—314 **9 Claims**



1. A reed holder comprising a common base member and a cover member, said common base member having a plurality

of rigid, elongated portions extending therefrom in spaced apart parallel relation and with said common base member having planar surfaces each for receiving a reed with the flat surface thereof against said planar surfaces, and a plurality of elastomeric members respectively encircling said elongated portions, each for resiliently and releasably holding a reed against said planar surfaces, said cover member comprising an open-ended sleeve having top, bottom and side walls engageable over said elongated extending portions for covering a tip portion of each said reed, and means acting between said base member and said cover member for securing said reed holder in assembled condition.

4,352,429

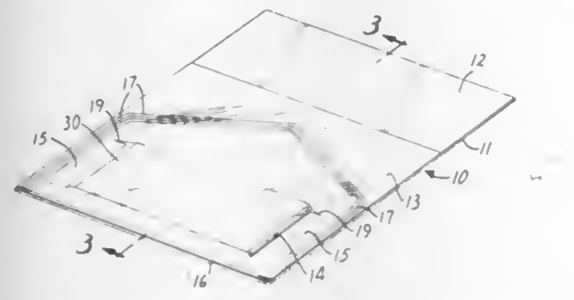
MEANS FOR THE STORAGE AND ASEPTIC DELIVERY OF STERILIZED ARTICLES

Charles L. Newman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 20,440, Mar. 14, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,501

Int. Cl.³ A61B *19/02;* **A61L** *15/00*

U.S. Cl. 206—439 **4 Claims**



1. A package having high strength, bacteria-impermeable, sterilizable wall members adapted to contain an article in a sterile condition for use in a surgical environment, said package comprising:
(a) a first wall member having a top edge, bottom edge, opposite side edges flanking said top edge and having a window spaced from said edges to provide border portions between said edges and said window;
(b) a second wall member being sealed to said first wall member to afford a storage space between said wall members adapted for containing said article; and
(c) a flap member overlaying said window and said border portions and attached to said first wall member around the entire periphery of said window, said flap member being peelably sealed to said first wall member around said border portions so that when said flap member is peeled from said first member said article can pass from said storage space through said window while contacting only said border portions.

4,352,430

METHOD AND APPARATUS FOR SORTING FOREIGN BODIES FROM MATERIAL ON A MOVING CONVEYOR BELT

Maxemin Maier; Heinz Wittkugel, both of Hamburg; Klaus J. Liepelt, Ahrensburg, and Jorn Homeier, Henstedt-Ulzburg, all of Fed. Rep. of Germany, assignors to H.F. & Ph.F. Reemtsma G.m.b.H. & Co., Hamburg, Fed. Rep. of Germany

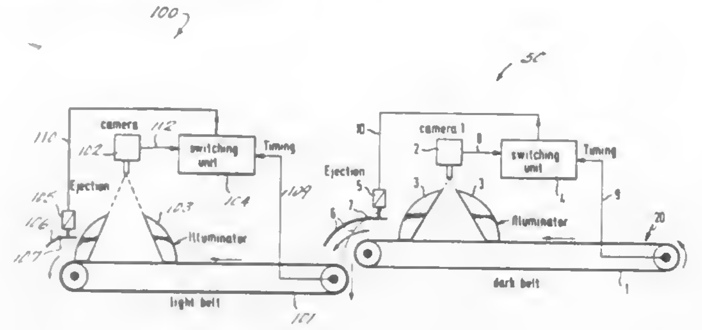
Filed Jan. 16, 1980, Ser. No. 112,594

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2901970

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—577 **16 Claims**

1. A method for removing foreign bodies from material comprising the steps of:
moving said material along a given direction on a conveyor while exposing said material to light from a source;
successively detecting with a television camera light coming from said material, in response to exposure, in a plurality of line areas extending along a line perpendicular to said given direction of movement of said material and across said moving material;
separating the line areas extending along each line into a plurality of sections, each including a plurality of areas, said sections being divided along the direction of movement of said material;



sequentially integrating over time the signals associated with a plurality of successive and corresponding sections from successive lines, the result of said integration being cleared and said integration reinitiated periodically, for producing a plurality of operating signals, each indicating the presence or absence of a foreign body in the areas associated with the integrated signals; and
removing each of said foreign bodies from said material in accordance with said operating signals.

4,352,431

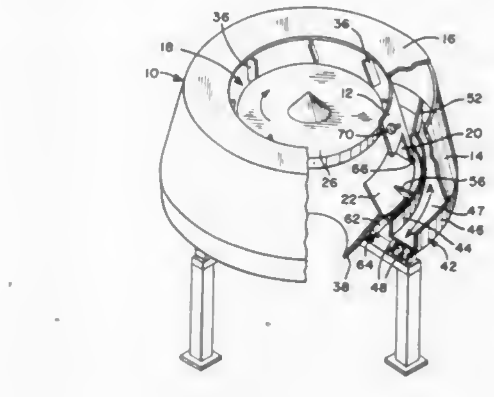
APPARATUS FOR SORTING CONTAMINANT MATERIAL FROM PROCESSING MATERIAL

Adrian Artiano, Everett, Wash., assignor to Black Clawson Inc., Everett, Wash.

Filed Jun. 4, 1979, Ser. No. 45,513

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—600 **15 Claims**



1. An apparatus for sorting contaminant material, such as rocks and metal, from processing material, such as wood chips, comprising:
a housing having an internal wall formed of a surface of revolution along a central vertical axis;
feed means defined in the upper portion of said housing for receiving said processing material;
discharge means in the lower portion of said housing for discharging said processing material;
impeller means disposed in said housing for receiving said processing material from said feed means and for propelling said processing material radially outwardly against said internal wall of said housing;
means for sensing vibrations of said internal wall due to impingement of said processing material thereon and for generating signals in response thereto;
means for distinguishing between signals generated in response to impact of said processing material from signals generated in response to impact of said contaminant material;
material flow diverting means disposed vertically beneath said internal wall of said housing downstream in the movement of the normal flow path of said processing material and movable between an inoperative position in which said processing material flows along its normal flow path past said material flow diverting means to an operative position for diverting from said normal flow path a portion of said processing material containing said contaminant material; and
means for receiving said signal from said signal distinguishing means and for activating said material flow diverting means to move from said inoperative position to said operative position in response thereto and for further causing said flow diverting means to move from said operative position to said inoperative position after a sufficient time to permit said portion of said processing material containing said contaminant material to be diverted.

4,352,432

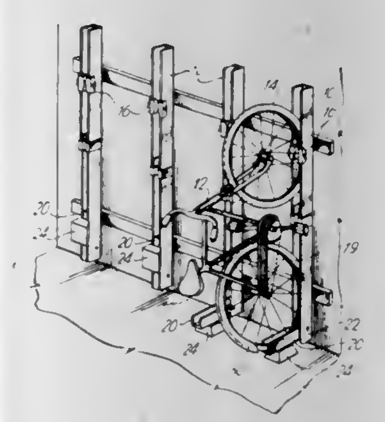
BICYCLE STORAGE RACK

Terrance R. Smith, 28 Roundhay Dr., Ottawa, Ontario, Canada (K2G 1B5)

Continuation-in-part of Ser. No. 806,307, Jun. 13, 1977, abandoned. This application Aug. 2, 1979, Ser. No. 62,944

Int. Cl.³ A47F *7/04;* **B62H** *3/08*

U.S. Cl. 211—19 **7 Claims**



1. A bicycle storage rack comprising an elongated U-channel adapted for vertical mounting on a vertical supporting surface;
said U-channel being formed of a rigid material bent along a pair of parallel bend lines to form a pair of arms extending the length of said channel in opposition to each other, said arms being deeper than the depth of a bicycle wheel with tire when rim mounted and flexible along the bend lines thereof with respect to each other to have a normal bias wherein the space between said opposing arms has a distance less than the width of the bicycle tire and rim and to be distendible on entry of the bicycle tire and rim to a distance slightly wider than said tire and rim, and thereafter releasably return to the normal bias so as to clamp the tire and rim thereof when said bicycle is secured in a vertical position with its other wheel resting on or near the ground, each of said arms having a plurality of holes adjacent its outer edge extending along the length thereof, the holes in one arm being horizontally aligned with the holes in the opposite arm to form opposing pairs across the bight of said U-channel wheel restraint means comprising a pair of restricting members each of which is located in a hole on an arm of said U-channel adjacent the free edge thereof in opposition to each other, to thereby reduce the space between said opposing arms to a distance less than the width of the bicycle tire and rim, said restraint means causing said arms to distend on entry of the bicycle tire and rim and thereafter, at least in part, surrounding said wheel and rim to releasably clamp the wheel within said channel.

4,352,433

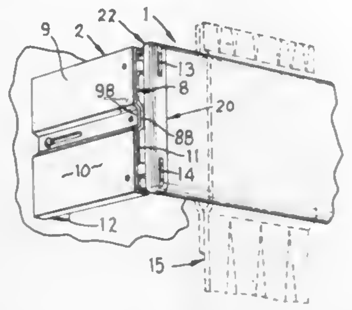
ROD AND BRACKET ASSEMBLY

James A. Ford, Sherman Township, St. Joseph County, Mich., assignor to Kirsch Company, Sturgis, Mich.

Filed Dec. 14, 1979, Ser. No. 103,777

Int. Cl.³ A47H *1/02*

U.S. Cl. 211—105.1 **15 Claims**



1. A device for the support of a drapery by extension thereof through a hem at the top of said drapery, comprising:
elongated straight rod means having rearwardly projecting flanges along the upper and lower edges thereof;
an end bracket attachable to a supporting surface and having plate means with a pair of remotely facing top and bottom hooks projecting beyond the outer edge of said plate means; and
an end cap fixedly but releasably attached to said rod means and being slidable therewith through the hem of said drapery, the end cap having a first portion inserted between adjacent ends of said flanges for supporting said rod means and a second portion arranged for covering both the adjacent end of said rod means and said outer edge of said plate means, said end cap including slot defining means for receiving and removably retaining said hooks.

4,352,434

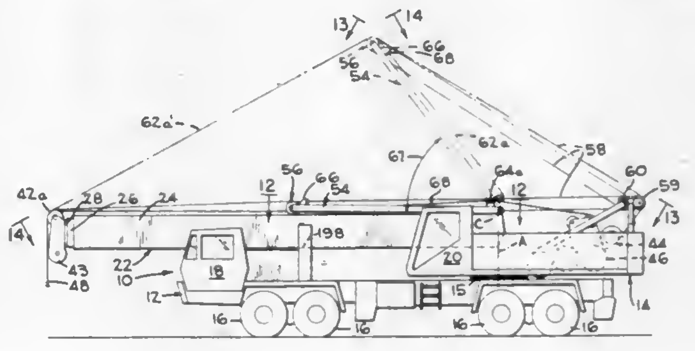
PENDANT SUPPORTED HYDRAULIC EXTENSIBLE BOOM

Darwin N. Poock, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed May 1, 1980, Ser. No. 145,529

Int. Cl.³ B66C *23/00*

U.S. Cl. 212—186 **15 Claims**



1. A crane having a body and having an extensible boom, said boom having a base section pivotally connected to the body and having an intermediate boom section and a tip section, said boom sections mounted in telescopic relation, the improvement comprising a mast pivotally mounted on said boom, a pendant extending from the top of the mast to the end of the boom and into the boom for connecting to the base section, an intermediate sheave rotatably mounted in fixed relation to the intermediate section, an internal tip section sheave rotatably mounted in fixed relation to the tip section,

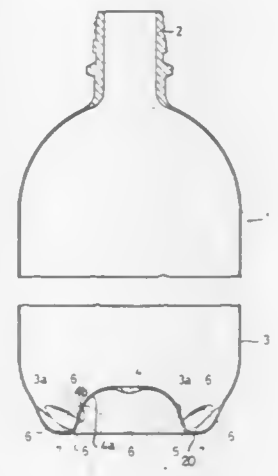
two hydraulic cylinders recieved in said boom, one of said cylinders connected between the base section and the intermediate section, a cylinder sheave journaled on the forward end of said one cylinder, the other of said hydraulic cylinders being connected between the tip section and the intermediate section, said cylinders and a portion of said pendant trained around said sheaves cooperating to extend said boom sections and move said sheaves with respect to each other, the movement of said sheaves paying out pendant from the boom in response to extension of said boom sections to compensate for the change in length of the boom, said pendant portion within said boom being trained about said sheaves in a manner which assists said cylinders when extending said boom sections.

4,352,435

SYNTHETIC RESIN MADE THIN-WALLED BOTTLE

Yataro Yoshino; Akiho Ota, and Hiroaki Sugiura, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 101,172, Dec. 7, 1979, Pat. No. 4,301,933.
This application Jan. 30, 1981, Ser. No. 229,878
Claims priority, application Japan, Jan. 10, 1979, 54-2805
Int. Cl.^{3} B65D *1/02*
U.S. Cl. 215—1 C **1 Claim**



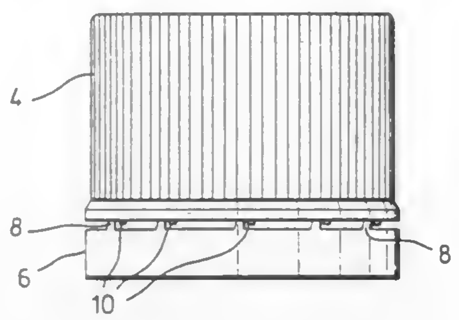
1. A synthetic resin thin-walled bottle having a neck portion, a biaxially oriented body wall portion extending downwardly from the neck portion and a bottom wall portion connected to the lower extremity of said body wall portion through a body wall section which extends downwardly and inwardly to said bottom wall portion, the bottom wall portion of said bottle having an upwardly projecting rise having a conical lower portion and an annular basal portion connected to said section and said rise through a substantially planar annular interconnect area, said section having spaced on the circumferential periphery thereof a plurality of rounded bulges projecting outwardly from said section, each of said bulges having an underside surface positioned more outwardly than said annular interconnect area, the underside surface of said bulges being annularly arranged and forming an outer ground-contacting surface for said bottle, said interconnect area forming a displaceable inner ground-contacting surface between said basal portion and the outer ground-contacting surface, said inner ground-contacting surface being positioned at a higher level than the outer ground-contacting surface and provided with elasticity so that when the bottle is empty, said inner ground-contacting surface stays at a higher level than the outer ground-contacting surface, but when the bottle is full, said inner ground-contacting surface is pressed down to the same level as the outer ground-contacting surface.

4,352,436

PILFERPROOF CAP

Robert M. Chartier, Waterloo, and Jean P. Richard, St. Bruno, both of Canada, assignors to Consumers Glass Company Limited, Etobicoke, Canada

Filed Nov. 28, 1980, Ser. No. 211,389
Int. Cl.^{3} B65D *41/34*
U.S. Cl. 215—252 **20 Claims**



1. A plastic cap with tamper indicating provision for twist application to a container, comprising a cap body portion, a band for application over a shoulder provided on a container, a plurality of circumferentially spaced-apart bridges for connecting and axially spacing apart the cap body portion and band, said bridges being sufficiently weak to break readily upon unthreading of the cap body portion for removing such applied cap from a container, means for driving said band relative to said cap body portion as said cap is twist applied onto a container to control relative rotation of said cap body portion and band to ensure integrity of said bridges as said band is applied over a shoulder of a container, said drive means being normally disengaged, said bridges being thickened at their juncture with either the cap or the band and said drive means being associated with the other of said cap or band, said bridges in the area of their thinner portions flexing as said cap is twist applied to a container whereby said band moves towards said cap body portion during application of said cap to a container to engage said drive means with the thickened portions of the bridges to prevent any further relative rotation between band and cap body portion and thereby ensure the integrity of said bridges.

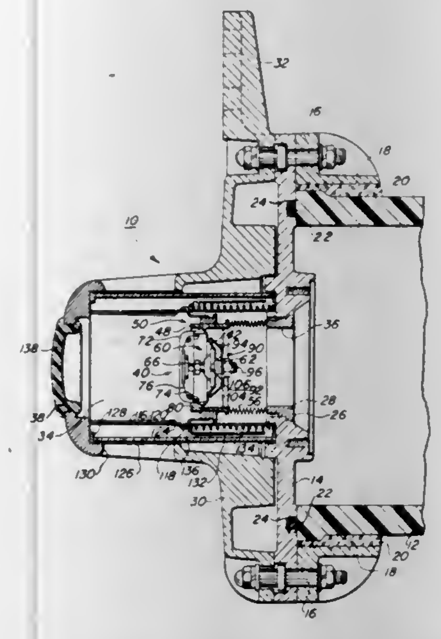
4,352,437

COMBINED PRESSURE RELIEF AND INDICATOR MECHANISM

Joseph Bernatt, Casa Grande, Ariz., assignor to S&C Electric Company, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,686
Int. Cl.^{3} B65D *25/00*
U.S. Cl. 220—89 A **20 Claims**

1. A combined pressure relief and pressure indicating mechanism for a vented housing filled with fluid at super-atmospheric pressure, comprising:
- rupturable diaphragm means for normally closing the vent;
- means for normally maintaining the diaphragm means in a first configuration as long as the fluid pressure is below a first value and for permitting the diaphragm to move out of the first configuration into a second configuration when the fluid pressure exceeds the first value;
- puncturing means for puncturing the diaphragm in response to movement of the diaphragm out of the first configuration and toward the second configuration;
- a normally unobservable movable indicator biased to an observable position; and
- means, including the diaphragm means, for normally holding the indicator in the unobservable position as long as the fluid pressure is greater than a second value and for releasing the indicator for movement to the observable position in response to fluid pressure less than the second value, the second value being less than the first value.

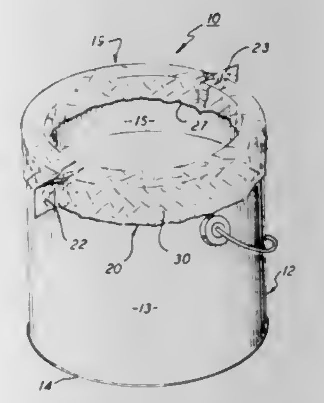


4,352,438

PROTECTIVE SHIELD FOR OPEN CONTAINER

Charles M. Carino, 264 S. Fourth Ave., Ilion, N.Y. 13357

Filed Feb. 12, 1981, Ser. No. 233,831
Int. Cl.^{3} B65D *90/52*
U.S. Cl. 220—90 **7 Claims**



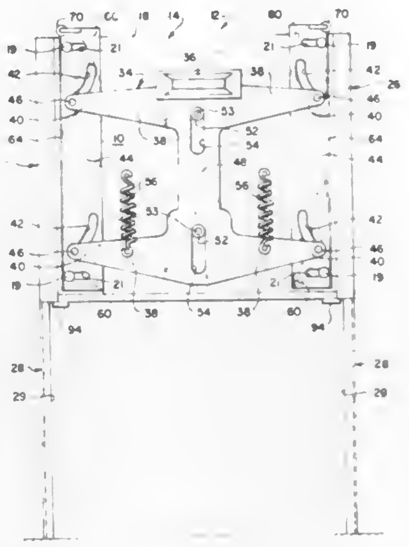
1. A protective device for use in conjunction with a liquid container of the type having an annular cover receiving rim that surrounds an opening formed in the top of the container, said protective device including an endless loop made of a thin deformable metal foil having a peripheral length that is slightly greater than the outer periphery of the container body, the lower portion of the foil loop passing coaxially over the top of the container to encircle its body, the middle portion of the foil loop being folded inwardly over the rim of the container to form a contoured surface that is seated in conformity against the rim and the top portion of the foil loop being folded downwardly into the container opening to form an annular protective wall about the opening and said foil loop containing a textured outer surface having a plurality of embossed lines that are obliquely inclined in reference to the center axis of said loop whereby liquid moving over said surface under the influence of gravity will remain in contact with said surface for an extended period of time.

4,352,439

APPARATUS FOR CLOSING THE DOOR OF A PRESSURE CHAMBER

Raju T. Makhijani, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Apr. 13, 1981, Ser. No. 253,254
Int. Cl.^{3} B65D *45/00*
U.S. Cl. 220—316 **6 Claims**



1. Apparatus for closing the door of a chamber capable of maintaining pressure within the chamber comprising:
- an operator for moving the door among its closed position, in which pressure can be maintained within the chamber, its partially closed position, in which access cannot be had to the interior of the chamber but in which pressure cannot be maintained within the chamber, and its open position, in which access can be had through the chamber opening to the interior of the chamber and in which pressure cannot be maintained within the chamber;
- a guide disposed on the chamber for restricting movement of the door to that necessary for it to travel among its closed, partially closed and open positions;
- a member secured to the chamber that is stationary relative to the chamber;
- a member disposed on the chamber that is movable relative to the chamber door and capable of being forced by said operator between the door and said stationary member to effect a separation of the door and said stationary member from each other of a predetermined distance to move the door to its closed position; and
- means disposed on the chamber for preventing the door from moving from its partially closed position toward its closed position until said movable member is forced between said stationary member and the door.

4,352,440

APPARATUS FOR TRANSPORTING ELECTRONIC COMPONENTS OR THE LIKE FROM ONE LOCATION TO ANOTHER IN ALIGNMENT

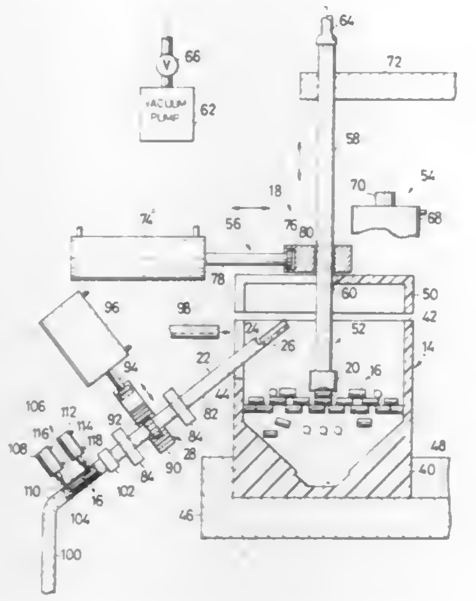
Kikuji Fukai, and Hideo Shirouchi, both of Takasaki, Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,003
Claims priority, application Japan, Jun. 25, 1979, 54/79957
Int. Cl.^{3} B65G *57/16, 61/00*
U.S. Cl. 221—178 **14 Claims**

1. An apparatus for transferring articles from one location, where the articles are held in a random pile, to another location in a row, the apparatus comprising:
- (a) a receptacle in said one location for receiving the articles;
- (b) pickup means for repeatedly picking up the articles, at least one at a time, in the receptacle and depositing the articles in a predetermined position;
- (c) an inclined chute for receiving the articles one at a time

at an entrance end thereof and conveying the articles in a row therethrough toward said other location;

(d) an entrance guide of substantially V-shaped cross section extending from the entrance end of the chute and lying in said predetermined position for directing the articles, as they are deposited on the entrance guide by the pickup means, into the chute; and



(e) means for rotating the chute and the entrance guide about the axis of the chute after the pickup means deposits at least one article on the entrance guide each time, in order to facilitate the entrance of the articles from the entrance guide into the chute.

4,352,441
TUBE KEY

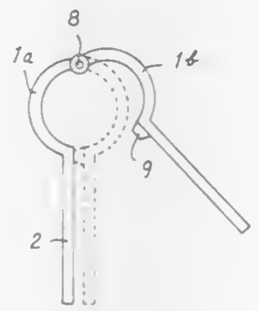
K. Göran Rosenlind, and S. B. Thomas Brandberg, both of Lindingö, Sweden, assignors to Svenska Streck Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE79/00077, § 371 Date Dec. 6, 1979, § 102(e) Date Nov. 27, 1979, PCT Pub. No. WO79/00887, PCT Pub. Date Nov. 1, 1979

PCT Filed Mar. 30, 1979, Ser. No. 128,353

Int. Cl.³ B65D *35/32*

U.S. Cl. 222—99 **3 Claims**



1. Tube key for exuding a product packed in a soft tube by compressing the tube to flatten it and rolling same onto the tube key, said tube key comprising a handle carrying two parallel legs of substantially circular cross section which are free at the ends thereof opposite the handle, the legs of the tube key being made of a springy material such as a springy metal, a springy glass fibre material or plastic material, said legs being constructed and arranged to spring outwardly against the material of the tube as the tube is rolled onto the key, the least free distance between the legs being 0.25–0.75 times the average diameter of the legs and the average diameter of legs being 16–48 times the thickness of the material of the tube, and wherein one of the legs is formed with a slot which is open outwards opposite the handle and the width of which slot is slightly larger than twice the thickness of the tube material.

4,352,442
DEVICE FOR THE MELTING AND MEASURED DISCHARGE OF A THERMOPLASTIC ADHESIVE MATERIAL

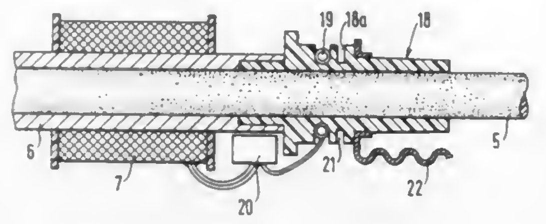
Erich Leibhard, Munich; Hanno Richter, Unterhaching; Gusztav Lang; Franz Popp, both of Munich, and Heinz Goellnitz, Ottobrunn, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Feb. 21, 1980, Ser. No. 123,416

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907484

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146 HE **12 Claims**



1. Device for the melting and measured discharge of a thermoplastic adhesive material comprising an axially extending melting chamber having an inlet opening at one end and an outlet opening spaced axially from it at the opposite end, a heating coil enclosing said melting chamber for melting the thermoplastic adhesive material so that it can be discharged from the outlet opening, an axially extending sealing sleeve secured to the inlet end of said melting chamber and extending outwardly therefrom and in general axial alignment therewith, said sealing sleeve arrange to prevent leakage of melted adhesive material out of the inlet opening to said melting chamber, wherein the improvement comprises that sealing sleeve being formed of a material having a significantly lower heat conductivity than the material forming said melting chamber, and having a first end located at the inlet opening of said melting chamber and a second end spaced outwardly away from the inlet opening to said melting chamber, a heating means located about said sealing sleeve between the first and second end thereof outside of said melting chamber and adjacent the inlet end of said melting chamber for heating the adhesive material located within said sealing sleeve so that a limited amount of heat is supplied sufficient for the adhesive material to pass into said melting chamber, said heating means having a heating capacity relatively small as compared to the heating capacity of said heating coil, and said heating means spaced axially from said heating coil.

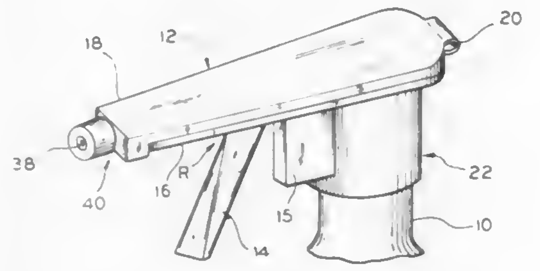
4,352,443
DISPENSER HAVING A TRIGGER-BULB PUMP

Sidney M. Libit, Glencoe, Ill., assignor to U.S. Cap & Closure, Inc., Chicago, Ill.

Filed Jun. 24, 1980, Ser. No. 162,429

Int. Cl.³ B65D *37/00;* **B05B** *11/01*

U.S. Cl. 222—207 **23 Claims**



1. A pump for a fluid container comprising: a spray head for dispensing fluid from the container, said head including a fluid-dispensing nozzle; first means for providing a flow of fluid from near the bottom of the container to the nozzle; second means interposed in said first means for drawing fluid from said container and delivering it to and expelling it from said nozzle, said second means including an integral trigger having a flexible flange member with a bulb dependent therefrom and a hole through said flange leading into the interior of said bulb, the contours of said flange cooperating with said spray head to form intake and outlet fluid valves and an air breather valve, said valves being operated by actuating said trigger bulb.

4,352,444
CONTROLLABLE VOLUME DOSING DEVICE

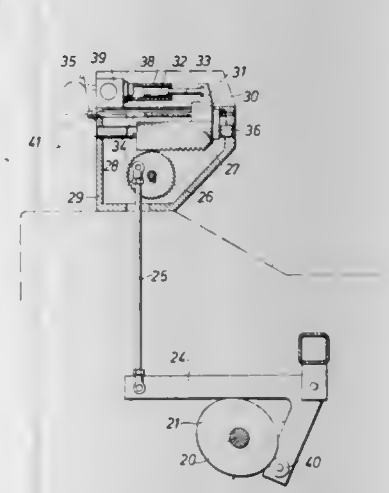
Roy D. Lewis, Färjestaden, and Bernt V. Borg, Kalmar, both of Sweden, assignors to Norden Packaging Machinery Aktiebolag, Sweden

Filed Jan. 16, 1980, Ser. No. 112,547

Claims priority, application Sweden, Jan. 17, 1979, 7900399

Int. Cl.³ G01F *11/06*

U.S. Cl. 222—309 **17 Claims**



1. A controllable volume dosing device comprising:
a support structure;
a cylinder supported by said support structure;
piston means for said cylinder, said piston means including a piston mounted within said cylinder for movement between a first end position and a second end position, and a piston rod having a first end connected to said piston and a second end;
a valve associated with said cylinder, said valve being positionable in a first valve position in which material may be introduced into said cylinder, and a second valve position in which material may be expelled from said cylinder, the displacement of said piston within said cylinder between said first and second end positions controlling the volume of a dose of said material;
linear drive means for linearly driving said piston rod to move said piston along a piston path of movement between said first and second end positions, said linear drive means comprising a guide rod supported by said support structure and extending substantially parallel to said piston path of movement, a rack member journalled on said guide rod for linear movement therealong, a dog member carried by said rack member and engaging said second end of said piston rod, and a rotatable pinion engageable with said rack member to move said rack member along said guide rod in response to rotation of said pinion; and
adjustable stop means associated with said piston means for defining said first end position of said piston, said adjustable stop means comprising a threaded member supported by said support structure and extending in a direction parallel to said piston path of movement, and a stop member threadably mounted on said threaded member so that rotation of said threaded member causes said stop member to move along said threaded member to adjust the position of said stop member, said stop member being engageable by one of said rack member and said dog member during movement thereof whereby said stop member sets the location of said first end position of said piston to thereby control the amount of displacement of said piston between said first and second end positions.

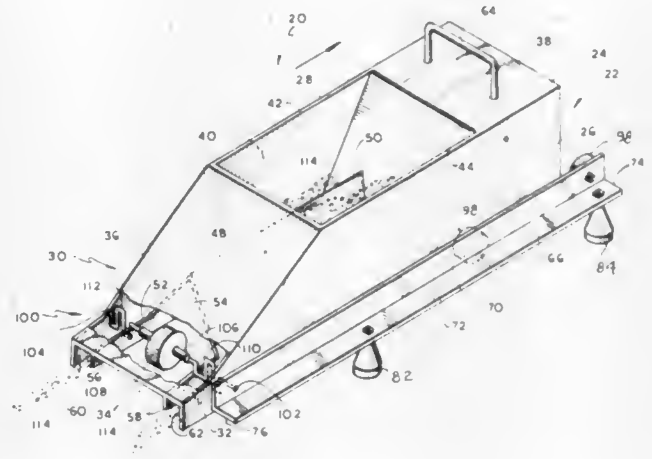
4,352,445
BUILDING MATERIAL APPLICATOR

Philip Cusumano, 246-25 137th Ave., and Vincent Cusumano, 246-26 137th Ave., both of Rosedale, N.Y. 11422

Filed Mar. 24, 1980, Ser. No. 133,660

Int. Cl.³ B05D *1/26, 1/30;* **F04G** *21/16*

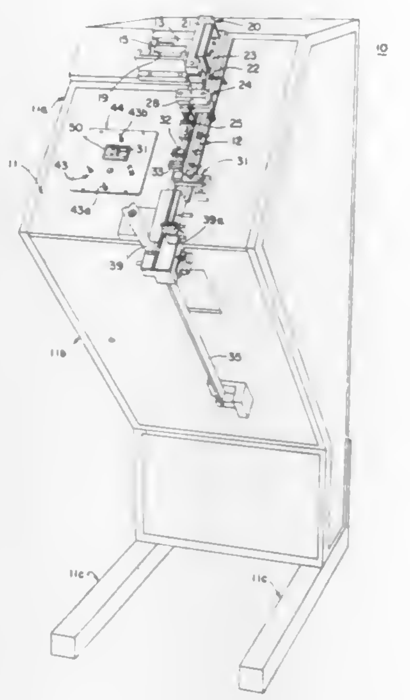
U.S. Cl. 222—611 **14 Claims**



1. An applicator for introducing and spreading building material in a controlled manner to a building surface comprising; a housing adapted to contain a predetermined amount of building material therein, guide means on the housing adapted to engage with the building surface and direct the applicator into desired alignment therewith and along a desired path when the applicator is associated with the building surface and moved there along, metering means in communication with the interior of the housing and with at least one opening to the exterior thereof to direct a predetermined pattern of building material from the interior of the housing through the opening and onto the building surface, the housing including a base and an arrangement of side walls extending from the base and forming therewith an enclosure for a chamber to hold building material, the base adapted for engagement with the building surface, the side walls having a configuration when forming the chamber so that building material is directed toward a pair of spaced openings in the base communicating with the building surface when the applicator is positioned thereon, the metering means including a beater on the housing and positioned in the travel path of the building material from the chamber through the openings in the housing, the beater adapted to be actuated when the applicator is moved along the building surface to facilitate metering and direction of building material from the chamber through the openings onto the beater surface, the beater including an axle mounted on the housing, at least one paddle on the axle and positioned in the housing so that rotation of the axle will cause the paddle to rotate and engage and direct building material through the openings onto the building surface, beater drive means on the axle and extending from the housing into direct engagement with the building surface so that movement of the applicator along the building surface will automatically actuate the beater drive means and to rotate the axle and paddle, and the beater drive means including gear means interconnecting the axle with a shaft extending downward from the exterior of the housing into alignment with a guide surface associated with the building surface, a beater roller on the shaft in position for engagement with the guide surface when the applicator is moved along the building surface so as to rotate the interconnected shaft, gear means, axle and paddles.

4,352,446
SUBSTRATE SEPARATING MACHINE AND METHOD

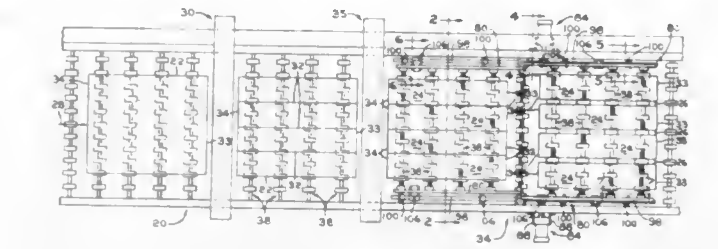
David H. Young, Warrington, Pa., assignor to MTI Systems Corporation, Ivyland, Pa.
Division of Ser. No. 941,181, Sep. 11, 1978, Pat. No. 4,235,357. This application Jun. 26, 1980, Ser. No. 163,171
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.^{3} B26F *3/00*
U.S. Cl. 225—1 **9 Claims**



1. A machine for subdividing into individual substrates for use in electronic components a wafer which is prescored with a pattern of intersecting score lines defining the substrates, said machine comprising:
first means for advancing the wafer progressively over a first support means;
first means for halting said advance when the wafer extends by substantially the distance between one set of said score lines beyond a predetermined linear region of the support means paralleling these score lines;
the first support means being so constructed at and beyond said linear region as to impart a localized breaking effect to the wafer along the linear region in response to force applied to the wafer portion extending beyond the region;
first means for applying said force thereby to break off said wafer portion;
second support means sloped to allow advancement of the broken-off wafer portion beyond a predetermined linear region of the second support means paralleling the other set of score lines;
second means for halting said last-named advance when the portion extends beyond the last-named linear region by substantially the distance between the second set of score lines;
the second support means being so constructed at and beyond its said linear region as to impart a localized breaking effect to the wafer portion along the said last-named linear region in response to force applied to the wafer portion extending beyond said last-named linear region; and
second means for applying said last-named force thereby to break off the last-named extending portion.

4,352,447
METHOD OF AND APPARATUS FOR SIDEWARD DISPLACEMENT OF SHEETS

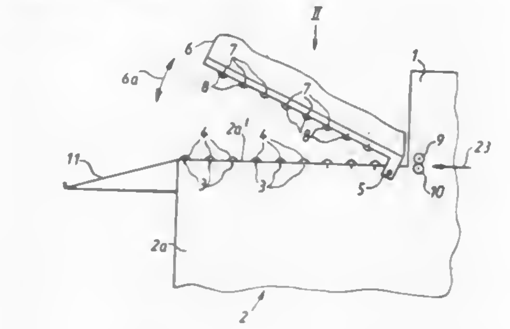
Robert M. Bonaddio, Fresno, Calif., and John R. Dahlberg, Jeannette, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Jul. 17, 1980, Ser. No. 169,548
Int. Cl.^{3} B26F *3/00;* **B65G** *47/26*
U.S. Cl. 225—2 **16 Claims**



1. A conveyor having a section for spacing edge portions of adjacent articles, comprising:
a plurality of spacing rolls, each of said spacing rolls comprising:
a shaft;
a member having linear elasticity and torque transmission mounted on said shaft; and
means slidably mounted on said shaft and engaging said member for expanding said member said expanding means includes a collar slidably mounted on said shaft adjacent each shaft end,
each of said collars engaging adjacent end of said member and means for securing said collars to their respective shaft to rotate said collars with said shaft; and
means for rotating at least one of said rolls about longitudinal axis of its shaft.

4,352,448
APPARATUS FOR DRYING SHEET-LIKE PHOTOGRAPHIC MATERIAL

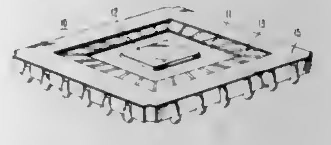
Thomas Hammer; Wilfried Hehn; Franz Kocourek; Werner Sieber, all of Munich, and Viktor Osegowitsch, Taufkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 3, 1980, Ser. No. 212,604
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951845
Int. Cl.^{3} B65H *17/20, 17/22*
U.S. Cl. 226—108 **20 Claims**

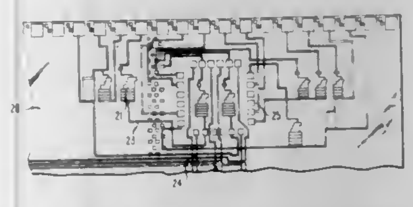


1. In an apparatus for drying running strips or sheets of photographic material, the combination of first and second groups of transporting rollers having predetermined diameters and defining an elongated path for the advancement of photographic material in a predetermined direction; first and second groups of parallel shafts supporting the rollers of the respective groups, the shafts of each group of shafts being spaced apart from each other by distances each of which at least equals 2D wherein D is the diameter of a roller; and elongated guide members disposed at the opposite sides of the photographic material and extending in said direction to guide the photographic material in said path, the guide members at one side and the guide members at the other side of said path being separated from each other by a distance which is less than D.

4,352,449
FABRICATION OF CIRCUIT PACKAGES

Peter M. Hall, Emmaus; Frank L. Howland, Allentown; Joseph M. Morabito, Bethlehem, all of Pa., and Lawrence J. Rickabaugh, North Andover, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 26, 1979, Ser. No. 107,327
Int. Cl.^{3} B23K *1/02;* **H01L** *21/60*
U.S. Cl. 228—123 **12 Claims**





1. A method of fabricating a circuit package comprising the steps of providing an electrical macro-component (**10** of FIG. 1) which includes a first set of contact pads (**14**) formed on one surface thereof, providing a supporting insulating substrate (**20** of FIG. 3) which includes a second set of contact pads (**25**) formed on one surface thereof corresponding to the first set of contact pads on the macro-component, and bonding the macro-component to the substrate by soldering said sets of contact pads together, characterized in that said pads include a solder wettable layer of gold thereon, and said soldering is done by bonding large lead-tin solder preforms (**16**) onto one of said sets of contact pads, bringing the other set of contact pads into contact with the preforms, and bonding the preforms to the said other set of contact pads so that the weight of the macro-component is supported by the solder preforms while maintaining a gap between the macro-component and the substrate of at least 10 mils.

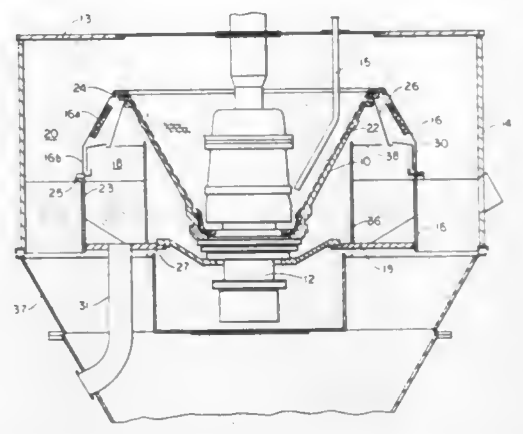
4,352,450
METHOD FOR SOLDERING ALUMINUM

Robert E. Edgington, 120 S. Genesse, Bellaire, Mich. 49615
Filed Sep. 19, 1980, Ser. No. 188,699
Int. Cl.^{3} B23K *1/02, 1/20*
U.S. Cl. 228—205 **5 Claims**

1. A method for soldering aluminum which includes the steps of heating at least one aluminum piece to a temperature within the range of 90°–150° C. cleaning at least one heated surface thereof, further heating the cleaned piece to a temperature within the range of 350°–490° C., applying to the cleaned and further-heated piece a coating, of a tin/lead/zinc alloy consisting essentially of from 1.7 to 2.2 percent aluminum, from 0.01 to 0.02 percent magnesium, from 45.9 to 50.4 percent zinc, from 14.2 to 34.0 percent tin, and from 16.6 to 36.7 percent lead, cooling a surface of the applied alloy, cooling the coated piece to within the range of approximately 180°–300° C., and soldering the cleaned alloy surface with a lead-tin solder.

4,352,451
CENTRIFUGAL DRIER

Gerard Journet, Hellemmes Lille, France, assignor to Fives-Cail Babcock, Paris, France
Filed Sep. 25, 1980, Ser. No. 190,740
Int. Cl.^{3} B04B *7/00, 11/06*
U.S. Cl. 233—27 **7 Claims**



1. An apparatus for the continuous centrifugal separation of solids from a liquid, which comprises
(a) an upwardly and outwardly tapering conical bowl having an upper rim,
(b) a housing surrounding the bowl and defining a chamber,
(c) a vertical shaft mounted in the housing and supporting the bowl for rotation thereabout,
(d) a circular wall concentrically surrounding the bowl and separating the housing chamber into a first compartment receiving the liquid from the rotating bowl and a second compartment receiving the separated solids therefrom,
(e) a skirt surrounding an upper part of the bowl, the skirt having an upper part affixed to the upper bowl part and a lower part,
(f) an annular baffle affixed to the circular wall and extending between the circular wall and the lower skirt part,
(1) the circular wall, the skirt and the baffle defining an annular space in communication with the first compartment, rotation of the bowl and skirt affixed thereto causing the liquid to be forced centrifugally from the bowl into the first compartment and droplets of the liquid to be suspended in an air current in the annular space, and
(g) a fibrous mat disposed in the annular space and surrounding the skirt, the mat being arranged to trap the suspended liquid droplets and permit the trapped liquid to run by gravity into the first compartment.

4,352,452
EMERGENCY CONTROLLER FOR AN AIR CONDITIONING SYSTEM OF AN AUTOMOTIVE VEHICLE

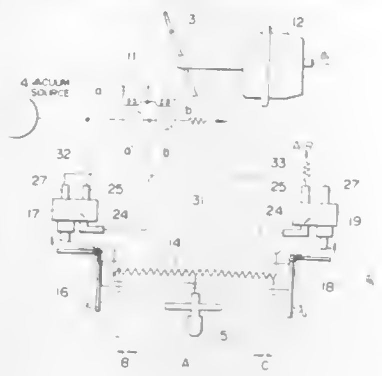
Yukio Shimada; Naoyoshi Suzuki; Toshio Ohashi, all of Yokohama, and Yasushi Inoshita, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Oct. 16, 1980, Ser. No. 197,694
Claims priority, application Japan, Oct. 22, 1979, 54-135181
Int. Cl.^{3} G05D *23/13*
U.S. Cl. 236—13 **3 Claims**

1. An emergency controller for an air conditioning system of an automotive vehicle incorporating an automatic electric temperature adjusting means connected to a vacuum control circuit, the vacuum control circuit being normally connected between a vacuum source and vacuum power servo, for performing a proportional control over an air mixing door, the emergency controller comprising:
(a) a vacuum supply conduit connected directly to the vacuum source; and
(b) a first three-way vacuum switch connected to said vacuum supply conduit and vacuum control circuit for

switching the connection of the vacuum power servo from the vacuum control circuit to said vacuum supply conduit;

(c) a first switching member operatively connected to said first three-way vacuum switch for mechanically switching said first three-way vacuum switch;

(d) a second three-way vacuum switch connected to said first three-way vacuum switch and the vacuum power servo for switching the connection of the vacuum power servo from said first three-way switch to an air opening conduit;



(e) a second switching member operatively connected to said second three-way vacuum switch,

said first and second switching members positioned for manual actuation by an operator of the vehicle for switching said first and second three-way vacuum switches upon failure of said automatic electric temperature adjusting means.

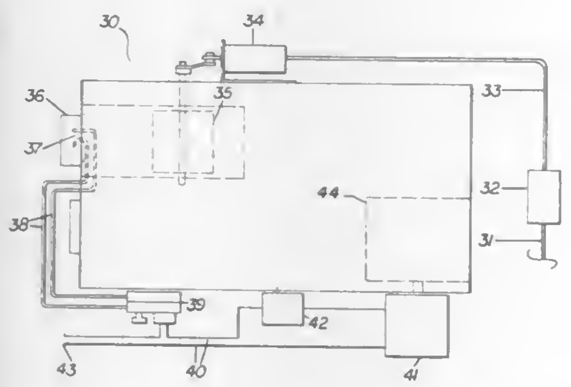
4,352,453
FAN CONTROL FOR VARIABLE AIR VOLUME TERMINAL UNIT

John C. McNabney, Harwinton, Conn., assignor to Interpace Corporation, Parsippany, N.J.

Filed Jan. 19, 1981, Ser. No. 226,567

Int. Cl.³ G05D *23/13*

U.S. Cl. 236—13 **3 Claims**



1. An air conditioning system terminal unit comprising:

a mixing box with a primary air inlet communicating with a source of pressurized air, a secondary air inlet, and an outlet;

an electric fan located at the outlet;

a throttling valve located at the primary air inlet;

throttling valve controls comprising means responsive to the temperature at a preselected location actuating the throttling valve; and

flow sensing means located in the primary air duct, ahead of the throttling valve, actuating the fan at a predetermined volume of primary air, independent of the throttling valve controls.

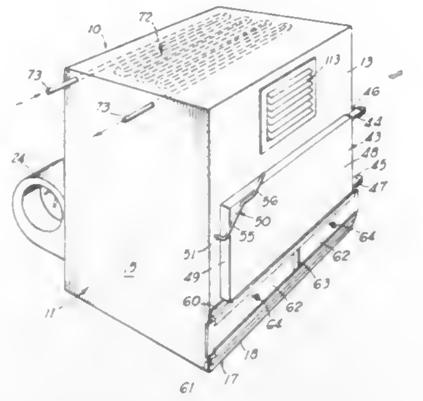
4,352,454
WOOD BURNING HEATER

James P. Ewing, 447 Tara Rd., Jonesboro, Clayton County, Ga. 30236

Filed Sep. 9, 1980, Ser. No. 185,491

Int. Cl.³ F24D *3/00*

U.S. Cl. 237—8 R **8 Claims**



1. A heater comprising an outer jacket, a fire box within said outer jacket, a common horizontal bottom panel for said jacket and said firebox said outer jacket and said fire box defining a plenum chamber therebetween, a plurality of horizontal rows of baffles spaced above and generally parallel to said base panel and within said plenum chamber, each of said baffles extending across said plenum chamber and being secured on opposite edges respectively to said jacket and said fire box, said baffles being disposed in vertically spaced rows, the ends of said baffles in each row being spaced from each other for defining a tortous air path through said plenum chamber, means for introducing air into said plenum chamber at the bottom rear portion thereof, said outer jacket being provided with port means at its top portion through which the air from said plenum chamber is discharged, a grate extending across the lower portion of said fire box, said grate being supported by its edges in spaced relationship above said bottom panel by said fire box said grate extending entirely across the bottom portion of the fire box, means for introducing air to the lower side of said grate, a flue extending through the rear portions of said outer jacket and said fire box for communicating with the upper portion of said fire box, said fire box being provided with an access opening and an access door for closing said access opening.

4,352,455
ARRANGEMENT FOR HEATING THE SERVICE CABIN OF A MACHINE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

Gottfried Moser, Gladbach, and Hansjürgen Gross, Niederkassel, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 123,169

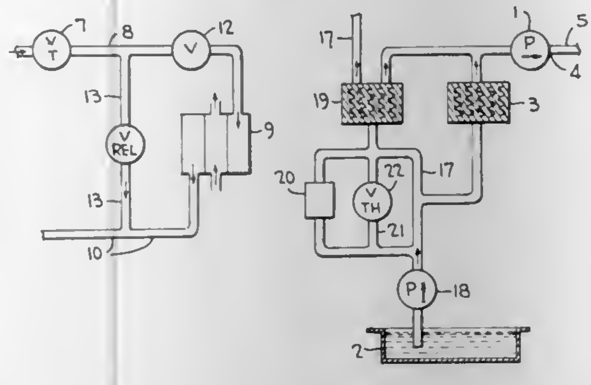
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932448

Int. Cl.³ B60H *1/14*

U.S. Cl. 237—12.3 R **9 Claims**

1. An arrangement for heating the operator's cabin of a motor vehicle powered by an internal combustion engine, comprising a lubricating system including a first lubricating oil pump operating at a predetermined lubricant pressure level for pumping oil from the engine oil sump into pressurized oil lines of the engine, a heating system including a second lubricating oil pump having a suction conduit connected to the engine oil sump, a supply conduit leading from the discharge side of the second pump to a heat exchanger provided for supplying heat to the operator's cabin, and a first return conduit leading from said heat exchanger to the oil sump, the improvement wherein an operating element is coupled into said supply conduit for reducing the pressure and elevating the temperature of the lubricating oil passing therethrough, and said second pump

having a capacity to produce a pressure of about one order of magnitude higher than said predetermined pressure level of said first pump, whereby the heat produced by said second pump and by said operating element raises the temperature of the lubricating oil fed through said heat exchanger to thereby increase the heating efficiency of said heat exchanger.



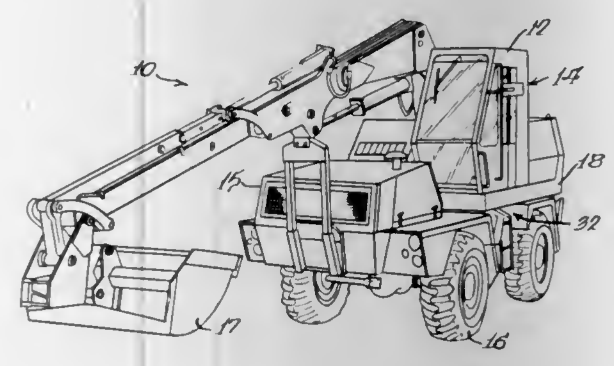
4,352,456
CAB HEATING SYSTEM

Lloyd W. Brandenburg, Jr., Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 9, 1980, Ser. No. 157,878

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 R **17 Claims**



1. A cab heating system, comprising: a cab providing an operator compartment, at least one material handling implement remotely operable from said cab, a hydraulic circuit having hydraulic fluid circulating therethrough, said hydraulic circuit including hydraulic control means for selectively controlling movement of said material handling implement from said cab, a tank for supplying said hydraulic fluid and pump means for circulating said hydraulic fluid, said hydraulic fluid being heated by fluid friction during circulation and in response to operation of said hydraulic control means, a heat exchanger in proximity to said cab having a hydraulic fluid flow passageway in fluid communication with said hydraulic control means and at least one air flow passageway in communication with the interior of said cab, said heated hydraulic fluid flowing through said hydraulic fluid flow passageway and heating air flowing through said air flow passageway and fan means for propelling said heated air into the interior of said cab.

4,352,457
DEVICE FOR LONG-TERM EVAPORATION OF PERFUMES

Heinz H. Weick, 94 rue de la Servette, 1202 Geneva, Switzerland

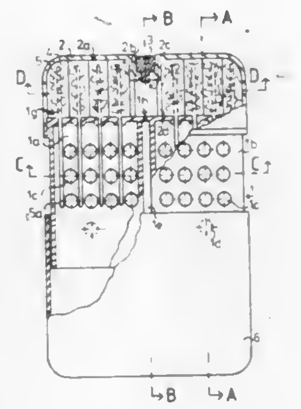
PCT No. PCT/CH79100081, § 371 Date Jan. 30, 1980, § 102(e) Date Jan. 30, 1980, PCT Pub. No. WO80/00003, PCT Pub. Date Jan. 10, 1980

PCT Filed Jun. 1, 1979, Ser. No. 191,331

Claims priority, application Switzerland, Jun. 2, 1978, 6038/78; Dec. 23, 1978, 13066/78; Mar. 21, 1979, 2627/79

Int. Cl.³ A45D *34/00;* **A61L** *9/12*

U.S. Cl. 239—45 **16 Claims**



1. A device for long-term evaporation of liquid perfumes, particularly for placing in the pockets of garments and handbags, comprising a flat, plate-like basic member which encloses a perfume carrier and which has at least one wall having a porous evaporation region for evaporation purposes, the basic member **1**, **2** being provided with a reserve perfume chamber **2***a*, an evaporation chamber **1***a*, and at least one channel **1***g* for establishing communication between the reserve chamber and the evaporation chamber for the passage of perfume, a cover member **6** mounted on the basic member **1**, **2** and movable thereon in the manner of a slide between a sealing position, in which the porous evaporation region is covered, and at least one evaporating position, in which at least a portion of the porous evaporation region is uncovered, the cover member **6** being in the form of a sheath-like sleeve which is provided with an inwardly directed engaging cam **6***a* for the purpose of securing a plurality of evaporating positions, and by virtue of inherent resilience of the corresponding wall of the cover member, the engaging cam exerting a locking action in cooperation with a longitudinal row of evaporation openings **1***c* in the basic member **1**, **2**, the device including at least one wick-like perfume conductor **5** of compact, rod-like construction, extending through said channel **1***g* for the passage of perfume, a longitudinal portion **5***a* of the conductor **5** extending into the evaporation chamber **1***a* between front and rear walls **1***b* thereof and immediately acting as an evaporating perfume carrier, and the thickness of the conductor **5**, relative to the internal spacing between front and rear walls **1***b* of the evaporation chamber **1***a*, being such as to prevent any mutual contact between the perfume conductor portion **5***a* and the walls **1***b*.

4,352,458
SATURATED VAPOR GUN

Ruben Masel, Kiron, Israel, assignor to Koor Metals Ltd., Holon, Israel

Continuation of Ser. No. 871,938, Jan. 24, 1978, abandoned. This application Jul. 10, 1980, Ser. No. 167,353

Int. Cl.³ B05B *7/06*

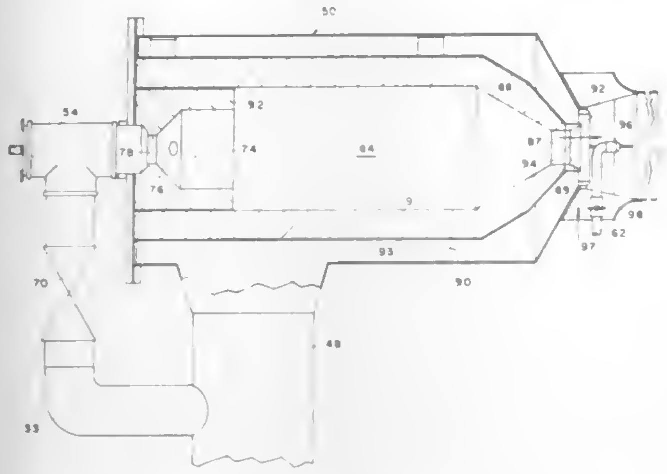
U.S. Cl. 239—77 **9 Claims**

1. In vapor generating apparatus, a vapor generating gun comprising a combustion chamber; combustion chamber air and fuel inlets;

a combustion chamber outlet duct including an outlet nozzle having a circular cross section of reduced diameter through which nozzle the hot gases produced in the combustion chamber exit in the form of a jet of hot gases;

a water spray generator located in said duct so that the water spray generated therein is at least partially vaporized by said exiting jet hot gases;

a source of pressurized air; and



a substantially annular conduit connected to said source of pressurized air and located to produce an annular stream of pressurized air which substantially envelopes said jet of hot gases and the vaporized water spray therein, condenses at least part of said vaporized water and entrains same within the jet of hot gases, and transports over substantial distances the jet of hot gases and entrained vaporized and condensed water.

4,352,459

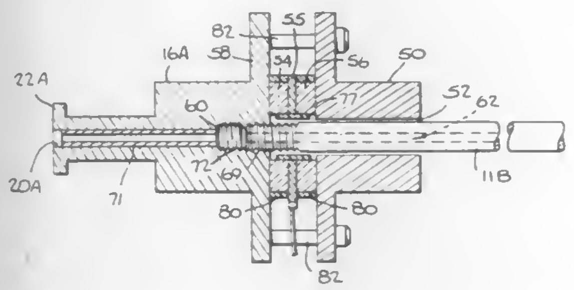
ULTRASONIC LIQUID ATOMIZER HAVING AN AXIALLY-EXTENDING LIQUID FEED PASSAGE

Harvey L. Berger, Poughkeepsie, and Charles R. Brandow, Highland, both of N.Y., assignors to Sono-Tek Corporation, Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 93,115, Nov. 13, 1979, abandoned. This application Dec. 3, 1979, Ser. No. 95,971

Int. Cl.^{3} B05B *17/06*

U.S. Cl. 239—102 **109 Claims**



78. A transducer for atomizing liquids comprising an atomizing section having an atomizing surface, driving means disposed adjacent to the atomizing section, the atomizing section and the driving means having a passage axially extending therethrough to the atomizing surface, a decoupling sleeve in the axially-extending passage in the atomizing section with one end thereof extending substantially to the atomizing surface, the axially-extending passage being adapted to receive a tubular member through which liquid can be introduced into the transducer and delivered through the decoupling sleeve to the atomizing surface, means provided in or adjacent to the atomizing section adapted to secure the tubular member to the atomizing section with one end of the tubular member adjacent to the other end of the decoupling sleeve, and means cooperating with the atomizing section spaced radially outwardly from the axially-extending passage for coupling the driving means and the atomizing section to atomize liquid delivered to the atomizing surface through the tubular member and the decoupling sleeve in response to electrical excitation of the driving means.

4,352,460

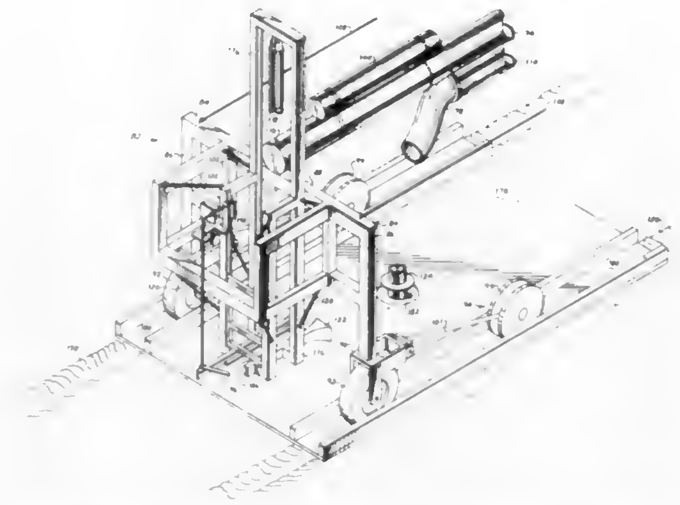
AUTOMATIC FURROW GUIDE

Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic, Inc., Brownfield, Tex.

Continuation-in-part of Ser. No. 816,442, Jul. 18, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 28,984

Int. Cl.^{3} B05B *3/18*

U.S. Cl. 239—184 **27 Claims**



1. In the process of operating an automatic irrigator which includes:

a. sprinking water from an elongated pipe upon a field to be irrigated,

b. moving said pipe traversely of its length through the field,

c. moving a trolley along a series of main valves,

d. attaching said trolley to said valves, and

e. opening said valves, thus

f. supplying water from the valves to the trolley and thus the elongated pipe;

the improved method of guiding the trolley to the valve comprising the steps of:

g. plowing a furrow adjacent to the valves along the series of valves,

h. placing a furrow guide on said trolley with a guide portion in said furrow,

i. determining the horizontal distance from the furrow guide portion to the trolley,

j. transmitting the determination of the horizontal distance to control means for moving said trolley through the field, and

k. controlling said control means in response to the horizontal distance determination.

4,352,461

HAND SIGNALS

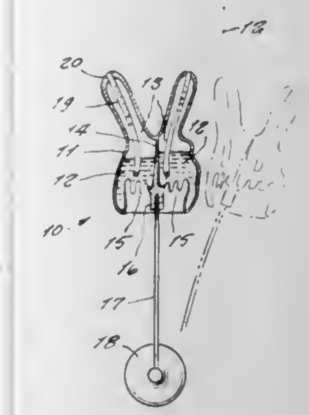
Phillip N. Orta, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed May-9, 1980, Ser. No. 148,578

Int. Cl.^{3} B60R *15/00*

U.S. Cl. 239—211 **2 Claims**

1. An air refreshner device adapted for vibratory mobile mounting on the interior of an automotive vehicle comprising a container with a message thereon mounted at the top of a vibratory flexible rod which at its lower end is mounted on a suction cup, a liquid air refreshner inside said container and a plurality of openings at an upper end of said container for dispensing vapor from said refreshener outwardly of said container in combination with means responsive to rod vibration for pumping vapor through said openings, said container being hand shaped wherein the said means comprises a flexible bottom wall of said container secured centrally to said rod whereby vibratory rod movement causes alternating contraction and expansion of the container volume resulting in increased vapor outflow from said container wherein said container is divided by a central partition into two compartments each having an accordion pleated bottom wall at each side of said partition, said rod being connected to said partition.



4,352,462

SPRAY NOZZLE

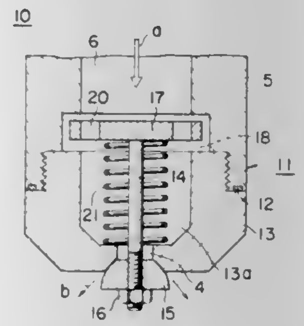
Masaru Watanabe, Fuchu; Takayoshi Amada, Yokohama, and Shinichi Yamaguchi, Tomioka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 8, 1980, Ser. No. 184,981

Claims priority, application Japan, Sep. 10, 1979, 54-115164; Nov. 30, 1979, 54-155263

Int. Cl.^{3} B05B *1/32*

U.S. Cl. 239—266 **11 Claims**



1. In a spray nozzle comprising a nozzle structure having an internal chamber and an injecting hole provided at an outer end of the nozzle structure in communication with the internal chamber, a control rod provided in said internal chamber with an outer end thereof projecting outwardly through said injecting hole, a spring member provided in said internal chamber for urging said control rod inwardly in said chamber, and a nozzle tip member secured to the outer end of said control rod for closing the injecting hole from outside, the improvement wherein:

said nozzle structure comprises a stem member and a nozzle cap member detachably secured to said stem member so as to define said internal chamber within the two members;

said two members further define an increased diameter portion upwardly and downwardly delimited by annular surfaces extending transversely to said internal chamber;

a planar member having a diameter larger than that of the internal chamber is encased in said increased diameter portion so that said planar member is movable longitudinally in said increased diameter portion;

said planar member has a number of fluid passages formed therethrough and is secured perpendicularly to an upper end of said control rod extending longitudinally in said internal chamber;

said spring member is provided around said control rod between said planar member and a bottom surface of said internal chamber;

said control rod has a screw threaded portion at the outer end projecting outwardly through said injecting hole; and

means engageable with said screw-threaded portion of said control rod is further provided for securing said nozzle tip member to a desired portion of said control rod.

4,352,463

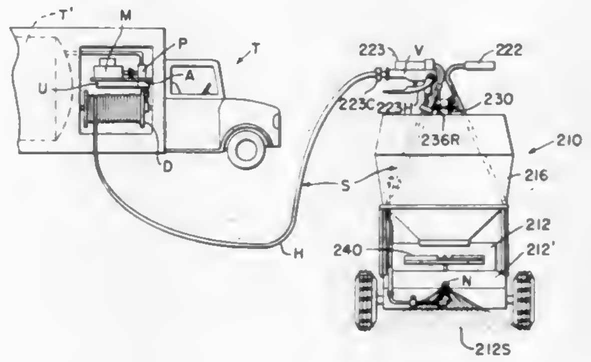
MOTORIZED COMBINATION WET AND DRY LAWN TREATMENT SPREADER

Douglas W. Baker, Kettering, Ohio, assignor to Leisure Lawn, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 4,585, Jan. 18, 1979, Pat. No. 4,234,131. This application Aug. 11, 1980, Ser. No. 177,109

Int. Cl.^{3} A01C *15/00*

U.S. Cl. 239—663 **8 Claims**



1. A spreader for application of both wet and dry lawn treatment material comprising in combination, a substantially rectangular base frame structure, a large capacity hopper with a bottom opening for passage of dry lawn treatment material, an engine carried at a rear location of said frame structure, a handle means with control means for the operation of the hopper, four wheels rotatably journalled with front and rear axle means on said frame structure, gear reduction means on one side of said engine, a belt-clutch coupling means suitably journalled to one side of said engine and gear reduction means, a power engagement control element extending along said handle means for on-off control of said belt-clutch coupling means, a first sprocket gear fixed on a shaft to which driving power is transmitted when said power engagement control element is actuated for "on" positioning, a second sprocket gear secured to the front axle means, a single chain drive means interconnecting said first and second sprockets, a wet treatment nozzle means and hose connection thereto mounted at least partially on said base frame structure in a location below and in front of said hopper, and a valve means mounted with said handle means for on-off control of wet treatment material to said hose and nozzle means for spraying thereof, said valve means having an on-off handle therewith adjoining said handle means, said valve means also having a quick disconnect hose connection therewith, and a hose means joined therewith between the spreader and a truck for wet and dry lawn treatment material.

4,352,464

IRRIGATION LINE WIND BRACE

Gail Cornelius, Portland, and Lloyd C. Olson, Beaverton, both of Oreg., assignors to R. M. Wade & Co., Portland, Oreg.

Filed Dec. 3, 1980, Ser. No. 212,279

Int. Cl.^{3} A01G *25/02*

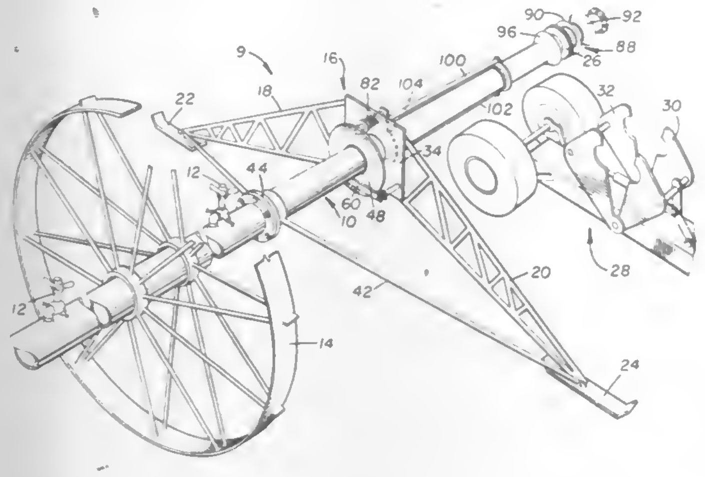
U.S. Cl. 239—713 **15 Claims**

1. In an irrigation line supported by and having fixed relative thereto a plurality of wheels, the improvement comprising:

brace means for selectively preventing the irrigation line from moving including:

a brace member having a ground engaging member;

means for mounting said brace member to said irrigation line so that said irrigation line is free to rotate relative to said brace member;



means for selectively locking said brace member to the irrigation line; and

means for selectively deactivating said locking means.

4,352,465

DEVICE FOR MANUFACTURING RESISTORS FROM INSULATED WIRE

Stepan S. Grechanliisky, ulitsa Akademiches-kaya, 8/2, kv. 15; Ivan I. Grishanov, ulitsa Kommuny, 11, kv. 42; Sergei N. Dimitraki, ulitsa Bubnovskogo, 5/5, kv. 118; Vladimir S. Miroshnichenko, ulitsa Belskogo, 24, kv. 25, and Vitaly I. Nastas, ulitsa Frunze, 104, all of Kishinev, U.S.S.R.

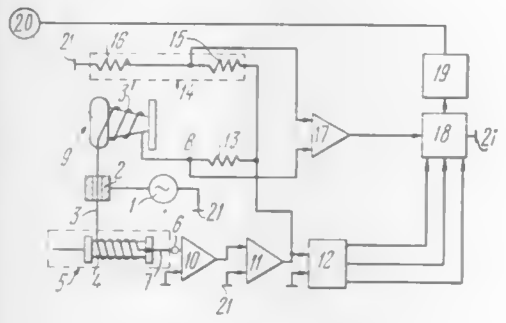
PCT No. PCT/SU80/00002, § 371 Date Sep. 8, 1980, § 102(e) Date Aug. 29, 1980, PCT Pub. No. WO80/01430, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 8, 1980, Ser. No. 205,446

Claims priority, application U.S.S.R., Jan. 8, 1979, 2700553

Int. Cl.³ H01C *17/00, 17/22;* **H01F** *41/04*

U.S. Cl. 242—7.12 **3 Claims**



1. A device for manufacturing resistors from insulated wire comprising a take-up mechanism taking up unwound insulated wire and having electric contact elements and a drive; a securing mechanism securing a feed spool with an electric contact element; a harmonic generator; a current output electrode and a current input electrode providing capacitive coupling between a conductor of the unwound wire and said harmonic generator; a precision voltage divider; a reference resistor having a first pole connected to the electric contact element of the securing mechanism and a second pole connected to said precision voltage divider; a phase-sensitive indicator affecting said drive of said takeup mechanism and being electrically connected via its input to the contact element of the wire takeup mechanism and to a common tap of the precision divider; and a phase-inverting amplifier having an output connected to the second pole of the reference resistor and to the precision voltage divider; an electronic follower inserted between said electric contact element of said securing mechanism and a potential input of said phase-inverting amplifier; a clamping amplifier having a potential input connected to an output of the phase-inverting amplifier and an output coupled to said phase-sensitive indicator; a differential amplifier having a large input impedance and placed between a signal input of the phase-sensitive indicator and said electric contact element of said wire takeup mechanism and said precision divider; wherein the current output electrode represents a galvanic contact between the wire conductor of a resistor being manufactured and the electric contact element of the securing mechanism.

4,352,466

DEVICE FOR MAKING A THREAD RESERVE

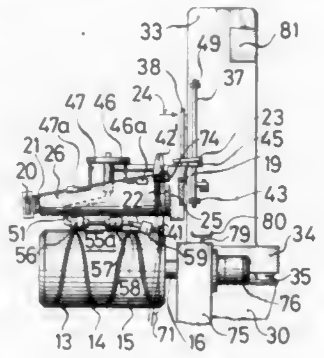
Hans Bäumges, Nettetal, and Hans-Jürgen Preuhs, Willich, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,006

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927742

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 PW **4 Claims**



1. Device for making a thread reserve on a coil tube in a thread winding machine having a coil frame for exchangeably holding a coil tube and a winding cylinder for rotating the coil tube at an operating speed in a given direction to form a take-up coil, said device comprising friction wheel means driveable by the winding cylinder against the surface of the coil tube for rotating the coil tube for a short time at initial winding of the take-up coil at a speed lower than the operating speed, and means for driving the winding cylinder at a speed lower than the operating speed in a direction opposite the given direction while the thread reserve is being made.

4,352,467

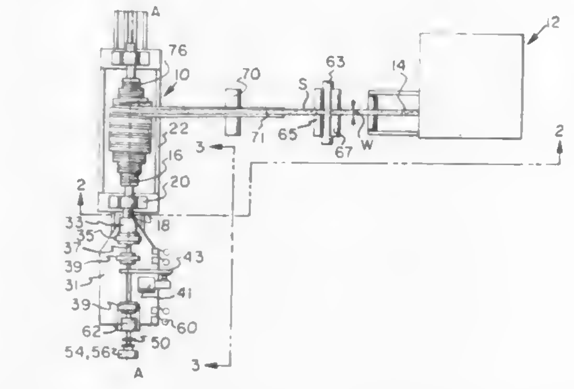
METHOD OF SPIRAL WINDING STRIP MATERIAL

William F. Dunn, and Ernest A. Milan, both of Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 14, 1980, Ser. No. 168,074

Int. Cl.³ B65H *17/02*

U.S. Cl. 242—55 **6 Claims**



1. A method of spiral winding strip material subject to induced curl from a letoff position onto a supply reel comprising

(a) laying an end of said strip material on the surface of said reel and continuously rotating said reel;

(b) providing forward axial movement of said reel relative to said letoff position in a first direction to spiral wind said strip on the surface of said reel to form a first layer of said strip material having an axial length less than the length of said reel;

(c) stopping said forward axial movement to form a first edge strip of the wound material;

(d) providing a reverse axial movement of said reel relative to said letoff position in a second direction opposite to said first direction to spiral wind said strip on the surface of said first layer to form a second layer of said strip material;

(e) stopping said reverse axial movement to form a second edge strip of the wound material;

(f) thereafter continuing to alternately provide said forward and reverse axial movement of said reel relative to said letoff position to form overlapping layers which are progressively of shorter length by reducing the number of revolutions of said reel for each overlapping layer providing at least one pyramidal edge with axially spaced edge strips; and

(g) continuing to rotate said reel for a predetermined rotation for each of said layers at said pyramidal edge when axial movement of said reel is stopped to provide supporting surfaces at said axially spaced edge strips and a minimum of curl of said strip material.

4,352,468

APPARATUS FOR THE UNINTERRUPTED WITHDRAWAL OF WEBS FROM REELS OF WEBS WHICH ARE TO BE UNWOUND SUCCESSIVELY

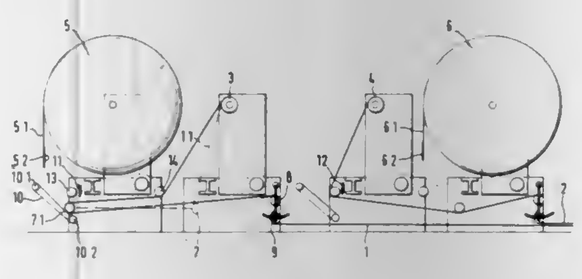
Richard Feldkämper, and Fritz Achelpohl, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,730

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950493

Int. Cl.³ B65H *19/16, 19/08*

U.S. Cl. 242—58.4 **14 Claims**



1. Apparatus for the uninterrupted withdrawal of webs from reels of webs which are to be unwound successively, the webs having adhesively coated leading web ends, said apparatus comprising bearing means for supporting the reels to be unwound alternately, guide means for guiding the webs running from the reels, and means for pressing to a web running from a depleting reel the adhesively coated leading web end of another reel, the another reel having been set in rotation to advance a lowered leading web end, said means for pressing comprising a belt (**10**) disposed beneath the leading end (**5.1**, **6.1**) of the web running from another reel (**3**, **4**, **5**, **6**; **21**, **22**, **23**, **24**, **25**, **26**), direction-changing rollers (**10.1**, **10.2**) for guiding movement of said belt, said belt advancing the lowered leading web end (**6.1**; **25.1**, **26.1**), and pressing means comprising a backing roller (**7**; **34**, **38**) over which the web from the depleting reel (**3**, **4**; **22**, **23**, **24**) and the leading end taken along by the belt (**10**) pass in such a way that the backing roller and belt cooperate with each other to press the adhesively coated leading web end against the depleting web.

4,352,469

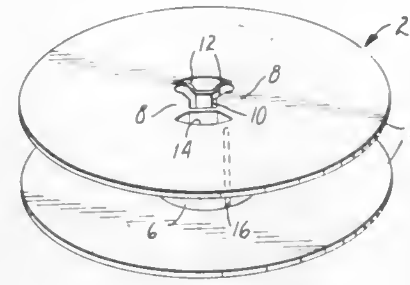
SPOOL FOR PHOTOGRAPHIC FILM

William V. Huck, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 13, 1981, Ser. No. 282,647

Int. Cl.³ B65H *75/18, 75/28*

U.S. Cl. 242—71.8 **7 Claims**



1. A spool for photosensitive film comprising a core having at least one hollow area therein, a slot extending lengthwise on the core, which opens into said at least one hollow area, two flanges extending radially from said core, a spindle receiving aperture in said core, and wherein both the core and the flanges are opaque, said spool being characterized by at least one of said flanges having a weakened or removable portion which extends from the outer edge of said at least one flange to intersect the core at or about said slot.

4,352,470

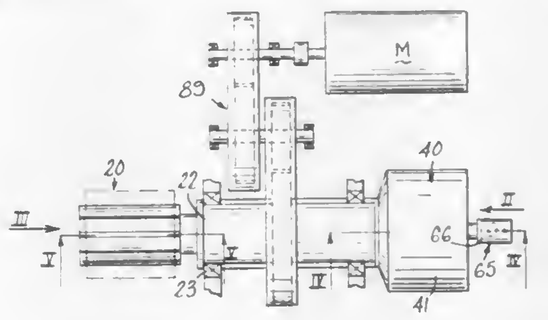
COMBINED PAYOFF AND WINDER FOR STRIP ROLLING MILLS

Frederick R. Blakeslee, Wallingford, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 27, 1981, Ser. No. 248,572

Int. Cl.³ B65H *75/28*

U.S. Cl. 242—72.1 **7 Claims**



1. A convertible payoff and winder for strip metal comprising a mandrel, means for varying the diameter of the mandrel, and drive mechanism for said diameter varying means, the drive mechanism including means for expanding the mandrel into frictional engagement with the interior of a pre-wound coil of strip metal for operation in the payoff mode, means for arresting the expansion of the mandrel at a predetermined diameter for operation in the winding mode, and separate control means for said expanding means and said arresting means.

4,352,471

THREAD TENSIONING AND BRAKE DEVICE

John E. Zust, Rte. 1, Seay Rd., Spartanburg, S.C. 29302

Filed May 13, 1981, Ser. No. 263,276

Int. Cl.³ B65H *59/10, 59/36*

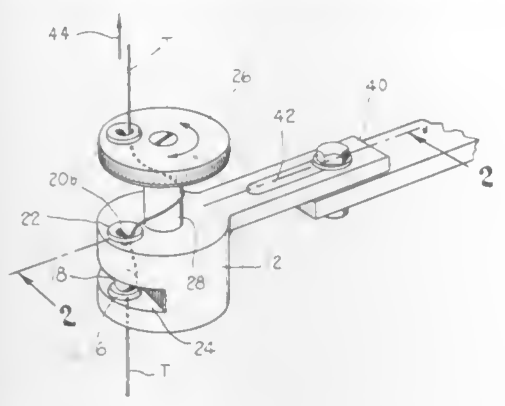
U.S. Cl. 242—147 R **8 Claims**

1. A thread tensioning device for tensioning thread traveling to a textile machine, comprising:

first thread passage means having a thread inlet and a thread outlet;

second thread passage means spaced generally above said

first passage means and in general axial alignment therewith having a thread inlet and outlet through which said yarn travels;
chamber means defined between said first and second passage means;
brake means carried in said chamber means between said first passage means and second passage means to brake the travel of thread therethrough;
a third thread passage means spaced generally above said second yarn passage means having a thread inlet and outlet, said third thread passage means being adjustable in position relative to the axial alignment of said first and second thread passage means;
thread tensioning cylinder means carried intermediate said thread outlet of said second passage means and said threat inlet of said third passage means for contacting and tensioning said thread traveling to said machine;
means carrying said third yarn passage means for varying said position and amount of contact of said thread about said cylinder means and hence the tension thereof; and
said brake means braking said thread travel to maintain thread tight about said cylinder means during machine stoppage avoiding thread breakage upon start-up.



4,352,472
SYSTEM FOR DETECTION OF TAPE THICKNESS IN TAPE RECORDERS OR PLAYERS

Ivan Tyrsted, Struer, Denmark, assignor to Bang and Olufsen A/S, Struer, Denmark

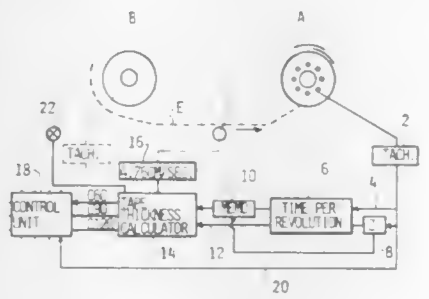
PCT No. PCT/DK80/00004, § 371 Date Sep. 10, 1980, § 102(e) Date Sep. 10, 1980, PCT Pub. No. WO80/01522, PCT Pub. Date Jul. 24, 1980

PCT Filed Jan. 10, 1980, Ser. No. 205,326

Claims priority, application United Kingdom, Nov. 1, 1979, 7901060

Int. Cl.³ G03B ***1/04;*** **G11B** ***15/32;*** **B65H** ***59/38***

U.S. Cl. 242—186 **9 Claims**



1. A system for detection of the playtime type of a tape in tape players or recorders of the type having a means for detecting angular velocity of at least one reel and a main control means for effecting at least one of automatic control and display functions at least partially based upon the thickness of a tape being utilized, comprising:
control means for actuating said angular velocity detecting means during a first short interval of time and for subsequently reactuating said angular velocity detecting means during a second short interval of time;
memory means operatively associated with said angular velocity detecting means for receiving and storing an angular velocity output produced as a result of at least the actuation of the angular velocity detecting means during said first time interval;
playing velocity means for producing an output representative of the linear speed of said tape;
and
calculator means operatively associated with said memory means, said playing velocity means and said angular velocity detecting means for calculating the thickness of said tape based upon angular velocity output produced as a result of actuation of the angular velocity detecting means during both of said time intervals and upon linear speed output from said playing velocity means.

4,352,473
TAPE CASSETTE

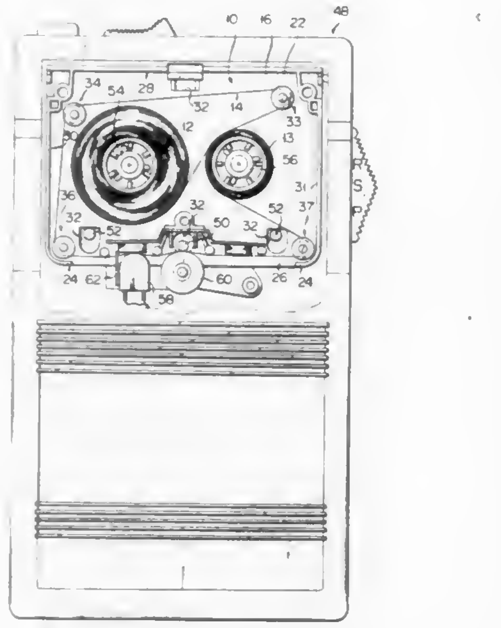
Ken Satoh, Akigawa; Seizo Watanabe; Sinichi Saitou, both of Hachioji; Toshikazu Kato, Hino; Ken Ohshima; Tsutomu Shibata, both of Hachioji, and Kenji Kimura, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,324

Claims priority, application Japan, Oct. 26, 1979, 54-148555[U]

Int. Cl.³ G03B ***1/04;*** **G11B** ***15/32***

U.S. Cl. 242—199 **8 Claims**



1. In a tape cassette comprising a housing including a pair of spaced apart holding plates disposed in parallel with each other, a front wall coupling said pair of holding plates and having openings for the insertion of a magnetic head and a pinch roller, a rear wall facing said front wall and coupling said pair of holding plates, and a pair of side walls facing each other and coupling said pair of holding plates and said front and rear walls; a pair of reel hubs rotatably held by said pair of holding plates; and a magnetic recording tape wound around said pair of reel hubs, said magnetic recording tape running from one of said reel hubs and then along a path adjacent and along said front wall and then to the other of said reel hubs,
the improvement wherein said tape cassette further comprises:
at least three guide rollers disposed inside said cassette housing and arranged to contact and guide the magnetic recording tape between said one reel hub and said path adjacent said front wall, said at least three guide rollers guiding the magnetic recording tape in a path to cross an imaginary line which intersects the rotation axes of said pair of reel hubs after the magnetic recording tape leaves said one reel hub, said guide rollers further including position defining means for defining a position of the magnetic recording tape relative to said cassette housing across the thickness of said cassette housing while said tape is traveling from said one reel hub to said path adjacent and along said front wall.

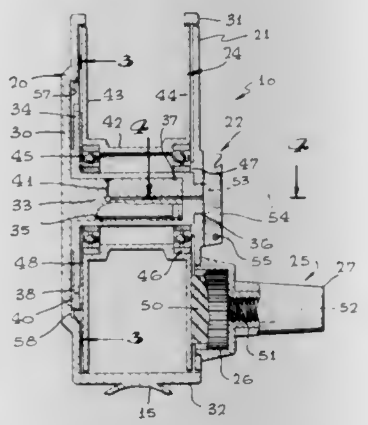
4,352,474
DRAG CONTROL FOR FISHING REELS

Oscar Kovalovsky, 11154 Debby St., North Hollywood, Calif. 91606

Filed Jan. 30, 1981, Ser. No. 229,937

Int. Cl.³ A01K ***89/02***

U.S. Cl. 242—218 **8 Claims**



1. A fishing reel of the fly casting type comprising:
a frame having a stub shaft outwardly projecting from the center of a plate;
a ratchet member movably carried on said stub shaft including a ratchet shaft coaxially disposed on said stub shaft and a plurality of ratchet teeth provided along the periphery of said ratchet member;
at least one pawl operably carried on said frame plate adapted to engage with said ratchet teeth so as to allow rotation of said ratchet member in a predetermined direction;
a spool for holding a length of fishing line;
a friction disc disposed on said ratchet shaft between said ratchet member and said spool;
bearing means carried on said ratchet shaft for rotatably supporting said spool thereon;
a crank plate fixed to a selected end of said ratchet shaft;
a winding knob rotatably carried on said crank plate in close proximity to its peripheral edge;
a drag adjuster mechanism rotatably carried on said crank plate coaxially disposed with respect to said winding knob; and
a friction pad fixed on said drag adjuster mechanism for bearing against said spool adjacent its outer peripheral edge to forcibly urge said spool into retarded frictional engagement with said friction disc so as to place a desired tension on said fishing line during a fish catching procedure.

4,352,475
AUDIO FREQUENCY TRACK CIRCUIT FOR RAPID TRANSIT APPLICATIONS WITH SIGNAL MODULATION SECURITY

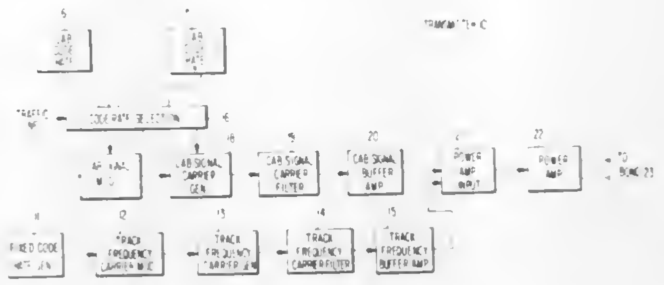
Barry L. Smith, and James R. Hoelscher, both of Rochester, N.Y., assignors to General Signal Corp., Stamford, Conn.

Filed May 23, 1980, Ser. No. 152,467

Int. Cl.³ B61L ***21/00, 3/00***

U.S. Cl. 246—34 CT **7 Claims**

1. An automatic protection system for trains traversing a plurality of uninsulated track sections along track rails comprising:
transmitting and receiving equipment spaced along said track rails, said transmitting equipment including;
a track frequency oscillator;
modulation means for modulating a signal produced by said track frequency oscillator only at a fixed code rate and producing a modulated track frequency signal;
cab signaling means producing selectively modulated cab signaling energy;
amplifying means for amplifying said modulated track frequency signal and said cab signaling energy;


CODE RATE SELECTION
CAB SIGNAL CARRIER GEN
CAB SIGNAL CARRIER FILTER
CAB SIGNAL BUFFER AMP
POWER AMP INPUT
POWER AMP
FIXED CODE RATE GEN
TRACK FREQUENCY CARRIER MOD
TRACK FREQUENCY CARRIER GEN
TRACK FREQUENCY CARRIER FILTER
TRACK FREQUENCY BUFFER AMP
20
22
12

bond means for applying said amplified modulated track frequency signal to said track rails, said receiving equipment including:
decoder means responsive to signals derived from said track rails and tuned only to said fixed code rate, for producing a detectable output in response to detection of a signal at said fixed code rate, and
output means operated to a distinctive condition only in response to said detectable output from said decoder means.

4,352,476
CABLE CLAMPS

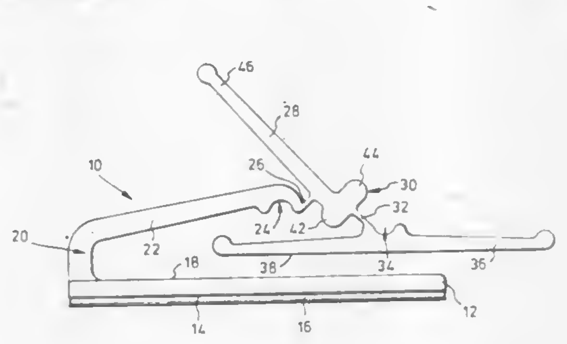
Alan M. G. Meeks, Basingstoke, England, assignor to ITW Limited, Windsor, England

Filed Jun. 25, 1981, Ser. No. 277,354

Claims priority, application United Kingdom, Jul. 1, 1980, 8021463

Int. Cl.³ F16L ***3/08***

U.S. Cl. 248—74 R **12 Claims**



1. A cable clamp comprising a base and a pressure plate presenting respective opposed faces capable of lying generally parallel to one another for clamping a cable therebetween, a resilient arm joined at one end to said base and overhanging both the base and the pressure plate, a lever joined to the other end of said resilient arm and to said pressure plate pivotally movable between a releasing position and a clamping position for moving said pressure plate, in the absence of a cable, relative to the base with a toggle action, through a position of reduced separation between said opposed faces of the pressure plate and the base, said resilient arm and said pressure plate are formed with respective sockets for pivotally engaging with respective ends of a bearing member formed transversely to the length of the lever.

4,352,477

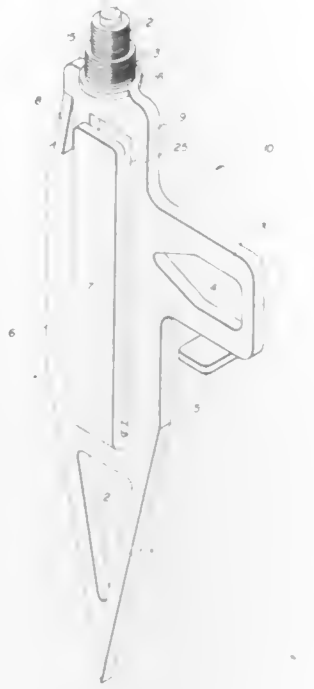
SUPPORT FOR HOLDING BRUSHES

Vern L. Garrett, and Morine V. Garrett, both of 863 18th Ave., Sweet Home, Oreg. 97386

Filed Aug. 11, 1980, Ser. No. 176,765

Int. Cl.^{3} A46B *17/06*

U.S. Cl. 248—156 **7 Claims**



1. A support for holding paint brushes, rollers and the like for cleaning, comprising in combination:
- a spike means for insertion and retention in a penetrable substance,
- a body extending upwardly therefrom of substantially rectangular configuration and said spike means has a top portion of substantially the same width, tapering downwardly to a point,
- a purchase area extending outwardly from said body having a top face to assist in driving said spike means and a side face to abut against a brush in resisting water pressure,
- a resilent clip means for carrying a brush handle, said clip means on said body comprising an outwardly offset strip overlying said body, said strip having a memory,
- and a threaded area extending upwardly from said body to engage a complementally threaded roller handle,
- wherein a stop member is provided on a bottom edge of said purchase area.

4,352,478

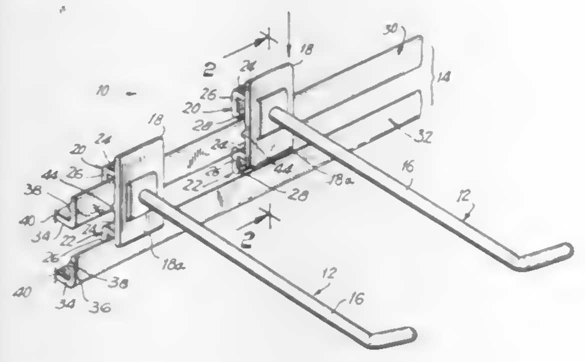
ARTICLE HOLDING ASSEMBLY

Jonathan A. Loew, New York, N.Y., assignor to P.O.P. Displays, Inc., Long Island City, N.Y.

Filed Oct. 20, 1980, Ser. No. 199,294

Int. Cl.^{3} A44B *13/00*

U.S. Cl. 248—221.3 **12 Claims**



1. An article holding assembly comprising:
- at least one article holding member including a base, and a pair of vertically spaced fastening elements affixed to one of said base side surfaces one above the other so as to define upper and lower fastening elements, each fastening element including an outwardly extending fastener web affixed to said base side surface, a fastener flange extending substantially downwardly from said web, and an inwardly directed fastener bead formed on said flange; and
- an elongate retainer member to which said article holding member is adapted to be attached, said retainer member including a pair of vertically spaced, parallelly expending fastening rails located one above the other so as to define upper and lower fastening rails, each fastening rail including an outwardly extending elongate retainer web, an elongate retaining flange extending substantially upwardly from said web, and an inwardly directed retaining bead formed on said retaining flange; and
- wherein the vertical distances between said fastener beads on an article holding member and said retaining beads on the retainer member, respectively, are substantially equal to each other;
- whereby said article holding member is adapted to be fastened to said retainer member at any location along the length thereof by locating said holding member such that the upper and lower fastening elements are located vertically over the upper and lower fastining rails, respectively, with said upper and lower retaining flanges being substantially vertically aligned with said upper and lower receiving passages, respectively, whereupon said hook member is urged downwardly until said retaining and fastening beads deform until the retaining beads pass through respective receiving passages.

4,352,479

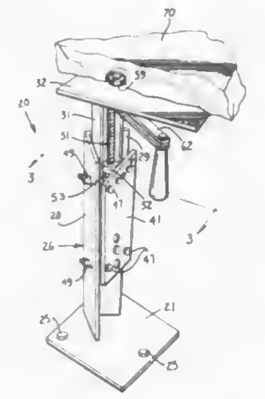
ADJUSTABLE SUPPORT

Ivan B. Chapman, Jr., Baltimore, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,670

Int. Cl.^{3} F16M *11/00*

U.S. Cl. 248—405 **2 Claims**



1. Apparatus for adjustably supporting a work surface at a desired level above a floor at a work station, said apparatus comprising:
- a base;
- a post attached to and upstanding from said base, said post comprising a pair of plates connected together along longitudinal edges thereof;
- a plurality of strips which are made of a plastic material and which are attached to an inwardly facing surface of each of said plates of said post;
- a column which comprises a pair of elongated plates attached together along longitudinal edges, said column being in engagement with said plastic strips on the inwardly facing surfaces of said post;
- a retainer plate extending at least partially along the length of said post;
- a bearing device which includes a mounting bracket having spaced bearings attached thereto, said bearings engaging inwardly facing surfaces of said elongated plates of said column;
- means for securing said retainer plate to said post and for securing said bearing device to said retainer plate with said bearings in engagement with said column, said means being effective to hold said column in juxtaposition with said strips of plastic material and to facilitate movement of said column relative to said post to extend said column from said post and position the work surface at a desired level above the floor;
- guide members which are attached to said retainer plate and spaced apart to be engaged by longitudinal free edges of said elongated plates of said column when said column is held in engagement with said plastic strips for preventing unintentional turning movement of said column when said column is extended from said post;
- a support plate attached to an upper end of said column, said support plate adapted to have the work surface attached thereto;
- internally threaded bushing means attached to said retainer plate;
- a threaded rod extending through said bushing means and connected to said support plate; and
- means for turning said threaded rod to cause said rod to be moved through said bushing means to move said support plate.

4,352,480

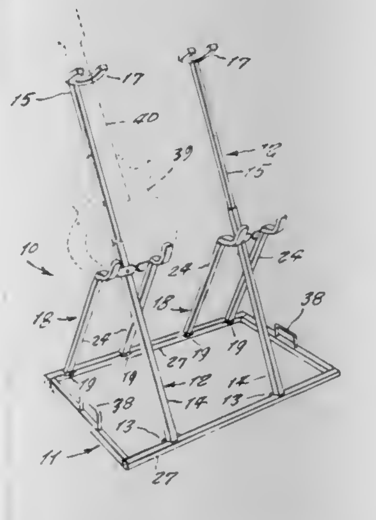
(PF-2) DOUBLE GUITAR STAND

Wayne R. Gathright, P.O. Box 3829, Austin, Tex. 78764

Filed Feb. 2, 1981, Ser. No. 230,325

Int. Cl.^{3} G10G *5/00;* A45C *11/00;* B65D *21/02;* A47G *19/00*

U.S. Cl. 248—443 **3 Claims**



1. A double guitar stand, comprising, in combination, a rectangular base frame, a plurality of extensible telescopic posts and braces hinged on said base frame, a rest unit and yoke on each said post for supporting a guitar thereupon wherein a plurality of said stands can be attached together by means of pins fitted between the said frame thereof.

4,352,481

APPARATUS AND METHOD FOR ELECTRONIC DAMPING OF RESONANCES

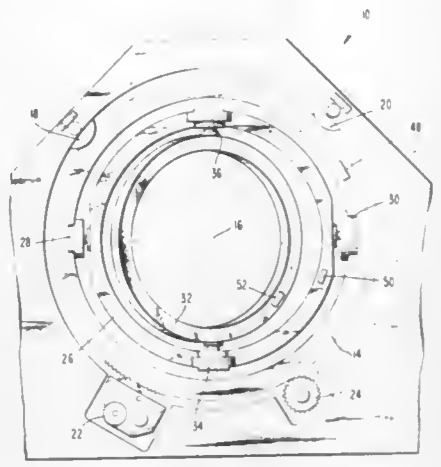
Robert L. Forward, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 13, 1980, Ser. No. 129,861

Int. Cl.^{3} F16M *13/00*

U.S. Cl. 248—550 **5 Claims**

1. An apparatus for the damping of resonance in a system comprising:
- a gimbal structure having at least first and second axes and having at least first and second movable mechanical members respectively movable on said first and second axes, a positioner and a resolver connected to each of said first and second movable mechanical members for positioning and determining the position thereof said positioners and said resolvers being electromechanical devices with a mechanical portion thereof connected to said mechanical members, said positioners and said resolvers being positioned away from each other;
- first and second control servo loops respectively connected with said positioner and resolver of said first and second mechanical members; and
- first and second vibration sensing transducers respectively attached to said first and second mechanical members, said first and second vibration sensors being respectively connected to said first and second servo loops for connecting the vibration signals from said vibration sensing transducers into said electronic control servo loop for damping vibration inside said gimble structure, said connection of said transducers to said servo loops including a phase shifter and an amplifier.



4,352,482

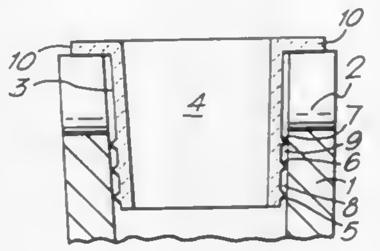
HOT TOPS

Paul F. Duvall, Medina, Ohio, assignor to Foseco Trading AG, Chur, Switzerland

Filed Apr. 7, 1980, Ser. No. 137,782

Int. Cl.^{3} B22D *7/10*

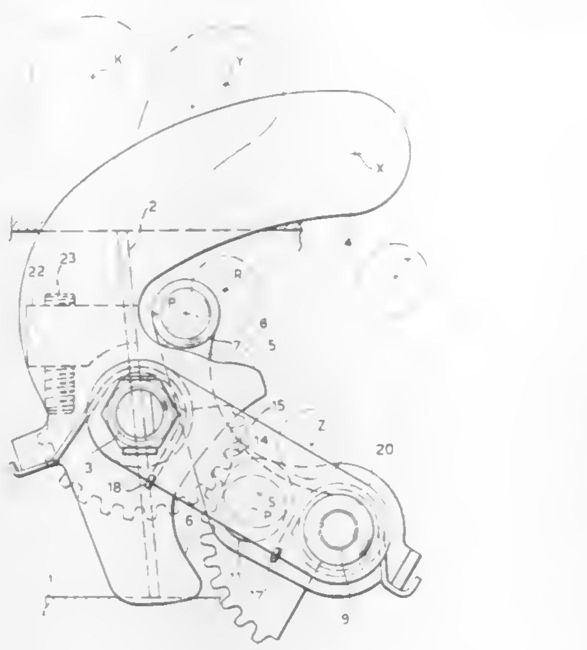
U.S. Cl. 249—106 **5 Claims**



1. An assembly for casting metal ingots comprising: an ingot mould and a hot top lining in the mouth of said mould, said lining comprising: a plurality of refractory, heat-insulating lining slabs having a predetermined thickness and positioned in contact with the inner surface of the walls of the mouth of said mould; at least one of the said slabs having, at its outward-facing surface and adjacent to its lower edge, at least two ribs having a predetermined height and width such that said ribs extend horizontally across said slab and protrude from said outward-facing surface a distance corresponding to said predetermined height, and into contact with the mould walls, and characterized as being disposed and arranged progressively to inhibit upward flow of molten metal behind said slab, said ribs being of the same material as and integral with said slab.

4,352,483
DIFFERENTIAL THROTTLE OPENING CONTROL MECHANISM

Stefano Iacoponi, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy
Filed Feb. 28, 1980, Ser. No. 125,385
Claims priority, application Italy, Jun. 5, 1979, 68205 A/79
Int. Cl.^{3} F16K *31/524, 31/53*
U.S. Cl. 251—229 **7 Claims**

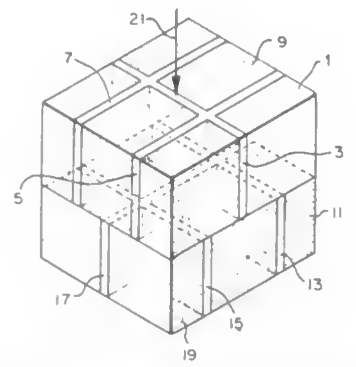


1. A differential opening control mechanism for controlling the angular displacement of a throttle valve which determines the air flow in an induction manifold of an internal combustion engine, comprising:
a spindle connected to said throttle valve for pivotally supporting said throttle valve,
a first lever pivoted on said spindle intermediate the ends thereof and adapted to be connected to one end thereof to linkage means the movement of which is controlled by an accelerator pedal of said engine, means defining first and second cam profiles on said first pivoted lever,
a support shaft disposed in spaced parallel relation to said spindle,
a second lever pivoted on said support shaft,
first and second cam follower means on said second pivoted lever, operatively associated with said first and second cam profiles respectively, and
movement transmission means operatively connected between said second pivoted lever and said throttle valve whereby the angular displacement of said valve follows that of said first lever and is related thereto by a relationship determined by the shape of said first and second cam profiles and the transmission ratio of said movement transmission means.

4,352,484
SHEAR ACTION AND COMPRESSION ENERGY ABSORBER

David C. Gertz, Citrus Heights, and Owen S. Denman, Sacramento, both of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.
Filed Sep. 5, 1980, Ser. No. 184,236
Int. Cl.^{3} E01F *15/00*
U.S. Cl. 256—13.1 **16 Claims**

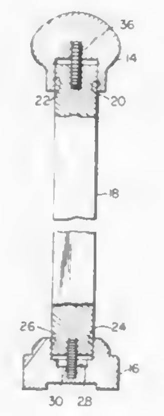
1. An energy absorbing apparatus comprising:
a plurality of energy absorbing sheets arranged in a stacked relation for compressing and cutting into one another to dissipate the energy of an impact force, each sheet having
an array of intersecting walls for defining a plurality of cell areas, and
filler means for filling said cell areas and adapted to deform to absorb the energy of the impact force and to support said walls so that the edges of the walls of abutting sheets



cut into one another and into said filler means in response to said impact force, to dissipate the energy of the impact.

4,352,485
VARIABLE RACK STAIR RAIL ASSEMBLY

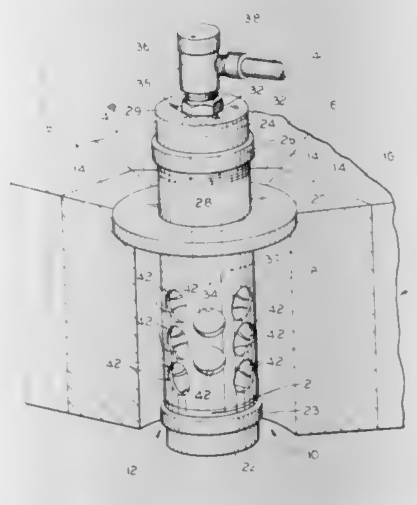
Gene Basey, Rowland Heights, Calif., assignor to Zenith Stairways & Bldg. Products, Inc., Walnut, Calif.
Filed Jun. 6, 1980, Ser. No. 157,186
Int. Cl.^{3} E04H *17/14*
U.S. Cl. 256—65 **22 Claims**



18. A variable rake stair rail assembly having a predetermined normal stairway pitch and susceptible of being racked by a small acute angle to a steeper or less steep pitch, comprising:
a wooden hand rail;
a wooden shoe rail;
a plurality of elongated balusters extending vertically between said hand rail and said shoe rail, the ends of each of said balusters being cut at an angle to the axis of the baluster substantially conforming to said normal stairway pitch;
means defining recessed surface areas in said hand rail and said shoe rail opposing the ends of said balusters and extending substantially parallel to said ends of said balusters; and
means for mounting said balusters onto said hand rail and said shoe rail with the ends of said balusters close to but spaced from the opposed recessed surface areas, said mounting means including high strength deformable mechanical means secured to both the ends of said baluster and to said rails, said mechanical means holding said assembly at each joint thereof to provide the normal pitch for a stairway with the balusters vertical, said spacing between said ends of said balusters and said recessed surface areas being substantially that required to permit racking of said stair rail assembly to increase or reduce the pitch of said stair rail assembly by said small acute angle by the flexing of said deformable mechanical means;
whereby the preassembled stair rail assembly may be employed with stairways of normally varying pitches with the balusters extending vertically and the spacing between the ends of the balusters and the opposing surfaces in the hand and shoe rails being concealed by the enclosing recesses in the hand and shoe rails.

4,352,486
PRESSURE PROBE FOR METALLURGICAL VESSELS

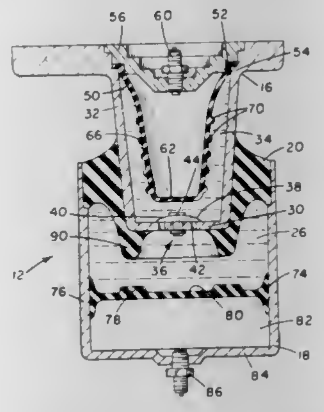
Dennis L. Hixenbaugh, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corp., Pittsburgh, Pa.
Filed Apr. 2, 1981, Ser. No. 250,235
Int. Cl.^{3} C21B *7/24;* **G01L** *19/06, 7/00*
U.S. Cl. 266—99 **4 Claims**



1. A pressure probe in combination with a refractory lining of a metallurgical vessel, said refractory being arranged to define an opening for receiving said probe,
said probe including a tubular housing disposed within and spaced from the surface of the refractory defining said opening to provide a gap therebetween,
said housing having a side wall facing said gap and an inner end exposed to the interior of said furnace, closure means closing the inner end of said housing, pressure probe means disposed within said tubular housing,
a plurality of spaced apart openings formed in the side wall of said housing and opening into said gap,
the refractory, said closure means and said side wall shielding said probe from any straight line path within said vessel, said openings being arranged to permit said probe to sample the pressure within said vessel.

4,352,487
VISCOUS SPRING DAMPER

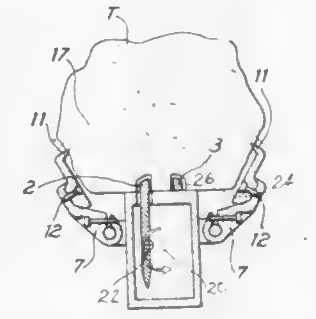
Emile M. Shtarkman, Norwalk, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.
Filed Nov. 18, 1980, Ser. No. 207,909
Int. Cl.^{3} F16F *3/08, 9/04*
U.S. Cl. 267—35 **5 Claims**



1. In a viscous spring damper including inner and outer members connected by an elastomeric shear spring, having a main fluid chamber therebetween communicating with a second chamber in said inner member through restricted orifice means, and having an expandible and contractible gas chargeable elastomeric bladder in said second chamber, and a first valve means for selectively charging said bladder with gas pressure, the improvement comprising: an elastomeric diaphragm in said main fluid chamber having means associated therewith for providing fluid ports between said diaphragm and said inner member, said inner member having stop means extending therefrom towards said outer member and wherein said stop means are positioned for engaging said means on said diaphragm during telescoping movement of said members, and a second valve means for selectively charging said diaphragm with gas pressure whereby relative movement between said members operates to stress said shear spring and vary the volumes of said bladder and said diaphragm.

4,352,488
LOG CLAMPING DEVICES USED IN HALF ROUND OR STAY LOG CUTTING

Angelo Cremona, Viale Lombardia, 275, 20052 Monza, Italy
Filed Jun. 20, 1980, Ser. No. 161,311
Claims priority, application Italy, Mar. 13, 1980, 20574 A/80
Int. Cl.^{3} B23Q *1/00;* **B27B** *29/08*
U.S. Cl. 269—54.2 **7 Claims**



1. A log clamping device for use in half round or stay log cutting of logs having a support surface and a pair of axial grooves in the support surface, comprising:
a rectangular cross-sectioned bar having two wide sides and two narrow sides, rotatable about a rotation axis which is parallel to a a major axis of the bar;
at least one fixed toothed element extending from one narrow side of said bar;
at least one movable toothed element movably mounted to said bar extending from one narrow side at a location spaced from said toothed element, each of said fixed and movable elements having teeth facing each other and adapted to extend into respective axial grooves of a log with the log supporting surface supported on said one narrow side, said movable element movable to reduce the spacing between teeth on said fixed and movable elements to clamp the log to said bar;
a shaft connected to each wide side of said bar extending parallel to said rotation axis and disposed between said rotation axis and a plane containing said one narrow side;
at least two toothed dogs connected to each shaft, each having a length so as not to extend beyond the other of said narrow sides with said dogs pivoted about said shaft against each respective wide side and away from said plane containing said one narrow side; and
drive means connected to said shafts for rotating said shafts and moving said toothed dogs into engagement with the log clamped to said bar, to further clamp the log to said bar, and for moving said toothed dogs against their respective wide sides;
each toothed dog having a log engaging tooth which is wedge-shaped and inclined so as to draw the support surface of the log firmer into engagement with said one narrow side, with increased engaging force between each dog tooth and the log.

4,352,489

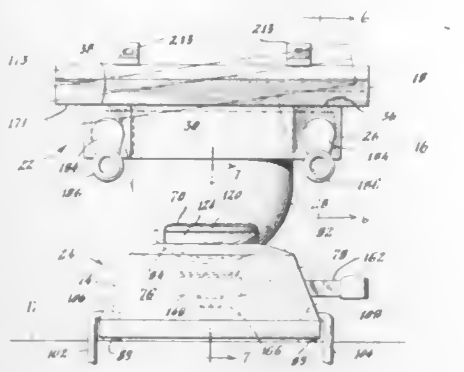
SMALL COMPACT LIGHTWEIGHT PORTABLE VISE SUITABLE FOR USE BY MODEL MAKERS AND HOBBYISTS

Robert P. Wagster, Greensboro, Md., assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 42,778, May 29, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,062

Int. Cl.^{3} B23Q *1/04*

U.S. Cl. 269—75 **5 Claims**



1. A small compact lightweight portable vise suitable for use by model makers and hobbyists, comprising a frame having a pair of substantially-flat top coplaner surfaces spaced from one another, a pair of elongated clamping jaws supported longitudinally on top of the frame and transversely of the coplanar surfaces thereof, means fixing one of the jaws to the frame, means mounting the other jaw on the frame for non-parallel movement towards and away from the fixed jaw, whereby tapered objects may be clamped between the jaws, the top of the frame having a central aperture disposed between the coplanar surfaces and the clamping jaws, the aperture extending substantially to the maximum extent of opening between the clamping jaws, a member secured to the frame and depending below the aperture, the member being substantially coterminous with the aperture, whereby an odd-shaped enlarged workpiece may be received within the member and yet may be clamped between the jaws, the member having a lowermost convex portion, a base having a complementary concave portion for supporting the member thereon, whereby the frame and hence the clamping jaws may be swivel adjusted with respect to the base, and means for clamping the member to the base in a desired adjusted position.

4,352,490

DEFLECTING DEVICE FOR SORTER OR THE LIKE

Noboru Hatakeyama, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 210,136

Claims priority, application Japan, Nov. 27, 1979, 54-153384

Int. Cl.^{3} B65H *29/58*

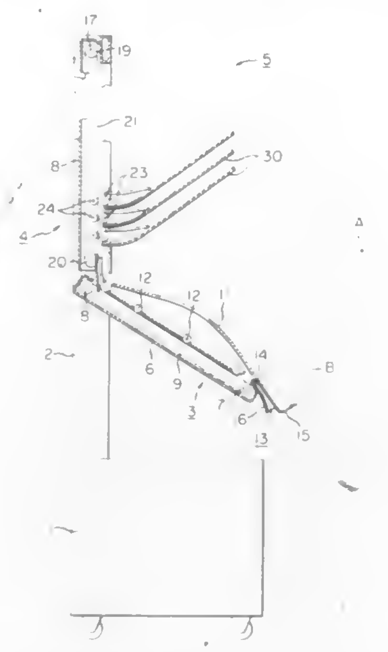
U.S. Cl. 271—289 **5 Claims**

1. In a sheet sorter including sheet sorting means, sheet receiving and transporting means for conveying sheets to the sorting means, and a main tray overlying the receiving and transporting means for receiving sheets in stacked relation thereon,

sheet deflecting means at a sheet inlet end of the receiving and transporting means and comprising an upper plate and a lower plate positionally fixed in spaced apart relation to each other, said deflecting means being pivotally movable between a first position in which sheets input to the sorter are directed by said deflecting means onto the main tray and wherein said upper plate forms a substantially smooth continuation of the main tray to partially support sheets received in stacked relation on the main tray, and a second position in which sheets input to the sorter are directed by said deflecting means to the receiving and transporting means for conveyance to the sorting means, and

drive means connected to said deflecting means for moving the same between said first and second positions thereof so that sheets input to the sorter are caused to be either stacked on the main tray or conveyed to the sorting means, respectively,

said upper plate of the deflecting means being so configured that when said upper plate forms a substantially smooth continuation of the main tray in said first position of said deflecting means to partially support sheets stacked on the main tray said upper plate supports only a relatively small portion of the stacked sheets with respect to that portion supported by the main tray so as to facilitate free movement of said deflecting means to its second position while partially supporting sheets thereon.



4,352,491

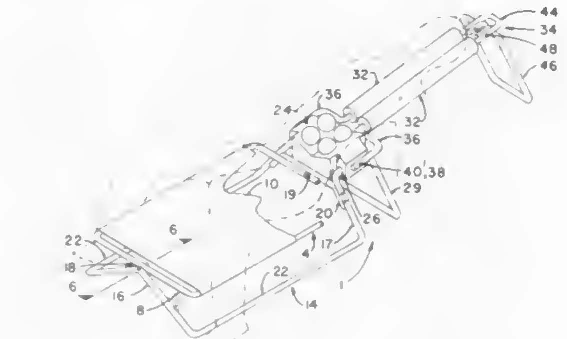
EXERCISE TABLE

Ferdinando Bellia, 51 Regina Rd., Monsey, N.Y. 10952

Filed Jun. 13, 1980, Ser. No. 159,009

Int. Cl.^{3} A63B *23/00*

U.S. Cl. 272—144 **12 Claims**



1. An exercise table comprising:

a. support means;

b. a flat semi-rigid support which is rotatably affixed at each end to said support means, the latter of which supports said exercise table on the floor and said flat semi-rigid support being disposed to rock laterally on said support means when in use by a person;

c. a rigid cushion fixedly attached to one end of said support means and extending outwardly therefrom;

d. a plurality of rigid cushion support means affixed in said rigid cushion with a portion of said rigid cushion support means exposed for cradling the spine in the neck and back of a person on said flat semi-rigid support; and

e. tubing extending from said rigid cushion and pivotably secured to said rigid cushion at an extension of said tubing so as to be foldable onto said flat semi-rigid support, said tubing having a pair of spaced apart soft alignment sleeves secured on said tubing;

said exercise table provides a person using the same with a means of relieving tension by relaxing the back and neck muscles while relaxing any spinal misalignments developed from tension, poor posture or muscle strain.

4,352,492

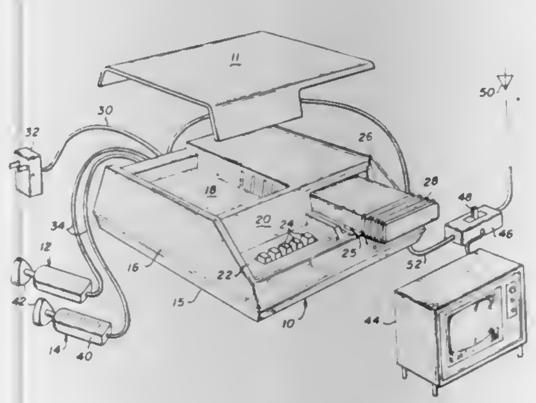
DATA STORAGE APPARATUS

Ronald A. Smith, Los Gatos, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Division of Ser. No. 716,909, Aug. 23, 1976, Pat. No. 4,095,791. This application Nov. 26, 1976, Ser. No. 745,025

Int. Cl.^{3} B63B *71/04;* **A63F** *9/00*

U.S. Cl. 273—1 GC **21 Claims**



1. A data storage cartridge means for use in apparatus for the playing of video games and the like, said apparatus including a console means having signal-generating and processing means and a chute for receiving said data storage cartridge means, said chute having connector means pivotally mounted and rotatable between a cartridge-engaging position and a cartridge-connection position and including a pair of end portions each having a camming surface and an elongated central portion forming a connector slot with a plurality of upstanding resilient contact members extending upwardly through the bottom of said central portion, said central portion having a chamferred surface to provide ease of entry for an end portion of a circuit-board means, said end portion engaging said chamferred surface upon insertion of said cartridge and facilitating pivoting of said connector means, said elongated central portion of said connector means including an alignment key means which divides said central portion into two sections, said chute including a closure assembly for locking an inserted cartridge means in said chute, said closure assembly having an elongated door which is rotatably mounted to rotate open upon insertion of a cartridge means, and an outwardly-extending detent rib for rotation into engagement with an inserted cartridge, said cartridge means including housing means having a bottom surface with slot means which engages said detent rib to latch said cartridge means within said chute,

said data storage cartridge means comprising circuit-board means having a plurality of contacts on an end portion for mating with contacts of said connector means, means for engaging said connector means and pivoting said connector means upon insertion of said cartridge means in said chute whereby said connector means, engages said contacts of said circuit-board means, said end portion being insertable into said connector whereby said plurality of upstanding resilient contact members engage said contacts on said board means, and said board including a notched portion for mating with said alignment key means to facilitate alignment of said board means in said elongated central portion.

4,352,493

PORTABLE OBSTACLE TOY

Hiroyuki Watanabe, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

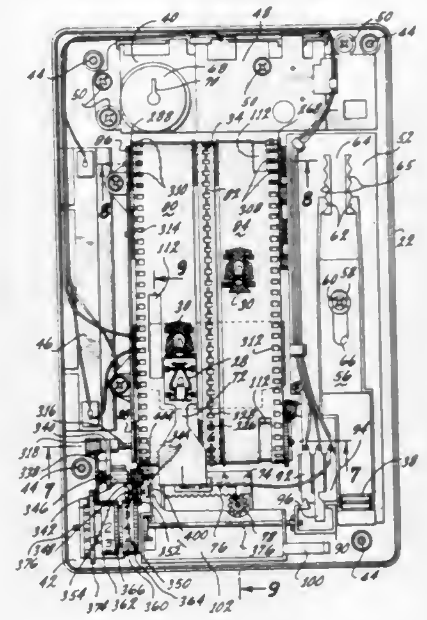
Continuation of Ser. No. 971,464, Dec. 21, 1978, Pat. No. 4,231,571. This application Nov. 3, 1980, Ser. No. 202,887

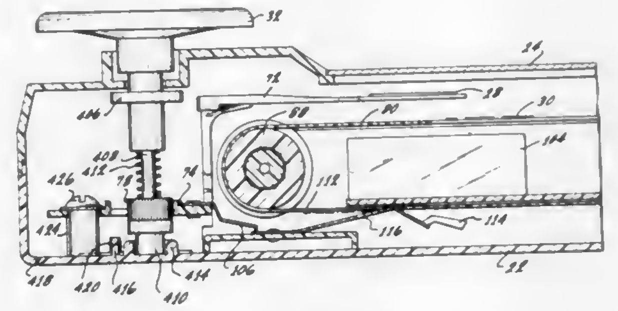
Claims priority, application Japan, Dec. 28, 1977, 52-157850

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.^{3} A63F *9/14*

U.S. Cl. 273—1 GA **4 Claims**





1. A toy game of skill which comprises:

a base;

an orbiting support member, said orbiting support member having a substantially continuous surface, support member mounting means attached to said base, said orbiting support member attaching to said support member mounting means;

driving means mounted on said base, said drive means connecting to and orbiting said orbiting support member in a path around said support member mounting means such that said substantially continuous surface of said orbiting support member orbits around said mounting means;

said orbiting support member including at least one obstacle means on said surface of said support member, said obstacle means repeatedly orbiting about said orbiting support means;

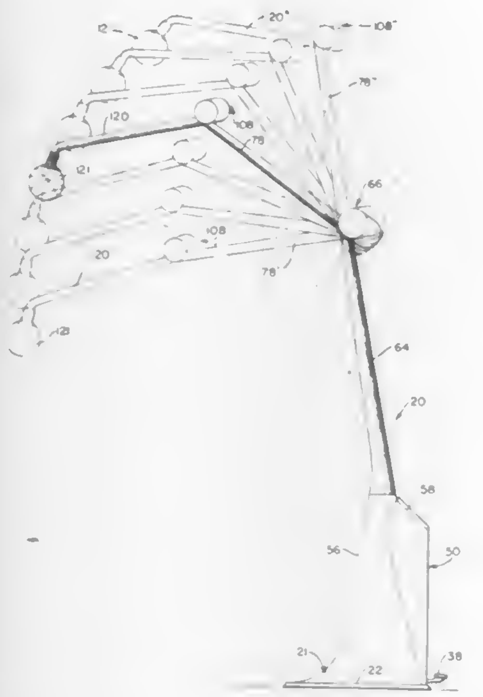
an object member slidably mounted on said base proximal to said surface of said orbiting support member and including an object member moving means for moving said object member in respect to said surface of said orbiting support member;

said object member moving in respect to said surface of said support member and including an interference position between said object member and said obstacle means;

detecting means for detecting when said object member is in said interference position with said obstacle means, said detecting means including an opening located in said surface of said support member and a sensor means located in association with said surface of said support member and capable of interacting with said opening when said object member is in said interference position with said obstacle means, said sensor means independent from said object member;

said detecting means including a drive disengagement means capable of disengaging said drive means from orbiting said orbiting support member when said object means is in said interference position.

4,352,494
REACTION DEVELOPMENT APPARATUS
Alfred A. Wells, 15700 Steel St., Detroit, Mich. 48227
Filed Jul. 24, 1980, Ser. No. 171,673
Int. Cl.³ A63B *5/16, 69/00*
U.S. Cl. 273—1.5 A **4 Claims**



4. A reaction development and physical training apparatus, comprising:

a base located on a supporting surface;

an upright support rotatably mounted on said base for rotation about a substantially vertical axis;

an articulated arm assembly, including primary and secondary arms;

said primary arm having a first end connected by primary pivot means to the upper end of said support assembly for movement primarily in a vertical plane for controlling generally vertical movement of said articulated arm assembly in a generally vertical plane toward and away from said supporting surface;

said secondary arm having one end connected by a secondary pivot means to the free end of said primary arm for controlling movement of said secondary arm relative to said first arm;

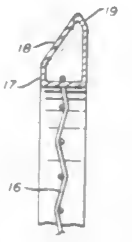
retainer means releasably retaining a ball-like object to the free end of said primary arm;

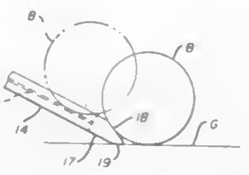
actuating means controlling and varying the relative movement of said primary and secondary arms and rotational movement of said upright support; and

a programmable control center providing a programed sequence of instruction to said actuating means, controlling the rotational movements of said upright support and the pivotal movement of said articulated arm assembly;

the apparatus characterized in that the rotational movement of said upright support and the pivotal movement of said articulated arm assembly cause said ball-like object to move in predetermined paths of travel to accomodate users of different heights, ages, coordination levels and the like, while the user attempts to grasp and remove the ball-like object from said retaining means during said predetermined travel.

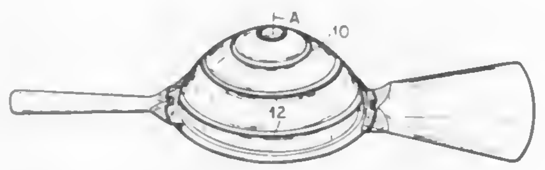
4,352,495
TENNIS RACKET
Tony F. Marchionda, 708 Fifth St., Struthers, Ohio 44471
Filed Feb. 9, 1981, Ser. No. 232,719
Int. Cl.³ A63B *49/02*
U.S. Cl. 273—73 C **2 Claims**





1. In a tennis racket having a frame of a known thickness with an oval head portion having an outermost end and a handle in oppositely disposed relation thereto and stringing in said head portion, the frame in said head portion having an outer side and an inner side and spaced front and back walls extending therebetween, unequal oppositely disposed tapered areas formed in said front and back walls of said frame in said head portion in the outermost end thereof, the tapered areas joining one another in sharp angular relation and defining said outer side of said head portion in said outermost end so that the frame in the tapered area is thin and pointed at its outer side and of said known thickness at its inner side, said tapered area in said front wall being substantially greater than the tapered area in said back wall so as to form a substantially longer incline in said front wall for a ball rolling toward said racket and up said incline onto said stringing.

4,352,496
PLASTIC AND METAL TARGET PIGEON
Ludovico Lante-Montefeltro Della Rovere, 171 Spring Hill Rd., Trumbull, Conn. 06611
Continuation-in-part of Ser. No. 65,467, Aug. 10, 1979, Pat. No. 4,335,882, which is a continuation-in-part of Ser. No. 921,006, Jun. 30, 1979, Pat. No. 4,206,919, which is a continuation-in-part of Ser. No. 762,019, Jan. 24, 1977, Pat. No. 4,133,532, and a continuation-in-part of Ser. No. 882,907, Mar. 1, 1978, Pat. No. 4,274,636, and a continuation-in-part of Ser. No. 892,921, Mar. 3, 1978, Pat. No. 4,218,061. This application Oct. 15, 1980, Ser. No. 197,126
Int. Cl.³ F41J *9/16*
U.S. Cl. 273—363 **10 Claims**



1. A target pigeon comprising:

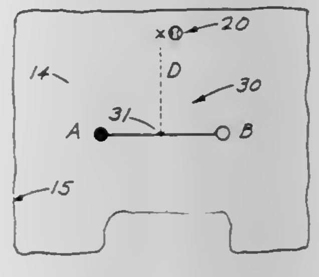
a generally flat web formed at a web axis with a central throughgoing hole and having a pair of diametrically opposite ends;

a pair of vanes on said web extending diametrically oppositely from said ends thereof and tipped propeller-fashion to each other;

a pair of diametrically opposite holding tabs on said ends of said webs directed generally axially and tipped inwardly toward each other, said vanes, web, and tabs being integrally formed and together having a predetermined relatively great mass; and

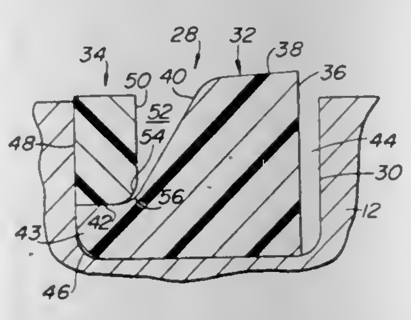
a cup-shaped witness cap having an axially directed and substantially circular annular rim centered on a cap axis and formed with a pair of diametrically opposite outwardly open notches, said rim being axially engageable with said ends of said web inwardly of said tabs with said tabs fitting in said notches, said cap having a predetermined relatively small mass equal to at most one-eighth of said great mass.

4,352,497
FOOTBALL (SOCCER) GAME WITH MOBILE GOALS
Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211
Filed Dec. 12, 1980, Ser. No. 215,649
Int. Cl.³ A63B *71/02, 63/04*
U.S. Cl. 273—411 **4 Claims**



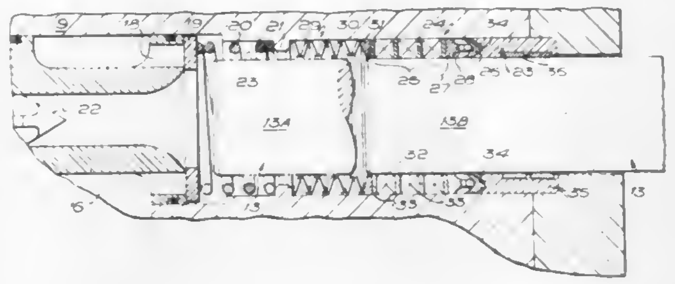
1. Football (soccer) game with mobile goals comprising two footballs (soccer balls), one of which includes indicia designating the team "A" goal and one of which includes different indicia designating the team "B" goal, with a 2 to 10 yds (mts) tether therebetween, a free football (soccer ball), a playing surface, and a playing area, whereby competing teams can play a modified version of conventional football (soccer) game.

4,352,498
SPRING SEAL
John A. Burke, Rocky River, Ohio, and James B. Gross, Lansdale, Pa., assignors to Greene, Tweed & Co., Inc., North Wales, Pa.
Division of Ser. No. 53,883, Jul. 2, 1979, Pat. No. 4,229,013. This application Mar. 7, 1980, Ser. No. 128,063
Int. Cl.³ F16J *15/00*
U.S. Cl. 277—1 **3 Claims**



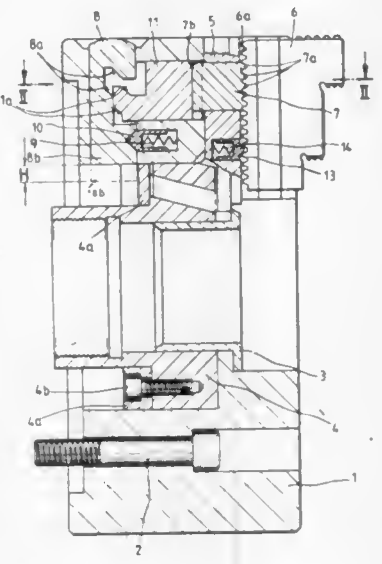
1. A method comprising the steps of providing an annual seal assembly including a sealing ring and a back-up ring with the assembly having a generally trianular opening between said rings on its inner periphery, placing said assembly in a stationary rectangular groove having an axial length greater than the axial length of the assembly so as to provide a space on the high pressure side of the groove, deforming the sealing ring radially outwardly by contact between the outer periphery of a piston and a surface on the sealing which tapers from the high pressure side to said triangular opening, decreasing the size of said opening by said deforming step, using a piston whose outer diameter is greater than the inner diameter of the sealing ring tapered surface in the relaxed state of the sealing ring, applying pressure to the piston and to said space so that said sealing ring deforms axially into and occupies said triangular opening and biases said back-up ring radially inwardly, releasing pressure on said piston and seal assembly, and using said sealing ring as a return spring for retracting the piston a predetermined amount as said sealing ring returns to its original cross-sectional shape as deformed by the outer periphery of said piston.

4,352,499
HYDRAULIC PUMP WITH PISTON SEALING
Malcolm C. Foster, Wakefield, England, assignor to Fletcher Sutcliffe Wild Limited, United Kingdom
Filed Nov. 28, 1979, Ser. No. 97,986
Claims priority, application United Kingdom, Nov. 28, 1978, 46371/78
Int. Cl.³ F16J *15/48*
U.S. Cl. 277—59 **11 Claims**



1. A reciprocable piston hydraulic pump provided with a piston periphery sealing means comprising, at the pressure side, a first seal of flexible material surrounding said piston periphery, a second seal having a moulded pressure seal, a ring separating said first seal from said pressure seal, a reservoir defined between said first seal and said pressure seal, said spring means operable on said first seal to urge the latter towards said pressure seal.

4,352,500
CLAMPING CHUCK FOR TURNING MACHINES
Hans Blättry, Meerbusch, and Herbert Antoni, Grevenbroich, both of Fed. Rep. of Germany, assignors to Paul Forkardt Kommanditgesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Jan. 29, 1981, Ser. No. 229,397
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005459
Int. Cl.³ B23B *31/14*
U.S. Cl. 279—121 **6 Claims**



1. In a chuck for lathes having a chuck body in which at least two clamping jaws which can be jointly actuated by a drive member are guided in radially displaceable manner, said jaws comprising in each case a drive jaw part which is continuously in operative connection with the drive member and a clamping jaw part which is guided for radial movement independently of

the drive jaw part within the chuck body and can be connected in form-locked manner with the drive jaw part by a coupling piece arranged in the drive jaw part, the form-locked engagement of said coupling piece with the clamping jaw part being adapted to be released via positive guide surfaces by a spring-biased actuating member which is movable substantially radially and independently of other actuating members, the improvement comprising

an intermediate member is displaceably mounted in the chuck body,

said actuating member is arranged in the chuck body and is operatively connected with said intermediate member via the positive guide surfaces,

said coupling piece is displaceably mounted in a direction of action and is connected in form-locked manner with said intermediate member in the direction of action of said coupling piece and is radially and displaceably mounted relative to said intermediate member, whereby in the radial direction free movement of the coupling piece with respect to the intermediate member may occur.

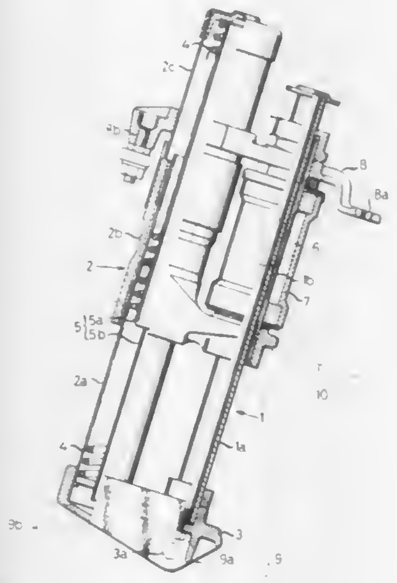
4,352,501
SUSPENSION AND STEERING ASSEMBLY FOR SNOWMOBILE

Izumi Takagi, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed May 5, 1980, Ser. No. 146,911

Int. Cl.^{3} B62B *13/08*

U.S. Cl. 280—16 **6 Claims**



1. A suspension and steering system for a snowmobile comprising:

at least two skis for supporting and steering the snowmobile;

for each of said at least two skis a suspension and steering assembly comprising two strut means disposed substantially parallel to each other, each strut means comprising an inner member telescopically sliding into an outer member;

spring means engaged with at least one of the two strut means to cause said strut means to telescopically expand;

shock absorber means engaged with at least one of the two strut means to dampen the telescopic movement of said strut means;

means for supporting the outer member of one of said two strut means, permitting rotation of said strut means around its own axis and preventing axial or lateral movement of said strut means with respect to the snowmobile;

steering means in one of said assemblies rigidly connecting the outer members of both strut means to cause the two strut means to rotate about the axis of the strut means engaged with the supporting means, said steering means adapted to receive a steering rod connected to a steering gear and a tie rod connected to the other suspension and steering assembly; and

ski mounting means for pivotally connecting the ski to both of the two inner strut members of both strut means in a rigidly fixed relationship, in which said ski mounting means is pivotally connected to the ski at one point and laterally retained between members secured to the ski at another point.

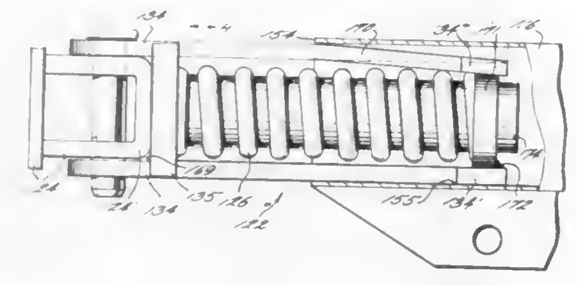
4,352,502
SUPPORT ASSEMBLY FOR MUD-FLAPS

Charles F. Leonard, P.O. Box 99, Rte. 1, Star, Id. 83669; Claude H. Leonard, deceased, late of Star, Id., and legal representative Leonard, P.O. Box 8891, Boise, Id. 83707

Continuation-in-part of Ser. No. 869,761, Jan. 16, 1978, Pat. No. 4,189,165. This application Dec. 31, 1979, Ser. No. 109,196

Int. Cl.^{3} B62D *25/16*

U.S. Cl. 280—154.5 R **10 Claims**



1. A mud-flap supporting assembly, for mounting a mud-flap on a vehicle, comprising a horizontally disposed mounting arm adapted to have a mud-flap attached thereto; means for mounting said mounting arm to a vehicle at an attachment point, including means for substantially preventing movement of said arm in a vertical direction, and means for providing pivotal movement of said arm about a vertical axis adjacent the operative attachment point of the arm to the vehicle; said means for providing pivotal movement of said arm about a vertical axis including a vertical pin, an arm portion for receipt of said pin, and a support portion adapted to be connected to the vehicle for receipt of said pin, said pin passing through said arm portion and said support portion;

spring means operatively connected between said arm and arm portion for centering said arm so that it is normally in a first position but may pivot against the bias of said spring means about said vertical axis out of the first position and so that it will be automatically returned by said spring means to the first position; said means for preventing movement of said arm in a vertical direction comprising interfering portions of said arm portion and said support portion, and means for mounting said arm and arm portions for horizontal telescopic movement with respect to each other against the bias of said spring means;

said arm portion comprising first and second arm portions, said first arm portion being rigidly attached to said arm and receiving said vertical pin, and said second arm portion being mounted for slidable movement with respect to said first arm portion and including a guide member received by a bushing operatively connected to said first arm portion and said arm to provide said telescopic movement of said second arm portion with respect to said arm;

said second arm portion further comprising an end plate portion affixed to said guide member and having surface portions thereof engaging said first arm portion for providing slidable movement therebetween, and said second arm portion having a flat end face portion for abutting said support portion under the bias of said spring means, said support portion being flat at a major area of engagement between it and said end plate and having edge portions for engaging said end plate during pivoting of said arm and spring means comprising; and

a coil spring surrounding said guide member and operatively engaging said arm bushing for receipt of said guide member, and said second arm portion end plate.

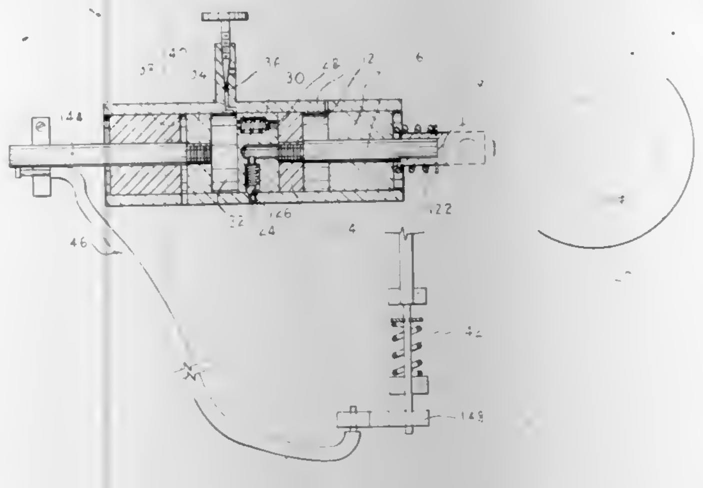
4,352,503
AUTOMATIC TRANSMISSION SHIFTER FOR BICYCLES

James F. Cotter, 105 Crown Ct., Lancaster, Ohio 43130

Filed Jun. 18, 1980, Ser. No. 160,653

Int. Cl.^{3} B62M *25/08*

U.S. Cl. 280—238 **3 Claims**



1. An improved automatic transmission for a human powered vehicle which includes pedals drivingly connected through a variable speed transmission to a wheel, a movable shift member for changing the ratio of the transmission and a speed sensing means linked to said shift member for shifting the transmission ratio in response to vehicle speed wherein the improvement comprises a speed sensing means including:

(a) a fluid pump drivingly connected to said vehicle for pumping fluid at a rate which is a function of vehicle speed said pump including a reciprocating piston-like member connected through a piston rod to an eccentric cam and cam follower mechanism linked to a wheel of said vehicle and biased into engagement;

(b) a container having a chamber connected to said pump through the outlet check valve of said pump for receipt of pumped fluid, said chamber having a vent;

(c) fluid pressure responsive means connected in communication with said chamber and having an actuator which moves in proportion to fluid pressure said pressure responsive means comprising a piston-like member reciprocally mounted in a mating cylinder, one end of said cylinder forming said chamber and means for biasing said piston like member toward said one end, said actuator being a piston rod connected to said piston-like member; and

(d) linkage means linked to said shift member and said actuator for moving said shift member in proportion to the movement of said actuator for shifting the ratio of said transmission.

4,352,504
REAR BRAKE HOLDER FOR BICYCLES

Adriano Pianalto, Vicentino, Italy, assignor to Gipiemme s.r.l., Camisano Vicentino, Italy

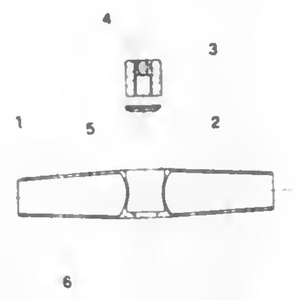
Filed Apr. 28, 1980, Ser. No. 144,586

Claims priority, application Italy, May 3, 1979, 64269/79[U]; Jun. 7, 1979, 64283/79**[U]**

Int. Cl.^{3} B62K *19/38*

U.S. Cl. 280—281 R **2 Claims**

1. In a strut for the brake of a bicycle, the combination which comprises an integral body including a hollow central portion and a pair of hollow, lateral portions connected each to said central portion is oppositely extending relation; and a threaded bushing completely received in an opening of said central portion, said bushing being disposed to receive a threaded bolt extending into said opening to support said brake.



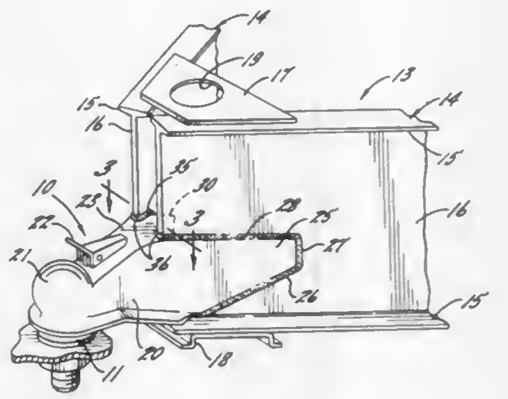
4,352,505
STRADDLE MOUNT TRAILER COUPLER

James W. Chambers, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Dec. 3, 1980, Ser. No. 212,698

Int. Cl.^{3} B60D *1/06*

U.S. Cl. 280—495 **6 Claims**



1. A coupler for connecting a trailing vehicle to a hitch ball on a towing vehicle, the trailing vehicle having a frame which includes a pair of forwardly projecting upright plates spaced laterally from one another at their forward ends, said coupler comprising a body having a downwardly opening socket at the forward end portion thereof for receiving said ball, a pair of laterally spaced wings projecting rearwardly from said body and straddling said plates with the inner sides of said wings lying in face-to-face relation with the outer sides of said plates, means for securing said wings to said plates, a generally horizontal tongue located between said wings and projecting rearwardly from said body into the space between said plates, and welds extending along the outer margins of said tongue and the inner sides of said plates and joining said tongue to said plates.

4,352,506
SKI BRAKE

Josef Svoboda, Schwechat, and Friedrich Leichtfried, Traiskirchen, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed May 27, 1980, Ser. No. 153,243

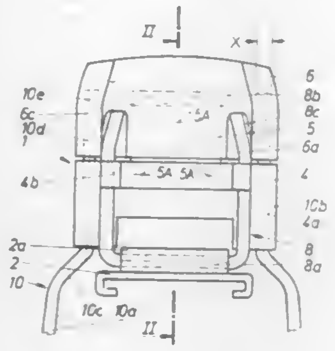
Claims priority, application Austria, Jul. 9, 1979, 4784/79

Int. Cl.^{3} A63C *7/10*

U.S. Cl. 280—605 **11 Claims**

1. In a ski brake having at least one braking leg pivotal by a force applied by a ski boot or by a sole plate secured to a ski boot to a pedal about an axle extending substantially at a right angle with respect to the longitudinal axis of a ski in a mounting member adapted to be secured to said ski, said braking leg being pivotal between a braking position and a retracted position, an erecting spring resisting a pivoting of said braking leg toward said retracted position, said braking leg having a brak-

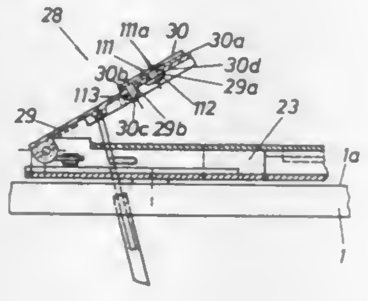
ing mandrel thereon and a first segment therein which extends from said braking mandrel toward the central longitudinal axis of the ski, said braking leg being held totally above the upper surface of said ski and between the lateral edges of said ski in the retracted position of said ski brake by said pedal which is stepped down upon by said ski boot or by said sole plate, and in the braking position of said ski brake, said braking mandrel being positioned laterally outside of one of said ski edges and projecting below the running surface of said ski, said braking leg being pivotal about first means defining a swivel shaft which extends in longitudinal direction of said ski, said first means including at least one further second segment on said braking leg which extends substantially parallel with respect to said central longitudinal axis of said ski brake when said braking leg is in said retracted position, and second means operatively connecting said second segment to said axle to facilitate said pivotal movement of said braking leg about the axis of said second segment, the improvement comprising wherein third means are provided on said braking leg intermediate said braking mandrel and said second segment for engaging a lateral edge of said mounting member and guiding the movement of said braking leg between said braking position and said retracted position.



4,352,507

SOLE-SUPPORT MECHANISM

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Baar, Switzerland
Division of Ser. No. 55,337, Jul. 6, 1979, Pat. No. 4,288,093. This application Mar. 26, 1981, Ser. No. 247,693
Claims priority, application Austria, Jul. 7, 1978, 4928/78
Int. Cl.³ A63C *11/00*
U.S. Cl. 280—605 8 Claims

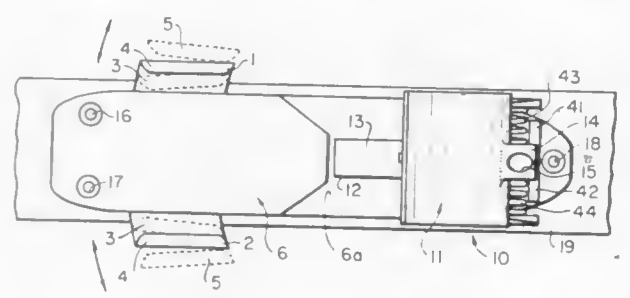


1. A sole support mechanism for the sole of a ski boot secured to a ski between a toe jaw and a heel holder, comprising:
guide rail means adapted to be mounted on said ski;
guide plate means mounted for reciprocal movement on said guide rail means, said heel holder being fixedly mounted on said guide plate means for movement therewith, said heel holder including means adapted to engage and hold said sole of said ski boot;
first resilient means operatively connected to said guide plate means and said guide rail means for urging said guide plate means toward said toe jaw; and
stepping plate means on said guide plate means for supporting the heel portion of the sole of said ski boot during changes in the spacing between said toe jaw and said heel holder in response to a flexing of said ski with no relative longitudinal movement occurring between the sole of said ski boot and said stepping plate means, said stepping plate means including a ski brake pedal supported for movement between a braking position and a retracted position and including means on the upper side of said pedal for reducing friction between said pedal and the sole of said ski boot.

4,352,508

RELEASABLE STEP-IN SKI BINDING

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450
Filed Jan. 7, 1980, Ser. No. 110,222
Int. Cl.³ A63C *9/08*
U.S. Cl. 280—624 16 Claims

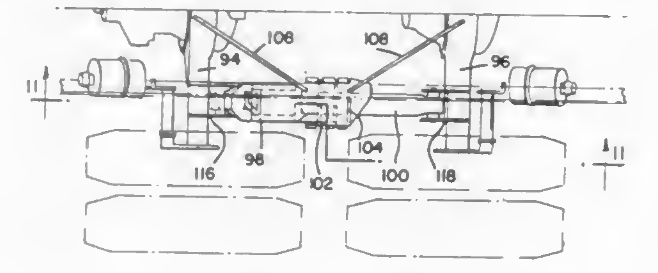


1. A releasable ski binding including a clamping member movable between an opened and a closed condition and being coupled to an elongated force unit for providing a clamping force for releasably securing a ski boot to a ski rearward of the toe and forward of the rear of the heel of the ski boot when the clamping member is in its closed condition comprising:
means for mounting said force unit on said binding with its longitudinal axis transverse to the longitudinal axis of the binding; means coupling said force unit to said clamping member for biasing said clamping member to its closed condition; and step-in means shiftably mounted on said binding for releasably holding the clamping member in its opened condition when the step-in means is at a first position on the binding, said step-in means being movable to a second position in response to a ski boot placed in skiing position on the binding to release said clamping member and allow it to move to its closed condition under the bias action of said force unit.

4,352,509

DAMPED RUBBER TIRED VEHICLE SUSPENSION

H. Neil Paton, 2521 W. Montlake Pl. East, Seattle, Wash. 98112; E. Frederick Gylland, Jr.; Jeffrey P. Sandys, both of Seattle, Wash., and John B. Skilling, 3000 Webster Point Rd., Seattle, Wash. 98105, assignors to H. Neil Paton and John B. Skilling, both of Seattle, Wash.
Division of Ser. No. 870,500, Jan. 18, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,756
Int. Cl.³ B60G *13/02;* B61F *5/34, 5/52*
U.S. Cl. 280—716 20 Claims



1. A rubber tired vehicle suspension, comprising:

moveable load arm means for supporting an axle with respect to a rubber tired vehicle body;
a spring element;
means connected with the body forming a frictional damping surface;
a damping element; and
force resolving means carried by said load arm means between the axle and the body for supporting said spring element in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and said load arm means.

17. A variable rate friction damper for a rubber tired vehicle suspension, comprising:
means connectable with a rubber tired vehicle body forming a frictional damping surface;
a damping element;
spring means for supporting said body; and
force resolving means positionable in load transmitting relation between a vehicle axle and the body for supporting said spring means in load bearing relation with the body and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring means will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the body and the vehicle axle.

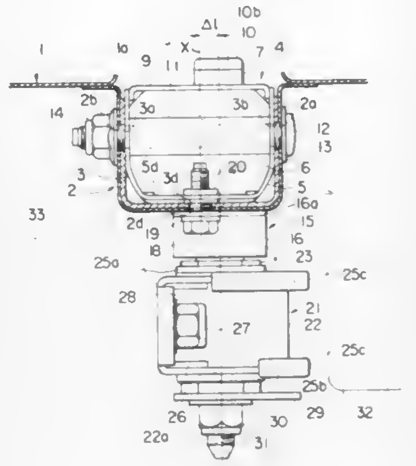
18. A rubber tired vehicle suspension having two relatively moveable arm assemblies, comprising:
moveable load arm means for supporting one of the two assemblies;
a spring element;
means in force transmitting relation with the other of the two assemblies forming a frictional damping surface;
a damping element; and
force resolving means carried by said load arm means between the two assemblies for supporting said spring element in load bearing relation with said other assembly and for supporting said damping element in frictional force generating relation with said frictional damping surface such that said spring element will be compressed while simultaneously therewith said damping element will be urged into frictional engagement with said frictional damping surface in response to relative movement of the two assemblies.

4,352,510

SUPPORT BRACKET

Yoshihiro Saito, Yokohama; Shigeru Sakai, Fujisawa, and Tsuneo Endo, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan
Filed May 30, 1979, Ser. No. 43,700
Claims priority, application Japan, Jun. 2, 1978, 53-74512[U]
Int. Cl.³ B60S *5/00*
U.S. Cl. 280—727 5 Claims

1. For use in mounting a unit on a vehicle, the combination comprising:
an elongated channel member fixed to the vehicle, said channel member having first base and opposed side wall portions;
an elongated bracket having second base and opposed side wall portions, said bracket being dimensioned for removable seating within said channel member, with said bracket and said channel member being arranged symmetrically with respect to a common central reference plane parallel to said first and second side wall portions, with said second side wall portions being confined between said first side wall portions, and with said second base portion overlying said first base portion;
means on said bracket for supporting a carrier bolt vertically with respect to said first and second base portions and laterally of said central reference plane, with a portion of said carrier bolt protruding through aligned openings in said first and second base portions;
detachable fastening means extending through said channel member and said bracket for fixing said bracket to said channel member; and

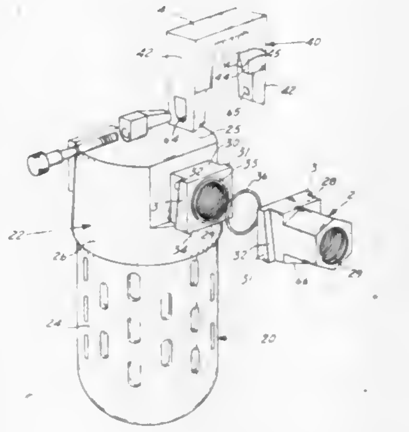


connecting means for connecting the unit to the protruding portion of said carrier bolt externally of both said channel member and said bracket, the position of said unit in relation to said vehicle being adjustable by detaching said fastening means and reversing the orientation of said bracket relative to said channel member to shift the position of said carrier bolt from one to the other side of said central reference plane.

4,352,511

RELEASABLE CLAMP FOR MODULAR CONNECTOR

Franklin Ribble, Arvada, and William E. Huber, Englewood, both of Colo., assignors to Wilkerson Corporation, Englewood, Colo.
Filed Feb. 17, 1981, Ser. No. 234,702
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—91 1 Claim



1. A clamping structure for releasably securing together two pressure fluid conducting components in sealed relationship, each component having means thereon defining a sealing surface including a pressure fluid port therein and adapted for juxtaposed sealing engagement with a corresponding sealing surface on the other component, transversely extending flanges adjacent each of said sealing surfaces and defining on each component coplanar cam surfaces sloping away from the adjacent sealing surface, means defining a wedge surface on at least of one of said components below and generally transverse to said sloping cam surfaces, a yoke having spaced parallel

depending legs, means on said legs defining opposed sloping cam surfaces engageable with said flanges when said component sealing surfaces are positioned together for clamping said components together in sealed pressure fluid conducting engagement, said yoke legs having aligned apertures extending therethrough, one of said apertures being threaded, a bolt positioned in said apertures and extending between said yoke legs and having a threaded end threadably engaged with said threaded aperture and having a headed end defining a head exterior of the other leg and abutment means intermediate said threaded end and said headed end, and a wedge rotatably carried by said bolt intermediate the ends thereof and adapted for sliding engagement with the aperture in the other leg, said wedge having a wedge surface adapted to engage said wedge surface of said component and an abutment surface to engage said abutment means when said components are juxtaposed and said bolt is threaded into said threaded aperture thereby to pull said yoke tightly over said components to releasably clamp and retain said components tightly together in fluid pressure tight relation.

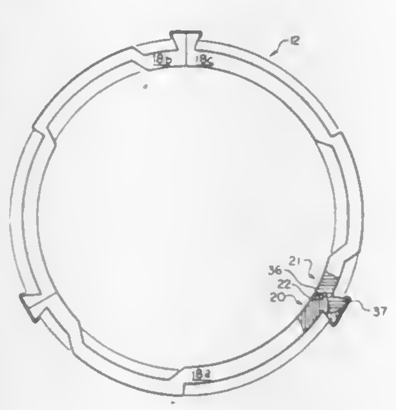
4,352,512
MOLDED FITTINGS

Kermit W. Janssen, Valley Forge, Pa., and Andrew Mitchell, Pompano Beach, Fla., assignors to Certain-teed Corporation, Valley Forge, Pa.

Division of Ser. No. 31,522, Apr. 19, 1979, Pat. No. 4,310,372. This application Sep. 2, 1981, Ser. No. 298,455

Int. Cl.^{3} F16L *21/00*

U.S. Cl. 285—419 **15 Claims**



1. A screen comprising:

a hollow body composing three longitudinally extending sections, each section extending substantially 120° in transverse directions;

longitudinally extending joints disposed along adjoining side surfaces of each of the sections for joining the sections together, the joints including interfitting means arranged along mating portions of the surfaces;

at least one of the sections including apertures for providing fluid access into the interior of the hollow body; and

means at one end of the body for mounting the body on an adjoining hollow member.

4,352,513
TOGGLE LATCH WITH SPRING CATCH

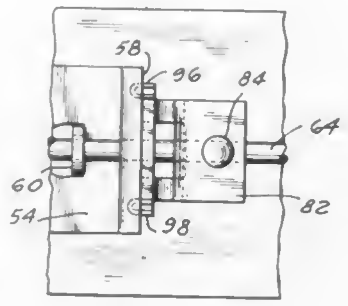
Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Mar. 13, 1980, Ser. No. 130,021

Int. Cl.^{3} E05C *5/02*

U.S. Cl. 292—113 **6 Claims**

1. In a toggle latch for fastening two members together including a base adapted to be coupled to one member to be fastened, a draw bar connected to the base and having a free end to engage with the other member to be fastened, a lever having an opening therein connected to the draw bar and the base and pivotable to shift the draw bar between open and closed positions to unfasten and fasten the two members respectively the lever being pivotally mounted to the base and the draw bar so that when it is pivoted to the closed position it is shifted into overlying position with respect to the draw bar and the base and when it is pivoted to the open position it is pivoted up and away from the draw bar and the base, the improvement comprising; a one piece integral spring catch having an anchor portion affixed to the lever, a resilient intermediate portion extending from the anchor portion and terminating in an arcuate arm projecting through the opening in the lever, the resilient intermediate portion biasing the actuator arm in one direction and permitting the arm to be moved in a second direction, at least one finger on the spring catch in position to automatically engage with one of the base and draw bar when the lever is pivoted to the closed position and the actuator arm is biased in the one direction to prevent pivoting of the latch to the open position and to be disengaged therefrom when the actuator arm is moved in the second direction permitting the lever to pivot to the open position, the intermediate portion being U-shaped and terminating in two ends with the anchor portion extending from one end and the actuator arm extending from the other end, the actuator arm including a finger gripping portion extending through the opening in the lever to facilitate grasping and movement thereof, and the intermediate portion having a central slot between two spaced U-shaped legs to facilitate provision of sufficient resilience for the spring catch and accommodating a portion of the toggle latch when the lever is shifted to the closed position.



4,352,514
SHOCK ABSORBING DEVICE

Hajime Orima, Sakaimachi, Japan, assignor to Firster Corporation Limited, Japan

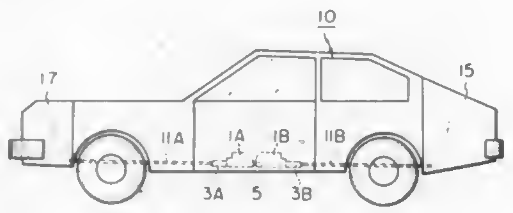
PCT No. PCT/JP78/00061, § 371 Date Aug. 21, 1979, § 102(e) Date Aug. 20, 1979, PCT Pub. No. WO79/00417, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 20, 1978, Ser. No. 154,395

Claims priority, application Japan, Dec. 21, 1977, 52-152949

Int. Cl.^{3} B60R *19/06*

U.S. Cl. 293—110 **2 Claims**



1. A shock absorbing device comprising:

a pair of slightly separated, substantially rigid fluid containers;

a passage of restricted size connecting said containers to each other;

a piston slidably mounted in fluid-tight fashion in each container, one end of each piston projecting outward from its respective container;

each container containing a compressible gas and a liquid; and

a frangible closure valve positioned in said passage separating the gas and liquid contained in one container from the gas and liquid contained in the other container, said closure valve being rupturable when the fluids in either container reach a predetermined pressure, whereby when a force above said predetermined pressure is applied to the projecting end of one of said pistons, the pressure of the fluid in the corresponding container ruptures the closure valve, allowing the fluid to pass between said containers and causing the other piston to extend outwardly of its container, thereby absorbing the shock of the force applied to said one piston.

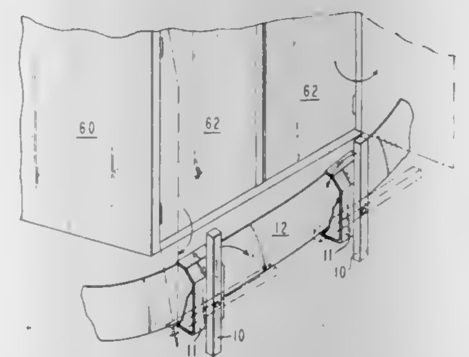
4,352,515
PIN-ACTUATED ROTATABLE RAM BAR APPARATUS AND CARRIER ADAPTER

John B. Schumacher, P.O. Box 657, Huron, S. Dak. 57350

Filed Jul. 7, 1980, Ser. No. 166,183

Int. Cl.^{3} B60R *19/02*

U.S. Cl. 293—145 **16 Claims**



1. A rotatable ram bar apparatus having at least one ram bar assembly for mounting on a vehicle bumper, said assembly comprising:

a ram bar rotatable between first and second positions;

means for securing said bar to said bumper including a bracket attachable to the outer side of said vehicle bumper; and

pin-actuated means for retaining said bar in one of said first position wherein said bar extends vertically with respect to said vehicle bumper and said second position wherein said bar is substantially parallel to said bumper,

said bracket including a shaft protruding horizontally therefrom, said ram bar being rotatably mounted on said shaft, and said retaining means including a pin slidably mounted within said ram bar, one end of said pin interacting with said shaft for holding said ram bar in said first position.

4,352,516
SPREADER BAR

John S. Gasper, Fort Wayne, Ind., assignor to North American Van Lines, Inc., Fort Wayne, Ind.

Filed Jun. 10, 1980, Ser. No. 158,247

Int. Cl.^{3} B66C *1/10*

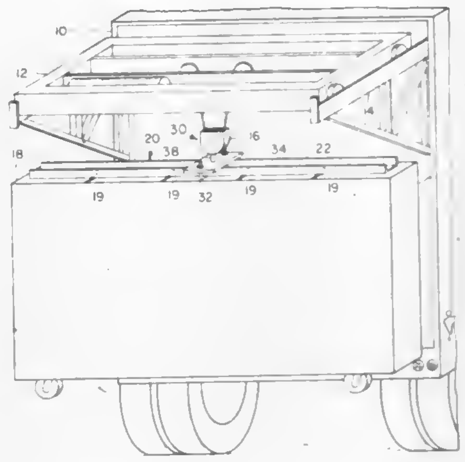
U.S. Cl. 294—81 R **1 Claim**

1. A spreader bar arrangement for enabling an elongated product, comprising an elongated telephone switchgear frame having an upper frame, to be lifted and transported by a transport vehicle having a movable crane mechanism thereon, comprising:

a. a channel shaped support member extending along the top of the elongated telephone switchgear frame, said channel shaped support member having a plurality of fastening apertures therein spaced along its length in coincidence with similar fastening apertures in the upper frame of the elongated telephone switchgear frame;

b. fastener means fastening said channel shaped support member to the elongated telephone switchgear frame at said plurality of fastening apertures; and

c. a connector means centrally disposed along the length of said channel shaped support member for coupling said support member, and the elongated telephone switchgear frame support thereby, to the crane mechanism on the transport vehicle, whereby the channel shaped support member enables the elongated telephone switchgear frame to be lifted upon and transported by the transport vehicle with a minimum amount of damage to the switchgear frame, said connector means including two U-bolts extending around said channel shaped support member with the closed end of each U-bolt mounted around the bottom of said support member, and a bracket, having four holes therein for receipt of the legs of the two U-bolts, being fastened to the legs of the two U-bolts above said support member, whereby the two U-bolts may be loosened relative to the bracket to enable the connector means to be centered relative to the weight of the elongated product to provide a balanced load for the crane mechanism, and said bracket having a centrally mounted attachment means including a centrally located pin extending therethrough for attachment to the crane mechanism of a transport vehicle.



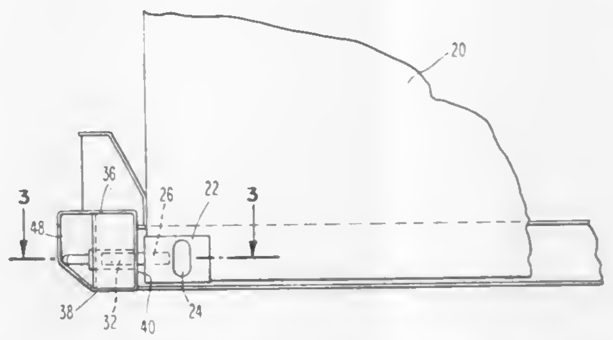
4,352,517
FRONT LOCKING PIN FOR GOOSENECK CONTAINER CHASSIS

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Filed Nov. 10, 1980, Ser. No. 205,590

Int. Cl.^{3} B62D *23/00*

U.S. Cl. 296—35.3 **7 Claims**



1. In a chassis having a front transverse bolster including a rear wall, top and bottom walls, an open front and apertures in the rear wall; a locking pin mechanism adjacent each bolster aperture comprising a pin mounted for movement transversely of and in the bolster, a rack of gear teeth longitudinally along the pin at the front portion thereof, a spur gear quadrant having teeth engaging the rack teeth, a handle extending generally horizontally from the spur gear quadrant and means mounting the spur gear quadrant for rotation transversely of and in the bolster to selectively activate the pin and extend it into its locking position through the bolster aperture and into a lower

corner member of a container on the chassis and to retract the pin out of the corner member in the unlocked position, and a releasable latch to selectively latch the spur gear quadrant against rotation and to unlatch the spur gear quadrant to permit its rotation by the handle, said spur gear quadrant, handle and mounting means being within the confines of the bolster in both the extended and retracted position of said locking pin.

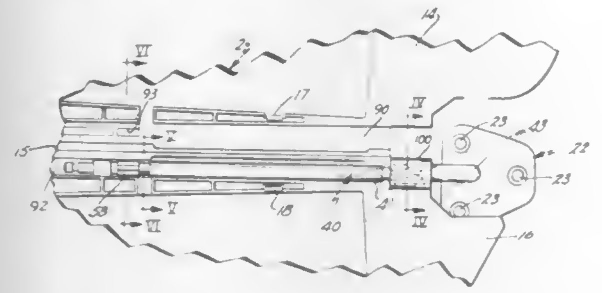
4,352,518
VISOR

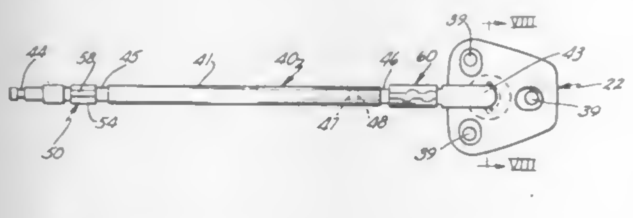
Edgar D. Prince, and Konrad H. Marcus, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Mar. 5, 1979, Ser. No. 17,417

Int. Cl.^{3} B60J *3/02*

U.S. Cl. 296—97 H **31 Claims**





1. A visor comprising:

a visor body including recess means for receiving a visor support rod, said recess means including a locking tab extending toward a visor rod;

a visor support rod including a pair of collars made of a lubricous polymeric material molded and shrunk in spaced relationship on said rod to form a continuous cylindrical and uniformly compressive contact area between each of said collars and said rod for permitting rotation between said collars and said rod to provide a predetermined torque between said collars and said rod, said collars including flange means cooperating with said recess means of said visor body to anchor said collars within said visor body against rotation within said visor body and said tab cooperating with said collar to prevent axial movement of said rod.

4,352,519
LATCHING GLARE SHIELD

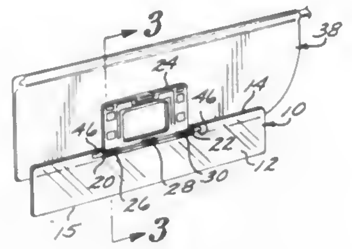
Ernesto M. Aro, Torrance, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Continuation-in-part of Ser. No. 60,726, Jul. 25, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,245

Int. Cl.^{3} B60J *3/02*

U.S. Cl. 296—97 G **7 Claims**

1. A glare shield of an automotive vehicle sun visor comprising a flat sheet of molded transparent glare reducing plastic having a hinging edge defining an elongated, shallow channel at its center and an opposite parallel edge, a metal hinge pin having ends molded into said sheet at said hinging edge to span the width of said channel, a plastic backing having unitary knuckle means rotatably secured to said hinge pin in said channel and having a snap fastening catch formed thereon opposite said knuckle means for releasable engagement with said opposite parallel edge of said glare reducing plastic sheet to hold said sheet and said backing in face to face disposition, said backing being constructed with a plurality of sockets extending away from said knuckle, and metal spring biased gripping means inserted into said backing and disposed thereon opposite said glare reducing plastic sheet for removably securing said backing to said automotive vehicle sun visor, said gripping means including a plurality of clips, each of which fits into a separate one of said sockets and has retaining means for interacting with the structure of said backing at said sockets to retard the withdrawal of said clips from said sockets.



4,352,520
COMPOSITE OF A VEHICLE FRAME AND BODY PARTS

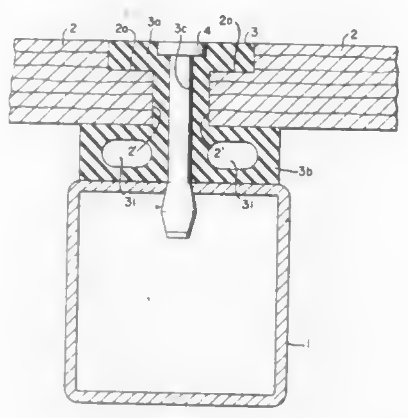
Manfred Stiglmaier, Gilching, and Rudolf Hörmann, Dachau, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 966,021, Dec. 4, 1978, abandoned. This application May 9, 1980, Ser. No. 148,285

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753957

Int. Cl.^{3} B62D *25/20*

U.S. Cl. 296—182 **14 Claims**



1. A vehicle construction which includes at least two vehicle body parts, and means for mounting the vehicle body parts at a vehicle frame, characterized in that the at least two vehicle body parts are floor panels, the mounting means includes a vibration damping insert of a viscous material adapted to be hardened in situ, the floor panels are only attached to the insert and the insert is only attached to the vehicle frame the vibration damping insert has a natural frequency which is lower than a natural frequency of the vehicle frame, the vibration damping insert has a substantially T-shaped cross-sectional configuration and is disposed between adjacent edges of the floor panels, a T-crossbar of the vibration damping insert is adapted to rest flush on the vehicle frame, and in that the material of the vibration damping insert consists essentially of a mixture of an adhesive material and an elastic filler.

4,352,521
MOUNTING ELEMENT WITH THREADED MEMBER ATTACHED TO A BODY WALL OF AN AUTOMOTIVE VEHICLE

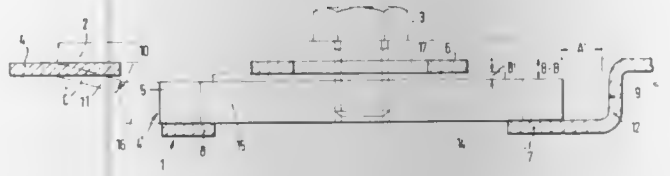
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,739

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822057

Int. Cl.^{3} B60R *13/00;* **B62D** *27/02*

U.S. Cl. 296—191 **7 Claims**



1. A vehicle body construction comprising a mounting element with a threaded fastening member attached to a body panel wall of an automotive vehicle and serving for the accommodation of an assembly part, characterized in that the threaded member comprises a plate having major faces bounded by edge sides, and with a threaded aperture, and said body panel wall includes limiting sections, between which said plate is insertable sideways with its faces disposed opposite thereto, as well as stops for retaining said plate at its edge sides in a receiving space located between said limiting sections, wherein at least one of said stops is formed by a portion of said body panel wall cut free in a manner creating a bendable tongue.

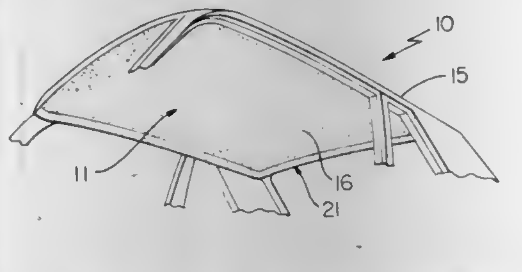
4,352,522
AUTOMOBILE HEADLINER AND METHOD OF MAKING SAME

Donald E. Miller, Livonia, Mich., assignor to Allen Industries, Inc., Troy, Mich.

Filed Sep. 29, 1980, Ser. No. 191,609

Int. Cl.^{3} B60J *7/00*

U.S. Cl. 296—214 **19 Claims**



1. In an automobile headliner comprising, a substrate defined by a compacted and rigidified fibrous material, said substrate having a peripheral portion which is more highly compacted than the remainder thereof, a decorative sheet, and means bonding said substrate and decorative sheet together as a single-piece laminate having a substantially solid cross section throughout, the improvement wherein said peripheral portion has an annular enlargement and said decorative sheet covers said enlargement and defines a sheet-covered enlargement which serves as an integral garnish molding for said headliner, said peripheral portion has an inside surface which is adapted to be disposed adjacent the roof of an automobile, said enlargement when viewed in cross section has a peripheral strip which is substantially parallel to said inside surface and a convex part inwardly of said peripheral strip, said convex part upon being disposed adjacent said roof being convex generally away from said roof and toward the interior of said automobile, said peripheral strip and convex part having said decorative sheet bonded thereagainst and comprising said sheet-covered enlargement, and said enlargement when viewed in cross section has a peripheral edge which has an effective thickness which is greater than the thickness of said peripheral portion.

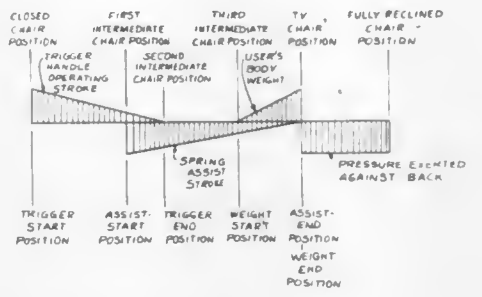
4,352,523
MANUALLY-OPERATED SPRING-ASSISTED RECLINING CHAIRS

Raymond E. Holobaugh, Jr., Tupelo, Miss., assignor to Mohasco Corp., Amsterdam, N.Y.

Filed Jul. 2, 1980, Ser. No. 164,500

Int. Cl.^{3} A47C *1/02*

U.S. Cl. 297—85 **25 Claims**



1. In a reclining chair of the type having

(A) a stationary base for supporting the chair on a floor;

(B) body-supporting means including a seat located generally above the base, and a backrest located rearwardly of the seat;

(C) an armrest located at a side of the seat; and

(D) a recliner system at the armrest, and kinematically interconnecting the body-supporting means to the base for reciprocal movement of the body-supporting means relative to the base in forward and rearward directions along a multi-position path which extends between

  an end-limiting upright chair position in which the body-supporting means is oriented at a predetermined orientation relative to the base, and

  an end-limiting fully-reclined chair position in which the body-supporting means is oriented at a different reclined orientation relative to the base;

the improvement which comprises:

(a) manually-actuatable means for moving the body-supporting means downstream along the path only in the forward direction from the upright chair position towards an intermediate chair position which is intermediate the end-limiting chair positions,

(b) assist means operatively connected to the manually-actuatable means, for forwardly moving the body-supporting means further downstream along the path past the intermediate chair position after the manually-actuatable means has moved the body-supporting means to the general vicinity of the intermediate chair position, to thereby forwardly move the body-supporting means downstream along the path to a greater extent than that obtained by sole operation of the manually-actuatable means,

(c) said manually-actuatable means including an actuator member mounted on the armrest within hand-reach of a seated user, for displacement along a working stroke from a trigger-start position which corresponds to the upright chair position, to a trigger-end position which corresponds to the intermediate chair position,

(d) said manually-actuatable means being in force-transmitting relationship with, and affirmatively forwardly driving, the recliner system throughout the displacement of the actuator member as it is being displaced from its trigger-start position towards its trigger-end position, to thereby forwardly move the body-supporting means downstream of the path towards the intermediate chair position,

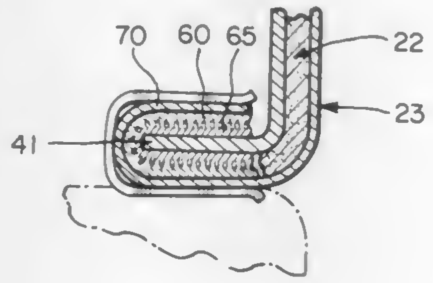
(e) said manually-actuatable means being in impositive engagement, and out of force-transmitting relationship with, the recliner system when the actuator member reaches the trigger-end position, to thereby disengage the manually-actuatable means from the recliner system and permit the latter and the body-supporting means to be moved forwardly further downstream along the path towards the fully-reclined position in response to the operation of the assist means and to the body weight of the seated user acting on the recliner system, and

(f) said actuator member being returnable from its trigger-end position to its trigger-start position upon disengagement of the manually-actuatable means from the recliner system when the actuator member reaches its trigger-end position.

4,352,524
IMPROVEMENT IN UPHOLSTERED FURNITURE

Lawton H. Crosby, Lake Bluss, Ill., assignor to Morley Furniture Spring Corporation, Lake Bluff, Ill.

Filed Jan. 2, 1980, Ser. No. 108,994
Int. Cl.³ A47C *31/02*
U.S. Cl. 297—452 1 Claim



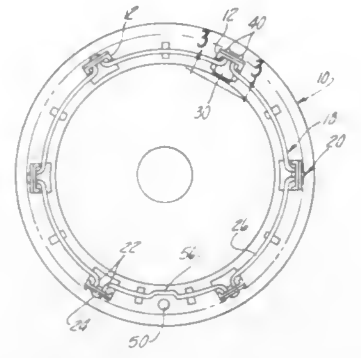
1. In upholstered furniture having a metal frame over which upholstery material is stretched, the improvement in an upholstery material and metal frame rail fastening assembly, comprising:

(a) a metal frame rail including a strip member having upper and lower surfaces and a free edge,
(b) a first flexible fastening element secured to said strip member and including a sheet having a plurality of tiny loops extending outwardly of said sheet to form a pile;
(c) said first flexible fastening element being folded over said free edge of said strip member and secured to both said upper and lower surfaces thereof;
(d) upholstery material having a second flexible fastening element secured thereto on one side of the material and adjacent one edge of the material;
(e) said second flexible fastening element including a sheet secured to said material and a plurality of tiny fingers with enlarged tips thereon extending outwardly of said second flexible element sheet;
(f) said upholstery material adjacent said one edge being folded over said first flexible fastening element and the fingers of second flexible element being pressed into the loops of said first flexible element whereby the cooperating elements serve to fasten the material to the rail and the stress exerted which tends to separate the elements is substantially only shear stress; and
(g) U-shaped spring clip means which force said second flexible element against said first flexible element and said first flexible element against both said upper and lower surfaces.

4,352,525
WHEEL COVER WITH TORQUE RESISTOR

Edwin E. Foster, and Thomas E. Foster, both of Austin, Tex., assignors to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed May 7, 1981, Ser. No. 261,463
Int. Cl.³ B60B *7/06*
U.S. Cl. 301—37 PB 10 Claims

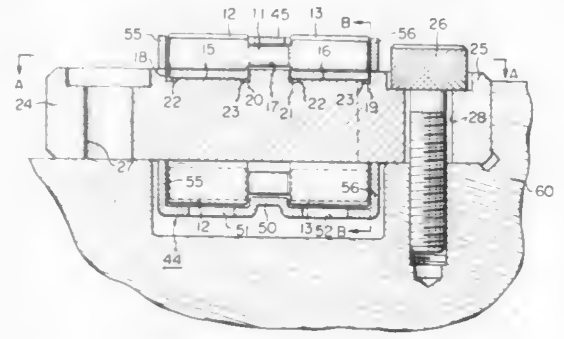


1. In a cover for a vehicle wheel of the type having a body and a resilient wire ring member mounted on the inboard face of the cover body, said ring member having at least one pair of parted ends and a plurality of radially outward projections thereon extending through radial passageways on the cover which are adapted to releasably engage an annular surface on the wheel rim to retain the cover on the wheel, that improvement which comprises, at least one of said projections being formed as a metal member separate from the ring member and extending radially outwardly through one of said passageways, said parted ends of the ring being bent radially outwardly to form a pair of radially outwardly extending legs, the laterally opposite sides of said metal member having laterally inwardly extending recesses therein, said legs being nested within said recesses, said metal member having a radially outwardly projecting biting edge at its radially outer end adapted, when the cover is mounted on the wheel, to dig into said annular surface of the wheel rim to resist rotation of the cover relative to the wheel.

4,352,526
SLIDE ROLLER BEARING

Katsuhito Imai, Nagoya, Japan, assignor to Hiroshi Teramachi, Tokyo, Japan

Filed Jan. 13, 1981, Ser. No. 224,661
Claims priority, application Japan, Jan. 23, 1980, 55-6359
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C 3 Claims



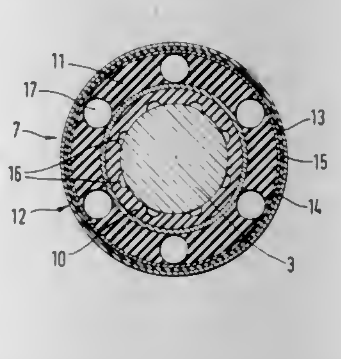
1. In a slide roller bearing, comprising:

a race body defining an endless track around the circumference thereof;
a plural number of rollers placed side-by-side along said track of said race body for circulation therearound;
spacers inserted between individual rollers to prevent contact of adjacent rollers; and
a casing consisting of upper and lower covers clampingly fixed to each other to guide said rollers from a load-carrying region to a non-load-carrying region of said track or vice versa, said upper cover being provided with openings on opposite sides of a center retainer band, and, inwardly embossed guide portions substantially of U-shape in section in the center portions contiguous to said non-load carrying side of said track, and, said lower cover being provided with an inwardly embossed guide portion substantially of U-shape in the center portion facing said non-load-carrying side of said track.

4,352,527
WATER-LUBRICATED BEARING CONSTRUCTION FOR SHIP'S PROPELLER SHAFT

Anders Sandström, Nynäshamn, Sweden, assignor to Scatra AB, Nynäshamn, Sweden

Filed Jul. 15, 1980, Ser. No. 169,167
Int. Cl.³ F16C *17/14, 27/02, 27/06*
U.S. Cl. 308—26 8 Claims



1. In a propeller system for ships including a propeller shaft connected to be driven by a ship's drive shaft to drive a ship's propeller connected thereto, with water-lubricated bearing means located in the stern frame of said ship having said propeller shaft extending therethrough, the improvement wherein said water-lubricated bearing means comprise a first layer of hard rubber extending coaxially about said propeller shaft, a second layer of soft rubber arranged coaxially with said first layer and a tubular member externally enclosing said water-lubricated bearing means, said tubular member being formed with an inner casing, an outer casing and with an intermediate layer located therebetween, said inner casing and said outer casing each consisting of a material having a high specific weight with said intermediate layer being formed of a material having a low specific weight.

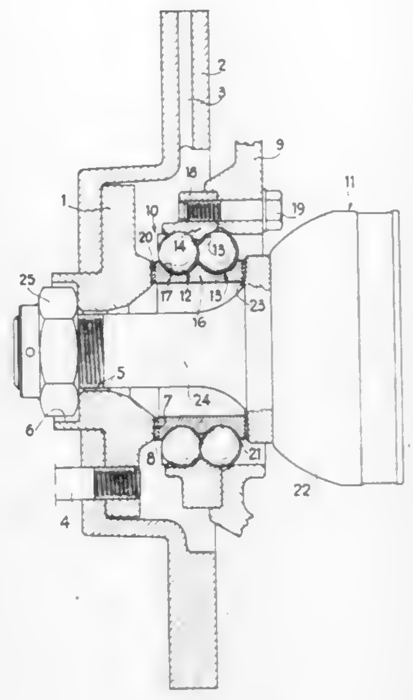
6. In a propeller system for ships including a propeller shaft connected to be driven by a ship's drive shaft to drive a ship's propeller connected thereto, with water-lubricated bearing means located in the stern frame of said ship having said propeller shaft extending therethrough, the improvement wherein said water-lubricated bearing means comprise a first layer of hard rubber extending coaxially about said propeller shaft, a second layer of soft rubber arranged coaxially with said first layer and a tubular member externally enclosing said water-lubricated bearing means, said tubular member being formed with a pair of metallic tubes having an intermediate layer of soft rubber located therebetween.

7. In a propeller system for ships including a propeller shaft connected to be driven by a ship's drive shaft to drive a ship's propeller connected thereto, with water-lubricated bearing means located in the stern frame of said ship having said propeller shaft extending therethrough, the improvement wherein said water-lubricated bearing means comprise a first layer of hard rubber extending coaxially about said propeller shaft, a second layer of soft rubber arranged coaxially with said first layer and a tubular member externally enclosing said water-lubricated bearing means, said second layer of soft rubber having formed therein axially extending blind-ended bores distributed over the circumference thereof and extending over approximately two-thirds of the length of said bearing means.

4,352,528
ROLLING BEARING HAVING TWO ROWS OF ROLLING ELEMENTS AND DEVICE FOR MOUNTING A VEHICLE WHEEL

Pierre L. Guimbretiere, Neauphle le Chateau, France, assignor to Glaenzer Spicer, Poissy, France

Filed Feb. 29, 1980, Ser. No. 126,114
Claims priority, application France, Apr. 24, 1979, 79 10351
Int. Cl.³ F16C *19/08, 33/58*
U.S. Cl. 308—189 R 3 Claims



1. A device for mounting on a support a vehicle wheel which has a hub, said device comprising a rolling bearing comprising two rows of rolling elements and an inner unit defining raceways for the rolling elements and defining at least one end face provided with frontal radiating splines, said unit consisting of a single ring which is axially clamped between two faces, of which one face is associated with the support and the other face pertains to the wheel hub, splines being provided on the face of the hub which fit and engage said splines on the single ring.

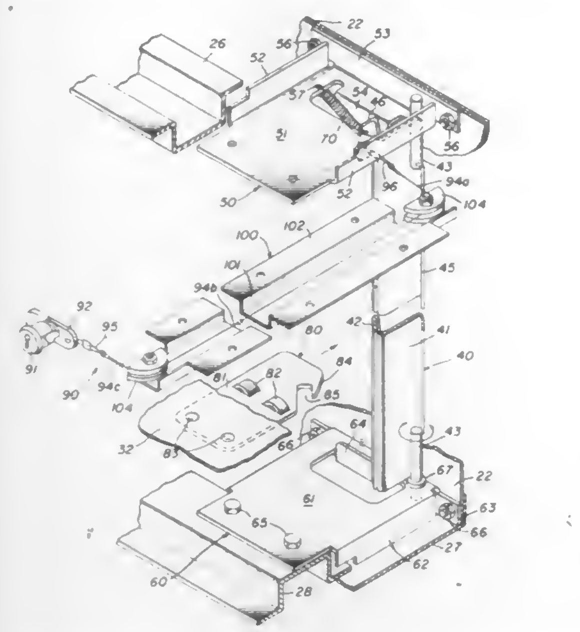
4,352,529
DRAWER LOCKING SYSTEM

Mark H. Steinke, Montgomery, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.

Filed Nov. 3, 1980, Ser. No. 203,123
Int. Cl.³ E05B *65/46;* E05C *7/06*
U.S. Cl. 312—222 24 Claims

1. A drawer locking system for use with a frame having a front, a rear, a pair of sides and upper and lower ends, and at least two drawers carried by the frame and movable between a forwardly open position and a rearwardly closed position, said drawer locking system comprising an elongated latching bar having a longitudinal axis substantially perpendicular to the ends of the frame and extending adjacent to the drawers, said latching bar being rotatable about said longitudinal axis between latching and unlatching positions, means for biasing said latching bar to the latching position thereof, and a latching clip on each of said drawers and having camming means for engaging said latching bar and causing rotation thereof to the unlatching position thereof as the associated drawer is moved toward the closed position thereof, whereupon the associated drawer can be moved further toward the closed position until

said camming means passes said latching bar, whereupon said latching bar tends toward the latching position thereof, said latching clip further having keeper means for receiving said latching bar as it rotates toward the latching position thereof.



4,352,530
ROTARY FEED FOR TONOGRAPHIC SCANNING APPARATUS

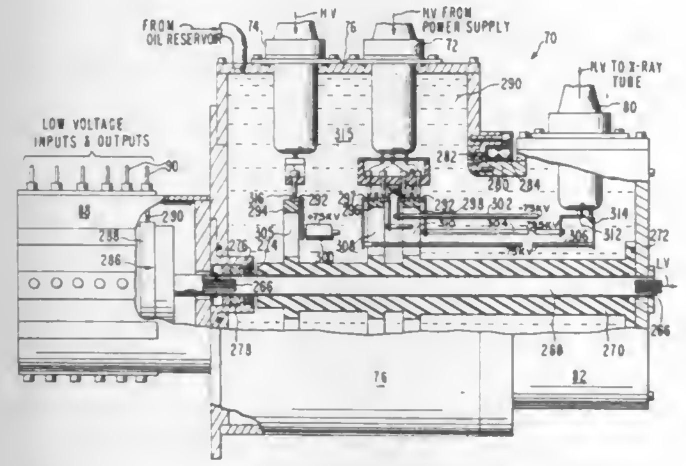
Kendall L. Dinwiddie, Palo Alto; Janos A. Racz, San Jose, and Edward J. Seppi, Menlo Park, all of Calif., assignors to General Electric Company, Milwaukee, Wis.

Continuation of Ser. No. 863,979, Dec. 23, 1977, Pat. No. 4,201,430, which is a continuation of Ser. No. 677,939, Apr. 19, 1976, abandoned. This application Mar. 21, 1980, Ser. No. 132,682

The portion of the term of this patent subsequent to May 6, 1997, has been disclaimed.

Int. Cl.³ A61B *39/00;* H01R *6/00*

U.S. Cl. 339—5 M 4 Claims



1. Rotary electrical feed-through apparatus comprising first and second casing portions, said first and second casing portions being rotatably connected together to form a chamber adapted to contain insulating fluid, a first high voltage electrical contact positioned in said chamber and supported from said first casing portion, a second high voltage electrical contact positioned in said chamber in engagement with said first high voltage electrical contact and supported from said second casing portion, first and second high voltage electrical leads respectively connected to said first and second high voltage electrical contacts and respectively passing through said first and second casing portions to the exteriors thereof, a plurality of first low voltage electrical contacts attached to said first casing portion and positioned outside said chamber, and a plurality of second low voltage electrical contacts positioned outside said chamber in engagement with said first low voltage contacts and attached to said second casing portion.

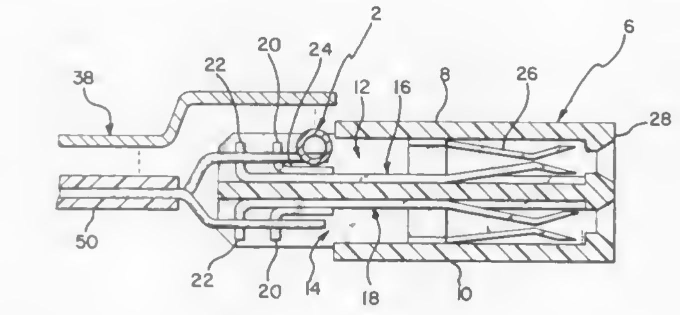
4,352,531
COMMONING ELEMENT FOR AN ELECTRICAL CONNECTOR

David H. Gutter, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 2, 1980, Ser. No. 155,905

Int. Cl.³ H01R *9/07, 23/06*

U.S. Cl. 339—14 R 7 Claims



1. In an electrical connector of the type comprising a housing block having a row of cavities within one surface thereof, contact members seated in respective ones of said row of cavities, and commoning means for electrically connecting each said contact member, the improvement comprising:
- each of said contact members comprising support portion means positioned within a respective cavity of said row of cavities, said cavities being open to said one surface;
- said commoning means comprising elongate radially compressible spring means positioned transversely above said support portion means of said contact members; and
- means provided by said housing block being movable towards said one surface for covering said row of cavities along said one surface, radially compressing said spring means through said one surface into intimate engagement against said support means of said contact members and to maintain said spring means in electrical contact with said contact members whereby electrical contact is established between said contact members.

4,352,532
MANIFOLDING MEANS FOR ELECTRICAL AND/OR PNEUMATIC CONTROL UNITS AND PARTS AND METHODS THEREFOR

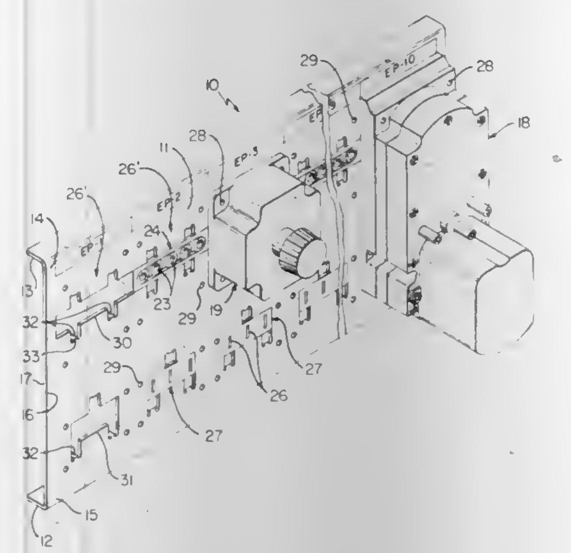
George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 15, 1980, Ser. No. 187,497

Int. Cl.³ H01R *04/64*

U.S. Cl. 339—15 46 Claims

1. In a manifold means adapted to detachably carry on one side thereof a plurality of pneumatically and electrically operated control units each of which is adapted to be fluidly and electrically interconnected to pneumatic means and electrical means of said manifold means by plug-in means of said units respectively cooperating with plug-in means of said pneumatic means and said electrical means of said manifold means at said one side thereof, the improvement wherein said manifold means has external interconnection means for said pneumatic means and said electrical means on the other side thereof whereby external pneumatic and electrical lines can all be interconnected to said other side of said manifold means.



4,352,533
CONNECTOR DEVICE FOR PRINTED BOARDS

Teruo Murase, Tokorozawa; Kyoichiro Kawano, and Akiyoshi Oshitani, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

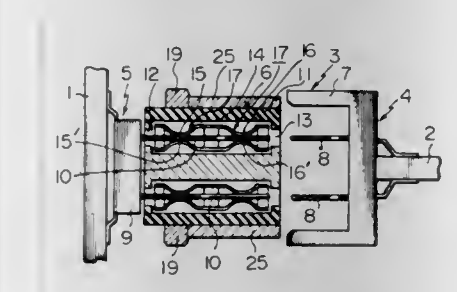
PCT No. PCT/JP79/00273, § 371 Date Jun. 30, 1980, § 102(e) Date Jun. 18, 1980, PCT Pub. No. WO80/01022, PCT Pub. Date May 15, 1980

PCT Filed Oct. 29, 1979, Ser. No. 199,932

Claims priority, application Japan, Oct. 31, 1978, 53-134352

Int. Cl.³ H05K *1/00*

U.S. Cl. 339—17 L 18 Claims



1. A connector device for a plurality of printed boards which are to be electrically interconnected and which are to be spaced from one another, comprising at least one pair of opposed male connectors provided on said printed boards to be interconnected, each male connector being provided with at least one projecting terminal; at least one projecting terminal of one of said opposed male connectors being spaced from and in alignment with said corresponding projecting terminal of the other of said opposed male connectors; and at least one female connector positioned between said opposed male connectors and movably attached to and supported by said at least one projecting terminal of one of said opposed male connectors, the electrical connection between said corresponding projecting terminals of said opposed male connectors being established and broken by the displacement of said at least one interpositioned female connector.

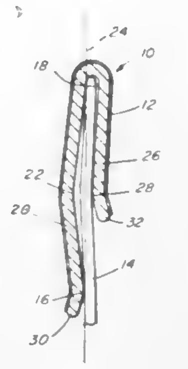
4,352,534
BUS BAR

Lennart B. Johnson, Milford, N.H., assignor to Teradyne, Inc., Boston, Mass.

Filed Jun. 5, 1980, Ser. No. 156,808

Int. Cl.³ H01R *31/08*

U.S. Cl. 339—19 8 Claims



1. In an easily attachable bus bar to interconnect a number of connector posts, the center lines of said posts defining a post locus, the improvement comprising:
- a first portion having, in vertical section, first and second contact points,
- said first portion having an intermediate portion between said first and second points spaced in a first direction transversely to vertical lines connecting said first and second points, and
- a second portion integrally connected to said first portion and spaced from said first portion in a second direction opposite to said first direction,
- said second portion having, in vertical section, third contact points adjacent to said intermediate portion and spaced in said second direction from said vertical lines by a distance less than the thickness of said posts,
- said first, second, and third contact points defining a post-insertion region between them,
- said bar being constructed to bend said posts when said bar is attached to them to provide the normal force for electrical contact, the locus defined by said vertical lines corresponding generally to said post locus.

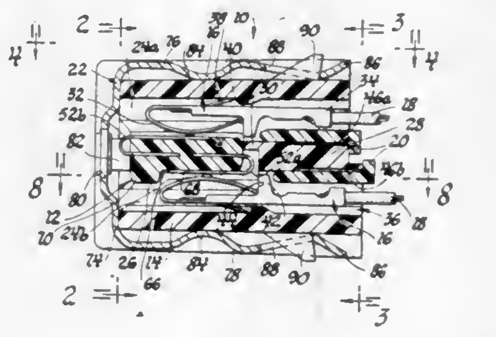
4,352,535
ELECTRICAL CONNECTOR

James W. McNamee, Sr., and Daniel N. Kosareo, both of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1980, Ser. No. 163,817

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—75 MP 5 Claims



1. An electrical connector for connecting a DIP having an insulated block with first and second sets of substantially parallel circuitry tabs projecting from opposite respective sides thereof to a wiring harness comprising:
- a DIP having first and second sets of tabs folded over onto the top and bottom surfaces of an insulated block respectively,

a socket having a longitudinal slot at one end receiving the DIP,

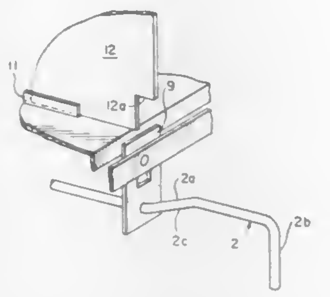
two rows of terminals in the socket disposed on opposite sides of the slot,

each of said terminals being attached to a lead of a wiring harness and having a flexible contact engaging one of the tabs of the DIP, and

a cover mounted over the one end of the socket to retain the DIP in the slot.

4,352,536
PRINTED CIRCUIT BOARD CONNECTING AND LOCKING ASSEMBLY

Gerald J. Goldberg, Palm Beach Gardens, Fla., assignor to Harris Data Communications, Inc., Dallas, Tex.
Filed Mar. 7, 1980, Ser. No. 128,142
Int. Cl.³ H01R *13/64*
U.S. Cl. 339—75 MP **18 Claims**



1. A printed circuit board connecting and locking assembly comprising:

(a) at least one electrical connector for receiving a printed circuit board in electrical engagement therewith;

(b) a support structure;

(c) at least one circuit board locking key supported at least in part by said support structure for movement between a first, open position located outside of an insertion and removal path of said printed circuit board into and out of said electrical connector and a second, closed position located within said path of the printed circuit board into and out of the electrical connector; and

(d) at least one actuator rod mounted in association with said electrical connector for reciprocation, said actuator rod extending in an axial direction from said electrical connector beyond said locking key and being provided with an axially extending camming surface for displacing said locking key from said first, open position to said second, closed position.

4,352,537
CORD ADAPTER

Ronald H. Guelden, Shreveport, La., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jun. 11, 1980, Ser. No. 158,401
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—99 R **5 Claims**

1. A cord adapter (**100**) for terminating a cord (**10**) including a plurality of insulated conductors (**16**), the cord adapter comprising:

a dielectric base (**112**) including a connector portion (**116**) having terminal members (**162**);

a plurality of contacts (**184**), where each contact comprises:

a first set (**216**) of insulation-piercing tangs for engaging respective ones of the cord conductors (**16**); and

a second set (**218**) of insulation-piercing tangs;

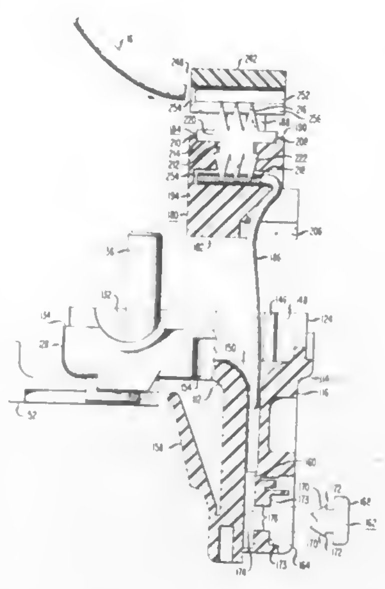
a contact holding body (**182**), made from dielectric material, and comprising:

a first surface (**190**);

a plurality of spaced-apart, parallel conductor-receiving bores (**204**) contained in a plane substantially parallel to the first surface; and

a plurality of spaced-apart, parallel contact-receiving slots (**208**), where each slot (**208**) is in communication with the first surface and one of the bores, each slot being configured to accommodate a contact such that the first set of tangs protrudes beyond the first surface and the second set of tangs protrudes into its associated bore;

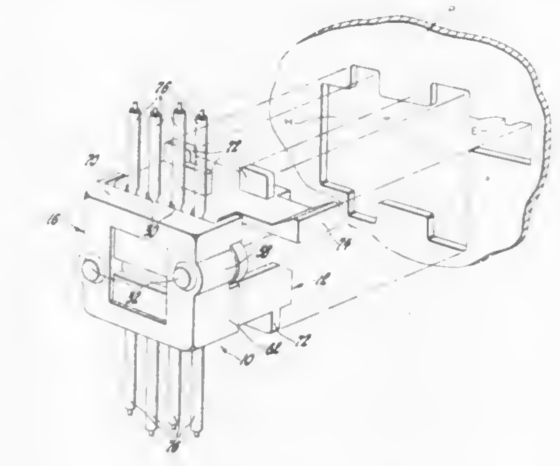
means for aligning (**148, 202**) the contact holding body with the base; and



a plurality of second insulated conductors (**186**), each second conductor having a first end threaded into an associated bore and in intimate electrical connection with the second set of tangs of the associated contact, and having a second end contained in the connector portion (**116**) of the base and in intimate electrical connection with a terminal member (**162**), whereby the connections at both ends of the second conductors (**186**) help to secure the body to the base.

4,352,538
LOW PROFILE CONNECTOR FOR PRINTED CIRCUIT BOARD

Charles E. Fowler, Boardman, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 19, 1980, Ser. No. 151,308
Int. Cl.³ H01R *11/20;* H02B *1/04*
U.S. Cl. 339—126 R **2 Claims**



1. A low profile connector for a printed circuit board comprising:

a connector body having two spaced rows of terminal cavities which extend from a conductor end to a contact end thereof,

a transverse slot in the contact end for receiving a printed circuit board,

said transverse slot being between the two rows of terminal cavities and communicating with each of the terminal cavities,

a support rib in each terminal cavity which is parallel to the depth of the slot and which projects from a side wall transverse to the slot,

a terminal disposed in each cavity having a contact bow projecting into the slot,

said terminal further including a channel-shaped body having spaced parallel walls located on opposite sides of the support rib,

said contact bow being connected to a leading edge of one of said walls by a reverse bend,

at least one of said walls having a tail portion projecting outwardly of the conductor end of the connector body, said tail portion having a slot for receiving an insulated conductor wire and piercing its insulation to make electrical contact with its core,

a cover over the conductor end of the connector body for covering the tail portions after the conductor wires are received in the slots, and

panel mounting means comprising:

a first set of lugs projecting from one side of the connector body,

a second set of lugs projecting from an opposite side of the connector body, and

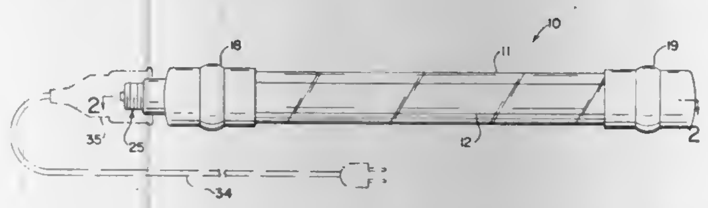
a latch finger projecting from a third side of the connector body,

said first and second sets each having at least one lug spaced from the remaining lugs so that the lugs in each set are adapted to engage opposite sides of a panel, and

said latch finger being wide enough to span the space between the lugs in each set.

4,352,539
FLUORESCENT LIGHT WITH THREADED CONNECTOR

Gary W. Vest, 4480 Broadview Rd., Cleveland, Ohio 44109
Filed May 30, 1980, Ser. No. 154,790
Int. Cl.³ F21V *23/02*
U.S. Cl. 339—154 L **1 Claim**



1. In a portable fluorescent light including an elongated, transparent, tubular housing, an axially elongated, cylindrical fluorescent lamp positioned in said housing coaxial therewith, and electrical circuit means, including two fluorescent lamp sockets, for energizing said lamp, each one of said lamp sockets being mounted on said tubular housing adjacent an associated end thereof, the improvement wherein the lamp further comprises:

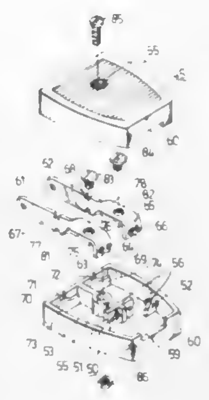
electrical ballast means associated with said electrical circuit means and including a protective cover therefor, said cover being connected to and in axial alignment with said housing;

electrical lamp starter means associated with said electrical circuit means; and

connector means at the end of the light associated with said ballast means and in axial alignment with said cover, said connector means including at its end distal from said housing a threaded annular electrical contact adapted for electrical connection to a conventional threaded electrical socket of a trouble light power cord for energizing said fluorescent lamp, said connector means including a generally cylindrical dielectric body with a recess formed therein to receive said starter means, said cylindrical dielectric body and starter means therein being adapted to be received within the incandescent bulb receptacle of the trouble light power cord while the ballast is disposed axially between the start and the fluorescent lamp and is thereby adapted to be supported out of but adjacent the receptacle of the power cord when the electrical contact is fully engaged with the electrical socket of the trouble light power cord.

4,352,540
ELECTRICAL PLUG

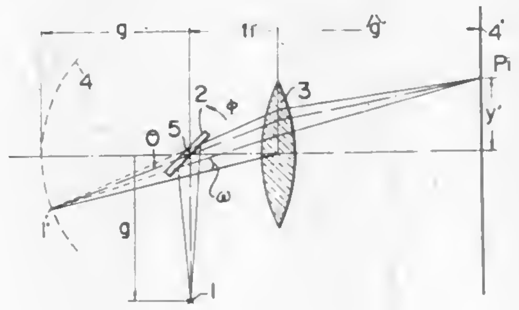
Liang-Huang Liu, 97, Lane 192, Hsui-Yuan Rd., Feng-Yuan City, Taiwan
Filed Jul. 23, 1980, Ser. No. 171,311
Int. Cl.³ H01R *33/04*
U.S. Cl. 339—196 R **6 Claims**



1. An improved electrical plug comprising elongated members for conveying electrical energy and a housing having first and second housing elements, at least one of said housing elements including means for fixing said elongated members in predetermined positions in said housing, and an opening in said housing permitting said elongated members to communicate between the exterior and interior of said housing, said fixing means including a wall disposed in said at least one housing element, said wall being disposed generally perpendicular to a major axis of said elongated members, and a pair of stop blocks disposed in parallel, spaced relationship to said wall in said at least one of said housing elements, the spacing between said wall and said stop blocks being sized to receive a portion of said elongated members, said wall and said stop blocks each having at least one protuberance for engaging said elongated members.

4,352,541
OPTICAL SCANNING DEVICE WITH CONSTANT SPEED SCAN

Kazuo Minoura, and Setsuo Minami, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1978, Ser. No. 971,439
Claims priority, application Japan, Dec. 23, 1977, 52/156158
Int. Cl.³ G02B *27/17, 3/02*
U.S. Cl. 350—6.6 **21 Claims**



1. An optical scanning device comprising:

a light source for producing light rays;

means for deflecting light rays from the light source toward a predetermined direction;

a surface to be scanned by said deflected light rays;

single lens means having a distortion coefficient V disposed between the deflecting means and the surface for focusing the light rays deflected by the deflecting means; and

said deflecting means having a revolution angle ϕ_0 sin kt within a definite time, where ϕ_0 is an amplitude, k is a constant, and t is time, wherein the following equation is satisfied to make the moving velocity of a light beam on said surface constant;

$$\phi_0 = \frac{1}{2\sqrt{2 - 3\left(\frac{g}{g + t_1}\right)^2 V}}$$

where t_1 is the distance between said single lens means and said deflecting means measured from said single lens means toward said deflecting means; g is a distance between said deflecting means and the light source measured from the deflecting means toward the light source.

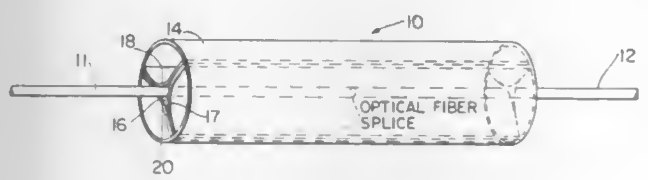
4,352,542
CABLE CONNECTOR

John E. Tydings, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,524

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.21 **13 Claims**



1. A connector for joining opposing cable ends, comprising: support means; and

shape memory means supported by the support means so as to align and hold the cable ends, said shape memory means comprising strips of a shape memory alloy.

4,352,543
LENS BARREL

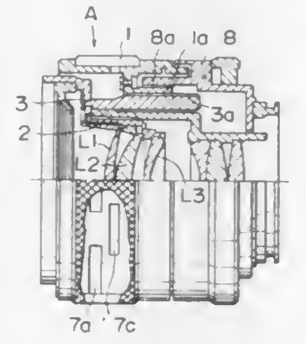
Motoyoshi Furusawa, Shyobu, and Shigemitsu Mori, Omiya, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

Filed Jul. 17, 1980, Ser. No. 169,781

Claims priority, application Japan, Jul. 21, 1979, 54/93100

Int. Cl.³ G02B *7/02*

U.S. Cl. 350—252 **4 Claims**



1. A lens barrel for a lens system in an optical instrument comprising a driven member, and an operating ring made of synthetic resin having a driving portion operatively engaged with said driven member for driving the driven member and an operating portion imparted with a driving force for driving said driven member, said driving portion and said operating portion being located in different positions in the direction of the optical axis of the lens system in the lens barrel characterized in that said operating ring is provided on said operating portion or on the periphery of the operating ring between said operating portion and said driving portion with a plurality of slots extending in a plane perpendicular to the optical axis of the lens system.

4,352,544
WIDE-ANGLE PHOTOGRAPHIC CAMERA LENS SYSTEM

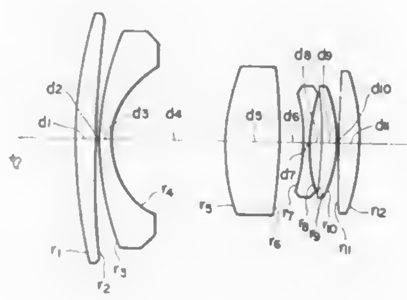
Toshihiro Imai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,751

Claims priority, application Japan, Aug. 1, 1979, 54/98785

Int. Cl.³ G02B *9/62, 13/04*

U.S. Cl. 350—464 **1 Claim**



1. A wide-angle photographic camera lens system comprising a front diverging lens group consisting of a first positive meniscus lens component and a second negative meniscus lens component, and a rear converging lens group consisting of a third positive lens component, a fourth negative lens component, a fifth positive meniscus lens component and a sixth positive lens component, said photographic camera lens system having the following numerical data:

$f = 1$			
$r_1 = 2.669$			
	$d_1 = 0.094$	$n_1 = 1.72000$	$\nu_1 = 43.7$
$r_2 = 9.738$			
	$d_2 = 0.003$		
$r_3 = 1.281$			
	$d_3 = 0.063$	$n_2 = 1.62041$	$\nu_2 = 60.27$
$r_4 = 0.387$			
	$d_4 = 0.538$		
$r_5 = 0.875$			
	$d_5 = 0.300$	$n_3 = 1.80440$	$\nu_3 = 39.62$
$r_6 = -1.243$			
	$d_6 = 0.091$		
$r_7 = -0.853$			
	$d_7 = 0.042$	$n_4 = 1.78472$	$\nu_4 = 25.71$
$r_8 = 0.996$			
	$d_8 = 0.052$		
$r_9 = -1.558$			
	$d_9 = 0.074$	$n_5 = 1.62041$	$\nu_5 = 60.27$
$r_{10} = -0.588$			
	$d_{10} = 0.003$		
$r_{11} = 10.557$			
	$d_{11} = 0.091$	$n_6 = 1.61272$	$\nu_6 = 58.75$
$r_{12} = -0.994$			

wherein the reference symbol f represents focal length of the entire lens system as a whole, the reference symbols r_1 through r_{12} designate radii of curvature on the surfaces of the respective lens components, the reference symbols d_1 through d_{11} denote thicknesses of the respective lens components and airspaces reserved therebetween, the reference symbols n_1 through n_6 represent refractive indices of the respective lens components and the reference symbols ν_1 through ν_6 designate Abbe's numbers of the respective lens components.

4,352,545
CAMERA FOCUS DETECTING DEVICE

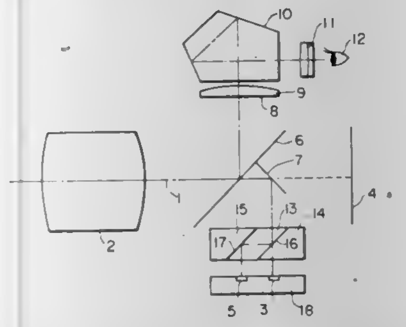
Naoyuki Uno, Urawa; Masao Jyojiki, Tsurugashima, and Harumi Aoki, Kiyose, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,589

Claims priority, application Japan, Feb. 13, 1979, 54-15255; Feb. 16, 1979, 54-16948

Int. Cl.³ G03B *3/10, 7/08*

U.S. Cl. 354—25 **10 Claims**



1. A focus detecting device for a camera comprising: a flat package assembly having an optical planar plate including a beam splitter for passing a first part of light from a photographing lens and reflecting the remaining part thereof and a reflecting surface for directing said reflected light in parallel with said first part of light; and a substrate below said optical planar plate having a pair of light receiving elements provided in a plane in parallel to said optical planar plate in such a manner that the optical distance of one of said light receiving elements from said photographing lens is different from the optical distance of the other light receiving element from said photographing lens, said light receiving elements receiving images formed by said first and remaining parts of light wherein focalization states are determined from the difference in focalization of images which are formed on said pair of light receiving elements by said photographing lens.

4,352,546
CAMERA SELECTIVELY SETTABLE TO EITHER STANDARD PHOTOGRAPHIC MODE OR SUPERTELEPHOTOGRAPHIC MODE

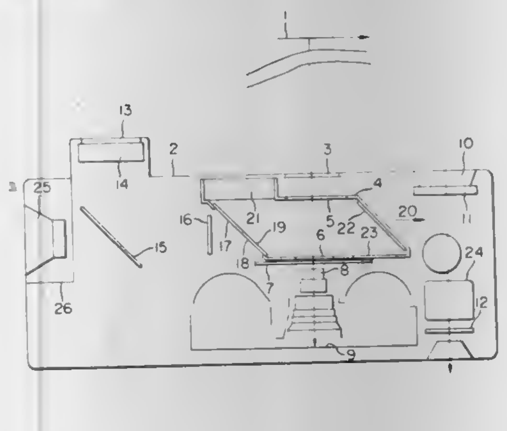
Hiroshi Iwata, Nara; Tetsuo Yamaoka, and Akitoshi Morioka, both of Osaka, all of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Mar. 11, 1981, Ser. No. 242,576

Claims priority, application Japan, Mar. 14, 1980, 55-32995

Int. Cl.³ G03B *3/00, 13/06, 15/05*

U.S. Cl. 354—126 **4 Claims**



1. A camera which can be selectively switched between a standard photographic mode and a supertelephotographic mode which comprises:

(a) a camera body having a first light aperture formed through a wall of the camera body and through which the light rays from a subject enter into said camera body;

(b) an optical system for standard photography for focusing the light rays which have entered through said first light aperture on a film surface through a shutter mechanism and a standard lens;

(c) a standard viewfinder system for permitting an operator to view an image of said subject which is substantially similar to the image focused on said film surface through said optical system for standard photography, the standard viewfinder system including a second light aperture formed through said wall of said camera body, a first finder lens, a first eyepiece and an eyepiece window;

(d) a third light aperture formed through said wall of said camera body;

(e) an optical system for supertelephotography for focusing the light rays, which have entered said third light aperture, through said shutter mechanism on said film surface, said optical system for supertelephotography comprising at least one supertelephoto lens, a first reflecting mirror, a second reflecting mirror and said shutter mechanism arranged in the order named;

(f) a supertelephotographic viewfinder system for permitting the operator to view an image substantially similar to that focused over said film surface through said optical system for supertelephotography which comprises said first light aperture of said camera body, a second finder lens, a third reflecting mirror, a fourth reflecting mirror, a second eyepiece and the eyepiece window; and

(g) a control means for selecting either said optical system for standard photography or said optical system for supertelephotography so that an image of a subject is focused over said film surface through the selected optical system.

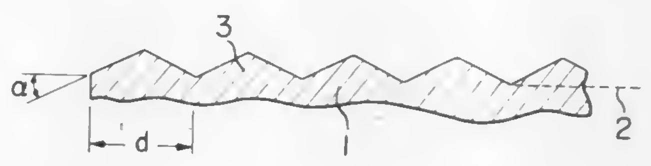
4,352,547
FOCUSING SCREEN OF A CAMERA

Toshihiro Sasaya, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 285,132

Int. Cl.³ G03B *13/20*

U.S. Cl. 354—200 **9 Claims**



1. In a focusing screen capable of passing light therethrough and disposed between an objective lens and an eyepiece to enable the focused condition of the objective lens with respect to an object to be observed through the eyepiece and having a surface formed with a number of pyramidical faces, the improvement residing in that the angle of inclination α of each of said pyramids satisfies an inequality that

$$\frac{0.8f}{10{,}000(n - 1)\Delta} \leqq \alpha \leqq \frac{1.5}{2(n - 1)F}$$

where F represents the F-number of the optical system from the objective lens to the focusing screen, f the focal length of the eyepiece, n the refractive index of the focusing screen and Δ the required range finding accuracy, and the focusing screen satisfies

$$A < \frac{3}{10{,}000}$$

where A represents the visual angle whereat a length cos α times as great as the length of the slant face extending from the bottom surface to the vertex of said pyramid at the angle of inclination α is seen through said eyepiece.

4,352,548

CAMERA HAVING A VARIABLE PROGRAM EXPOSURE CONTROL DEVICE

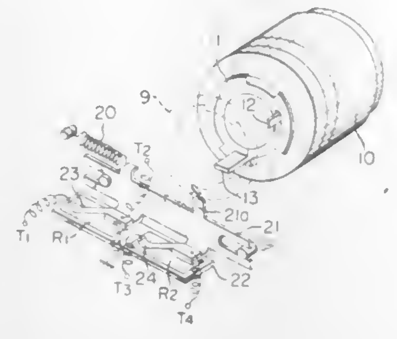
Kenji Toyoda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 41,414, May 22, 1979, abandoned. This application Apr. 23, 1981, Ser. No. 256,951

Claims priority, application Japan, May 31, 1978, 53-64373

Int. Cl.^{3} G03B *17/12, 7/08*

U.S. Cl. 354—286 9 Claims



1. In a camera of the interchangeable lens type having a program exposure control device which is so programmed that a combination of shutter speed and aperture value may be determined according to the brightness of the object to be photographed and film speed and a lens mount; and an interchangeable lens mounted detachably on said body through said mount, the improvement comprising:

(a) program varying means provided in said program exposure control device, the program of said program exposure control device being capable of being arbitrarily selected by the setting of said program varying means;

(b) information means provided on said interchangeable lens, the information possessed by said information means corresponding to the main usage of photography of the lens; and

(c) interlock means for setting said program varying means so that when said interchangeable lens is mounted on said body, said program varying means selects a program corresponding to the information possessed by said information means.

4,352,549

ELECTROPHOTOGRAPHIC COPYING METHOD AND APPARATUS

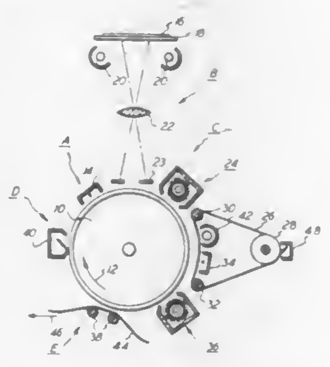
Takashi Ozawa, Ebina, Japan, assignor to Rank Xerox Limited, London, England

Filed Jul. 1, 1980, Ser. No. 164,996

Claims priority, application Japan, Jul. 27, 1979, 54-094915

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 R 12 Claims



1. In an electrophotographic printing machine of the type in which a powder image of an original document is formed on a photoconductive member, a latent image forming device comprising:

a receiving member positioned closely adjacent the photoconductive member;

means for transferring the powder image from the photoconductive member to said receiving member; and

means for recording on the photoconductive member an electrostatic latent image of the powder image transferred to said receiving member.

8. In electrophotographic printing, a method of forming an electrostatic latent image comprising the steps of:

forming a powder image of an original document on a photoconductive member;

transferring the powder image from the photoconductive member to a light permeable belt; and

recoring on the photoconductive member an electrostatic latent image of the powder image transferred to the belt.

4,352,550

COMBINATION OF CIRCULAR/STRAIGHT LINE LIGHT BEAM SCAN TRANSFORMING APPARATUS AND OPTICAL DEVICE AND METHOD OF FABRICATING CIRCULAR/STRAIGHT LINE TRANSFORMING DEVICE

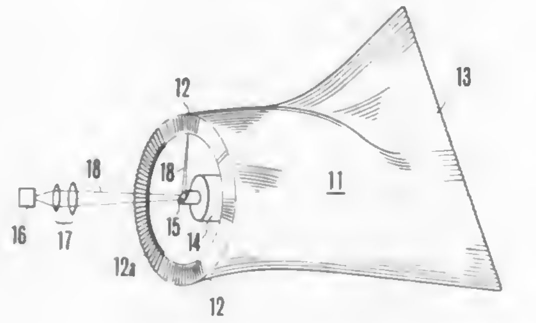
Kozo Uchida, Akikawa, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1980, Ser. No. 213,301

Claims priority, application Japan, Dec. 13, 1979, 54-160831; Dec. 13, 1979, 54-160832; Dec. 13, 1979, 54-160833; Dec. 13, 1979, 54-160834; Dec. 13, 1979, 54-160835; Dec. 13, 1979, 54-160836; Dec. 13, 1979, 54-160837; Dec. 13, 1979, 54-160838; Dec. 13, 1979, 54-160839; Dec. 13, 1979, 54-160840; Dec. 13, 1979, 54-160841; Dec. 13, 1979, 54-160842

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 R 60 Claims



1. A combination of a circular/straight line light beam scan apparatus and optical device, said optical device comprising:

means for producing a light beam capable of being varied in intensity by a modulation signal; and

an object exposed to the scanning beam from said light beam scan apparatus,

said light beam scan apparatus comprising:

focussing means for focussing the light beam from said light beam producing means;

rotary mirror means adapted to reflect the light beam from said focussing means;

means for rotating said mirror means at a high speed, and

circular/straight line transforming optical fiber means which includes:

a cylindrical portion having a fore end part thereof bent toward the center thereof so that the extension of said bent part intersects the axis of rotation of said rotary mirror means, the reflected light beam being focussed on the fore end part; and

a linear portion adapted to receive said light beam from said cylindrical portion and emit said light beam as a linear scanning beam in a sequence in conformity to the sequence of reception of light beam by said cylindrical portion.

4,352,551

ELECTROPHOTOGRAPHIC FIXING DEVICE

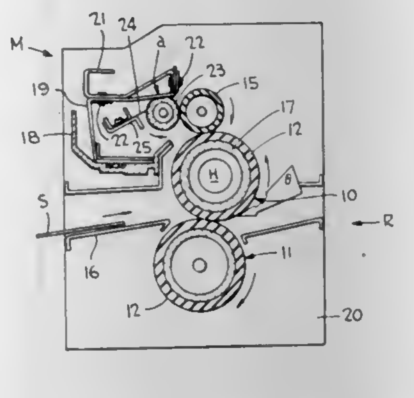
Soichi Iwao, Okazaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 3, 1981, Ser. No. 269,858

Claims priority, application Japan, Jun. 6, 1980, 55-76781

Int. Cl.^{3} G03G *15/00;* B05C *11/00*

U.S. Cl. 355—3 FU 4 Claims



1. In an electrophotographic fixing device comprising:

a heat roller and a press roller journalled parallel to one another in a frame, said heat roller being covered by a layer of silicone rubber;

oil applying means on said frame for coating the surface of said heat roller with an offset preventing agent to prevent offset of a toner image formed in a sheet fed through said rollers;

said oil applying means comprising a felt element impregnated with the offset preventing agent, a metallic roller having its surface in rubbing contact with said felt element, and being rotatably driven by said heat roller, and a metallic doctor blade having a forward end thereof in pressing contact with said metallic roller;

the improvement wherein said metallic roller has a roughened surface;

said blade being of a material having a lower hardness than that of said metallic roller, whereby said forward end of said blade is abraded by said roughened surface at the initial stage of rotation of said metallic roller and thereby comes into intimate contact with said surface for forming a uniform coating of said agent over the entirety of said surface without irregularities;

and

said forward end of said blade lying to the rear of the position of rubbing contact between said felt element and said metallic roller relative to the direction of rotation of said metallic roller.

4,352,552

MULTICOLOR DEVELOPMENT SYSTEM FOR ELECTROPHOTOGRAPHIC PRINTING MACHINES

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1980, Ser. No. 162,988

Int. Cl.^{3} G03G *15/01, 15/08*

U.S. Cl. 355—4 5 Claims

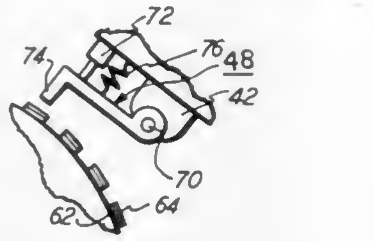
1. An apparatus for developing a latent image, including:

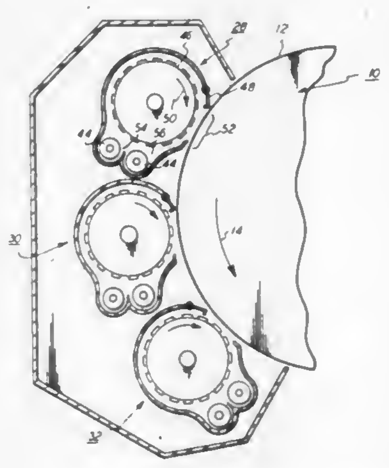
a first transport roller comprising a plurality of magnetic strips for attracting at least one of two differently colored developer materials thereto, and means for movably supporting said magnetic strips with adjacent magnetic strips being parallel to and spaced from one another to define a cylindrical configuration and to enable developer material to pass therebetween, said supporting means moving said magnetic strips to transport the attracted developer material closely adjacent to the latent image;

a second transport roller spaced from said first transport roller, said second transport roller comprising a plurality of magnetic strips for attracting the other of the developer materials thereto, and means for movably supporting said magnetic strips with adjacent magnetic strips being parallel to and spaced from one another to define a cylindrical configuration and to enable developer material to pass therebetween, said supporting means moving said magnetic strips to transport the other of the developer materials closely adjacent to the latent image;

a first blade member arranged to move from an inoperative position in which the leading edge thereof is remote from said first transport roller to an operative position in which the leading edge thereof is closely adjacent to said first transport roller to remove developer material therefrom; and

a second blade member arranged to move from an inoperative position in which the leading edge thereof is remote from said second transport roller to an operative position in which the leading edge thereof is closely adjacent to said second transport roller to remove developer material therefrom, said second blade member being in the inoperative position in response to said first blade member being operative.





4,352,553

QUALITY CONTROL COPYING APPARATUS

Shuzo Hirahara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 15, 1980, Ser. No. 216,767

Claims priority, application Japan, Dec. 24, 1979, 54-166816

Int. Cl.^{3} G03G *15/00*

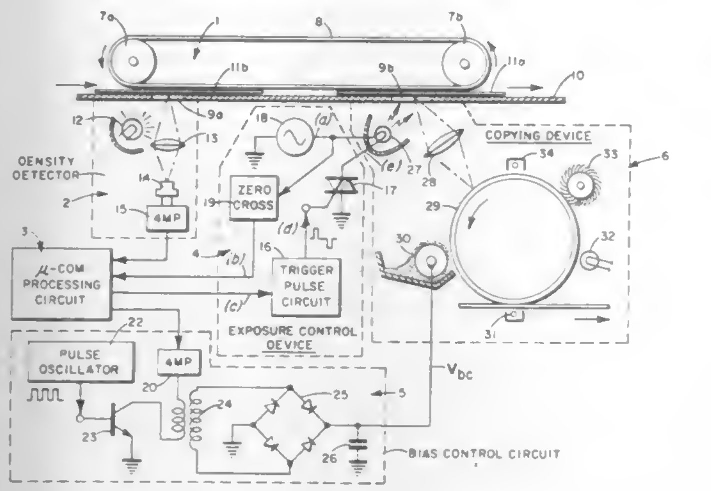
U.S. Cl. 355—14 E 18 Claims

1. An automatic quality control copying apparatus comprising:

frequency detecting means for detecting the frequency distribution of the density of a document, the frequency distribution meaning the frequency of occurrence of each density value of the document;

smoothing means for smoothing the frequency distribution when the frequency distribution has at least three maxima, said smoothing means executing a predetermined filter function till the frequency distribution has one or two maxima;

density detecting means responsive to said frequency detecting means and said smoothing means for detecting at least one density value according to a maximum or minimum value of the frequency distribution when the frequency distribution has one or two maxima; and



control means for controlling the quality of a reproductive image according to the detected density value.

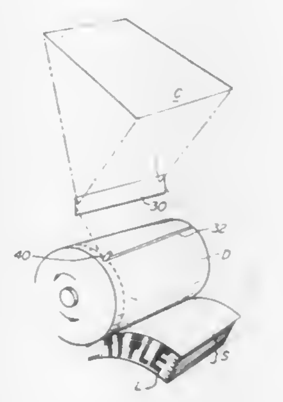
4,352,554
TITLE EDGE APPARATUS FOR SERIALLY PRODUCED COLLATED COPY

Stanton Kaye, 2216 Los Angeles St., Berkeley, Calif. 94707, and Curtis Schreier, San Francisco, Calif., assignors to Stanton Kaye, Calif.

Filed Apr. 24, 1981, Ser. No. 257,438

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—40 **15 Claims**



1. The improvement in a machine to serially reproduce copy from original and place said copy in a collated array comprising in combination: means for retaining title information for imprintation to the edges of collated copy passing through said machine; means for serially scanning successive raster lines of said retained title information on a line raster basis synchronously onto edges of copy passing through said machine; means responsive to said scanning means for pigmenting the edge of said copy; means for indexing said scan to pigment successively said pages at the edge thereof, whereby when said pages are collated, the edges thereof display in location title information from the edges thereof.

2. The invention of claim 1 and including means registered to a side edge of the copier of said machine for serially pigmenting the side edge of passing copy, the legend.

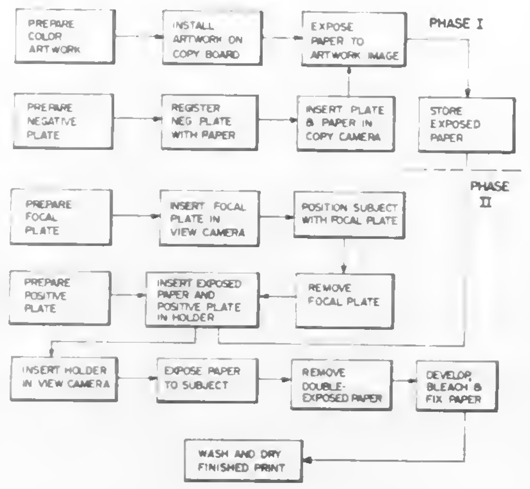
4,352,555
CONTROLLED DOUBLE EXPOSURE METHOD AND APPARATUS

Gregg Dobbs, and Laura P. Dobbs, both of Windermere, Fla., assignors to Fotozines, Inc., Windermere, Fla.

Filed Aug. 7, 1981, Ser. No. 291,041

Int. Cl.³ G03B *27/32, 17/24, 17/26, 15/00*

U.S. Cl. 355—77 **8 Claims**


PREPARE COLOR ARTWORK
INSTALL ARTWORK ON COPY BOARD
EXPOSE PAPER TO ARTWORK IMAGE
PHASE I
PREPARE NEGATIVE PLATE
REGISTER NEG PLATE WITH PAPER
INSERT PLATE & PAPER IN COPY CAMERA
STORE EXPOSED PAPER
PHASE II
PREPARE FOCAL PLATE
INSERT FOCAL PLATE IN VIEW CAMERA
POSITION SUBJECT WITH FOCAL PLATE
PREPARE POSITIVE PLATE
INSERT EXPOSED PAPER AND POSITIVE PLATE IN HOLDER
REMOVE FOCAL PLATE
INSERT HOLDER IN VIEW CAMERA
EXPOSE PAPER TO SUBJECT
REMOVE DOUBLE-EXPOSED PAPER
DEVELOP, BLEACH & FIX PAPER
WASH AND DRY FINISHED PRINT

1. A process for producing a controlled double exposure of a color print comprising the steps of:
- (a) preparing color background artwork;
- (b) preparing a negative plate of the background artwork;
- (c) registering the negative plate with a sheet of positive-to-positive color paper in a copy camera;
- (d) focusing the copy camera on the color background artwork;
- (e) exposing the color paper to the background artwork through the negative plate forming a first exposure;
- (f) removing and storing the first exposed color paper without development;
- (g) preparing a positive plate complementary to the negative plate;
- (h) registering the first exposed color paper with the positive plate in a view camera;
- (i) exposing the first exposed color paper to a subject through the positive plate, forming a second exposure thereby generating a latent image of the subject in the previously unexposed portion of the first exposed color paper; and
- (j) developing, bleaching, fixing and washing the first and second exposed paper to thereby produce a color photograph having the subject image disposed within the background artwork.

4,352,556
REFLECTOR FOR ELECTROOPTICAL DISTANCE MEASUREMENT

Erwin Haefliger, Buchs; Fritz Hinden, Aarau, and Aldo Lardelli, Schöftland, all of Switzerland, assignors to Kern & Co. AG, Aarau, Switzerland

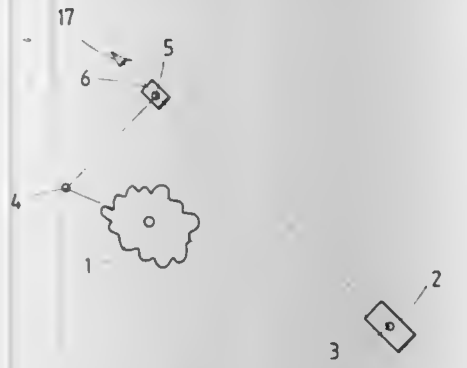
Filed Mar. 19, 1980, Ser. No. 131,840

Claims priority, application Switzerland, Apr. 11, 1979, 3430/79

Int. Cl.³ G01C *3/10;* **G02B** *17/02;* **G01C** *1/00*

U.S. Cl. 356—1 **5 Claims**

1. A reflector for electrooptical measurement of the distance between a first and a second point in cooperation with a master station at the first point with: a right angle sighting device near to the reflector (6); means for arranging the right angle sighting device (13) with the reflector (6) at a distance from the second point (4) for concurrent observation of markers (20, 18) both at the first (3) and second points (4), the directions of the markers with respect to a reference point (19) at the reflector (6) forming a right angle only if the marker images (20, 18), as observed, are coincident; a triple mirror (7) tiltable around a horizontal axis (11) for reflecting the measurement beam back to the first point (3) and a pentaprism (13) near to the triple mirror (7) for sighting the marker (18) at the second point (4) at a right angle when the marker (20) at the first point (3) near the master station (2) is observed in a straight line along the side of the pentaprism (13); comprising further a case (8) with an opening (9,10) at each side around the horizontal axis and a holder (12) for the pentaprism that may be inserted into each one of the openings (9, 10) as required.



4,352,557
DETERMINING A TEST VALUE CORRESPONDING TO BLOOD SUBSIDENCE

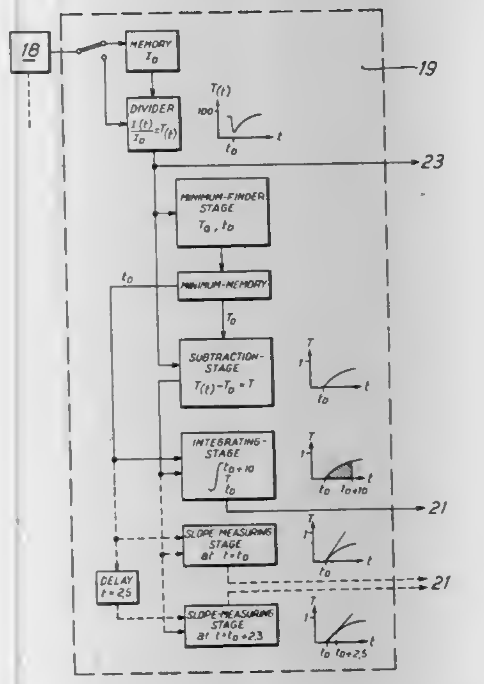
Holger Schmid-Schönbein; Holger Kiesewetter; Klaus Mussler, all of Aachen; Heinz Myrenne, Roetgen, and Andreas Scheffler, Wuppertal, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,638

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942466; Mar. 11, 1980, 3009260

Int. Cl.³ G01N *33/48*

U.S. Cl. 356—39 **12 Claims**


18
MEMORY I_0
DIVIDER $\frac{I(t)}{I_0}=T(t)$
19
23
MINIMUM-FINDER STAGE T_0, t_0
MINIMUM-MEMORY
SUBTRACTION-STAGE $T(t)-T_0=T$
INTEGRATING-STAGE $\int_{t_0}^{t_0+10} T$
21
SLOPE MEASURING STAGE at $t=t_0$
DELAY $t=2.5$
SLOPE-MEASURING STAGE at $t=t_0+2.5$

1. In a method for obtaining measured test values from blood sedimentation corresponding to blood subsidence, by inserting a blood specimen in a transparent measuring chamber, removing erythrocyte aggregation present in the specimen, illuminating the specimen with light, and measuring the amount of light leaving the specimen over a given time, wherein:
- (a) said specimen is inserted in a measuring chamber having upper (11) and lower (10) means movable relative to one another and the specimen comes in contact with said upper and lower means;
- (b) erythrocyte aggregation present in said operation is counteracted by movement of said upper means relative to said lower means; and
- (c) the amount of light leaving said specimen during the aggregation process setting in again is photometrically measured after sudden stopping or after transition to a continuous minor residual shearing movement of said upper and lower means, and photometric signals are generated; the improvement comprising:
- (d) ascertaining a syllectogram from said generated photometric signals;
- (e) defining as the onset of the aggregation phase an extreme value of the syllectogram within a predetermined time interval of about 5 seconds following said sudden stopping of shearing or transition to a residual continuous shearing; and
- (f) ascertaining said test values at a predetermined time within approximately 2.5 seconds after onset of the blood aggregation from a slope of a test curve representing said syllectogram.

4,352,558
APPARATUS FOR MEASURING PARTICLE CHARACTERISTICS

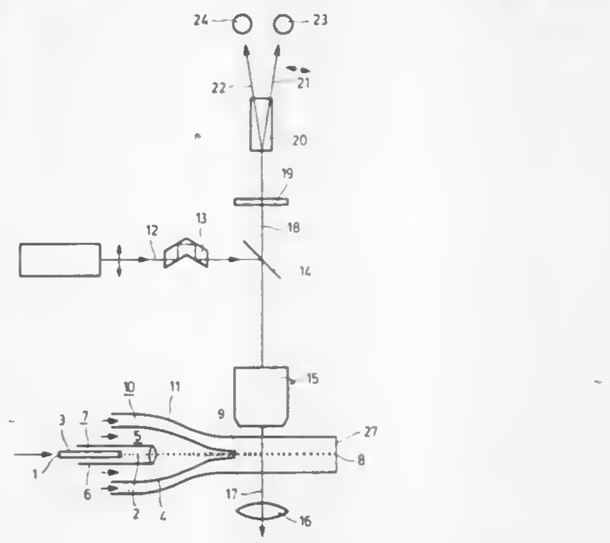
Wolfgang Eisert, Hanover, Fed. Rep. of Germany, assignor to Gesellschaft fur Strahlen-und Umweltforschung mbh, München, Neuherberg, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,378

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943116

Int. Cl.³ G01N *33/48, 21/64*

U.S. Cl. 356—39 **4 Claims**



1. In apparatus for measuring reaction and/or diffusion of particles suspended in a fluid, which apparatus includes a supply tube for supplying a stream of the particle-containing fluid, a tapered tube surrounding the supply tube for providing a first entraining fluid stream and for encasing the particle-containing fluid in the first entraining fluid stream for the purpose of hydrodynamically focusing the particle-containing stream into a thin stream enclosed by the first fluid and in which the particles are separated from one another, means defining an outlet for passage of the thin stream and first fluid stream after leaving the tube, means producing a radiation beam which intersects the thin particle-containing stream, detector means disposed for detecting the radiation emanating from the separated particles, and a pulse evaluation circuit connected to the detector, the improvement comprising a further tube surrounding the supply tube and forming a further entraining fluid stream concentric with the particle-containing stream and the first entraining fluid stream, surrounding the particle-containing stream and flowing therewith through the tapered tube, said further entraining fluid stream having a composition selected to interact with the particles.

4,352,559

LOGARITHMIC PRIMARY TESTING SYSTEM FOR SECURITY VALIDATION

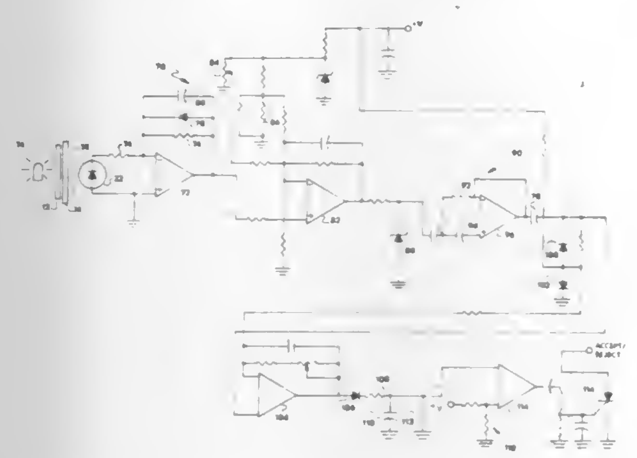
Robert L. Gorgone, Mentor; Alan J. Kovach, Cleveland, and Frank A. Novak, Seven Hills, all of Ohio, assignors to Ardac, Inc., Eastlake, Ohio

Continuation of Ser. No. 922,637, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 740,415, Nov. 10, 1976, abandoned.

This application May 23, 1980, Ser. No. 152,636

Int. Cl.³ G06K *9/82;* H01J *40/14;* G01N *9/24, 21/17*

U.S. Cl. 356—71 13 Claims



1. Apparatus for performing tests for determining the validity of a paper purported to be a valid instrument, comprising:
- a light source;
- a reticle in juxtaposition to and receiving light from said light source;
- means interpositioned between said light source and said reticle for receiving the paper and providing relative movement between said reticle and the paper, such movement chopping the light passing from said source and through said reticle; and
- sensing means operatively connected to said reticle for receiving the light passing therethrough and generating an electrical signal therefrom, said sensing means testing such light as to the frequency of such chopping from an AC component of said signal, and the optical density of the paper, from a DC component of said signal, to determine the validity of the paper and further including means for establishing first and second optical density levels defining an optical density domain within which a valid instrument must lie.

4,352,560

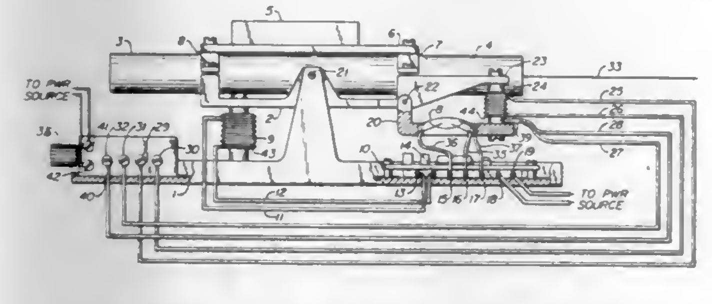
SELF-LEVELING AND GRADE SETTING LASER APPARATUS

Jiri M. Nessel, deceased, late of Palo Alto, Calif., and by Alena Alexander, administrator, Menlo Park, Calif.

Filed Nov. 3, 1980, Ser. No. 203,436

Int. Cl.³ G01C *15/00*

U.S. Cl. 356—247 7 Claims



1. An apparatus for automatically maintaining the angular position of the light beam produced by a light source, comprising:
- a base;
- pivotal mounting means attached to the base, for mounting the light source;
- a thermal motor having a heating coil and having two ends the linear displacement between which is responsive to the current applied to the heating coil, one end of said thermal motor being attached to the base and the other end being attached to the cradle;
- a level-sensing transducer having electrical signal outputs which are indicative of the displacement of the transducer with respect to a level position, and;
- control means connected to the heating coil of the thermal motor for producing a current in said heating coil in the proper magnitude and phase relationship such that a displacement in the position of the level-sensitive transducer is corrected by a corresponding displacement in the thermal motor such that the original position of the level-sensitive transducer is maintained.

4,352,561

CALIBRATING APPARATUS IN A MONOCHROMATOR

Shigeo Tohyama; Nobuo Akitomo, and Isao Nemoto, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

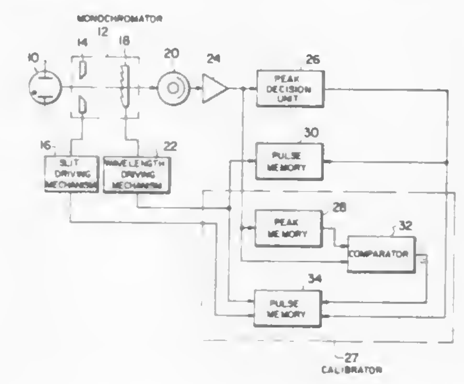
PCT No. PCT/JP79/00158, § 371 Date Feb. 25, 1980, § 102(e) Date Feb. 25, 1980, PCT Pub. No. WO80/00189, PCT Pub. Date Feb. 7, 1980

PCT Filed Jun. 20, 1979, Ser. No. 192,530

Claims priority, application Japan, Jun. 23, 1978, 53-75350

Int. Cl.³ G01J *3/12, 3/18*

U.S. Cl. 356—332 12 Claims



1. A calibrating apparatus in a monochromator comprising a light source; said monochromator separating into spectral components light emitted from said light source and consisting of an entrance slit, a dispersive element and an exit slit; a lightdetector which detects light dispersed by said monochromator; slit driving means for varying widths of said entrance slit and said exit slit; wavelength driving means for rotating said dispersive element to perform wavelength scanning; means for deciding a predetermined peak of a spectrum from among outputs of said lightdetector as vary with the wavelength scanning by said wavelength driving means; and means for calibrating the slit widths on the basis of a wavelength scanning quantity of said wavelength driving means until a ratio between the output of said lightdetector at said predetermined peak and the outputs thereof varying with the wavelength scanning has become a fixed value.

4,352,562

PASSIVE RING LASER RATE OF TURN DEVICE WITH ACOUSTO-OPTIC MODULATION

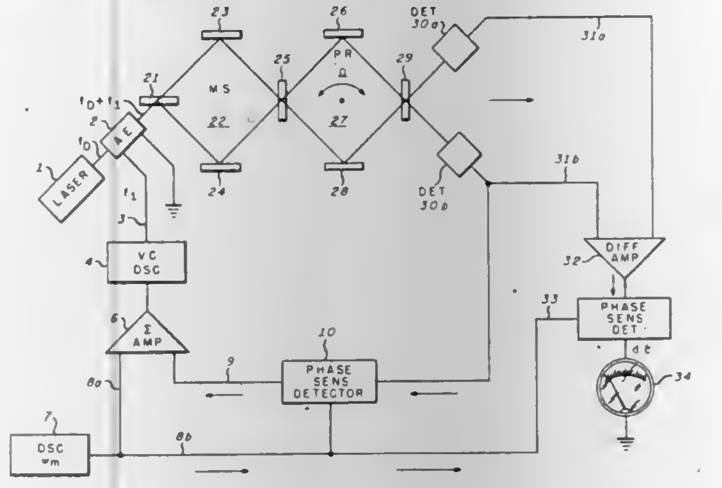
Henry T. Minden, Concord, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,732

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 7 Claims

1. In a rate of turn measuring device of the type including a monochromatic beam, a beam splitting system, and a passive ring to which first and second beams are coupled from the beam splitting system to traverse the path therein in opposite directions, the improvement comprising:
- first modulator means responsive to said monochromatic beam for coupling a frequency modulated beam about a first center frequency to said beam splitting system, thereby causing said first and second beams traversing said passive ring to be frequency modulated;
- detector means coupled to receive said first and second frequency modulated beams from said passive ring for producing electrical signals representative of said first and second beams;



- signal generator means coupled to said first modulator means for providing a modulating signal that is frequency modulated about a second center frequency;
- frequency shift means responsive to said signal representative of said first beam and coupled to said signal generator means for controlling said modulating signal; and
- means coupled to receive said signals representative of said first and second beams for producing a signal representative of instantaneous differences therebetween.

4,352,563

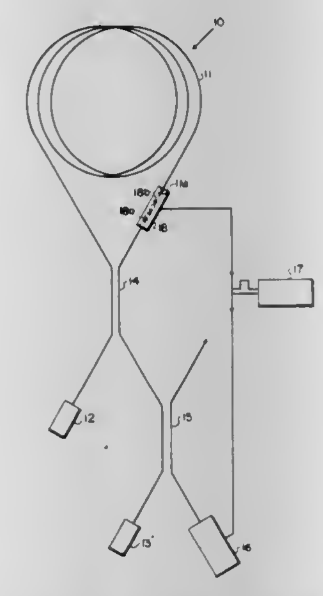
METHOD OF PROVIDING PHASE BIASING IN A CONTINUOUS SINGLE-MODE FIBER RING INTERFEROMETER

Matthew N. McLandrich, Oceanside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,497

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—350 2 Claims



1. In a unitized fiber interferometer gyro having a continuous integral looped single-mode fiber coupled to bidirectionally transmit beams of light from a laser to at least one detector, an improvement therefor is provided comprising:
- a piezoelectric cylinder having a coaxial bore sized to contiguously and securely accommodate a portion of the continuous integral single-mode fiber in a bonded secure fashion and being fashioned from a material that exerts a compressive radially inwardly force on the portion of the continuous integral single-mode fiber in response to driving electric fields for changing the refractive index of a portion of the continuous integral single-mode fiber to impart a $\pi/2$ relative phase shift between the bidirectionally traveling light beams.

4,352,564

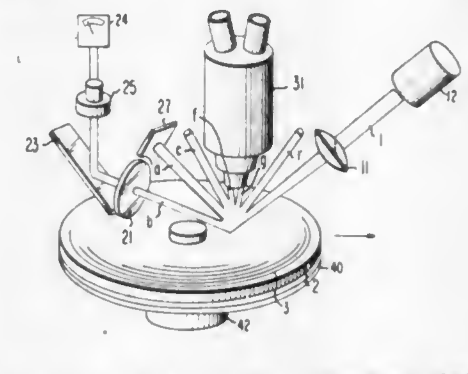
MISSING ORDER DEFECT DETECTION APPARATUS

William R. Roach, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 155,989

Int. Cl.³ G01N *21/32*

U.S. Cl. 356—354 8 Claims

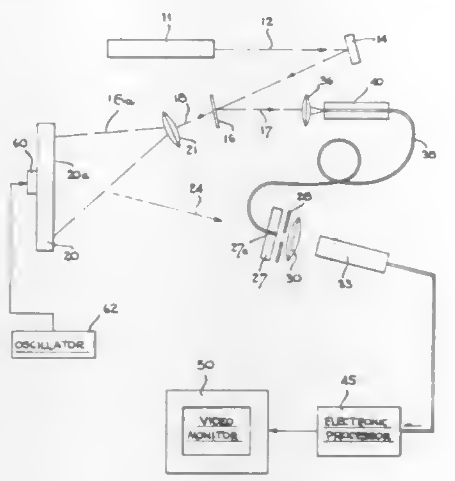


1. A flaw detection apparatus for detecting defects in a record surface having uniformly spaced track convolutions said apparatus comprising:
- first means for providing a beam of light directed toward a region of the surface of said record along an incident beam path;
- second means for focusing said beam of light to illuminate a region of said surface, said illuminated region being sufficiently large to span a plurality of tracks;
- the structure of the track convolutions in the surface region illuminated by said light beam serving as a diffraction grating for diffracting the light from said illuminated region to form a zero diffraction order beam of light and higher diffraction order beams of light, and wherein short wavelength variations in track depth exist along the length of said track convolutions, the structure of said track convolutions and said short wavelength variations serving as a two-dimensional diffraction grating for diffracting the light from the illuminated region into said zero diffraction order beam of light, said higher diffraction order beams of light, and into additional higher diffraction order beams of light which are substantially affected by said short wavelength variations;
- third means for establishing relative motion between said surface and said beam path in such a manner that a succession of regions of said surface are scanned by said light beam;
- fourth means for directing one of said higher diffraction order beams, to the exclusion of said additional higher diffraction order beams, to a first location;
- light detection means having a photosensitive surface positioned to intercept said one higher diffraction order beam at said first location and to provide a detection signal in response to said one higher order diffraction beam; and
- fifth means, responsive to said detection signal developed by said light detection means, for indicating illumination of a defect in said surface.

4,352,565
SPECKLE PATTERN INTERFEROMETER

James M. Rowe, 4705 Avenue C., Torrance, Calif. 90505, and Rudolph W. Modster, 1916 Leighton Ave., Los Angeles, Calif. 90062

Filed Jan. 12, 1981, Ser. No. 224,184
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—360 **5 Claims**



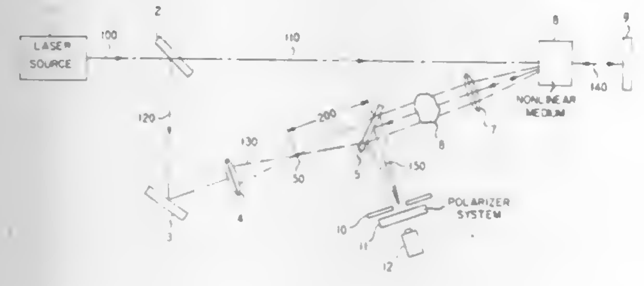
1. In a speckle pattern interferometer for testing an object, including means for generating a coherent light beam, means for splitting said beam into reference and object beams, means for directing said object beam towards said object, means for cyclically displacing said object, said object beam being reflected from said object along a predetermined optical axis, means for recombining the object and reference beams, means for detecting the recombined object and reference beams, means for processing the combined beams, and means for displaying the combined beams, the improvement being means for channeling the reference beam from the beam splitting means to the recombining means along an optical path equal in length to that of said object beam between the beam splitting means and the recombining means comprising

an optical fiber having one end thereof positioned to receive the reference beam from said beam splitting means, said fiber running to a point whereat the other end thereof is directly opposite said detecting means, said fiber directing the object beam towards said detecting means along said predetermined axis.

4,352,566
DETECTION OF BIREFRINGENCE IN IRREGULARLY SHAPED OBJECTS

Gary C. Bjorklund, Los Altos; David M. Bloom, Menlo Park, both of Calif., and Paul F. Liao, Fair Haven, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1980, Ser. No. 160,850
Int. Cl.³ G01N *21/40*
U.S. Cl. 356—364 **21 Claims**



1. Apparatus for analyzing radiation that has passed through an irregularly shaped object (6), said object being transparent to radiation of at least one wavelength, said apparatus comprising:

means (1 and 2) for producing a first beam (110) and a second beam (120) having radiation which includes radiation at said one wavelength;

means (3) for directing said second beam (120) along a first predetermined path into said irregularly shaped object;

radiation collection means (7), disposed to collect radiation from said second beam which has been scattered by and through said irregularly shaped object, for directing said scattered light along a second predetermined path;

a material (8) having a third-order nonlinearity in susceptibility, disposed in said second predetermined path and in the path of said first beam;

means (9) for generating a further beam of radiation having radiation at said wavelength, which further beam counterpropagates relative to said first beam in said material, whereby a conjugate beam is generated which propagates in the opposite direction from said second predetermined path, back through said radiation collection means and said irregularly shaped object;

pick-off means (5), disposed in the path of said conjugate beam, for isolating said conjugate beam; and

means (12) for detecting radiation from said picked-off conjugate beam (150);

characterized in that:

said means for producing said first and second beams provides that said first beam and said second beam are linearly polarized;

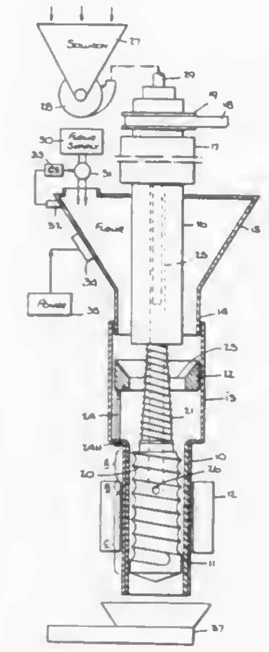
said means for directing said second beam further comprises means (4) for bringing said second beam to a first focus point (50), said first focus point being a first distance from said pick-off means; and

said means for detecting said picked-off conjugate beam further comprises means (10 and 11), disposed to intercept radiation at a second focus point to which said picked-off conjugate beam propagates, said second focus point being at a distance from said pick-off means which is substantially equal to said first distance, for detecting the presence of a polarization which is different from said linear polarization, whereby the presence of birefringence in said irregularly shaped object is detected.

4,352,567
AUTOMATIC DOUGH-PROCESSING APPARATUS

Raul Guibert, 10374 Summer Holly Cir., Los Angeles, Calif. 90024

Filed Jun. 10, 1981, Ser. No. 272,344
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—76 **11 Claims**



1. An apparatus for mixing flour or any other powder with a liquid solution to produce a homogeneous dough, said apparatus comprising:

(A) a vertically-mounted assembly constituted by a tubular processing chamber whose upper end communicates with a metering tube to which said powder is supplied;

(B) a rotating shaft coaxially mounted in said assembly, said shaft having a main screw section of uniform diameter operating within the chamber, and a conical valve section operating within the tube;

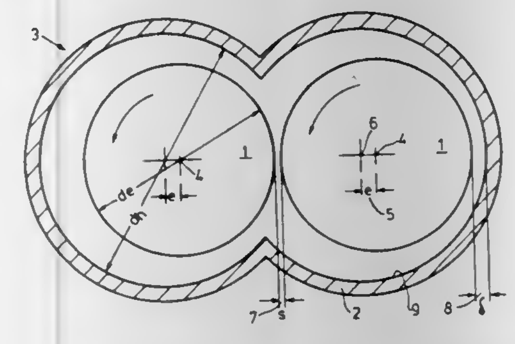
(C) a ring slidable within the metering tube and surrounding the valve section to define an annular valve orifice, the ring being axially shiftable by an adjustable element to set the size of the orifice, whereby the flour admitted into the chamber through the metering tube is hurled by the main screw section against the inner wall of the chamber in a film-forming zone to create a thin powder film thereon;

(D) means to introduce the solution through a channel in said shaft communicating with a lateral nozzle just below the film-forming zone to cause the powder film to be bombarded by the solution to form a paste in a paste-forming zone, which paste is then kneaded by the main screw in a kneading zone just below the paste-forming zone to form the dough.

4,352,568
TWIN-SCREW MACHINE WITH SCREWS ROTATABLE IN THE SAME DIRECTION

Karl-Dieter Löhr, Alpen; Martin Ullrich, Leverkusen, and Erhard Tresper, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,118
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014643
Int. Cl.³ A21C *1/06*
U.S. Cl. 366—84 **3 Claims**



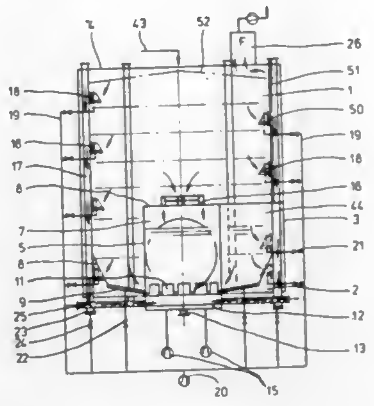
1. In a twin-screw machine of the type wherein the screws are rotatable in the same direction for melting, mixing, dispersing, shearing and imparting energy, in a housing having a figure-eight cross-section and containing circular eccentrically arranged rotatable kneading discs, the improvement wherein: the clearance δ between the eccentric discs and the inner wall of the housing is greater than the constant clearance s between two adjacent kneading discs and the eccentricity (e) at each side of the housing from the central point of the housing to the central point of the kneading disc being greater than zero and less than half the absolute value of the difference between the diameter of the housing and the diameter of the disc minus the clearance s.

4,352,569
MIXING APPARATUS AND METHOD FOR MIXING

Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,572
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022346
Int. Cl.³ B01F *13/02*
U.S. Cl. 366—107 **10 Claims**

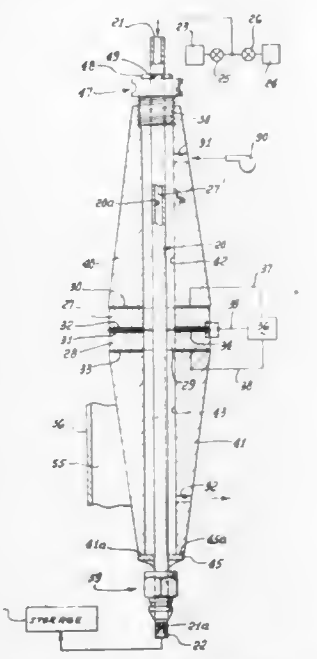
1. A mixing apparatus for mixing particulate bulk material comprising a housing, said housing having a lower portion and a vertically disposed side wall adapted and constructed to define a zone having a bottom for the material, a plurality of vertical tubular means distributed in spaced relationship proximate said side wall, said vertical tubular means having a bottom, said vertical tubular means having a plurality of vertically displaced entranceway means adapted and constructed to communicate with said zone and internally of said vertical tubular means whereby the material may flow from said zone into said vertical tubular means, mixing chamber means positioned in said lower portion of said housing, collection and distribution means communicating with the bottom of said tubular means and said mixing chamber whereby the material from said vertical tubular means is charged into said mixing chamber means, means for introducing material from the lower portion of said housing into said mixing chamber means, aeration means for distribution of pressurized fluidizing gas into said entranceway means, into said bottom of said zone and into said mixing chamber means and means for removing mixed material from said mixing chamber means.



4,352,570
VIBRATORY TREATMENT APPARATUS AND METHOD

Francis G. Firth, Los Angeles, Calif., assignor to Applied Plastics Co., Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 153,713, May 27, 1980, Pat. No. 4,305,275. This application Jun. 19, 1980, Ser. No. 161,017
Int. Cl.³ B01F *11/02*
U.S. Cl. 366—127 **31 Claims**



1. The method of treating material in a vessel having an axis, the steps that include:

(a) locating transducer means to extend generally about the vessel axis and operating said means for vibrating the vessel to produce oscillating displacement thereof lengthwise and also inwardly and outwardly,

(b) and transmitting said displacement to said material in the vessel,

(c) and simultaneously maintaining the vessel in adjusted tensioned condition, in the direction of said axis.

4,352,571
APPARATUS FOR HOMOGENIZING LIQUIDS

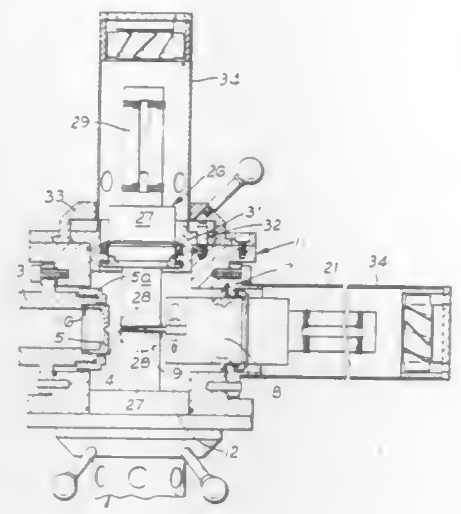
Arthur Grange, and Jack Hollings, both of West Yorkshire, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 11, 1981, Ser. No. 242,556

Claims priority, application United Kingdom, Mar. 20, 1980, 8009360

Int. Cl.³ B01F *11/02*

U.S. Cl. 366—127 **6 Claims**



1. Apparatus for homogenizing a liquid, including a hollow body defining a homogenization chamber, a vibratory blade located in the chamber, means for directing a jet of the liquid onto the blade so as to cause the blade to vibrate, and further means for imparting vibrational energy to the liquid in the chamber additional to the vibrational energy imparted thereto by the action of the liquid jet on the blade.

4,352,572
CONTINUOUS AND AUTOMATIC OIL-WATER MIXING METHOD AND ITS INSTALLATION

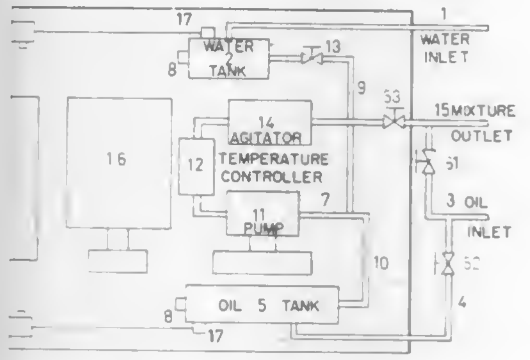
Hwang-Chuan Chen, No. 19, 2nd Fl. Lane 282 Min Tsu West Rd., and Peter E.P. Jih, both of Taipei, Taiwan, assignors to Hwang-Chuan Chen, Taipei, Taiwan

Filed Jul. 15, 1980, Ser. No. 169,084

Claims priority, application Taiwan, Jan. 9, 1980, 6910049

Int. Cl.³ B01F *3/08*

U.S. Cl. 366—145 **14 Claims**



1. An installation for continuously and automatically producing an oil-water mixture comprising:

a water tank having means for maintaining water in said tank at a selected temperature and pressure,

an oil tank having means for maintaining oil in said tank at a selected temperature and pressure,

an agitator for intimately mixing water from said water tank and oil from said oil tank, said agitator having an inlet and an outlet,

pump means having an inlet connected with said water tank and said oil tank and an outlet connected with the inlet of said agitator and operable to supply oil and water under pressure to said agitator, and

means for controlling the temperature of the oil and water supplied under pressure by said pump means to said agitator,

said agitator comprising a casing having an inlet and an outlet and containing a first set of static elements for producing a swirling motion of oil and water forced through them by said pump and a second set of static elements having a multiplicity of small holes through which said oil and water are forced and thereby intimately mixed with one another.

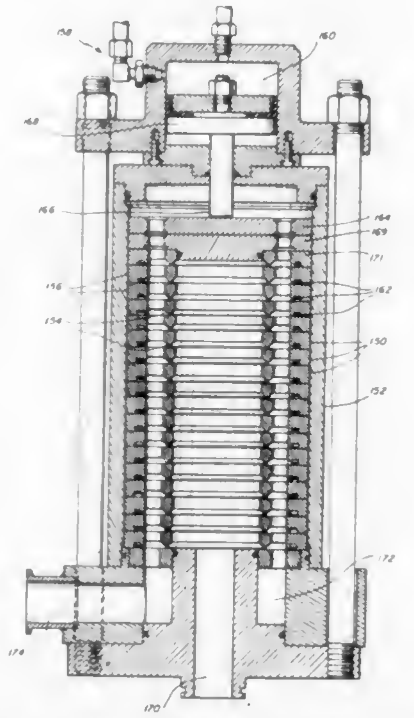
4,352,573
HOMOGENIZING METHOD

William D. Pandolfe, Billerica, Mass., assignor to Gaulin Corporation, Everett, Mass.

Filed Jan. 29, 1980, Ser. No. 116,601

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—176 **2 Claims**



1. A method of cleaning a plurality of valve slits between stacked valve members in a fluid mixing or homogenizing valve assembly, at least some of the valve members having valve seats protruding axially therefrom and being spaced from adjacent valve members by rigid spacing means positioned between the valve members, the method comprising:

providing spring elements between the valve members for exerting axial spring forces on the valve members to separate the valve members, the valve members and rigid spacing means being fully compressed into a tight stack and the spring elements being compressed between the valve members by means of a valve actuating means during homogenizing operation of the valve with a valve slit gap between each valve seat and adjacent valve member being determined by said rigid spacing means independent of the spring elements with the valve members and rigid spacing means fully compressed; and

releasing the valve members such that they are separated by the spring elements to allow for substantially larger slit gaps for cleaning of the slits.

4,352,574
MIXER-SETTLER APPARATUS

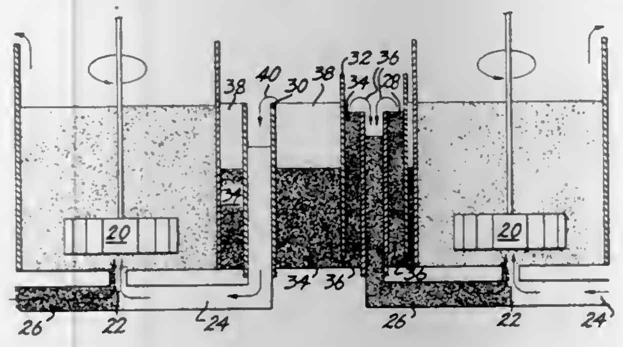
Norvald Gjelsvik, Oslo, Norway, assignor to Forskningsgruppe for Sjeldne Jordarter, Oslo, Norway

Filed Nov. 5, 1979, Ser. No. 91,481

Claims priority, application Norway, Oct. 12, 1978, 783453

Int. Cl.³ B01F *15/02;* **B01D** *21/24*

U.S. Cl. 366—194 **1 Claim**



1. In a mixer-settler apparatus comprising a mixer chamber and a settler chamber and heavy phase and light phase exit tubes in said settler chamber, the improvement comprising each said exit tube being positively vertically adjustable in height, the positive vertical adjustment in height being accomplished through a threaded portion of the bottom of each said exit tubes.

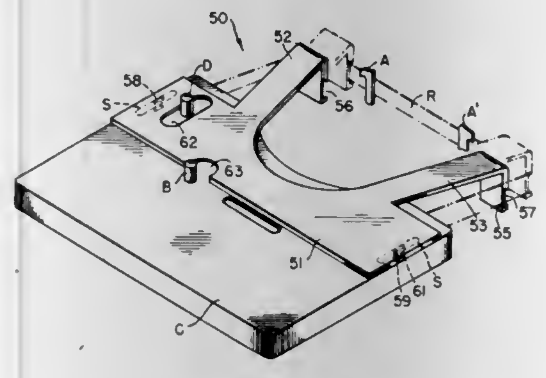
4,352,575
RIBBON CARTRIDGE AND ADAPTER

Sydney Shore, 38-04 48th St., Long Island City, N.Y. 11104

Filed Oct. 8, 1980, Ser. No. 195,025

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—250 **8 Claims**



1. A ribbon cartridge loading adapter for use with a ribbon cartridge having a substantially planar top surface, the adapter comprising: a substantially planar body portion having means cooperating with the top surface of the ribbon cartridge for mounting same on the top surface of a ribbon cartridge for movement between extended and retracted positions and two substantially planar spaced apart arms extending outwardly from the body portion parallel thereto and having downwardly depending means at the termini thereof for releasably retaining a run of ribbon.

4,352,576
SERIAL PRINTER HAVING A SINGLE DRIVE MOTOR

Fumihisa Hori; Tadao Tamukai, both of Tamayama, and Mikio Miyajima, Nishine, all of Japan, assignors to Alps Patent Department, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,774

Claims priority, application Japan, Jul. 9, 1979, 54-86756

Int. Cl.³ B41J *9/02, 9/38, 19/72*

U.S. Cl. 400—154.4 **8 Claims**

1. A printer comprising:

a motor;

a rotary shaft adapted to be rotated unitarily with type wheels and adapted to be driven rotatably by said motor;

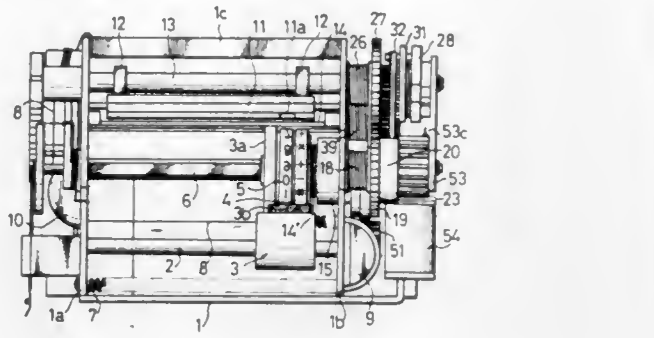
first clutch means for selectively transmitting the rotation of said motor to said rotary shaft;

a hammer member adapted to be moved into and out of contact with said type wheels;

a hammer drive shaft adapted to be driven by said motor and carrying a cam member for actuating said hammer member;

second clutch means adapted for selectively transmitting the rotation of said motor to said hammer drive shaft,

control means for controlling said first and second clutch means simultaneously to engage one of said clutch means while disengaging the other; further comprising



a carriage carrying said type wheels and slidable in a direction parallel to said rotary shaft;

a spring member connected to one end of said carriage and adapted to urge said carriage toward the initial position;

a thread member connected to the other end of said carriage; and

means adapted to gather said thread means to overcome the force of said spring member, said gathering means being actuated by rotation of said hammer drive shaft when the latter is driven through said second clutch means.

4,352,577
CASSETTE TYPE INK RIBBON DEVICE

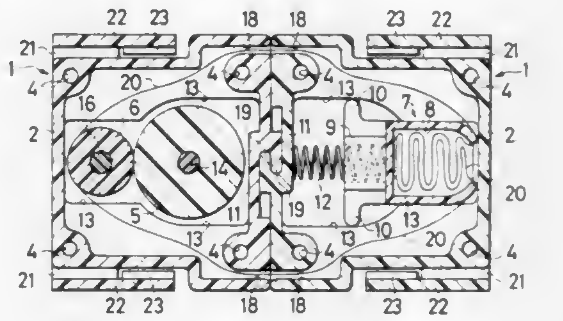
Yoshinori Chida, and Satoru Tada, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Sep. 23, 1980, Ser. No. 190,066

Claims priority, application Japan, Nov. 5, 1979, 54-143010; Nov. 5, 1979, 54-143012; Apr. 8, 1980, 55-45487[U]

Int. Cl.³ B41J *32/02, 31/16*

U.S. Cl. 400—196.1 **8 Claims**



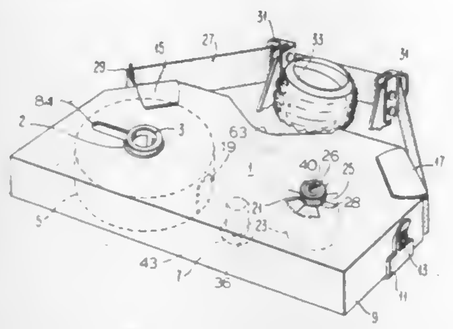
1. In a cassette type ink ribbon device of the type comprising a pair of cassette cases releasably connected together prior to mounting on a printing apparatus and being separatable for mounting on the printing apparatus during use of the device; an endless ink ribbon having a slack part stored within either of said pair of cassette cases prior to the mounting operation and which is withdrawn so as to extend through said cassette cases during the mounting operation; a transfer roller and an ink roller rotatably mounted within one of said pair of cassette cases in order to replenish ink onto said ink ribbon and which are in contact with each other; and a tensioner for applying a tensioning force to said ink ribbon and disposed within the other of said pair of cassette cases; the improvement wherein

said tensioner comprises a slidably supported guide body having means therein defining a cavity in which said slack part of the ink ribbon is stored prior to the mounting operation, and a biasing spring for biasing said guide body so as to apply a tensoning force to the ink ribbon.

4,352,578
PAPERBOARD RIBBON CARTRIDGE

Norman D. Dunning, Harrodsburg; Franklin D. Jervis, Lexington, and Kenneth W. Taylor, Georgetown, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,105
Int. Cl.^{3} B41J *35/28*
U.S. Cl. 400—208 **35 Claims**

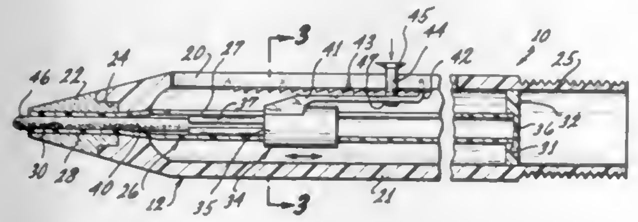


31. A cartridge containing a typewriter ribbon and formed from a flat blank comprising:
a first portion for forming the top of said cartridge, said first portion further defining a pair of apertures for rotatably receiving a take-up and supply spool, respectively;
second and third portions bendably attached to said first portion for forming the front of said cartridge;
a fourth portion attached to the side of said second and third portions opposite said first portion and bendable with respect to said second and third portions for forming the bottom of said cartridge, said fourth portion further comprising surfaces defining a plurality of apertures therein, two of said apertures positioned and sized, with respect to said apertures in said first portion to rotateably support said supply and take-up spools, respectively, a third aperture defined by said bottom portion to permit entry of a control part of a ribbon feed mechanism, and a fourth aperture, interconnecting with and extending out from said aperture for rotateably supporting said take-up spool,
a plurality of portions attached at least to said first portion and bendable with respect thereto to form side walls of said cartridge, and means for joining said side walls to said fourth portion to complete said cartridge.

4,352,579
WRITING IMPLEMENT

Hyon P. Yi, 6941 Chimineas Ave., Reseda, Calif. 91335

Filed Apr. 17, 1981, Ser. No. 255,045
Int. Cl.^{3} B43K *27/02, 21/18*
U.S. Cl. 401—19 **1 Claim**

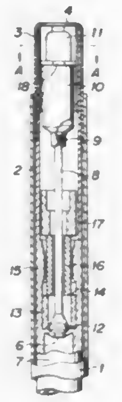


1. A writing implement comprising:
a hollow pencil end-segment having a taper on one end thereof and threads on the other end thereof, said pencil end-segment having a longitudinal slot in the wall thereof, the inner surface of said wall adjacent said longitudinal slot being provided with serrations;
a hollow pen end-segment having a taper on one end thereof and threads on the other end thereof, said pencil and pen end-segments having their threaded ends engaged to form a single body;
an elongated tube extending through the longitudinal axis of said pencil end-segment, said elongated tube having a reduced diameter on one end thereof extending through the tapered end of said pencil end-segment and said elongated tube having a longitudinal slot on the wall thereof;
a carriage member within said pencil end-segment, said carriage member having an outer wall which longitudinally slides on the outer surface of said elongated tube;
a tubular holder on the front end of said carriage member adapted to receive the end of a length of lead inserted through the reduced diameter end of said elongated tube;
said tubular holder being connected to the outer wall of said carriage member by a radial portion which extends through the longitudinal slot on said elongated tube;
a cantilevered arm on said carriage member having an arcuate outer edge normally resiliently engaging the serrations on the inner surface of the wall of said pencil end-segment;
a button having a stem extending through the longitudinal slot on the wall of said pencil end-segment and attached to said arm near the arcuate outer edge thereof; and
a replacable unit including a magazine for ink within said pen end-segment, said unit having a steel ball point member on the outer end thereof extending out of the tapered end of said pen end-segment.

4,352,580
KNOCK-OUT TYPE MECHANICAL PENCIL WITH RETRACTABLE ERASER

Yoichi Ando, Yokohama, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,243
Claims priority, application Japan, Oct. 29, 1979, 54-148875
Int. Cl.^{3} B43K *29/02*
U.S. Cl. 401—29 **4 Claims**

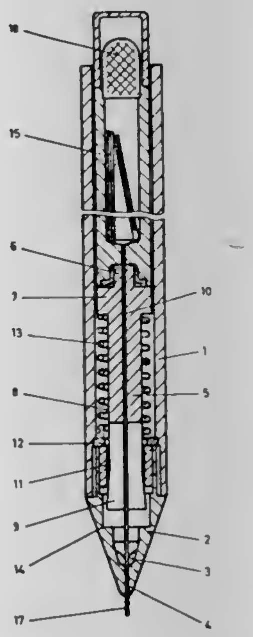


1. A knock-out type mechanical pencil comprising:
a tubular cylindrical body (1) invertable between a writing position and an erasing position, said body having a first end oriented downwardly when the pencil is in the writing position and a second, opposite end;
a cylindrical knock-button member (2) axially slidably inserted into said second end of said cylindrical body for feeding writing lead to said first end, said cylindrical knock-button member having an axial hole (4);
a supporting rod (8) inside said knock-button member (2) and having first and second ends (12, 9) oriented the same as said first and second ends of said body, said supporting rod (8) being axially slidably movable in said cylindrical knock-button member (2) by the inversion of said body (1);
an eraser (11) mounted on the second end (9) of said supporting rod (8) and extendable from within said knock-button member (2) through said axial hole (4) by movement of said rod (8) when said body (1) is inverted to the erasing position;
a tubular cylindrical weight (16) surrounding said supporting rod (8) and slidable therealong towards said first and second ends by the inversion of said body;
an annular, inwardly extending guide portion (15) formed on the interior of said cylindrical knock-button member (2) and surrounding said rod, said guide portion (15) being so located on said knock-button member (2) as to coact with said weight (16) when the latter is adjacent the first end (12) of said rod (8) for causing the rod (8) to be generally on the axis of said knock-button member (2), said weight (16) being free of said guide portion (15) when adjacent the second end (9) of said rod (8) to allow said first end (12) of said rod to assume a non-axial condition with respect to said cylindrical knock-button member (2);
a tubular cylindrical element (13) fixedly disposed within said knock-button member (2), said element (13) surrounding said rod (8) when said body is in the writing position, said first end (12) of said rod (8) engaging said element (13) when said rod (8) is in the non-axial condition for preventing movement of said rod towards said first end of said body;
said pencil having a cylindrical holder (10) for said eraser (11) mounted on said second end (9) of said supporting rod (8) within said knock-button member (2) and slidably contacting the interior surface of said knock-button member (2), said holder (10) and knock-button member interior surface being formed to prevent said holder (10) from turning with respect to said knock-button member (2); and
an additional cylindrical weight (17) surrounding said supporting rod (8) and positioned above said tubular weight (16) when said body is in said writing position, said additional weight (17) having an outer diameter slightly larger than the inner diameter of said inwardly extending guide portion (15).

4,352,581
MECHANICAL PENCIL

Werner Leuthold, Schwabach; Svatopluk Krumnikl, and Günther Babel, both of Nuremberg, all of Fed. Rep. of Germany, assignors to A. W. Faber-Castell, Stein bei Nuernberg, Fed. Rep. of Germany

Continuation of Ser. No. 910,504, May 30, 1978, Pat. No. 4,247,215. This application Mar. 24, 1980, Ser. No. 133,137
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724317
Int. Cl.^{3} B43K *21/00*
U.S. Cl. 401—85 **29 Claims**

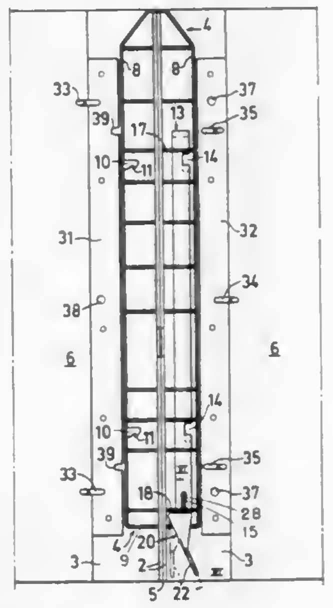


1. In a mechanical pencil, a combination comprising a housing having a front end portion provided with a tip, and a rear end portion; a lead-containing cartridge bounding an interior adapted to contain a plurality of leads, and having a leading end portion provided with an outlet passage having one end open into and communicating with said interior and another end longitudinally spaced from said one end, said cartridge being removably insertable into said rear end portion of said housing; lead-feeding means reciprocable in said housing for incrementally advancing leads from said rear end portion to and outwardly beyond said tip; means at said leading end portion of said cartridge for coupling engagement with said lead feeding means; means for blocking said passage until such coupling engagement is effected; and means for unblocking said passage by acting upon said blocking means in response to such coupling engagement, said blocking and unblocking means being shaped and cooperate with each other so that after acting of said unblocking means upon said blocking means the latter ceases to block said passage and also does not intrude into said interior of said cartridge.

4,352,582
LOOSE LEAF BINDER

Erik Eliasson, Ubbas, S-332 00 Gislaved, Sweden

Filed Jan. 8, 1980, Ser. No. 110,754
Int. Cl.^{3} B42F *13/22, 13/36*
U.S. Cl. 402—38 **6 Claims**



1. A loose leaf binder for apertured loose leaves including;
a pair of hinged plastic back sections having a substantially angular cross section;
a cover pivotally connected to each of said back sections;
an elongated metal plate extending substantially parallel to the hinge axis of said hinged back sections and rigidly secured to each of said back sections;
a plurality of arcuate prongs lying in planes substantially perpendicular to said hinge axis, and rigidly secured to each of said metal plates;
a locking member secured to one of said back sections and having at least one hook portion;
an elongated, slidable latch member for interengagement with said locking member;
means for manually displacing said latch member in its longitudinal direction between a locking position and a release position,
said latch member having a notch for receiving the hook portion of the locking member when the binder is closed and the latch member is in its locking position; and
means for resiliently biasing said latch member towards its locking position,
wherein at least one of said arcuate prongs is secured to said metal plates nearer, and extends at a smaller radial distance from, the hinge axis of said hinged back sections than others of said prongs and is positioned for engagement with and abutment against an edge of said loose leaves,

said other arcuate prongs being positioned for passage through the apertures of said apertured loose leaves,

wherein a reinforcing lattice, which at least partly consists of plastic and comprises at least one longitudinal wall substantially parallel to said hinge axis and a plurality of transverse walls substantially perpendicular thereto, is united with each of said back sections, and

wherein said locking member extends substantially perpendicular to said hinge axis and has its hook portion projecting substantially in the direction of said hinge axis, and wherein said elongated latch member extends substantially parallel to said hinge axis and passes through slots provided in the transverse walls of the lattice of the other back sections.

4,352,583

BINDERS FOR TELEPHONE DIRECTORIES AND LIKE BOOKS AND TAMPER PROOF LANYARD SUSPENSION THEREOF

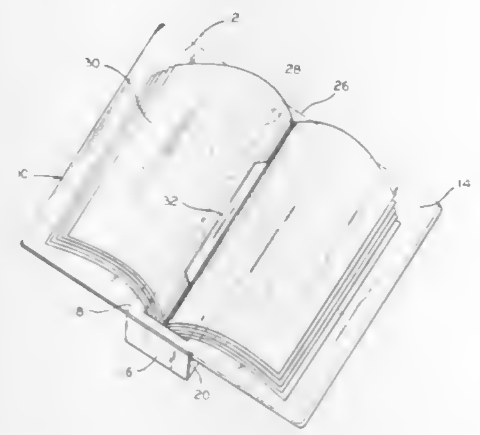
Dominic R. Errichiello, 389 Meadowlark Rd., Bloomingdale, Ill. 60108

Continuation-in-part of Ser. No. 63,832, Aug. 6, 1979, Pat. No. 4,255,065. This application Feb. 19, 1980, Ser. No. 122,312

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.^{3} B42D *3/10*

U.S. Cl. 402—75 **18 Claims**



1. A binder for books, which comprises a front cover panel, a rear cover panel, and a spine along whose opposite longitudinal edges the front and rear cover panels respectively are hingedly connected, and means for protectively securing on said spine and between said cover panels a book, said means being a thin metal member with oppositely extending wings adapted to lie between and against the bound edges of the pages of the directory and a thin edged tongue adapted to penetrate the bound edges of said pages and project through a slot in the spine, and means coacting with said spine-projecting part, and said spine for locking said tongue and said wings in book-securing position to prevent removal of said book from said binder, and the spine of said binder having a rectangular well formed by opposite side walls and opposite end walls for securely holding the back of said book or the backs of two or more books.

4,352,584

METHOD OF PRODUCING A JOINT CAPABLE OF TRANSMITTING HIGH TORQUE

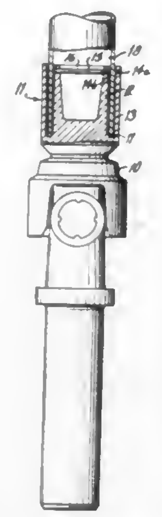
Derek R. Smith, Bristol, England, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 954,112, Oct. 24, 1978, Pat. No. 4,190,479, which is a continuation of Ser. No. 753,819, Dec. 23, 1976, abandoned. This application Sep. 12, 1979, Ser. No. 74,432

Int. Cl.^{3} F16D *1/00*

U.S. Cl. 403—13 **4 Claims**

1. A joint comprising a tubular shaft and an end fitting provided with a mating section having two concentric cylindrical walls which describe an annular cavity, said shaft being positioned in said annular cavity between the two concentric cylindrical walls and bonded to said walls by means of a cured bonding agent, said shaft being axially aligned with said end fitting by means of a resilient sealing ring positioned near the top of the inner cylindrical wall of the mating section of the end fitting and between said inner cylindrical wall and the interior wall of said shaft and a parallel annular shoulder positioned near the base of said inner cylindrical wall, said annular shoulder having an outer diameter which is slightly greater than the diameter of said inner cylindrical wall such that the lower end of said shaft fits snugly over said annular shoulder to thereby enclose and seal off said annular cavity while completely filled by said bonding agent.



4,352,585

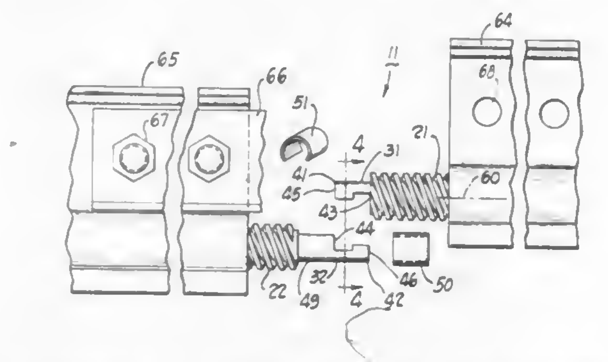
DOOR OPERATOR SCREW COUPLING

Wilbur J. Spalding, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Mar. 6, 1980, Ser. No. 127,760

Int. Cl.^{3} E05F *11/00*

U.S. Cl. 403—24 **19 Claims**



1. In a garage door operator having a motor-driven screw at least partially within guide means, a partial nut guided by said guide means and movable longitudinally therealong by engagement with said screw and connectable to open and close the garage door, the screw being in at least first and second parts, and a coupling adapted to interconnect adjacent ends of the first and second screw parts, the improvement comprising said coupling being readily connectable and being disconnected at the time of shipment to the customer said coupling in the connected condition being capable of being traversed by the partial nut, the first screw part having a portion adapted to about and directly transmit torque both clockwise and counterclockwise to the second screw part.

4,352,586

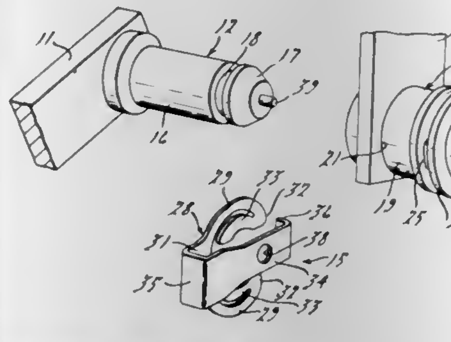
LINKAGE SYSTEM

William L. Hayden, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1980, Ser. No. 220,625

Int. Cl.^{3} F16C *11/06;* F16D *1/12, 3/00*

U.S. Cl. 403—163 **7 Claims**



1. A linkage system, comprising:

a crank arm having an upstanding crank pin,

a drive link having an aperture in which a cylindrical bushing is mounted,

the crank pin being journalled in the bushing,

the bushing and crank pin having external annular grooves axially aligned outwardly of the crank arm and drive link,

the bushing having diametrically opposed apertures extending through the bottom of its groove in communication with the crank pin groove,

and a retainer clip seated in the bushing groove and projecting through the opposed apertures into the crank pin groove to interlock the bushing and crank pin against substantial axial displacement,

the retainer clip further having manually disengageable retention means engaged with the assembled bushing and crank pin to prevent radial displacement of the clip from its bushing and crank pin interlocking position.

4,352,587

LOCKING ASSEMBLY FOR STRUCTURAL PRODUCTS

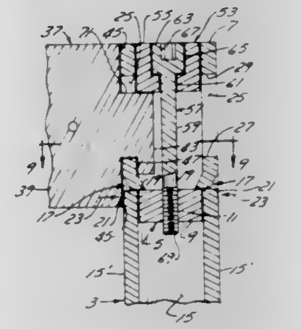
Frederick Milz, 6002 Westbury Ave., Montreal, Quebec, Canada (H3W 2W9)

Filed Jul. 9, 1980, Ser. No. 167,208

Claims priority, application Canada, Jul. 9, 1979, 331374

Int. Cl.^{3} F16B *7/22*

U.S. Cl. 403—252 **9 Claims**



1. A construction for use in knockdown structures comprising: a tubular leg with (an anchor) a plug member (fixed) fixedly secured within the leg near one end of the leg by a portion of said leg, one longitudinal slot provided in the wall of the leg, the slot located between the (anchor) plug member and the one end of the tube and spaced from the (anchor) plug member; an elongated cross-bar having a tab extending from at least one end of the bar, the tab having a notch formed on one side of the tab adjacent the end of the bar; the cross-bar connected to the leg by sliding the tab through the slot until the end of the bar abuts the wall of the leg and then moving the cross-bar in a direction away from the one end of the leg to move the wall of the leg into the notch in the tab to prevent withdrawal of the cross-bar; and locking means to prevent the cross-bar from being moved in a directon back toward the one end of the leg, the locking means sized to fit within the one end of the leg and to attach to the (anchor) plug member while overlying the tab of the cross-bar to prevent its movement toward the one end of the leg (.) and comprising a retaining member for overlying the tab and internal adjustable bolt means for connecting the retaining member and the plug member to urge the members together and prevent the movement of the tab.

4,352,588

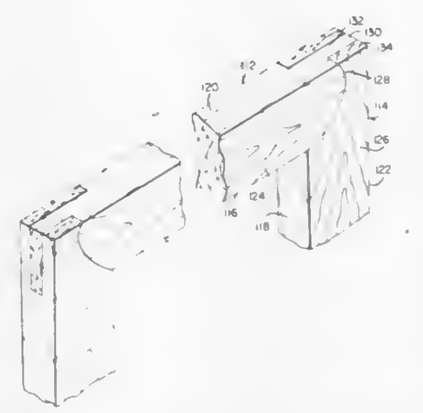
WOOD JOINT

Benjamin Davies, III, 518 Sterling Ave., Chattanooga, Tenn. 37405

Filed Aug. 7, 1980, Ser. No. 176,010

Int. Cl.^{3} B25G *3/08*

U.S. Cl. 403—382 **9 Claims**



6. A method of forming a joint between a rail and a stile of a frame structure such that facial surfaces of the rail and stile are coextensive and abut at an edge having a curvilinear configuration, said method comprising cutting said edge in each of said rail and stile with a router tool having a rotatable cutting bit of a radius r_c, the cutting of one of said rail and stile being performed while guiding said router tool along a guide template by following said guide template with a first annular guide member having a guide surface of a radius r_1 concentric about said cutting bit and the cutting of the other of said rail and stile being performed while guiding said router tool along said guide template by following said guide template with a second annular guide member having a guide surface of a radius substantially equal to r_1+2r_c concentric about said guide surface, said method including the step of forming said guide template with the same configuration as said curvilinear edge but displaced from said edge by a distance substantially equal to the sum of the radius of the cutting bit (r_c) plus the radius of the first annular guide member (r_1).

4,352,589

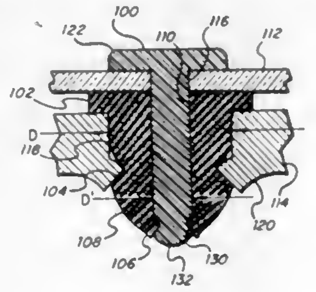
BLIND RIVETING AND SEALING SYSTEM

Kenneth C. Allison, Crystal Lake, and William H. Cooley, Winnetka, both of Ill., assignors to Almedco, Inc., Crystal Lake, Ill.

Filed Jul. 20, 1981, Ser. No. 284,824

Int. Cl.^{3} B25G *3/00;* F16D *1/00;* F16G *11/00*

U.S. Cl. 403—408 **14 Claims**

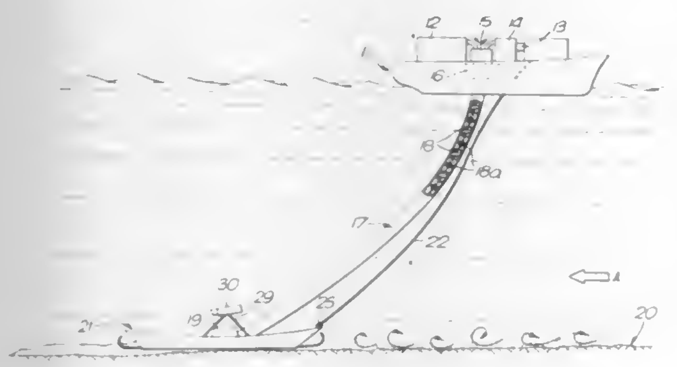


1. A blind riveting system comprising, sheet means having a

hole of diameter D with a smaller diameter step therein to thereby form a resilient annular locking flange in said hole, and rivet means inserted in said stepped hole and adapted to be locked in position therein by said resilient annular locking flange, said rivet means consisting of head means and body means wherein
  said head means has a diameter sufficiently larger than
  the maximum diameter (D) of said hole to prevent
  its insertion in said hole, and
  said body means comprises
    an upper shank portion having a diameter that results in a force fit with the diameter D position of the hole and thereby forming a first seal therebetween,
    a tapered portion,
    a beveled locking seal face for engaging said resilient annular flange over its entire width to thereby form a second seal therebetween,
and a pilot tip portion.

4,352,590
STABILIZATION OF ERODIBLE MARINE OR FLUVIATILE SEDIMENTS

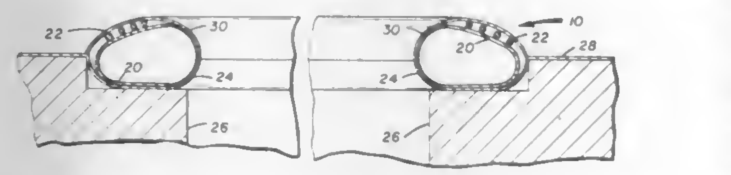
William R. Parker, and Robert Kirby, both of 3 Curdleigh La., Blagdon Hill, Taunton TA3 7SH, England
Continuation-in-part of Ser. No. 47,217, Jun. 11, 1979, abandoned. This application Dec. 11, 1980, Ser. No. 215,387
Int. Cl.^{3} E02B *3/12*
U.S. Cl. 405—17 **14 Claims**



1. A method of stabilizing an erodible marine or fluviatile sediment comprising the steps of depositing directly over the sediment to be stabilized a slurry comprising a framework of rigid particles greater than 2 mm. least dimension and less than 100 cm. least dimension in generally touching relation and a non-setting paste-like or colloidal matrix material filling voids between particles of said framework.

4,352,591
PNEUMATIC TOROIDAL WEIR

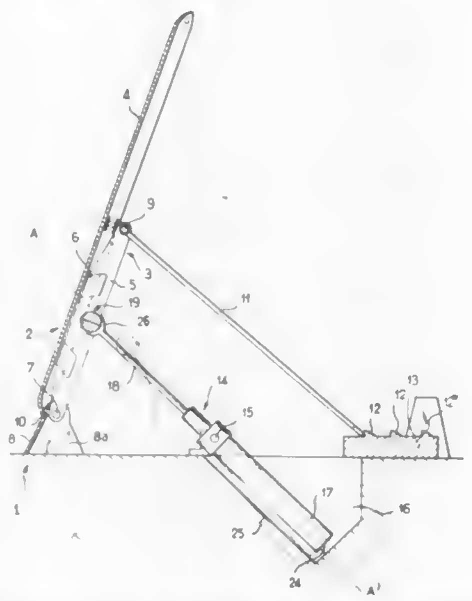
Worthington J. Thompson, 109 Powell St., Snow Hill, Md. 21863
Filed Aug. 11, 1980, Ser. No. 177,089
Int. Cl.^{3} E02B *7/00*
U.S. Cl. 405—87 **1 Claim**



1. A pneumatic convoluted toroidal weir, comprising:
a tube-like structure formed of an elastic membrane-like material, said tube-like structure being convoluted and toroidal in configuration;
a plurality of chines constructed of a semi-rigid material, said chines being concentric with each other around said tube-like structure and affixed to a portion of the outer surface of said tube-like structure;
a plastic holder means, said holder means being half-dish-like and circular and sized to hold said tube-like structure therein;
a connecting means, said connecting means attaching said tube-like structure to said holder means;
a piping means, said piping means connected to said tube-like structure for inflation and deflation.

4,352,592
GATE SYSTEM FOR A HYDRAULIC DAM

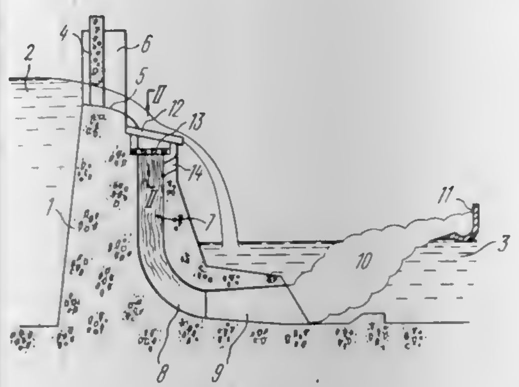
Jean Aubert, 8, rue La Boetie, 75008 Paris, France
Filed Jun. 4, 1980, Ser. No. 156,390
Claims priority, application France, Jun. 12, 1979, 79 14986
Int. Cl.^{3} E02B *7/40*
U.S. Cl. 405—102 **23 Claims**



1. A gate system for a hydraulic dam comprising at least one wicket which can be set at a number of predetermined angles of inclination about a horizontal shaft which is attached to the floor or body of the dam, each wicket being provided with an operating device comprising on the one hand a jack pivotally mounted on the floor or body of the dam downstream of the wicket and on the other hand an abutment member rotatably mounted on a horizontal shaft carried by the wicket, said abutment member being intended to receive the free end of the operating rod of the jack, means being provided for ensuring that the operating rod of the jack is fully withdrawn into the jack body between two operations of said wicket, wherein the operating device comprises restoring means which tend to move the jack to an end angular orientation about its axis of pivotal motion, said end angular orientation being close to the different orientations assumed by the jack when the operating rod of said jack is in engagement with the abutment member in the different predetermined positions of inclination of the wicket, the end of the operating rod of the jack and the abutment member being provided with coupling means comprising a cup-like member and a convex member one of which is carried by the abutment member and the other by the end of the jack, the cup-like member being large enough to contact and receive therein the convex member in any of the predetermined inclinations of the wicket when the operating rod of the jack is being extended out of the jack body in the said end angular orientation of the jack.

4,352,593
DAM SPILLWAY

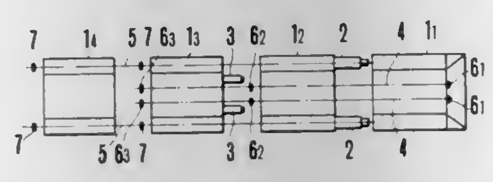
Anton L. Iskra, ulitsa Magdagulovoi, 8, korpus 1, kv. 65, Moscow; Mikhail S. Kharchenko, ulitsa Semashko, 8, korpus 1, kv. 135, Zhukovsky Moskovskoi oblasti, and Jury N. Vasiliev, ploschad Vosstania, 1, kv. 60, Moscow, all of U.S.S.R.
Filed Dec. 23, 1980, Ser. No. 219,901
Int. Cl.^{3} E02B *8/06*
U.S. Cl. 405—108 **3 Claims**



1. A dam spillway to pass water over the crest from a forebay into an afterbay, comprising:
a vertically disposed mixing chamber having an inlet section opening into the atmosphere;
a horizontally mounted diffuser communicating with said mixing chamber; an upper wall of said diffuser;
a flotation zone;
an intake arrangement of said mixing chamber, ensuring formation of said flotation zone downstream of said diffuser;
a water flow divider of said intake arrangement, located above said mixing chamber and made in the form of a screen composed of chutes;
a water breaking grid of said intake arrangement, installed transversely in said inlet section of said mixing chamber and composed of bluff members;
air intake ducts of said intake arrangement, made in a wall of said mixing chamber below said water breaking grid in close proximity thereto;
a froth collector arranged on the surface of said afterbay downstream of said flotation zone.

4,352,594
METHOD AND APPARATUS FOR CONSTRUCTING UNDERGROUND STRUCTURE

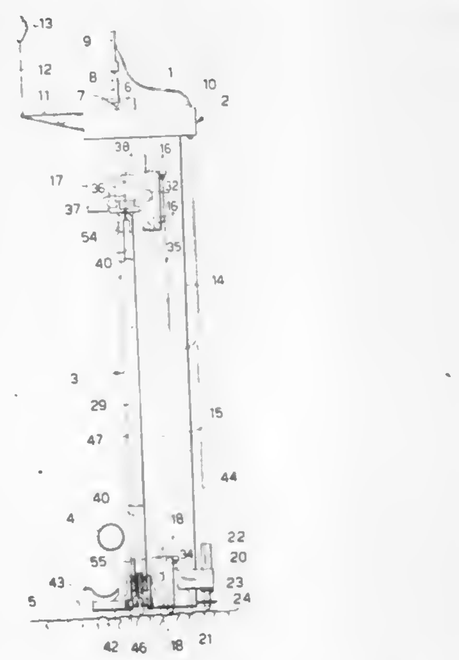
Koichi Uemura, No. 1-3-11, Sakura-machi, Koganei-shi, Tokyo, and Makoto Uemura, No. 3-5-8, Hon-cho, Koganei-shi, Tokyo, both of Japan
Filed Aug. 25, 1980, Ser. No. 180,936
Int. Cl.^{3} E21D *9/00, 11/40*
U.S. Cl. 405—138 **42 Claims**



1. A method for constructing an underground structure by advancing underground a plurality of serially adjoining cylindrical bodies one after another, wherein a reaction force required for advancing each cylindrical body is obtained from the sum of reaction forces available from other cylindrical bodies and/or a reaction facility additionally provided; a cylindrical body pushing facility is formed with a thrusting jack advancing arrangement provided between selected ones of said cylindrical bodies; a cylindrical body connecting facility is formed with connecting members arranged to pierce through a required number of said serially adjoining cylindrical bodies, with fasteners attached to the connecting members at required points and with a pulling jack advancing arrangement or a pulling/thrusting jack advancing arrangement arranged to engage said cylindrical bodies; a pulling facility is formed with traction members arranged to pierce through a first group of a required number of cylindrical bodies, through a reaction facility or a second group of cylindrical bodies disposed on one side opposite to the side on which the first group are disposed and through a horizontal hole or the like arranged underground beforehand across a distance between said two sides, said traction members being provided with fixing pieces and a pulling jack advancing arrangement or a pulling/thrusting jack advancing arrangement which are attached thereto and are arranged to engage said cylindrical bodies and said reaction facility at desired points; the advancing facilities including said pushing, connecting and pulling facilities are operated as desired to have said cylindrical bodies moved forward underground one by one; then said advancing facilities are removed; and a cylindrical structure is constructed underground either by unifying said cylindrical bodies with each other or by having the cylindrical bodies installed on both ends of the underground structure with intermediate portion thereof constructed by a suitable conventional construction method.

4,352,595
APPARATUS FOR AND METHOD OF SUPPORTING PIPE SUSPENDED OVER DEPRESSIONS IN THE SEA BED

Ambrogio Scodino, S. Donato MI, Italy, assignor to Saipem S.p.A, Milan, Italy
Filed May 16, 1980, Ser. No. 150,418
Claims priority, application Italy, May 29, 1979, 23083 A/79
Int. Cl.^{3} F16L *1/04*
U.S. Cl. 405—158 **4 Claims**



1. In apparatus for supporting pipe suspended over depressions in the sea bed, even at great depths, having a service module and a support module for supporting the pipe, the improvement which comprises:
a support module which has a pile adapted to be inserted into the sea bed that has a rotatable rod at its upper end which drills said pile into the sea bed, and
a recoverable service module which is connected to said support module in such a manner that it can be separated therefrom by remote control means and which arranges and maintains said support module in a vertical position on the sea bed as said pile is inserted into the sea bed, including:
(a) a vertical upright having at its upper end a horizontal

beam terminating in a bracket, the free end of which is connected to a float, and having at its lower end three horizontal arms, at the ends of which are fixed three vertical hydraulic cylinders with adjustable pistons that terminate in points provided with support discs to form a tripod structure on which the upright rests,

(b) a rack and two lateral guides fixed longitudinally to one side of said vertical upright,

(c) a first electric motor-driven carriage slidable along said rack and lateral guides having a recoverable control head which contains an electric motor that engages and rotates said rod for drilling said pile into the sea bed, and coupling means releasably connecting said head to the upper end of the pile adapted to release said head from said pile after the vertical insertion thereof into the sea bed,

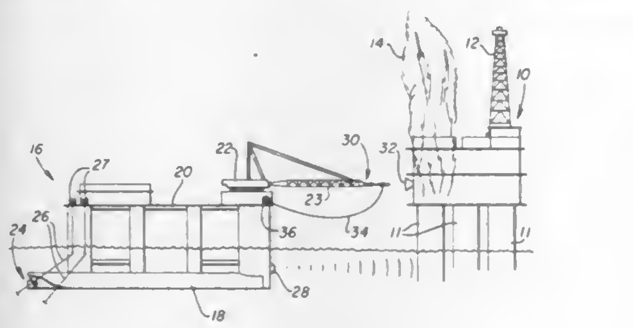
(d) a second carriage having an electric motor and a pinion which engages said rack for movement along said vertical upright,

(e) a bracket-shaped slide having a seat for supporting the pipe wherein said slide is connected to said second carriage and is slidable along the pile of the support module,

(f) coupling means releasably connecting the second carriage to said bracket-shaped slide adapted to release said slide when the pipe is seated and suspended over the depression on the sea bed, and

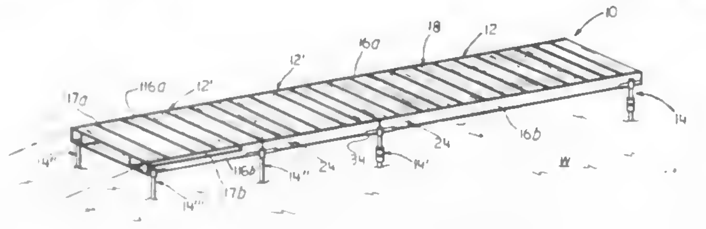
(g) a cable adapted to be under tension connected to said service module for lowering said module to the sea bed and for recovering said sevice module after the pipe is seated and suspended over the depression on the sea bed and said service module is separated from said support module.

4,352,596
STAB SYSTEM FOR EQUIPMENT REMOVAL
Dillard S. Hammett, Dallas, Tex., assignor to Sedco, Inc., Dallas, Tex.
Filed Oct. 29, 1979, Ser. No. 89,186
Int. Cl.^{3} E02B *17/00*
U.S. Cl. 405—195 **4 Claims**



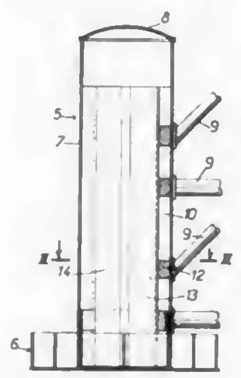
1. A fire suppression system for use in controlling fires occurring on offshore oil platforms comprising:
a self-propelled service vessel having a means for maintaining said vessel at a predetermined station with respect to said platform;
a stab assembly including a stab adapted to engage a stab receptacle on said platform and means for controlling the movement of said stab;
tension means interconnecting said stab and said vessel;
means extending from said vessel for supporting said stab assembly;
a plurality of walls cooperating to form a compartment for housing operating equipment;
a stab receptacle mounted to said platform, said receptacle including a guide means;
means for locking said stab in said receptacle; and
second tension means connecting said equipment to said receptacle, said equipment being removable from said platform by the application of a tensile load to said receptacle.

4,352,597
SLIDE DOCK
Charles Kay, 3401 Burton Ridge Rd., SE., Grand Rapids, Mich. 49506
Filed Jan. 12, 1981, Ser. No. 224,216
Int. Cl.^{3} E02B *3/20*
U.S. Cl. 405—219 **10 Claims**



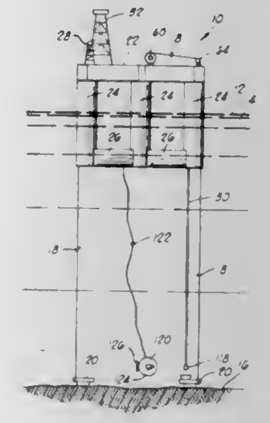
1. A slidably assembled dock comprising:
at least one pair of spaced, facing side channels, each including an inwardly directed upper flange and an inwardly directed lower flange;
modular platforms extending between said side channels and having edge portions slidably received in said side channels;
said modular platforms being formed of an upper layer and a lower layer spaced therefrom, and elongated stringers interconnecting said layers;
said lower layer supported on said lower flanges of said side channels and said upper layer interfitting with said upper flanges;
tying connector means for maintaining said side channels within a predetermined maximum spacing of each other;
and support means for vertically supporting said dock.

4,352,598
CONCRETE STRUCTURE FOR THE TRANSMISSION OF LOADS FROM THE STEEL LATTICE OF A MARINE PLATFORM AND A METHOD OF FORMING SAID STRUCTURE
Hubert J. L. Parat; Dominique Michel, both of Paris, and Francois G. Sedillot, Velizy, all of France, assignors to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris", Paris, France
Filed Feb. 6, 1980, Ser. No. 118,917
Claims priority, application France, Feb. 7, 1979, 79 03108
Int. Cl.^{3} E02B *17/00;* E02D *29/06*
U.S. Cl. 405—222 **10 Claims**



1. A concrete structure for the transmission of loads from the steel lattice of a marine platform resting on the sea bed by means of concrete base plates, the lattice being made up of lattice members which form bracing joints with the legs of the platform, the concrete structure comprising: a base plate; a cylindrical hollow body leg member fixed to the base plate; concrete walls within the hollow body; enclosed spaces defined by said concrete walls and by part of the hollow body; and concrete fixing plugs, at least a part of each fixing plug being affixed to said walls defining the enclosed spaces and to the end of an associated lattice member.

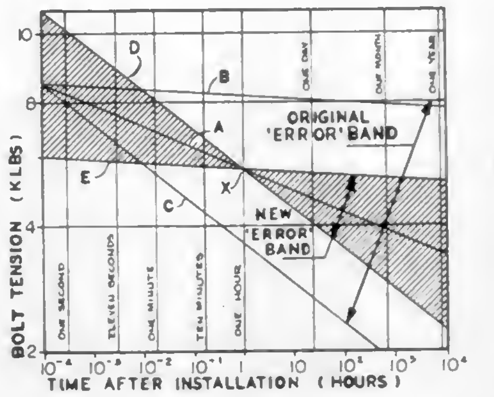
4,352,599
PERMANENT MOORING OF TENSION LEG PLATFORMS
Riley G. Goldsmith, Houston, Tex., assignor to Conoco Inc., Ponca City, Okla.
Filed Aug. 4, 1980, Ser. No. 175,101
Int. Cl.^{3} E02B *17/00*
U.S. Cl. 405—224 **19 Claims**



1. A method of installing a permanent vertical tethering element between a floating structure and an anchor means, said method comprising steps of:
providing on said anchor means an upward opening guide funnel located above a connector means for connecting a lower end of said permanent vertical tethering element to said anchor means;
temporarily mooring said floating structure to said anchor means with a plurality of substantially vertical temporary mooring lines held in tension by a buoyancy of said platform;
while said floating structure is temporarily moored, lowering said permanent vertical tethering element from said floating structure until said lower end thereof is located a relatively short distance above said anchor means;
observing, with an underwater television camera, a location of said lower end of said permanent vertical tethering element relative to said guide funnel of said anchor means;
moving said lower end of said permanent vertical tethering element laterally as necessary to position it above said guide funnel;
stabbing said lower end of said permanent vertical tethering element into said guide funnel;
guiding, by means of said guide funnel, said lower end of said permanent vertical tethering element into engagement with said connector means; and
connecting said lower end of said permanent vertical tethering element to said connector means.

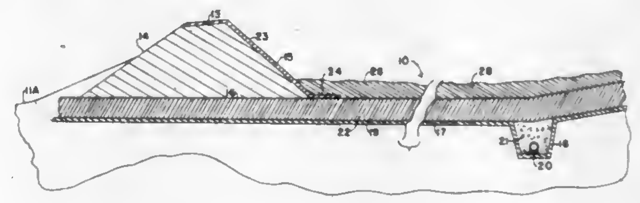
4,352,600
DEVICE AND METHOD FOR CONTROLLING TIME DEPENDENT PARAMETER VARIABILITY
Carel J. H. Brest van Kempen, 4920 Emigration Canyon, Salt Lake City, Utah 84104
Filed Apr. 30, 1980, Ser. No. 144,987
Int. Cl.^{3} E21D *21/00*
U.S. Cl. 405—259 **7 Claims**

1. A method for controlling long term uniformity of a parameter in a population of similar processes, where said processes are characterized by an exponential change of said parameter with time, the rate of said exponential change with time being randomly variable from one individual representative of said process to the next, the invention comprising the steps of:
identifying the exponential change rate of said exponentially changing parameter for each individual representative of said process;
determining the required initial value for said parameter to change to a particular value at a particular time in the future based on the previously identified exponential change rate for each individual representative of said process, said particular value of said parameter as well as said particular time in the future being the same for all individual representatives of said process; and



adjusting the initial value for said parameter to the desired level for each individual representative of said process as determined in the previous step.

4,352,601
PERMANENT BIN FOR TEMPORARY STORAGE OF HAZARDOUS MATERIALS
Richard E. Valiga, Center Square, and John R. Rosso, Mechanicsburg, both of Pa., assignors to Stabatrol Corporation, Norristown, Pa.
Filed Aug. 18, 1980, Ser. No. 178,965
Int. Cl.^{3} E02D *3/00;* E02B *3/16*
U.S. Cl. 405—270 **7 Claims**



1. A storage bin for temporary storage of hazardous, nonvolatile substances comprising:
an excavation basin having an elevated periphery and a surface which slopes from said periphery along a collection path;
a water-impervious liner for said basin comprising a water-impervious film;
a water-impermeable covering for said liner comprising a monolithic layer of hardened cementitious material;
a perimeter wall above and inside the rim of said water-impervious covering;
said perimeter wall having a crest, an annular sloping outer surface and an annular sloping inner surface;
a liquid-impervious coating over said annular sloping inner surface and over a continguous annular margin of the said water-impermeable covering;
a monitoring drain comprising a collector conduit along the central region of said excavation basin beneath the said water-impermeable covering and above the said film;
a collection sump located outside said perimeter wall;
said collector conduit communicating with said collecting sump;
said excavation basin being above the high water table level of the region.

4,352,602

ROOF SUPPORT FOR A MINE GALLERY WHICH EXTENDS AT A RELATIVELY LARGE ANGLE INCLINED TO THE HORIZONTAL

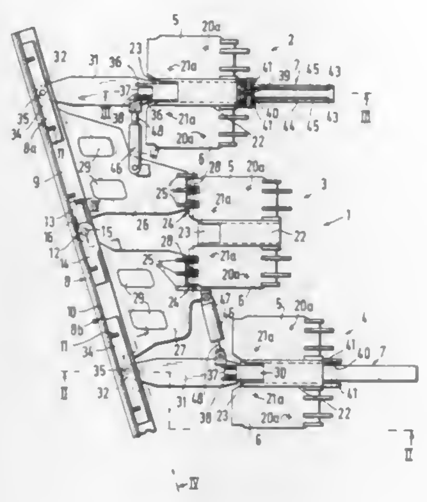
Kurt Plaga, Herne, Fed. Rep. of Germany, assignor to Bochumer Eisenhuette Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,295

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001994

Int. Cl.³ E15D *23/04*

U.S. Cl. 405—291 **10 Claims**



1. A roof support for a mine gallery which extends at a relatively large angle inclined to the horizontal comprising an upper roof support unit, a middle roof support unit and a lower roof support unit arranged adjacent to each other and each having a pair of elongated sole engaging skids; an abutment beam extending inclined to the elongation of the skids and adapted to be located adjacent a face of the gallery to be mined; a pair of flat sole plates, each fixedly connected at one end edge thereof to the abutment beam and on the opposite end edge thereof to a respective one of the skids of said middle support unit tiltable about axes extending transverse to the elongation of said skids; said upper and said lower roof support unit including each elongated guide means with an advancing cylinder and piston unit provided therein and a flat end member connected at one end to said abutment beam for pivoting about a substantially vertical pivot axis; and a pair of directing cylinder and piston units, one of which being pivotally connected at opposite ends respectively to said flat end member of the guide means of said upper roof support unit and the flat sole plate of the middle roof support unit adjacent thereto and the other being pivotally connected at opposite ends respectively to the flat end member of the guide means of said lower roof support unit and the flat sole plate of said middle roof support unit adjacent thereto.

4,352,603

PNEUMATIC TUBE SYSTEM TELLER TERMINAL CONSTRUCTION

Walter G. Anders, Canton, Ohio, assignor to Diebold Incorporated, Canton, Ohio

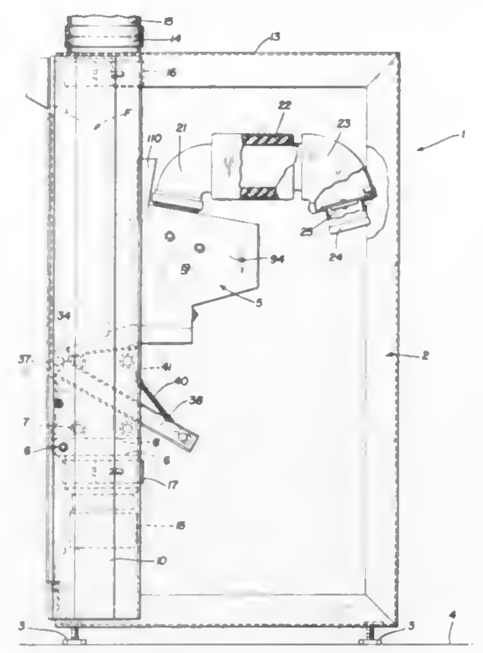
Filed Aug. 15, 1980, Ser. No. 178,559

Int. Cl.³ B65G *51/26*

U.S. Cl. 406—27 **22 Claims**

16. In a terminal for a banking service pneumatic tube system of a type in which a single conveyor tube transmits a carrier to the terminal, in which the carrier is removable from the terminal, in which the terminal has a housing opening closed by a door pivotally mounted for movement between open and closed positions on the housing, in which a cradle for receiving a carrier transmitted in the system to the terminal is mounted on the door forming a cradle-door and is located in the housing when the door is closed; and in which the cradle-door is provided with latch means for locking the cradle-door closed when in closed position; the improvement in which the latch means includes:

(1) a pawl and a lever pivotally mounted at spaced positions on the cradle;
(2) the pawl and lever having selectively interengage-engageable notch and stop projections;
(3) a latch member mounted on the terminal housing;
(4) the pawl and lever having two positions of interengagement, one of which is a latched mode and the other of which is an unlatched mode with respect to said latch member; and
(5) spring means engaged with each of the pawl and lever biasing the pawl and lever from one mode position to the other when either the pawl or lever is released from interengagement in the position of either of the modes.



4,352,604

FEEDING DEVICE FOR CIGARETTE FILTERS AND SIMILAR RODS

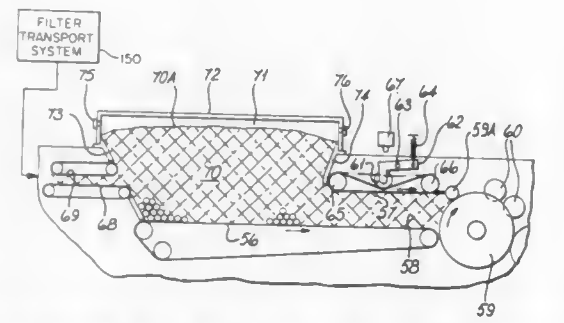
Walter Carascon; Derek H. Dyett, and Grantley R. Hoath, all of High Wycombe Bucks, England, assignors to Molins Limited, London, England

Filed Apr. 7, 1980, Ser. No. 137,970

Claims priority, application United Kingdom, Apr. 5, 1979, 7912043

Int. Cl.³ B65G *51/02, 37/00*

U.S. Cl. 406—28 **7 Claims**



1. In a cigarette filter attachment machine, means for feeding filter rods comprising a fluted drum for carrying filter rods in the flutes thereof; powered conveyor means arranged to feed a stack-like multi-layer stream of filter rods towards the fluted drum whereby movement of the conveyor means urges the filter rods towards the fluted drum to ensure that filter rods enter the flutes of the fluted drum, at least a part of said conveyor means being disposed at a level below the top of said fluted drum; means defining an expandable area for filter rods above the said part of said conveyor means disposed below the top of the fluted drum and including means upstream of said fluted drum for selectively supporting above the said expandable area a succession of filter-containing trays for feeding filter rods from the trays and onto the conveyor means; and pneumatic feed means for feeding pneumatically-delivered filter rods into the expandable area above the conveyor means adjacent to the end of the conveyor means remote from the fluted drum, whereby the volume of the filter rods expands in the expandable area when filter rods enter the expandable area from the feed means at a rate greater than that at which filter rods are conveyed from the expandable area by the conveyor means.

4,352,605

MEANS FOR ADDING MATERIALS TO A FLOWING STREAM

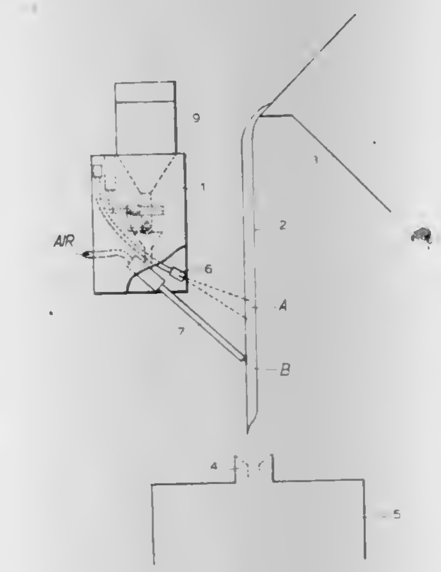
Ronald G. Godding, West Heath, and William McCormack, Studley, both of England, assignors to BCIRA, Birmingham, England

Filed Jun. 28, 1979, Ser. No. 52,740

Claims priority, application United Kingdom, Jun. 28, 1978, 28182/78

Int. Cl.³ B22D *27/20;* **B65G** *53/66*

U.S. Cl. 406—29 **2 Claims**



1. Apparatus for adding particulate material to a stream of flowing molten metal by blowing said material into said stream with a flow of gas under pressure, said apparatus comprising chamber means providing a path for the gas under pressure and directed towards a point in the path of said stream, reservoir means for said material, a flow path from said reservoir to said chamber means, a gate in said flow path, means for opening and shutting said gate, sensing means responsive to the presence and absence of said flowing metal stream at a predetermined location in the path of said stream, and a connection between said sensing means and said means for opening and shutting said gate whereby said gate is opened automatically in response to the presence at said location of said flowing metal stream and closed automatically in response to the absence at said location of said flowing metal stream, said connection between said sensing means and said gate opening and shutting means including adjustable delay means, the latter including first and second delay devices, said first device controlling the delay between sensing of the presence of said stream and the opening of said gate and said second device controlling the delay between sensing the absence of said stream and the closing of said gate, said devices being mutually independently adjustable.

4,352,606

DEVICE FOR EXTRACTING HAY FROM A TOWER SILO

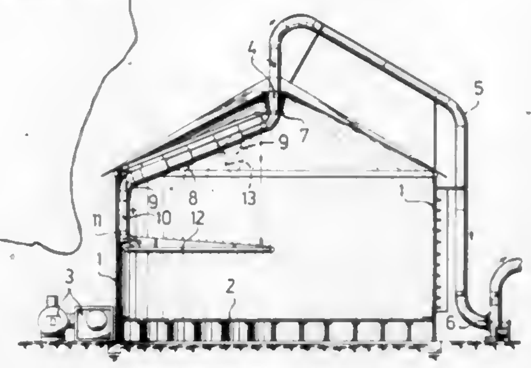
Bernhard Jülke, Melle, Fed. Rep. of Germany, assignor to Engelbrecht & Lemmerbrock GmbH & Co., Melle, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,718

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 2924558

Int. Cl.³ B65G *53/44*

U.S. Cl. 406—81 **9 Claims**



1. In a device for extracting hay or the like from a cylindrical tower silo, the device being of the type comprising a pneumatic conveyor pipe leading centrally into said silo at its top end, and provided with an inlet thereat, and having a suction head for receiving material therein, and a radial belt or chain conveyor disposed in said silo, for feeding the material to said suction head of said conveyor pipe, the improvement comprising said conveyor pipe having a portion which extends radially with respect to the periphery of the silo, and is rotatable around the axis of the silo, said radial portion of said conveyor pipe having one extremity thereof following said top end inlet and the other extremity thereof being associated with said suction head, and said radial belt or chain conveyor revolves around the silo axis and feeds material to said suction head by conveying the material from the inside of the silo towards the outside thereof.

4,352,607

AUTOMATIC WAFER PROCESSING SYSTEM AND METHOD

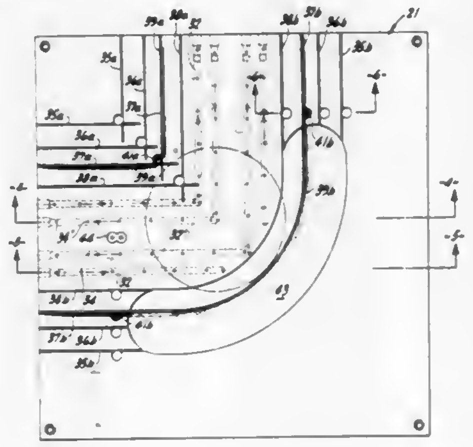
W. L. Loveless, Saratoga; Richard J. Trott, Los Gatos; Robert H. Heath, Campbell, and William L. Glick, San Jose, all of Calif., assignors to GCA Corporation, Sunnyvale, Calif.

Division of Ser. No. 779,074, Mar. 18, 1977, Pat. No. 4,278,366.

This application Dec. 11, 1980, Ser. No. 215,499

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—88 **3 Claims**



1. A method of producing a variable width track assembly with a flat fluid bearing surface over which fragile articles are transported comprising the following steps: providing a plurality of parallel slot pairs in said flat surface; providing a pair of flexible strips; inserting only a portion of said pair of strips in a

slot pair corresponding to a predetermined track width to thereby form guides for said articles.

4,352,608

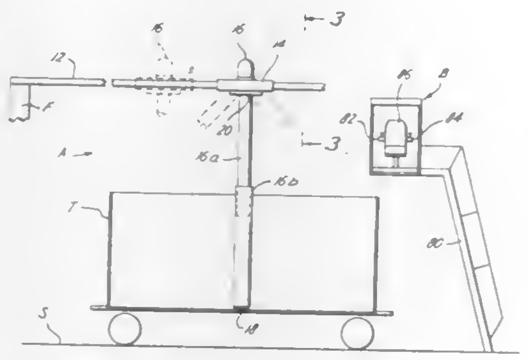
REMOTELY POSITIONED INTAKE APPARATUS FOR A PNEUMATIC CONVEYING SYSTEM AND METHOD OF USING SAME

Howard E. Stuller, and Jimmie L. Francis, both of Lubbock, Tex., assignors to Stuller Engineering & Marketing Services, Lubbock, Tex.

Continuation of Ser. No. 55,353, Jul. 6, 1979, abandoned, which is a continuation of Ser. No. 855,886, Nov. 30, 1977, abandoned. This application Sep. 17, 1980, Ser. No. 188,451

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—116 **1 Claim**



1. An intake apparatus adapted for use with a pneumatic conveying system, including:

a support frame having a pair of spaced parallel rails adapted for positioning above a loading surface upon which the flowable material to be conveyed may be positioned;

a movable carriage movably mounted on said rails;

means with said carriage for effecting movement of said carriage on said frame rails;

means disposed remotely from said carriage and operably connected therewith for effecting desired movement of said carriage on said rails of said support frame;

an inlet conduit supported by said carriage and having an inlet opening disposed below said carriage and adjacent the loading surface for receiving the material to be conveyed;

hydraulic means for lengthening and shortening said inlet conduit below said carriage to position said inlet opening adjacent the material to be conveyed positioned on the loading surface;

control means disposed remotely from said inlet conduit and hydraulically connected with said inlet conduit for controlling the lengthening and shortening of said inlet conduit remotely from said inlet conduit;

said inlet conduit having a flexible connection adjacent said carriage for enabling movement of the portion of said inlet conduit in a cone shaped area below said carriage to selectively position the inlet opening adjacent the loading surface;

hydraulic means mounted with said movable carriage and said inlet conduit for moving said movable portion of said inlet conduit to selectively position the inlet opening in and to thereby define said cone shaped area below said carriage; and

control means disposed remotely from said inlet conduit and hydraulically connected with said means for moving said inlet conduit for moving said inlet opening of said inlet conduit remotely from said inlet conduit wherein said inlet conduit is remotely moved by movement of said means for moving said carriage and said inlet conduit in the cone shaped area to facilitate movement of the flowable material into the inlet conduit and pneumatic conveying system by selectively positioning the inlet opening over the loading surface.

4,352,609

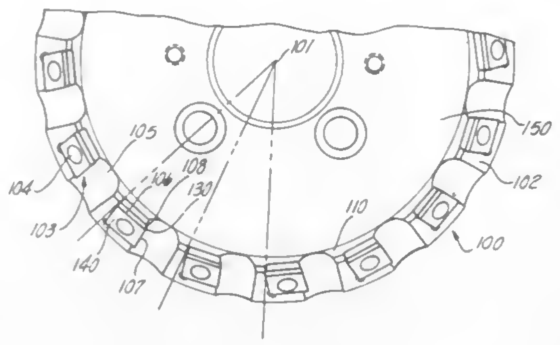
FACE MILLING CUTTER

David A. Hopkins, Troy, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Aug. 28, 1980, Ser. No. 182,229

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—42 **9 Claims**



1. A face milling cutter comprising an annular body rotatable about an axis thereof and including means for mounting and positioning in on-edge fashion a plurality of circumferentially spaced cutting inserts, such that each insert presents a principal cutting edge joined at its maximum cutting depth by a supplemental wiping edge lying substantially in the cutting plane of rotation, the intersection of the principal and supplemental edges forming a sharp corner with substantially no radius of curvature, each principal cutting edge positioned to exhibit relatively small negative inclination and positive true rake angles.

4,352,610

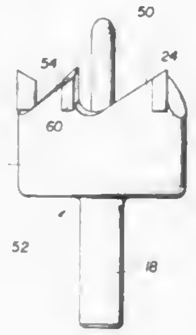
METHOD AND TOOL FOR GENERATING HOLES IN COMPOSITE MATERIALS

Alexander Yankovoy, and Theodore Ozer, both of Wallingford, Pa., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 166,868, Jul. 7, 1980. This application Sep. 30, 1980, Ser. No. 192,572

Int. Cl.³ B23B *51/04*

U.S. Cl. 408—1 R **16 Claims**



1. A trepanning tool, having an axis, for generating a hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material, when the tool, relative to the composite, is rotated about its axis in a first direction of rotation and is moved in a first axial direction against the composite, the tool including a generally cylindrical side wall having a plurality of cutting teeth spaced around one end thereof, the plurality of cutting teeth including:

at least one outwardly directed cutting tooth having a front surface disposed in the first direction of rotation of the tool, a semi-cylindrical outer surface concentrically disposed about the tool axis, and an end surface, the front, outer and end surfaces of the outwardly-directed tooth intersecting at an outer cutting end point, the front surface intersecting the end surface adjacent the outer cutting end point at an acute angle to form an outer end cutting edge, the front surface intersecting the outer surface adjacent the outer cutting end point at an angle not exceeding 90 degrees to form an outer circumference cutting edge, and the end surface intersecting the outer surface adjacent the outer cutting end point at an acute angle to form an outer trailing edge; and

at least one inwardly-directed cutting tooth, having a front surface disposed in the first direction of rotation of the tool, a semi-cylindrical inner surface concentrically disposed about the tool axis, and an end surface, wherein the front, inner, and end surfaces of the inwardly-directed tooth intersect at an inner cutting end point, the front surface intersecting the end surface adjacent the inner cutting end point at an acute angle to form an inner end cutting edge, the front surface intersecting the inner surface adjacent the inner cutting end point at an angle not exceeding 90 degrees to form an inner circumference cutting edge, and the end surface intersecting the inner surface adjacent the inner cutting end point at an acute angle to form an inner trailing edge.

14. A trepanning method of generating a hole in a composite of at least a first material and a second material having a higher modulus of elasticity than the first material, wherein an annular segment of the composite is removed to form and separate a generally cylindrical composite core from the main body of the composite, the hole being generated having an inner circumferential surface limit and a longitudinal axis, and the core being generated having an outer circumferential surface limit concentrically disposed within the inner circumferential surface limit of the hole, the method comprising the steps of:

cutting and continuously penetrating the composite at the inner circumferential surface limit of the hole and at an outer point which is simultaneously rotated in one direction about the hole axis and is longitudinally moved in one axial direction;

simultaneously cutting the composite continuously along a longitudinally extending first line at the inner circumferential surface of the hole being generated and along an outer portion of a first radius of the hole being generated which intersects the first line at the outer point at an acute angle, wherein the first line and the first radius is rotated and moved axially with the outer point to cut away an outer portion of the annular segment of the composite to be removed;

cutting and continuously penetrating the composite at the outer circumferential surface limit of the core and at an inner point which is rotated about the hole axis in the one direction of rotation and is simultaneously moved in the one axial direction with the outer point; and

simultaneously cutting the composite continuously along a longitudinally extending second line at the outer circumferential surface of the core and along an outer portion of a second radius of the hole being generated, wherein the inner end of the outer portion of the second radius intersects the second line at an acute angle at the inner point, the second line and second radius being moved with the inner point to cut away the remaining, inner portion of the annular composite segment.

4,352,611

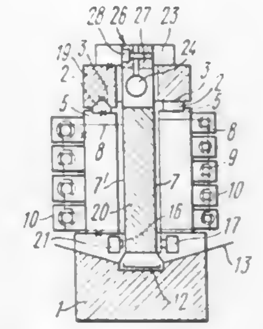
DOUBLE-ENDED MULTIPLE-SPINDLE FINE BORING MACHINE

Genrikh M. Goldraikh, ulitsa Deribasovskaya, 9, kv. 10; Askold F. Dubinenko, ulitsa Kosmonavtov, 13a, kv. 8; Leonid V. Kapitelman, prospekt Dobrovolskogo, 147/1, kv. 33; Viktor A. Krivak, ulitsa 25 Chapaevskoi divizii, 3a, kv. 44; Viktor Y. Livshits, ulitsa Srednefontanskaya, 47/51, kv. 14; Konstantin M. Manenkov, ulitsa Kosmonavtov, 19/1, kv. 24; Semen M. Khomutov, Chernomorskaya doroga, 54b, kv. 29, and Eduard N. Khomchenko, ulitsa Ilfa i Petrova, 9, kv. 13, all of Odessa, U.S.S.R.

Filed Dec. 27, 1979, Ser. No. 107,912

Int. Cl.³ B23B *41/00*

U.S. Cl. 408—37 **9 Claims**



1. A double-ended multiple-spindle horizontal-feed fine boring machine comprising:

a bed having at least one guide with bearing faces thereon;

outer platens extending vertically;

a centre platen having a working face arranged in a vertical plane;

spindle heads mounted in a vertical row on said outer platens and serving for holding cutting tools therein, said spindle heads being arranged in such a manner that their axes are parallel to said working face of said centre platen;

a device for clamping workpieces, mounted on the working face of said centre platen;

said outer platens and said centre platen mounted on said bearing faces of said at least one guide, said centre platen being capable of horizontal movement between said outer platens and to effect the feed, each one of said bearing faces being disposed above the centre of gravity of each one of said platens mounted thereon.

4,352,612

TOOL FASTENING DEVICE

Edmo Benatti, Frassine-Mantova, Italy, assignor to Sandvik-Kosta GmbH, Renningen, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,845

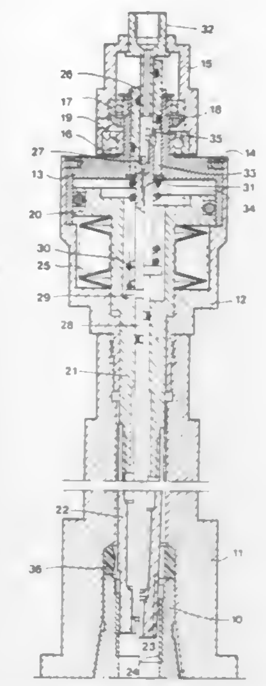
Claims priority, application Italy, Jul. 10, 1979, 18122 A/79

Int. Cl.³ B23C *5/26*

U.S. Cl. 409—233 **6 Claims**

1. Apparatus for clamping a tool holder to a spindle having a longitudinal bore, comprising: a drawbar movably mounted in said bore, a drawbar actuator for longitudinally moving said drawbar in reciprocable movement between an extended position for insertion and removal of the tool holder and a retracted position for securement of the tool holder comprising first spring means biasing said drawbar toward said retracted position, and a first actuating piston for moving said drawbar toward its extended position against the bias of said first spring means, locking means carried by said drawbar which are radially movable between a locking position for lockingly engaging the tool holder and an unlocking position for releasing the tool holder, and lock moving means for radially moving said locking means, a lock actuator comprising second spring means for biasing said lock moving means to move said locking means toward said locking position, and a second actuating piston for moving said lock moving means to move said locking means toward said unlocking position against the bias of

said second spring means, wherein said first and second pistons each have a surface exposed to a common work chamber to which pressurized fluid is supplied, the relationship between the exposed surface areas of said first and second pistons and



the biasing strengths of said first and second spring means being such that said first piston is actuated by a fluid pressure in said common work chamber which is lower than that at which said second piston is actuated.

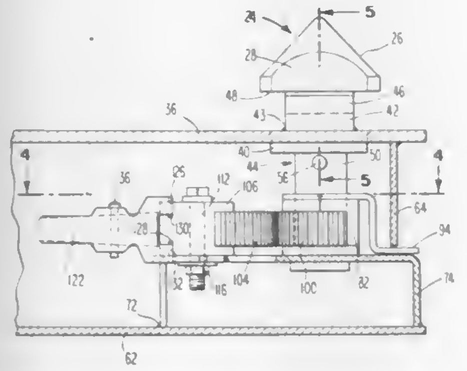
4,352,613
GEAR OPERATED TWIST LOCK

William A. Bertolini, 115-65 Undercliff Ter., Kinnelon, N.J. 07405

Continuation-in-part of Ser. No. 205,590, Nov. 10, 1980. This application Dec. 5, 1980, Ser. No. 213,836

Int. Cl.³ B60P *7/013*

U.S. Cl. 410—82 **10 Claims**



1. In a chassis for mounting a container and including front and rear bolsters having top, side and end walls; a twist lock adjacent the end of each bolster comprising a shank with a locking head thereon, said shank extending vertically through said top bolster wall and mounted for axial rotation thereon, a first gear quadrant, means mounting said first gear quadrant on said shank within said bolster for rotation with said shank, a second gear quadrant meshing with said first gear quadrant, means mounting said second gear quadrant within said bolster for rotation about an axis parallel to said shank axis, a handle extending from said means mounting said second gear quadrant whereby movement of the handle in one direction toward one of said bolster side walls will twist said shank and head 90° to its locked position and movement of the handle in an opposite direction will twist said shank and head 90° back to its unlocked position, and a releasable latch to selectively latch said second gear quadrant against rotation and to unlatch it to permit its rotation by said handle, said gear quadrants, handle and latch being confined between said sidewalls in both the locked and unlocked positions.

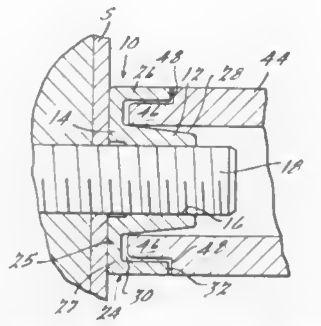
4,352,614
TAMPER RESISTANT THREADED FASTENER

Herbert L. Hirsch, Yorba Linda, Calif., assignor to Microdot Inc., Darien, Conn.

Filed Jul. 23, 1980, Ser. No. 171,367

Int. Cl.³ F16B *37/00, 23/00*

U.S. Cl. 411—427 **1 Claim**



1. A system for effecting a generally tamper resistant threaded connection,

said system comprising a nut having an internally threaded cylindrical shank and a radial flange extending substantially perpendicular to the longitudinal axis of the shank adjacent one end thereof, the flange on said nut having an integrally reentrantly formed axially extending hollow cylindrical tool engaging portion disposed at its radially outer periphery in radially spaced relation to the shank portions of said nut, said tool engaging portion having an axially facing annular edge face through which a torque may be applied to said nut,

a driving tool having a circular central recess complementary to the cylindrical shank on said nut for the acceptance thereof in guiding relationship, and

engagement means between said driving tool and the tool engaging portion of said nut for applying a torque to said nut through the tool engaging portion thereof when said driving tool is rotated in one direction, but which enables relative rotational movement between said driving tool and the tool engaging portion of said nut when said driving tool is rotated in the opposite direction,

said engagement means comprising a plurality of spaced recesses on the edge face of the tool engaging portion of said nut,

each recess having a drive surface and a slip surface, and

a like number of generally complementary shaped projections on said driving tool which are receivable within said recesses and which coact with the drive surface of each recess to establish said operative connection upon rotation of said driving tool in said one direction and with said slip surface of each recess to permit relative rotation between said driving tool and said nut upon rotation of said driving tool in the opposite direction,

the slip surface of each recess effecting axial movement of said driving tool away from the tool engaging portion of said nut and withdrawal of the projections thereon from said recesses upon rotation of said driving tool in said opposite direction,

the shank on said nut guiding said tool upon relative rotation and axial with drawal movement of said tool from said nut until the projections on said tool are completely disengaged from the drive surfaces of said recesses to preclude radial displacement of said tool relative to said nut prior to driving disengagement therebetween.

4,352,615
FEEDER FOR AUTOMATIC LATHE

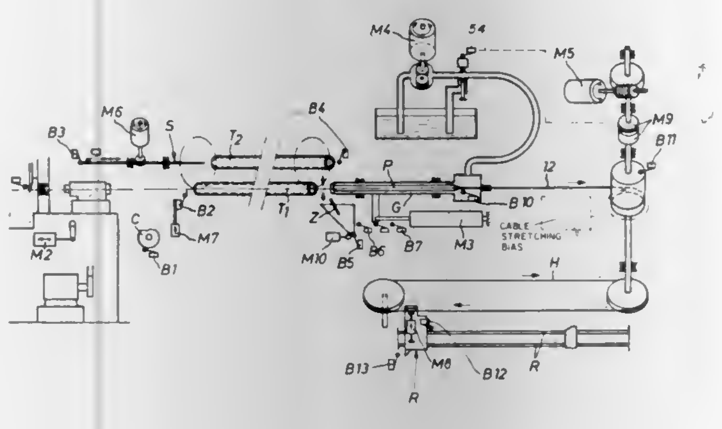
Walter Neukomm, Court, Switzerland, assignor to LNS SA, Orvin, Switzerland

Continuation of Ser. No. 39,549, May 16, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 254,014

Claims priority, application Switzerland, May 19, 1978, 5485/78

Int. Cl.³ B23B *13/00, 15/00*

U.S. Cl. 414—17 **14 Claims**



1. Bar stock feed apparatus for an automatic lathe having a headstock with a chuck, said feed apparatus comprising:

at least one tube having a front end and a rear end and arranged to be disposed in use in alignment with said headstock for guiding a piece of bar stock engaged in said headstock with the front end of said tube near said headstock and the rear end of said tube remote from said headstock;

a housing having a front part and a rear part, the front part of the housing being tubular and being disposed in alignment with said tube and having a first end near the rear end of said tube;

a plunger disposed as a piston in said housing and having a front end and a rear end and adapted to be advanced from the housing so that the front end of the plunger enters said tube and pushes said piece of bar stock toward said headstock, and then to be retracted from said tube, so as to extract a remaining stub of said bar out from the headstock and to pull it backwards within the tube for removing it from said tube through the rear end thereof;

a hydraulic system connectable to the rear part of the housing for delivering fluid under pressure into the housing in order to exert on the plunger a hydraulic force to bring about advancing movement of the plunger;

a non extensible flexible member having first and second ends and having its first end attached to the rear end of the plunger;

a first pulling device connected to said second end of said flexible member for acting thereupon with a first pulling force for maintaining said flexible member stretched during advancing movement of said plunger;

a second pulling device connectable to said second end of said flexible member for acting thereon with a second, larger, pulling force for bringing about retracting movement of said plunger; and

means for operatively connecting the second pulling device to the second end of said flexible member when the plunger is to be retracted.

4,352,616
DEVICE FOR ARRANGING OBJECTS IN STACKING LAYERS, FOR LOADING PALLETS

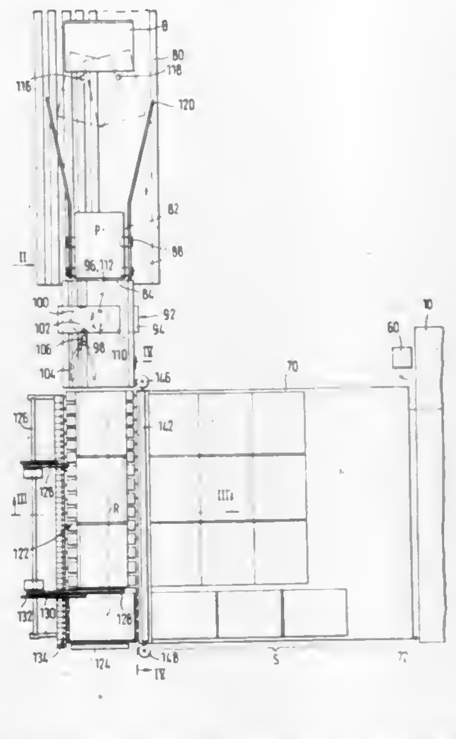
Hermann Brenner, Kunzelsau-Kocherstetten, Fed. Rep. of Germany, assignor to Grossbuchbinderei Sigloch GmbH & Co. KG, Kunzelsau, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,647

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1979, 2952624

Int. Cl.³ B65G *57/26*

U.S. Cl. 414—31 **21 Claims**



1. A process for the mechanical grouping of objects such as books or the like to be stacked into stacking tiers for loading on pallets comprising forming stacks of equal height from individual objects which are supplied flat and with like orientation, conveying a plurality of said stacks along an accumulation stretch for forming a stacking row the length of which corresponds to the transverse dimension of a pallet, rotating at least one of said stacks in said stacking row by 90° with respect to the other stacks in said stacking row during the conveying of the individual stacks, and producing a gap between said at least one of said stacks and the remainder of said stacks in said stacking row, pushing said stacking row onto an intermediate storage table in a direction transverse to its row direction, and completing a first stacking tier having the dimensions of the pallet on the intermediate storage table from a plurality of sequentially arriving of said stacking rows which are pushed on after the first, transferring the thus formed stacking tier from the intermediate storage table to a pallet, and rotating the stacks in succeeding stacking tiers in a different sequence relative to the preceding stacking tier whereby the stacks in succeeding stacking tiers deposited on the pallet are at least partially staggered or overlapping in a bond.

4,352,617
BUCKET STACKING AND CONVEYING APPARATUS

Masao Sakai, Inuyamashi, and Takayuki Nishida, Kyotoshi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Apr. 10, 1980, Ser. No. 138,876

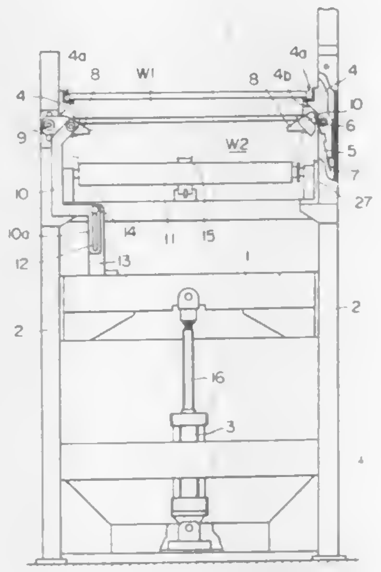
Claims priority, application Japan, Apr. 12, 1979, 54-45048; Apr. 24, 1979, 54-50983

Int. Cl.³ B65G *57/30*

U.S. Cl. 414—95 **5 Claims**

1. An apparatus for stacking conveyed objects comprising a short conveyor arranged between a carrying conveyor and a delivering conveyor for receiving objects to be stacked from the carrying conveyor stanchions positioned on both sides of the short conveyor, a lift stand arranged under the short con-

veyor movable in a vertical direction along the stanchions supporting members secured to the lift stand for movement along the stanchions in a vertical direction together with the lift stand, shafts extending parallel to the short conveyor secured to the supporting members, hook levers having upper and lower ends extending generally vertically in the direction of the stanchions pivoted centrally of the levers on the shafts for rotation about the sahfts, spring means secured to the lower ends of the hook levers away from the short conveyor and the upper end of the hook levers toward the short conveyor, an object engaging notch in the upper end of the hook levers, a camming surface on the short conveyor side of the upper end of the hook levers and stop plates positioned substantially at the level of the short conveyor for engaging the camming surface on the hook levers to move the bottom of the hook levers toward the short conveyor on movement downwardly of the lift stand, supporting members and hook levers, whereby on movement upwardly of the lift stand the upper part of the hook levers rotate toward the short conveyor on disengagement of the cam surface from the stop plates to engage an object positioned on the short conveyor in the hook lever object engaging notches to lift the object above the short conveyor and on downward movement of the lift stand the lower ends of the hook levers are again moved toward the short conveyor by the stop plates to disengage the hook levers from objects positioned on the short conveyor, a stop lever pivotally mounted on one of the stanchions adjacent the short conveyor for pivotal movement into an out of the path of an object positioned on the short conveyor and an actuating link pivotally secured to the lever and carried by the lift stand for vertical movement therewith to pivot the stop lever into the path of an object on the short conveyor on movement of the lift stand vertically upwardly and to pivot the stop lever out of the path of a bucket moving on the short conveyor on movement of the lift stand vertically downwardly, including a lost motion connection between the actuating link and lift stand whereby actuation of the stop lever is accomplished during the last portion of movement of the lift stand in either direction.



4,352,618

METHOD OF, AND APPARATUS FOR PREVENTING THE UNINTENDED CHARGING OF COKE OVEN CHAMBERS

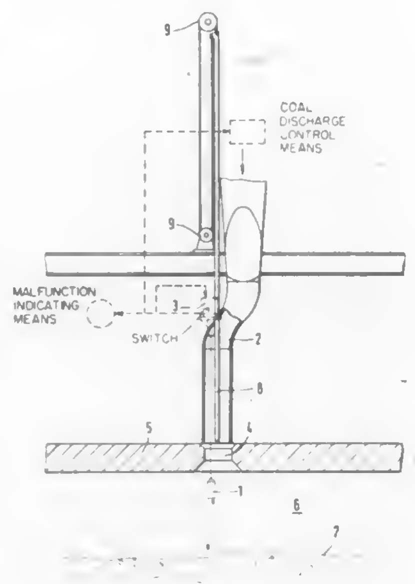
Claus Flockenhaus; Horst Joseph, both of Essen, and Joachim Meckel, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,766

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918151

Int. Cl.^{3} C10B *31/04*

U.S. Cl. 414—148 **12 Claims**



11. Apparatus for preventing unintentional charging of coal from a coal supply device through a charge pipe and a charge hole in the ceiling of a plurality of coke ovens, the apparatus comprising means for lowering a single one of obstruction sensors through the charge hole of and into a respective one of the coke ovens; means for lowering a filling level indicating probe into a respective one of the coke ovens in the event the sensor fails to encounter an obstacle during its descent; and means for blocking the initiation of a coal charging operation for the respective coke oven in the event the descending sensor encounters an obstruction in this respective coke oven.

4,352,619

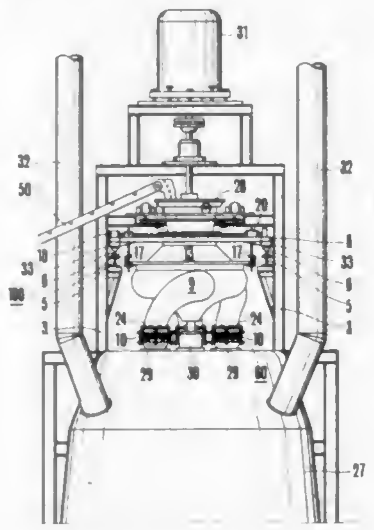
BLAST FURNACE INSTALLATIONS

Kiyotoshi Sakai, 4-402 Tsuchitori 5-chome, Tobata-ku, Kita-Kyushu City, Fukuoka Prefecture, Japan

Filed Aug. 26, 1980, Ser. No. 181,356

Int. Cl.^{3} F27B *1/20*

U.S. Cl. 414—174 **4 Claims**



1. In a blast furnace, installation of the type comprising a blast furnace and raw material charging apparatus including a hollow inverted frustum shaped rotary hopper supplied with raw material, an impeller located beneath said hopper for receiving the raw material therefrom, and inclined chute means surrounding the impeller and connected to the blast furnace for receiving the raw material discharged from the impeller to supply the raw material to the interior of said blast furnace, the improvement comprising means defining a support independent of the furnace, a first carriage mounted on the support for movement from a position above the furnace to a lateral position, tackle adjustably suspending the inclined chute from the carriage clear of the furnace such as to bear the weight of the inclined chute and to enable moving the inclined chute to a lateral position by lateral movement of the first carriage for dismantling the inclined chute from the furnace and a second carriage mounted on the support below the first carriage for receiving the inclined chute at said lateral position and moving it from said lateral position to a position to clear it of the overlying first carriage.

4,352,620

INDUSTRIAL ROBOT

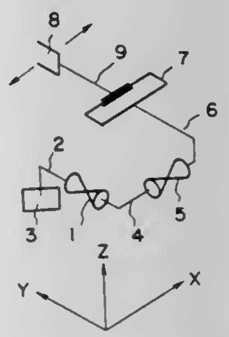
Hajimu Inaba; Seiichiro Nakajima, both of Hino, and Shigemi Inagaki, Musashino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jun. 25, 1980, Ser. No. 162,878

Claims priority, application Japan, Jun. 30, 1979, 54-082782

Int. Cl.^{3} B25J *3/00*

U.S. Cl. 414—225 **22 Claims**



1. An industrial robot which comprises:

a first rotation drive mechanism;

an arm rotatably supported by said first rotation drive mechanism; and

a second rotation drive mechanism supported by said arm so that the attitude of said second rotation drive mechanism is changed by rotation of said first rotation drive mechanism, the axis of rotation of said second rotation drive mechanism being disposed substantially perpendicular to the axis of rotation of said first rotation drive mechanism.

4,352,621

APPARATUS FOR PARKING MOTOR VEHICLES

Ernst E. Kühner, 8 Fere-Champenoise-Strasse, D-7501 Bruchausen, and Dieter G. Weinstein, Waldbronn, both of Fed. Rep. of Germany, assignors to Ernest E. Kühner, Bruchhausen, Fed. Rep. of Germany

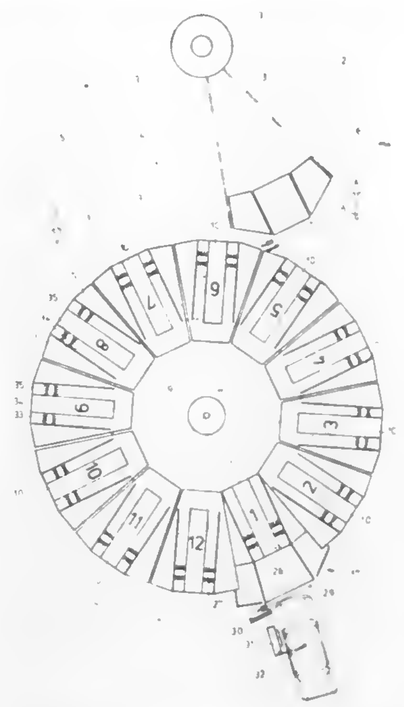
Continuation-in-part of Ser. No. 883,153, Mar. 3, 1978, abandoned. This application Nov. 6, 1980, Ser. No. 204,516

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709202

Int. Cl.^{3} E04H *6/40*

U.S. Cl. 414—231 **12 Claims**

8. In an apparatus for parking motor vehicles on pallets, the pallets being arranged next to one another on a movable supporting construction, the movable supporting construction being rotatable about a central column by a drive means such that the supporting construction can be positioned at a desired position in its path of movement, including a rotary rim connected to the supporting construction, said rotary rim being provided with a plurality of teeth, a transmission means including a pinion adapted to mesh with the teeth of the rotary rim, an increment transmitter driven by the supporting construction through said transmission means for supplying actual value signals representative of an actual position of the supporting construction, the improvement comprising:



first means to control said drive means to reduce speed thereof when a selected pallet to be positioned at said desired position assumes a predetermined position prior to arriving at said desired position.

4,352,622

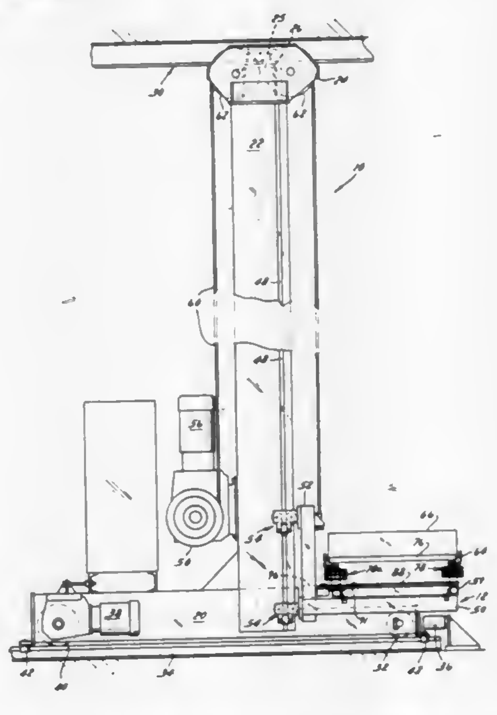
WAREHOUSE CRANE WITH PIN-ENGAGEABLE TOTE PANS

John E. Wieschel, Hartland, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Dec. 23, 1980, Ser. No. 219,446

Int. Cl.^{3} B65G *47/00*

U.S. Cl. 414—277 **6 Claims**



1. In a warehouse crane having individual storage areas for containing tote pans, said tote pans having opposite end walls, each with a handle, a pair of reversibly driven, counterrotating endless chains mounted on said crane and for movement about a generally horizontal, orbital path, each of said chains also having a radially inner pin and an outer pin attached to and for movement with their respective chain in orbital paths, said inner pin being pushingly engageable with said handles to push

said pans into said storage areas, and said outer pin being releasably engageable with said handle of said pans to pull and push said pans from said storage area, said inner pin being attached to said chain with a first arm and said outer pin is attached to said chain with a second arm, said second arm being longer than said first arm, both said first and said second arm having its pin-attached end positioned outwardly of said chain path.

4,352,623

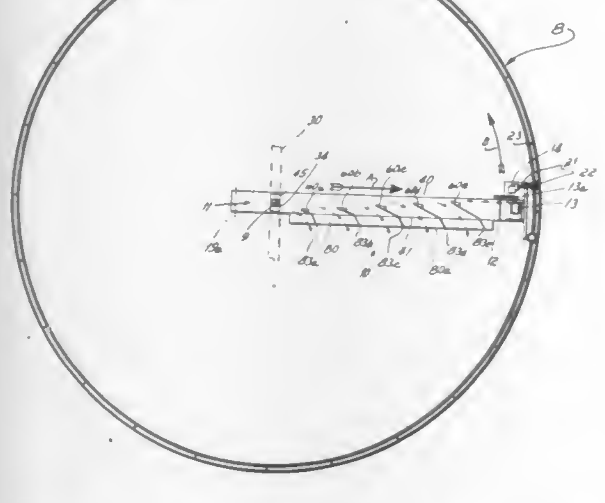
GRAIN DISTRIBUTOR AND METHOD

George W. Smiley, Rte. 4, Greensburg, Ind. 47240

Filed Aug. 8, 1979, Ser. No. 64,875

Int. Cl.^{3} B65G *65/32*

U.S. Cl. 414—294 **27 Claims**



16. Apparatus for dropping grain into a bin to fill said bin evenly, said apparatus comprising:

a conveyor means for moving grain thereon radially with respect to said bin between a central area of said bin and a periphery thereof, and being rotationally mounted for sweeping around said bin in a horizontal circular plane,

a plurality of sweeper bar means extending at an angle across said conveyor means to divert sequential portions of grain off a side of said conveyor means, said sweeper bar means each extending respectively further across said conveyor means than a preceding sweeper bar means downstream thereof, and

a transition plate means extending along one edge of said conveyor means for receiving grain directed by said sweeper bar means and guiding said grain from said conveyor means into said bin, and

a plurality of grain engaging vane means on said transition plate, said vane means in register with said sweeper bars for directing grain into said bin.

4,352,624

REFUSE COMPACTION TRAILER

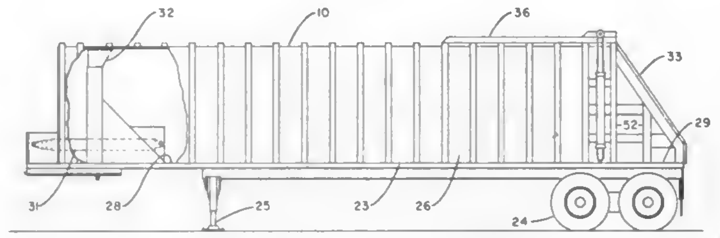
Tom T. Matsumoto, 889 Spinosa Dr., Sunnyvale, Calif. 94087, assignor to Tom T. Matsumoto, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 903,426, May 8, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 104,138

Int. Cl.^{3} B65G *67/04, 67/24*

U.S. Cl. 414—400 **3 Claims**

1. A refuse transport vehicle capable of use with a stationary refuse compactor of the type that has a refuse chamber supported above a horizontal surface, a loading hopper above the chamber and communicating therewith for affording introduction of refuse into the chamber, said chamber having a horizontal extension terminating in a discharge opening, and a packing head for reciprocal movement within the chamber to move refuse horizontally therein through the discharge opening, said vehicle comprising a floor, first and second side walls and a top wall forming a closed body having a rearward opening of general rectangular cross-sectional shape and sized to receive said chamber extension therein, said floor and said top wall having rear extremities, the rear extremity of the floor being rearward of the rear extremity of the top wall by a given distance and said side walls having sloped edge portions extending between the rear portions of said floor and top wall so that said vehicle can be moved on said horizontal surface beneath said discharge opening with the vehicle body surrounding said extension, with the rear extremity of the floor rearward of the discharge opening and with the rear extremity of said top wall free of said loading hopper, first and second guide tracks having portions mounted to the sloped edge portions of respective said side walls in confronting relation across said rearward opening, a door spanning the space between said tracks and slidably supported therein for closing said rearward opening, said guide tracks having portions remote from said rearward opening and attached to the exterior of said body for affording movement of said door clear of said rearward opening and in non-obstructing relation to said loading hopper.



4,352,625

CONTAINER HANDLING APPARATUS

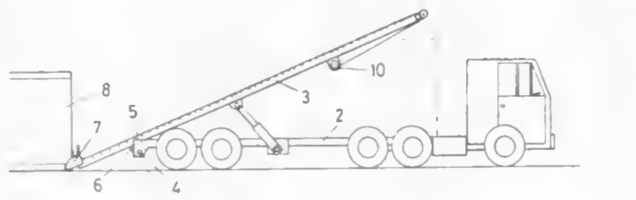
Jack Bolderoff, 18 Hooke Rd., Elizabeth West, Australia (5112)

Filed Apr. 22, 1980, Ser. No. 142,761

Claims priority, application Australia, Apr. 23, 1979, PD85006

Int. Cl.^{3} B60P *1/00*

U.S. Cl. 414—494 **4 Claims**



1. In a system for handling sea containers to secure such a container in a loaded position on a vehicle, a tiltable support frame on the vehicle adapted to support a sea container having a forward and rearward end, said support frame in its tilted position having one of its ends adjacent the surface on which the vehicle rests, and means for moving the container along said support frame, the improvement characterized by a cross member movable along said support frame and having means to lock onto the sea container, said means for moving the container being attached to said cross member whereby said container may be drawn along said support frame by and during movement of said cross member, said cross member including stop and locating pins fixedly mounted thereon to engage openings in the forward end of the base of the container and also including a set of forward locking pins on locking plates pivotally mounted on the cross member to be engageable with apertures at the sides of the base of the container at the forward portion thereof, actuating means being provided to pivot the plates toward and away from each other to engage the second-named pins in said apertures in the sides of the base of the container, and a set of rearward locking pins engageable with apertures at the rear of the container base to secure the container in the loaded position, each pin in the rearward set being supported by a movable carriage, and means for moving

the carriages toward and away from the container to engage and disengage the pins.

4,352,626

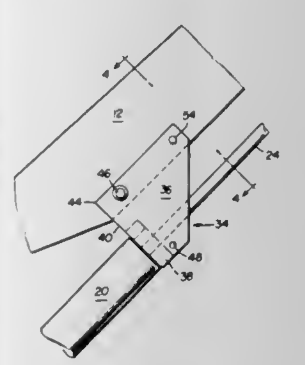
LOADER ARM POSITIONING DEVICE

Claude M. Frisbee, Bettendorf, and David H. Seaberg, Davenport, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Dec. 22, 1980, Ser. No. 219,077

Int. Cl.^{3} B66C *23/00*

U.S. Cl. 414—722 **1 Claim**



1. In a tractor carrying a front end mounted bucket assembly including boom arms which are pivotally secured to the tractor on opposite sides of its frame for swinging movement parallel to a longitudinal vertical plane and corresponding lift cylinders disposed directly beneath the boom arms for raising and lowering the boom arms, each lift cylinder including an end portion and a piston rod connected to its corresponding boom arm, the improvement comprising:

a locking device pivotally connected to one of said boom arms and said locking device being selectively movable between an inoperative position where the locking device is out of the way so that it will not interfere with the normal operation of the boom arm and an operative position between the boom arm and the corresponding lift cylinder for the boom arm where the locking device is restrained in compression to secure the boom arm and lift cylinder in a raised position against collapsing movement;

said locking device including a pair of spaced apart, parallel, and aligned mounting plates, each mounting plate being generally in the form of a right triangle, a generally U-shaped yoke fixed between said mounting plates and extending along opposed corresponding sides of the mounting plates for a part of their length, said yoke including an open portion that extends outwardly away from the right angle corners of the mounting plates, and said mounting plates being pivotally attached to opposite sides of said boom arm;

a lock pin passing through a first set of opposed openings in said mounting plates and a latch opening through said boom arm for holding said locking device in its inoperative position where one side of said yoke is held in a substantially abutting relationship with the underside of said boom arm and the side surfaces of said mounting plates being held in alignment with opposite sides of said boom arm which is sandwiched therebetween; and

said lock pin being selectively removed and reinserted through a second set of opposed openings through said mounting plates and said boom arm latch opening such that said locking device assumes its operative position whereby said yoke abuts the end portion of said lift cylinder and straddles the lift cylinder piston rod thereby providing a rigid strut between the lift cylinder and boom arm to support the boom arm in a raised position against collapsing movement.

4,352,627

LOADING DEVICE FOR A PRESS

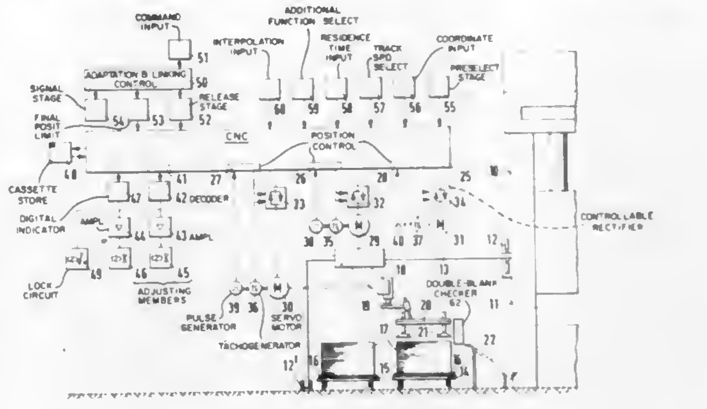
Franz Schneider, Göppingen, and Rolf Rühl, Rechberghausen, both of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Göppingen, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 981

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800381

Int. Cl.^{3} B30B *15/30*

U.S. Cl. 414—752 **13 Claims**



1. A loading device for loading blanks from a stack into a tool chamber of a press having a main press drive, comprising:

a guide frame located adjacent the press and extending over the stack of blanks;

a carrier mounted on said guide frame;

a support mounted on a guide element of said carrier;

a first numerically controlled drive means to move the carrier along said guide frame in a first direction;

a second numerically controlled drive means to move the support in the guide element in a second direction perpendicular to the first direction;

gripper elements, wherein said gripper elements can be moved laterally outside of an area under said carrier frame into the tool chamber of the press to lift workpieces from the stack and deliver them into said press working area;

a plurality of adjustable drive means controlled by a numerical control unit which is independent of the press drive means, said adjustable drive means being coupled to the gripper elements to move the gripper elements in either of said first and second directions to remove blanks from the stack and carry them along a preselected path outside of the area under the carrier frame and into the tool chamber; and

means for checking for double blanks being lifted from the stack by the gripper elements.

4,352,628

METHOD FOR POSITIONING PORTABLE STRUCTURES

William J. Rogers, Jr., 4449 Park Blvd., Oakland, Calif. 94602

Division of Ser. No. 840,752, Oct. 11, 1977, Pat. No. 4,200,419. This application Nov. 15, 1979, Ser. No. 94,468

Int. Cl.^{3} B66F *7/12*

U.S. Cl. 414—786 **2 Claims**

1. A method of positioning two portable structures in a side by side contiguous relationship comprising the steps of:

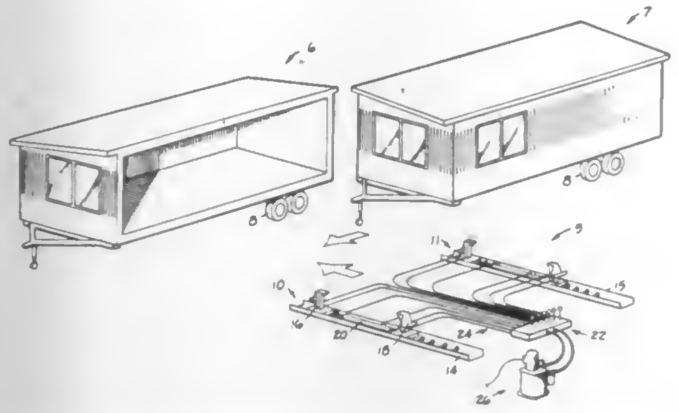
(1) moving the first portable structure to a predetermined position

(2) leveling the first portable structure

(3) putting the vertical members of the first portable structure into plumb by supporting the first portable structure asymmetrically so that the structure simultaneously rotates about the longitudinal and about the lateral axis while concurrently observing the plumb of the vertical members of the first portable structure

(4) moving the second portable structure along its longitudinal axis to a position adjacent the first portable structure

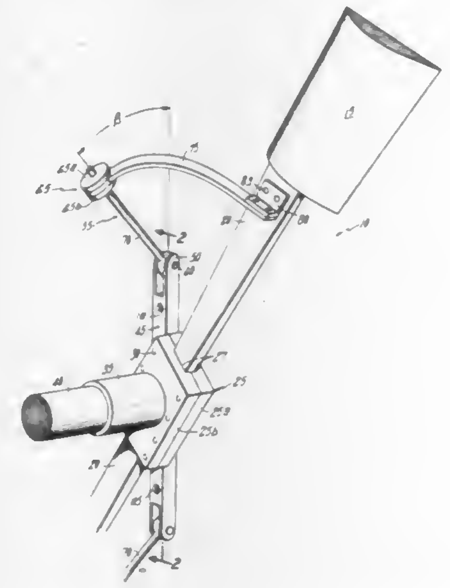
(5) moving the second portable structure laterally to a position contiguous the first portable structure
(6) leveling the second portable structure
(7) moving the plane of the floor of the second portable structure into the plane of the floor of the first portable structure



(8) putting the vertical members of the second portable structure into plumb by supporting the second portable structure asymmetrically so that the structure simultaneously rotates about the longitudinal and about the lateral axis while concurrently observing the plumb of the vertical members of the second portable structure.

4,352,629
WIND TURBINE

Marvin C. Cheney, Jr., Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 19, 1981, Ser. No. 312,604
Int. Cl.^{3} F03D *7/04*
U.S. Cl. 416—18 **9 Claims**

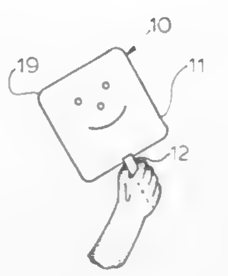


1. In a wind turbine comprising a rotatable hub, at least one torsionally flexible beam including portions extending outwardly of said hub for rotation therewith, an airfoil blade fixed to each said outwardly extending beam portion for rotation therewith and a governor connected to each said beam portion, said governor being responsive to rotor speed by movement along a predetermined path for torsionally twisting said beam portion, thereby adjusting the pitch of said blade from a position corresponding to low pitch at static or negligible wind velocity conditions for turbine self-starting to a position of increased pitch for increasing the speed of rotation of said wind turbine with increasing wind speed, the improvement characterized by:

means carried by said hub and engaging said governor thereby limiting the movement thereof for restricting continued pitch change of said blade at a predetermined turbine operating speed due to torsional creep of that flexible beam to which said blade is fixed, and being released from said governor for allowing continued torsional twisting of said beam to orient said blade in a stall position at excessive turbine speeds for preventing further overspeed operation of said wind turbine.

4,352,630
HAND FAN ASSEMBLY AND KIT

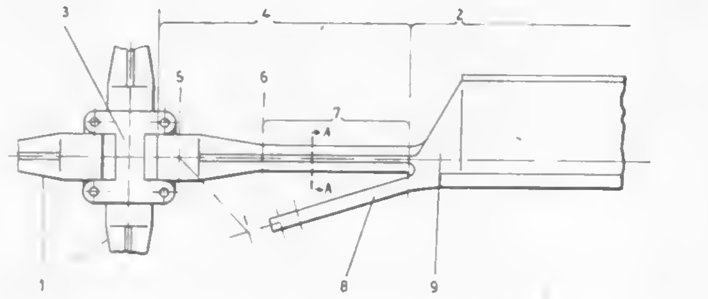
William H. Wallo, Clearwater, Fla., assignor to Francis & Lusky Company, Inc., Nashville, Tenn.
Filed May 1, 1980, Ser. No. 145,718
Int. Cl.^{3} A45B *27/00;* **B65D** *27/00;* **A63H** *9/00*
U.S. Cl. 416—70 A **25 Claims**



1. A method of making hand fan assembly, comprising:
forming a fan body with an elongate handle socket extending inwardly from one edge of said body;
providing an elongate handle with a hand grip portion and an extension stem projecting from said hand grip portion and adapted to be received in said socket;
providing means for retaining said stem in said socket and thus maintaining said handle in functional assembly with said fan body;
forming said body from a pair of laminar panels;
and preforming matching offsets in said panel defining said socket in the laminar relation of said panels.

4,352,631
HINGELESS ROTOR, ESPECIALLY FOR A HELICOPTER

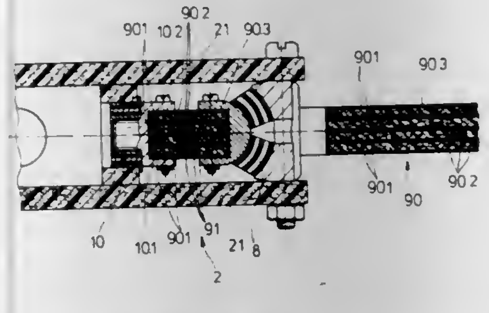
Wolfgang Buchs, Valley; Franz Nowak, Taufkirchen, and Rudolf Woerndle, Brunnthal, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Apr. 17, 1980, Ser. No. 141,281
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917301
Int. Cl.^{3} B64C *27/38*
U.S. Cl. 416—134 A **18 Claims**



1. A connecting element (**4**) for securing a rotor blade (**2**) to a rotor hub (**3**) without hinging means, especially for a helicopter, comprising a torsion hinge zone (**7**) including at least two components (**10, 11, 12, 13**) connected to each other so that the components include an angle and form a common shearing axis (**14**), said components of said torsion hinge zone (**7**) being so dimensioned in their respective cross-section that at least one component extends with two sides outside of the other component whereby the other component is substantially enclosed and contacted by said one component, and slot means (**15, 16**) extending longitudinally through the connecting element at least in one of said two components, said slot means extending substantially radially toward said central shearing axis (**14**), whereby each connecting element functions as a flapping hinge (**5**), as a lead-lag hinge (**6**), and as a torsion hinge (**7**).

4,352,632
ROTOR MOUNTING ASSEMBLY FOR ROTARY WING AIRCRAFT

Alois Schwarz, Putzbrunn; Karlheinz Mautz, and Alexander Schröder, both of Ottobrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany
Filed Feb. 4, 1981, Ser. No. 231,042
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006088
Int. Cl.^{3} B64C *27/38*
U.S. Cl. 416—134 A **5 Claims**

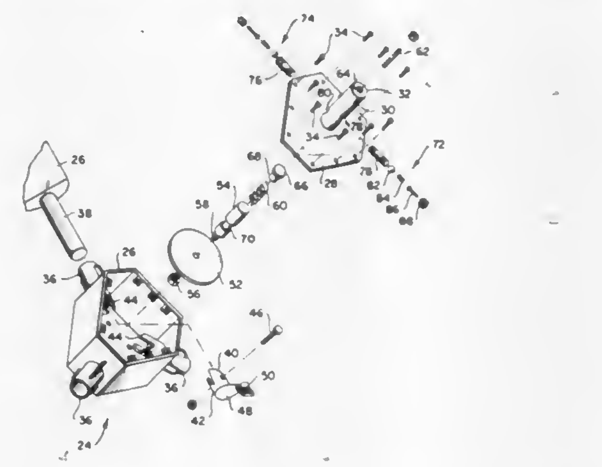


1. In a rotor head mounting assembly for the rotor of rotary wing aircraft having rotor blades each including a blade root pivotally supported at a rotor head by blade angle bearings, said rotor head being formed as an integral body of composite fiber material shaped to define a plurality of bifurcated rotor blade mounting support arms each having a rotor blade mounted therebetween, said rotor head being essentially composed of generally congruent plate members with intermediate spacer means located therebetween, said plate members and said spacer means being integrally joined together to form said rotor head as a unitary body of composite fiber material, each of said mounting support arms being equipped with load-bearing connection means for mounting between the sides of each of said bifurcated support arms a rotor blade root, said connection means being formed to enable bearing of compressive stresses in the longitudinal direction of a rotor blade while allowing angular movement of said blade, the improvement comprising that said rotor blades are formed at least in the region of said blade roots with a laminated configuration of composite fiber material, that at least two layers of said laminated configuration are formed with a fiber loop having a unidirectional fiber orientation which extends longitudinally of said rotor blade and about said load-bearing connection means and about its support point at the side of said blade root, that an intermediate layer having a crosswise fiber orientation is provided between each of said at least two layers which integrally joins said two layers, and that said fiber loop is enclosed by support members at its longitudinal edges at the inside and outside thereof at least in the region of said load-bearing connection means.

4,352,633
WINDMILL BLADE STALLING AND SPEED CONTROL DEVICE

Devon E. Tassen, 10335 Old 44 Dr., Millville, Calif. 96062
Filed Apr. 25, 1980, Ser. No. 143,728
Int. Cl.^{3} F03D *7/02, 7/04*
U.S. Cl. 416—137 **6 Claims**

1. In combination with a windmill hub which is rotatable about an axis of rotation and supports the blades of a windmill, said hub including a casing, blade support means mounted upon the casing to receive and support a shaft for at least one windmill blade for rotational movement relative to said support means to alter the pitch of the windmill blade associated therewith, a windmill blade stalling and speed control device comprising pitch biasing means mounted upon said casing to oppose centrifugal force induced relative movement in at least one direction between said shaft and blade support means, said pitch biasing means including shaft movement responsive means which moves in response to centrifugal force induced relative movement between said shaft and blade support means, said shaft movement responsive means including a stub shaft movable longitudinally away from said hub against said pitch biasing means as the centrifugal force increases, and stage adjustment means mounted upon said casing for aiding said biasing means and increasing the opposition to said relative movement between said shaft and blade support means when said windmill hub and the blades supported thereby reach an entry speed of rotation within at least one of a plurality of sequential predetermined rotational speed ranges and to automatically cease to aid said opposition when the speed of rotation of said windmill hub and the blades supported thereby exceeds the last of the sequential predetermined rotational speed ranges, said stage adjustment means including at least one detent formed in the surface of said stub shaft intermediate its ends and biased bearing means mounted on said casing for engaging said detent when said stub shaft moves longitudinally to bring said detent into alignment with said bearing means, said bearing means including at least first and second detent assemblies spaced longitudinally along said stub shaft, each said detent assembly including a bearing member for engaging said detent, detent biasing means for biasing said bearing member toward said stub shaft and adjustment means for adjusting the bias of said detent biasing means, whereby said longitudinally spaced bearing members sequentially engage said detent as said stub shaft moves longitudinally to provide at least two separate impediments to longitudinal movement of said stub shaft and, thereby, to increase opposition to relative movement between said shaft and blade support means.

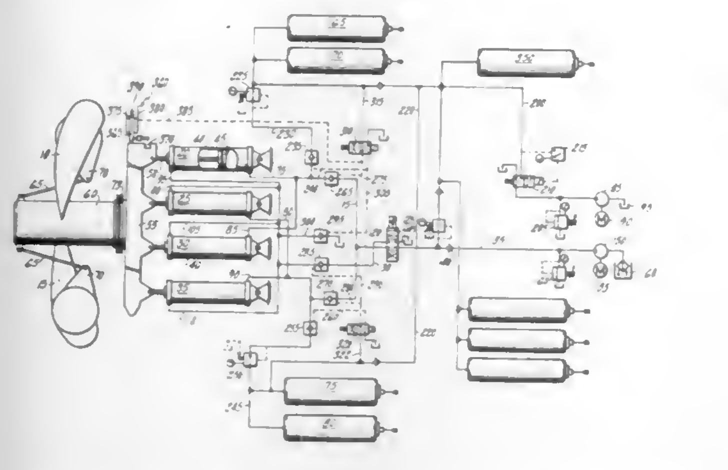


4,352,634
WIND TURBINE BLADE PITCH CONTROL SYSTEM

Merritt B. Andrews, Westfield, Mass., assignor to United Technologies Corporation, Hartford, Conn.
Filed Mar. 17, 1980, Ser. No. 130,657
Int. Cl.^{3} F03D *7/04*
U.S. Cl. 416—154 **13 Claims**

1. A system for controlling the pitch of wind turbine blades, said system comprising a first source of pressurized hydraulic fluid; an hydraulic actuator connected to, and driving said blades in pivoting movement about the longitudinal axes thereof in response to the introduction of pressurized hydraulic fluid into said actuator for adjusting blade pitch; a first control valve for controlling the introduction of said pressurized hydraulic fluid to said actuator for normal blade pitch adjustment; at least one second source of pressurized hydraulic fluid independent of said first source thereof and supplied to said actuator for feathering said blades, and second control valve means communicating with said first and second hydraulic

fluid sources for controlling the introduction of said hydraulic fluid from said second source to said actuator while maintaining isolation of said second fluid source from said first fluid source and said first control valve and for isolating said first source and said first control valve from hydraulic fluid drained from said actuator during blade feathering thereby preventing the impediment of fluid supply to, and drain from, said actuators during blade feathering by malfunction of said first source of pressurized hydraulic fluid or said first control means.



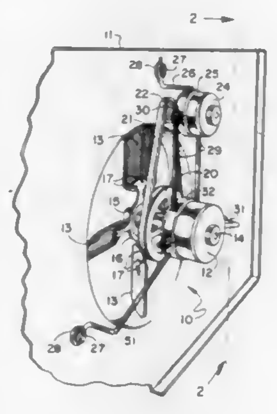
4,352,635
MULTI-SPEED FAN ASSEMBLY

James F. Saunders, Onalaska, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jul. 16, 1980, Ser. No. 169,333

Int. Cl.³ F04B *49/02, 35/04;* H02D *1/58*

U.S. Cl. 417—16 **9 Claims**



1. A multi-speed fluid impeller apparatus for use in moving air in a system having two or more stages of operation, said apparatus comprising

a. a rotating fluid impeller;

b. a shaft centrally connected to the fluid impeller;

c. a first electric motor, having a rotor attached to the shaft for drivingly rotating the impeller;

d. a second electric motor, having a rotor drivingly connected to the shaft to rotate the impeller at a slower speed than the first electric motor, wherein only one of the first and the second electric motors is provided with a start winding and the other is not; and

e. control means for selectively energizing the first and second electric motors, the second electric motor being energized during operation of the first stage and the first electric motor during operation of all stages, said control means being further operative to energize said one of the electric motors long enough to bring said other electric motor up to operating speed and then energizing said other electric motor to start it.

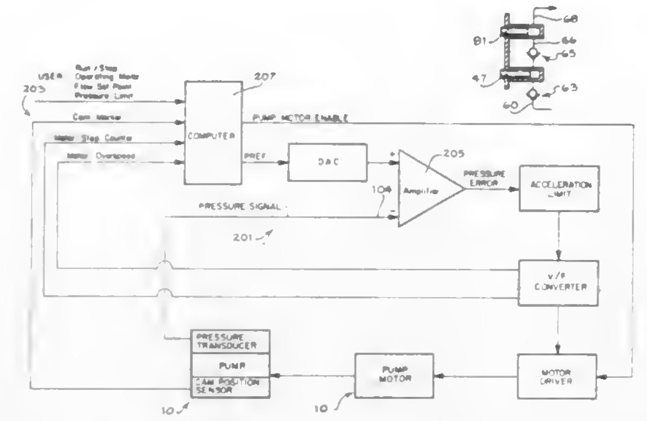
4,352,636
DUAL PISTON PUMP

Williams G. Patterson, Palo Alto; Allen B. Rochkind, Santa Cruz; Leslie A. Miller, San Jose, and Martin P. T. Bradley, Cupertino, all of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Apr. 14, 1980, Ser. No. 139,648

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—22 **23 Claims**



1. A pump for producing a continuous outflow of liquid at relatively high pressure and comprising,

pressure piston means for pressurizing the liquid,

said pressure piston means including a pressure piston movable through suction and expulsion strokes,

damper piston means for storing some of the liquid displaced by the pressure piston during the expulsion stroke of the pressure piston and for delivering the stored pressurized liquid to an outlet of the pump during the suction stroke of the pressure piston,

said damper piston means including a damper piston movable through storage and expulsion strokes,

connecting means connecting the pressure piston means and the damper piston means in series with the flow outlet from the pressure piston means connected to the flow inlet to the damper piston means,

drive means for driving the pressure piston and damper piston in cooperation to produce a continuous outflow of pressurized liquid from the damper piston during all conditions of movement of the pistons,

said drive means including a rotatable cam shaft, a pressure piston drive cam mounted on the cam shaft, and a damper piston drive cam mounted on the cam shaft,

the cams being contoured to produce, at a constant speed of rotation of the cam shaft, a constant amount of outflow of pressurized liquid from the damper piston at all points in the cycle of rotation of the cam shaft except for a short interval at the beginning of the expulsion stroke of the pressure piston and an increased amount of outflow during said short interval,

control means for slowing down the speed of rotation of the cam shaft during said short interval to produce the same amount of outflow as produced during the rest of the cycle of rotation of the cam shaft,

sensing means for sensing the increase of outflow from the damper piston during said short interval and for supplying a feedback control signal to the control means, and

wherein the control means include a first digitally operated control loop which controls the speed of rotation of the cam shaft except during said short interval and wherein the control means include an analog operated control loop which controls the speed of rotation of the cam shaft during said short interval at the beginning of the expulsion stroke of the pressure piston.

16. A method of producing a continuous flow of liquid at relatively high pressure from a pump and comprising,

connecting a pressure piston assembly and a damper piston assembly in series with the outlet of the pressure piston assembly connected to the inlet of the damper piston assembly,

pressurizing the liquid by moving a pressure piston through a long inlet stroke and a relatively short expulsion stroke, and

smoothing out the outflow from the pressure piston by moving a damper piston in cooperation with the movement of the pressure piston,

said smoothing out step comprising,

storing some of the liquid displaced by the expulsion stroke of the pressure piston in the damper piston assembly during the inlet stroke of the damper piston and

delivering the stored pressurized liquid to the outlet of the pump during the expulsion stroke of the damper piston.

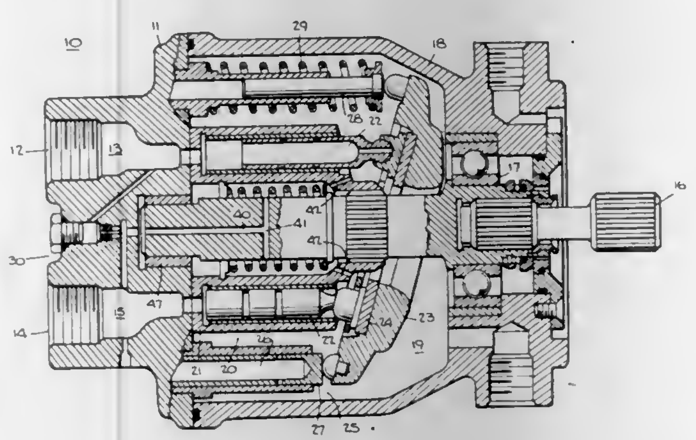
4,352,637
JET COOLING PUMP

Charles O. Weisenbach, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Jun. 4, 1980, Ser. No. 156,522

Int. Cl.³ F04B *23/10*

U.S. Cl. 417—54 **7 Claims**



1. A variable displacement pump comprising

a pump having an inlet cavity adapted to be connected to a source of inlet fluid,

an oulet chamber for receiving outlet fluid of the pump,

a casing enclosing a casing chamber and a pumping assembly for drawing fluid from the inlet into the pumping assembly and discharging fluid under pressure into the outlet chamber,

a displacement control operatively associated with the pumping assembly for controlling the output pressure or flow or both of the variable displacement pump, and adapted to maintain the output pressure of the pump at a predetermined value when the output flow of the pump is nill, thereby causing the temperature of the fluid in the pump and the pump itself to rise,

cooling means for drawing inlet fluid into the pump casing for cooling the pump and the fluid therein comprising:

(a) an inlet cavity in fluid communication with the inlet chamber and the casing chamber,

(b) a jet pump operative associated with the inlet cavity and the casing chamber for providing a high velocity stream of fluid directed along a path through the inlet chamber and into the casing chamber, whereby fluid in the inlet cavity is entrained by the jet stream and carried along with the stream into the casing chamber.

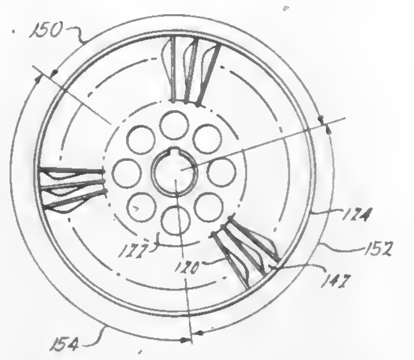
4,352,638
ROTOR ASSEMBLY FOR WAVE COMPRESSION SUPERCHARGER

James K. Vallance, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 5, 1979, Ser. No. 90,948

Int. Cl.³ F04F *11/02*

U.S. Cl. 417—64 **4 Claims**



1. A compressor for compressing air supplied to an engine having an air intake manifold and an exhaust gas manifold comprising:

a rotor mounted for rotation having a plurality of vanes disposed around the rotor circumference defining axially and radially extending cells therebetween, said vanes being arranged in zones, the vanes of each zone being spaced from adjacent vanes of that zone by a substantially equal distance, the spacing between the vanes of a zone being different from the vane spacing of any other zone, the vanes include a flange portion that extends around the periphery of said rotor vane and a stiffening bead extending axially and radially along the vane and outwardly from the vane surface having a plurality of transition regions extending to the crest of the bead from the flange portion;

an inlet exhaust gas port disposed at a first axial end of said rotor through which high pressure engine exhaust gas enters the rotor cells from the engine exhaust gas manifold;

an outlet exhaust gas port disposed at the first axial end of said rotor through which the engine exhaust gas exits the rotor cells and is returned to the engine exhaust manifold;

an air inlet port disposed at a second axial end of said rotor through which low-pressure air enters the rotor cells;

an air outlet port disposed at a second axial end of said rotor through which the air at a higher pressure exits the rotor cells and is directed to the engine inlet manifold;

wherein engine exhaust gas and air enter and exit the rotor cells as the cells rotate into alignment with the exhaust gas and air inlet and outlet ports whereby the low pressure air is compressed within the cell by the action of a pressure wave that travels axially from the first to the second rotor end, the pressure wave being produced by the engine exhaust gas that enters said inlet exhaust gas port.

4,352,639
PNEUMATIC PUMP

Henry S. Siemsen, Los Angeles, Calif., assignor to Bryce Bowmar, Burbank, Calif.

Filed Nov. 7, 1980, Ser. No. 204,864

Int. Cl.³ F04B *1/06*

U.S. Cl. 417—134 **6 Claims**

1. In a pneumatic pump:

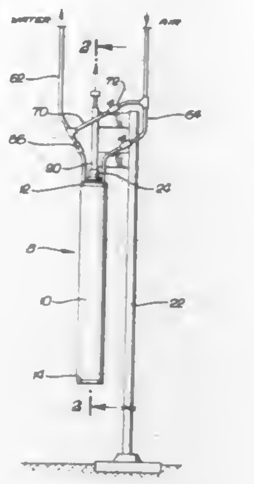
(a) a hollow pump casing;

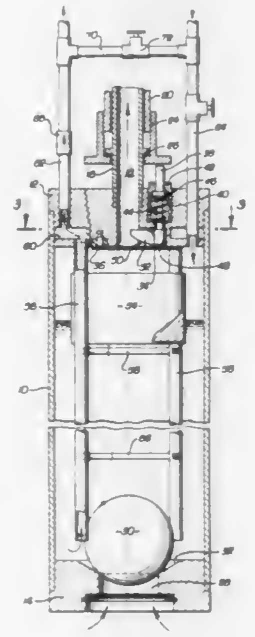
(b) a relatively fixed guide means supporting the pump casing for limited vertical movement in accordance with its positive and negative buoyancy;

(c) means forming a vent opening adjacent the upper end of the casing;

(d) a valve normally closing the vent opening;

(e) conduit means for continuously admitting air under pressure into the pump casing;
(f) outlet conduit means opening near the lower end of the pump casing for conducting water forced from the casing;
(g) means forming a large water inlet for conducting water into the lower end of the casing;
(h) means for substantially preventing reverse flow through said water inlet means;





(i) means operated upon arrival of said casing to its upper limit for opening said vent valve to allow inrush of water through said inlet meams; and
(j) means for closing said vent valve as said casing substantially fills with water whereby air under pressure works upon the water to force it through sâid outlet conduit means.

4,352,640
FLUID COMPRESSOR

Hiroshi Takamatsu, Ohi; Hiroshi Tanaka, Niiza, and Mutsuo **Sugisaki, Ohi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan**

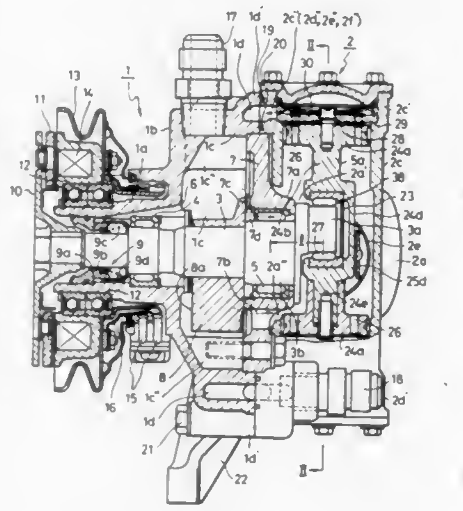
Filed Feb. 21, 1980, Ser. No. 123,453

Claims priority, application Japan, Feb. 24, 1979, 54-022427[U]

Int. Cl.^{3} F04B *1/04*

U.S. Cl. 417—273 **8 Claims**

1. A fluid compressor comprising: a casing having a fluid suction chamber and a fluid discharge chamber formed therein, said casing having an end thereof formed open to define therein an inner peripheral surface; a drive shaft having an end thereof eccentric with respect to the axis thereof, said drive shaft being rotatably supported in said casing in an overhung manner with said eccentric end projected from said open end of said casing; a cylinder housing secured in an abutting manner to said open end of said casing, said cylinder housing having a first cylinder and a second cylinder integrally formed thereon, said first and second cylinders cruciformly intersecting with each other in a common plane, said cylinders defining a first spatial portion opening in the direction of said casing at an intersection thereof; said eccentric end of said drive shaft terminating in said first spatial portion; a first and a second piston arranged in said cylinders in an intersecting manner, said first and second pistons each having a pair of piston heads located at opposite ends thereof, a pair of opposite slip portions located at an intermediate portion thereof, and a coupling portion coupling together said opposite slip portions at ends of said opposite slip portions remote from said casing, said paired slip portions and said coupling portion defining a central recess, said first and second pistons engaging each other for respective reciprocating motions in a manner such that said paired slip portions of one of said pistons are directed in a different direction by 90 degrees from said paired slip portions of the other piston and said coupling portion of one of said pistons is positioned in front of said coupling portion of the other piston, said central recess defined in one of said pistons cooperating with said central recess defined in the other piston to define a second spatial portion opening solely in the direction of said casing; one of said piston heads of at least one of said first and second pistons being dismountable from the body of said at least one piston; a sliding member slidably fitted in said space, said sliding member having an aperture in which is rotatably fitted said eccentric end of said drive shaft, whereby said sliding member is moved eccentrically with respect to the axis of said drive shaft as said drive shaft rotates, to cause said first and second pistons to reciprocatingly move within respective ones of said first and second cylinders in an alternating manner; valve means provided on an outer end of each of said first and second cylinders for regulating the flow of fluid with respect to the interior of said first and second cylinders; a flange-shaped bearing retainer member having a hub formed centrally thereof, said retainer member having a peripheral edge secured to said inner peripheral surface of said open end of said casing, said hub having a central through bore and disposed around a portion of said drive shaft adjacent said eccentric end thereof with said adjacent portion of said drive shaft fitted in said central through bore, said hub being bulged in said first spatial portion of said cylinder housing; and a needle bearing mounted in said central through bore of said hub and supporting as a main bearing said adjacent portion of said drive shaft, said bearing being partially located in said first spatial portion of said cylinder housing.



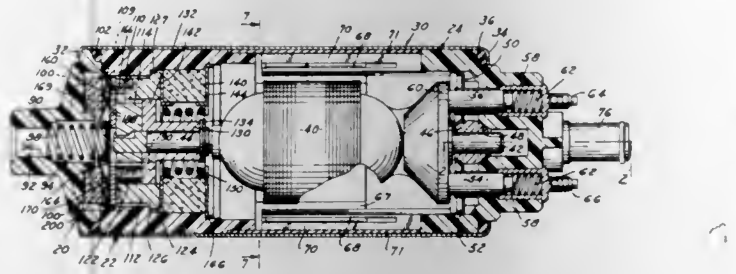
4,352,641
SELF-CONTAINED ROTARY FUEL PUMP

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Feb. 19, 1980, Ser. No. 123,103

Int. Cl.^{3} F04B *49/08*

U.S. Cl. 417—283 **1 Claim**



1. A pump body for a rotary fuel pump having an inlet end and an outlet end in which said inlet end comprises a first end plate on the inlet end of the pump, a circumferential housing and outlet plate, a pump rotor in said housing between said first end plate and said outlet plate with predetermined clearance in the chamber of said circumferential housing, said first end plate adjacent said rotor having an opening in communication with the outlet pressure of said pump, a relief valve overlying said first end plate at the inlet end of said pump comprising a circular member having two radially spaced annular ridges adjacent and pressing against first end plate to contain the pressure in said pump body, spring means resiliently biasing said relief valve against said first end plate wherein pressure above a predetermined setting of said spring will cause said relief valve to lift away from said first end plate and by-pass outlet fluid past said two ridges of said relief valve, said first annular ridge forming a central pressure chamber in communication with said pump outlet pressure acting against said spring means, and said second annular ridge forming an annular chamber outside said central chamber to receive pressure fluid from said central chamber when said spring means is overcome by said pump outlet pressure thereby increasing the effective pressure area of said relief valve acting against said spring means to compensate for increased spring force resulting from a valve movement against said spring.

4,352,642
HERMETIC MOTOR-COMPRESSOR

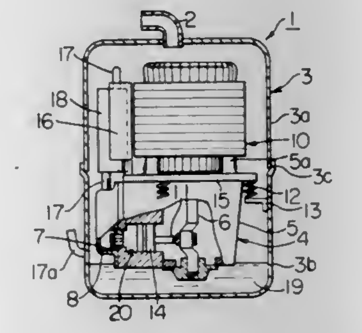
Akira Murayama; Fumio Harada, and Kazutaka Suefuji, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,675

Claims priority, application Japan, Apr. 4, 1979, 54/43477[U]; Jul. 6, 1979, 54/92533[U]

Int. Cl.^{3} F04B *21/00, 39/00, 39/04*

U.S. Cl. 417—312 **12 Claims**



10. A hermetic motor-compressor comprising:
a closed container;
an electric motor component disposed within said closed container;
a compressor component disposed within said closed container below said motor component, said compressor having a frame upon which said motor component is mounted;
mounting means for supporting said motor and compressor components within said closed container;
an oil reservoir defined between the compressor and a bottom portion of the closed container;
a return pipe for refrigerant gas having one end communicating into an upper end of the closed container;
a suction pipe connected at one end to said compressor and opening at an opposite, inlet end into a space defined within an upper end of the closed container for introducing the refrigerant gas directly into said compressor; and
deflecting means disposed on said frame between said compressor component and motor component below said inlet end of the suction pipe and projecting radially outwardly from the top of said frame, for deflecting refrigerant gas flowing downwardly along an outer surface of the motor component radially outwardly to an inner wall of the closed container and away from said compressor component, so as to minimize contact between said refrigerant gas and exterior parts of said compressor located therebelow.

4,352,643
STRUCTURE FOR VIBRATION ISOLATION IN AN APPARATUS WITH A VACUUM SYSTEM

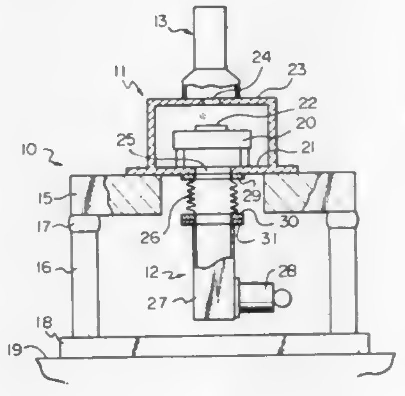
Nobuo Iijima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 12, 1980, Ser. No. 148,723

Claims priority, application Japan, May 18, 1979, 54/61224

Int. Cl.^{3} F04B *39/00*

U.S. Cl. 417—313 **10 Claims**



1. An apparatus having a vacuum system, the vacuum system including a vacuum chamber for containing main instruments of the apparatus, an exhaust device adapted to exhaust air from the vacuum chamber, the apparatus including a structure for vibration insulation for preventing the transmission of the vibration of said exhaust device to a main section of the apparatus, in which structure said exhaust device comprises a bellows connected with said vacuum chamber, an exhaust tube connected with said bellows, a vacuum pump attached to said exhaust tube; and said bellows, said exhaust tube and said vacuum pump being arranged in the form of a pendulum in which the bellows is used as a fulcrum.

4,352,644
AIR-HYDRAULIC PUMP

Michael T. Landrum, Elysian, and Terrance M. Anderson, Owatonna, both of Minn., assignors to Owatonna Tool Company, Owatonna, Minn.

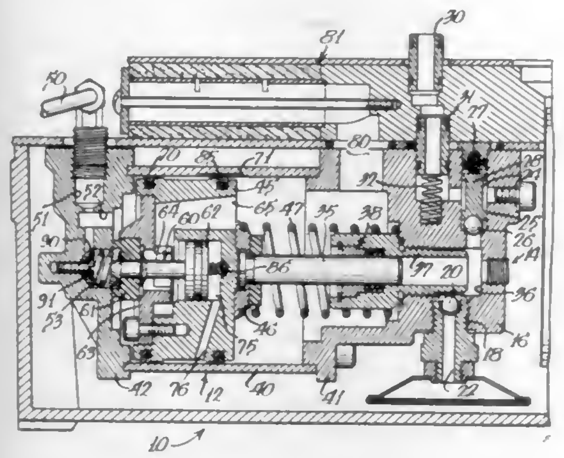
Filed May 12, 1980, Ser. No. 148,696

Int. Cl.^{3} F01L *21/04;* **F04B** *17/00*

U.S. Cl. 417—402 **2 Claims**

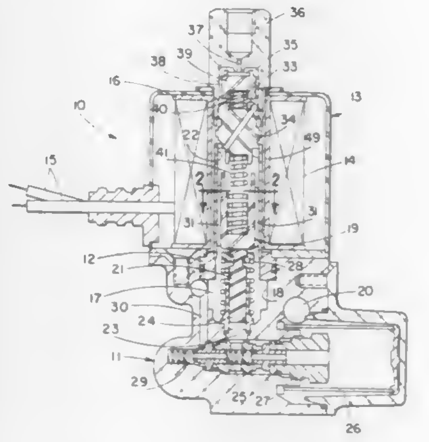
1. A hydraulic pump having a reciprocally-operable pumping member; a fluid motor including a cylinder containing a reciprocal piston movable between a retracted position at one end of the cylinder and an extended position and connected to

said pumping member, a fluid inlet through which fluid under pressure may be admitted into said one end of the cylinder to drive the piston towards said extended position, spring means for driving the piston towards said retracted position, and a fluid outlet for exhausting fluid within the cylinder to permit the spring means to drive the piston towards said retracted position; a control valve in said piston alternately movable between a closed position wherein fluid under pressure from said fluid inlet drives said piston toward the extended position and an open position wherein said one end of the cylinder is connected through the piston to said fluid outlet to permit movement of the piston to said retracted position by said spring means to thereby reciprocate the pump member; control means responsive to the piston approaching the retracted position for shifting the control valve to the closed position and responsive to the piston in the extended position for shifting the control valve to the open position; means yieldably urging said control valve toward said open position including a spring member within the piston and engaging the control valve; means for positively holding said control valve in said open position when said piston is moving from said extended position thereof to said retracted position thereof; and resilient means engageable within the control valve to maintain the control valve closed during the initial movement of the piston away from said retracted position.



4,352,645
SOLENOID PUMP ADAPTED FOR NOISELESS OPERATION

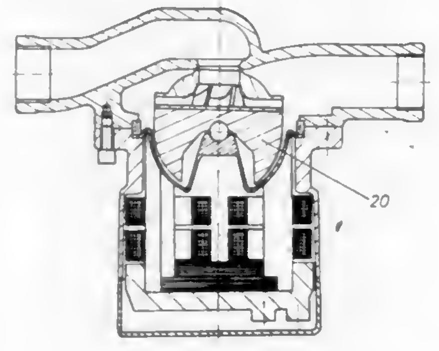
James H. M. Meyer, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Division of Ser. No. 925,731, Jul. 18, 1978, Pat. No. 4,308,475. This application Feb. 14, 1980, Ser. No. 121,631
Int. Cl.³ F04B *17/04*
U.S. Cl. 417—417 **3 Claims**



1. In a solenoid-actuated hydraulic pump including means defining a pumping chamber having inlet and outlet ends, movable means mounted within said pumping chamber and adapted for reciprocation in an axial direction between normal upper and lower limits under hydraulic load to pump fluid through the chamber, said movable means including an armature, a magnetic coil associated with said armature and operable when energized to move said armature, the improvement in said solenoid-actuated fuel pump being defined by said armature being solid with peripheral longitudinal slots to permit flow between said inlet and outlet ends and by hydraulic dashpot means including a fluid-holding recess in an upper end of the armature for limiting movement of the armature beyond said normal upper limit.

4,352,646
ROTODYNAMIC PUMP WITH SPHERICAL MOTOR

Ingeborg Laing, and Nikolaus Laing, both of 7141 Aldingen bei Stuttgart, Hofener Weg 35-37, Fed. Rep. of Germany
Continuation of Ser. No. 820,446, Aug. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 648,580, Jan. 12, 1976, abandoned. This application Feb. 27, 1981, Ser. No. 238,855
Claims priority, application Austria, Jan. 13, 1975, 180/75
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—420 **2 Claims**



1. A pump motor unit of the type having a combined impeller-armature rotatably mounted on a bearing means adapted to pump a throughput through the unit and a stator for generating magnetic flux to exert a drive torque on the armature where the stator is separated from said armature by a spherical air gap; the improvement characterized in that the armature comprises a magnetic material the coercive force of which does not exceed substantially 500 oersteds and the residual flux density of which is set at an upper limit such that when the pump-motor unit is throttled and there is corresponding throughput through the unit resulting in a correspondingly low torque load on the impeller armature, the flux density will not reverse under the influence of magnetic flux generated by the stator whereby the magnetic material will act as a permanent magnet to provide synchronous rotation of the impeller-armature, and where the residual flux density of said magnetic material is also sufficient to hold said impeller-armature on said bearing means when the pump motor unit is not operating and the stator is not generating magnetic flux, and such that when the pump-motor unit is unthrottled and there is a correspondingly high throughput through the unit resulting in an increased torque load on the impeller-armature under the influence of magnetic flux generated by the stator, the flux density will reverse whereby the armature will no longer act as a permanent magnet but act similar to a squirrel cage armature to provide asynchronous rotation.

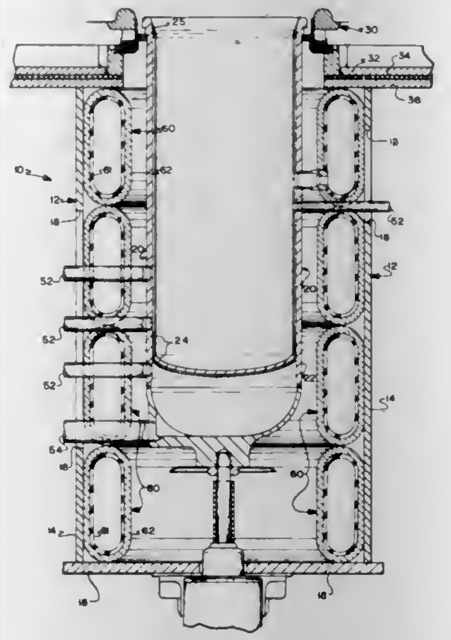
4,352,647
INSULATED TIRE PRESS BAG WELL AND A METHOD THEREFOR

Harold S. Rocco, 4271 Darrow Rd., Stow, Ohio 44224
Filed Dec. 19, 1980, Ser. No. 218,113
Int. Cl.³ B29H *5/02, 5/08*
U.S. Cl. 425—48 **30 Claims**

1. An insulated bag well of a tire press, comprising:

a bag well for a tire curing press,

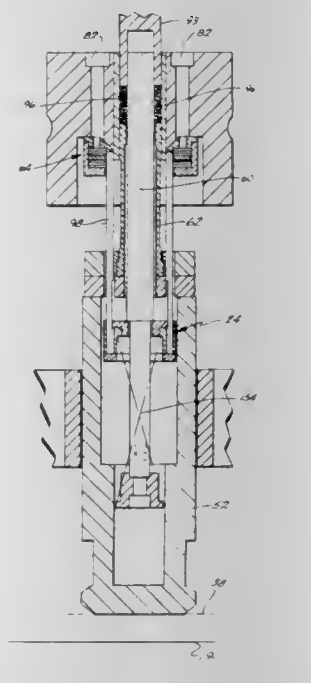
a housing, said housing located about said bag well and spaced therefrom,



at least one envelope, said envelope located between said bag well and said housing and insulating said bag well.

4,352,648
POWDERED METAL PRESS AND TOOLING THEREFOR

Carl W. Hilton, Muskegon, Mich., assignor to Toolmakers, Incorporated, Muskegon, Mich.
Filed Dec. 22, 1980, Ser. No. 218,657
Int. Cl.³ B29C *3/00*
U.S. Cl. 425—78 **26 Claims**



1. A lower punch assembly for use with a metal compacting press to form compacted metal parts, said assembly comprising:

a punch shank having a lower heel adapted to be engaged by a cam, said shank defining a bore having a vertical axis;

a core rod extending into said punch shank and being coaxial therewith;

connecting means for slidably connecting said shank to said core rod so that said shank may slide up and down on said core rod; and

mounting means engaging said shank for mounting said assembly to a metal compacting press and for permitting said punch shank to rotate about said vertical axis.

13. A lower compacting tool for use with a complementary upper tool assembly for compacting powder metal within a die cavity defined by a die case, said tool comprising:

an elongated punch shank having an open top and defining a bore;

a closure secured to said open top and having a central aperture;

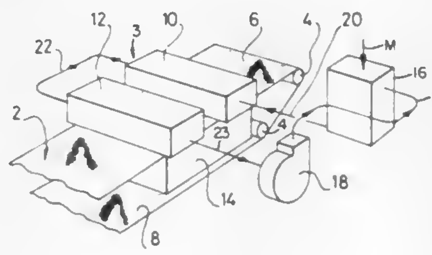
an elongated, generally cylindrical core rod extending through said central aperture and having a lower end disposed within said punch shank bore;

a generally cylindrical punch disposed around said core rod and having a lower end secured to said closure, said punch shank and said punch being movable vertically along said core rod; and

core rod withdrawal means engaging said core rod for permitting said core rod to extend vertically with said punch and said punch shank during an ejection stroke to reduce ejection loads, said core rod withdrawal means including a seat secured to the lower end of said core rod and a spring having an end engaging said seat so that said core rod extends with said punch against the bais of said spring during the ejection stroke.

4,352,649
APPARATUS FOR PRODUCING A NON-WOVEN WEB FROM PARTICLES AND/OR FIBERS

Edmond M. Jacobsen, Skanderborg; Otto V. Nielsen, Aarhus N., and Torsten B. Persson, Maarslet, all of Denmark, assignors to Scan-Web I/S, Risskov, Denmark
Filed Mar. 20, 1980, Ser. No. 132,131
Int. Cl.³ B29J *1/00*
U.S. Cl. 425—83.1 **33 Claims**



1. Apparatus for dry forming at least one of particles and fibers into a web-like material comprising:

(a) a moving foraminous forming sheet;

(b) a distributor unit positioned above said forming sheet with an outlet thereof directed toward and extending across said forming sheet; and

(c) suction means positioned beneath said forming sheet for sucking air downward through the forming sheet and for conveying said particles and fibers from said distributor unit outlet toward said forming sheet;

wherein said distributor unit comprises:

(1) an inlet for material comprising at least one of fibers and particles;

(2) a flow producing means for recirculating a flow of said particles and fibers in a path extending across said forming sheet within said distributor unit between said inlet and outlet, said flow producing means being formed at least in part by a flow guiding pipe, at least a portion of which is formed by a perforated outlet screen wall; and

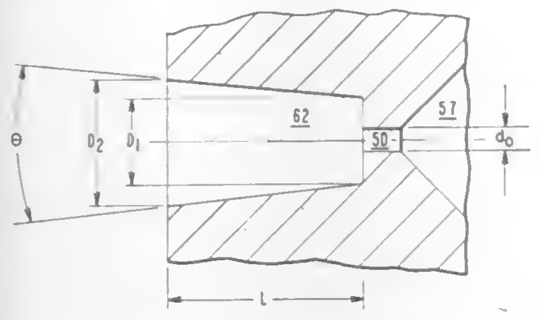
(3) means, within said flow guiding pipe, for directing a portion of said flow of particles and fibers outwardly through said outlet screen wall.

4,352,650
NOZZLE FOR FLASH-EXTRUSION APPARATUS

Larry R. Marshall, Chester, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 24, 1981, Ser. No. 247,220
Int. Cl.³ B28B *17/00;* **D01D** *3/00*
U.S. Cl. 425—174.8 E **3 Claims**

1. In a flash-extrusion apparatus of the type which includes

a nozzle having a tunnel immediately downstream of and coaxial with an exit orifice, the minimum tunnel diameter being at least four times as large as the orifice diameter, the improvement comprising a flared tunnel having a diameter that increases from inlet to outlet with a flare angle in the range of 10 to 35 degrees and a length that is in the range of 0.6 to 1.0 times the minimum diameter and 0.45 to 0.85 times the maximum diameter of the tunnel.



4,352,651
MOLD EQUIPMENT

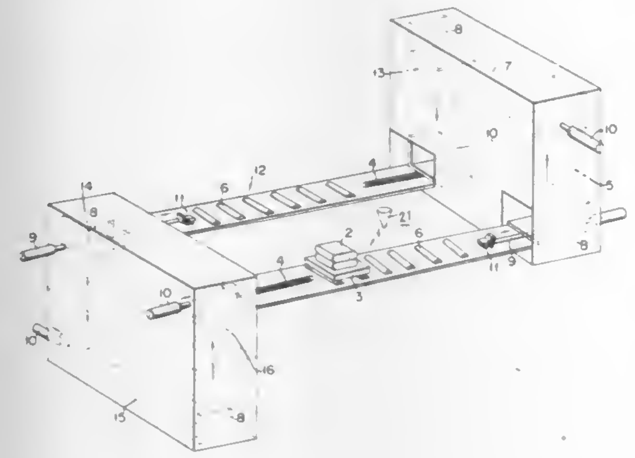
Sadao Kumasaka, Tanashi; Satomi Tada, Tokyo; Goro Yoneyama, Kawagoe, and Kazuo Hashimoto, Kawagoe, all of Japan, assignors to Toyo Rubber Chemical Industrial Corp., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,472

Claims priority, application Japan, Oct. 13, 1979, 54-132054

Int. Cl.^{3} B29D *27/04*

U.S. Cl. 425—261 **5 Claims**



1. A mold equipment comprising:

a material pouring station (**1**);

a first lift chamber (**5**) at the outlet portion of said material pouring station;

a heating chamber (**7**) containing a curing atmosphere and disposed at the outlet portion of said first lift chamber;

a pull-in means (**9**) for drawing a metal mold from the outlet of said material pouring station into said first lift chamber (**5**);

a second lift chamber (**13**) at the outlet portion of said heating chamber (**7**);

a mold releasing work station (**12**) adjacent to said second lift chamber (**13**);

a third lift chamber (**14**) at the outlet portion of said mold releasing work station (**12**);

a cooling chamber (**15**) adjacent to the outlet portion of said third lift chamber (**14**);

a pull-in means (**11**) for drawing said metal mold from the outlet of said mold releasing work station (**12**) into said third lift chamber (**14**);

a fourth lift chamber (**16**) defined between the outlet of said cooling chamber (**15**) and said material pouring station (**11**); and

push-in means (**10**) for forcing said metal mold into said heating chamber, mold releasing work station, cooling chamber, and said material pouring station, respectively;

said material pouring station (**1**), heating chamber (**7**), mold releasing work station (**12**), and cooling chamber (**15**) are each provided at respective bottom portions thereof with a roller conveyor to facilitate the running of said metal mold forced thereinto by said push-in means;

said metal mold being placed on a truck which runs on said roller conveyor;

each of said push-in means including a piston to push said truck, and a cylinder containing said piston; and

each of said pull-in means including a piston to pull said truck, and a cylinder containing said piston thereof.

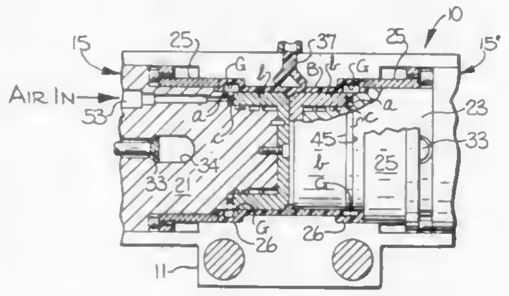
4,352,652
APPARATUS FOR MOLDING PLASTIC PIPE FITTING WITH INTERNAL GROOVE THEREIN

Jasper D. Barber, Charlotte, N.C., assignor to Charlotte Pipe and Foundry Company, Charlotte, N.C.

Filed Mar. 23, 1981, Ser. No. 246,865

Int. Cl.^{3} B29C *17/07*

U.S. Cl. 425—525 **6 Claims**



1. In an apparatus for forming a plastic pipe structure having a groove on the internal surface thereof and including

(a) a mold having a cylindrical chamber therein,

(b) an internal core having a cylindrical body adapted to fit in the mold chamber in spaced relation thereto for defining with the mold a mold cavity extending between the mold and the core body,

(c) shoulder means on the core defining an end of the mold cavity,

(d) a sleeve axially movable on the shoulder means between an inward position and an outward position, wherein the sleeve defines with the mold a substantially uninterrupted end portion of the mold cavity when the sleeve occupies its inward position, and the sleeve defines with the mold an internal annular plastic-receiving groove communicating with the mold cavity when the sleeve occupies the outward position,

(e) means for introducing plastic material into the cavity when the sleeve occupies said inward position to form a plastic pipe structure therein, and

(f) means for moving the sleeve to the outward position,

the combination therewith of an improvement in the internal core wherein:

(g) the cylindrical body of the internal core is provided with a pair of relatively narrow peripheral grooves therein which are open to the periphery of the internal core at all times during use of the apparatus and are positioned in radial alignment with the plastic-receiving groove defined in the mold by the axially movable sleeve when it occupies said outward position, said peripheral grooves being of such narrow width as to prevent the plastic material from entering and clogging the peripheral grooves when the plastic material is being introduced into the mold cavity,

(h) means for introducing fluid pressure into the core body to flow outwardly through said peripheral grooves when the sleeve occupies said outward position to cause the fluid to pass through said peripheral grooves and pressurize a portion of the plastic pipe structure into the internal plastic-

receiving groove in the mold cavity to form an internal groove in the pipe structure, and

(i) wherein said cylindrical body further includes at least two axially spaced-apart cylindrical body sections, and a cylindrical filler section in the form of a ring, said ring having an annular recess on each side thereof and positioned in the space between said cylindrical body sections and in abutting relationship thereto such that said ring forms a part of the cylindrical body of said core, and wherein said cylindrical body sections and said ring collectively define the periphery of said body and said annular recesses in said ring define said relatively narrow peripheral grooves through which fluid pressure is directed.

4,352,653
CLAMPING DEVICE FOR MOLDS USED IN THE BLOW MOLDING OF HOLLOW PLASTIC ARTICLES

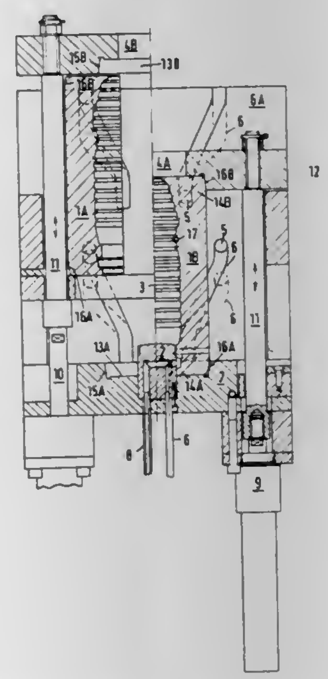
Lothar Ott, Schwalbach, and Dieter Gessner, Karben, both of Fed. Rep. of Germany, assignors to tpT Machinery Corporation, Norwalk, Conn.

Filed Dec. 16, 1980, Ser. No. 216,859

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950723

Int. Cl.^{3} B29C *17/07, 1/16*

U.S. Cl. 425—541 **13 Claims**



1. A mold assembly having segmented side mold portions, for example, to be used in blow molding of hollow plastic articles, which comprises side mold portions, each having upper and lower ends, movable away from each other to open said mold, means associated with said side mold portions and operative during the opening thereof for moving said portions first in an axial direction without separating said portions and subsequently in continuation of said movement linearly away from each other such that parting faces of said portions maintain a lateral alignment, said mold assembly including upper and lower members, each respectively cooperative with said upper and lower ends of said mold portions with means therein for receiving and locking the side mold portions in the closed position.

4,352,654
APPARATUS FOR THE PRODUCTION OF SMALL SYNTHETIC RESIN ARTICLES

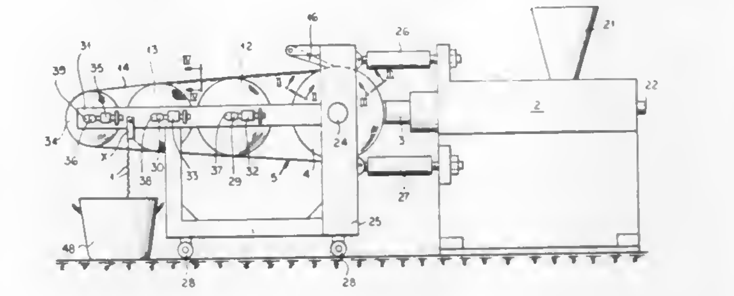
Helmut Heimberger, Steinhausen, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Dec. 22, 1980, Ser. No. 218,816

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951978

Int. Cl.^{3} B29D *5/00*

U.S. Cl. 425—545 **5 Claims**



1. An apparatus for producing a succession of small molded articles, especially end-stop members for slide fasteners, comprising:

a form wheel provided with a multiplicity of forming beds distributed around the periphery of said wheel;

a composite forming band having a plurality of endless band members meeting along the periphery of said wheel and extending around a portion of said periphery before being deflected away from the periphery of said wheel said band members collectively defining at each of said beds along said portion of the periphery of said wheel a respective generally closed core surrounded by a respective individual mold cavity having the shape of the articles to be molded, at least two of said endless band members being formed with undercuts whereby said articles have overhangs enabling said articles to be withdrawn by said composite band from said beds as said members are drawn away from said wheel;

means including an injection molding head juxtaposed with said portion of the periphery of said wheel for introducing synthetic resin into said cavities; and

means for mutually offsetting said members passage therefrom away from said wheel and upon the withdrawal of said articles by the composite band from said bed to release said articles from said composite band.

4,352,655
ENGINE

Winston B. Tucker, deceased, late of Seattle, Wash. (by Mary L. Tucker, administratrix), and Edward L. Tucker, 626 NW. 49th St., Seattle, Wash. 98107, assignors to Willmot A. Tucker and Edward Tucker, both of Seattle, Wash.

Filed Oct. 5, 1979, Ser. No. 82,036

Int. Cl.^{3} F23C *11/04*

U.S. Cl. 431—1 **6 Claims**

1. An apparatus for producing a flaming, high-pressure, high-velocity fluid stream, comprising:

(a) a compressor having a primary piston disposed in a primary cylinder, defining a closed combustion chamber, wherein the piston is capable of reciprocating in the cylinder;

(b) a prime mover means to reciprocate the piston;

(c) an air inlet means in the compressor for injecting air into the combustion chamber so that the air is compressed by the piston;

(d) fuel inlet means in the compressor for injecting fuel into the combustion chamber after the air is compressed, thereby forming an air-fuel mixture in the combustion chamber;

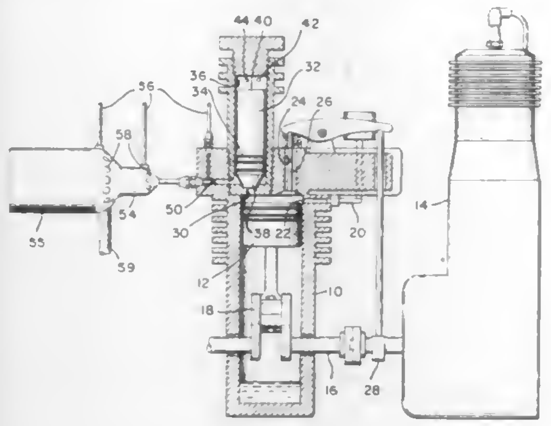
(e) ignition means to ignite the air-fuel mixture in the combustion chamber;

(f) an exhaust port communicating with the combustion chamber to remove the ignited air-fuel mixture from the combustion chamber;

(g) a chamber surrounding the exhaust port and having:

(i) a floating valve piston capable of reciprocating in the chamber and capable of sealingly seating on the exhaust port;

(ii) means for applying a pressure to the floating valve piston to ensure that the piston unseats from the port only when a predetermined pressure is achieved in the combustion chamber of the compressor;



(iii) means for allowing the ignited air-fuel mixture to exit the combustion chamber through the exhaust port and chamber when the piston unseats from the exhaust port; and

(h) means for adding additional air and fuel to the exiting ignited air-fuel mixture to produce secondary combustion, thereby generating a flaming, high-pressure, high-velocity fluid stream.

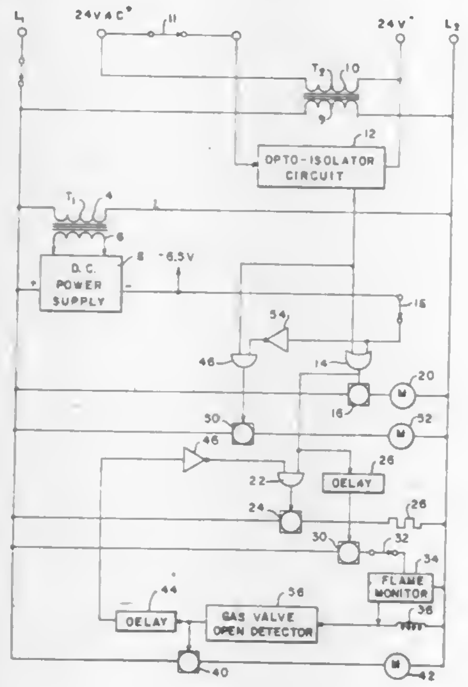
4,352,656
GAS APPLIANCE CONTROL DEVICE

Roger P. Michaud, Lewiston, Me., and Douglas B. Campbell, deceased, late of Gilford, N.H. (by Diane Campbell, administratrix), assignors to American Stabilis, Inc., Lewiston, Me.

Filed Sep. 21, 1979, Ser. No. 77,628

Int. Cl.^{3} F23H *5/00;* F23N *5/00;* F23Q *9/08*

U.S. Cl. 431—72 **8 Claims**



1. A control circuit for controlling the operation of a pilotless gas system including igniter means and a gas supply valve, comprising:

means for producing an appliance-activating control first signal;

first logic means responsive to said first signal for activating said igniter means;

first delay circuit means for producing a second signal delayed from said first signal by a first predetermined delay time period;

gas supply valve control circuit means responsive to said second delayed signal for opening the gas supply valve after the first predetermined delay time period for exposing said igniter means to said gas;

detector means for producing a third signal when the gas supply valve is in the open position; and

second delay circuit means for producing a fourth signal in response to said third signal after a second predetermined delay time period, said fourth signal being applied to said first logic means to deactivate the igniter means said second predetermined time period after opening of the gas supply valve, whereby the igniter means is activated for the first predetermined time period prior to opening of the gas supply valve, and the igniter means is deactivated after the second predetermined time period following opening of the gas supply valve.

4,352,657
LIGHTING DEVICE

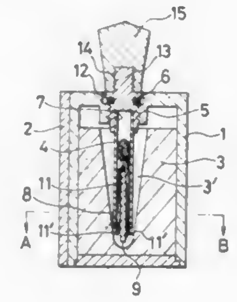
Taro Yanai, No. 3-13, Shirakawa 1-chome, Koto-ky, Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,911

Claims priority, application Japan, Dec. 28, 1979, 54-182674[U]

Int. Cl.^{3} F23Q *2/32*

U.S. Cl. 431—127 **4 Claims**



1. A lighter comprising a case having a fuel absorbent therein adapted to be saturated with a fuel, said fuel absorbent having a lighter rod access undercut therein, said case having a threaded opening overyling the undercut, a lighter rod assembly including a fitting portion having a radially outwardly extending flange defined around its periphery and a threaded portion below said flange threadably engaged in said threaded opening of said case, said fitting portion having a bottom face with a cylindrical lighting rod receiving recess, a tubular lighting rod having a bottom opened end and a top end press-fitted into the cylindrical lighting rod recess and adapted to extend into the undercut, an abrasive strip press-fitted into the open end of said lighting rod, a wick folded over said abrasive strip on the interior end thereof and extending out of the bottom end of said lighting rod on each side of said strip, and a knob press-fitted onto said fitting portion above the flange thereof.

4,352,658
GAS LIGHTER

Alfred Racek, Seitenbergstr. 54, 1160 Vienna, Austria

Filed Mar. 3, 1980, Ser. No. 126,358

Claims priority, application Austria, Mar. 5, 1979, 1628/79

Int. Cl.^{3} F23Q *1/04*

U.S. Cl. 431—254 **4 Claims**

1. A gas lighter comprising:

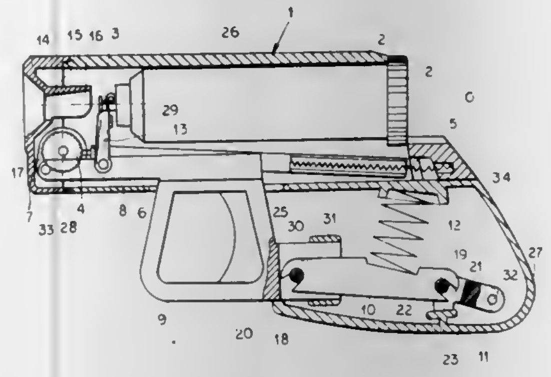
a casing provided with a mouthpiece having an aperture;

a gas cartridge in said casing having an axis aligned with said aperture and an outlet on said axis separated by an ignition space from said mouthpiece, said cartridge being provided with a shut-off valve normally closing said outlet;

pyrophoric means in said casing at a location offset from said axis for igniting a flow of flammable gas issuing from said outlet, said pyrophoric means including a spark-generating wheel in a plane including said axis;

actuating means coupled with said wheel and with said shut-off valve for opening the latter while rotating said wheel in a direction aiming the generated sparks toward said ignition space; and

a hood on said mouthpiece extending inward from said aperture toward said cartridge and bounding said ignition space on a side of said axis opposite said pyrophoric means for intercepting sparks traversing the gas flow and redirecting such sparks into said ignition space, said hood having a concave side open toward said spark-generating wheel.



4,352,659
METHOD OF HEATING AN END OF A LENGTH OF PLASTIC PIPE AND A CIRCULATING AIR FURNACE FOR CARRYING OUT THE METHOD

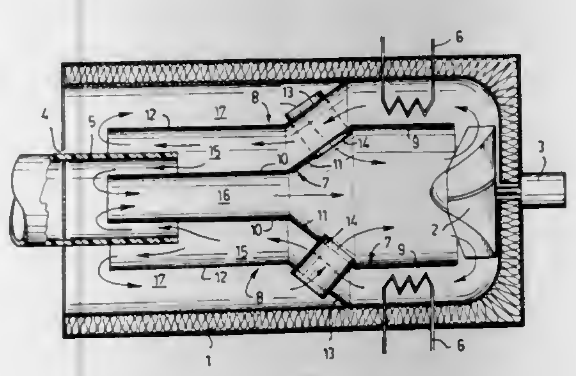
Erkki Salmela, Lahti, and Väinö Kulo, Uusikylä, both of, Finland, assignors to Asko-Uop Oy, Lahti, Finland

Filed Jul. 1, 1981, Ser. No. 279,521

Claims priority, application Finland, May 7, 1981, 811410

Int. Cl.^{3} F27D *5/00;* F24J *3/00;* F26B *25/00*

U.S. Cl. 432—10 **8 Claims**



1. A method of heating an end of a length of plastic pipe to be belled comprising the steps of

passing air from the exhaust side of a fan across heating means, heating the air as it crosses the heating means,

passing the heated air in the form of an annular flow substantially coaxially with a centre axis of an end of the length of pipe towards the end of the length of pipe,

dividing the annular air flow of heated air into two partial annular air flows passing over the outer and inner surfaces, respectively, of the wall of the end of the length of pipe, and returning the heated air to the suction side of the fan.

4,352,660
METHOD AND APPARATUS FOR BURNING FINE-GRAIN MATERIAL

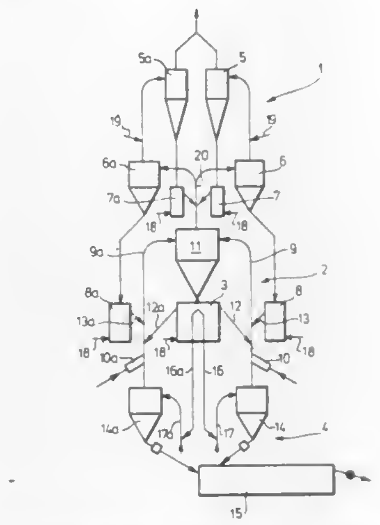
Janos Steiner, Budapest; Kalman Wenzly; Jozsef T. Toth, both of Almasfuzito, all of Hungary; Peter Tiggesbaumker, Oelde, Fed. Rep. of Germany; Wolf Goldmann, Beckum, Fed. Rep. of Germany, and Gerhard Butschko, Hamm, Fed. Rep. of Germany, assignors to Magyar Aluminiumipari Troszt, Hungary and Krupp Polysius AG, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,476

Claims priority, application Hungary, Jan. 23, 1980, 136/80

Int. Cl.^{3} F27B *15/00;* C01F *7/02*

U.S. Cl. 432—14 **13 Claims**



1. In a method of burning, calcining, or sintering fine grained alumina material wherein said material is preheated in a preheater, discharged from said preheater to and burnt in a burning zone, discharged from said burning zone to a residence zone, and thence discharged from said residence zone to a cooling zone, and wherein a portion of the material discharged from said residence zone is recycled through said burning zone, and wherein said burning zone comprises a hot gas stream heated at a first level below that of said preheater and flowing upwardly to the latter, the improvement comprising introducing said portion of said material from said residence zone to said burning zone at a second level above said first level and below said preheater, and introducing said material from said preheater to said burning zone at a third level above both of said first and second levels.

4,352,661
SHAFT KILN

James A. Crookston, and James L. Hill, both of Mexico, Mo., assignors to A. P. Green Refractories Co., Mexico, Mo.

Filed Feb. 6, 1981, Ser. No. 232,346

Int. Cl.^{3} F27B *15/00;* F27D *15/02, 1/08*

U.S. Cl. 432—14 **14 Claims**

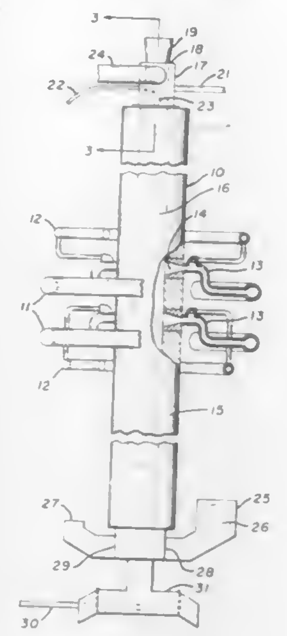
1. A calcining apparatus comprising an upright hollow shaft having a side wall and top wall and adapted to the passage downward of particulate material from a hopper mounted in said top wall through a preheating zone of said shaft, a calcining zone of said shaft, a cooling zone of said shaft, and a discharge port, in sequence, said apparatus further comprising:

a means for forming and proportioning a fuel/air mixture, a means for burning said mixture and introducing the resulting combustion product gases into the calcining zone, and a means coaxial with the shaft and disposed above the calcining zone for removing spent combustion product gases from the shaft;

a duct extending from said hopper through said top wall into said shaft and forming at least a part of the preheating zone, said duct having a preheating air inlet;

a means, extrinsic to said burning means, for heating air, a means for blowing the heated air into said duct through said preheating air inlet, and a means for exhausting spent preheating air from the preheating zone;

a means for forcing cooling air into the cooling zone, said forcing means having an inlet end open to the atmosphere and an outlet end which penetrates the side wall of the shaft below the calcining zone; and



a means for purging hot air from the cooling zone;

whereby, during the passage of particulate material through the shaft, the material is at least partially dried by hot air in said hopper extension and the calcined material is cooled while the pressure and temperature within the calcining zone are regulated solely by the fuel/air proportioning means.

4,352,662

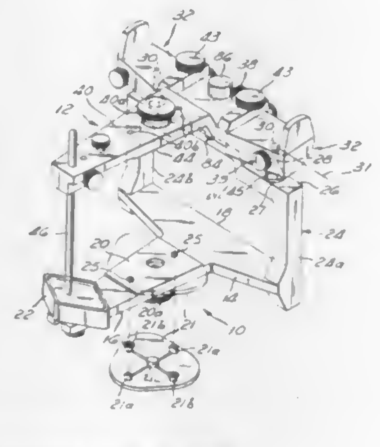
DENTAL ARTICULATOR FRAMES AND METHOD OF MAKING

Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324

Continuation of Ser. No. 965,049, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 814,815, Jul. 11, 1977, Pat. No. 4,209,909, which is a continuation-in-part of Ser. No. 581,203, May 27, 1975, Pat. No. 4,034,475, which is a continuation-in-part of Ser. No. 485,158, Jul. 1, 1974, Pat. No. 4,034,474. This application Dec. 29, 1980, Ser. No. 221,056

Int. Cl.³ A61C *11/00*

U.S. Cl. 433—56 **17 Claims**



1. A dental articulator comprising:

a first frame having a pair of guide blocks mounted thereon;

a second frame having a pair of spaced pedestals each supporting a spherical stylus, said styluses defining a hinge axis;

each of said blocks having an opening formed therein for receiving one of the styluses, said openings each being formed by a curved rear wall, a curved upper wall, a curved medial wall, and a lateral wall for guiding movement of the styluses, said rear and upper wall of each of the guide blocks being engaged by a respective one of said styluses when the frames are in centric position; and

means defining a circular hole drilled into the lateral wall of each of said blocks on a line which is collinear with said hinge axis when the styluses are in said openings and the frames are in centric position, said hole connecting with the opening in each of the blocks, the diameter of the drilled hole in the area of said rear wall being equal to the diameter of said stylus, the shape and size of the curved side walls of the hole being continuous with and equal to those of the rear and upper walls of the opening by virtue of their being formed at the same time in a single drilling operation.

4,352,663

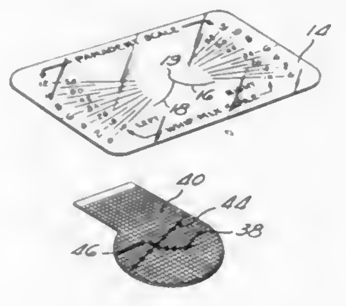
METHOD AND APPARATUS FOR SETTING A DENTAL ARTICULATOR

Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324

Filed May 7, 1980, Ser. No. 147,631

Int. Cl.³ A61C *19/04*

U.S. Cl. 433—73 **4 Claims**



1. Dental apparatus comprising:

a dental articulator including a lower frame having a pair of spaced styluses defining a hinge axis and an upper frame having a pair of guide blocks, each having an opening for receiving one of said styluses with the opening having an upper wall determining the protrusive movement of the upper frame relative to the lower frame;

a recording of a patient's jaw movement protrusive path including a reference line formed thereon which is correlated to a reference plane on the articulator; and

a thin flat transparent tool having a curve marked thereon which corresponds to the curvature of the protrusive path of the center of one of said styluses when the stylus is moved in engagement with the upper wall of one of the guide blocks, said tool further having means defining one or more scale lines marked thereon oriented to intersect said curve, with the intersection representing the articulator hinge axis of curvature when the guide blocks are positioned in centric relation with respect to the styluses, said tool further having markings thereon which correspond to markings on the articulator for indicating the angle at which said guide block should be set, whereby said tool curve may be aligned with said recording path and the angular orientation of said recording reference line with respect to said scale lines may be observed and utilized to set the angular orientation of said one guide block in the articulator.

4,352,664

SIMULATOR HAVING TWO INDEPENDENTLY SERVO-CONTROLLED PROJECTION SYSTEMS

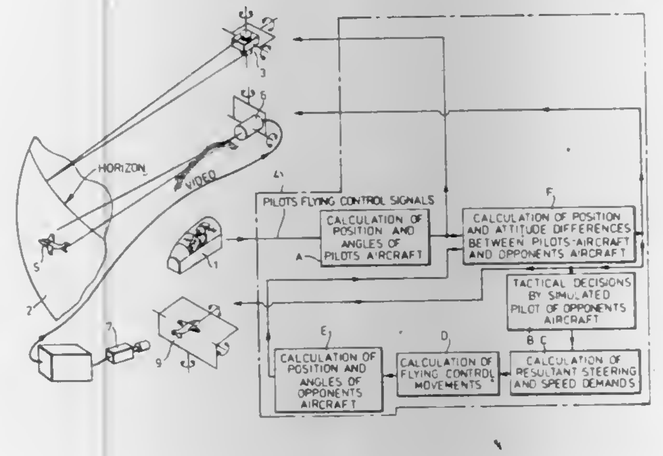
Jeffrey Morrison; Stanley R. E. Dixon, and Arthur G. Barnes, all of Bristol, England, assignors to British Aerospace, Weybridge, England

Continuation-in-part of Ser. No. 936,849, Aug. 25, 1978, abandoned. This application Nov. 1, 1979, Ser. No. 90,494

Claims priority, application United Kingdom, Aug. 27, 1977, 36094/77

Int. Cl.³ F41J *9/00;* **G09B** *9/08;* **H04N** *7/18*

U.S. Cl. 434—14 **4 Claims**


HORIZON
VIDEO
PILOTS FLYING CONTROL SIGNALS
CALCULATION OF POSITION AND ANGLES OF PILOTS AIRCRAFT
CALCULATION OF POSITION AND ATTITUDE DIFFERENCES BETWEEN PILOTS AIRCRAFT AND OPPONENTS AIRCRAFT
TACTICAL DECISIONS BY SIMULATED PILOT OF OPPONENTS AIRCRAFT
CALCULATION OF POSITION AND ANGLES OF OPPONENTS AIRCRAFT
CALCULATION OF FLYING CONTROL MOVEMENTS
CALCULATION OF RESULTANT STEERING AND SPEED DEMANDS
A
B
C
D
E
F
1
2
3
4
5
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7
9

1. An air combat simulator including, in combination:

a part spherical screen;

a simulated manned aircraft consisting of a pilot's control station positioned to view the screen and having flight controls operable for generating flight control signals;

a movably mounted horizon projector operable for projecting onto said screen a sky and ground terrain scene;

first servo-motor means coupled to said first projector for steering the projector;

a t.v. projection system operable for projecting onto said screen an image of an opponent's aircraft, the t.v. projection system comprising a movably mounted housing containing a cathode ray tube for forming a t.v. picture of said opponent's aircraft, focusing means for projecting said t.v. picture to form said image, second servo-motor means, independent from said first servo-motor means, coupled to said housing for steering said housing to change the position of said image on said screen, and controllable deflection signal generating means connected to said cathode ray tube for varying the raster size of said t.v. picture and hence also the size of said projected image; and

computer means, connected to said flight controls, said first and second servo-motor means and said deflection signal generating means, for (a) calculating the position and attitude of the simulated manned aircraft as determined by said flight control signals and steering said horizon projector accordingly, (b) calculating the relative position and attitude of the two aircraft, (c) making tactical decisions concerning the path of the opponent's aircraft relative to the sky and ground terrain scene based on the relative positions and attitudes of the two aircraft, (d) calculating the position and attitude of the opponent's aircraft based upon a combination of the tactical decisions and the relative position and attitude of the two aircraft and steering said housing of said t.v. projection system accordingly, and (e) calculating the relative size of the opponent's aircraft in accordance with the calculated range between the two aircraft and to vary the image size of the opponent's aircraft accordingly.

4,352,665

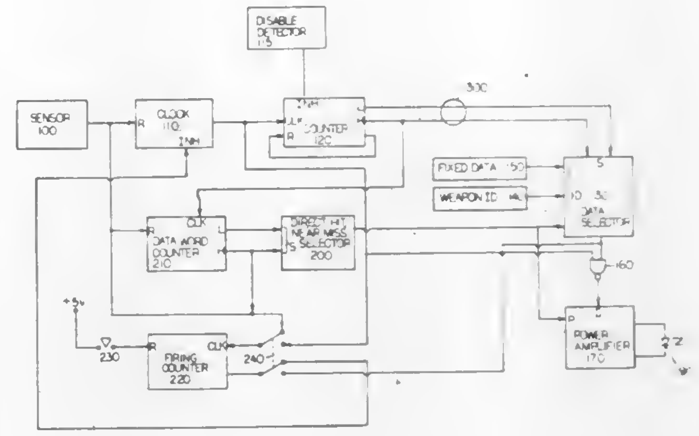
SMALL ARMS LASER TRAINING DEVICE

Joe W. Kimble, Falls Church, and Edsel E. Dotson, Alexandria, both of Va., assignors to Cerberonics, Inc., Falls Church, Va.

Filed Jan. 12, 1981, Ser. No. 224,068

Int. Cl.³ F41G *3/26*

U.S. Cl. 434—22 **16 Claims**



1. A laser weapons simulation and training system comprising a firearm, said firearm being capable of firing a load comprising a plurality of blank rounds; a data transmission system including in combination: sensor means, said sensor means being configured to detect when each of said rounds is fired; clock means, said clock means providing an output signal of constant frequency, said clock means being activated by said sensor means; first counter means, the output of said clock means being coupled to the input of said first counter means; data selector means, said data selector means having a plurality of selector inputs coupled to outputs of said first counter means, and having a plurality of single-bit data inputs, comprising a data word, said data inputs being selected for serial transmission by said data selector means, a portion of said data word of fixed value in order to indicate the identity of the system, and another portion of said data word being of variable value; data variance means, said data variance means having an input coupled to an output of said first counter means, said data variance means having at least one single-bit output coupled to at least one of said variable value inputs of said first data selector means, said data variance means varying said variable value inputs in order to provide an output signal from said first data selector means capable of distinguishing between a direct hit and a near miss when a round is fired; second counter means, the input of said second counter means being coupled to an output of said data variance means in order to count the number of rounds expended by operation of the system, an output of said second counter means being coupled to a reset input of said clock means in order to disable said clock means when said load is completely expended; gain controlled power amplifier means, said gain controlled power amplifier means having a data input and a power control input, said data input being coupled to said data output of said first data selector means, said power control input being coupled to an output of said data variance means for increasing the power of said gain controlled power amplifier means when said signal indicates a near miss; and modulated laser output means, said modulated laser output means being coupled to the output of said gain controlled power amplifier means for transmission of a data-modulated laser light signal; said modulated laser output means being mounted within a barrel of said firearm to project said laser light signal along the boresight of said firearm; and said data transmission system being mounted within said firearm.

4,352,666

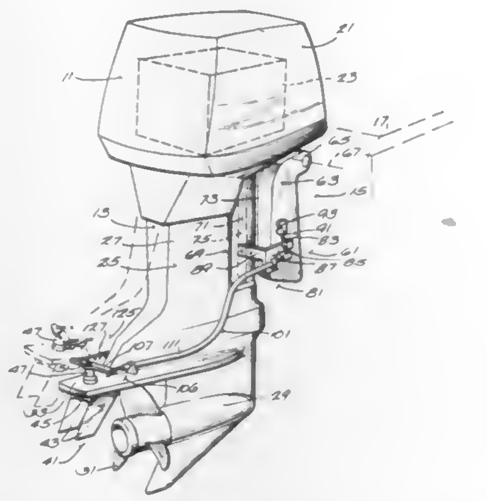
MARINE PROPULSION DEVICE WITH TRIM SENSITIVE MOVABLE TRIM TAB

Philip J. McGowan, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 11, 1980, Ser. No. 176,864

Int. Cl.^{3} B63H *25/48*

U.S. Cl. 440—53 **9 Claims**



1. A marine propulsion device comprising a propulsion unit including a rotatably mounted propeller, mounting means adapted to be fixedly connected to a boat transom and connected to said propulsion unit for mounting of said propulsion unit for pivotal movement about an axis which is horizontal when said mounting means is boat mounted, a trim tab, means mounting said trim tab on said propulsion unit for pivotal movement about an axis transverse to said horizontal axis, and linkage means for displacing said trim tab about said transverse axis in response to movement of said propulsion unit about said horizontal axis.

4,352,667

RIGGER FOR A ROWING OR SCULLING BOAT

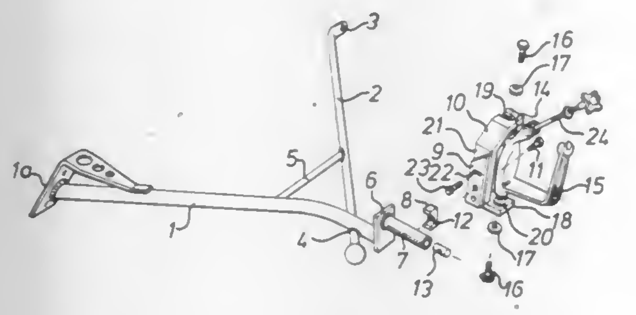
Leonard H. Neville, 3, Toutley Close, Wokingham, Berkshire, RG11 1JH, England

Filed Mar. 6, 1981, Ser. No. 241,303

Claims priority, application United Kingdom, Mar. 7, 1980, 8007828

Int. Cl.^{3} B63H *16/06*

U.S. Cl. 440—105 **12 Claims**



1. A rigger for a rowing or sculling boat, the rigger comprising at least two stays having inner ends securable to the saxboard of a boat and outer ends which converge towards one another and are secured together, a rowlock, and mounting means for the rowlock, said mounting means comprising:
(a) a hollow tubular member secured to the outer end of at least one of said stays so that its longitudinal axis will extend substantially laterally of the boat when the rigger is in use on a boat,
(b) a bracket member,
(c) means mounting said bracket member on said tubular member so that the bracket member can be adjusted relative to the tubular member longitudinally of the tubular member, angularly about the longitudinal axis of the tubular member and angularly about an axis at right angles to the longitudinal axis of the tubular member, and
(d) a pin carried by said bracket member so that, in the position of use of the rigger, the longitudinal axis thereof will extend in a generally vertical direction,
(e) said rowlock being mounted on said pin and being adjustable relative to said bracket member in the longitudinal direction of the pin.

4,352,668

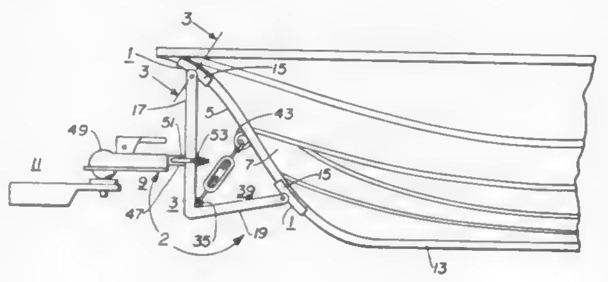
DETACHABLE TOW BAR ASSEMBLY

Shannon D. Beevers, Napa, Calif., and Robert E. Croxen, 40 Iry Ct., Yountville, Calif. 94599, assignors to Robert E. Croxen, Yountville, Calif.

Filed Jul. 1, 1980, Ser. No. 165,222

Int. Cl.^{3} B60P *3/10;* B63B *21/64;* B63C *13/001*

U.S. Cl. 114—344 **3 Claims**



1. A detachable tow bar assembly, primarily for use in towing a small boat, said tow bar assembly comprising a pair of independent concave bow engageable means, each adapted to straddle the foremost edge of the bow of said boat, means including a pair of angularly disposed, rigid arms solidly connected at one end to each other with one of said bow engageable means carried on the opposite end of each arm, means removeably tensioning said assembly to retain the same against said bow and a detachable tow bar assembly including a tow bar attaching means being adjustably mounted on one of said rigid arms.

4,352,669

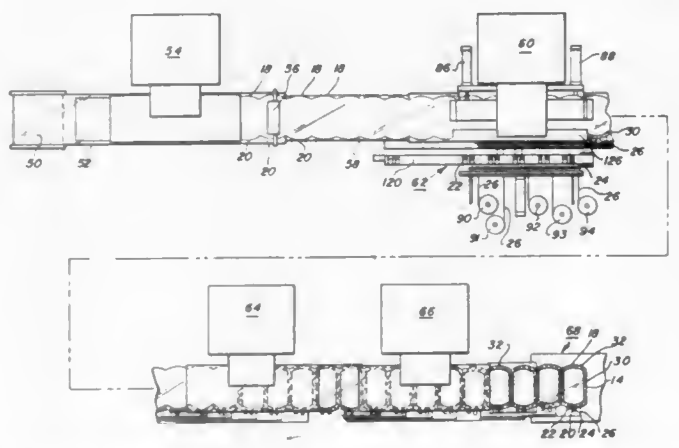
PROCESS AND APPARATUS FOR MANUFACTURING PLASTIC CONTAINERS

William W. Norton, Lincolnshire, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 10, 1980, Ser. No. 205,789

Int. Cl.^{3} B31B *1/84*

U.S. Cl. 493—213 **27 Claims**



1. A method for manufacturing plastic containers having closed ports extending from one end of the plastic containers, which comprises the steps of:
providing a first web of plastic material;
providing a second web of plastic material opposing said first web;
conveying said first and second webs to a port sealing station in a first direction;
conveying a closed port to a position adjacent said port sealing station;
providing a mandrel intermediate said first and second webs at said port sealing station;
moving said mandrel relatively with respect to said closed port in a second direction transverse said first direction to engage said closed port with said mandrel;
retracting said mandrel away from said closed port position in said second direction to bring said closed port toward said webs and then intermediate front opposed ends of said first and second webs;
sealing said front opposed ends of said first and second webs while said closed port is intermediate said front opposed ends;
retracting said mandrel to disengage from said closed port;
sealing the sides and back opposed ends of the webs; and
cutting the webs transverse their direction of conveyance.

4,352,670

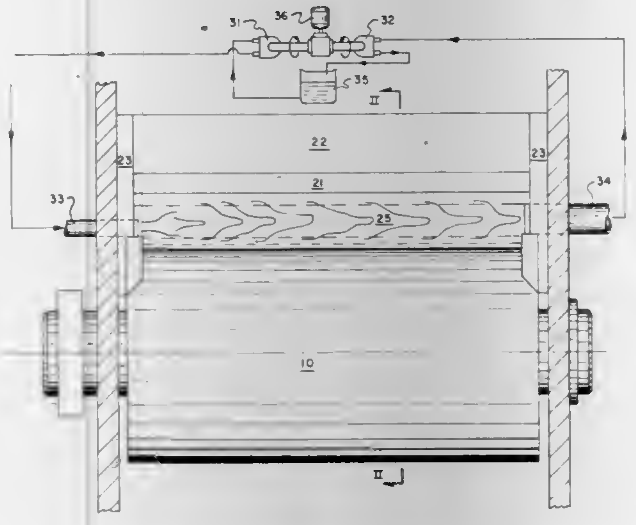
CONVERTING MACHINE GUM BOX

Gregory Georgiades, Longmeadow, Mass., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 193,909

Int. Cl.^{3} B05C *1/06*

U.S. Cl. 493—337 **7 Claims**



1. A rotary converting machine gum box comprising back, opposite ends and bottom wall portions disposed longitudinally adjacent an adhesive metering roll, said bottom wall portion also including a doctor blade for the surface of said metering roll, said wall portions and metering roll surface defining a fluid adhesive pond enclosure, the improvement comprising:
A. An adhesive flow delivery conduit at one end wall opening into said enclosure proximate of a juncture between said doctor blade with said metering roll;
B. An adhesive flow withdrawal conduit at the opposite end wall opening into said enclosure proximate of a juncture between said doctor blade with said metering roll; and
C. Adhesive flow circulation means connecting said conduits having greater withdrawal flow capacity than delivery capacity.

4,352,671

SHEET FOLDING APPARATUS FOR USE WITH CONTINUOUS WEB PRINTING MACHINE

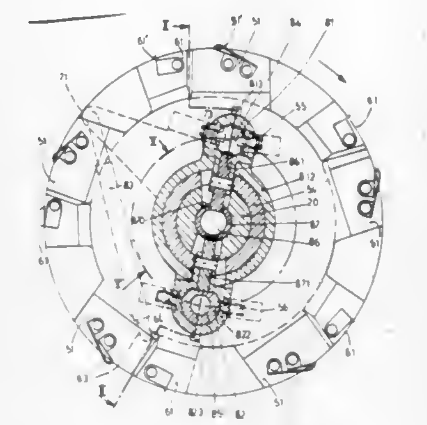
Godber Petersen, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,542

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936768

Int. Cl.^{3} B65H *45/16*

U.S. Cl. 493—424 **22 Claims**



1. Sheet folding apparatus having
a sheet pick-up cylinder (2);
a central shaft (20) supporting the sheet pick-up cylinder;
leading sheet edge gripper means (G, 51) positioned on the circumference of the sheet pick-up cylinder;
sheet creasing or folding means (61) positioned on the circumference of the sheet pick-up cylinder adjustably, circumferentially offset from the sheet gripper means;
a sheet receiving cylinder (3) having sheet fold receiving means (31) positioned to receive the sheet at a crease or fold line after creasing of the sheet by the sheet creasing means;
a drive means (M, 41);
and comprising,
means (62, 63) for securing the sheet creasing means (F, 61) on the central shaft;
a drive shaft (70), coupled to the drive means (M, 41) positioned at an end portion of the central shaft and rotatable with respect to the central shaft;
means (52, 53, 54) including a hollow shaft (54) surrounding said central shaft (20) for securing the gripper means (G, 51) angularly adjustably on the central shaft (20);
a control arm (71) rotatably secured to the drive shaft (70) to rotate therewith and radially projecting therefrom and formed with a first camming surface (731);
a first control disk (63) secured to the central shaft (20) and formed with a second camming surface (641) positioned adjacent the control arm;
a second control disk (53) secured to the hollow shaft (54) which forms part of the gripper means securing means (52-54) and formed with third and fourth camming surfaces (551, 561) positioned adjacent said first control disk (63);
two selectively engageable wedge elements (81, 82), one of said wedge elements (81) being positioned between the first camming surface (731) and one (551) of the camming surfaces (551, 561) formed on the second control desk, the second wedge element (82) being positioned between the other of the camming surfaces (561) formed on the second control disk (53) and the second camming surface (641) of the first control disk (63);
and wedge element positioning means (86, 87, 861, 867) to adjust the position of the wedge elements (81, 82) with respect to the engaged camming surfaces (81: 551, 731; 82: 561, 641) to thereby control the relative angular position of the gripper means (G, 51) with respect to the drive shaft (70) and effect driving engagement of the drive shaft, and hence the drive means (M, 41) with the gripper means (G, 51) and with the first control disk (63) and hence with the central support shaft (20) and the sheet creasing and folding means (F, 61) secured thereto.

4,352,672

PROCESS FOR THE PRODUCTION OF COLORFUL AND FIGURATIVE DESIGNS OF SHAPED SYNTHETIC-RESIN ARTICLES

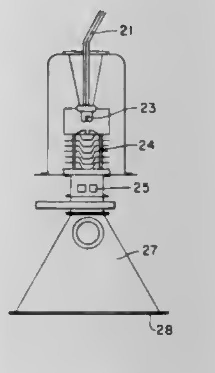
Karl-Heinz Spiess, Much-Schwellenbach, and Harald Stock, Königswinter, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,935

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006604

Int. Cl.^{3} D06P *5/20*

U.S. Cl. 8—444 **17 Claims**



1. A process for the production of colorful and figurative designs of shaped synthetic resin articles with the use of colorants which comprises coloring a shaped article formed of a synthetic resin at least partially with colorants that change color by being exposed to electron rays and then exposing the article to electron rays with a radiation dose of between 1 and 20 Mrad in selected zones corresponding to a figurative design until color changes are achieved; said article being covered in zones other than said selected zones with a material which absorbs or reflects the electron rays during exposure to said electron rays whereby the original colors of the colorants are maintained in the covered zones.

4,352,673

METHOD AND DEVICE FOR DETERMINING THE ORGANIC CARBON CONTENT OF A SAMPLE

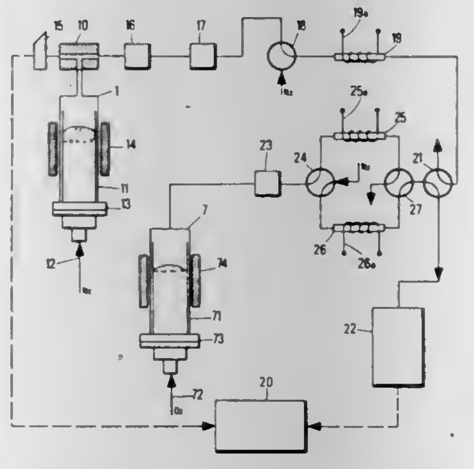
Jean Espitalie, Le Vesinet; Marcel Madec, Suresnes, both of France; Paul Leplat, Louvain, and Jacques Paulet, Emines, both of Belgium, assignors to Institut Francais du Petrole, Rueil-Malmaison, France and Societe Labofina S.A., Brussels, Belgium

Filed Dec. 24, 1980, Ser. No. 219,616

Claims priority, application France, Dec. 28, 1979, 79 32019

Int. Cl.^{3} G01N *31/08*

U.S. Cl. 23—230 EP **6 Claims**



1. A method for determining, the total organic carbon content of a sample of sediment, comprising the successive steps of:

(a) heating a sample in an inert atmosphere to a first temperature capable of cracking at least a fraction of the organic material therein and to decompose all mineral carbonates decomposable up to said first temperature to produce a first effluent containing hydrocarbons, and a solid material residue,

(b) measuring the amount of organic carbon contained in at least a fraction of the first effluent produced by said cracking of the organic material in an inert atmosphere, by selectively determining the amount of carbon in the hydrocarbons contained in said first effluent,

(c) heating the solid material residue in an oxidizing atmosphere to a second temperature at most equal to said first temperature to produce a second effluent containing CO_2, said second temperature being insufficient to produce decomposition of remaining mineral carbonates contained in the residual material,

(d) measuring the amount of organic carbon contained in the second effluent resulting from the oxidation of the organic material by measuring the amount of carbon in the CO_2 contained in said second effluent, and

(e) deriving from the above measurements effected on said first and second effluents the total organic carbon content of the sample.

2. A method for determining the organic and mineral carbon content of a sample of sediment comprising the successive steps of:

(a) heating a sample in an inert atmosphere to a first temperature capable of cracking at least a fraction of the organic material therein and to decompose all mineral carbonates decomposable up to said first temperature to produce a first effluent and a first residue,

(b) measuring the amount of organic carbon contained in at least a fraction of the first effluent produced by said cracking of the organic material in an inert atmosphere, and measuring the quantity of mineral carbon contained in the remaining fraction of the first effluent,

(c) heating the first residue of step (a) in an oxidizing atmosphere to a second temperature at most equal to said first temperature to produce a second effluent and a second residue,

(d) measuring the amount of organic carbon contained in the second effluent resulting from the oxidation of the organic material in the first residue,

(e) heating the second residue of step (c) in an oxidizing atmosphere to a third temperature capable of decomposing all the remaining mineral carbonates contained in the second residue to produce a third effluent,

(f) measuring the quantity of mineral carbon contained in the third effluent, and

(g) deriving from all the effected measurements the respective organic carbon and mineral carbon contents of the sample.

4,352,674

METHOD OF TRACING A WELL DRILLING MUD

Jean J. Fery, Bar Le Duc, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Jan. 6, 1981, Ser. No. 222,843

Claims priority, application France, Jan. 8, 1980, 80 00263

Int. Cl.^{3} G01N *33/24*

U.S. Cl. 23—230 EP **7 Claims**

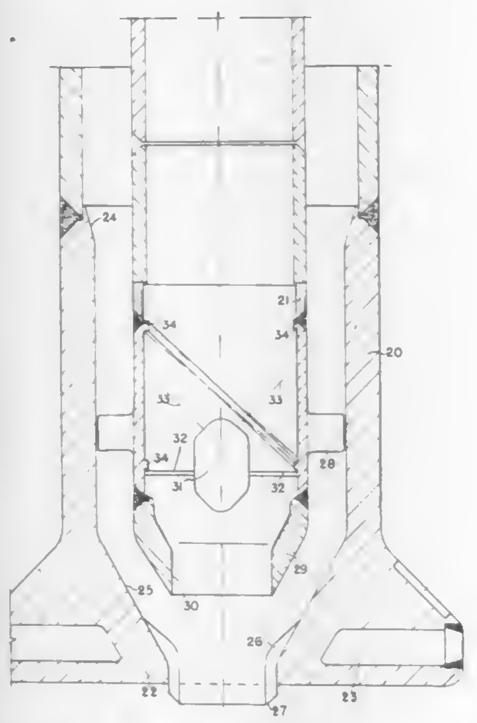
1. A method of tracing a well drilling mud by determining the concentration of a tracer ion in samples of filtrate from a drilling mud which contains a predetermined concentration of the tracer ion, wherein the tracer ion is the acetate ion, CH_3COO^-, and is present in the drilling mud in a concentration of from about 1×10^{-3} to about 5×10^{-2} ions per liter; said method comprising:

providing said filtrate from a drilling mud which contains said tracer ion; determining the acetate ion concentration in the filtrate sample by treating said filtrate with a solution of a strong acid selected from the group consisting of hydrochloric acid and sulphuric acid and distilling the acetic acid thereby liberated at a temperature of from about 105° to about 130° C.; and

determining the strong acidity of the distillate by adding thereto an N solution of a strong base until the pH of the resulting solution is indicated by an indicator to be about 4.2-4.3, and then determining the weak acidity representing the tracer ion concentration by adding a volume V_1 of a base solution until the pH of the resulting solution is indicated by an indicator to be about 8.3.

4,352,675
COAL GASIFICATION REACTOR

Jürgen Selpenbusch, Essen, and Hans Dohren, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany
Filed Nov. 30, 1979, Ser. No. 98,917
Int. Cl.³ C10J *3/50*
U.S. Cl. 48—73 18 Claims



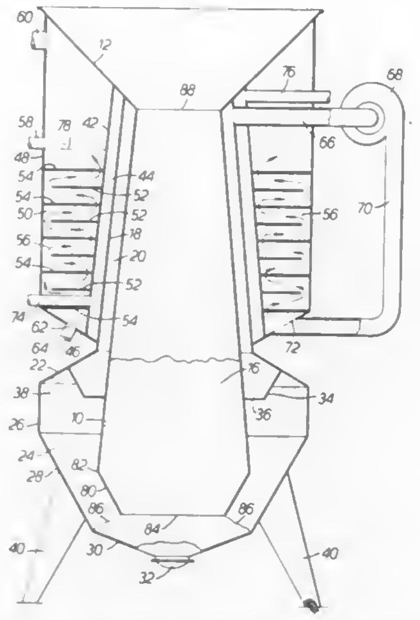
1. A reactor for coal gasification wherein partial oxidation of a solid material containing carbon in the presence of water produces a carbon monoxide and hydrogen containing gas, comprising

a vortex burner connected to said reactor having an inner cylindrical conduit for admission of oxygen or combustive air and an outer concentric cylindrical conduit cooperating with said inner conduit to define an annulus for receipt of said solid material and water, and

generally inwardly projecting guide means comprising helical ribs inclined relative to the longitudinal axis of the inner conduit and disposed within said inner conduit for establishing generally spiral motion to said oxygen or combustive air as it moves through said inner conduit wherein said ribs are at one end connected by articulation with said inner conduit and are glidingly supported at the other end in a recess of an annular nut which nut is adjustably connected to said inner conduit at the inner periphery thereof.

4,352,676
APPARATUS FOR CONVERTING GARBAGE INTO A FUEL GAS

David T. Szloboda, 10591 Skagit Dr., Richmond, B. C., Canada (V7E 1Z9)
Division of Ser. No. 149,241, May 12, 1980, abandoned. This application Mar. 11, 1981, Ser. No. 242,434
Claims priority, application Canada, May 8, 1980, 351505
Int. Cl.³ C10J *3/68*
U.S. Cl. 48—76 5 Claims



1. Apparatus for converting garbage into combustible gas, which apparatus comprises:

a combustion chamber for the garbage;

a combustion chamber inlet in an upper portion of the combustion chamber for introducing the garbage into the combustion chamber;

a combustion chamber outlet in a lower portion of the combustion chamber;

a gas chamber which is positioned around the combustion chamber and which is in communication with the combustion chamber outlet;

baffle means which is in the gas chamber, which divides the gas chamber into upper and lower portions, and which acts in the use of the apparatus to cause solid products of combustion in the gas leaving the outlet of the combustion chamber to separate out from the gas and so prevent a proportion of the solid products of combustion from entering the upper portion of the gas chamber;

a gas chamber outlet;

a suction line which is in communication with the gas chamber outlet;

motor blower means for sucking gas generated from the burning garbage through the garbage, the combustion chamber outlet, the gas chamber, the gas chamber outlet, and the suction line, whereby the motor blower means creates a controlled suction through the garbage so that gaseous products of combustion in the combustion chamber are sucked through the burning solids in the combustion chamber and are converted into the combustible gas;

a gas cooling chamber which is positioned around the gas chamber and which has inlet and outlet means for allowing cooling water to be circulated through the gas cooling chamber;

a gas purifying chamber which is for containing water and which is positioned around the gas cooling chamber;

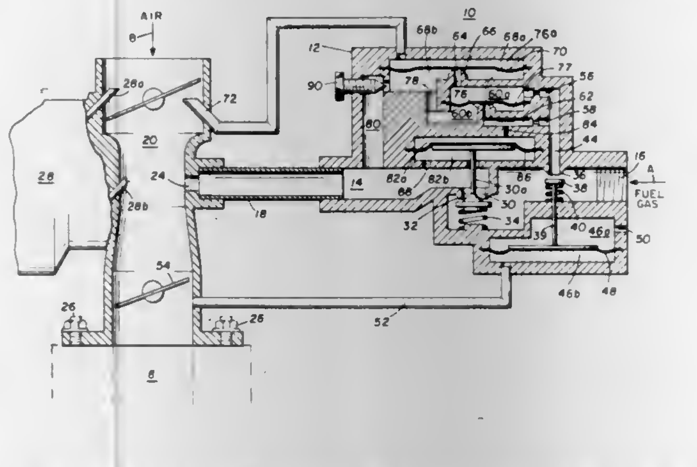
a discharge line for introducing gas from the motor blower means into an inlet of the gas purifying chamber, the motor blower means forcing the gas along the discharge line and through the gas purifying chamber;

baffle means in the gas purifying chamber for causing the gas from the discharge line which is introduced to the gas purifying chamber to follow a zig-zag path through the gas purifying chamber; and

a gas outlet in the gas purifying chamber for removed purifying gas from the gas purifying chamber; the said apparatus being such that the gas chamber does not have direct access to environmental air so that the motor blower means can suck the gaseous products of combustion in the combustion chamber through the burning solids in the combustion chamber for the formation of the combustible gas.

4,352,677
REGULATOR FOR GAS AND AIR MIXTURE

James S. Jones, 45 Crown Pl., Richardson, Tex. 75080
Filed Oct. 14, 1980, Ser. No. 196,196
Int. Cl.³ F02M *23/04*
U.S. Cl. 48—180 C 12 Claims



1. A device for controlling the flow of fuel gas from a fuel gas source to an engine in response to a variable level vacuum generated by said engine, comprising:

a conduit connecting the vacuum input port of said engine to said fuel gas source;

a main valve disposed in said conduit for regulating the flow of said fuel gas; and

diaphragm main valve control means in fluid communication with said conduit for operating said main valve in response to the level of said vacuum, comprising

control diaphragm means for producing variations in pressure in said gas in response to said changes in the vacuum; and

amplifier diaphragm means for amplifying said variations in pressure to drive said main valve.

4,352,678
THICKENED ABRASIVE BLEACHING COMPOSITIONS

Robert A. Jones, Wirral, England, and David A. Reed, La Chapelle d'Armentieres, France, assignors to Lever Brothers Company, New York, N.Y.
Filed Sep. 24, 1979, Ser. No. 78,103
Claims priority, application United Kingdom, Oct. 2, 1978, 38961/78
Int. Cl.³ B24D *3/02*
U.S. Cl. 51—307 10 Claims

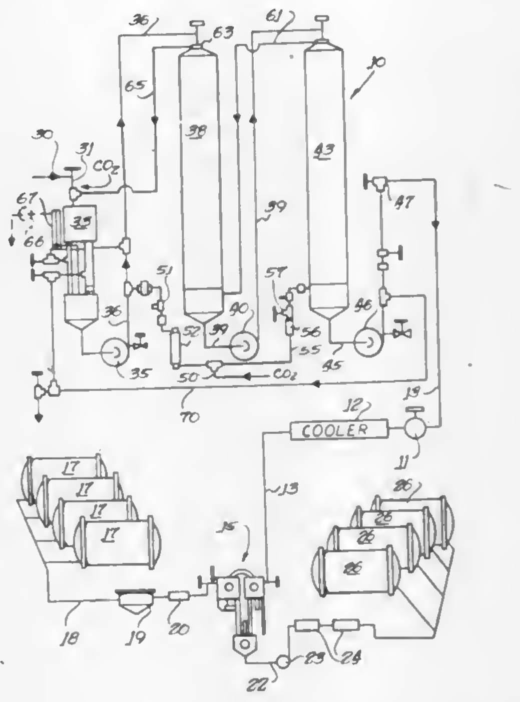
1. A pourable aqueous scouring cleanser composition free from a three dimensional network of entanged filaments, said composition comprising:

(i) in a liquid portion,
  (a) from 0.02 to 10% by weight based on the total composition of sodium hypochlorite as a chlorine-releasing bleaching agent; and
  (b) a suspending combination of from 0.1 to 0.5 moles/kg, based on the weight of the liquid portion of an anionic surfactant and a water soluble polar nonionic/zwitterionic surfactant in the form of an amine oxide and an effective amount of electrolyte in aqueous solution to form said suspending combination, said suspending combination being resistant to oxidative chlorination by said chlorine-releasing bleaching agent; and

(ii) from 0.1 to 75% by weight of a particulate abrasive suspended in said suspending combination, said liquid portion and particulate abrasive when combined providing said composition in a form from which there is absent any three dimensional network of entangled filaments.

4,352,679
DEOXYGENATING EQUIPMENT AND METHOD OF OPERATION

Luigi Notardonato, Park Ridge; Casimir Pulawski, Chicago, and David M. Kemp, Naperville, all of Ill., assignors to FMC Corporation, Chicago, Ill.
Filed Apr. 10, 1981, Ser. No. 252,871
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—38 7 Claims



1. A method of simultaneously deoxygenating and carbonating a supply of water, comprising the steps of receiving a flow of water from a source, metering the rate of flow of water, then injecting at a positive pressure a first flow of carbon dioxide gas into the metered, flowing water, thereafter introducing said flowing, carbonated water into a vessel, maintaining the pressure within the vessel and experienced by the metered, carbonated water at between about 14.7 and 4.9 pounds per square inch absolute, thereafter introducing a second flow of carbon dioxide gas into said vessel in counterflow to said water therein, removing excess carbon dioxide from said vessel at the upstream side of the vessel to maintain said pressure, introducing said excess carbon dioxide into the flowing water upstream from said vessel and thereafter cooling said flow to a 34°-37° F. temperature, so as to remove oxygen from the water and leave the cooled carbonated water discharged from said vessel with less than 1.0 dissolved volumes of carbon dioxide, and thereafter drawing off the deoxygenated, carbonated flow of water.

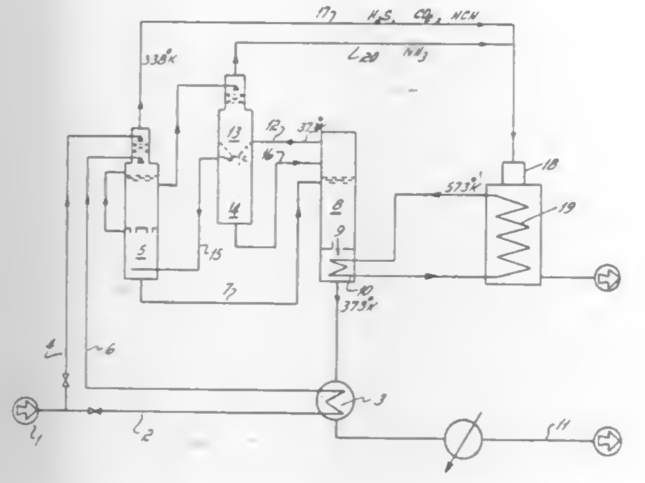
4,352,680
PROCESS AND/OR FACILITY FOR DRIVING OFF DISSOLVED, CORROSIVE GASEOUS CONSTITUENTS FROM WATERY SOLUTIONS

Erich Hackler, Essen-Kettwig, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Fed. Rep. of Germany
Filed Jul. 19, 1979, Ser. No. 58,761
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832359
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—48 18 Claims

1. A process for separating dissolved gaseous constituents from an aqueous solution containing acid gases and ammonia, said process comprising the steps of directly contacting said

aqueous solution with drops of hot light heating oil immiscible in said solution to separate said acid gases from said solution to form a treated solution, introducing steam into said treated solution to separate out ammonia and to form an ammonia-water vapor, and cooling said vapor with the oil from the acid separation step to condense the water component of said vapor.

8. A process for separating dissolved gaseous constituents from an aqueous solution containing acid gases and ammonia, said process comprising the steps of introducing said aqueous solution into a deacidifier, introducing drops of hot light heating oil into the bottom of said deacidifier, said oil flowing in an upward direction through said aqueous solution to separate said acid gases from said solution, withdrawing the treated solution from said deacidifier, introducing said treated solution into an ammonia separator, introducing steam into said treated solution in said ammonia separator to separate out the residual ammonia, introducing the H_2O/NH_3 vapor issuing out of the ammonia separator into a vapor cooler, cooling said vapor by contacting it with cooled heating oil from said deacidifier in a top section of said vapor cooler, accumulating the condensate in a bottom section of said vapor cooler, said oil forming a layer on the top of said condensate, withdrawing said oil from said cooler, and withdrawing said condensate from said cooler.



4,352,681

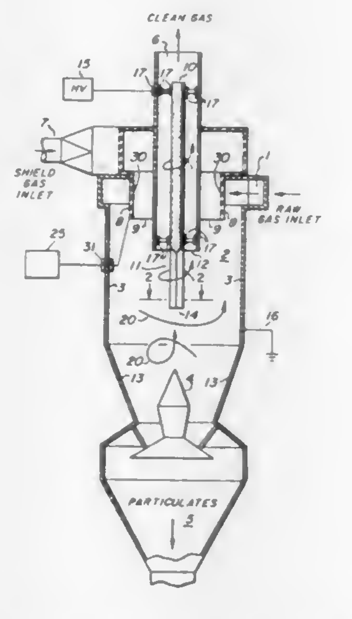
ELECTROSTATICALLY AUGMENTED CYCLONE APPARATUS

Peter W. Dietz, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 195,174, Oct. 8, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,706

Int. Cl.^{3} B03C *3/14*

U.S. Cl. 55—127 **4 Claims**



1. A reverse flow cyclone separator comprising a first swirl-inducing raw gas inlet, a radially inwardly disposed exhaust duct, a cyclonic separation zone disposed in flow communication intermediate said raw gas inlet and said exhaust duct and a means for producing a corona discharge in said cyclonic separtion zone wherein said corona discharge producing means comprises an electrode disposed substantially coaxially in said exhaust duct and having a corona producing portion extending out of said duct inlet into said cyclonic separation zone and first electrical means to enable the formation of a corona discharge between said corona producing portion and a wall of said cyclonic separation zone and further comprising a second swirl inducing inlet for substantially contaminant free gaseous medium, said second inlet including an inlet structure defining an introduction zone disposed radially inwardly from said raw gas inlet and radially outwardly of the inlet of said exhaust duct and second electrical means for forming a voltage gradient between said inlet structure and said wall of said cyclonic separation zone.

4,352,682

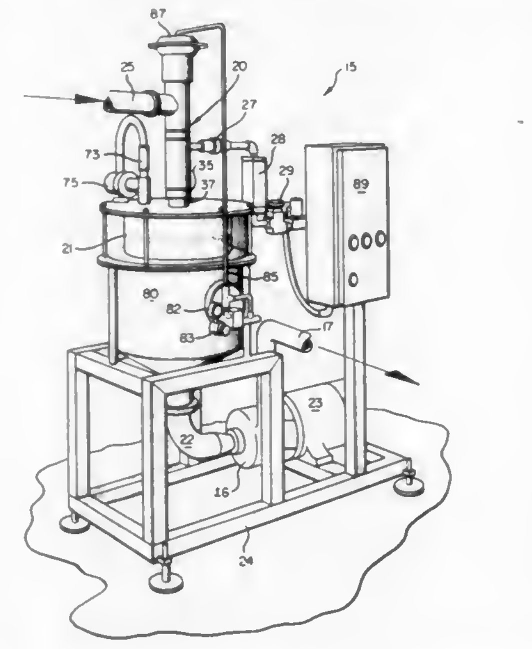
DEOXYGENATING APPARATUS

David M. Kemp, Jr., Naperville, and Hartl R. Jones, Bensenville, both of Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 13, 1980, Ser. No. 206,455

Int. Cl.^{3} B01D *19/00*

U.S. Cl. 55—165 **9 Claims**



1. A gas exchange deoxygenating unit, comprising, in combination, a tubular conduit forming a hollow discrete mixing chamber having an upstream water inlet pipe adapted to receive oxygen-containing water from a remote source, a gas inlet located downstream of the water inlet and adapted to receive a stripping gas from a remote source, a gas flow meter between said remote gas source and said gas inlet, said gas inlet being positioned to inject the stripping gas directly into the water in the mixing chamber, valve means operable to cause said stripping gas to be introduced into said mixing chamber at a positive gas pressure to provide a turbulent water and gas flow within the mixing chamber, and a mixing chamber outlet downstream of the water inlet and gas inlet, the chamber containing a quantity of insoluble reticulated material to further encourage said turbulent water and gas flow and intimate water and gas intermixing in the mixing chamber, the deoxygenating unit further including a discrete hollow deoxygenating chamber having an upstream inlet in fluid communication with the mixing chamber water outlet and comprising a deoxygenating chamber inlet for receiving the combined and mixed water and stripping gas from the mixing chamber outlet, a plurality of foraminous members mounted at spaced apart locations in the deoxygenating chamber and adapted to intercept and cause intermixing of the water and stripping gas, each member having a plurality of orifices extending therethrough,

a deoxygenating chamber water outlet, a deoxygenating chamber gas outlet, exhaust means for expelling gas from the deoxygenating chamber through the deoxygenating chamber gas outlet, a water collecting basin connected to said water outlet, a pump for withdrawing the deoxygenated water from said basin, and means responsive to the water level within said basin for controlling the flow of water from said inlet pipe to said mixing chamber.

4,352,683

APPARATUS FOR VENTING AND DEAERATING FROM A LIQUID CIRCUIT

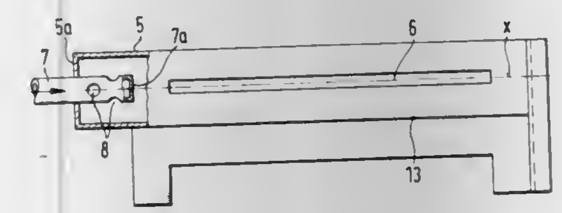
Hans Vogel, Nuremburg, Fed. Rep. of Germany, assignor to MAN Maschinenfabrik Augsburg-Nuernberg AG, Nuremberg, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,795

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002578

Int. Cl.^{3} B01D *19/00*

U.S. Cl. 55—192 **9 Claims**



1. Apparatus for degassing a liquid circuit, particularly the cooling circuit of an internal combustion engine, comprising

a surge tank having a lower liquid-side part and an upper gas-side part;

inlet means for admitting a gas-containing liquid into said surge tank under pressure;

outlet means for discharging degassed liquid from said surge tank; and

means for depressurizing and degassing the admitted liquid, comprising an at least generally horizontal expansion tube of predetermined diameter and having closed ends and a longitudinally extending large-area outlet, a liquid-inlet pipe of a diameter smaller than said predetermined diameter and having a closed but radially ported end portion extending through one of said ends and located within said tube and a baffle opposite to and spaced from said large-area outlet so that when gas-containing liquid admitted via said inlet pipe is discharged from said large-area outlet over the relatively large area of the outlet and impinges upon said baffle, even small gas bubbles will be liberated from the liquid to rise upwards in said gas-side port whereas the now degassed liquid is depressurized prior to its run-off over a surface of the baffle and into said liquid-side port.

4,352,684

FILTER BAG

Suresh D. Amberkar, Framingham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 127,294, Mar. 5, 1980, abandoned, which is a continuation of Ser. No. 846,658, Oct. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 607,540, Aug. 25, 1975, abandoned. This application Jul. 6, 1981, Ser. No. 280,397

Int. Cl.^{3} B01D *46/02*

U.S. Cl. 55—382 **7 Claims**

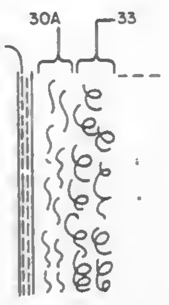
1. A filter bag comprising

a porous bag cover, and

a porous filter mass within said bag cover,

said filter mass being in the form of loosely lofted material which has a greater internal surface area than that of said bag cover, and

said loosely lofted material being puff expanded to completely fill said bag and having a density in the range from



about 75 grams per cubic foot to about 250 grams per cubic foot.

4,352,685

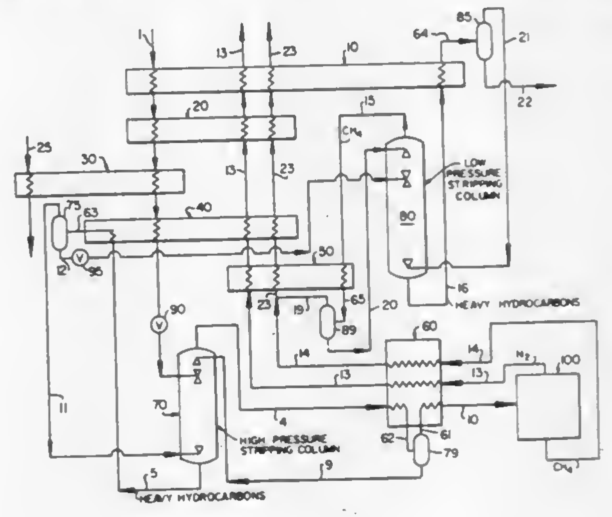
PROCESS FOR REMOVING NITROGEN FROM NATURAL GAS

Brian R. Swallow, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 24, 1981, Ser. No. 276,899

Int. Cl.^{3} F25J *3/02*

U.S. Cl. 62—28 **18 Claims**



1. A process for separating nitrogen from natural gas comprising:

(1) introducing an at least partially condensed nitrogen-containing natural gas feed stream which is essentially free of water and carbon dioxide and is at a pressure of at least 400 psia, to a first stripping column wherein the stream is separated by rectification into a nitrogen-methane gas stream A and a heavy hydrocarbon-methane liquid stream B;
(2) partially condensing stream A to produce a nitrogen-methane gas stream C and a liquid stream D;
(3) introducing stream D to said first stripping column;
(4) introducing stream C to a nitrogen-methane separation zone wherein the stream is separated into a nitrogen stream E and a methane stream F;
(5) partially vaporizing stream B to produce a gas stream G and a heavy hydrocarbon-enriched liquid stream H;
(6) introducing stream G to said first stripping column as vapor reflux;
(7) introducing stream H to a second stripping column wherein it is separated by rectification into a methane-rich stream I and a liquid stream J;
(8) partially condensing stream I to produce a methane gas stream K and a liquid stream L;
(9) introducing stream L to said second stripping column;
(10) partially vaporizing stream J to produce a gas stream M and a heavy hydrocarbon liquid stream N;

(11) introducing stream M to said second stripping column as vapor reflux; and

(12) recovering stream F and stream K as product methane.

4,352,686

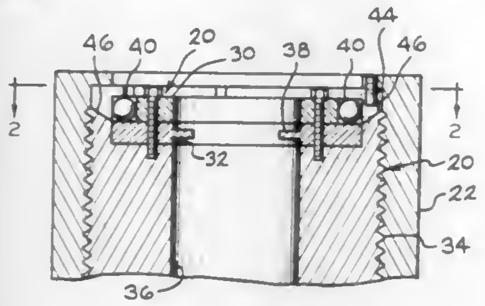
SPINNER ROTATING APPARATUS

E. Eugene Crosby, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 2, 1981, Ser. No. 317,095

Int. Cl.^{3} C03D *37/04*

U.S. Cl. 65—15 **8 Claims**



5. Apparatus for manufacturing mineral fibers from molten material comprising a spinner having orificed peripheral walls, said spinner being adapted to receive and to centrifuge molten mineral material into mineral fibers, a quill upon which said spinner is mounted, a rotatable cap means adapted to be rotated by a drive means, threaded insert means to which said quill is attached, said insert means being adapted to threadably engage the interior of said cap means and to transmit driving force from said cap means to said quill, a stop means mounted on said cap means and a movable member mounted on said inert means for radial movement with respect to said insert means, said movable member being biased radially inwardly, and where outward radial movement of said movable member caused by rotation of said insert means results in engagement between said movable member and said stop means to prevent relative movement between said insert means and said cap means.

4,352,687

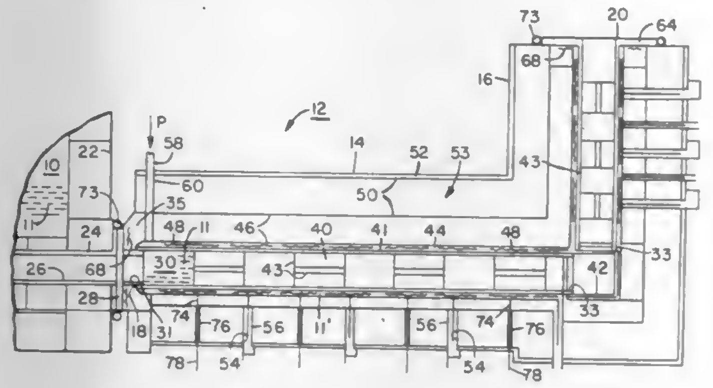
FURNACE DELIVERY SYSTEM

George B. Boettner, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,022

Int. Cl.^{3} C03B *5/23*

U.S. Cl. 65—134 **27 Claims**



1. A delivery apparatus for a furnace for conditioning a supply of relatively hot molten thermoplastic material contained within said furnace and supplied at an outlet thereof by controlled dissipation of heat energy therefrom comprising: a pipe having an inlet coupled to the furnace outlet for receiving said thermoplastic material therefrom and delivering the same to a desired location from an outlet thereof and conditioning the material to a desired homogeneity and temperature upon delivery; a refractory structure located in spaced relation about said pipe forming a space between an exterior of the pipe and the refractory structure and defining a chamber which surrounds said pipe and extends between said pipe and said structure, and heater means located in the chamber proximate the pipe for supplying heat thereto, said chamber having an opening in communication with the supply of thermoplastic material in at least one of the pipe and the furnace so as to receive therefrom a portion of the supply of thermoplastic material to thereby immerse the pipe and heater means therein.

20. A method of conditioning a supply of thermosplastic material existing at virtually any condition between a solid relatively cold condition and a molten relatively hot condition comprising the steps of: confining the material to a selected flow path, conducting the material along the flow path from an inlet end to an outlet end thereof, regulating the rate of heat energy dissipation from the material along said flow path including the step of at least one of heating said material and heat exchanging and removing heat energy given up by said material along said path, forming a concentric annular chamber surrounding the flow path, said chamber having wall portions in spaced relation with said flow path, said wall portions defining a space within said chamber, and communicating the supply of the material into the chamber for surrounding the flow path with thermoplastic material to thereby immerse the same in said material within said chamber.

4,352,688

NITROGEN FERTILIZERS

Louis E. Ott, Oswego, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 2, 1978, Ser. No. 956,913

Int. Cl.^{3} C05G *3/00*

U.S. Cl. 71—11 **8 Claims**

1. A method of fertilizing soil consisting of applying an effective amount of ammonia and ammonium acetate to said soil, wherein the mole ratio of ammonia to acetate ion is from about 50 to about 50,000.

7. A method of treating soil which comprises applying to said soil a source of available nitrogen and at least one alkanoate anion in the form of a salt which is selected from the group consisting of the ammonium and metal salts of an alkanoic acid containing from 2 to 6 carbon atoms; wherein said metal is selected from the group consisting of lithium, sodium, potassium and calcium; said nitrogen source is selected from the group consisting of ammonium nitrate, ammonium sulfate, sodium nitrate, calcium nitrate, calcium cyanamide, urea, ammonium phosphate, ammonium polyphosphate and mixtures thereof; and the mole ratio of said nitrogen source to said alkanoate anion is from about 600 to about 50,000.

4,352,689

METHOD FOR CONTROLLING APICAL DOMINANCE

Charles D. Fritz, Hatfield, Pa.; Wilbur F. Evans, Kuala Lumpur, Malaysia, and Anson R. Cooke, Hatfield, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 869,386, Oct. 24, 1969, which is a continuation-in-part of Ser. No. 693,698, Dec. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 617,860, Feb. 23, 1967, abandoned. This application Jan. 28, 1972, Ser. No. 221,817

The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.

Int. Cl.^{3} A01N *57/00*

U.S. Cl. 71—86 **1 Claim**

1. A method for controlling apical dominance which comprises applying to the plant an effective amount, ranging between about 0.1 lb. and about 16 lbs. per acre of plants being treated, of 2-chloroethylphosphonic acid.

4,352,690

ACID GOLD BATH FOR THE ELECTROLESS DEPOSITION OF GOLD

Manfred Dettke, and Ludwig Stein, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

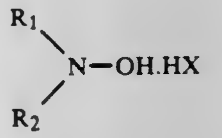
Filed Jul. 17, 1980, Ser. No. 284,450

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1980, 3029785

Int. Cl.^{3} C23C *3/02*

U.S. Cl. 106—1.23 **7 Claims**

1. In a stabilized aqueous, acidic gold plating bath for the electroless deposition of gold on gold and metals that are more electronegative than gold and alloys thereof containing a dicyanogold(I)-complex, a complex former and a reducing agent; the improvement comprising a stabilizer selected form the group consisting of an alkali metal fluoride and an alkali metal hydrogen fluoride and, as reducing agent, a hydroxyl amine derivative having the formula



$$R_1R_2N{-}OH.HX$$

in which R_1 and R_2 are the same or different and represent hydrogen or alkyl of 1-5 carbon atoms and X represents the residue of an inorganic acid.

4,352,691

LIQUID INK FOR PRINTERS

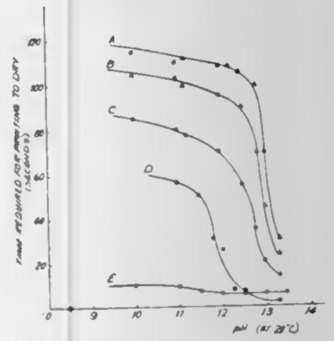
Akio Owatari, and Yuki Yamada, both of Shiojiri, Japan, assignors to Shinshu Seiki Kabushiki Kaisha, Nagano, Japan

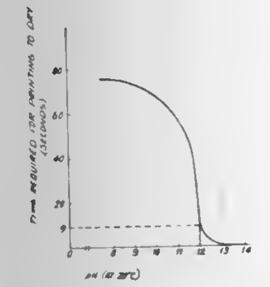
Filed Oct. 16, 1980, Ser. No. 197,731

Claims priority, application Japan, Oct. 17, 1979, 54-133824

Int. Cl.^{3} C09D *11/02*

U.S. Cl. 106—20 **11 Claims**





1. A liquid ink composition including an effective amount of a component capable of dissolving at least one of a fibrous material, sizing material and a surface treatment material present in a recording medium to permit the ink to penetrate the recording medium, comprising:

a water-soluble dye;

a wetting agent selected from the group consisting of aliphatic polyhydric alcohols, alkylether derivatives of aliphatic polyhydric alcohols, acetate derivatives of aliphatic polyhydric alcohols and mixtures thereof;

at least one strong basic alkali metal hydroxide; and

water; the composition having a pH between about 12 and 14 at 20° C.

4,352,692

MODIFIED VEGETABLE PROTEIN ADHESIVE BINDER

Thomas L. Krinski, Granite City, Ill., and Carroll L. Garey, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Mar. 16, 1981, Ser. No. 244,439

Int. Cl.^{3} C09D *1/04, 3/02*

U.S. Cl. 106—79 **34 Claims**

13. A process for the production of a modified vegetable protein alkaline binder comprising:

- a. forming a slurry of a urease containing vegetable protein material having a proteinaceous solids content of 10 to 30% by weight;
- b. adding to said slurry a water soluble silicate in amounts effective to reduce foaming during reaction of the protein material and sufficient urea to react with the urease and provide a pH for the slurry above about 8,
- c. reacting said slurry with an oxidizing agent in an amount and for a time sufficient to improve the rheological properties by lowering the viscosity of the protein material;
- d. heating said reacted slurry to a temperature of between about 220° to 320° F. for between about 90–150 seconds.

4,352,693

CAPSULES CONTAINING CEMENTITIOUS COMPOSITIONS

Michael Langdon, P.O. Box 329, 162 Drakensberg Rd., Rondebult, Germiston 1423, Transvaal, South Africa

Filed Jan. 27, 1981, Ser. No. 228,854

Claims priority, application United Kingdom, Jan. 29, 1980, 8002941

Int. Cl.^{3} C04B *7/32*

U.S. Cl. 106—104 **19 Claims**

1. An anchoring capsule for use in anchoring, comprising a container, a dry self-setting water activatable solid composition in said container, said container having a plurality of holes whereby when the capsule is immersed in water the water passes through the holes into the container there to interact with said dry solid component in the container to form the anchoring self-setting composition, said container including means to reduce loss of the self-setting composition via the holes when the capsule is immersed in the water, and wherein the dry self-setting composition in said container is a cementitious mixture comprising a high alumina cement, said dry self-setting composition including both an organic acid component selected from the group consisting of hydroxy carboxylic acids and alkali metal salts and esters thereof, and at least one water soluble lithium derivative, said organic acid component and said lithium derivative being present in substantially equal proportions by weight, and in which there is a concentration of 0.05 parts of the lithium derivative to 100 parts of dry self-setting composition which is sufficient to cause the self-setting composition to achieve a high early strength in the form of a controlled initial setting time followed by a final setting time to give a final strength similar to the high initial strength whereby an element may be anchored in the set anchoring composition.

4,352,694

PROCESS OF PRODUCING SOREL CEMENT

Robert Smith-Johannsen, Incline Village, Nev., assignor to Norcem A.S., Oslo, Norway

Continuation-in-part of Ser. No. 169,984, Jul. 18, 1980, abandoned. This application Oct. 31, 1980, Ser. No. 202,691

Int. Cl.^{3} C04B *9/02*

U.S. Cl. 106—106 **5 Claims**

1. A process for producing magnesium oxide hydrate cements which comprises forming a premix containing water and part of the magnesium oxide to be used to form the hydrate and in which the magnesium oxide is at least initially substantially unreactive with magnesium chloride hydrate, mixing the premix with the magnesium chloride hydrate and the remainder of the magnesium oxide in the reactive state, and curing the

resulting composition, said unreactive magnesium oxide being capable of slowly reacting with the magnesium chloride hydrate after the initial reaction of the reactive magnesium oxide with the magnesium chloride hydrate.

4,352,695
NOVEL GELATINS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Ivan Tomka, Bourguillon, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 5, 1980, Ser. No. 184,568

Claims priority, application Switzerland, Sep. 17, 1979, 8382/79

Int. Cl.^{3} **C09D** *3/04;* **C09H** *11/00*

U.S. Cl. 106—135 **16 Claims**

1. A process for the preparation of gelatin with a high setting speed of solidification and reduced viscosity by lowering its microgel content without at the same time substantially increasing its peptide content, which comprises subjecting an aqueous gelatin solution to the action of mechanical shearing forces, the shear stress being between 10^4 and 10^8 Pascal.

4,352,696
PROCESS AND COMPOSITION

Richard A. Prather, Houston, Tex., assignor to The Upjohn Company, Kalamazoo, Mich.

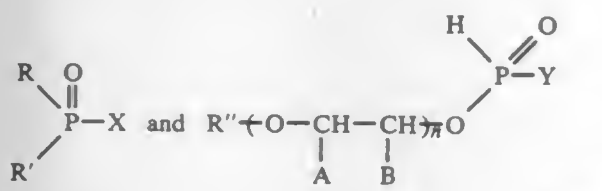
Filed Mar. 30, 1981, Ser. No. 248,804

Int. Cl.^{3} **C08L** *1/00*

U.S. Cl. 106—163 R **17 Claims**

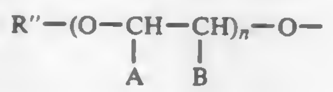
1. In a process for the preparation of particle board wherein particles of material capable of being compacted are contacted with a polyisocyanate composition and the treated particles are subsequently formed into boards by the application of heat and pressure, the improvement which comprises contacting said particles, in addition to the treatment with said polyisocyanate composition, with from about 0.1 to about 20 parts, per 100 parts by weight of said polyisocyanate, of a compound selected from the class consisting of:

(a) compounds having the formulae:



(I) (II)

wherein R is hydrocarbyl; R′ is selected from the group consisting of hydrocarbyl, alkoxy, hydroxyl and

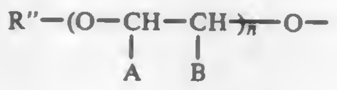


$$R''-(O-\underset{A}{\underset{|}{CH}}-\underset{B}{\underset{|}{CH}})_n-O-$$

wherein R″ is selected from the group consisting of alkyl and aryl, one of A and B represents hydrogen and the other is selected from the class consisting of hydrogen, methyl, chloromethyl and 2,2,2-trichloroethyl, and n is a number having an average value from 1 to 25;

R and R′ taken together represent alkylene having 3 to 5 carbon atoms in the chain separating the valencies;

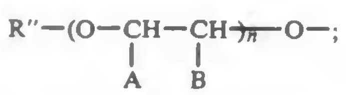
X is selected from the group consisting of hydroxy, halo, acyloxy, hydrocarbylamino, and



$$R''-(O-\underset{A}{\underset{|}{CH}}-\underset{B}{\underset{|}{CH}})_n-O-$$

wherein R″, A, B, and n are as defined above; and

Y represents a member selected from the group consisting of halo and



$$R''-(O-\underset{A}{\underset{|}{CH}}-\underset{B}{\underset{|}{CH}})_n-O-;$$

(b) metal, ammonium and organic amine salts of the acids of formula (I) wherein R′ and or X represents hydroxyl.

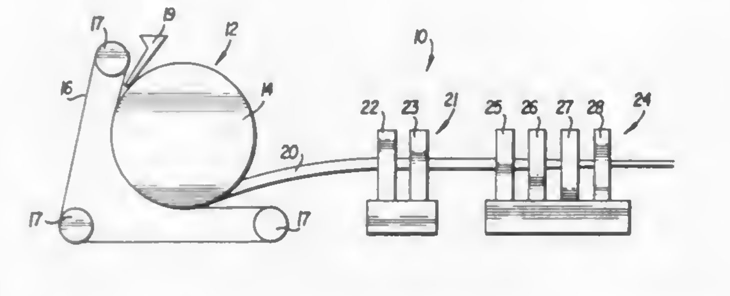
4,352,697
METHOD OF HOT-FORMING METALS PRONE TO CRACK DURING ROLLING

Ronald D. Adams, and E. Henry Chia, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Oct. 1, 1979, Ser. No. 80,368

Int. Cl.^{3} **C22F** *1/08*

U.S. Cl. 148—2 **7 Claims**



1. A method for hot rolling, directly inline with a continuous caster, a continuous bar of high impurity copper without cracking said bar during heavy reduction from the predominately as cast condition, comprising:

(a) providing as a starting material, a molten flow of high impurity copper; then

(b) continuously casting said molten flow into a continuous bar and directing the advancing solidified bar to an inline continuous hot rolling mill, said bar being in the as cast condition and at a hot-forming temperature; then

(c) conditioning said bar immediately precedent to subjecting said bar to heavy reduction in said rolling mill, said conditioning being characterized in that said bar is preliminarily subjected to light reduction sufficient to cause recrystallization in a relatively thin surface shell within said bar but otherwise leaving said bar in a predominately as cast condition; and then

(d) subjecting said bar to heavy reduction in at least the first roll stand following conditioning, said heavy reduction being sufficient to cause substantially complete recrystallization throughout the entire cross-section of said bar after conditioning.

4,352,698
METHOD OF IMPROVING THE WEAR RESISTANCE OF METALS

Nicholas E. W. Hartley, Wantage; Alan Wilcockson, Newbury, both of England; David M. Sutherland, deceased, late of Wembley, England, and by The Midland Bank Trust Company Limited, legal representative, London, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 2, 1980, Ser. No. 212,340

Claims priority, application United Kingdom, Dec. 3, 1979, 7941579

Int. Cl.^{3} **C21D** *1/09*

U.S. Cl. 148—4 **10 Claims**

1. A process for improving the wear resistance of a surface portion of a metal article which is to be subject to contact with another article after assembly, comprising the operation of implanting into such a portion of a metal article, the wear resistance of which portion is to be improved, ions of a material which is capable of forming within the article oxide compounds having a perovskite or spinel type structure, and terminating the implantation of the ions when a dose of at least 10^{15} ions per square centimeter has been implanted and the wear resistance of said portion has been materially improved.

4,352,699
CO-NITRATING TRIMETHOLETHANE AND DIETHYLENE GLYCOL

Edward H. Zeigler, Jr., Budd Lake, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 1, 1981, Ser. No. 269,154

Int. Cl.^{3} **D03D** *23/00, 43/00*

U.S. Cl. 149—109.6 **3 Claims**

1. In a process of co-nitrating a mixture of trimethylolethane and diethylene glycol with a mixture of sulfuric and nitric acids, the improvement of using an excess of between about 65 to about 100% by weight of nitric acid above the stoichiometric requirement for the co-nitration.

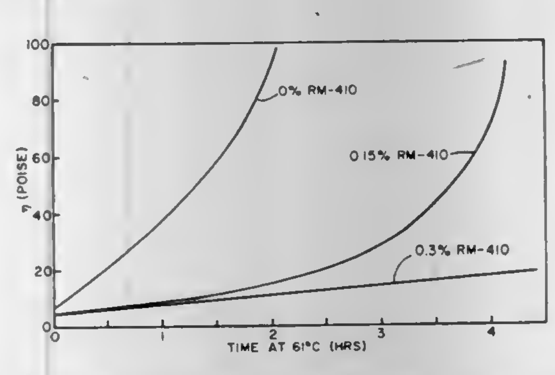
4,352,700
CURE RATE INHIBITORS FOR FERROCENE-CONTAINING PROPELLANTS

Richard E. Hoffman, Sandy, Utah, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1980, Ser. No. 218,400

Int. Cl.^{3} **C06B** *45/10*

U.S. Cl. 149—19.2 **4 Claims**



1. A composite propellant composition containing a phosphate acid diester which functions as a cure-rate inhibitor to thereby increase the pot life of said composite propellant containing ferrocene or ferrocene derivatives, said composite propellant composition comprising:

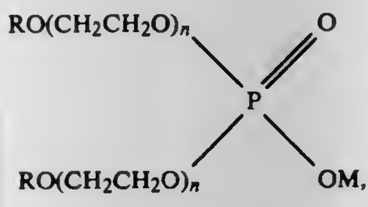
(i) hydroxyl terminated polybutadiene binder in an amount from about 52 to about 60 weight percent;

(ii) isophorone diisocyanate curing and crosslinking agent in an amount from about 2 to about 5 weight percent;

(iii) isodecyl pelargonate plasticizer in an amount from about 5 to about 7 weight percent;

(iv) a burning rate catalyst selected from a ferrocene or a ferrocene derivative in an amount from about 28 to about 41 weight percent; and

(v) an additive of a phosphate acid diester which functions as a cure-rate inhibitor in an amount from about 0.3 to about 2.5 weight percent, said phosphate acid diester having the formula:



wherein n equals the average number from about 1 to about 10 moles ethylene oxide reacted with one mole hydrophobe, R equals alkyl or alkylaryl radical, and M equals hydrogen or an alkali metal selected from sodium and potassium.

4,352,701
PROCESS FOR THE PRODUCTION OF HIGHLY EXPANDED POLYOLEFIN INSULATED WIRES AND CABLES

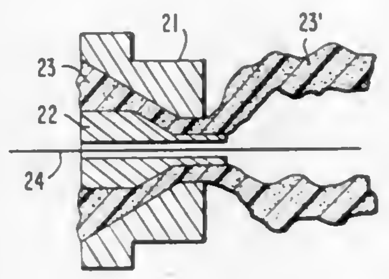
Hiroshi Shimba; Fumio Suzuki, and Masao Yuto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 858,752, Dec. 8, 1977, abandoned, which is a continuation of Ser. No. 661,876, Feb. 27, 1976, abandoned, which is a division of Ser. No. 420,486, Nov. 30, 1973, abandoned. This application Apr. 25, 1980, Ser. No. 143,684

Claims priority, application Japan, Aug. 21, 1973, 48-92939; Sep. 21, 1973, 48-102212

Int. Cl.^{3} **H01B** *7/02*

U.S. Cl. 156—51 **33 Claims**



19. In a process for producing a highly expanded polyolefin cable of excellent high frequency characteristics comprising the steps of feeding a polyolefin, a nucleating agent and a blowing agent to an extruder wherein the blowing agent is fed into the polyolefin as in a conventional swelling process or a conventional injection process and then heat extruding the resulting mixture through the extruder onto an inner conductor passing through the extruder to cover the outer periphery of the inner conductor, thereby forming an insulation layer of a highly expanded polyolefin foam, the improvement which includes the step of uniformly applying a polyolefin adhesive layer onto the inner conductor which is a metallic conductor to thereby increase the adhesive strength between the highly expanded polyolefin insulation layer, which consists essentially of polyolefin, and the inner conductor prior to forming the highly expanded polyolefin insulation layer having a foaming ratio in excess of 2.5 times (60% expansion degree) on the adhesive layer on the inner conductor, which includes the step of, after extruding the foaming polyolefin mixture around said inner conductor having coated thereon the adhesive layer, sizing the outer surface of said foaming polyolefin layer on said inner conductor by means of a sizing die to provide a highly expanded uniform polyolefin insulation layer of a predetermined size, said sizing die having a cross-sectional area less than that of the freely expanded polyolefin foam at normal atmospheric pressure, whereby said foam is prevented from undergoing free foaming in the sizing die to provide tight adhesion of said insulation layer on said inner conductor due to the absence of a space between said polyolefin foam insulation layer and said adhesive layer on the inner conductor wherein the temperature of the sizing die is lower than the temperature of the extruded polyolefin foam, and wherein said blowing agent is a volatile liquid which provides a lubricating effect to the extruded foam insulation being sized.

20. The process as claimed in claim **18**, further comprising the application of an outer conductor to said highly expanded uniform polyolefin insulation layer after said sizing, said outer conductor being provided after providing an adhesive layer between said outer conductor and said highly expanded uniform polyolefin insulation layer after sizing.

4,352,702
METHOD OF MAKING A THERMOPLASTIC RECEPTACLE HAVING IMPROVED HIGH TEMPERATURE SEAL

Norman D. Bornstein, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Sep. 22, 1980, Ser. No. 189,459

Int. Cl.³ B29C *27/02;* **B29D** *23/04;* **B32B** *31/28*

U.S. Cl. 156—84 **6 Claims**

1. A process for forming a heat shrinkable, flexible, thermoplastic receptacle having a gas barrier layer wherein food products or the like can be raised to pasteurizing temperatures comprising the steps of:

(a) coextruding a tubular multi-layer film comprising a layer of hydrolyzed ethylene-vinyl acetate copolymer and an interior surface layer of a polyolefin which is cross-linkable by ionizing radiation, the layers of said multi-layer film being directly melt joined without an adhesive disposed therebetween;
(b) irradiating said tubing with ionizing radiation to a first dosage level sufficient to allow continuous processing of said tubing by the trapped bubble technique, said dosage level being at least 0.5 MR;
(c) heating said tubing to the orientation temperature of said polyolefin;
(d) inflating and then cooling said tubing by the trapped bubble technique to stretch the tubing to film thickness and to orient it thereby producing a heat-shrinkable film;
(e) sealing selected portions of said film to itself using heat and pressure and severing selected portions of said film to form a heat shrinkable receptacle having an opening; and,
(f) irradiating the entire receptacle to impart a second and higher dosage level, said second dosage being at least 0.5 MR thereby producing a heat shrinkable receptacle in which a food product can be pasteurized.

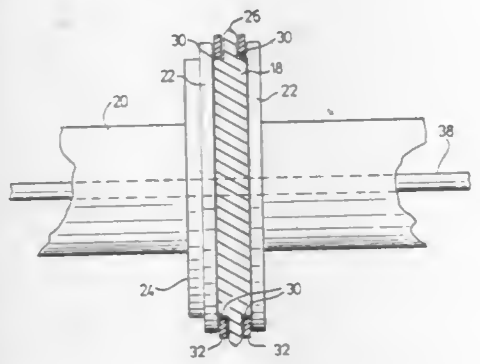
4,352,703
FREE-SPINNING EMBOSSERS

Reginald F. Perron, Chambly, Canada, assignor to Hubscher Ribbon Corporation Limited, Montreal, Canada

Filed Oct. 6, 1980, Ser. No. 194,526

Int. Cl.³ D03D *47/50*

U.S. Cl. 156—88 **7 Claims**



1. A method of producing ribbons with embossed side edges from a length of thermoplastic material, comprising pulling said length of material through a cutting station having a plurality of side-by-side circular knives mounted for rotation about an axis substantially parallel to the plane of the material at the cutting station and substantially perpendicular to the direction of travel of the material through the cutting station, each circular knife having a peripheral cutting edge, drivingly rotating and heating the circular knives while the material is being pulled through the cutting station to cause the cutting knives to cut the material into a series of ribbons, and providing heated circular embossing members on opposite sides of each circular knife which are freely rotatable relative to the associated circular knife to cause the embossing members to be rotated by contact with the material and to emboss the side edges of the ribbons.

4,352,704
METHOD OF MAKING POROUS TREAD

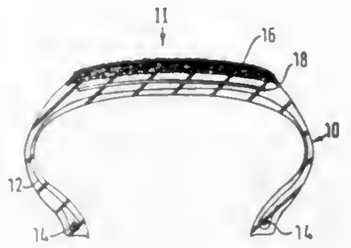
Arthur R. Williams, Birmingham, and Gareth T. Williams, Lichfield, both of England, assignors to Dunlop Limited, London, England

Division of Ser. No. 127,655, Mar. 6, 1980, Pat. No. 4,290,470. This application Jun. 9, 1981, Ser. No. 271,964

Claims priority, application United Kingdom, Mar. 16, 1979, 7909376

Int. Cl.³ B29G *7/02;* **B60C** *11/00*

U.S. Cl. 156—125 **17 Claims**



1. A method of manufacturing a tire tread having an assembly of numerous discrete particles of vulcanized elastomeric material bonded together to form a cohesive non-solid mass with adjacent particles bonded together only at separated portions thereof, and intermediate said bonded portions, the particles being spaced-apart to provide passages which are randomly distributed and randomly orientated, said passages extending substantially throughout the tread, including from a highway-contacting surface of the tread, said passages constituting voids in the tread, the total void content of the tread being in the range from 10% to 60% of the overall volume of the tread, said method comprising the steps of mixing prevulcanized particulated elastomeric material with a binder, shaping said mixture to the required shape of the tread and curing the binder so that voids are left in the finished tread.

4,352,705
PROCESS FOR THE PREPARATION OF LEATHERLIKE SHEET MATERIALS

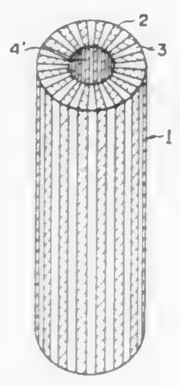
Kiyotaka Ozaki; Michikage Matsui, both of Ibaraki, and Norihiro Minemura, Takatsuki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 129,310, Mar. 11, 1980, abandoned, which is a continuation of Ser. No. 934,784, Aug. 18, 1978, abandoned. This application Jul. 2, 1981, Ser. No. 279,871

Claims priority, application Japan, Sep. 6, 1977, 52-106290; Sep. 6, 1977, 52-106291; Sep. 6, 1977, 52-106292

Int. Cl.³ B32B *5/02*

U.S. Cl. 156—155 **14 Claims**



1. A process for the preparation of leatherlike sheet materials which comprises the steps of:

(1) preparing hollow composite fibers, each composed of 32 to 72 alternately arranged segments of polyester or polyamide and polystyrene which are mutually adhered side-by-side and encompass a hollow space, and which extend along the longitudinal axis of the fiber to form a tubular body, said hollow composite fiber having a denier of 1 to 20, and said each segment having a denier of 0.01 to 0.5, the ratio of the total weight of the polyester or polyamide segments to that of the polystyrene segments in the hollow composite fiber being in the range of between 50:50 and 70:30 and the hollow ratio of the hollow composite fiber being between 2 and 15% by volume;
(2) forming a fabric using thus prepared hollow composite fibers;
(3) removing the polystyrene segments with a solvent thereof from the hollow composite fibers; and
(4) applying an elastic polymer to the fabric.

4,352,706
PROCESS FOR APPLYING A METALLIC IMAGE IN REGISTER TO A DOCUMENT OF VALUE

Lee H. Miller, 900 Park Ave., New York, N.Y. 10021

Filed Aug. 31, 1981, Ser. No. 298,090

Int. Cl.³ B44C *1/00*

U.S. Cl. 156—233 **3 Claims**

1. A process for preventing the counterfeiting of a valuable document, comprising the steps of, depositing, on a reusable transfer agent, a first film of metallic particles of the order of magnitude of substantially less than 1,000 Angstroms in thickness, coating a first predetermined area of said transfer agent with varnish, laminating said transfer agent and a first substrate together before said varnish is cured so that said metallic particles are embedded in said varnish at said first predetermined area and transferred to said first substrate, separating said transfer agent and said first substrate whereby said metallic particles outside of said coated first predetermined area remain deposited on said transfer agent, depositing, on said reusable transfer agent, a second film of metallic particles of the order of magnitude of substantially less than 1,000 Angstroms, coating a second predetermined area of said transfer agent with varnish, laminating a second substrate comprising the valuable document and said transfer agent together before said varnish is cured so that said metallic particles are embedded in said varnish at said second predetermined area and transferred to said second substrate, curing said varnish coating on said second predetermined area, separating said second substrate from said transfer agent whereby said second substrate is provided with at least one film of metallic particles at a first predetermined location and at least two films of metallic particles at a second predetermined location and cleaning said reusable transfer agent.

4,352,707
COMPOSITE REPAIR APPARATUS

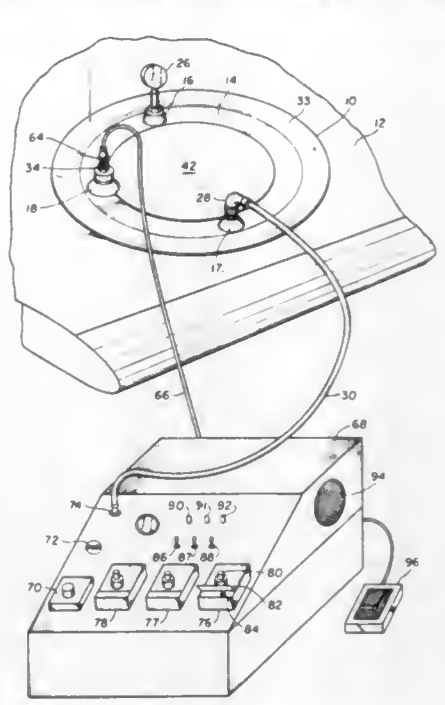
Leonard M. Wengler, Sayville; Harold J. Wicker, Commack, and Michael J. Masica, Jr., Port Jefferson Station, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 23, 1981, Ser. No. 256,699

Int. Cl.³ G05G *15/00*

U.S. Cl. 156—359 **7 Claims**

1. A portable composite repair apparatus comprising:
a flexible, non porous diaphragm which may be fitted over a composite patch which has been placed on a surface to be patched;
a plurality of resistive heating elements, each of said resistive heating elements being integrally formed within the diaphragm and having a surface power density corresponding to a maximum heat loss density of an area on the surface to be patched with which said resistive heating element registers; and
a like plurality of temperature control units, each of which may be adjusted to control a rate of temperature rise and an ultimate curing temperature in an associated resistive heating element.



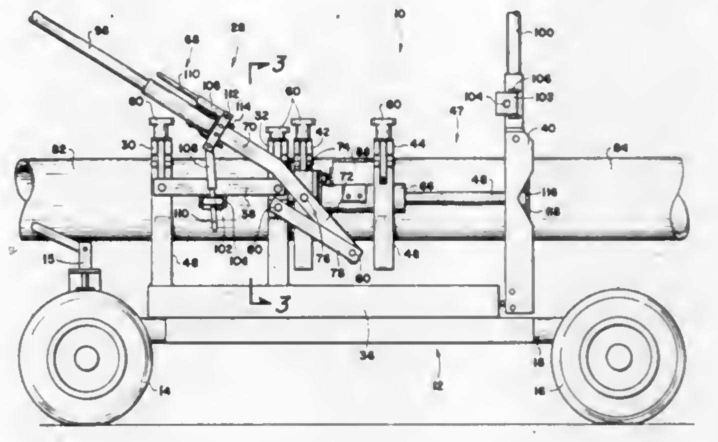
4,352,708
DEFINED FORCE FUSION MACHINE FOR JOINING PLASTIC PIPE

Arthur H. McElroy, P.O. Box 15580, Tulsa, Okla. 74112

Filed Sep. 8, 1980, Ser. No. 179,030

Int. Cl.³ B29C *27/12;* **B32B** *31/20;* **F16L** *47/02*

U.S. Cl. 156—378 **12 Claims**



1. An apparatus for fusing molten portions of pipe together comprising:
a support frame;
fixed clamp means on said support frame to retain a molten portion of said first section of pipe in a fixed axial position;
movable clamp means adapted to retain a molten portion of a second section of pipe axially spaced from said molten portion of said first section of pipe, said movable clamp means movably supported upon guide rods, said guide rods fixed to said support frame on each side of said pipe the axis of which lies in an imaginery plane which intersects the central axis of said molten portions of said first and second pipe sections;
means to move said clamp means bringing said molten pipe portions into contact for fusion; and
means in communication with said movable clamp means to indicate the force applied to said molten pipe portions when drawn together into contact for fusion.

12. In an apparatus for fusing molten portions of a first and a second pipe together, including means to move the portion of the first pipe relative to the portion of the second pipe, the

improvement comprising means in communication with said means to move to indicate the force being applied to said molten portions when drawn together into contact for fusion.

4,352,709

APPARATUS FOR PRODUCING SEAT CUSHION MEMBER

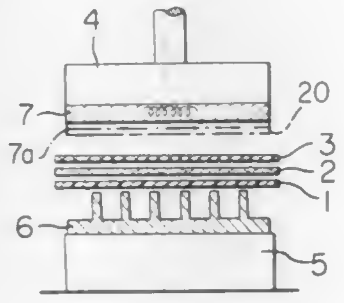
Muneharu Urai, 3-419-3, Takagi, Higashiyamato, Tokyo; Tadafumi Abe, 2-8-42, Honda, Kokubunji, Tokyo; Youichiro Haraguchi, 2054-11, Hane, Hamuramachi, Nishitamagun, Tokyo, and Koji Hayashi, 2149-2, Haijimacho, Akishima, Tokyo, all of Japan

Division of Ser. No. 102,399, Dec. 11, 1979, Pat. No. 4,313,776. This application Oct. 27, 1980, Ser. No. 203,401

Claims priority, application Japan, Dec. 14, 1978, 53/153621; Dec. 20, 1978, 53/156297

Int. Cl.^{3} B29C *27/04, 27/06*

U.S. Cl. 156—380.6 **1 Claim**



1. An apparatus for producing a seat cushion member by welding a sheet of surface material, a sheet of usual or untreated polyurethane foam material and a reinforcing web of fabric material into an integral structure, said apparatus comprising high-frequency welding means including a pair of an upper plate and a lower plate, conventional heating means disposed on the entire surface of at least one of the upper plate and the lower plate of said high-frequency welding means, a sheet of heat resistive elastic material bonded to the heating surface of the plate having the conventional heating means thereon, the heating operation of said heating means being carried out substantially in concurrent relation with the high-frequency weld operation of said high-frequency welding means;

said heating means being disposed only on the side opposite to said reinforcing web of fabric material; and

said heating means comprises an insulator member which is subject to dielectric heating during the operation of said high-frequency welding means and accumulates internal heat generated due to the dielectric heating.

4,352,710

HAND-HELD LABELER

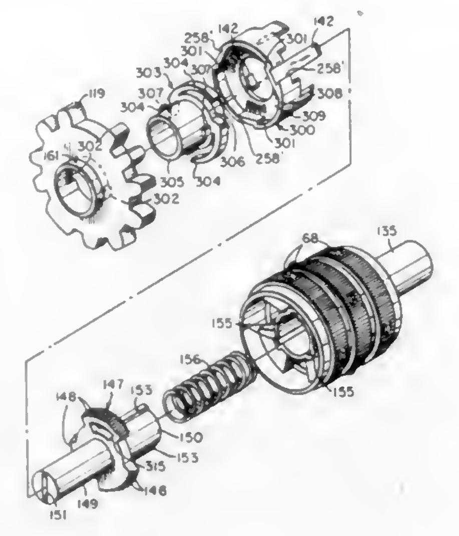
James A. Makley, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 11, 1981, Ser. No. 272,795

Int. Cl.^{3} B32B *31/00*

U.S. Cl. 156—384 **10 Claims**

1. In a hand-held apparatus for printing and applying labels releasably secured by pressure sensitive adhesive to a carrier web, and including a housing having a handle, means in the housing for printing on labels, means for delaminating printed labels from the carrier web, means for applying printed labels, a rotatably mounted feed wheel, the feed wheel having teeth at its periphery engageable with the carrier web for drawing the web about the delaminating means, means for moving the printing means and the feed wheel, the moving means including a ratchet wheel and a pawl member having a pawl cooperable with the ratchet wheel, first clutch means for enabling relative movement between the ratchet wheel and the feed wheel when unclutched to enable the registration of the label with respect to the printing means to be adjusted and for preventing relative movement between the ratchet wheel and the feed wheel when clutched to provide a drive connection between the ratchet wheel and the feed wheel during use of the apparatus, characterized in that the pawl member has a slidably mounted hub, means including second clutch means effective when the first clutch means is unclutched and having a first clutch member connected to the pawl member and a cooperable second clutch member connected to the ratchet wheel for selectively clutching the pawl member and the ratchet wheel against relative rotational movement while the feed wheel is being rotated relative to the ratchet wheel, the pawl member being slidable in one direction relative to the ratchet wheel for clutching the pawl member and the ratchet wheel, and the pawl member being slidable in the opposite direction relative to the ratchet wheel for unclutching the pawl member and the ratchet wheel.



4,352,711

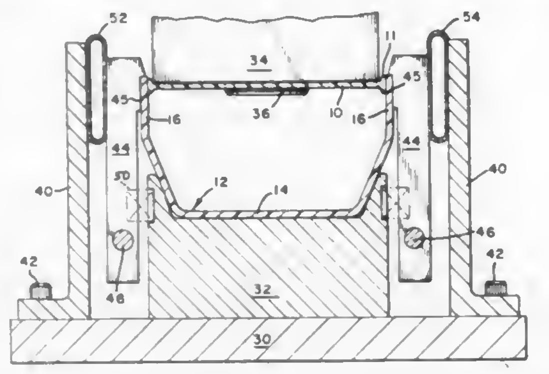
FRICTION WELDING APPARATUS

Leslie Toth, Brookfield, Conn., assignor to Branson Ultrasonics Corporation, Newton, Conn.

Filed Jun. 15, 1981, Ser. No. 273,628

Int. Cl.^{3} B29C *27/08*

U.S. Cl. 156—497 **8 Claims**



1. A friction welding apparatus for welding a thermoplastic reinforcing plate to a thermoplastic U-shaped channel, the latter including a base and two upstanding legs comprising:

first support means for supporting said channel;

second support means for supporting said plate within said channel in a manner to dispose each of the opposite lateral edges of said plate in abutting contact with a respective inside surface of each of said legs;

means for applying a force to the outside surface of each of said legs for causing each of said legs to be in forced abutting surface contact with said plate along said two opposite edges of said plate, and

means for causing said first and second support means to undergo relative linear reciprocating motion along an axis parallel to the longitudinal axis of said plate during a weld time interval for causing thermoplastic material along said respective abutting surface contacts to melt and upon cessation of said motion said molten material to rigidify whereby said plate becomes welded to said channel.

4,352,712

APPARATUS FOR APPLYING GASKET-FORMING MATERIAL TO WORKPIECES

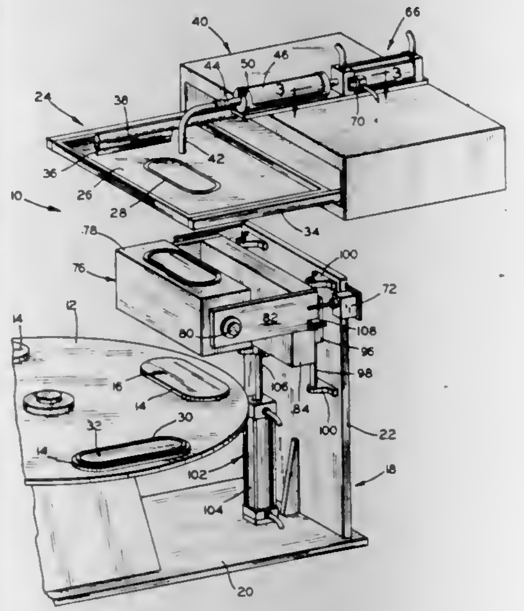
William A. Paul, 2338 Townley Rd., Toledo, Ohio 43614

Continuation-in-part of Ser. No. 90,466, Nov. 1, 1979, Pat. No. 4,273,607. This application Jun. 10, 1981, Ser. No. 272,278

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.^{3} B44C *1/00*

U.S. Cl. 156—540 **14 Claims**



1. Apparatus for applying a bead of gasket-forming material in a pattern of predetermined size and shape to a mateable surface of a workpiece, said apparatus comprising means for supporting the workpiece, a source of gasket-forming material, a supporting member, a transfer member rotatably supported by said supporting member, applicator means for applying gasket-forming material to said transfer member from said source in the shape of the bead to be applied to the mateable surface, means for moving said supporting member in a lineal path toward and away from said applicator means and said workpiece supporting means, and means mounted on said supporting member for moving said transfer member in an arcuate path from a position with the transfer surface facing toward the mateable surface of the workpiece when on said supporting means and a position with the transfer surface facing said applicator means.

4,352,713

VAPOR GROWTH METHOD

Shigeru Morita, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 7, 1980, Ser. No. 204,953

Claims priority, application Japan, Nov. 10, 1979, 54-145727

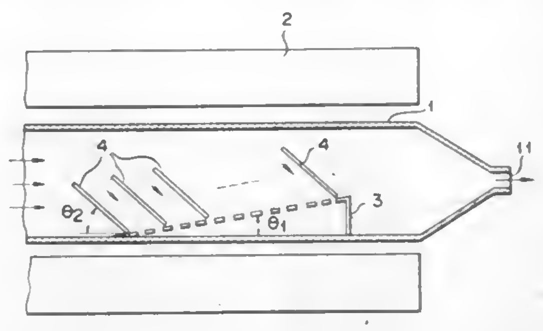
Int. Cl.^{3} C30B *25/12*

U.S. Cl. 156—612 **11 Claims**

1. A method of forming a film on a plurality of substrates within a generally horizontal elongated reaction vessel having a central axis, an upstream inlet and a downstream outlet, comprising the steps of:

(a) arranging said substrates along said axis in a substantially parallel array, the planes of said substrates being at an angle to said axis with the upstream edge of each substrate being higher than the downstream edge of the same substrate, the upstream edge of each said substrates projecting higher into the gas flow a distance greater than the upstream edge of the preceding upstream substrate; and

(b) passing a reactive gas through said vessel at a reduced pressure along said axis from said inlet to said outlet, said gas reacting with said substrates and forming a film thereon.



4,352,714

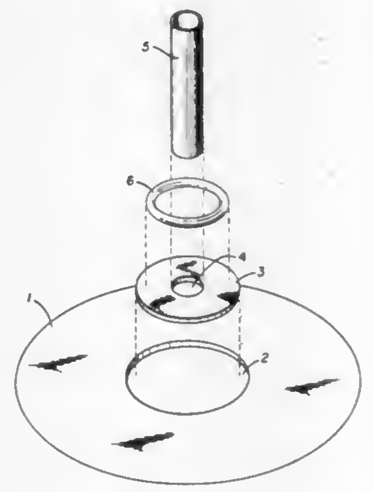
METHOD FOR MAKING A METAL-TO-CERAMIC INSULATOR SEAL FOR ELECTROCHEMICAL CELLS

Charlton A. Patterson, Parma Heights, and Richard M. Wilson, Medina, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1980, Ser. No. 192,018

Int. Cl.^{3} H01M *2/08;* **C03C** *17/10, 29/00*

U.S. Cl. 156—626 **5 Claims**



1. A method for making a metal/ceramic seal for electrochemical cells comprising the steps:

(a) plating the surface of a ceramic insulator having an opening disposed in the insulator with a metal that can be chemically removed;

(b) juxtaposing a metal elongated member at the opening of the metal-plated ceramic insulator such that the elongated member is to be metallurgically bonded within said opening and to said metal-plated ceramic insulator and juxtaposing the metal-plated ceramic insulator with a metal member to be metallurgically bonded together;

(c) placing a heat-fusible metal proximal the areas of the metal-plated ceramic insulator and metal elongated member and the metal-plated ceramic insulator and the metal member;

(d) heating the fusible metal above its melting point so as to cause the fusible metal to flow over the surface of the metal-plated ceramic insulator and be drawn by capillary action into the interfacial areas of the metal elongated member and the metal-plated ceramic insulator and the metal-plated ceramic insulator and the metal member; and

(e) chemically treating the components of step (d) to remove the plated metal from selected exposed surfaces on the ceramic insulator while not effectively weakening the metallurgical bonds between the metal elongated member and the metal-plated ceramic insulator and between the metal-plated ceramic insulator and the metal member.

4,352,715

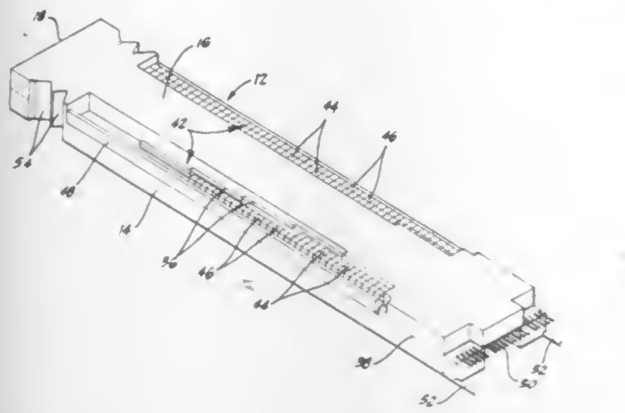
DETECTOR ARRAY MODULE FABRICATION

John C. Carson, Corona Del Mar, and Paul F. Dahlgren, Newport Beach, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.

Division of Ser. No. 855,242, Nov. 28, 1977, Pat. No. 4,304,624. This application Nov. 17, 1980, Ser. No. 206,993

Int. Cl.³ C23F *1/02;* **H01J** *5/02;* **G06K** *9/00;* **H05K** *3/06*

U.S. Cl. 156—634 **10 Claims**



1. That method of fabricating a photo-detector mosaic array module which has a focal plane at one end adapted to support and provide electrical connections to the photo-detectors in the mosaic array, and which comprises a plurality of electrical-circuit-supporting layers extending at right angles to the focal plane, which method comprises:

forming separately a plurality of electrical-circuit-supporting layers each of which has electrical circuitry thereon terminating in a plurality of closely spaced electrical leads at the focal plane end of said layer;

securing the layers together with the electrical circuitry located between contiguous layers and arranged to provide a mosaic array pattern of electrical contact points on the focal plane end of the layered structure; and

emplacing a multiplicity of individual photo-detectors on the focal plane of the layered structure, each detector being in direct electrical contact with one of the electrical contact points.

4,352,716

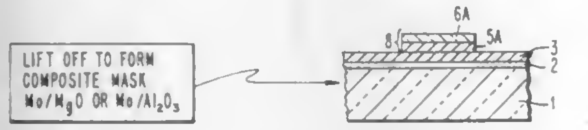
DRY ETCHING OF COPPER PATTERNS

Paul M. Schaible, and Geraldine C. Schwartz, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,645

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—643 **34 Claims**



1. A process for forming a copper based metal pattern comprising

depositing on a copper surface a composite mask formed by sequentially depositing of a diffusion barrier layer of molybdenum and an overlying layer selected from the group consisting of magnesium oxide (MgO) and aluminum oxide (Al_2O_3) extending in a pattern corresponding to the desired configuration of said copper pattern, with openings exposing complementary portions of said copper surface,

dry etch removal of said complementary portions of said copper through said mask openings, and

removing said composite mask.

23. A process for forming a patterned copper metallization on a substrate comprising:

(A) blanket coating said substrate with a copper first film,

(B) blanket coating said copper film with a diffusion barrier molybdenum second film,

(C) blanket coating second film with a third film selected from the group consisting of MgO and Al_2O_3 films,

(D) blanket coating said film with a resist fourth film,

(E) lithographically forming a mask from said resist having a pattern of openings complementary to the desired copper pattern,

(F) removing the portions of said MgO film and the underlying portions of said Mo film in said openings to expose the underlying portions of said copper film,

(G) removing the remaining portions of said resist of said mask to retain a composite mask of said Mo and MgO films, extending in a configuration corresponding to said copper pattern,

(H) dry etching said exposed portions of said copper film in a plasma ambient through said openings of said composite mask, and

(I) removing the remaining MgO and Mo film portions of said composite mask.

4,352,717

APPARATUS FOR PRODUCTION OF SPHERICAL GRAIN FERRITE POWDER

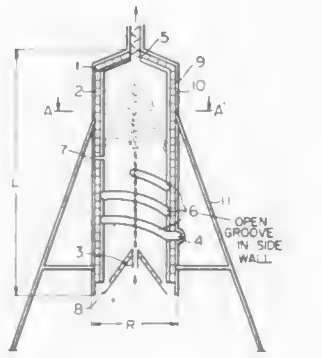
Yasuo Watanabe; Seizi Isoyama, both of Okayama, and Yoshikazu Yamamichi, Tokyo, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Division of Ser. No. 823,345, Aug. 10, 1977, abandoned. This application Jan. 3, 1978, Ser. No. 866,703

Claims priority, application Japan, Aug. 12, 1975, 50-97844

Int. Cl.³ B01D *1/18*

U.S. Cl. 159—4 E **3 Claims**



1. Apparatus for the production of substantially spherical grain-ferrite powder which comprises:

a vertical cylindrical vessel having a lining of refractory material;

a hot air intake provided at the lower portion of the wall of said vertical vessel;

an exhaust vent provided at the top of said vertical vessel;

a spray nozzle provided in the center of the bottom of said vertical vessel and oriented to provide a continuous jetting feed of a ferrite powder suspension rising in the same direction as the axis of said vertical cylindrical vessel;

an open groove hot air guide provided along the inner surface of the wall of said vertical vessel, said open groove opening to the interior of said vertical vessel and extending upward in a spiral form starting from said hot air intake and toward said exhaust vent for providing a hot air current rising spirally upwardly within said vessel and around said sprayed suspension to produce a high temperature atmosphere above said spray nozzle for the formation of substantially spherical-grain ferrite particles from said sprayed suspension; and

an outlet at the lower end of said vessel for removal of said substantially spherical-grain ferrite particles.

4,352,718

METHOD FOR TREATING PARTICULATE MATERIAL

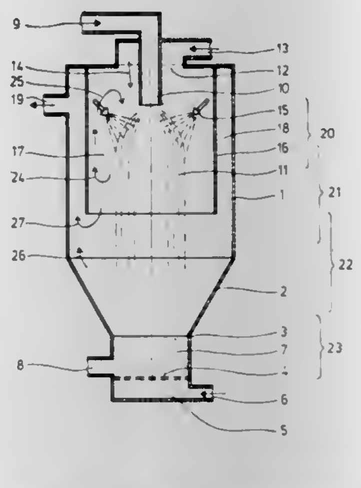
Gustav Grün, Ortenberg-Lissberg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,371

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006861

Int. Cl.³ B01D *1/18*

U.S. Cl. 159—48 R **5 Claims**



1. The method for moistening and subsequently drying particulate material comprising introducing gas entrained particulate material into a first zone, treating said gas entrained particulate material in said first zone with a spray of moisturizing liquid (while said particulate material is gas entrained), providing a free falling zone below said first zone through which said wetted particulate material is permitted to fall whereby penetration of the liquid into the interstices of the particulate material is accomplished, thereafter accumulating said treated particulate material in a fluidized bed zone positioned below said free falling zone, said particulate material being further treated by relatively high gas flow at the fluidized bed zone whereby said acccumulated particulate material is removed from the locus of said fluidized bed zone, said gaseous flow being adjusted whereby the gases have a relatively high partial pressure of the moisturizing liquid in the free falling zone and a lower partial pressure in the fluidized bed zone.

4,352,719

METHOD FOR PRODUCING COMBUSTION RESISTANT FIBROUS PRODUCTS

Alfons K. Herr, Stutensee, Fed. Rep. of Germany, assignor to Kataflox Patentverwaltungsgesellschaft mbH, Karlsruhe, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,506

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003371; May 24, 1980, 3020033

Int. Cl.³ D21H *5/00*

U.S. Cl. 162—128 **17 Claims**

1. Method for producing a fire retardant or fireproof fibrous product, comprising:

(a) processing fibrous organic materials, fibrous inorganic materials or a mixture thereof into an aqueous slurry;

(b) intimately mixing with said slurry at least one boron-containing mineral which reacts with a mineral acid to form boric acid and at least one mineral acid to form boric acid;

(c) allowing the slurry, mineral and acid mixture to ripen;

(d) feeding said ripened mixture into a sheet forming and dewatering means to form a dewatered fibrous web; and

(e) drying said dewatered fibrous web to form said fibrous product.

4,352,720

PROCESS AND APPARATUS FOR THE PRODUCTION OF MOLDED METALLURGICAL COKE FROM COAL BRIQUETTES

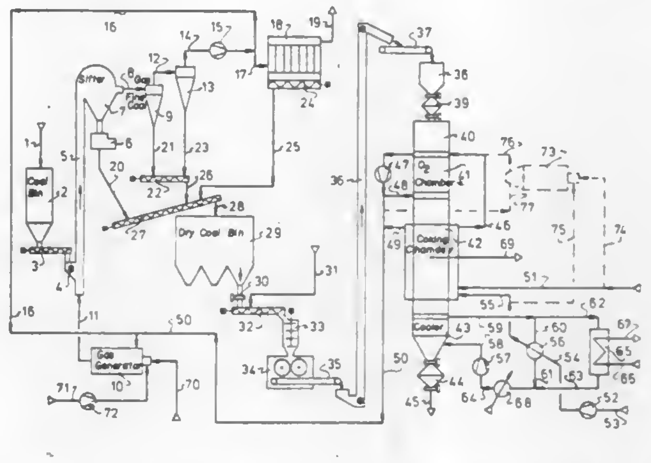
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen; Horst Dungs, Herne, and Klaus Urbye, Flaesheim, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co., KG, Fed. Rep. of Germany

Division of Ser. No. 135,112, Mar. 28, 1980, Pat. No. 4,305,788. This application Oct. 27, 1980, Ser. No. 201,262

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913666

Int. Cl.³ C10B *1/04*

U.S. Cl. 202—124 **3 Claims**



1. A device for the production of molded metallurgical coke from dried coal or fine coal mixtures with a low swelling index, comprising:

means for forming briquettes;

a vertically extending reactor with a common jacket having an oxidation chamber adjacent the top thereof for receiving the briquettes, an indirectly heated vertical coking chamber directly below the oxidation chamber and a cooling chamber disposed directly below the coking chamber for directly cooling the briquettes using a cooling gas ;

means for circulating heating gases around said coking chamber and then upwardly across said coking chamber for indirect heating thereof, and into said oxidation chamber;

a top double air lock chamber connected to a top of said oxidation chamber for admitting the briquettes; and

a bottom double air lock chamber connected to a bottom of said cooling chamber for discharging briquettes;

said means for circulating heating gases operating to supply the heating gases from around said coking chamber to said oxidation chamber with an oxygen content of about 2% to 6% to surface oxidize the briquettes directly;

said coking chamber having an outlet for crude coke gas.

4,352,721

PROCESS FOR APPLYING DESIGNS TO ALUMINUM STRIP

Timothy A. Park, Derby, and Brian C. Turner, Bletchley, both of England, assignors to Ano-Coil Limited, Bletchley, England

Continuation of Ser. No. 14,567, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 811,125, Jun. 28, 1977, abandoned. This application Nov. 14, 1980, Ser. No. 208,168

Claims priority, application United Kingdom, Jun. 28, 1976, 26840/76

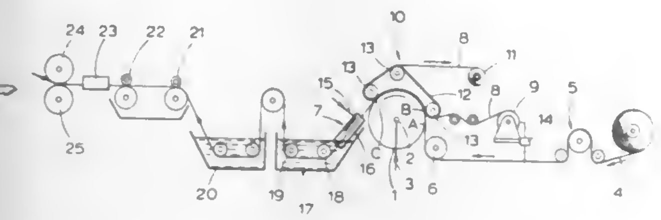
Int. Cl.³ C23F *5/00;* **B41M** *1/08, 1/28*

U.S. Cl. 204—35 N **14 Claims**

1. A process for continuously printing anodised aluminum strip by transfer from a carrier web of a design in printing ink containing colored sublimable components, said process comprising:

(a) continuously feeding an unsealed, anodised aluminum strip to a moving surface heated to a temperature at which said colored components of the ink sublime and heating the strip by contact with the surface of said moving surface in advance of its contact with the carrier web so that the aluminum is pre-heated before contact with the carrier web;

(b) feeding said carrier web into contact with the aluminum strip so that the printing ink is heated by contact with the anodised aluminum surface and colored components of the ink are caused to transfer from the carrier web to the aluminum strip;



(c) rapidly quenching the strip after transfer of the design thereto by contacting the strip substantially instantaneously with a coolant after leaving the heated moving surface and prior to sealing the anodised aluminum surface; and

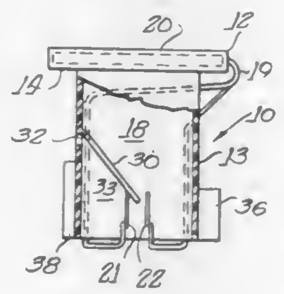
(d) thereafter sealing the anodised aluminum surface.

4,352,722

INTEGRATED PHOTOVOLTAIC ELECTROLYTIC CELL

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Mar. 12, 1981, Ser. No. 243,265
Int. Cl.³ C25B *1/04*
U.S. Cl. 204—129 **16 Claims**



1. A unit for producing hydrogen gas with solar energy, comprising:

flotation means to buoy said unit in an aqueous medium;

stabilization means to maintain a vertical orientation of said floating unit;

solar ray receiving means located at the top of said unit when said unit is floated which includes a plurality of interconnected photovoltaic cells, positioned to receive sun's rays and interconnected to produce electrical potential of at least about 1.4 volts;

a gas bubble collection chamber with means to admit therein the medium oriented below the surface of the medium when said unit floats therein;

an anode and a cathode; and

means respectively connecting said anode and said cathode to positive and negative terminals of said photovoltaic cells;

said cathode being positioned for contact with the aqueous medium at a location where hydrogen bubbles produced by the electrolysis of water resulting from the electrical potential created by said photovoltaic cells are trapped in said collection chamber.

13. A method for producing hydrogen gas from an aqueous medium comprising:

disposing a plurality of floatable photovoltaic-electrolysis units in an aqueous medium, each of which units includes a gas bubble collection chamber;

exposing said units to the sun's rays and collecting hydrogen created by electrolysis of water in said collection chambers;

gathering said units at a hydrogen harvesting facility, following collecton of at least a minimum desired amount of hydrogen in each unit, and

harvesting the hydrogen from said units.

4,352,723

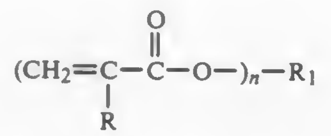
METHOD OF CURING A DUAL UV/THERMALLY CURABLE ACRYLATE COMPOSITION

Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 177,658, Aug. 13, 1980, Pat. No. 4,288,527. This application Mar. 16, 1981, Ser. No. 244,441
Int. Cl.³ C25F *3/00*
U.S. Cl. 204—159.19 **3 Claims**

1. The process of forming a cured product which comprises admixing a composition consisting essentially of

(1) a liquid ethylenically unsaturated compound of the formula:

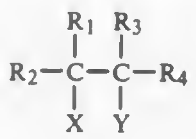


$$(CH_2{=}\underset{R}{\underset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-)_n-R_1$$

wherein R is H or CH_3, R_1 is an organic moiety and n is 2 to 4,

(2) 0.0005 to 30% by weight of (1) of a photoinitiator, and

(3) 0.01 to 5% by weight of (1) of a substituted or unsubstituted pinacol of the general formula:



$$R_2-\overset{R_1}{\overset{|}{\underset{X}{\underset{|}{C}}}}-\overset{R_3}{\overset{|}{\underset{Y}{\underset{|}{C}}}}-R_4$$

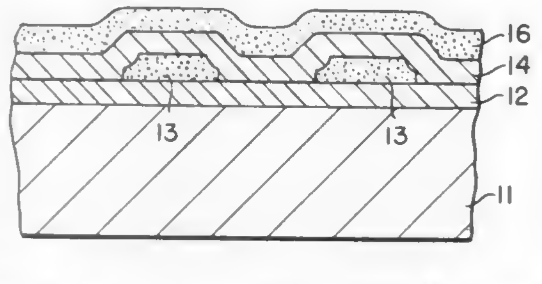
wherein R_1 and R_3 are members independently selected from the group consisting of substituted and unsubstituted aromatic radicals, R_2 and R_4 are members independently selected from the group consisting of substituted and unsubstituted aliphatic and aromatic radicals and X and Y are members independently selected from the group consisting of hydroxyl, alkoxy and aryloxy, exposing said composition to UV radiation having an intensity in the range 0.0004 to 60.0 watts/cm² in the 200–400 nanometer region and, thereafter, heating the composition to a temperature in the range 50°–250° C. for a time sufficient to obtain a cured solid product.

4,352,724

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Kenji Sugishima, and Tadakazu Takada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 19, 1980, Ser. No. 206,391
Claims priority, application Japan, Nov. 28, 1979, 54-154003
Int. Cl.³ C23C *15/00;* **C23F** *1/00*
U.S. Cl. 204—192 E **36 Claims**



1. A method of manufacturing a semiconductor device with

a multi-layer structure on a semiconductor substrate to have a more uniform thickness of at least one of the layers, said method comprising the steps of

forming a masking film with a predetermined pattern on a selected one of said layers that is to be etched in forming said multi-layer structure,

isotropically etching each portion of said layer exposed by said pattern to a substantial depth of said selected layer with a respective etchant, leaving at least a lower part of each said exposed portion of said selected layer, said isotropic etching resulting in the removal of at least some of said selected layer underneath said masking film at the edges of said predetermined pattern, and

completing removal of said selected layer in an area of each said lower part by anisotropic etching so that the lower surface of said selected layer has said predetermined pattern,

wherein the combination of said etchings result in the selected layer having said predetermined pattern with tapered edges.

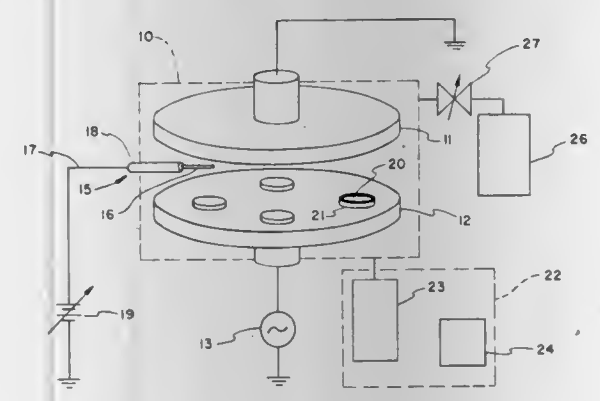
18. The method of claim 1, said anisotropic etching selectively comprising reactive ion etching and reactive sputter etching.

4,352,725

DRY ETCHING DEVICE COMPRISING AN ELECTRODE FOR CONTROLLING ETCH RATE

Tsutomu Tsukada, Fuchu, Japan, assignor to Anelva Corporation, Fuchu, Japan

Filed Dec. 12, 1980, Ser. No. 215,804
Claims priority, application Japan, Dec. 15, 1979, 54/162178
Int. Cl.³ C23C *15/00;* **C23F** *1/00*
U.S. Cl. 204—192 E **6 Claims**



1. A method of equalizing the etch rates in a device for dry etching a specimen by a use of a gas plasma, said method comprising the steps of:

(a) exhausting a chamber having spaced parallel electrodes contained in an enclosed hollow space within said chamber;

(b) placing at least one specimen to be etched on each of said electrodes, the etch rate of a specimen on one electrode differing considerably from the etch rate of a specimen on the other electrode;

(c) filling said space with a preselected reactive gas;

(d) applying an a.c. electric voltage of a predetermined frequency across said electrodes to develop said gas plasma in said gas-filled space, said gas plasma having a plasma potential dependent on the electric voltage applied across it and on said reactive gas; and

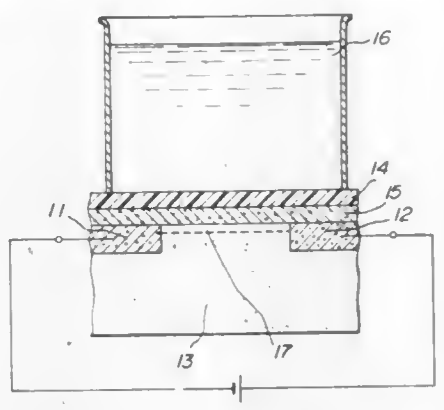
(e) controlling said plasma potential by applying an adjustable d.c. voltage to a control electrode member position in said hollow space between said first and said second electrodes, said control electrode being out of contact with said specimen, thereby equalizing the etch rates of specimens on both electrodes.

4,352,726

ION SELECTIVE FIELD-EFFECT SENSOR

Takuo Sugano; Eiji Niki; Yoichi Okabe, and Tatsuo Akiyama, all of Tokyo, Japan, assignors to Takashi Mukaibo, Tokyo, Japan

Continuation of Ser. No. 20,686, Mar. 15, 1979, abandoned. This application Oct. 28, 1980, Ser. No. 201,637
Claims priority, application Japan, Sep. 14, 1978, 53-112339
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—195 M **16 Claims**



1. In an ion selective field-effect sensor selectively sensitive to a particular cation to be measured, the improvement characterized by using a polymer having a structural unit of a giant heterocyclic compound, which selectively forms a complex with said particular cation, as an ion selective film provided on a surface of a field-effect semiconductor, wherein said polymer is between said giant heterocyclic compound and a member selected from the group consisting of vinyl polymers obtained by radical or ion polymerization of vinyl derivatives of the giant heterocyclic compound; vinyl copolymers obtained by radical or ion polymerization of such a vinyl derivative with a vinyl monomer; a polyamide polymer obtained by polycondensation of a diamino derivative of the giant heterocyclic compound with a dibasic acid halide; a polyester polymer obtained by polycondenstion of a dicarboxylic acid derivative of the giant heterocyclic compound with a glycol; a polyurea polymer obtained by addition polymerization of a diamino derivative of the giant heterocyclic compound with a diisocyanate; a polyurethane polymer obtained by addition polymerization of a diisocyanate derivative of the giant heterocyclic compound with a polyhydric alcohol, a polybasic acid or a polyvalent amine; an epoxy polymer obtained by the addition condensation of an amino derivative of the giant heterocyclic compound with a compound having in its molecule two or more epoxy groups; a polymer obtained by the addition polymerization of the giant heterocyclic compound which comprises an aromatic hydrocarbon group with formaldehyde, chloral or glutaric acid; and a polymer obtained by supporting the giant heterocyclic compound in polymer form by reacting an amino derivative of the giant heterocyclic compound with chloromethylated polystyrene or divinylbenzene crosslinked chloromethylated polystyrene.

4,352,727

ROTOGRAVURE CYLINDER PLATING AND DE-PLATING APPARATUS

Hubert Metzger, Milwaukee, Wis., assignor to Printing Machinery & Electronics Corporation, Inc., Milwaukee, Wis.

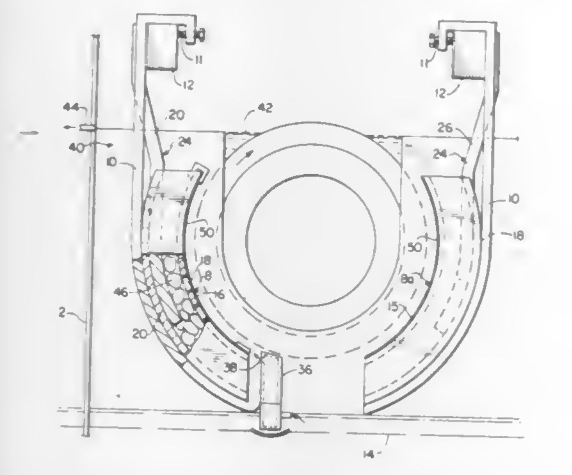
Continuation-in-part of Ser. No. 211,562, Dec. 1, 1980. This application Apr. 17, 1981, Ser. No. 255,281
The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.
Int. Cl.³ C25D *17/00, 17/12*
U.S. Cl. 204—212 **6 Claims**

1. Apparatus for electrolytic plating and deplating of rotogravure cylinders, comprising a tank adapted to contain a plating solution and including means for supporting therein a cylinder for rotation about a horizontal axis in one direction,

baskets disposed in said tank, one on each side of the cylinder, with concavo-convex arcuate inner perforate walls closely spaced from the cylinder and outer concavo-convex arcuate walls concentric with and spaced from the inner walls in the direction away from the cylinder, said baskets being of non-conductive material,

elongate metallic current-conductor strips, having upper protectively coated portions disposed above the baskets, and lower bare portions extending downwardly along inner sides of the outer basket walls, said lower portions being arcuate and concentric with the cylinder,

means for connecting a source of current to the upper portions of the conductor strips and to the cylinder,



nuggets of metal packed in said baskets between the lower portions of said conductor strips and the front walls of the baskets,

said baskets having tops disposed below the top of the cylinder, and supply and return means for maintaining plating solution in the tank with the level thereof below the top of the cylinder and above the tops of the baskets, and a sheet of porous plastic material covering the concave sides of the inner-perforate walls of the baskets and disposed between said inner sides of the baskets and the cylinder for preventing build-up of metal through the perforations of the inner basket walls when the cylinder is deplated.

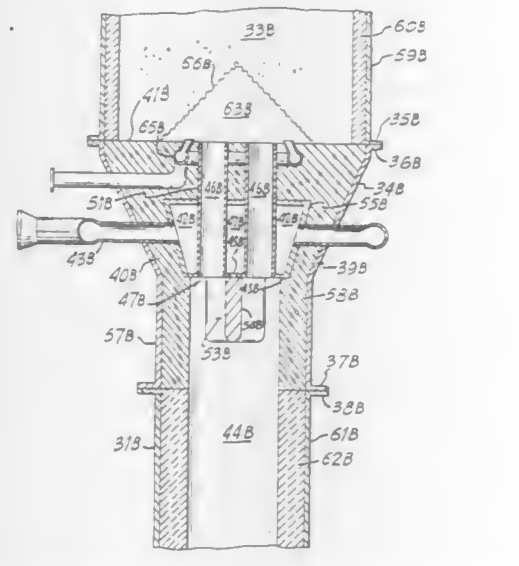
4,352,728
SOLIDS FEEDING DEVICE AND SYSTEM

Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 86,951, Oct. 22, 1979. This application Jul. 3, 1980, Ser. No. 165,786

Int. Cl.³ C10G *9/30*

U.S. Cl. 208—127 **2 Claims**



1. In a TRC process wherein the temperature in the reaction chamber is between 1300° and 2500° F. and wherein the hydrocarbon fluid feed or the hydrosulfurization residual oil along with the entrained inert solids and the diluent gas are passed through the reaction chamber for a residence time of 0.05 to 2 seconds, the improvement wherein the process for continually feeding particulate solids to the reaction chamber comprises the steps of:

a. delivering aeration gas under pressure to a localized section of a bed of solids immediately above a conduit extending from the bed of solids to a reaction chamber to fluidize solids in the localized section, said aeration gas having a flow rate less than a rate necessary for incipient fluidization of the bed of solids; and

b. passing the fluidized solids through the conduit to the reaction chamber.

4,352,729
PROCESS FOR HYDROTREATING HEAVY HYDROCARBONS IN THE PRESENCE OF A MOLYBDENUM CONTAINING CATALYST

Yves Jacquin, Sevres; Dai-Nghia Huynh, Rueil-Malmaison, and Maurice Born, Nanterre, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 5, 1981, Ser. No. 222,228

Claims priority, application France, Jan. 4, 1980, 80 00178

Int. Cl.³ C10G *45/04, 45/08;* **B01J** *23/28, 23/88*

U.S. Cl. 208—209 **10 Claims**

1. In a process for the treatment with hydrogen of an asphaltene containing charge of heavy hydrocarbons, wherein the charge is contacted with a catalyst containing molybdenum, under hydrotreatment conditions, the improvement comprising effecting the process by introducing into the heavy hydrocarbons charge a molybdenum blue solution in a polar organic solvent, said solvent having a normal boiling point higher than 140° C. and being soluble in said hydrocarbon charge, and then treating the so-modified hydrocarbon charge under said hydrotreatment conditions.

4,352,730
METHOD FOR CLEANING A MAGNETIC SEPARATOR AND MAGNETIC SEPARATOR

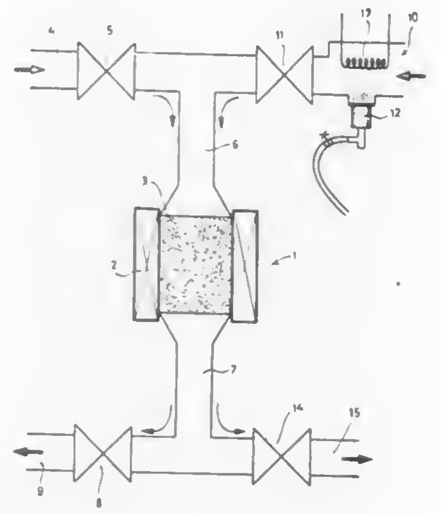
Jacob I. Dijkhuis, TC Zeist, Netherlands, assignor to Holec N.V., Utrecht, Netherlands

Filed Jan. 26, 1981, Ser. No. 228,474

Claims priority, application Netherlands, Jan. 30, 1980, 8000579

Int. Cl.³ B03C *1/02*

U.S. Cl. 209—8 **5 Claims**



1. A magnetic separator comprising a magnet, an inlet for the material to be filtered, an outlet for filtered material, a filtermatrix positioned between the inlet and outlet through which the material to be filtered is passed, a supply of cleaning fluid coupled to the filtermatrix and heater means for heating the filtermatrix to a temperature higher than the Curie temperature, said heater means heating the cleaning fluid to said temperature higher than the Curie temperature and the cleaning fluid heating said filtermatrix to said temperature.

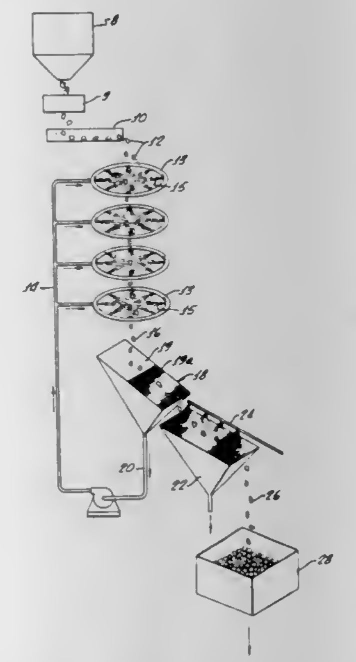
4,352,731
APPARATUS FOR SELECTIVE WETTING OF PARTICLES

Brij M. Moudgil, New York, N.Y., and John G. Roeschlaub, Upland, Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 203,738, Nov. 3, 1980, abandoned, which is a continuation of Ser. No. 897,946, Apr. 19, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,656

Int. Cl.³ B03B *1/00*

U.S. Cl. 209—9 **4 Claims**



1. Apparatus for conditioning a particle mixture comprising desired and undesired particles, for enabling optical distinction between the desired particles and the undesired particles said apparatus comprising:

(a) means for sizing said desired and undesired particles to a preselected size, said desired particles having a relatively large surface area receptive to coating by a preselected wetting agent and a relatively small surface area not receptive to coating by the preselected wetting agent, said undesired particles having a relatively small surface area receptive to coating by the preselected wetting agent, and a relatively large surface area not receptive to coating by the preselected wetting agent, said relatively large surface areas being optically distinguishable from said relatively small surface areas after being coated by the preselected wetting agent,

(b) spray means, defining a conditioning zone, for impacting said desired and undesired particles with sufficient wetting agent to substantially coat all of the desired and undesired particles' surface areas receptive to coating by the wetting agent within the conditioning zone;

(c) feeding means for passing the particle mixture comprising the desired and undesired particles through the conditioning zone in a state of free fall;

(d) means for collecting the free-falling particles without substantial breakage thereof and for separating excess wetting agent therefrom, said means for collecting the free-falling particles including an inclined surface member having an impact absorbing material disposed therein;

(e) washing means for removing excess wetting agent from surface areas of the desired and undesired particles which are not receptive to coating by the wetting agent; and

(f) means for supplying said excess wetting agent to the spray means.

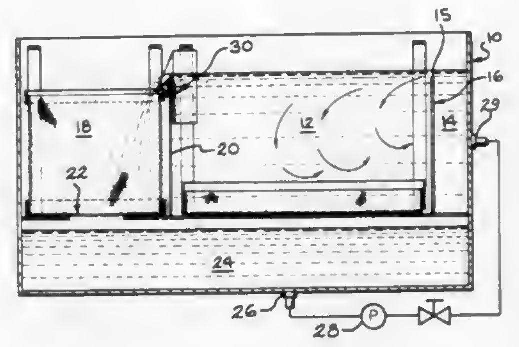
4,352,732
FLOTATION SYSTEM

Raymond C. Massicotte, Romulus, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Continuation of Ser. No. 114,474, Jan. 23, 1980, abandoned. This application Aug. 26, 1981, Ser. No. 296,592

Int. Cl.³ B03B *5/40*

U.S. Cl. 209—17 **6 Claims**



1. In apparatus for separating parts according to their specific gravity, said parts having outside overall dimensions one of which is the minimum outside part dimension that will pass over a weir: a tank having inlet and outlet partitions spaced apart at opposite ends of a float chamber, said inlet and outlet partitions having inlet and outlet weirs respectively for liquid passing into and out of said float chamber, means causing the liquid entering said float chamber to approach said inlet weir as a generally uniform vertically rising stream that rolls over the inlet weir into said float chamber where the rolls proceed downwardly on their side away from the inlet weir and upwardly on their side adjacent said inlet weir, means producing flow over said weirs of a height at least equal to said minimum dimension, and said outlet weir being spaced from said inlet weir by a sufficient distance that said rolling action attenuates in said float chamber adjacent said outlet weir at least for a depth equal to said minimum dimension so that the liquid adjacent said outlet weir does not apply a downward component to floating parts, and whereby parts floating over said exit weir can have a specific gravity that is just slightly less than those sinking in said float chamber.

4,352,733
GOLD AND SILVER SEPARATOR

William M. Hibbard, McCall, Id., assignor to His Way

Filed Dec. 22, 1980, Ser. No. 218,985

Int. Cl.³ B03B *5/00*

U.S. Cl. 209—430 **5 Claims**

1. A gold and silver separator comprising:

a container for storing liquid;

an inclined tray supported above said container;

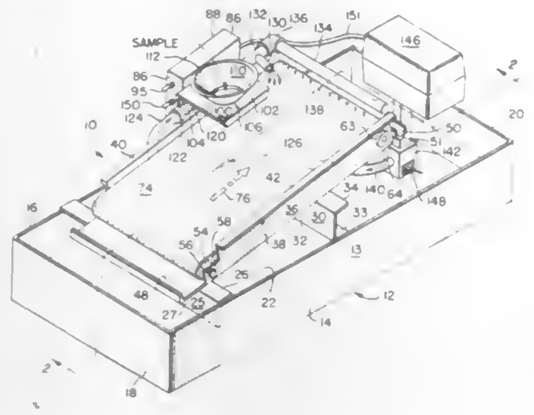
a rotatable conveyor supported on the tray;

a pump secured within the container;

a fluid conducting pipe having a discharge nipple thereon positioned on said tray adjacent a side and extending longitudinally thereof, said discharge nipple extending at an angle relative to the conveyor belt;

a water bar having a series of orifices therein, said water bar extending across the tray from side to side and adjacent the end thereof, said water bar connected to said fluid conducting pipe;

said discharge nipple being adjacent the water bar and adapted to direct liquid across the conveyor belt from side to side thereof in a slanting or oblique angle and said water bar at right angles to said fluid conducting pipe and positioned above the conveyor belt adjacent but forward of the end thereof, the orifices therein directed towards the conveyor belt and constructed such that a portion of the liquid emanating therefrom is directed onto the conveyor belt a distance forward of the end thereof and a second portion of the liquid flows over the conveyor belt as it turns over the driven roller, said fluid conducting pipe



connected to said pump whereby fluid is pumped from the container through said pipe and said water bar onto the conveyor belt; and

funnel means adjacent a side of the tray and connected thereto for depositing black sand and heavy concentrate onto the conveyor belt along one edge thereof whereby, upon being acted on by said liquid, the lighter particles are separated from the heavier gold and silver particles.

4,352,734

METHOD OF FILTERING A FLUID AND FILTER

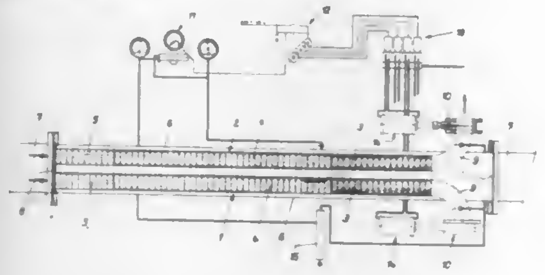
Charles Doucet, 20 Avenue Tronchet, 1226 Thonex, Geneva, Switzerland

Continuation of Ser. No. 62,882, Aug. 1, 1979, abandoned, which is a continuation of Ser. No. 917,397, Jun. 20, 1978, abandoned, which is a continuation of Ser. No. 742,523, Nov. 16, 1976, abandoned. This application Jan. 27, 1981, Ser. No. 228,694

Claims priority, application Switzerland, Nov. 24, 1975, 15215/75

Int. Cl.³ B01D *29/22*

U.S. Cl. 210—741 9 Claims



1. A method for filtering a liquid containing solid particles by using a filter element provided with filter openings in a lateral wall, the size of said openings varying from fine openings at one end of the filter to coarser openings toward the opposite end, said method including the steps of: flowing the liquid at a speed sufficient to produce a difference of pressure between the sides of the filter element at the end of the filter where the openings have finer size and compelling the liquid to pass selectively through the finer openings where greater difference of pressure exists, introducing the liquid to be filtered at high speed into the filter element at the end having the coarser filtering openings and closing the opposite end of the filter element during the filtering operation, thereby producing an increase in differential pressure across the filtering element at said opposite end, causing the liquid to pass selectively through the finer filtering openings at said opposite end, and causing filtration action to automatically move away from said end of said filter having the finer openings in dependence of the axial speed of the liquid and in proportion to the solid impurities in the liquid.

4,352,735

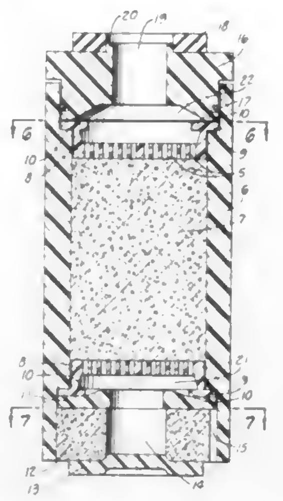
FILTER-PURIFIER CARTRIDGE

Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed May 4, 1981, Ser. No. 259,920

Int. Cl.³ B01D *23/06, 27/02*

U.S. Cl. 210—238 4 Claims



1. A filter-purifier cartridge for fluids, said cartridge comprising: a hollow self contained purifier element which functions as the cartridge housing, a tubular filter element disposed entirely within said purifier element and below purifying medium contained between two foraminous members, a washer contiguous to that end wall of said filter element facing the purifying medium; said purifier element being manually joined to, and separable from, a bottom wall member and a top wall member having an inlet and a discharge passage respectively, and means to retain said wall members in position; friction seals disposed between said members and said purifier element, said bottom wall member also functioning as a closer for the lower end of said tubular filter element.

4,352,736

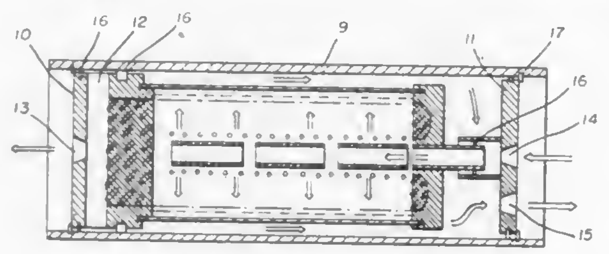
WOUND FLATTENED HOLLOW FIBER ASSEMBLY HAVING PLURAL SPACED CORE SECTIONS

Tetsuo Ukai; Hiroshi Matsumoto, and Chikara Kawamura, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Dec. 8, 1980, Ser. No. 214,569

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 6 Claims



1. A hollow fiber assembly having selective permeability consisting essentially of in combination a cylindrical arrangement of multilayers of a plurality of spirally wound flattened, tape-form hollow fibers having selective permeability, said layers of fibers being crisscrossed in a parallel relationship one to the other, at least two core sections centrally located within said cylindrical arrangement of said multilayers of hollow fibers, each of said core sections comprising an engaging member defining a hollow portion, each respective core section being separated and spaced one from the other, a first fluid-tight resin wall disposed at a first end of said assembly in which said hollow fibers terminate such that said hollow fibers open to the exterior of said resin wall, said first resin wall being separated and spaced from said engaging members, a second resin wall disposed at and fixing together a second end of said assembly, said cylindrical arrangement of hollow fibers extending continuously between said first resin wall and said second resin wall, an elastic support means for controlling the distance between said first and second resin walls and a fluid supply conduit means for introducing a fluid to be treated into said hollow fiber assembly.

4,352,737

STRAINER FOR AUTOMATIC TRANSMISSION CONTROL VALVE

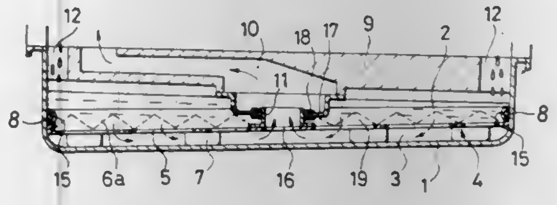
Takuji Taniguchi, Okazaki, Japan, assignor to Aisin Warner Kabushiki Kaisha, Anjo, Japan

Filed Sep. 15, 1980, Ser. No. 187,127

Claims priority, application Japan, Sep. 19, 1979, 54-129671

Int. Cl.³ B01D *35/02*

U.S. Cl. 210—455 8 Claims



1. A strainer construction for use on an automatic transmission control valve body, comprising:

a tray-like oil pan attached to the lower end of said valve body;

a strainer including a filter material and a frame for holding said filter material thereon;

said frame including a plate-like element having a plurality of openings therethrough, lower projections formed integrally therefrom for holding the frame at a predetermined distance from the bottom surfaces of said oil pan and a peripheral skirt extending therefrom being fitted to the inner periphery of said oil pan and dividing the inner space of said oil pan into upper and lower chambers;

seal means hermetically securing said peripheral skirt to said inner periphery of said oil pan; and

a tubular body having an upper end attached to a suction port of said valve body and a lower end connected to said frame,

the only flow communication between said upper and lower chambers being through said strainer and the flow area of said strainer substantially equals the length-by-width area of said oil pan.

4,352,738

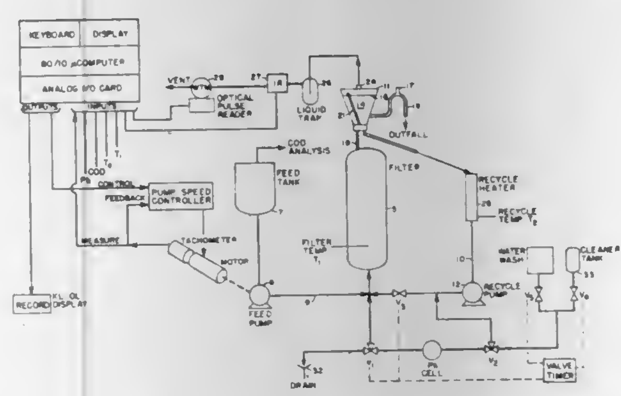
ANAEROBIC FILTER

George A. Blay, and Enrique R. Witt, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 95,915, Nov. 19, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,388

Int. Cl.³ C02F *3/28*

U.S. Cl. 210—612 9 Claims



1. Process for the treatment of an organic wastewater stream containing COD in a recycling anaerobic filter which contains methanogenic bacteria, operates at a COD feed rate, OL, which is at least 0.5 lb COD/cu. ft./day, and produces a stream of gas comprising methane, wherein the improvement comprises continually carrying out an alternating sequence of steps at least once per four hour period, the steps of said sequence comprising,

(a) a step of measuring the rate of production of methane in said gas stream and thereby determining the rate, KL, at which COD is removed from said filter as methane, and

(b) a step of setting the COD feed rate, OL, to said filter to maintain a predetermined ratio between the KL determined in said step a and the OL set in said step b,

said predetermined ratio of KL to OL, both KL and OL being expressed in the same units of lbs. COD/cu. ft./day, having a value of about 0.65 to 0.9.

4,352,739

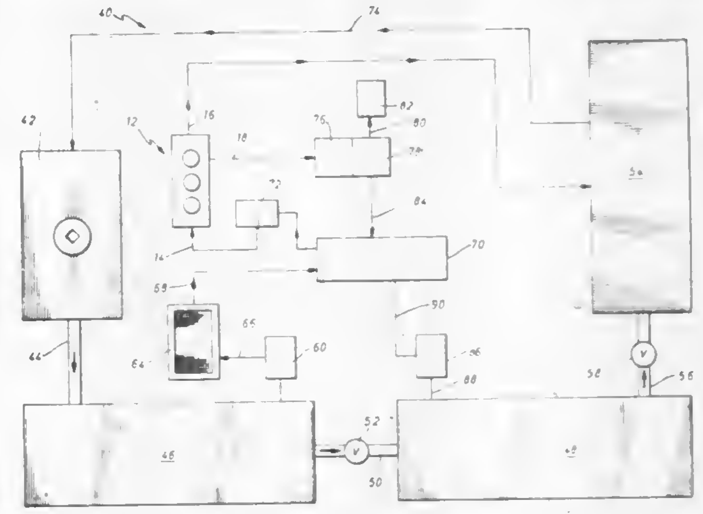
COMPLETION AND WORKOVER FLUID FILTRATION SYSTEM

John E. Oliver, Jr., 3752 Del Monte Dr., Houston, Tex. 77019, and W. Gerald Lott, 1857 Post Oak Park Dr., Houston, Tex. 77056

Continuation of Ser. No. 113,789, Jan. 21, 1980, abandoned. This application May 11, 1981, Ser. No. 262,177

Int. Cl.³ B01D *29/38*

U.S. Cl. 210—739 19 Claims



1. A method of filtering liquid employed in completion and workover of petroleum wells, said method comprising:

injecting clean liquid into the well bore in substantially continuous manner;

receiving a substantially continuous flow of contaminated liquid from said well bore;

forcing said contaminated liquid through a plurality of solids separator filters interconnected in parallel, series or compounded relation to common inlet, discharge and drain headers, said solids separator filters separating solid particulate above a predetermined size from said contaminated. liquid and resulting in discharge of clean liquid from said discharge header for reinjection into said well bore;

sequentially restoring each of said filters upon predetermined accumulation in said filters of solid particulate separated from said contaminated liquid by backflushing and discharging backflushed liquid and backflushed particulate to said drain header while maintaining a substantially continuous flow of said contaminated liquid through other ones of said plurality of solids separator filters wherein said backflushing is accomplished by diverting a portion of the flow of cleaned fluid flowing from other filters into said discharge header to the selected filter to be backflushed and causing reversal of the flow of liquid in the selected filter, which cleaned fluid flushes away accumulated particulate from said selected filter and transport said particulate into said drain header;

transporting fluid and particulate from said drain header to second solids separator means;

separating a majority of said particulate from said fluid and resulting in partially cleaned fluid;

transporting said separated majority of said particulate to a disposal receiver; and

returning said partially cleaned fluid to said plurality of solid separator filters for filtering

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4,352,740

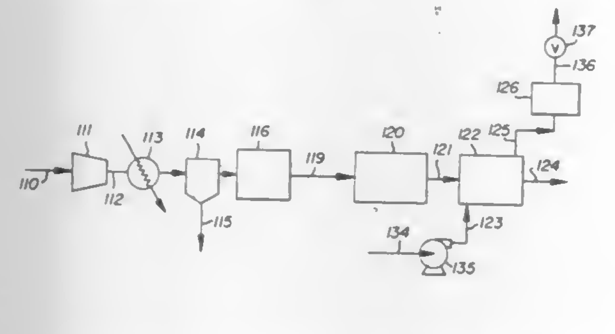
WATER OZONATION METHOD

Ronald J. Grader, East Amherst, and Richard P. Johansen, Williamsville, both of N.Y., assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,671

Int. Cl.^{3} C02F *1/78*

U.S. Cl. 210—760 **5 Claims**



1. In a method for ozonation of a water stream by separating air to produce oxygen-enriched feed gas, generating ozone in said feed gas by silent electric discharge to provide ozone-containing feed gas, contacting said water stream and said ozone-containing feed gas to dissolve ozone and oxygen in said water stream, atmospherically venting ozone-depleted gas from said contacting, and discharging the ozonized and oxygenated water from said contacting; the improvement comprising:

(a) producing at least 70% oxygen by volume as said oxygen-enriched feed gas;

(b) generating between 4% and 8% by weight ozone in said silent electric discharge such that the figure of merit η, representing the ozone generation energy demand in kwh/lb-O_3, is less than that defined by the equation:

$$\eta = 1/(0.34 - 0.033x)$$

wherein x is the ozone weight % concentration in the so-generated ozone-containing feed gas; and

(c) performing said contacting of said water stream and said ozone-containing feed gas to dissolve between 0.5 ppm and 8 ppm ozone in said water stream.

4,352,741

XANTHOMONAS BIOPOLYMER FOR USE IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS

William C. Wernau, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,757, Nov. 15, 1977, Pat. No. 4,296,203. This application Jun. 2, 1981, Ser. No. 269,681

Int. Cl.^{3} E21B *43/22*

U.S. Cl. 252—8.55 D **4 Claims**

1. In the process for the recovery of crude oil from an oil-bearing subterranean formation wherein a hydrophilic colloid-containing mobility control solution is injected into said formation, the improvement which comprises injecting into said formation a mobility control solution containing pyruvate-free xanthan-containing fermentation broth.

4,352,742

ALCOHOL COMPOSITION CONTAINING NOVEL HYDROXY-SUBSTITUTED ALIPHATIC SILICONE SULFONATE-SILICATE COPOLYMERS

Pauls Davis, Gibraltar, and Joe C. Wilson, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

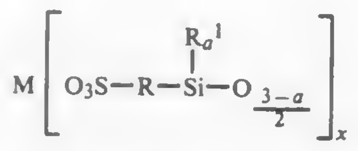
Filed Apr. 1, 1981, Ser. No. 250,050

Int. Cl.^{3} C09K *15/32, 15/10;* C23F *11/10*

U.S. Cl. 252—75 **12 Claims**

1. An improved inhibited alcohol composition comprising an alcohol and a corrosion inhibiting amount of a copolymer consisting essentially of

from 0.1 to 99.9 parts by weight of at least one silicone sulfonate unit derived from silicone sulfonates of the formula:



$$M\left[O_3S{-}R{-}\overset{\displaystyle R_a^1}{\overset{|}{Si}}{-}O_{\frac{3-a}{2}}\right]_x$$

wherein M is a monovalent, divalent, or trivalent cation; x is 1 to 3 and equal to the valence of M; R is a hydroxy-substituted divalent group having 3 to about 18 carbon atoms and said hydroxy substituent is bonded to a carbon atom vicinal to the carbon atom to which the —O_3S— group is bonded; R^1 is a monovalent alkyl group having 1 to about 8 carbon atoms; and a is an integer of 0 to 2, and

from 0.1 to 99.9 parts by weight of at least one silicate unit derived from silicates of the formula:

$$[X_{1/d}O]_eSiO_{\frac{4-e}{2}}$$

wherein X is a cation that forms a water-soluble silicate; d is the valence of the cation represented by X and has a value of at least 1; and e has a value of from 1 to 3, said parts by weight of said groups in said copolymer being based upon 100 parts by weight of said copolymer.

4,352,743

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF A DETERGENT WITH ALIPHATIC C_{11} BRANCHED CHAIN ALDEHYDES AND ALCOHOLS

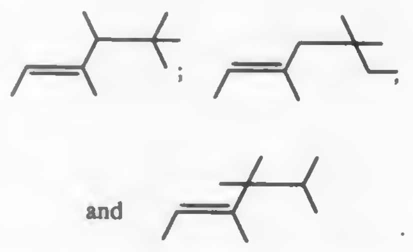
Richard M. Boden, Monmouth Beach, and John H. Geiger, Jr,, Lakewood, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 233,861, Feb. 12, 1981, Pat. No. 4,304,689. This application Sep. 25, 1981, Ser. No. 305,536

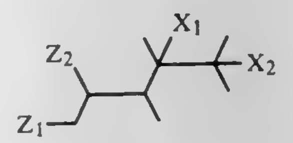
Int. Cl.^{3} C11D *17/00*

U.S. Cl. 252—174.11 **2 Claims**

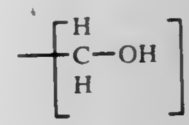
1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of a product produced according to a process comprising reacting at least one compound having the structure selected from the group consisting of:



with a mixture of carbon monoxide and hydrogen at elevated temperatures and pressures thereby producing at least one compound defined according to the structure:

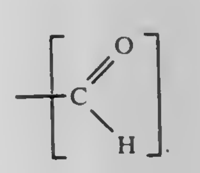


wherein one of X_1 or X_2 is hydrogen and the other of X_1 or X_2 is methyl; and wherein one of Z_1 and Z_2 is hydrogen and the other of Z_1 or Z_2 is hydroxymethyl having the structure:



$$-\left[\overset{\displaystyle H}{\underset{\displaystyle H}{C}}{-}OH\right]$$

or carboxaldehyde having the structure:



4,352,744

PROTECTING COLLOIDAL SILICA AQUASOLS FROM BACTERIAL DEGRADATION

George E. Bettinger, Wilmington, Del., and John N. Orban, Highland, Ind., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 5, 1980, Ser. No. 184,211

Int. Cl.^{3} B01J *13/00*

U.S. Cl. 252—313 S **4 Claims**

1. A method of protecting a colloidal silica aquasol from undesirable bacteria, said method comprising adding to said aquasol a bactericide wherein the bactericide is 200–675 ppm 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride; 100–350 ppm 1,2-benzisothiazolin-3-one; or 160–800 ppm of 1,3,5-triazine-1,3,5(2H,4H,6H)-triethanol and providing sufficient agitation to dissolve the bactericide in the aquasol.

3. A colloidal silica aquasol containing about 15–60 weight percent of silica, said silica having particle diameters within the range of 2–100 millimicrons and a bactericide wherein the bactericide is 200–675 ppm 1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride; 100–350 ppm 1,2-benzisothiazolin-3-one; or 160–800 ppm of 1,3,5-triazine-1,3,5(2H,4H,6H)-triethanol.

4,352,745

LIQUID MOBILE PHASE

David E. James, Batavia, and Richard N. Koeritz, Glen Ellyn, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 16, 1980, Ser. No. 159,828

Int. Cl.^{3} B01D *15/08*

U.S. Cl. 252—364 **5 Claims**

1. An aqueous solution comprising an incompletely neutralized ammonium salt of orthophosphoric acid, poly acid or boric acid in a 0.05 to 5.0 molar concentration modified by a water soluble alkanol or alkanenitrile at a concentration of from 0.1 to 15 weight percent and buffered to a pH of from 3 to 6.

4,352,746

PROCESS FOR THE PRODUCTION OF OXIDATION-INHIBITING SUBSTANCES

Umberto Bracco; Jean-Louis Viret, both of La Tour-de-Peilz, and Josef Rehacek, Yverdon, all of Switzerland, assignors to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 77,847, Sep. 21, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,526

Claims priority, application Switzerland, Sep. 29, 1978, 10186/78

Int. Cl.^{3} A23B *4/00, 5/00, 9/00;* C09K *15/34*

U.S. Cl. 252—398 **8 Claims**

1. A process for the production of a fraction containing oxidation-inhibiting substances from a vegetable material rich in these substances comprising:

(a) mixing a ground vegetable material or an extract of this vegetable material obtained with a solvent selected from the group consisting of methanol, dichloroethane, ethyl ether, hexane, dioxane, ethanol and mixtures thereof; a co-distillant which is a mono-, di- or triglyceride of a C_{8-10} fatty acid; and a vegetable oil to form a suspension or solution, wherein the amount of co-distillant present in the suspension or solution is in the amount of from 1 to 20% by weight of the total weight;

(b) heating the suspension or solution for 1 to 15 minutes to 100° to 250° C. and separating a carbonised solid fraction by sieving or centrifuging;

(c) subjecting the suspension or solution to molecular distillation; and

(d) collecting a condensate containing the oxidation-inhibiting principles, the co-distillant and a portion of the vegetable oil used.

4,352,747

METHOD TO LOWER FLY-ASH RESISTIVITY

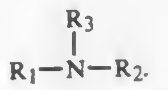
Richard L. Every, Lake Zurich; Franklin D. Lewandowski, Grayslake, and Jerome F. Lech, Crystal Lake, all of Ill., assignors to Dearborn Chemical Company, Lake Zurich, Ill.

Filed Mar. 30, 1979, Ser. No. 25,327

Int. Cl.^{3} H01B *1/00*

U.S. Cl. 252—500 **7 Claims**

1. In the addition of an additive of amine and a member of the group consisting of sulfuric or sulfamic acid and ammonium salts thereof to a coal fired utility boiler having heat exchangers and fly-ash collectors, the improvement comprising making the addition in the zone between the heat exchangers and the fly-ash collectors at a temperature of about 300°–500° F. thereby reducing electrical resistivity of the fly-ash particles and increasing their mean particle size without fouling heat exchange surfaces with the additive; the additive being added at the rate of about 0.05 to 0.70 pounds, active basis, per short ton of coal burned; and the amine having the formula:



$$R_1{-}\overset{\displaystyle R_3}{\overset{|}{N}}{-}R_2.$$

in which R_1, R_2, and R_3 are each independently selected from the group consisting of H and alkyl, in which alkyl has about 1–8 carbons.

4,352,748

NOVEL ACYL-POLYALKYLINDAN COMPOUNDS AND THE USE THEREOF AS A BASE FOR PERFUME, AS WELL AS PERFUME COMPOSITIONS

Petrus C. Traas, Naarden; Harrie Renes, Bussum, and Harmannus Boelens, Huizen, all of Netherlands, assignors to Naarden International N.V., Netherlands

Continuation of Ser. No. 879,509, Feb. 21, 1978, abandoned. This application Mar. 12, 1981, Ser. No. 242,841

Claims priority, application Netherlands, Feb. 25, 1977, 7702076

Int. Cl.^{3} C11D *9/44;* **C07C** *13/30*

U.S. Cl. 252—522 R **2 Claims**

1. A perfume composition comprising 6-acetyl-1-isopropyl-2,3,3,5-tetramethyl indan as a fragrance component in combination with at least one auxiliary substance selected from the group consisting of conventional perfume fragrances, mixtures thereof and perfume solvents.

4,352,749

HOT-MELT ADHESIVE COMPOSITION

Masamitsu Nakabayashi, Osaka; Fumihiro Doura, Sakai; Reiji Miyamoto, and Tetsujiro Tatsumi, both of Ichihara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 17, 1981, Ser. No. 235,028

Claims priority, application Japan, Feb. 14, 1980, 55-17364

Int. Cl.^{3} C08L *91/08, 93/00*

U.S. Cl. 525—149 **9 Claims**

1. A hot-melt adhesive composition containing:

(i) a first component consisting of (a) 20 to 100 weight percent of a hydrolyzed ethylene-vinyl acetate copolymer whose vinyl acetate unit content is in the range of 5 to 50 weight percent and its hydrolysis degree is at least 50 percent and/or a carboxyl-containing product obtained by grafting said copolymer with a carboxyl-containing unsaturated compound or anhydride thereof and (b) 0 to 80 weight percent of a resin compatible with said copolymer and/or said carboxyl-containing product,

(ii) a second component which is a dicyclopentadiene petroleum resin, the proportion of said first component being not less than 20 weight percent and that of said second component being not less than 20 weight percent, both based on said two components, and

(iii) a wax as a third component.

4,352,750

FRICTION MATERIAL FOR RAILROAD BRAKE SHOES

Frank W. Eschen, San Diego, Calif., assignor to Manville Service Corporation, Denver, Colo.

Filed Aug. 3, 1981, Ser. No. 289,140

Int. Cl.^{3} C08L *61/06*

U.S. Cl. 523—156 **7 Claims**

1. A friction material fiber free composition suitable for use as a brake shoe for railroad service comprising by volume:

Phenolic Resin Binder: 1–15%
Carbonaceous Component: 30–60%
Organic Component: 15–30%
Inorganic Component: 5–35%
Friction Modifiers: 1–15%
With the balance of other additives being: 1–7%.

4,352,751

SPECIES-LINKED DIAMINE TRIACETIC ACIDS AND THEIR CHELATES

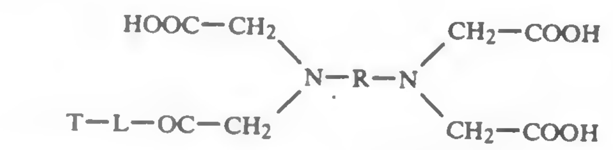
Irwin Wieder, and Robert H. Wollenberg, both of Los Altos, Calif., assignors to Analytical Radiation Corporation, Los Altos, Calif.

Filed Sep. 10, 1979, Ser. No. 73,728

Int. Cl.^{3} C07C *101/26, 103/18;* **G01N** *33/48, 33/50;* **C12Q** *1/06*

U.S. Cl. 260—112 R **25 Claims**

1. A reagent for use in the fluorometric quantification of a biologically active organic species comprising a diamine triacetic acid having the structural formula:



wherein R is a two to eight atom covalent bridge selected from carbon-oxygen ether bridges, carbon-nitrogen secondary and tertiary amide bridges and carbon-carbon alkylene, cycloalkylene and arylene bridges, T is the biologically active organic species to be fluorometrically quantified, T being other than an aliphatic mono- or polyamine, or aliphatic mono- or polyol, but comprising at least one originally present or added primary amine, secondary amine, thiol or hydroxyl functional group, and L is said at least one functional group in deprotonated form covalently bonding T to the indicated carbonyl carbon of the diamine triacetic acid.

4,352,752

PROCESS FOR THE PREPARATION OF DIPEPTIDES

Iwao Ojima, Sagamihara, and Shigemi Suga, Oiso, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

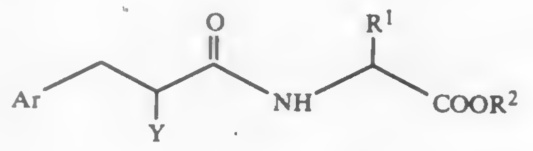
Filed Mar. 5, 1981, Ser. No. 240,983

Claims priority, application Japan, Mar. 7, 1980, 55-28060

Int. Cl.^{3} C07C *103/52, 101/30, 101/72*

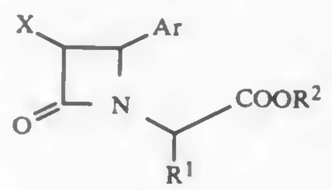
U.S. Cl. 260—112.5 R **13 Claims**

1. A process for the preparation of a dipeptide represented by the formula



wherein Ar represents an aromatic group; R^1 represents a hydrogen atom, an alkyl group or an aryl group; R^2 represents a hydrogen atom, an alkyl group or an aromatic group; Y represents a hydroxy group, an amino group or an acylamino group,

which comprises subjecting a β-lactam compound represented by the formula



wherein Ar, R^1 and R_2 have the same meanings as defined above, and X represents a hydroxy group, an amino group or an acylamino group, an azido group or benzyloxy group,

to hydrogenolysis in the presence of a catalyst consisting essentially of palladium.

4,352,753

3-[[(2,3-DIHYDRO-1H-INDOL-2-yl)CARBONYL]THIO]-PROPANOIC (AND ACETIC) ACIDS AS INTERMEDIATES

Dong H. Kim, Wayne, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

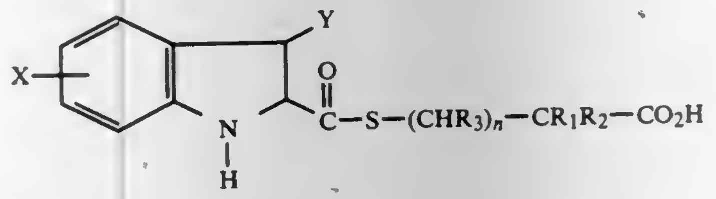
Filed Dec. 29, 1980, Ser. No. 220,652

Claims priority, application Argentina, Aug. 11, 1980, 282109

Int. Cl.^{3} C07D *209/12, 209/18*

U.S. Cl. 260—326.12 R **10 Claims**

1. A compound of the formula:



wherein:

n is 1 or 0;

R_1 is hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl, substituted phenyl, benzyl, or substituted benzyl;

R_2 is hydrogen or lower alkyl of 1 to 4 carbon atoms;

R_3 is hydrogen, lower alkyl of 1 to 4 carbon atoms, benzoyl, or substituted benzoyl;

X is hydrogen, hydroxy, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, or halogen; and

Y is hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl, or substituted phenyl;

or salts thereof;

wherein substituted phenyl, substituted benzyl and substituted benzoyl refer to such groups with the phenyl ring optionally substituted with a halogen, a lower alkyl group of 1 to 4 carbon atoms, or a lower alkoxy group of 1 to 4 carbon atoms.

4,352,754

3-THIENYLMETHYL-6-HALO-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

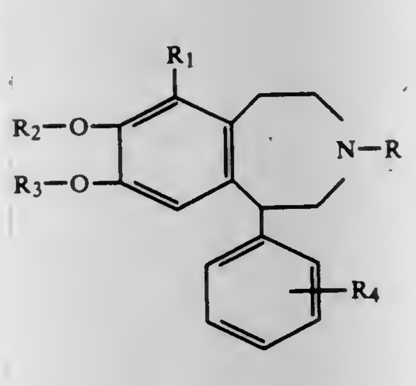
Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 893,238, Apr. 4, 1978, Pat. No. 4,255,422, which is a continuation-in-part of Ser. No. 742,965, Nov. 17, 1976, Pat. No. 4,160,765. This application Jun. 12, 1980, Ser. No. 158,833

Int. Cl.^{3} C07D *223/16;* **A61K** *31/55*

U.S. Cl. 260—330.3 **5 Claims**

1. A compound of the formula:



in which:

R is thienylmethyl;

R_1 is halo or trifluoromethyl;

R_2 and R_3 are hydrogen or alkanoyl of from 2–7 carbons; and

R_4 is hydrogen or from 1–3 substituents from the group comprising trifluoromethyl, halo, methyl, methoxy or, when another of this group is present, hydroxy or acetoxy;

together with its nontoxic, pharmaceutically acceptable salts.

4,352,755

PRODUCTION OF MALEIC ANHYDRIDE

Raymond Higgins, Middlesbrough; Graham J. Hutchings, Northallerton; Deborah A. Trebilco, Redcar, and Philip E. Starkey, Guisborough, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 6, 1980, Ser. No. 204,699

Claims priority, application United Kingdom, Nov. 20, 1979, 7940087

Int. Cl.^{3} C07D *307/60*

U.S. Cl. 549—258 **10 Claims**

1. A process which comprises producing a product gas stream containing at least 3% by volume of maleic anhydride by oxidising a straight chain C_4 hydrocarbon with oxygen in a stream comprising C_4 hydrocarbon 25 to 60% and oxygen 20 to 45%, the percentages being by volume and condensing maleic anhydride substantially free from water from the product gas stream.

4,352,756

PRODUCTION OF FURFURYL ALCOHOLS

Yukihisa Takisawa; Kenji Saito, and Hiroshi Yamachika, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

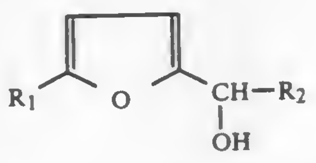
Filed Mar. 30, 1981, Ser. No. 248,677

Claims priority, application Japan, Apr. 9, 1980, 55/47329

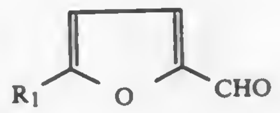
Int. Cl.^{3} C07D *307/44*

U.S. Cl. 549—497 **6 Claims**

1. A process for the production of a furfuryl alcohol of the formula:



wherein R_1 is hydrogen or methyl and R_2 is an allyl or α-methylallyl group, which comprises reacting the corresponding furfural of the formula:



wherein R_1 is as defined above, with magnesium and allyl chloride or α-methylallyl chloride and hydrolyzing the resultant product, the improvement comprising using tetrahydrofuran or a mixture of tetrahydrofuran with at least one aromatic hydrocarbon as a reaction medium, and simultaneously adding the furfural and allylchloride or α-methylallyl chloride to the reaction medium comprising magnesium.

4,352,757

PROCESS FOR THE PREPARATION OF ESTERS OF LEUKOTRIENE A

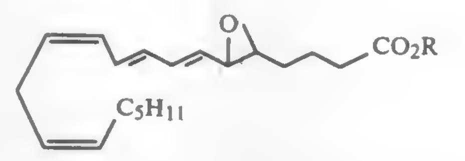
John G. Gleason, Delran, N.J.; Charles M. Kinzig, Merion Station, and Deborah L. Bryan, West Chester, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 2, 1981, Ser. No. 230,915

Int. Cl.^{3} C07D *303/42, 303/40*

U.S. Cl. 549—513 **7 Claims**

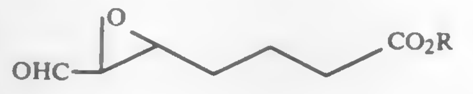
1. A process for the preparation of alkyl esters of leukotriene A, represented by the following structural formula (I):



(I)

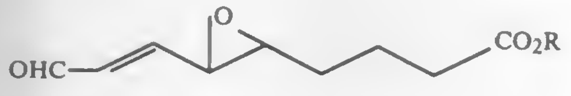
wherein R is alkyl of 1 to 4 carbon atoms, benzyl or 1,1,1-trichloroethyl, which comprises:

(a) reacting 7-oxo-5,6-trans-epoxyheptanoate ester represented by the following structural formula (IV)



(IV)

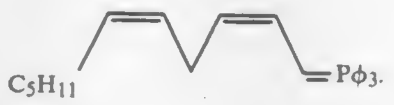
wherein R is defined above and formylmethylenetriphenylphosphorane to afford 9-oxo-5,6-trans-epoxynon-7(E)enoate ester, represented by the following structural formula (II)



(II)

wherein R is defined above; and

(b) reacting 9-oxo-5,6-trans-epoxynon-7(E)enoate ester with triphenylphosphoranylidene undec-6(Z),9(Z)-diene, represented by the following structural formula (III)



(III)

4,352,758
CHLOROCITRIC ACIDS

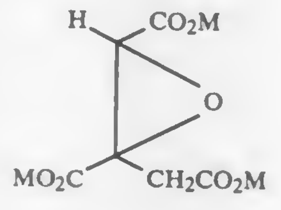
Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 973,504, Dec. 26, 1978, Pat. No. 4,312,885. This application Aug. 7, 1981, Ser. No. 290,988

Int. Cl.^{3} C07D *303/12*

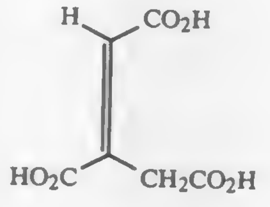
U.S. Cl. 549—521 **7 Claims**

1. A process for the preparation of tri-salt of (±)-threo-epoxyaconitic acid of the formula

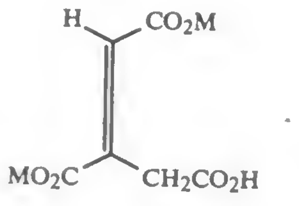


wherein M is alkali metal,
which comprises the steps of

(a) contacting trans-aconitic acid of the formula

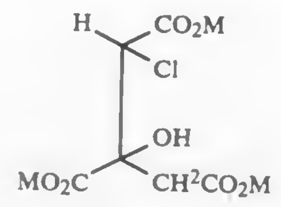


with an alkali metal hydroxide in an aqueous solvent at temperatures in the range of −20° C.−25° C. to form a di-salt of trans-aconitic acid of the formula



wherein M is alkali metal;

(b) contacting the di-salt of trans-aconitic acid with an alkali metal hypochlorite in an aqueous solvent at the temperatures in the range of −20° C.−25° C. to form a tri-salt of (±)-threo-chlorocitric acid of the formula



wherein M is alkali metal; and

(c) contacting the tri-salt of threo-chlorocitric acid with alkali metal hydroxide in an aqueous solvent at temperature in the range of −20° C. to 25° C.

4,352,759
RECOVERY OF HIGH PURITY N-ACYL TAURINE IN HIGH YIELD

Erwin Schwarte, 200 Glen Rd., Mountainside, N.J. 07092

Filed Apr. 29, 1981, Ser. No. 258,840

Int. Cl.^{3} C07C *143/90*

U.S. Cl. 260—401 **6 Claims**

1. A process for recovering an N-acyl taurine in high yield and substantially free of alkali metal chloride salt from a crude product mixture thereof resulting from reacting, in an aqueous medium at temperatures ranging from about 30° C. up to reflux, 1 mole of a C_6-C_{22} carboxylic acid chloride with 1 mole of a taurine salt of the formula

$$HNR^1—CHR^2—CHR^2—SO_3M$$

wherein
R^1 is H or a C_{1-6} hydrocarbon radical,
R^2 is independently H, methyl or ethyl, and
M is alkali metal,
in the presence of about 1 mole of alkali metal hydroxide, which comprises the steps of:

adding a C_{1-4} alkanol to the reacted mixture to form an aqueous-alkanol mixture comprising from about 50 to 70% by weight alkanol, about 20 to 35% water and about 10 to 15% solids, heating to a temperature sufficient to solubilize the N-acyl taurine and salts, then cooling the solution low enough to crystallize a high purity N-acyl taurine product in high yield while keeping said salt and other impurities in solution, and filtering the crystalline material to recover the thus-purified product.

4,352,760
ORGANIC COMPOUNDS SUBSTITUTED HEPTADECA-5,9- AND 5,10-DIENOIC ACID

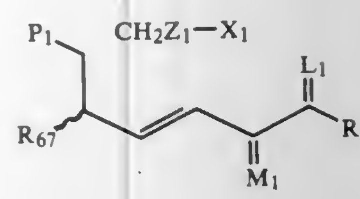
Kirk M. Maxey, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 29, 1980, Ser. No. 220,598

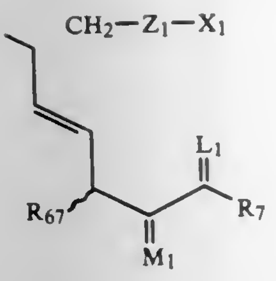
Int. Cl.^{3} C07C *57/02*

U.S. Cl. 260—404 **27 Claims**

1. A compound of the formula II or III,



II



III

wherein P_1 is
- (a) $—C(OH)(H)—CH_2—C(H)═CH_2$;
- (b) $—C(OH)(H)—CH_2—C≡N$;
- (c) $—C(OH)(H)—C(═CH_2)C(O)H$; or
- (d) $—C(OH)H—C(═CH_2)C≡N$;

wherein R_{67} is hydroxy, chloro, bromo, or fluoro;
wherein X_1 is
- (a) $—CO_2R_1$, wherein R_1 is hydrogen, alkyl of from one to 12 carbon atoms, cycloalkyl of 3 to 10 carbon atoms, aralkyl of from 7 to 12 carbon atoms, phenyl, phenyl substituted by one, 2 or 3 chloro or one, 2 or 3 alkyl, or phenyl substituted in the para position by
  - (i) $NHC(O)R_{25}$
  - (ii) $—O—C(O)R_{26}$,
  - (iii) $—CO_2R_1$
  - (iv) $—O—C(O)—(p—Ph)—R_{27}$, wherein p—Ph is 1,4-phenylene, or
  - (v) $—CH═N—NH—C(O)—NH_2$,

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzoylamidophenyl, or NH_2; wherein R_{26} is methyl, phenyl, NH_2, or methoxy; wherein R_{27} is hydrogen, acetamido, benzoylamido; or R_1 can be a pharmacologically acceptable cation;
- (b) $—COW_1$, wherein W_1 is
  - (i) amido of the formula—$NR_{21}R_{22}$, wherein R_{21} and R_{22} are the same or different and are:
    - hydrogen;
    - alkyl of one to 12 carbon atoms, inclusive;
    - cycloalkyl of 3 to 10 carbon atoms, inclusive;
    - aralkyl of 7 to 12 carbon atoms, inclusive;
    - phenyl;
    - phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
    - carboxyalkyl of one to four carbon atoms, inclusive;
    - carbamoylalkyl of one to 4 carbon atoms, inclusive;
    - cyanoalkyl of one to 4 carbon atoms, inclusive;
    - acetylalkyl of one to 4 carbon atoms, inclusive;
    - benzoylalkyl of one to 4 carbon atoms, inclusive;
    - benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
    - pyridyl;
    - pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
    - pyridylalkyl of one to 4 carbon atoms, inclusive; or
    - pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, hydroxyalkyl of one to 4 carbon atoms, inclusive, dihydroxyalkyl of one to 4 carbon atoms inclusive, or trihydroxyalkyl of one to 4 carbon atoms, inclusive;
    - with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;
  - (ii) cycloamido selected from the group consisting of
    - 1-pyrrolidinyl,
    - 1-piperidinyl,
    - 4-morpholinyl,
    - hexahydro-1H-azepin-1-yl,
    - 3-pyrrolin-1-yl, or
    - 3,6-dihydro-1(2H)-pyridinyl, substituted by R_{21} or R_{22} or both or
    - 1-piperazinyl substituted at the 4 position by R_{21},

wherein R_{21} and R_{22} are as defined above;
  - (iii) carbonylamido of the formula—$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above;
  - (iv) sulfonylamido of the formula—$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or
  - (v) hydrazino of the formula—$NR_{23}R_{24}$, wherein R_{24} is amido of the formula—$NR_{21}R_{22}$, as defined above, or cycloamido, as defined above; or
- (c) CH_2OH;
- (d) $CH_2NR_{31}R_{32}$ wherein R_{31} and R_{32} are the same or different and are hydrogen or alkyl of from one to 4 carbon atoms;

wherein Z_1 is
- (a) cis—$CH═CH—CH_2(CH_2)_g—CH_2—$;
- (b) trans—$CH═CH—CH_2(CH_2)_g—CH_2$;
- (c) $—CH═CH—CH_2(CH_2)_gCF_2—$;
- (d) trans—$CH═CH—CH_2(CH_2)_g—CH_2—$;
- (e) cis—$CH_2—CH═CH—(CH_2)_g—CH_2$;
- (f) trans—$CH_2—CH═CH—(CH_2)_g—CH_2$;
- (g) $—(CH_2)_3—(CH_2)_g—CH_2$;
- (h) $—(CH_2)_3—(CH_2)_g—CF_2$;
- (i) $—CH_2—O—CH_2—(CH_2)_g—CH_2—$;
- (j) phenyl substituted by $—CH_2(CH_2)_g$ or $—O—(CH_2)_g$, wherein g is one, 2, or three;

wherein L_1 is $\alpha—R_3:\beta—R_4$ or $\beta—R_3:\alpha—R_4$ or a mixture of the two, wherein R_3 and R_4 are the same or different and are hydrogen, methyl, or fluoro, with the proviso that when R_3 is fluoro R_4 is fluoro and when R_4 is fluoro R_3 is fluoro;
wherein R_7 is
- (a) $—(CH_2)_m—CH_3$;
- (b) O—(Ph—s); or
- (c) $—(CH_2)_n$(Ph—s); wherein (Ph—s) is phenyl or phenyl substituted by zero, one, 2, or 3 chloro, fluoro, trifluoromethyl, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, with the proviso that not more than two phenyl substitutents are other than alkyl, m is one, 2, 3, 4, or 5, and n is zero, one, 2, 3, or 4; and

wherein M_1 is α-hydroxy:β-methyl or α-hydroxy:β-hydrogen.

4,352,761
PRODUCTION OF ACETYL CHLORIDE

Heinz Erpenbach, Cologne; Klaus Gehrmann; Winfried Lork, both of Erftstadt, and Peter Pring, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,387

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016900

Int. Cl.^{3} C07C *51/58*

U.S. Cl. 260—544 A **5 Claims**

1. In a process for making acetyl chloride by reacting methyl chloride with carbon monoxide under practically anhydrous conditions, at temperatures of 350 to 575 K., under pressures of 1 to 300 bars, and in the presence of a catalyst system containing at least one of the noble metals selected from rhodium, palladium, iridium or at least one compound thereof selected from the group consisting of a chloride, acetate, carbonyl, or complex compound; iodine or iodine compounds or mixtures of iodine and iodine compounds; and an inert organic solvent, the improvement which comprises: effecting the reaction in the presence of a catalyst system containing n-heptane as the inert solvent and as additional ingredients methyltrialkyl phosphonium iodide or methyltriaryl phosphonium iodide or mixtures thereof and at least one compound of chromium, molybdenum or tungsten selected from the group consisting of a chloride, acetate, carbonyl, or complex compound, thereby

effecting the separation of the resulting reaction product into two phases, the entire catalyst system undergoing complete dissolution and forming the denser lower phase, whilst the bulk portion of acetyl chloride formed is contained in the upper solvent phase.

4,352,762
PROCESS FOR THE PRODUCTION OF S-TERTIARYALKYL PHOSPHONODITHOIC HALIDES

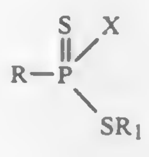
Mohamed A. Fahmy, Edison, N.J., assignor to Rhone-Poulenc Agrochimie, Lyon, France

Continuation of Ser. No. 71,465, Aug. 31, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,937

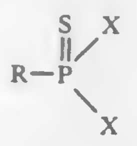
Int. Cl.^{3} C07F *9/20*

U.S. Cl. 260—972 **8 Claims**

1. The process of preparing compounds of the formula



which comprises reacting



with R_1SH in a solvent in the presence of a base at a temperature of about 20° C. to 100° C.; in which

R is alkyl of 1 to 6 carbon atoms;

R_1 is tertiary alkyl of 4 to 8 carbon atoms; and

X is halogen.

4,352,763
VENT CHANGEOVER DEVICE FOR A CARBURETOR

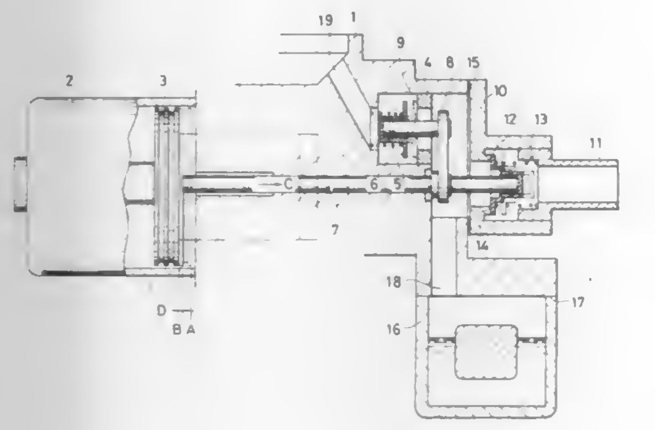
Nobuo Yamada, Kariya, and Toshiharu Morino, Mie, both of Japan, assignors to Aisan Industry Co., Ltd., Aichi, Japan

Continuation of Ser. No. 137,157, Apr. 4, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,541

Claims priority, application Japan, Apr. 27, 1979, 54/57490

Int. Cl.^{3} F02M *5/08*

U.S. Cl. 261—72 R **5 Claims**



1. A vent change-over device for an engine having a carburetor with a fuel bowl, comprising

a body forming an inner vent and an outer vent operatively communicating with said fuel bowl,

a suction chamber operatively controlled by the engine,

means including a piston moveably mounted in said suction chamber and having a piston rod connected thereto moveably mounted in said body, said piston rod being formed with two working ends adjacent a free end portion thereof, one of said working ends constitutes a rod end of said piston rod and the other of said two working ends constituteds an angle member including a push pin joined to said end portion of said piston rod, said push pin being formed together with said end portion of said piston rod as a unitary structure in parallel therewith and being oriented in a direction opposite to the rod end,

an inner valve adjacent said inner vent being operatively connected to and actuated by said push pin so as to open and close said inner vent, respectively,

an outer valve adjacent said outer vent being operatively connected to and actuated by said rod end so as to open and close said outer vent, respectively, said outer valve being separate from said inner valve spaced apart therefrom and disposed as as to face in a direction opposite to the direction in which said inner valve faces,

first and second spring means for biasing said inner and outer valves, respectively, in vent-closing directions, said inner and outer vents operatively communicating with the fuel bowl via said inner and outer valves, respectively, said inner and outer valves being positioned relative to said push pin and said rod end of said piston rod and said inner and outer vents and cooperating with said first and second spring means, respectively, so as to be actuated alternately in accordance with the movement of said piston rod such that when one of said valves is opened the other of said valves is closed,

said first spring means having a biasing force greater than that of said second spring means, and said piston being operatively connected to said suction chamber for movement so as, via said piston rod, to open said inner vent so as to communicate with said float chamber by opening said inner valve only when the engine is running, and to open said outer vent so as to communicate with said float chamber by opening said outer valve only when the engine is stopped, respectively.

4,352,764
METHOD OF MAKING SLAG SAND AND SLAG WOOL

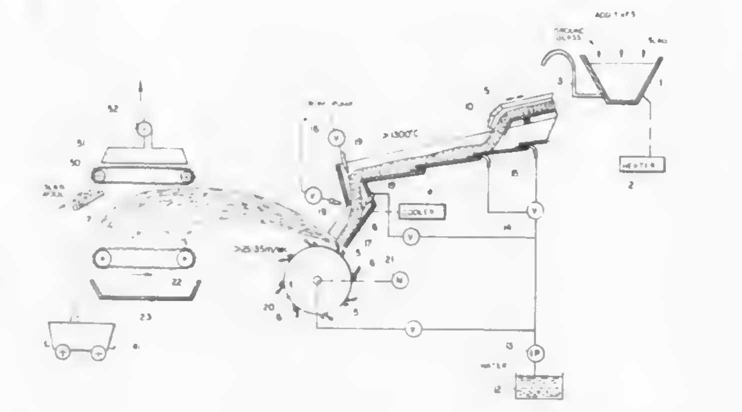
Paul Metz, Luxembourg; Robert Schockmel, Esch, and Roland Mersch, Dudelange, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 944,848, Sep. 22, 1978, abandoned. This application Jun. 24, 1980, Ser. No. 162,361

Claims priority, application Luxembourg, Sep. 26, 1977, 78185

Int. Cl.^{3} B01J *2/02*

U.S. Cl. 264—8 **3 Claims**



1. A method of simultaneously making slag sand and slag wool from metallurgical slag, said method comprising the steps of:

(a) slag shaping a slag stream at a temperature of at least 1300° C. and above the temperature at which said slag crystallizes;

(b) flowing said slag stream to a vaned drum before cooling of said slag stream to a temperature below that at which said slag crystallizes;

(c) rotating said vaned drum at a peripheral speed of at least 25 m/sec;

(d) impinging said slag stream prior to cooling thereof below said temperature at which said slag crystallizes onto the rotating drum and thereby breaking up said slag stream into droplets;

(e) cooling said droplets below said temperature at which said slag crystallizes to form said droplets into granules and filaments;

(f) projecting said granules and filaments by means of the rotating drum through the air to a collection location; and

(g) separating and separately collecting said granules as slag sand and said filaments as slag wool at said location.

4,352,765
METHOD FOR PRODUCING RUBBER ARTICLES BY SUBJECTING POWDERED CAOUTCHOU COMPOSITION TO INTENSIVE MIXING AND HIGH-SPEED ELECTRONS

Hermann Menk, Bodolz, and Michael Kempter, Munich, both of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,764

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931793

Int. Cl.^{3} C08J *7/16;* **C10M** *3/22;* **B29H** *5/26;* **B29C** *1/04*

U.S. Cl. 264—22 **12 Claims**

1. A method for producing rubber articles from powdered caoutchouc containing compositions which comprises subjecting a powdered caoutchouc containing composition for producing a rubber article which composition does not contain any vulcanization accelerators to thorough mixing at an elevated temperature in a high-speed mixer to produce an intermixed, homogeneous caoutchouc mixture which will produce a rubber article on cross-linking, and irradiating the homogeneous caoutchouc mixture with high-speed electrons to cross-link the caoutchouc mixture.

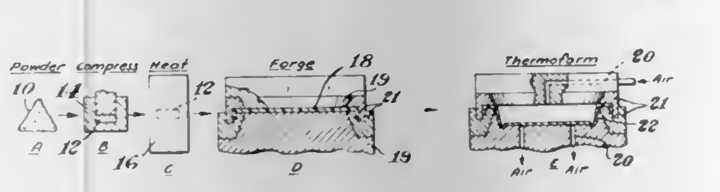
4,352,766
SCRAPLESS FORMING OF PLASTIC ARTICLES

Norbert L. Bradley; Kenneth J. Cleereman, and Ritchie A. Wessling, all of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 736,628, Oct. 28, 1976, Pat. No. 4,323,531, which is a continuation of Ser. No. 484,498, Jul. 1, 1974, abandoned, which is a division of Ser. No. 215,632, Jan. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 119,669, Mar. 1, 1971, abandoned. This application Nov. 24, 1980, Ser. No. 209,639

Int. Cl.^{3} B29D *9/00*

U.S. Cl. 264—45.5 **4 Claims**



1. A process for forming a foam thermoplastic article having dense surfaces and a porous less dense inner structure comprising the steps of:

(a) dry blending a mixture of a thermoplastic powder and a chemical blowing agent in sufficient quantity to make said article;

(b) compressing said blend into a briquette having green strength;

(c) heating said briquette to a temperature in the range from about the alpha transition temperature to less than the melt forming temperature of said powder and the activation temperature of said blowing agent;

(d) maintaining said temperature for a period sufficient to soften and sinter said briquette; and

(e) forging said briquette within said temperature range with sufficient heat to activate said blowing agent, and with substantial plug flow deformation to obtain substantial fusion of the powder forming said article while providing said dense surfaces.

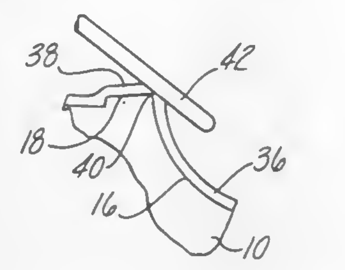
4,352,767
ELIMINATION OF PAINT FLASH ON FOAM MOLDED ARTICLES DURING THEIR MOLDING

Michael Ladney, Jr., 45 Oxford Rd., Grosse Pointe Shores, Mich. 48236, and Raymond W. Hatfield, Warren, Mich., assignors to Michael Ladney, Jr., Grosse Pointe Shores, Mich., a part interest

Filed Dec. 29, 1980, Ser. No. 220,428

Int. Cl.^{3} B29D *27/00;* **B29C** *17/12*

U.S. Cl. 264—46.6 **11 Claims**



1. The method of eliminating paint flash at the parting line of a foamed resin article formed in a mold, the interior molding surfaces of which are sprayed with a paint before the foam resin material is introduced into the mold and which paint becomes integrally bonded to the exterior surface of the foamed resin article, which comprises spraying the cavity surface of the open mold which forms the painted surface of the molded article with a paint compatible with the foam resin; permitting the paint spray to extend beyond the confines of the mold cavity and onto the parting faces of the mold which intersect and peripherally surround said cavity surface; and, while said paint is still wet, contacting at least the line of intersection between said parting faces and said cavity surfaces substantially throughout its lineal extent with a member adapted to interrupt the continuity of the wet paint layer between the cavity and parting face surfaces at said line of intersection; permitting paint in the cavity to at least partially dry after its continuity has been interrupted to thereby reduce its fluidity such that the interrupted portions thereof will not flow back together when the mold is thereafter closed; thereafter closing the mold and introducing said foam resin material; and, after said foam resin material has cured, opening the mold and removing the molded part therefrom whereby the paint layer on said parting surfaces remains separated from the layer of paint on the foamed article removed from the cavity.

4,352,768
FIBER REINFORCED CATHODE FOR ELECTROCHEMICAL CELL

James Epstein, Sharon, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 939,584, Sep. 5, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,572

Int. Cl.^{3} C04B *35/52*

U.S. Cl. 264—105 **8 Claims**

1. A method for forming a preformed cathode for a primary electrochemical cell comprising the steps of:

mixing a quantity of carbon black particles with from 1 to 10 weight percent of the mixture of a fibrous additive and an effective amount of suitable liquid to form a uniform slurry;

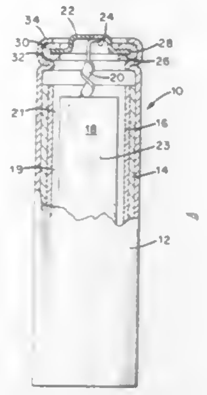
adding a quantity of a mechanical binder which is inert in the primary electrochemical cell to the slurry, the quantity of mechanical binder being at least 1 percent by weight of the resulting preformed cathode;

remixing the slurry to disperse uniformly the binder through the slurry;

sheeting the slurry;

drying the sheeted slurry; and

curing the preformed cathode for a time sufficient to remove substantially all of the liquid and to stabilize the mechanical binder thereby producing a self-supporting reinforced member for insertion into a primary electrochemical cell.



4,352,769

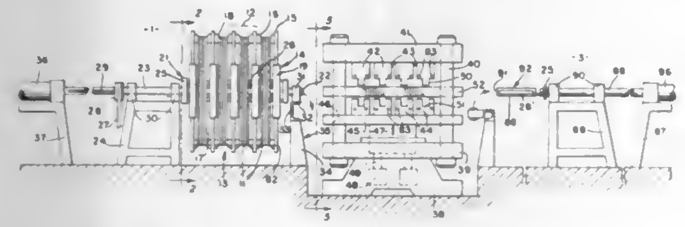
METHOD FOR SIMULTANEOUSLY MOLDING A PLURALITY OF PRODUCTS

Leonard S. Meyer, Columbia, S.C., assignor to Victor United, Inc., Chicago, Ill.

Division of Ser. No. 153,217, May 27, 1980. This application Mar. 31, 1981, Ser. No. 249,423

Int. Cl.³ B29D *3/02;* **B29G** *7/00*

U.S. Cl. 264—134 **9 Claims**



1. The method of molding parts comprising the steps of: winding a curable resin-impregnated strand about opposite end plates of a frame assembly to provide a strand bundle spanning an opening in said frame assembly, shifting said wound frame assembly into a molding station to dispose said bundle in a spanning manner between open spaced-apart mold sections therein, said molding station including opposed guide means, while engaging opposite ends of said frame assembly with said opposed guide means actuating cutting means adjacent said guide means to sever said bundle strands juxtaposed said frame assembly end plates, closing said mold sections to mold said bundle therebetween with at least one said mold section passing through said frame assembly opening curing said resin thereby forming a molded part, opening said mold sections after molding of said part, and retracting said frame assembly and the molded part from said molding station.

4,352,770

PROCESS FOR FORMING SHAPED CELLULOSIC PRODUCT

Albin F. Turbak, Convent Station; Adel El-Kafrawy, Rockaway; Fred W. Snyder, Jr., Wharton, and Andrew B. Auerbach, Livingston, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 145,333, Apr. 30, 1980, Pat. No. 4,302,252, which is a continuation-in-part of Ser. No. 60,814, Jul. 25, 1979, abandoned. This application May 1, 1981, Ser. No. 259,670

Int. Cl.³ D01F *2/00*

U.S. Cl. 264—187 **7 Claims**

1. A process of forming a shaped cellulosic product comprising

dissolving activated cellulose without significant depolymerization thereof in an amide selected from the group consisting of dimethylacetamide, 1-methyl-2-pyrrolidinone and mixtures thereof and from 3 to 15% by weight of the solution of lithium chloride, and

reconstituting the cellulose to form a shaped cellulosic product therefrom.

4,352,771

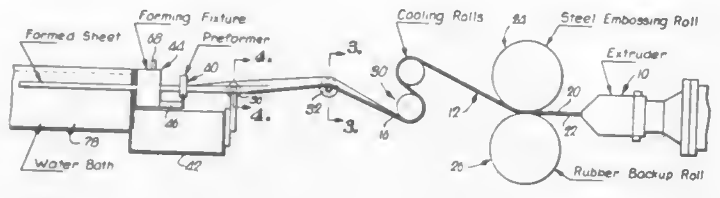
METHOD AND APPARATUS FOR CREATING RANDOM SHADOW PATTERNS IN FORMED VINYL SHEET ARTICLE

Robert J. Szabo, Kansas City, Mo., assignor to Variform Plastics, Inc., Kearney, Mo.

Filed Apr. 16, 1981, Ser. No. 254,632

Int. Cl.³ B29F *3/08;* **B29D** *7/02*

U.S. Cl. 264—210.2 **15 Claims**



1. A method of creating random shadow patterns in formed vinyl sheet including the steps of:

extruding a flat, hot web of vinyl material having a predetermined thickness and a predetermined distance between the edges thereof;

gathering said web towards the center thereof to reduce the distance between said edges;

preforming said web to further reduce the distance between said edges;

moving said web through a smooth-walled passage having a height greater than the thickness of said web while restraining said edges whereby to create wrinkles in said web to present a random pattern, rugose surface; and

cooling said web as it is moved through said passage whereby to create said formed vinyl sheet having random shadow patterns therein.

10. Apparatus for creating random shadow patterns in formed vinyl sheet comprising:

means for extruding a flat hot web of vinyl material having a predetermined thickness and a predetermined distance between the edges thereof;

means for gathering said web toward the center thereof to reduce the distance between said edges;

means for preforming said web by folding the same along predetermined longitudinally extending lines, to further reduce the distance between the edges thereof;

a forming fixture having a smooth-walled passage therein of a height greater than the thickness of the web and means for restraining the edges of the web to said further reduced distance apart whereby wrinkles are formed in said web as it is moved through said passage; and

means for cooling said web as it moves through said passage.

4,352,772

METHOD AND APPARATUS FOR INJECTION-MOLDING A MANIFOLD ONTO A SET OF HOLLOW ELEMENTS

Baruch J. Bezner, Tel Aviv, Israel, assignor to Helioset Advanced Technologies Ltd., Tel Aviv, Israel

Filed Jul. 11, 1980, Ser. No. 167,643

Claims priority, application Israel, Jul. 26, 1979, 57898

Int. Cl.³ B29C *6/04, 1/06*

U.S. Cl. 264—229 **12 Claims**

1. A method for injection-molding at least a first part of a plastic manifold element onto an extruded, panel-forming plurality of juxtaposed, hollow elements, comprising the steps of:

introducing into one set of ends of said plurality of hollow elements protrusion means extending from a core means,

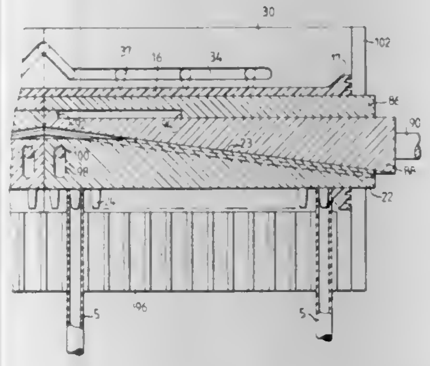
said core means defining the shape of at least part of the interior space of the final manifold to be formed;

clamping the region of said set of ends accommodating said protrusion means between a first and a second mold member, which two members, together with said core means, delimit the cavity of at least part of said final manifold;

injecting plastic material into said cavity;

removing said core means, and

removing said first and second mold members, whereby during the injection-molding process a strong bond is formed at the interface between the material of said plurality of juxtaposed, hollow elements and the material of the manifold being formed.



9. An apparatus for injection-molding a plastic manifold onto an extruded, panel-forming plurality of juxtaposed, hollow elements, which apparatus comprises: core means defining the shape of the interior space of the final manifold to be formed, protrusion means extending from said core means, which protrusion means is designed to substantially fit and fill at least one end section of said hollow elements to prevent the collapsing thereof during injection-molding of said manifold thereon, said core means comprising a core rail carrying said protrusion means, an extractor member in which said core rail is slidably arranged, and a core jacket substantially surrounding said extractor member, said core jacket, together with a portion of said core rail, defining the interior space of said final manifold.

4,352,773

METHOD OF MOUNTING A GRINDING WHEEL ON A SPINDLE

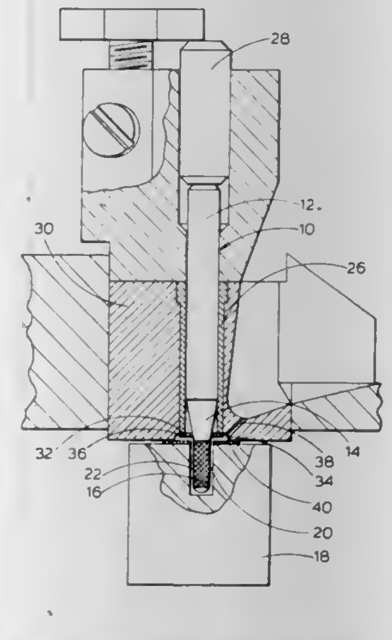
Trevor L. Jenkins, Luton, England, assignor to Norton Company, Worcester, Mass.

Filed Jun. 11, 1981, Ser. No. 272,793

Claims priority, application United Kingdom, Jun. 20, 1980, 8020156

Int. Cl.³ B29D *3/00;* **B29C** *5/00*

U.S. Cl. 264—262 **9 Claims**



1. A method for bonding the end of a tapered spindle in the central aperture of a grinding wheel in an injection mold that includes an injection die means having a hollow cylindrical die liner for holding the projecting end of a tapered spindle in said aperture, comprising placing the spindle to be mounted in the wheel in the hollow die liner with the projecting end of the spindle extending from the end of said liner; sealing the space between the end of the liner and the tapered portion of the spindle positioned within the liner against the flow of bond material into said space; centering the projecting end of the tapered spindle in the aperture in the wheel and sealing the wheel against said die to form a cavity defined by the wall of said aperture, the die means and the projecting end of said spindle; and then injecting a hardenable bonding material into said cavity and hardening said material to complete the bonding of the wheel to the spindle.

4,352,774

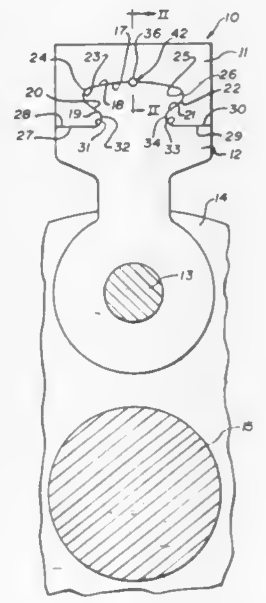
METHOD AND ARRANGEMENT FOR SUPPORT OF CONTACT ELEMENTS OF HAMMERMILLS AND THE LIKE

Michael E. Hornberger, Carlisle, Pa., assignor to The Frog, Switch & Manufacturing Company, Carlisle, Pa.

Filed Mar. 13, 1980, Ser. No. 129,978

Int. Cl.³ B29D *3/00*

U.S. Cl. 264—263 **2 Claims**



1. In a method of securing a contact element to a support element to be carried by said support element for contact with material to be treated, the steps of forming one of said elements with a groove having a longitudinal direction and having a substantially uniform cross-sectional shape with uniform cross-sectional dimensions along its length, forming the other of said elements with a tongue having a longitudinal direction and having a substantially uniform cross-sectional shape substantially the same as that of said groove and with cross-sectional dimensions such as to fit into said grooves with a close tolerance fit, forming first and second narrow and elongated recesses in interengageable surfaces of said groove and said tongue at positions such as to register to define a channel extending to an entrance opening at aligned edge portions of said surfaces when the full length of said tongue is in said groove, positioning one end of said tongue in alignment with one end of said groove and then moving said contact element relative to said support element to longitudinally slide said tongue in said groove to an installed condition in which substantially the full length of said tongue is in said groove and in which said first and second recesses register to define said channel having an entrance opening at aligned edge portions of said surfaces, then flowing a hardenable liquid bonding material through said entrance opening into said channel to fill said channel with said material, and allowing said material to harden to develop a solid resilient holding and locking element operative to resil-

iently oppose relative slideable movement of said contact and support elements away from said installed condition.

4,352,775

METHOD AND APPARATUS FOR PRODUCING MOLDED PLASTIC ARTICLES SUCH AS PACKAGING TUBES

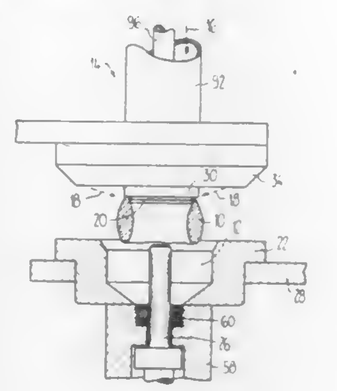
Karl Mägerle, Im vorderen Erb 1, 8700 Kusnacht, Switzerland

Filed Jul. 2, 1980, Ser. No. 165,396

Claims priority, application Switzerland, Jul. 12, 1979, 6502/79

Int. Cl.^{3} B29D *23/04*

U.S. Cl. 264—500 **6 Claims**



1. In a method producing a molded article from thermoplastic material in which during the extrusion of plasticized material from an extrusion head a blank is formed, transferred into an upwardly open mold cavity and formed into the shape of the molded article by pressing while the mold is being closed; the steps of:
   - (a) extruding at the extrusion head plasticized material in an annular flow;
   - (b) shaping the extruded plasticized material into an annular blank of lenticular, standing oval-resembling longitudinal cross-sectional profile, at least in part by controlling said annular flow, while permitting the extruded material to freely depend from the extrusion head;
   - (c) separating the blank, so shaped, from the extrusion head at least in part by terminating the flow; and
   - (d) permitting the separated blank to free fall into the mold cavity, the mold cavity including an axially directed pin, and the annular blank free falling so as to ring said pin while landing in said mold cavity whereby surface contact with the mold cavity is kept as small as possible; and
   - (e) forming a molded article from the deposited annular blank by pressing the deposited annular blank while closing the mold cavity.

4,352,776

APPARATUS AND METHOD FOR FABRICATING POLYCARBONATE SKYLIGHTS

Kent A. Weisner, Altamonte Springs, and Lester L. Walls, Jr., Winter Park, both of Fla., assignors to Kenergy Corporation, Orlando, Fla.

Continuation-in-part of Ser. No. 12,822, Feb. 16, 1979, Pat. No. 4,278,414. This application Feb. 2, 1981, Ser. No. 230,317

Int. Cl.^{3} B29C *17/00*

U.S. Cl. 264—522 **11 Claims**

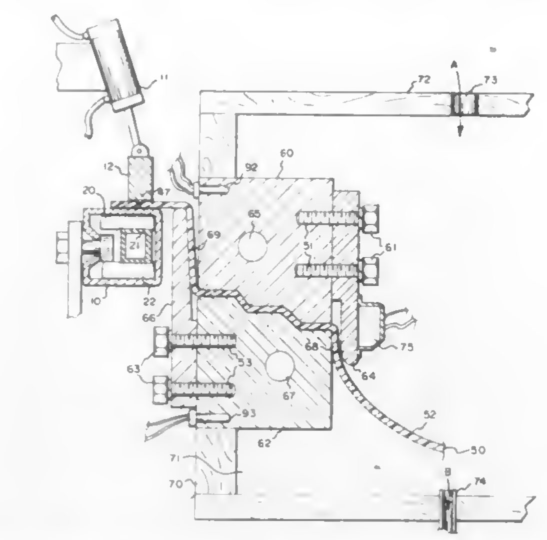
1. A method for forming skylight dome elements and the like in a polycarbonate plastic sheet utilizing apparatus having a heated clamp frame for clamping the perimeter of the plastic sheet, an oven for heating the plastic sheet, coacting perimeter molds to form stepped areas in the plastic sheet adjacent to the perimeter of the sheet, and a vacuum mold for forming a dome area in the plastic sheet, comprising the steps of:

preheating the clamp frame to a first temperature prior to use;

clamping a sheet of polycarbonate plastic around its perimeter region in the clamp frame;

preheating the perimeter region of the polycarbonate plastic sheet approximately to the first temperature by means of the preheated clamp frame;

heating the remainder of polycarbonate plastic sheet and clamp frame in the oven to a second temperature higher than the first temperature but lower than a temmperature which would permit the polycarbonate plastic sheet to sag, the first temperature having been selected to permit the perimeter region and the remainder of the polycarbonate plastic sheet to reach the second temperature at about the same time;



preheating the coacting perimeter molds to approximately the first temperature;

closing the preheated molds on the heated polycarbonate plastic sheet to form stepped areas therein immediately adjacent the clamp frames; and

drawing a vacuum on one surface of the heated polycarbonate plastic sheet to thereby form a dome therein.

4,352,777

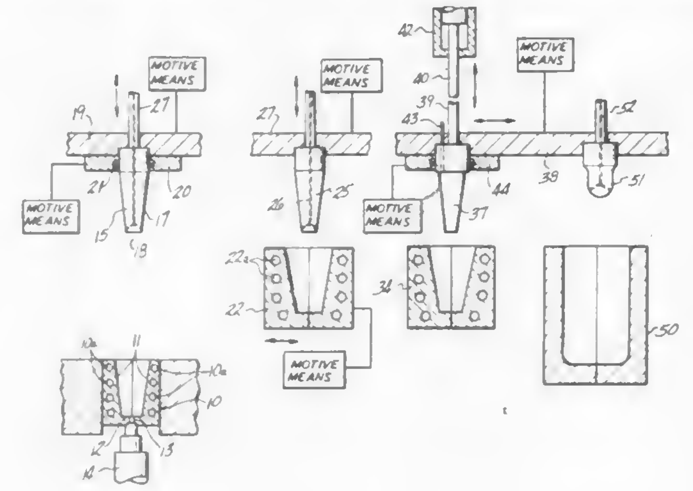
METHOD FOR FORMING HOLLOW PLASTIC OBJECTS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. No. 5,960, Jan. 24, 1979, Pat. No. 4,225,304, which is a division of Ser. No. 911,359, Jun. 1, 1978, Pat. No. 4,207,134. This application Feb. 11, 1980, Ser. No. 120,266

Int. Cl.^{3} B29C *17/07*

U.S. Cl. 264—538 **18 Claims**



1. A method for forming oriented, blown objects of moldable plastic material requiring prolonged tempering cycles to obtain conditions suitable for orientation which comprises: forming a parison by pressure molding in a closed mold cavity on a first core; providing a plurality of tempering molds in spaced relationship to each other and to said pressure mold for retaining and tempering said parison in a prolonged tempering cycle prior to orientation and blowing: relatively moving a first of said tempering molds and said first core into alignment with each other; transferring said parison from said first core to said first tempering mold; relatively moving said first core and first tempering mold to bring said parison into alignment with means for removing the parison from said first tempering mold and transferring said parison to at least one additional tempering mold spaced from said first tempering mold prior to orientation and blowing for prolonged tempering; providing a blow mold in spaced relationship with at least one of said tempering molds for forming said tempered parison into oriented, blown objects; removing said tempered parison from said at least one additional tempering mold by separate means at the end of the tempering cycle prior to orientation and blowing and placing same into said blow mold; and forming oriented, blown objects in said blow mold by means associated with said blow mold, whereby said tempering molds receive and release parisons seriatim and whereby the overall processing cycle is substantially unaffected by the number of tempering molds.

4,352,778

DEVICE FOR HOLDING AND SUPPLYING WITH LIQUID METAL AN ASSEMBLY FOR A NUCLEAR REACTOR CORE

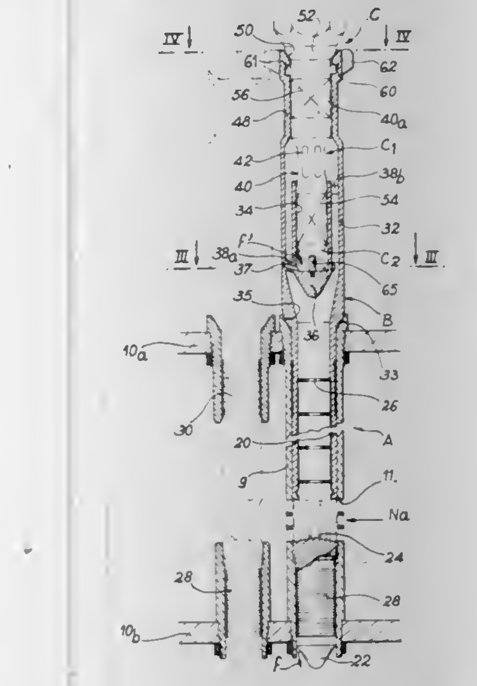
Georges Arnaud, Manosque, and Gerard Chiarelli, Aix en Provence, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 7, 1979, Ser. No. 101,075

Claims priority, application France, Dec. 14, 1978, 78 35201

Int. Cl.^{3} G21C *3/14*

U.S. Cl. 376—365 **6 Claims**



1. In a liquid metal cooled nuclear reactor having a core formed by a plurality of assemblies and a cross-member supporting the core provided with vertical hollow shores, said cross-member forming a reservoir for supplying said assemblies with high pressure liquid metal, each of the said assemblies having a leg comprising a generally cylindrical hollow body sealed at its upper end by a plug, means for holding and supplying each of the said assemblies comprising a hollow supporting member having a generally cylindrical shape, said hollow supporting member having towards its upper end an inner coaxial tube sealed by a base and which serves to receive with a clearance the lower end of the assembly leg, the latter being provided above said inner coaxial tube with at least one liquid metal supply opening and below said supply opening with means cooperating with said tube in order to create a pressure drop for liquid metal leakage flow, said hollow supporting member further having a lower part which is sealed at its lower end by a plug and which can be introduced with clearance into one of said shores, said lower part of the hollow supporting member being provided with a bearing surface by which said member rests on the upper end of said shore and with openings which coincide with openings made in the shore, means for regulating the liquid metal flow rate being provided in said lower part of the hollow supporting member above said openings in the shore and below said supply openings in the assembly leg, said lower part having on its outer face means for creating a pressure drop disposed below its supply openings, said last named means being able to create with the corresponding part of the shore a pressure drop for a liquid metal leakage flow directed towards the bottom of the cross-member.

4,352,779

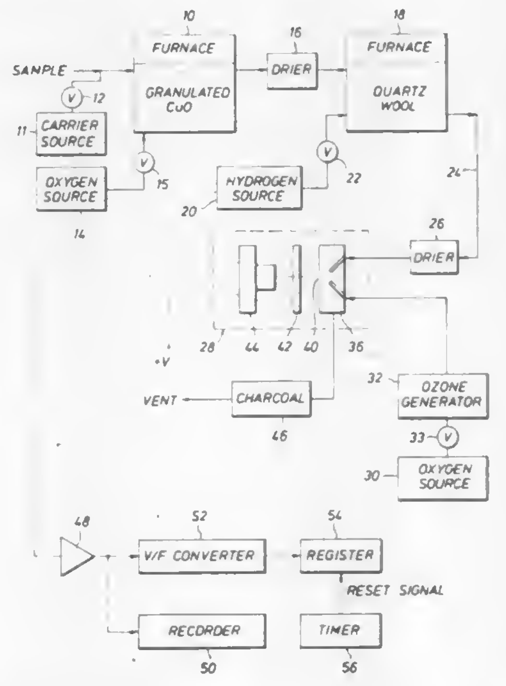
CHEMILUMINESCENT SULFUR DETECTION APPARATUS AND METHOD

Robert E. Parks, Houston, Tex., assignor to Antek Instruments, Inc., Houston, Tex.

Filed Feb. 9, 1981, Ser. No. 232,891

Int. Cl.^{3} G01N *21/76*

U.S. Cl. 422—52 **6 Claims**



1. Apparatus for testing chemically bound sulfur, comprising:
- (a) a first furnace having
  - (1) input means connected to receive a specimen having chemically bound sulfur into said first furnace;
  - (2) a particulate metal oxide in said first furnace selected to convert chemically bound sulfur into oxides of sulfur at a specified elevated temperature;
  - (3) supply mean for providing oxygen to said first furnace;
  - (4) heater means for maintaining said first furnace at the specified elevated temperature;
  - (5) an output means from said first furnace for delivery of the oxides of sulfur formed in said first furnace;
- (b) a second furnace having
  - (1) heater means maintaining a specified temperature therein;
  - (2) input means connected to said first furnace output means for providing the oxides of sulfur to said second furnace;
  - (3) supply means for providing elemental hydrogen to said second furnace;
  - (4) output means from said second furnace for outputting hydrogen sulfide resulting from the reaction of hydrogen and oxides of sulfur in the specimen in said second furnace;
- (c) a reaction chamber having
  - (1) input means connected to said second furnace output means for receiving hydrogen sulfide resulting from the specimen after reaction in said second furnace;
  - (2) supply means connected to said reaction chamber to

provide ozone into said reaction chamber to react with the hydrogen sulfide forming chemiluminescent radiation;

(3) an opaque wall defining a portion of said reaction chamber; and

(4) a transparent port in said wall permitting only chemiluminescent light from said reaction chamber to pass therethrough;

(d) light sensitive means positioned to be responsive to light from said port and which forms an output proportionate to the quanta of light; and

(e) summation means connected to said light sensitive means to form a sum indicative of the quanta of light proportionate to the chemically bound sulfur in the specimen.

4,352,780

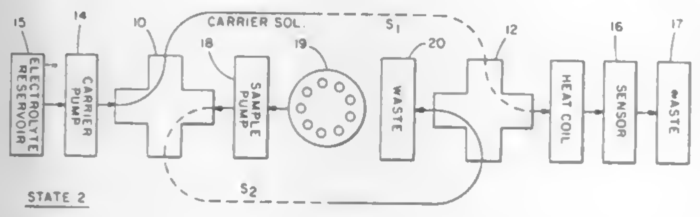
DEVICE FOR CONTROLLED INJECTION OF FLUIDS

Karl G. Schick, Whitefish Bay, Wis., assignor to Fiatron Systems, Inc., Oak Creek, Wis.

Continuation-in-part of Ser. No. 57,369, Jul. 13, 1979, Pat. No. 4,272,483. This application Jun. 9, 1980, Ser. No. 157,653

Int. Cl.^{3} G01N *21/00, 35/00, 35/08*

U.S. Cl. 422—67 **11 Claims**



1. A fluid handling device comprising:
means for supplying an electrolyte fluid,
means for supplying a fluid sample for analysis,
first and second fluid carrying channels,
first four-way valve means for simultaneously injecting said fluid sample into one of said channels and said electrolyte into the other of said channels,
a fluid displacement pump communicating the means for supplying the electrolyte fluid with said first valve means for displacement of electrolyte to said first valve means,
a sample pump communicating the means for supplying the fluid sample with said first valve means for displacement of electrolyte to said first valve means,
second four-way valve means for simultaneously receiving electrolyte fluid and fluid sample from said channels,
means for controlling the operation of said first and second valve means in response to an electrical impulse to direct the simultaneous flow of fluid sample from said first valve means into one of said channels and electrolyte fluid into the other of said channels and for controlling the second valve means for simultaneous flow of electrolyte fluid and fluid sample from said channels and through said second valve means with either the fluid sample or the electrolyte fluid flowing to means for analyzing the fluid sample and the other flowing to means for collecting the fluid, and
means for regulating the operation of said first and second valve means in timed relation to control the volume of fluids displaced by the sample pump and the fluid displacement pump.

4,352,781

COMBUSTION SYSTEM

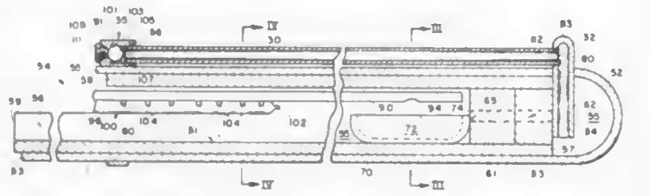
Larry O'Brien, St. Joseph, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Filed Oct. 14, 1980, Ser. No. 196,781

Int. Cl.^{3} G01N *31/12*

U.S. Cl. 422—78 **12 Claims**

1. A combustion chamber for use in combusting a liquid or solid specimen into a gaseous state for subsequent analysis to determine the amount of one or more constituent elements contained in the specimen comprising:
an elongated combustion chamber continuously open at one end to receive samples to be combusted which are positioned in said chamber through said open end, said chamber enclosed at its opposite end and made of a material to withstand temperatures of combustion in excess of 3000° F., said combustion chamber including an exit port adjacent said enclosed opposite end and an area axially spaced from said exit port toward said open end for supporting a combustion boat thereon;



eduction tube means extending along and closely adjacent said combustion chamber externally thereto and having one end coupled to said exit port for communicating with the interior of said combustion chamber for withdrawing specimen gases therefrom from a position adjacent said enclosed end; and
baffle means positioned in said combustion chamber between said support area for a combustion boat and said exit port and including an adjustable aperture to provide an adjustable flow path for the gaseous by-products of combustion.

4,352,782

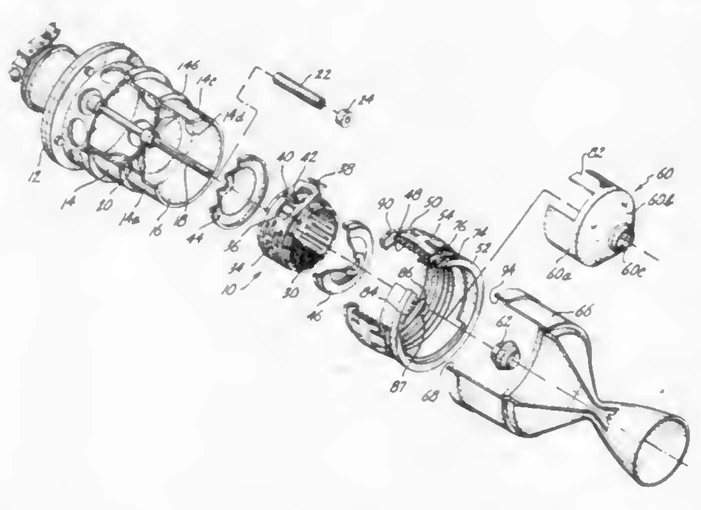
CATALYTIC GAS GENERATOR

James M. Daly, Kirkland, Wash., assignor to Rocket Research Company, Redmond, Wash.

Filed Feb. 20, 1981, Ser. No. 236,575

Int. Cl.^{3} F01N *3/10*

U.S. Cl. 422—179 **8 Claims**



1. In a catalytic gas generator including body means defining a generating chamber, a propellant inlet, a propellant outlet, and a generally cylindrical catalyst bed, the improvement comprising:
first means surrounding and radially confining said catalyst bed, said means being movable radially inwardly relative to said bed,
second means cooperating with said first means to apply a biasing force directed radially inwardly relative to said bed to move the first means radially inwardly and compress the bed as voids form therein during operation of the gas generator.

4,352,783

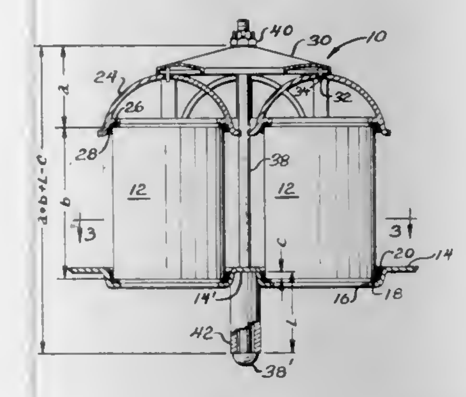
APPARATUS FOR MOUNTING A PLURALITY OF CATALYTIC ELEMENTS FOR TREATING LARGE VOLUMES OF EXHAUST GASES

Charles H. Bailey, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 10, 1981, Ser. No. 272,157

Int. Cl.^{3} B01D *53/36;* **F01N** *3/28, 7/16*

U.S. Cl. 422—179 **6 Claims**



1. An exhaust treatment assembly for catalytically converting large volumes of gases comprising a large chamber having an inlet plenum, an outlet plenum and a bulkhead member separating the plenums, said bulkhead member containing a plurality of apertures and walled portions surrounding each aperture, each of said walled portions being concentric with its associated aperture and spaced radially therefrom so as to form an annular recess around each aperture, gasket means in said recesses and an axially channeled ceramic monolithic catalyst element having a first end positioned in each recess, a metallic end support member in retaining contact with the opposite end of each catalyst element, an axially transverse metallic force applying member arranged and constructed to apply an axial compression force to a plurality of end support members at one time, said end support member being of generally open construction to allow the free flow of gases therethrough, but having at least one contact portion for receiving a compression force from a portion of said axially transverse metallic force applying member and an assembly comprising a metallic nut and bolt which passes through the bulkhead member for transmitting axial compression forces applied by said force applying member to said end support members.

4,352,784

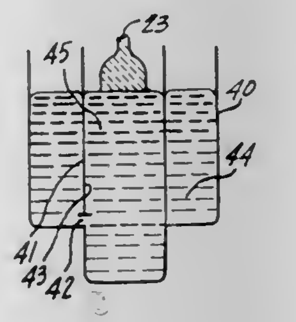
DOUBLE CRUCIBLE CZOCHRALSKI CRYSTAL GROWTH APPARATUS

Wen Lin, Titusville, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 25, 1979, Ser. No. 42,693

Int. Cl.^{3} C30B *15/12*

U.S. Cl. 422—249 **5 Claims**



1. An apparatus for growing a single crystal from a melt comprising an inner crucible and an outer crucible, said inner crucible placed concentrically inside and at least a top portion thereof spaced from the walls of said outer crucible, means for allowing the flow of melt from said outer crucible to said inner crucible, said inner crucible having a reservoir for holding melt in said inner crucible after flow of melt from said outer crucible ceases.

4,352,785

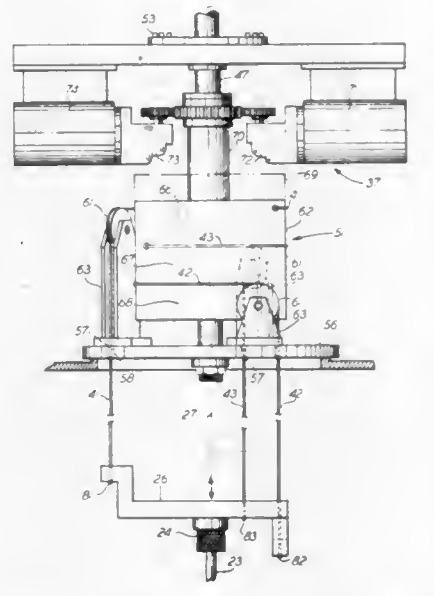
CRYSTAL GROWER WITH TORQUE SUPPORTIVE COLLAPSIBLE PULLING MECHANISM

Winfrid O. E. Schellin, Emmaus, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,050

Int. Cl.^{3} C30B *15/32*

U.S. Cl. 422—249 **11 Claims**



1. Apparatus for growing crystals, which comprises:
means for mounting a crystal;
at least two flexible cables for supporting said crystal mounting means such that the crystal is in coinciding alignment with a predetermined axis of said apparatus, at least one of said at least two flexible cables being in non-coincident relationship with such axis of said apparatus whereby said at least one cable, non-coincident with such axis supports a counter-torque about such axis to oppose rotational motion of such crystal about such axis as a result of a torque generated on the crystal; and
means for simultaneously winding said at least two cables to vertically translate said crystal mounting means within said apparatus.

4,352,786

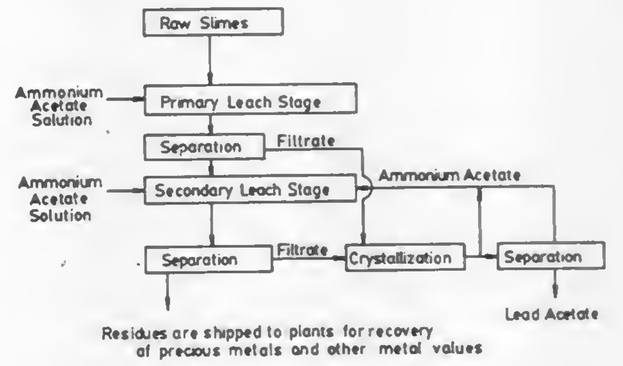
TREATMENT OF COPPER REFINERY ANODE SLIME

Ying-Chu Hoh, Lung-Tan; Bao-Dein Lee, Taipei; Tieh Ma, Taipei; Wen-Shou Chuang, Taipei, and Wei-Ko Wang, Lung-Tan, all of Taiwan, assignors to Institute of Nuclear Energy Research, Taiwan

Filed Feb. 24, 1981, Ser. No. 237,770

Int. Cl.^{3} C01G *21/02*

U.S. Cl. 423—98 **13 Claims**



1. A process for upgrading lead-containing anode slime

produced in the electrolytic refining of copper and for the recovery of lead from such slime comprising:

(a) contacting said anode slime in a primary leach stage with an ammonium acetate leach solution at an elevated temperature and for a period of time sufficient to provide a first leach solution which comprises a portion of the lead contained in said anode slime and separating a primary leach stage solution from undissolved anode slime residue; and

(b) contacting said undissolved anode slime residue from the primary leach stage in a secondary leach stage with additional ammonium acetate leach solution at an elevated temperature and for a period of time sufficient to provide a second leach solution which comprises a portion of the lead contained in said anode slime and separating a secondary leach stage solution from undissolved anode slime residue, said undissolved anode slime residue subsequent to said primary and secondary leach stages comprising less than about 6 percent by weight of the lead originally contained in said anode slime.

4,352,787

ULTRA-HARD PARTICLES OF CARBON PRODUCED BY REACTING METAL CARBIDE WITH NON-METAL HALIDE IN HOT MELT SYSTEM

Frederic A. French, and Douglas A. French, both of Portola Valley, Calif., assignors to TDC-Technology Development Corp., Canada

Continuation-in-part of Ser. No. 92,485, Nov. 8, 1979, Pat. No. 4,275,050. This application Jun. 22, 1981, Ser. No. 275,655

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.^{3} C01B *31/00*

U.S. Cl. 423—445 **21 Claims**

1. Ultra-hard particles having covalently bonded lattice structures composed largely of carbon and produced by reacting a carbide selected from the group consisting of acetylide carbides, interstitial carbides and other metal carbides with a halide or halogen reactant selected from the group consisting of $CH_nX_AY_{(4-n)-A}$, $C_2H_{n'}X_{A'}Y_{(6-n')-A'}$, $C_2H_{n''}X_{A''}Y_{(4-n''-)-A''}$, BX_3, C_6X_6, C_5X_5N, SX_2 and X_2 wherein X and Y are different halogens selected from the group consisting of chlorine, bromine, iodine and fluorine, and wherein A is an integer from 0 to 4, A′ is an integer from 0 to 6 and A″ is an integer from 0 to 4, and wherein n is an integer from 0 to 4, n′ is an integer from 0 to 6 and n″ is an integer from 0 to 4, wherein A, A′, A″, n, n′ or n″ is the same integer in any particular member selected and wherein $n+A=4$, $n'+A'=6$ and $n''+A''=4$, said reaction being carried out in a hot melt system having substantially no solvency capability for carbon comprising a molten solution of more than one metal halide wherein the metals are selected from the group consisting of Group I, Group II and Group III metals of the periodic table and the halides are selected from the group consisting of chlorine, bromine, iodine and fluorine, said reaction being carried out at temperature and pressure conditions sufficient to maintain the melt system in the liquid state.

4,352,788

DERIVATIVES OF 2,4,6-TRIIODO-ISOPHTHALIC ACID, PROCESSES FOR THEIR SYNTHESIS AND X-RAY CONTRASTING MATERIALS CONTAINING THESE

Ernst Felder, Riva S. Vitale, Switzerland, and Davide Pitre, Milan, Italy, assignors to Bracco Industria Chimica S.p.A., Milan, Italy

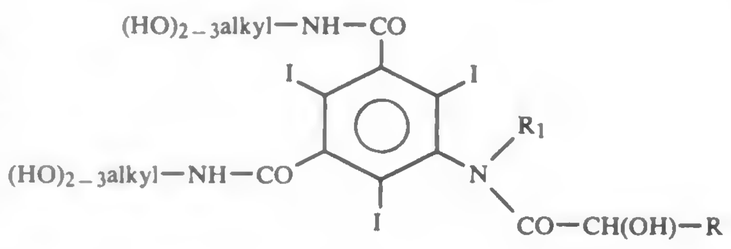
Filed Jul. 30, 1980, Ser. No. 173,698

Claims priority, application Italy, Aug. 9, 1979, 25026 A/79

Int. Cl.^{3} A61K *49/04*

U.S. Cl. 424—5 **6 Claims**

1. 5-(N-alkyl-α-hydroxyacylamino)-2,4,6-triiodoisophthalic-acid-bis-(hydroxyalkylamides) having the formula (I)



(I)

in which

$(OH)_{2-3}$alkyl is 1,3-dihydroxyisopropyl, 2,3-dihydroxypropyl or 1,3-dihydroxy-2-hydroxy-methyl-isopropyl,

R is hydrogen or methyl, and

R_1 is an alkyl residue with 1 to 5 carbon atoms.

4,352,789

AEROSOL COMPOSITIONS CONTAINING FINELY DIVIDED SOLID MATERIALS

Charles G. Thiel, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 17, 1980, Ser. No. 131,030

Int. Cl.^{3} A61K *9/14*

U.S. Cl. 424—46 **18 Claims**

1. A self-propelling, powder dispensing aerosol composition comprising between about 0.001 and 20 percent by weight of a finely-divided solid material coated with a dry coating of a perfluorinated surface-active dispersing agent which constitutes between about 0.1 to 20 percent by weight of said coated solid material, and suspended in a halogenated propellant in which said solid material and said perfluorinated surface-active dispersing agent are substantially insoluble.

4,352,790

MEDICAL PREPARATION CONTAINING PROSTAGLANDIN

Olof J. A. Johansson, Veberöd, and Ulf I. Ulmsten, Malmö, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Jan. 16, 1980, Ser. No. 112,563

Claims priority, application Sweden, Jan. 29, 1979, 7900737

Int. Cl.^{3} A61K *31/74, 31/215, 31/19*

U.S. Cl. 424—78 **10 Claims**

1. A stable medical preparation containing prostaglandin in the form of substantially dry particles and intended for intravaginal or intracervical application, said preparation comprising a crosslinked hydroxyl group containing polymer which is insoluble in water but has the capability of swelling in liquid containing water to form a gel, said polymer containing an effective amount of prostaglandin.

4,352,791

POTASSIUM REPLACEMENT THERAPY

Alejandro Zaffaroni, Atherton, and John Fara, Saratoga, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Apr. 27, 1981, Ser. No. 257,540

Int. Cl.^{3} A61K *31/60, 33/14*

U.S. Cl. 424—153 **19 Claims**

1. A method for treating potassium depletion in an animal in need of potassium replacement, which method comprises administering orally to the animal from 15 milligrams to 1200 milligrams of potassium chloride and an effective amount of a member selected from the group consisting essentially of salicyclic acid and its pharmaceutically acceptable salicylate salts for lessening the incidence of unwanted side effects associated with the therapeutic use of potassium chloride.

4,352,792

3-ALKOXYFLAVONE ANTIVIRAL AGENTS

Hideo Ishitsuka, Yokohama; Haruyoshi Shirai, Isehara; Isao Umeda, Yokohama, and Yasuji Suhara, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 7, 1980, Ser. No. 137,637

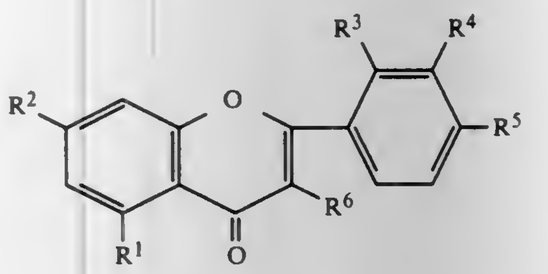
Claims priority, application United Kingdom, Apr. 10, 1979, 7912610; Feb. 25, 1980, 8006259

Int. Cl.^{3} C07H *15/20;* A61K *31/70*

U.S. Cl. 424—180 **67 Claims**

1. An anti-enteroviral composition comprising:

(a) as an active ingredient a compound of the formula:



I

wherein R^1 is hydroxy, lower alkoxy, lower alkanoyloxy, lower alkoxycarbonyloxy or nicotinoyloxy; R^2 is hydroxy or lower alkoxy; R^3 is hydrogen or lower alkoxy; R^4 is hydrogen, hydroxy or lower alkoxy; R^5 is hydroxy, lower alkoxy, lower alkanoyloxy, aminoacyloxy where its acyloxy group has 2 to 10 carbon atoms, glycosyloxy which is derived from a monosaccharide of 5 to 7 carbon atoms, a hydroxy-substituted dicarboxylic acid residue where its dicarboxylic acid group has 2 to 8 carbon atoms, amino, nicotinoyloxy or lower alkoxycarbonyloxy and R^6 is lower alkoxy, or pharmaceutically acceptable salts thereof,

in an amount which is effective as an anti-enteroviral agent; and

(b) a pharmaceutically acceptable carrier material.

4,352,793

PHARMACEUTICAL COMPOSITION COMPRISING BENCYCLANE FUMARATE AND CYCLODEXTRIN

Yoshiya Yamahira, Ibaraki; Takeshi Noguchi, Takatsuki; Keiji Fujioka, Ibaraki; Tetsuo Noguchi, Suita, and Shigeji Sato, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 8, 1980, Ser. No. 138,562

Claims priority, application Japan, Apr. 26, 1979, 54-52164; Dec. 4, 1979, 54-157151; Jan. 28, 1980, 55-9201; Feb. 13, 1980, 55-17042

Int. Cl.^{3} A61K *31/715*

U.S. Cl. 424—180 **21 Claims**

1. A pharmaceutical composition having anticonvulsant and vasodilatory activity comprising as a pharmaceutically active ingredient an effective amount of bencyclane fumarate and cyclodextrin in a molar ratio ranging between about 1:5 and 5:1.

4,352,794

BETA-CYCLODEXTRIN AS ANTI-ACNE AGENT

Jürgen Koch, Buchenalle 7c., Hamburg 54, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,232

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1979, 2947742

Int. Cl.^{3} A61K *31/715*

U.S. Cl. 424—180 **8 Claims**

1. A method of treating a patient suffering from acne, comprising topically applying to the acne beta-cyclodextrin in an acne treating effective amount, the beta-cyclodextrin being applied to the acne in a cosmetic or pharmaceutical acceptable carrier, the carrier containing substantially no organic compounds with molecular weights between 100 and 10,000 daltons.

4,352,795

7-β-D-ARABINOFURANOSYL-7H-PYRROLO[2,3-d]PYRIMIDINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

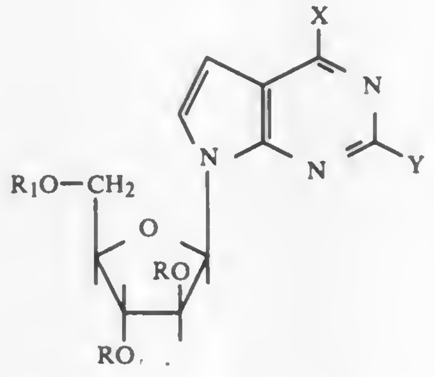
P. Dan Cook, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 29, 1981, Ser. No. 229,471

Int. Cl.^{3} A61K *31/70;* C07H *19/04*

U.S. Cl. 424—180 **12 Claims**

1. The compound having the structural formula:



and the pharmaceutically acceptable acid addition salts and when R_1 is phosphate ammonium ion, alkali metal cation, and alkaline earth metal cation salts thereof wherein when Y is NH_2, X is NH_2 or OH; and when Y is hydrogen, X is NH_2, OH or SH, with the proviso that when Y, R and R_1 are all hydrogen X is not NH_2 or OH; R is hydrogen or acyl containing 2 to 6 carbon atoms; and R_1 is hydrogen, acyl containing 2 to 6 carbon atoms or phosphate.

12. A method of treating Herpes simplex viral infection by the administration to a host of an effective amount of the component according to claim 1.

4,352,796

PHARMACEUTICALLY ACTIVE PLANT EXTRACT AND COMPOSITION THEREOF

Shigeru Arichi, and Yoshihiro Uchida, both of Osaka, Japan, assignors to Osaka Chemical Laboratory Co., Ltd., Osaka, Japan

Filed Jun. 11, 1980, Ser. No. 158,598

Claims priority, application Japan, Jun. 14, 1979, 54/75349

Int. Cl.^{3} A61K *35/78*

U.S. Cl. 424—195 **9 Claims**

1. A substantially alkaloid free aqueous extract of a steamed or powdered aconite root selected from the group consisting of *Aconitum japonicum* Thunberg or *Aconitum sinense* Siebold prepared by the process comprising:

(a) extracting said aconite root with water, a lower aliphatic alcohol containing water, or a lower aliphatic alcohol to form an extract of said aconite root;

(b) concentrating said extract or drying it by evaporation under reduced pressure;

(c) dissolving said extract in a slightly basic aqueous solution;

(d) treating said aqueous solution with a fat soluble organic solvent selected from the group consisting of chloroform, ethylether, benzene, hexane, toluene, ligroin and petroleum ether until the resulting aqueous solution shows a negative reaction against an alkaloid detecting reagent, thereby removing alkaloids;

(e) neutralizing said aqueous solution; and

(f) concentrating said aqueous solution as in step (b), whereby a substantially alkaloid-free aqueous extract of said aconite root is obtained.

4,352,797
BIOLOGICALLY ACTIVE EXTRACTS FROM *MYRISTICA CASTANEIFOLIA* (MYRISTICACEAE) FIJI AND A METHOD OF OBTAINING SAME

Sidney M. Hecht, Charlottesville, Va., assignor to Wofor AG, Giswil, Switzerland

Filed Jul. 2, 1981, Ser. No. 280,087

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **13 Claims**

1. Biologically active materials from the plant *Myristica castaneifolia,* Myristicaeae, Fiji, the materials being produced by the process comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to about 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, and a fourth solvent having a dielectric constant at 25° C. of about 78, each extraction step being conducted for a period of 1 to 10 days, all extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

7. A process of obtaining biologically active materials from the plant *Myristica castaneifolia,* Myristicaeae, Fiji, comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, a third solvent having a dielectric constant at 20° to 25° C. of from about 15 to 35, and a fourth solvent having a dielectric constant at 25° C. of about 78, each extraction step being conducted for a period of 1 to 10 days, all of the extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

4,352,798
11 α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt, and Barry A. Coomber, Pinner, all of England, assignors to Glaxo Group Limited, London, England

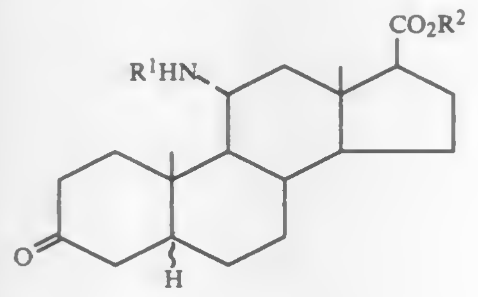
Filed Jul. 15, 1981, Ser. No. 283,429

Claims priority, application United Kingdom, Jul. 16, 1980, 8023295; Mar. 2, 1981, 8106488

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—242 **10 Claims**

1. Compounds of formula



(I)

(wherein:

- R^1 is a hydrogen atom, a $C_{1\text{-}8}$ alkyl group or a $C_{3\text{-}7}$ cycloalkyl group; and
- R^2 is a hydrogen atom, a $C_{1\text{-}6}$ alkyl group or a $C_{3\text{-}6}$ cycloalkyl group; and the D-homo analogues thereof having the group $-CO_2R^2$ (wherein R^2 is as defined above) at the $17a\beta$-position and salts and zwitterionic forms thereof.

10. A method of treatment or prophylaxis of a human or animal subject suffering from or liable to ventricular dysrhythmias which comprises administering to said subject an effective amount of one or more compounds as claimed in claim 1.

4,352,799
2-PHENYL-1,2-BENZISOSELENAZOL-3(2H)-ONE CONTAINING PHARMACEUTICAL PREPARATIONS AND PROCESS FOR THE TREATMENT OF RHEUMATIC DISEASES

Marcel Renson, Jupille, Belgium; Eugen Etschenberg, and Johannes Winkelmann, both of Cologne, Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,876

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027073

Int. Cl.³ A61K *31/33*

U.S. Cl. 424—244 **1 Claim**

1. A process for the treatment of rheumatic diseases comprising administering to a being suffering from such disease 2-phenyl-1.2-benzisoselenazol-3(2H)-one and, optionally, a carrier material therewith, in an amount ranging from 10 to 1000 mg per day.

4,352,800
ADJUVANT FOR PROMOTING ABSORPTION OF THERAPEUTICALLY ACTIVE SUBSTANCES THROUGH THE DIGESTIVE TRACT

Akira Kamada, Suita, Japan, assignor to Kyoto Yakuhin Kyogo Kabushiki Kaisha, Kyoto and Sawai Seiyaku Kabushiki Kaisha, Osaka, both of, Japan

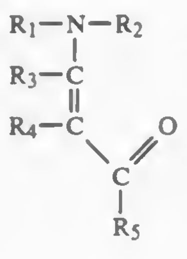
Division of Ser. No. 67,451, Aug. 17, 1979, Pat. No. 4,277,465. This application Nov. 26, 1980, Ser. No. 210,578

Claims priority, application Japan, Aug. 26, 1978, 53-104130; Jul. 30, 1979, 54-97931

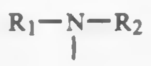
Int. Cl.³ A61K *31/54, 31/495, 31/43*

U.S. Cl. 424—246 **17 Claims**

1. A pharmaceutical composition for absorption through the digestive tract, which comprises a therapeutically effective amount of a β-lactam antibiotic and an absorption promoting amount of an enamine derivative of the formula



wherein



$$R_1-\underset{|}{N}-R_2$$

is the residue of an organic aminocarboxylic acid or organic aminosulfonic acid having a hydrogen atom removed from the amino group thereof, the carboxyl or sulfo group in said residue being optionally in the form of an alkali metal salt or ester; wherein one of R_1 and R_2 is a carboxy or sulfo substituted alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl or naphthyl group and the other of R_1 and R_2 is hydrogen, lower alkyl or phenyl, R_3 is a hydrogen atom, a lower alkyl group or a lower alkoxy group, R_4 is a hydrogen atom, a lower alkyl group or a lower alkoxycarbonyl group, R_5 is a lower alkyl group, a lower alkoxy group which may optionally be substituted by hydroxyl, carboxyl or lower alkoxycarbonyl, or a lower alkylamino group which is substituted by hydroxyl, carboxyl or lower alkoxycarbonyl.

4,352,801
CEPHEM DERIVATIVES AND ANTIBACTERIAL AGENTS COMPRISING SAID COMPOUNDS

Seiichiro Nomoto; Hironori Ikuta, both of Tokyo; Yoshimasa Machida, Wako; Shigeto Negi, Kodaira; Isao Sugiyama, Tokyo; Hiroshi Yamauchi, Gifu; Kenro Nakatsuka, Matsudo, and Isao Saito, Sakura, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

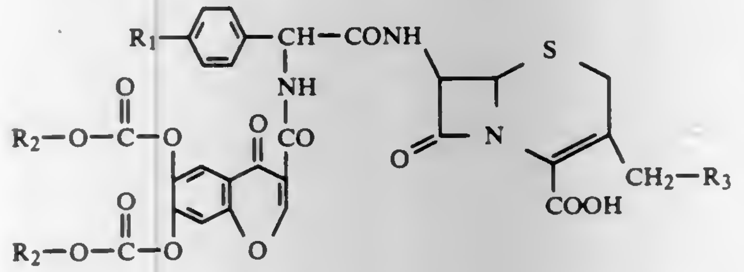
Filed Dec. 19, 1980, Ser. No. 218,402

Claims priority, application Japan, Oct. 7, 1980, 55-139269

Int. Cl.³ C07D *501/36*

U.S. Cl. 424—246 **5 Claims**

1. A cephem derivative represented by the formula:



wherein R_1 represents hydrogen or hydroxyl, R_2 represents lower alkyl or chloro-substituted lower alkyl, and R_3 represents lower alkanoyloxy or carboxyalkyl substituted tetrazolylthio or a pharmaceutically acceptable salt thereof.

4,352,802
BICYCLO[3.3.1]NONYL-BENZAMIDE

Frank E. Blaney, London, England, assignor to Beecham Group Limited, England

Filed Jun. 1, 1981, Ser. No. 268,741

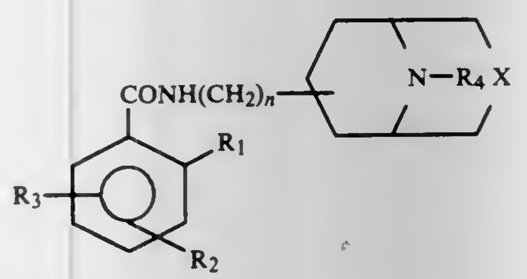
Claims priority, application United Kingdom, Jun. 10, 1980, 8019017

Int. Cl.³ A61K *31/54, 31/535;* **C07D** *279/16, 265/36*

U.S. Cl. 424—246 **13 Claims**

1. A compound of the formula (I) or a pharmaceutically acceptable salt thereof:

(I)



characterised in that:

- X is oxygen or sulphur;
- R_1 is a $C_{1\text{-}6}$ alkoxy or $C_{1\text{-}6}$ alkylthio group;
- R_2 and R_3 are the same or different and are hydrogen, halogen, CF_3, $C_{1\text{-}7}$acyl, $C_{1\text{-}7}$ acylamino or amino, aminocarbonyl or aminosulphonyl optionally substituted by one or two $C_{1\text{-}6}$ alkyl groups, $C_{1\text{-}6}$ alkylsulphonyl, $C_{1\text{-}6}$ alkylsulphinyl, $C_{1\text{-}6}$alkoxy, $C_{1\text{-}6}$ alkylthio, hydroxy or nitro or R_1 and R_2 taken together are methylenedioxy or ethylenedioxy in which case R_3 is any one of the groups given for R_2 and R_3 above;
- R_4 is $C_{1\text{-}7}$ alkyl or a group $-(CH_2)_sR_5$ where s is 0 to 2 and R_5 is a $C_{3\text{-}8}$ cycloalkyl group, or a group $-(CH_2)_tR_6$ where t is 1 or 2 and R_6 is a phenyl group optionally substituted by one or two substituents selected from $C_{1\text{-}6}$ alkyl, $C_{1\text{-}4}$alkoxy, trifluoromethyl and halogen, or a thienyl group; and
- n is 0 to 2;

and there are at least two carbon atoms between the benzamide and heterogranatane ring nitrogen atoms.

12. A pharmaceutical composition having dopamine antagonist activity comprising an effective amount of a compound according to claim 1 or a hydrate or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

4,352,803
NOVEL NAPHTHYRIDINE DERIVATIVES, INTERMEDIATES THEREOF, PROCESSES FOR PREPARATION THEREOF, AND USE THEREOF

Jun-ichi Matsumoto, Takatsuki; Yoshiyuki Takase, Amagasaki, and Yoshiro Nishimura, Neyagawa, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan and Laboratoire Roger Bellon, Neuilly sur Seine, France

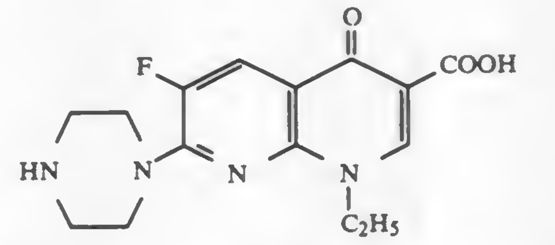
Division of Ser. No. 68,966, Aug. 23, 1979. This application May 18, 1981, Ser. No. 264,824

Claims priority, application Japan, Aug. 25, 1978, 53/104235; Dec. 20, 1978, 53/157939; Dec. 29, 1978, 53/162095

Int. Cl.³ A61K *31/495;* **C07D** *471/04*

U.S. Cl. 424—251 **6 Claims**

3. A method for the treatment of a bacterial infectious disease which comprises administering to a warm-blooded animal suffering from such disease an antibacterially effective amount of a 1,8-naphthyridine compound



or a non-toxic pharmaceutically acceptable salt thereof.

4,352,804
OXIME ETHERS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jacob A. van Zorge, Amelde, Netherlands, assignor to ACF Chemiefarma NV, Netherlands

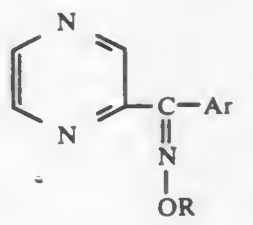
Filed Jul. 11, 1979, Ser. No. 56,529

Claims priority, application United Kingdom, Jul. 25, 1978, 30952/78

Int. Cl.³ A61K *31/495;* **C07D** *241/12*

U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula:



or an N-oxide thereof, or a pharmaceutically acceptable salt of said compound or said N-oxide, wherein:

- Ar is phenyl, thienyl, furyl or pyridinyl, said phenyl being unsubstituted or mono substituted by halogen, C_{1-6} alkyl or C_{1-6} alkoxy,
- R is C_{1-3} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, cyano C_{1-3} alkyl or aminoalkyl with the formula $-(CH_2)_qNR^3R^4$, wherein q is 2 or 3, R^3 and R^4 are each hydrogen or C_{1-3} alkyl.

4,352,805
METHODS OF TREATING PSYCHOSIS

John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 72,658, Sep. 5, 1979, which is a division of Ser. No. 847,371, Oct. 31, 1977, Pat. No. 4,179,510. This application Oct. 10, 1980, Ser. No. 196,192

The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.

Int. Cl.^{3} A61K *31/47, 31/495*

U.S. Cl. 424—250 **2 Claims**

1. A method of treating psychosis in humans which comprises administering systemically to humans an antipsychotic dose of 2-[(1,3,4,5-tetrahydro-7,8-dimethoxy-2-benzoxepin-1-yl)methyl]-4-(2-pyridyl)piperazine.

4,352,806
SELECTED 2-TRICHLOROMETHYL-4-PYRIMIDINYL CARBOXYLIC ESTERS AND THEIR USE AS FUNGICIDES

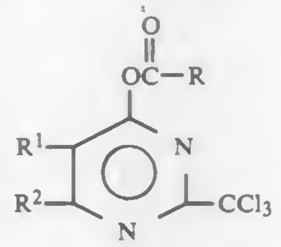
Lawrence E. Katz, Orange, and Walter A. Gay, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1981, Ser. No. 321,032

Int. Cl.^{3} A01N *43/54;* **C07D** *234/36*

U.S. Cl. 424—251 **23 Claims**

1. A compound having the formula:



wherein R is a lower alkyl group having 1 to 4 carbon atoms, a lower alkenyl group having 1 to 4 carbon atoms, a lower halo alkyl group having 1 to 4 carbon atoms or an unsubstituted or substituted phenyl group; R^1 is hydrogen or halo; and R^2 is a lower alkyl group having 1 to 4 carbon atoms.

4,352,807
HEXAHYDRO-TRANS-PYRIDOINDOLE NEUROLEPTIC AGENTS

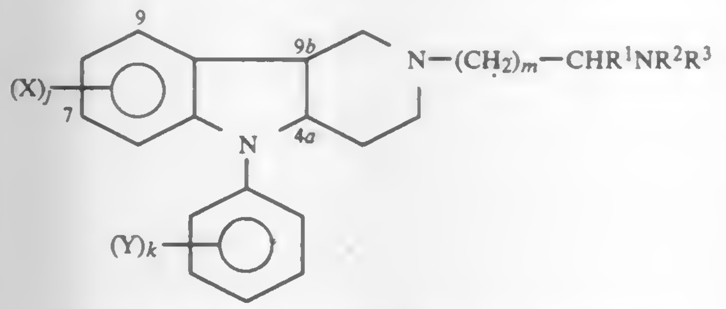
Willard M. Welch, Mystic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 61,573, Jul. 30, 1979, Pat. No. 4,252,811. This application Aug. 28, 1980, Ser. No. 182,177

Int. Cl.^{3} C07D *471/14;* **A61K** *31/445*

U.S. Cl. 424—256 **15 Claims**

1. A (+) enantiomeric, a mixture of (+) and (−) enantiomeric or (+) racemic hexahydro-trans-4a,9b-1(H)pyridoindole derivative of the formula



or a pharmacologically acceptable salt thereof, wherein

j and k are independently 1 or 2;

m is 1 to 8;

X and Y are independently H, F, Cl, Br, OCH_3, CH_3 or CH_2CH_3;

R^1 is H, alkyl of 1 to 5 carbons, Ph or the mono or disubstituted form of Ph, the mono or disubstituent being F, Cl, Br, OCH_3, CH_3 or CH_2CH_3;

R^2 is H, alkyl of 1 to 5 carbons, Ph, CH_2Ph or the mono or disubstituted form of Ph or CH_2Ph, the mono or disubstituent being F, Cl, Br, OCH_3, CH_3 or CH_2CH_3; and

R^3 is alkanoyl of 1 to 8 carbons, alkoxycarbonyl of 2 to 8 carbons, benzoyl, phenylacetyl, alkylsulfonyl of 1 to 8 carbons, phenylsulfonyl or a ring mono or disubstituted form of benzoyl, phenylacetyl, or phenylsulfonyl, the mono or disubstituent being F, Cl, Br, OCH_3, $—OCH_2O—$, CH_3 or CH_2CH_3.

4,352,808
3-ARALKYLOXY-2,3-DIHYDRO-2-(IMIDAZOLYLMETHYL)BENZO(B)THIOPHENES AND RELATED DERIVATIVES, THEIR USE AS ANTIMICROBIALS AND PHARMACEUTICAL FORMULATIONS USEFUL THEREFORE

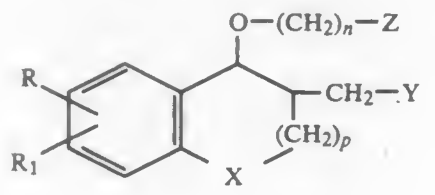
Dinanath F. Rane, Emerson; John J. Wright, Cedar Grove, and Russell E. Pike, Stanhope, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 12, 1980, Ser. No. 215,948

Int. Cl.^{3} A01N *43/42, 43/50;* **C07D** *405/08, 215/12*

U.S. Cl. 424—258 **24 Claims**

1. A compound selected from the group consisting of a compound defined by formula:



wherein

n is 0 to 4;

p is 0 or 1;

R and R_1 are independently H, lower alkyl, halogen, halogenated lower alkyl, nitro, or amino;

X is oxygen, sulfur, sulfinyl, or sulfonyl;

Y is imidazole, or lower alkyl and aryl derivatives of the foregoing, said aryl being a member selected from the group consisting of phenyl, halophenyl, and loweralkylphenyl;

Z is a member selected from the group consisting of alkyl of 1 to 10 carbons, alkenyl of 3 to 10 carbons, alkynyl, of 3 to 10 carbons, cycloalkyl of 3 to 6 carbons, and heterocyclic aromatic groups selected from the group consisting of 2-thienyl, 3-thienyl, pyridyl, quinolyl, thiazolyl and furanyl, and the lower alkyl and halogen substituted derivatives thereof, provided that when n is 0, Z is not 1-alkynyl; and where n is 1 to 4, Z is also a member selected from the group consisting of phenyl, phenyl substituted by lower alkyl, halogen, or N-(N'-lower alkanoyl-piperazine), alkoxy of 1 to 10 carbons, alkylthio of 1 to 10 carbons, aryloxy, and arylthio, wherein said aryl moiety is a member selected from the group consisting of phenyl, halophenyl and lower alkyl phenyl;

and the pharmaceutically acceptable acid addition salts thereof.

15. A composition useful for inhibiting the growth of fungi, bacteria or protozoa which comprises an antifungally, antibacterially, or antiprotozoally effective amount of a compound of claim 1 in admixture with a carrier.

4,352,809
METHOD OF PRODUCING ALPHA₂ ANTAGONISM

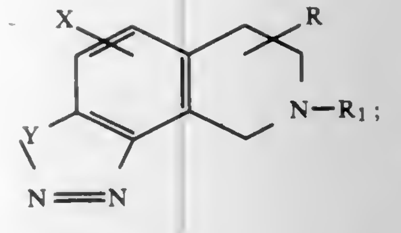
William E. Bondinell, Cherry Hill, N.J.; Robert M. DeMarinis, Ardmore, Pa.; Jacob P. Hieble, and Robert G. Pendleton, both of Philadelphia, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Filed Sep. 4, 1981, Ser. No. 299,435

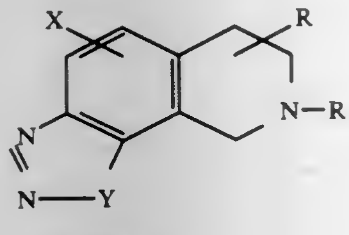
Int. Cl.^{3} A61K *31/47*

U.S. Cl. 424—258 **7 Claims**

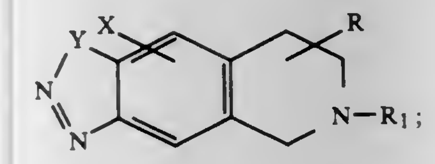
1. A method of producing $alpha_2$ antagonist activity which comprises administering to an animal requiring said treatment an amount sufficient to produce said activity a chemical compound of the formula selected from the group consisting of:



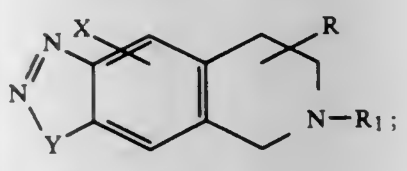
Formula I



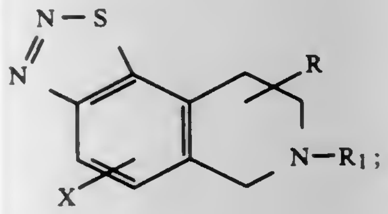
Formula II



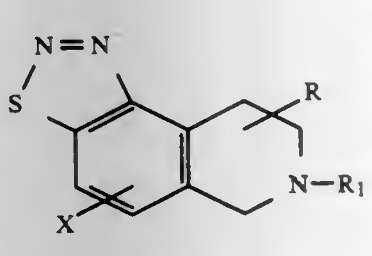
Formula III



Formula IV



Formula V



Formula VI

in which:

Y is sulfur or oxygen;

when Y is sulfur, X is hydrogen, halogen, or trifluoromethyl, and R and R_1 are hydrogen or lower alkyl of from 1 to 3 carbon atoms; and

when Y is oxygen, X, R and R_1 are hydrogen;

or a pharmaceutically acceptable acid addition salt thereof.

4,352,810
1-SUBSTITUTED HYDROXYIMINOMETHYL-PYRIDINIUM SALTS, WITH AN ACTIVITY AGAINST ORGANOPHOSPHATE POISONINGS

Hendrik P. Benschop, Pijnacker; Larry A. Kepner, Delft, and Leonardus P. A. de Jong, Bleiswijk, all of Netherlands, assignors to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijkonderzoek, The Hague, Netherlands

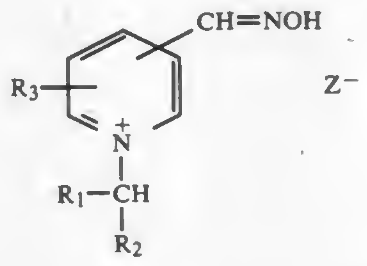
Filed Jul. 21, 1980, Ser. No. 170,625

Claims priority, application Netherlands, Jul. 26, 1979, 7905789

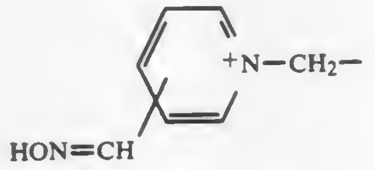
Int. Cl.^{3} A61K *31/38, 31/425, 31/44*

U.S. Cl. 424—263 **4 Claims**

1. A method of protecting and treating warm-blooded animals from organophosphate poisoning comprising administering to warm-blooded animals an amount of at least one compound of the formula



wherein R_1 is selected from the group consisting of benzyl, thiophenyl and isothioazolyl optionally substituted with at least one member selected from the group consisting of methyl, methoxy, chloro, iodo, $—NO_2$, $—CH_3$ and



R_2 is selected from the group consisting of hydrogen, methyl and phenyl, R_3 is selected from the group consisting of hydrogen, and ethyl and Z is a non-toxic, pharmaceutically acceptable anion sufficient to prevent or treat organophosphate poisoning.

4,352,811
3-(1-SUBSTITUTED-4-PIPERIDYL)-1,2-BENZISOXAZOLES

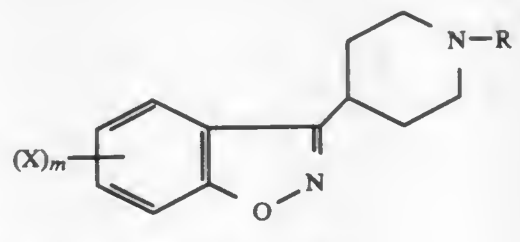
Joseph T. Strupczewski, and Richard C. Allen, both of Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Nov. 12, 1981, Ser. No. 319,872

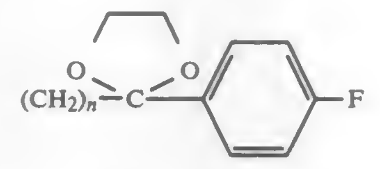
Int. Cl.^{3} A61K *31/445;* **C07D** *413/04, 413/14*

U.S. Cl. 424—267 **49 Claims**

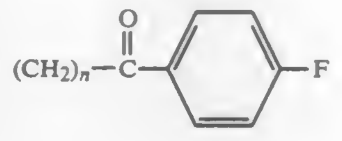
1. A compound of the formula



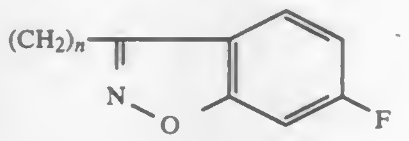
wherein R is a group of the formula



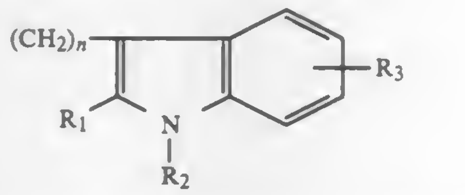
wherein n is 2 or 3; a group of the formula



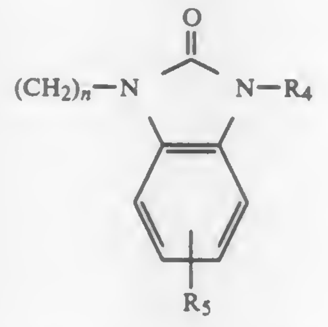
wherein n is 2 or 3; a group of the formula



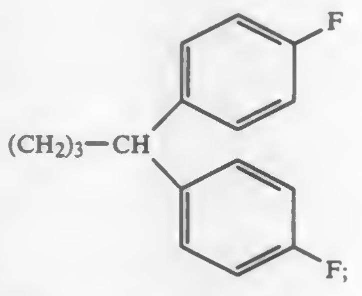
wherein n is 2 or 3; a group of the formula



wherein R_1 and R_2 are each independently hydrogen or loweralkyl, R_3 is hydrogen, halogen or loweralkyl and n is 2 or 3; a group of the formula



wherein R_4 is hydrogen or loweralkyl, R_5 is hydrogen, halogen or loweralkyl; and n is 2 or 3; and a group of the formula



X is hydroen, halogen, loweralkyl, loweralkoxy or hydroxy; and m is 1 or 2; the optical antipodes thereof; or pharmaceutically acceptable acid addition salts thereof.

48. A method of treating psychoses comprising administering to a mammal in need of psychoses treatment a psychoses-treating, effective amount of a compound as defined in claim 1.

4,352,812
METHOD OF COMBATING CERCARIAE USING CERTAIN AMPHOTERIC SURFACE ACTIVE AGENTS

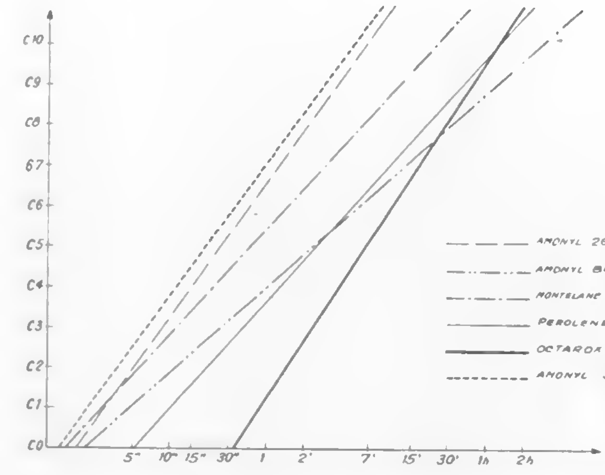
Claude Combes, Perpignan; Jean Arnaudis; Germaine Arnaudis, both of Castres, and Lucien Marcou, St-Maur, all of France, assignors to Produits Chimiques de la Montagne Noire, Paris, France

Filed Aug. 18, 1980, Ser. No. 178,984

Claims priority, application France, Aug. 31, 1979, 79 21941; Apr. 14, 1980, 80 08533

Int. Cl.^{3} A01N *43/50, 37/30*

U.S. Cl. 424—273 R **4 Claims**



1. A method for combating the cercariae which are the causative organisms of bilharziasis, which comprises contacting said cercariae with at least one amphoteric surface active agent of the betaine or imidazoline type, said amphoteric surface active agent being present in an amount effective to combat the said cercariae.

4,352,813
[(1-BENZYL-1H-INDAZOL-3-YL)OXY] ACETIC ACID SALT WITH L. LYSINE

Bruno Silvestrini, and Leandro Baiocchi, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Jun. 2, 1981, Ser. No. 269,923

Claims priority, application Italy, Jul. 29, 1980, 23768 A/80

Int. Cl.^{3} A61K *31/415;* **C07D** *231/56*

U.S. Cl. 424—273 N **3 Claims**

1. A salt of [(1-benzyl-1H-indazol-3-yl)oxy] acetic acid with L. lysine.

3. A method for the treatment of humans suffering from high blood lipid levels comprising orally administering to said human being an amount of the compound of claim 1 effective to decrease high blood lipid levels.

4,352,814
TREATMENT OF HEPATIC AND RENAL DISORDERS WITH MIXED SALTS OF ESSENTIAL OR SEMI-ESSENTIAL AMINO ACIDS AND NITROGEN-FREE ANALOGS

Mackenzie Walser, Ruxton, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Division of Ser. No. 31,274, Apr. 18, 1979, Pat. No. 4,296,127. This application Sep. 8, 1981, Ser. No. 300,336

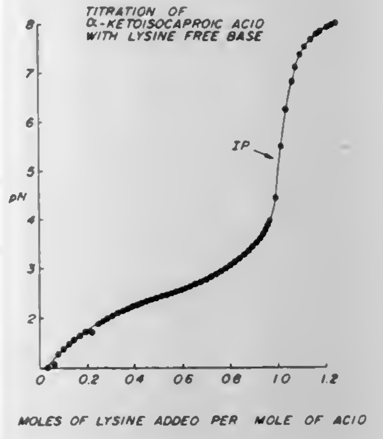
Int. Cl.^{3} A61K *31/195, 31/415*

U.S. Cl. 424—273 R **6 Claims**

1. A composition useful for providing essential and semi-essential amino acids to the body for the treatment of renal disease in humans, comprising the reaction product of the following compounds in approximately the indicated molar proportions:

4 parts alpha-keto-isovaleric acid
1 part alpha-ketoisocaproic acid
1 part alpha-keto-beta-methylvaleric acid

1 part histidine
2 part threonine
2 part lysine



said reaction product formed in aqueous medium followed by removal of water.

4,352,815
IMIDAZO-BENZODIAZEPINES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

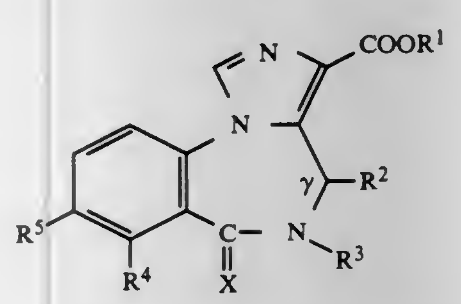
Filed Feb. 4, 1982, Ser. No. 345,852

Claims priority, application Switzerland, Feb. 27, 1981, 1338/81

Int. Cl.^{3} A61K *31/55;* **C07D** *487/04*

U.S. Cl. 424—273 R **8 Claims**

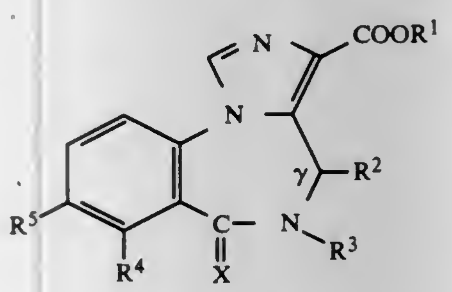
1. A compound of the formula



I

wherein R^1 is methyl, ethyl or isopropyl, one of R^4 and R^5 is hydrogen and the other is nitro or cyano, and either R^2 is hydrogen and R^3 is hydrogen or lower alkyl or R^2 and R^3 together are dimethylene, trimethylene or propenylene and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, and X is an oxygen or sulphur atom, and pharmaceutically acceptable acid addition salts thereof.

7. A method of antagonising in a patient the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4 benzodiazepines having tranquillising activity which comprises the daily administration to said patient of from about 0.2 mg to about 500 mg of a compound of the formula



I

wherein R^1 signifies methyl, ethyl or isopropyl, one of R^4 and R^5 signifies hydrogen and the other signifies nitro or cyano, and either R^2 signifies hydrogen and R^3 signifies hydrogen or lower alkyl or R^2 and R^3 together signify dimethylene, trimethylene or propenylene and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, and X signifies an oxygen or sulphur atom,

and their pharmaceutically acceptable acid addition salts.

4,352,816
AZETO-IMIDAZO-DIAZEPINES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

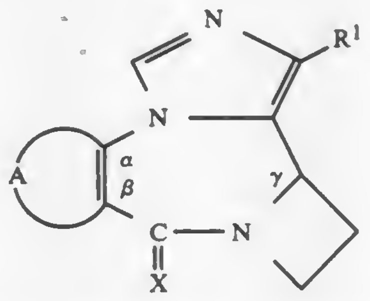
Filed Feb. 16, 1982, Ser. No. 349,405

Claims priority, application Switzerland, Feb. 27, 1981, 1339/81

Int. Cl.^{3} A61K *31/55;* **C07D** *513/22, 487/14*

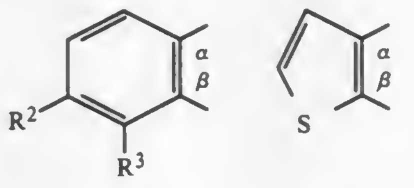
U.S. Cl. 424—273 R **8 Claims**

1. A compound of the formula



I

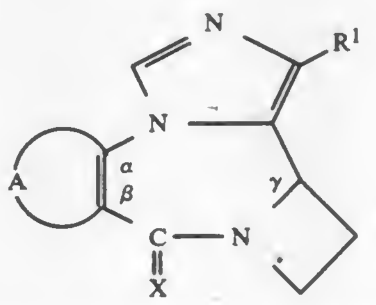
wherein A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

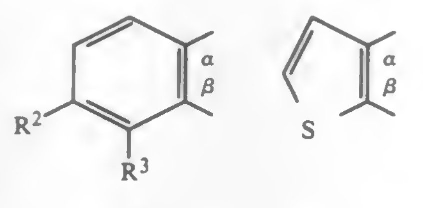
R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen, nitro or a group of the formula —COOR^4, R^2 is hydrogen, trifluoromethyl or halogen, R^3 is hydrogen, trifluoromethyl, halogen or lower alkyl, R^4 is methyl, ethyl or isopropyl and X is an oxygen or sulphur atom and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, and pharmaceutically acceptable acid addition salts thereof.

7. A method of antagonising in patients the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4-benzodiazepines having tranquilising activity which comprises daily administering to such patient from about 0.2 mg to about 500 mg of a compound of the formula



I

wherein A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen, nitro or a group of the formula —COOR^4, R^2 is hydrogen, trifluoromethyl or halogen, R^3 is hydrogen, trifluoromethyl, halogen or lower alkyl, R^4 is methyl, ethyl or isopropyl and X is an oxygen or sulphur atom and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, or a pharmaceutically acceptable acid addition salt thereof.

4,352,817
IMIDAZO-DIAZEPINES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

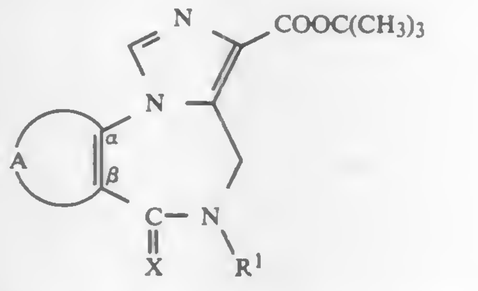
Filed Feb. 18, 1982, Ser. No. 349,802

Claims priority, application Switzerland, Feb. 27, 1982, 1340/81

Int. Cl.^{3} A61K *31/55;* **C07D** *487/04, 513/14*

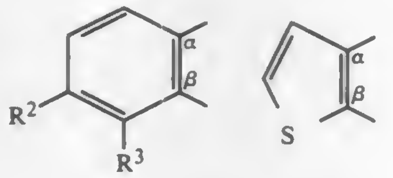
U.S. Cl. 424—273 R **11 Claims**

1. A compound of the formula



1

wherein A together with the two carbon atoms denoted as α and β is the group

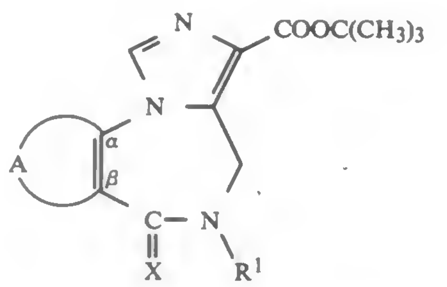


(a) or (b)

X is an oxygen or sulphur atom and R^1 is hydrogen or lower alkyl, and either R^2 is hydrogen, trifluoromethyl, halogen, cyano or nitro and R^3 is hydrogen or R^2 is hydrogen and R^3 is trifluoromethyl, halogen, cyano, nitro or lower alkyl,

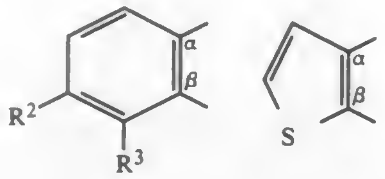
and pharmaceutically acceptable acid addition salts thereof.

10. A method of antagonizing, in a patient, the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4-benzodiazepines which have tranquillizing activity which comprises daily administering to said patient from about 0.2 mg to about 500 mg of a compound of the formula



1

wherein A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

X is an oxygen or sulphur atom and R^1 is hydrogen or lower alkyl, and either R^2 is hydrogen, trifluoromethyl, halogen, cyano or nitro and R^3 is hydrogen or R^2 is hydrogen and R^3 is trifluoromethyl, halogen, cyano, nitro or lower alkyl,

or the pharmaceutically acceptable acid addition salts thereof.

4,352,818
DIAZEPINE DERIVATIVES AND THEIR USE

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

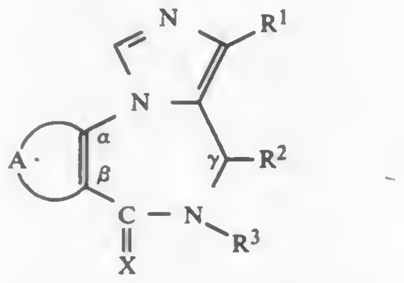
Filed Feb. 18, 1982, Ser. No. 349,879

Claims priority, application Switzerland, Feb. 27, 1981, 1341/81

Int. Cl.^{3} A61K *31/55;* **C07D** *487/04, 513/14*

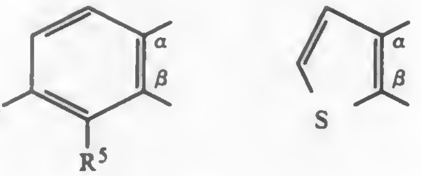
U.S. Cl. 424—273 R **12 Claims**

1. A compound of the formula



I

wherein A together with the two carbon atoms denoted as α and β is the group

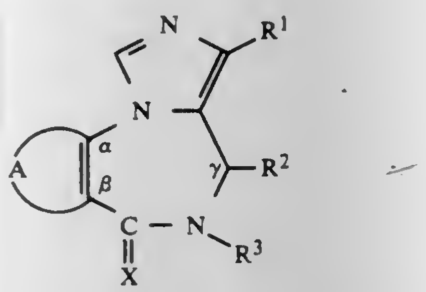


(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen or nitro, R^4 is hydrogen, trifluoromethyl or halogen, R^5 is hydrogen, trifluoromethyl, halogen or lower alkyl and X is an oxygen or sulphur atom, and either R^2 is hydrogen and R^3 is lower alkyl or R^2 and R^3 together are trimethylene or propylene and the carbon atom denoted as γ has the (S)— or (R,S)— configuration,

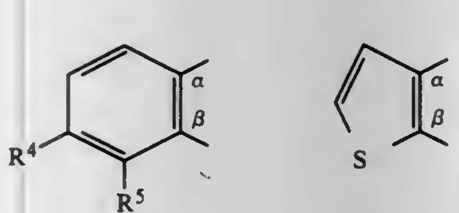
and pharmaceutically acceptable acid addition salts thereof.

11. A method of antagonising, in a patient, the central-depressant, muscle relaxant, ataxic, blood pressure-lowering and respiratory-depressant properties of 1,4-benzodiazepines which have tranquillizing activity which comprises the administration to said patient of from about 0.2 mg to about 500 mg daily of a compound of the formula



1

where A together with the two carbon atoms denoted as α and β is the group



(a) or (b)

R^1 is hydrogen, lower alkyl, lower alkoxymethyl, halogen or nitro, R^4 is hydrogen, trifluoromethyl or halogen, R^5 is hydrogen, trifluoromethyl, halogen or lower alkyl and X is an oxygen or sulphur atom and either R^2 is hydrogen and R^3 is lower alkyl or R^2 and R^3 together are trimethylene or propenylene and the carbon atom denoted as γ has the (S)— or (R,S)—configuration.

and the pharmaceutically acceptable acid addition salts thereof.

4,352,819
NOVEL 1-[3-(2-HYDROXY-3-ALKYLAMINOPROPOXY)-2-THIENYL]-3-PHENYL-1-PROPANONES AND THEIR SALTS AND A PROCESS FOR THE PREPARATION THEREOF

Dieter Binder, Vienna, Austria, assignor to Laevosan-Gesellschaft mbH & Co. KG, Linz, Austria

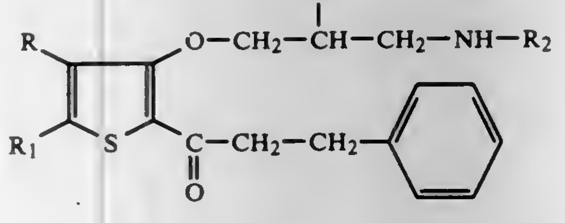
Filed Nov. 25, 1981, Ser. No. 324,760

Claims priority, application Austria, Nov. 28, 1980, 5818/80

Int. Cl.^{3} A61K *31/38;* **C07D** *333/16*

U.S. Cl. 424—275 **8 Claims**

1. A 1-[3-(2-hydroxy-3-alkylaminopropoxy)-2-thienyl]-3-phenyl-1-propanone of the formula



(I)

in which R and R_1 are independently hydrogen or methyl and R_2 is n-propyl, n-butyl, isobutyl or tert-butyl and an acid addition salt thereof.

4,352,820
METHOD FOR PROVIDING LONG-LASTING LOCAL ANESTHESIA AND COMPOUNDS AND COMPOSITIONS THEREFORE

James E. Scurlock, and Benson M. Curtis, both of Seattle, Wash., assignors to Virginia Mason Research Center, Seattle, Wash.

Filed Dec. 11, 1980, Ser. No. 215,223

Int. Cl.^{3} A61K *31/14*

U.S. Cl. 424—329 **8 Claims**

1. A method for providing a local anesthetic effect, said method comprising administering to a mammal a local anesthetic effect producing amount of an N,N,N-triethyl-N-alkyl ammonium salt wherein the alkyl group contains from about 8 to about 16 carbon atoms.

4,352,821
SWEET TABLETING AGENT

Mark A. Doran, Sunnyvale, and Thomas R. Rumolo, Fremont, both of Calif., assignors to Shaklee Corporation, Emeryville, Calif.

Filed Jul. 21, 1981, Ser. No. 285,639

Int. Cl.^{3} A61K *31/70, 9/16, 9/20*

U.S. Cl. 424—361 **15 Claims**

1. A composition consisting essentially of:

fructose and a substantially water insoluble carrier for the fructose, the fructose and the carrier together forming a compressible granule, the fructose being in a weight ratio with respect to the carrier of from about 0.1:1 to about 2.3:1, the carrier for the fructose being an edible, inorganic salt.

4,352,822
GUM BASE, CHEWING GUM CONTAINING SAME AND METHOD

Subraman R. Cherukuri; Dominick R. Friello, both of Danbury, Conn.; Michael Ferroti, Larchmont; Walter Jewell, Mamaroneck, and Ronald P. D'Amelia, Hicksville, all of N.Y., assignors to Nabisco Brands Inc., New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,415

Int. Cl.^{3} A23G *3/30*

U.S. Cl. 426—4 **25 Claims**

1. A chewing gum base which has excellent shelf-life and remains soft over extended periods of time, comprising a polyisobutylene elastomer or a mixture of medium and lower molecular weight polyisobutylene elastomers having a molecular weight within the range of from about 750,000 to 1,300,000, and 37,000 to 80,000, respectively, said polyisobutylene elastomer being present in said base in an amount of at least about 4%, plasticizers comprising glyceryl triacetate and acetylated monoglyceride, one or more hydrophilic-type detackifiers which absorb saliva and become slippery, one or more filler-texturizing agents, one or more softening agents having a melting point above about 22° C., one or more emulsifiers which function as slip agents and impart hydrophilic properties to the elastomer, and an anti-tack combination comprising a polyterpene resin in an amount of from about 4 to about 25% by weight of said gum base, one or more waxes in an amount of from at least 2% to about 25% by weight of said gum base to enhance bite through characteristics, and optionally a polyethylene wax.

4,352,823
COEXTRUDED CHEWING GUM CONTAINING A SOFT NON-SBR GUM CORE PORTION

Subraman R. Cherukuri; Raymond L. Roy; Dominick R. Friello, all of Danbury, Conn., and Stephen H. Wolf, Rye, N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,442

Int. Cl.^{3} A23G *3/30, 3/00*

U.S. Cl. 426—5 **23 Claims**

1. A coextruded chewing gum having a soft gum center

portion, comprising an extruded soft gum core portion formed of chewing gum containing at least about 5% up to about 10% by weight moisture based on the weight of the core portion and an outer shell portion formed of chewing gum having a harder consistency than said core portion, said soft core portion comprising a polyisobutylene elastomer or a mixture of medium and lower molecular weight polyisobutylene elastomers having a molecular weight within the range of from about 750,000 to 1,300,000 and 37,000 to 80,000, respectively, in an amount of from about 0.5% to about 25% by weight of said core portion gum base, plasticizers comprising glyceryl triacetate and acetylated monoglyceride in an amount of from about 0.5% to about 25% by weight of said core portion gum base, one or more hydrophilic-type detackifiers which absorb saliva and become slippery, one or more filler-texturizing agents, one or more softening agents having a melting point above about 22° C., one or more emulsifiers which function as slip agents and impart hydrophilic properties to the elastomer, and an anti-tack combination comprising a polyterpene resin, one or more waxes to enhance bite through characteristics, and optionally a polyethylene wax, said outer shell portion formed of chewing gum formulations generally known in the art and extruded simultaneously with said core portion so that said outer shell portion is bonded to said core portion to provide a support and protective barrier therefor to retain said moisture in said core portion and retard migration of moisture therefrom.

4,352,824
CHEWING GUM CONTAINING FATTY OR GELATINOUS SWEETENER AND METHOD

Wayne J. Puglia, Bellerose Village; Gary Kehoe, South Salem; Frank Witzel, Spring Valley; K. Warren Clark, Brewster, and Donald A. M. Mackay, Pleasantville, all of N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Continuation of Ser. No. 134,401, Mar. 27, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,334

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—5 **8 Claims**

1. A laminated chewing gum having long-lasting sweetness and flavor, which comprises at least a first slab or layer of chewing gum including from about 13 to about 32% by weight of finished gum base consisting essentially of one or more natural gums, synthetic resins or mixtures thereof, ester gums, fillers and plasticizers, and a solid fatty or gelatinous flavor additive incorporated in and bonded with said finished gum base, said fatty or gelatinous flavor additive consisting essentially of marshmallow, caramel, butter, butter combined with sugar, chocolate, cocoa butter, lard, other fat protein, other animal fats, milk solids, coconut fat, vegetable fats, or confectioner's coatings, said fatty or gelatinous flavor additive being present in an amount of from about 40 to about 350% by weight of said gum base, or from about 8 to about 70% by weight of the chewing gum, said first slab or layer having the appearance and mouth feel of chewing gum as opposed to a candy, and providing a delayed but prolonged sweetness or flavor impact, and a second slab or layer of chewing gum combined with and bonded directly to said first slab or layer, said second slab or layer to provide initial sweetness or flavor impact.

4,352,825
COEXTRUDED CHEWING GUM CONTAINING A SOFT CORE PORTION

Subraman R. Cherukuri; Raymond L. Roy; Dominick R. Friello, all of Danbury, Conn., and Stephen H. Wolf, Rye, N.Y., assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,340

Int. Cl.³ A23G *3/30, 3/00*

U.S. Cl. 426—5 **25 Claims**

1. A coextruded chewing gum having a soft gum center portion, comprising an extruded soft gum core portion and an outer shell portion formed of chewing gum and extruded simultaneously with said core portion, said core portion formed of chewing gum containing more than about 5 up to about 10% by weight moisture based on the weight of the core portion and containing therein a preformed recrystallized sweetener combination including at least two sweeteners which have been recrystallized as a mixture, dispersed as said recrystallized mixture in said gum base, and one or more flavors dispersed in said gum base, said outer shell portion, which contains any of gum base, bulking agents, sweeteners, and flavors and has a harder consistency than said core portion, being bonded to said core portion to provide a support and protective barrier therefor to retain said moisture in said core portion and retard migration of moisture therefrom.

4,352,826
PROCESS FOR PREPARING ACID CHEESE CURD

Donald I. Pearline, Olivette; Edgar A. Corbin, Jr., Manchester, both of Mo., and Marvin A. Garner, Greenville, Ill., assignors to Mallinckrodt International Corp., St. Louis, Mo.

Filed Oct. 14, 1980, Ser. No. 196,752

Int. Cl.³ A23C *19/02*

U.S. Cl. 426—39 **10 Claims**

1. An acid curd making process comprising:

a. acidifying milk under vigorous agitation at about 32° F. to about 95° F. with a sufficient amount of an aqueous acidulent mixture of an acid salt and a free acid per 100 parts by weight of milk to obtain an acidified milk having a pH of from about 4.8 to about 5.5 without coagulation wherein about 10 to about 60 parts by weight of the acid salt and from about 5 to about 40 parts by weight of the free acid are present in the aqueous acidulent mixture; then

b. adjusting the acidified milk to a temperature of from about 75° F. to about 95° F.; then

c. maintaining the acidified milk at a temperature of from about 75° F. to about 95° F. and adding about 0.2 to about 0.8 parts by weight of an acidogen and from about 0.01 parts to about 0.05 parts by weight of proteolytic enzyme per 100 parts by weight of the acidified milk; and thereafter

d. allowing the acidified milk from (C) to remain quiescent at a temperature of from about 75° F. to about 95° F. for from about 30 minutes to about 4 hours to form an acid cheese curd suitable for making cottage cheese, baker's cheese, quark cheese, cream cheese and Neufchatel cheese.

4,352,827
ALTERED BRINING PROPERTIES OF PRODUCE BY A METHOD OF PRE-BRINING EXPOSURE OF THE FRESH PRODUCE TO OXYGEN OR CARBON DIOXIDE

Henry P. Fleming; David M. Pharr, and Roger L. Thompson, all of Raleigh, N.C., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 23, 1981, Ser. No. 314,323

Int. Cl.³ A23L *1/218*

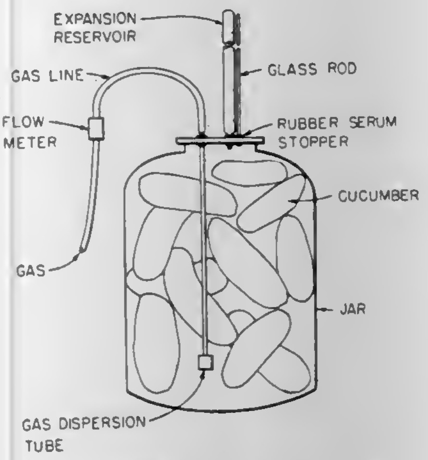
U.S. Cl. 426—270 **5 Claims**

1. A process for pickling and altering the brining properties of fresh produce comprising:

(a) placing fresh produce to be pickled in a container;

(b) continuously purging the container containing said produce with pure oxygen or carbon dioxide gas for a period of time sufficient to remove air from the container and allow said oxygen or carbon dioxide to displace undissolved gases within the flesh of the produce;

(c) then, without allowing said produce to be exposed to the air, filling the container with a brine solution until said produce is submerged;



Jar-reservoir assembly used to expose cucumbers to gases prior to brining and to subsequently brine the cucumbers

(d) allowing the produce to stand in the brine solution for a period of time sufficient to result in a pickled produce.

4,352,828
CATION-EXCHANGE OF MILK AND PRODUCTS THEREOF

Jean P. Rialland, Retiers, and Jean P. Barbier, Noyal-sur-Seiche, both of France, assignors to Laiteries E. Bridel, Retiers, France

Filed Apr. 7, 1981, Ser. No. 251,892

Claims priority, application France, Apr. 17, 1980, 80 08644; Mar. 31, 1981, 81 06470

Int. Cl.³ A23C *9/146*

U.S. Cl. 426—271 **32 Claims**

1. Milk processing method using a cation-exchanging resin in acid form for preparing an acidulated decationized milk, wherein said method comprises placing the milk, having a temperature of 0° C. to 4° C., in contact with the cation-exchanging resin in acid form for the time period necessary to lower the pH of the milk to a value below or equal to 3.8, and then separating decationized milk from the exchanging resin.

4,352,829
COFFEE EXTRACTION PROCESS

Robert M. Noyes, and Roger W. Voeller, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 5, 1981, Ser. No. 240,731

Int. Cl.³ A23F *5/22, 5/26*

U.S. Cl. 426—387 **11 Claims**

1. A process for forming a coffee extract comprising:

(a) steaming roast and ground coffee at a pressure of from about 120 to about 170 psig for from about 5 to about 45 minutes;

(b) extracting the steamed coffee to form a coffee extract having a solids concentration of about 12% to about 25% and having a pH of less than 4.6.

(c) stripping the volatiles from the coffee extract; and

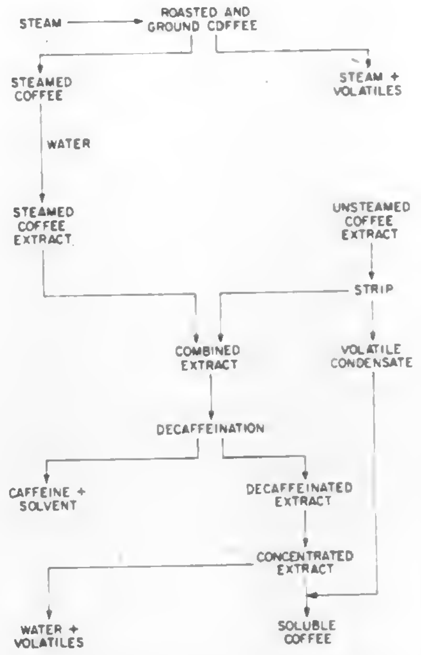
(d) combining the coffee extract from step (c) with unsteamed coffee extract, the combined extract having a pH of less than 4.7.

5. A process for producing a decaffeinated coffee concentrate comprising the steps of:

(a) forming an extract from roast and ground coffee which has been steamed at a pressure of from about 120 psig to about 170 psig for from about 5 to about 45 minutes having a pH of less than 4.6 and having a solids concentration of about 12% to about 25%;

(b) combining the extract from the steamed coffee with an extract from unsteamed coffee from which the volatiles have been removed, said combined extract naving a pH of less than 4.7;

(c) decaffeinating the combined extracts;



(d) concentrating the decaffeinated coffee extract; and

(e) adding back the volatiles removed from the unsteamed coffee extract.

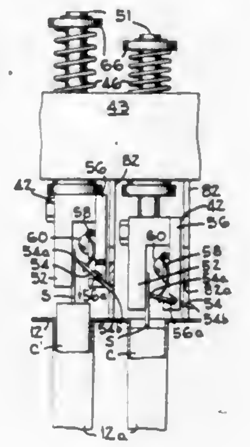
4,352,830
METHOD FOR EXTRACTING FROZEN CONFECTIONS

Ronald J. Billett, Sunnyvale, Calif.; David N. Anderson, and William M. Easter, both of Lakeland, Fla., assignors to FMC Corporation, Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,814

Int. Cl.³ A23G *9/26*

U.S. Cl. 426—421 **3 Claims**



1. An improved method of producing frozen stick confections generally including the steps of providing a mold member supporting a row of depending mold cups, depositing confection material into the mold cups, inserting sticks into the confection material so that the sticks project upwardly from the mold cups, freezing the confection material to form frozen confections within the mold cups, and gripping and pulling the sticks upwardly away from the mold cups at a pre-extraction area while simultaneously heating the mold cups to thaw the surface layers of the frozen confections to enable the frozen confections to be partially lifted from the mold cups, establishing a coating of frost on the surface of the confection while partially lifted, dropping the confections back into the mold cups, and conveying the mold cups to an extraction area where the confections are fully withdrawn from the mold cups.

4,352,831

METHOD FOR MANUFACTURING WAFERS

John F. Cavanagh, North Providence, and Paul A. Cavanagh, Johnston, both of R.I., assignors to Cavanagh & Sons, Smithfield, R.I.

Filed Apr. 27, 1981, Ser. No. 257,886
Int. Cl.^{3} A21D *13/00*

U.S. Cl. 426—497 **5 Claims**

1. A method of manufacturing wafers from a sheet of bread having first and second opposing friable outer crusts enclosing a center which is softer than said crusts comprising the steps of, advancing said sheet of bread to a rotating wafer former including a cavity having a fixed bottom portion and a gradually sloping surface rising from said bottom portion and terminating in a cutting edge around the upper edge of said cavity; rotating a pressure roll against said cutting edge of said rotating wafer former to progressively and sequentially press said first crusts, center and second crust into said cavity while simultaneously cutting a wafer out of said sheet of bread; continuously maintaining the edges of said first crust, center and second crust which have been cut and pressed into said cavity in constant contact with said gradually sloping surface of said cavity; and supporting said first crust which has been cut and pressed into said cavity on the fixed bottom portion of said cavity as said second crust is progressively cut.

4,352,832

STABILIZED DRESSING PRODUCTS

Robert W. Wood, West Milford, N.J.; John V. Parnell, Larchmont, and Andrew C. Hoefler, Warwick, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 135,738, Mar. 31, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,281
Int. Cl.^{3} A23L *1/24*

U.S. Cl. 426—589 **8 Claims**

1. A room-temperature, bacteriologically-stable dressing product having a moisture content of between 20% and 90% by weight and a pH of at least 4.2 wherein the acetic acid content of the product is between 0.2% and 4.0% by weight of the aqueous phase and wherein the product contains buffering salts selected from the group consisting of the soluble salts of acetic acid, the soluble salts of citric acid and combinations thereof at a level of from 0.4% to 3.0% by weight of the aqueous phase.

4,352,833

ADHERENT CONTROLLED RELEASE PESTICIDES

Robert W. Young, New York, N.Y.; Samuel Prussin, Carmel, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Continuation of Ser. No. 102,638, Dec. 12, 1979, abandoned, which is a continuation of Ser. No. 858,603, Dec. 8, 1977, abandoned, which is a continuation of Ser. No. 696,271, Jun. 15, 1976, abandoned. This application Jun. 11, 1981, Ser. No. 272,788
Int. Cl.^{3} A61K *31/695;* A01N *17/08*

U.S. Cl. 427—4 **15 Claims**

1. A composition consisting essentially of (a) a solid organopolysiloxane, soluble in organic solvents, and containing hydroxyl groups, wherein the number of hydroxyl radicals ranges from 1 radical per polysiloxane molecule up to 30 weight percent of the total organopolysiloxane molecular weight, and (b) an insecticide, the amount of insecticide being from about 1 part by weight to 0.5 to 1,000 parts by weight of solid polysiloxane.

4,352,834

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE

Kazuhisa Taketoshi, Sagamihara, and Chihaya Ogusu, Tokyo, both of Japan, assignors to Nippon Hoso Kyokai, Japan

Filed Dec. 4, 1980, Ser. No. 213,016
Claims priority, application Japan, Dec. 26, 1979, 54-168076
Int. Cl.^{3} H01L *21/363*

U.S. Cl. 427—38 **16 Claims**

1. A method for depositing a film onto a substrate utilizing evaporation comprising the steps of

forming an atmosphere containing an atomic state gas selected from a group consisting of hydrogen, oxygen and nitrogen with a partial pressure of 1×10^{-3} Torr or less, in a vacuum container, and

depositing a film consisting of a compound presenting semiconductor characteristics or a solid solution thereof on a substrate in said atmosphere to form a film on said substrate.

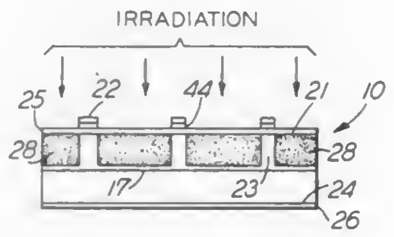
4,352,835

MASKING PORTIONS OF A SUBSTRATE

Walter R. Holbrook, Reading, and William A. Sponsler, West Lawn, both of Pa., assignors to Western Electric Co., Inc., Allentown, Pa. and Bell Telephone Laboratories, Inc., New York, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,290
Int. Cl.^{3} B05D *3/06*

U.S. Cl. 427—38 **10 Claims**



1. A method of removably masking at least one portion of a substrate to protect said portion during irradiation of said substrate, comprising:

applying over said portion, a parting layer of metal selected from the group consisting of nickel, aluminum, indium and tin, said layer being removable from the substrate by application of a detaching agent which is harmless to the substrate; and

applying over said parting layer, a masking layer of material, said material being adherent and harmless to the parting layer and being substantially impenetrable by the radiation.

4,352,836

METHOD FOR OBTAINING AN ABRASIVE COATING

John W. Robinson, Levittown, Pa., and Grzegorz Kaganowicz, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

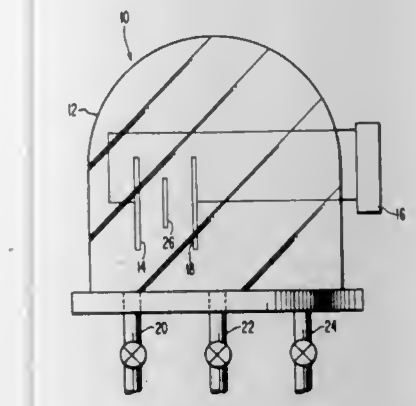
Filed Apr. 20, 1981, Ser. No. 255,399
Int. Cl.^{3} B05D *5/02;* E05D *15/10*

U.S. Cl. 427—39 **10 Claims**

1. A method for preparing a silicon oxide (SiO_x) abrasive coating, wherein $1 \leqq x \leqq 2$, on a substrate comprising the steps of:

subjecting N_2O and SiH_4 to a glow discharge;

depositing a first SiO_x layer having a refractive index as measured by ellipsometry of between about 1.0 and 1.2 onto the substrate; and



depositing a second SiO_x layer having a refractive index as measured by ellipsometry of between about 1.30 and 1.48 onto the first SiO_x layer.

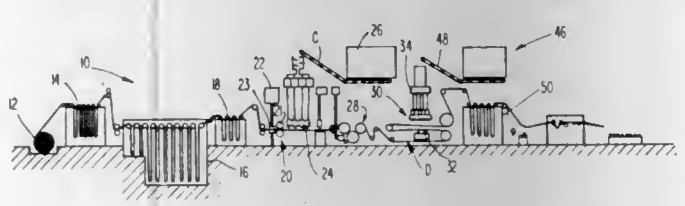
4,352,837

METHOD OF MANUFACTURING ROOFING SHINGLES HAVING MULTIPLE PLY APPEARANCE

Robert L. Kopenhaver, Berwyn, Pa., assignor to Certain-teed Corporation, Valley Forge, Pa.

Division of Ser. No. 808,171, Jun. 20, 1977, Pat. No. 4,295,445. This application May 22, 1981, Ser. No. 266,509
Int. Cl.^{3} B05C *19/00*

U.S. Cl. 427—187 **4 Claims**



1. An improved method for manufacturing roofing shingles from dry roofing material comprising, the steps of, continuously feeding dry roofing material, saturating the dry roofing material with asphalt, automatically applying a first uniform, longitudinal adhesive coating to the previously saturated material, automatically applying a first continuous coating of granules to said adhesive coating, and cutting said material into shingles of a given length and a given width, wherein the improvement comprises, after the applying of the first coating of granules and prior to cutting said material into shingles, the step of automatically and periodically applying a repeated series of spaced apart bands of adhesive upon the first coating of granules, with the series of bands of adhesive material having various widths and being periodically applied at a predetermined periodicity such that the series of bands are applied to the first coating of granules over a length different than the given length of the shingle, whereby varying portions of said series of bands will be present on each of said given lengths of shingles, and automatically distributing granules in conjunction with the applying of the bands of adhesive such that granules are only distributed upon said bands of adhesive.

4,352,838

DIPLESS METALLIZING PROCESS

Theodore Bostroem, 470 Park Rd. Ext., Middlebury, Conn. 06762

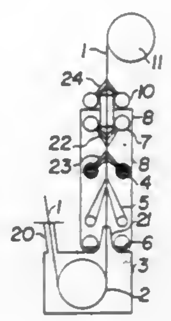
Filed Apr. 30, 1980, Ser. No. 145,302
The portion of the term of this patent subsequent to Mar. 2, 1993, has been disclaimed.
Int. Cl.^{3} B05D *1/00*

U.S. Cl. 427—209 **19 Claims**

1. A process for coating a moving metallic article with a metallic coating, comprising the steps of:

(a) Subjecting said metallic article to a continuous stream of the molten coating material for a very short period of time, coating all surfaces of the article;

(b) removing excess coating metal from the coated metallic article by subjecting it to the action of a hot gas blast, the rapidity of the coating step permitting the hot gas to comprise steam or other gases which would otherwise oxidize any aluminum contained in the molten coating metal, and



(c) rapidly quenching the coated metallic strip after the hot gas blast and before further handling of the coated strip.

4,352,839

METHOD OF FORMING A LAYER OF POLYMETHYL METHACRYLATE ON A SURFACE OF SILICON DIOXIDE

Daniel R. Olson; Bruce F. Griffing, both of Schenectady, and James F. Norton, Alplaus, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 26, 1981, Ser. No. 267,101
Int. Cl.^{3} B05D *3/12*

U.S. Cl. 427—240 **9 Claims**

1. A method of forming a layer of polymethyl methacrylate on a surface of silicon dioxide of a substrate comprising:

treating said surface of silicon dioxide with a solution of carboxylic acid and thereafter drying said surface,

depositing a solution of polymethyl methacrylate on the treated surface of silicon dioxide,

spinning said substrate with said solution of polymethyl methacrylate on said surface of silicon dioxide at a speed and for a time to spread said solution over said surface and to remove the solvent of said solution of polymethyl methacrylate thereby forming said layer of polymethyl methacrylate on said surface of silicon dioxide,

heating said layer of polymethyl methyacrylate on said surface of silicon dioxide at a temperature and for a time to remove residue of the solvent of said solution of polymethyl methacrylate in said layer of polymethyl methacrylate.

4,352,840

INTERDISPERSED PHASE COATINGS METHOD

G. Kelly Sievers, Burbank, Calif., assignor to Turbine Metal Technology, Inc., Burbank, Calif.

Filed Nov. 17, 1980, Ser. No. 207,246
Int. Cl.^{3} C23C *11/00, 13/00*

U.S. Cl. 427—252 **13 Claims**

1. In the method of forming diffusion coatings for improved corrosion, erosion or wear properties in high performance alloy structures, said coatings being characterized by the intimate presence of an interdispersed phase material in desired amount to enhance one or more of said properties, which includes interdiffusing under non-oxidizing conditions a portion of the structure surface and an alloying element disposed therewith in a diffusion pack of predetermined composition desirable for said interdiffusion, the improvement comprising maintaining said desired amount of interdispersed phase material relatively richly concentrated within a selected pack zone corresponding to the locus of interdiffusion for intimate diffusion coating interdispersal from said pack zone into said coating in interdiffusion reponsive relation, and maintaining said

phase material as discrete particulate matter during said interdispersal.

4,352,841

SURFACE PRE-TREATMENT PRIOR TO UNDERWATER BONDING

Malcolm R. Bowditch, Broadstone, England, assignor to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 17, 1981, Ser. No. 284,318

Claims priority, application United Kingdom, Jul. 30, 1980, 8024896

Int. Cl.³ B05D *3/00, 3/12*

U.S. Cl. 427—292 **10 Claims**

1. A method of bonding an adherent resin to a metal surface having an adsorbed water contaminant including the steps of
a. cleaning the metal surface
b. removing the contaminant from said surface by coating the cleaned metal surface with a pretreatment material comprising an organic solvent and a surfactant, which pretreatment material is
  i. adapted to displace the absorbed contaminant from the metal surface
  ii. substantially chemically inert with respect to the metal
  iii. soluble in the resin, and
  iv. displaceable from the metal surface by the resin, and
c. with said surface still coated with said pretreatment material, applying the adherent resin to the coated metal surface to cause the resin to remove said pretreatment material from said metal surface by solution of the pretreatment material into the resin while said resin bonds to said metal surface.

4,352,842

PROCESS FOR COATING AND CURING THERMOSETTING RESINOUS BINDER COMPOSITIONS USING TRANSESTERIFICATION CATALYST

Petrus G. Kooymans; Johannes J. M. H. Wintraecken; Werner T. Raudenbusch; Josepha M. E. Seelen-Kruijssen, and Gerardus C. M. Schreurs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 99,363, Dec. 3, 1979, Pat. No. 4,332,711. This application Feb. 16, 1982, Ser. No. 349,295

Claims priority, application Netherlands, Dec. 11, 1978, 7812028

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **9 Claims**

1. A process for preparing an insoluble, infusible coating on a surface which comprises (A) applying a thermosetting binder composition comprising:
(I) a mixture or precondensate of:
  (1) a non-acidic resinous compound essentially free of ethylenically unsaturation, having a molecular weight of at least 900 and a hydroxyl content of at least 0.2 equivalent per 100 g, and
  (2) a non-acidic polyester having an acid number of not more than 10 of a polycarboxylic acid cross-linking agent having more than one β-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl functionality of more than 2, and
(II) a transesterification-promoting metal salt or metal complex curing catalyst which is soluble in liquid hydrocarbons and (B) curing said coating at a temperature not higher than 200° C.

4,352,843

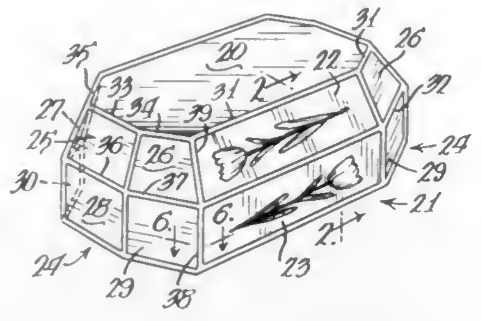
COMPONENT FOR A MULTIPLANAR DEVICE

Ronald P. Eckert, Northbrook, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Aug. 21, 1980, Ser. No. 180,097

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—33 **4 Claims**



1. A component for a multiplanar device having effectively planar, angularly related, rigid molded plastic walls, said component comprising:
first and second effectively planar polygonal wall members of substantially rigid molded plastic which have major areas of substantially uniform thickness, said wall members having strips along their adjacent side portions which are substantially thicker than said major areas and the adjacent sides of said wall members forming a miter joint which positions said wall members at a predetermined angle to one another, said adjacent sides being bonded together;
and a thin film of flexible plastic bonded to substantially the entirely of said wall members and forming a connection between said wall members around the outside of the miter joint.

4,352,844

THERMOPLASTIC FILM HAVING IMPROVED HANDLING AND SEALING CHARACTERISTICS AND RECEPTACLE FORMED THEREFROM

Norman D. Bornstein, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed May 29, 1981, Ser. No. 268,207

Int. Cl.³ B65D *65/40, 75/06, 75/12, 85/50*

U.S. Cl. 428—35 **12 Claims**

1. A multi-layer, heat shrinkable, thermoplastic packaging film which will produce heat seals having improved seal strength and grease resistance at shrink temperatures comprising:
(a) at least three layers, the first layer being a surface layer and the second layer being adjacent thereto;
(b) said first and second layers comprising ethylene-vinyl acetate copolymers, the copolymer of the first layer having a higher melting temperature than the copolymer of the second layer;
(c) said second layer being at least 1½ times the thickness of the first layer; whereby the shrink temperature of the entire multi-layer film is controlled by the shrink temperature of the second layer;
(d) the copolymers in both first and second layers being cross linked: and,
(e) at least one additional or third polymeric layer adjacent the second layer, the material of said additional layer comprising a copolymer selected from the group consisting of vinylidene chloride copolymers and hyrolyzed ethylene-acetate copolymers.

10. A method of improving the handling and heat sealing characteristics at shrink temperatures of a heat shrinkable film having a surface or second layer comprising an ethylene-vinyl acetate copolymer, said method comprising the steps of:
(a) providing an ethylene-vinyl acetate copolymer for a first layer, the copolymer for the first layer having a higher melting temperature than the copolymer of the second layer; and,
(b) forming a joining said first layer to a surface of said second layer whereby said first layer becomes a surface layer for the resulting multi-layer film, said second layer being at least 1½ times thicker than the first, whereby the heat shrink temperature of the resulting multi-layer film is controlled by the heat shrink temperature of said second layer.

4,352,845

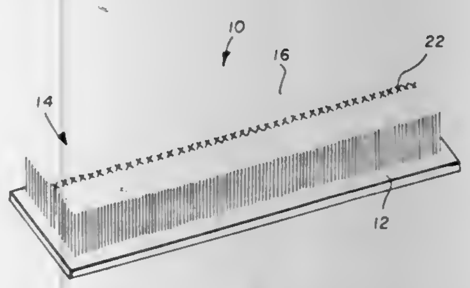
PILE WEATHER STRIP WITH BARRIER FIBERS AND BODY FIBERS

Stanley R. Miska, Henrietta, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Continuation of Ser. No. 191,927, Sep. 29, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,887

Int. Cl.³ D04H *11/00*

U.S. Cl. 428—88 **8 Claims**



1. A pile weather strip for sealing the space between relatively movable members, comprising:
a longitudinally extending backing strip;
a longitudinally extending first row of body fibers, each body fiber characterized by a first maximum cross-sectional dimension and having one end attached to said backing strip and its opposite free end projecting from said backing strip; and
a second longitudinally extending row of substantially identical nestable monofilament barrier fibers adjacent said first row of body fibers, each monofilament barrier fiber having a non-circular cross-sectional shape characterized by at least one cross-sectional dimension greater than the maximum cross-sectional dimension of said body fibers and generally longitudinally aligned along said backing strip and having one end of said barrier fiber attached to said backing strip and its opposite free end projecting from said backing strip said row of barrier fibers operative to substantially reduce the infiltration of air and moisture thereacross.

4,352,846

CLEANING CLOTH

Michael Pässler, Neusäss; Bohuslav Tecl, Weinheim, and Rolf Schumacher, Hirschberg, all of Fed. Rep. of Germany, assignors to Carl Freudenberg, Firma, Weinheim an der Bergstrasse, Fed. Rep. of Germany

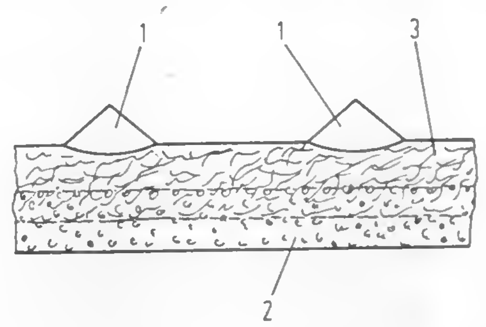
Filed Jan. 26, 1981, Ser. No. 228,488

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 8004287[U]

Int. Cl.³ A47L *13/16;* **B32B** *25/02*

U.S. Cl. 428—105 **7 Claims**

1. A cleaning cloth for household and industrial use comprising a soft resilient needled nonwoven fabric having a plurality of rubber strips surmounting its top surface in the manner of relief, the height of the rubber strips being about 0.2 to 0.4 times their width but not more than about 0.5 times the thickness of the nonwoven fabric, the nonwoven fabric on its underside carrying a continuous layer of an open-pore latex foam which projects above the bottom surface and penetrates into the nonwoven fabric to the extent of about 10 to 40 percent of the thickness of the nonwoven fabric.



4,352,847

TRANSFER FILM FOR USE IN ELECTROPHOTOGRAPHIC COPIERS

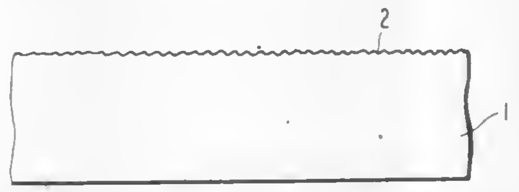
Toshiaki Okiyama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 14, 1980, Ser. No. 140,400

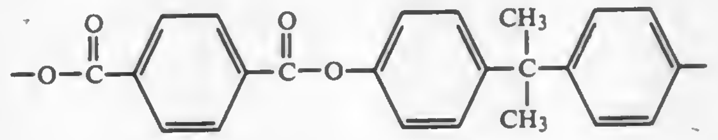
Claims priority, application Japan, Apr. 13, 1979, 54/44208

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—141 **11 Claims**



1. A transfer film for use in electrophotographic copiers comprising a matted plastic film having a UL temperature index of at least 120° C. and at least one side of which has a surface roughness of at least 1.0 micron, said plastic film comprising a resin selected from the group consisting of a polysulfone resin, a polyarylate resin having repeated units represented by the formula



and a chlorinated polycarbonate resin, said transfer film having an opacity of from 20 to 65%.

4,352,848

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF TRIMETHOXYBOROXINE AND BENZYL ALCOHOL AND INTERLAYERS OF MERCAPTAN RESINS

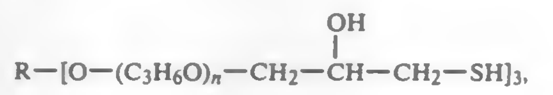
John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application Nov. 6, 1980, Ser. No. 204,424

Int. Cl.³ B32B *27/38*

U.S. Cl. 428—192 **15 Claims**

1. A laminate resistant to moisture permeation; comprising: a blend having,
(a) about 100 parts by weight of a mercaptan compound having the following formula:



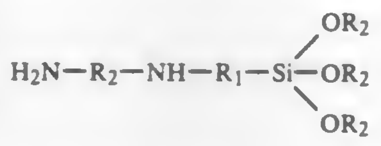
$$R-[O-(C_3H_6O)_n-CH_2-\overset{OH}{\overset{|}{C}H}-CH_2-SH]_3,$$

where R is an aliphatic hydrocarbon group having from 1 to 18 carbon atoms and where n is 1 or 2;

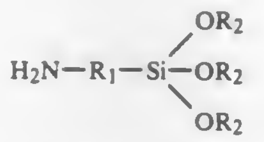
(b) from about 40 to about 250 parts by weight of an epoxy resin; and

(c) from about 0.5 parts by weight to about 4.0 parts by weight of a silane selected from the group consisting of:

N-aminoalkyl-aminoalkyl-trialkoxysilanes of the formula:



wherein R_1 is an alkylene having 1–6 carbon atoms and R_2 is an alkyl, having 1–6 carbon atoms, and aminoalkyl-trialkoxysilanes of the formula:

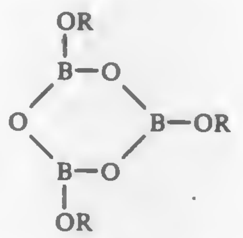


wherein R_1 and R_2 are as defined above, and combinations thereof,

said blend being transparent and is contiguously sandwiched between transparent materials selected from the group consisting of acrylic, polycarbonate, a heat resistant transparent material, polyurethane, silicate glass, polyvinyl butyral, and combinations thereof, to produce a composite transparency resistant to moisture permeation;

said heat resistant transparent material having from about 80 parts to about 100 parts by weight of an epoxy resin, from 5 parts to about 30 parts by weight of a boroxine, and from about 1 part to about 10 parts by weight of a phenyl substituted alkyl alcohol, said alkyl alcohol having from 1 to 20 carbon atoms;

said boroxine having the formula:



where R is a compound having from 1 to 18 carbon atoms; and

wherein said silane is selected from the group consisting of gamma aminopropyl triethoxy silane, normal beta aminoethyl gamma aminopropyl trimethoxy silane, and combinations thereof.

4,352,849

COEXTRUDED, HEAT-SHRINKABLE, MULTI-LAYER, POLYOLEFIN PACKAGING FILM

Walter B. Mueller, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Mar. 26, 1981, Ser. No. 247,955

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—213 **8 Claims**

1. A multilayer, heat shrinkable packaging film comprising:

(a) a core layer consisting essentially of from 5% to 50% by weight of an ethylene-propylene copolymer blended with 95% to 50% by weight of an ethylene-vinyl acetate copolymer wherein the vinyl acetate content of the ethylene-vinyl acetate copolymer is in the range of 4% to 18%; and

(b) skin or surface layers comprising an ethylene-propylene copolymer, wherein the ethylene content of the ethylene-propylene copolymer in the core blend and the surface layer is in the range of 1% to 6% by weight.

4,352,850

FIVE-LAYERED PACKAGING FILM

Masataka Yamamoto; Tsutomu Uehara, and Minoru Yoshimori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,792

Claims priority, application Japan, Mar. 19, 1980, 55-36077[U]

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—214 **5 Claims**

1. A five-layered packaging film for packaging soft foodstuffs comprising:

(a) an outer layer, (b) a first adhesive layer, (c) a core layer, (d) a second adhesive layer and (e) an inner layer in order of lamination;

said outer layer being 15 to 35 microns in thickness and consisting essentially of a saponified copolymer of ethylene and vinyl acetate containing 25 to 75 mole % of ethylene units with a degree of saponification of higher than 90%,

said first and second adhesive layers each being 0.1 to 10 microns in thickness and consisting essentially of a graft copolymer containing (i) 95 to 99.99% by weight of a resin selected from the group consisting of polymers of alpha-olefines, copolymers of alpha-olefines and vinyl acetate and saponified copolymers thereof, and (ii) 0.01 to 5% by weight of unsaturated carboxylic acid units or anhydride units thereof,

said core layer being 35 to 55 microns in thickness and consisting essentially of a polymer selected from the group consisting of (i) copolymers of ethylene and vinyl acetate containing 85 to 95% by weight of ethylene units, (ii) polyethylenes and (iii) polypropylenes,

said inner layer being 50 to 80 microns in thickness and consisting essentially of an ionomer containing sodium or zinc as a metallic component and a copolymer of an alpha-olefine and acrylic acid or methacrylic acid; and

the total thickness of said five-layered packaging film being 100 to 180 microns and the specific elasticity of said five-layered packaging film being 2 to 6 kg/cm of the width of said five-layered packaging film at an elongation at 2.5% and a temperature of 50° to 150° C.

4,352,851

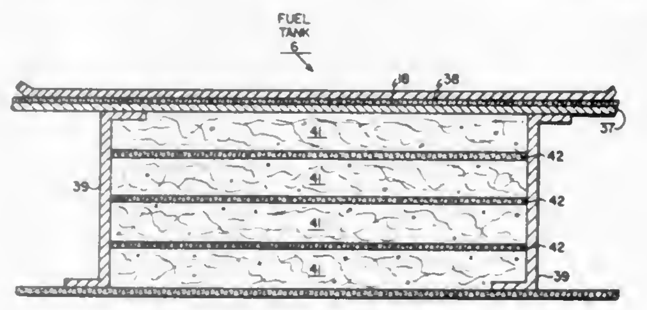
VOID FILLER FOAM FIRE SUPPRESSION SYSTEM

Roger M. Heitz, Palos Verdes Estates, and Franklin Hill, Van Nuys, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1980, Ser. No. 217,282

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—250 **10 Claims**



1. Aircraft armor comprising:

a planiform sheet metal member having first and second sides;

a layer of polysulfide impregnated fabric on said first side planiform sheet metal member;

a plurality of lateral support members attached to said second side of said sheet metal member providing stiffening therefor and defining an armor volumes therebetween;

at least one layer of reticulated foam within said volume extending between said lateral support member; and

a layer of polysulfide impregnated ballistic cloth across said plurality of lateral support members and contiguous with said at least one layer to form a cover for said armor.

4,352,852

REINFORCED PLASTIC MATRIX OF THERMOSETTING RESIN EMBEDDED WITH ACRYLONITRILE POLYMER FIBER

Francesco DeMaria, Gulf Breeze and Relmond H. Hamilton, Pensacola, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 19, 1980, Ser. No. 151,021

Int. Cl.³ B32B *27/00;* **D04B** *1/00;* **D01F** *6/18*

U.S. Cl. 428—290 **4 Claims**

1. A reinforced plastic composition comprising a plastic matrix derived from a thermosetting resin and embedded therein from about 10 to 90 weight percent of an acrylonitrile polymer fiber having a straight tenacity of at least about 5.0 grams per denier, said percent being based on the weight of the reinforced plastic composition.

4,352,853

SOUND ABSORBER

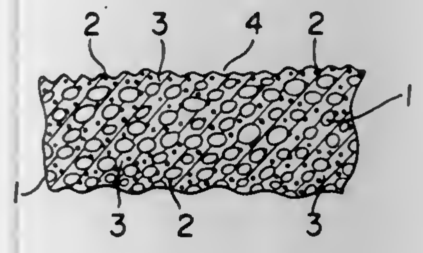
Fusaoki Uchikawa, Kamakura; Hideharu Tanaka; Mutsuo Sekiya, both of Amagasaki, and Yasufumi Ohata, Tokyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,552

Claims priority, application Japan, Mar. 17, 1981, 56-41387; Mar. 17, 1981, 56-41389; Mar. 17, 1981, 56-41390; Mar. 24, 1981, 56-43456

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—304.4 **14 Claims**



1. A sound absorber which comprises a layer of a composition of a heat resistant binder and an acidic solid catalyst which is coated on a porous metal substrate in the hardened form.

4,352,854

MOLDED SPONGE-LIKE THERMOPLASTIC ELASTOMER ARTICLES HAVING THIN, DENSE SKINS AND A PROCESS FOR THEIR PRODUCTION

Roy W. Siedenstrang, and Agmund K. Thorsrud, both of Stow, Ohio, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 134,829, Mar. 28, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,344

Int. Cl.³ B32B *5/20, 25/14;* **B29D** *27/00*

U.S. Cl. 428—318.8 **8 Claims**

1. A method for producing molded sponge like articles comprising:

(a) introducing into a mold an expandable thermoplastic elastomer composition comprising:

(1) vinyl-substituted aromatic compounds containing from 8–18 carbon atoms copolymerized with conjugated diene having from 4–12 carbon atoms,

(2) resinous solid polymer of vinyl-substituted aromatic compound in the range of about 10 to about 60 parts resinous polymer per 100 parts said copolymer,

(3) polarizing agent, and

(4) blowing agent in an amount sufficient to produce upon activation and molding an article of rubbery, sponge-like porosity surrounded by a thin, dense skin,

(b) melting said composition with microwave energy at temperatures sufficient to activate said blowing agent and cause expansion of said melted composition,

(c) shaping said expanding melted composition at low pressures to form said sponge like molded article having a thin, dense skin; and

(d) removing said molded article from the mold.

7. An article molded by the method of claim 1.

4,352,855

TRANSFER-ONTO-PLAIN PAPER TYPE PRESSURE-SENSITIVE COPYING PAPER

Shigetoshi Hiraishi, Tokyo; Sadao Morishita, Ushikumachi, and Toshihiko Matsushita, Funabashi, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Feb. 26, 1981, Ser. No. 238,656

Claims priority, application Japan, Mar. 3, 1980, 55-26390

Int. Cl.³ B41M *5/16*

U.S. Cl. 428—320.4 **12 Claims**

1. A transfer-onto-plain paper type pressure-sensitive copy sheet produced by single coating in monolayer to one surface of a support, a colorless electron-donating color former, a colorless electron-attracting color developer which reacts with said color former to give a colored product, and a wax mixture comprising (1) an amide wax selected from the group consisting of saturated fatty acid amides having 14 or less carbon atoms and unsaturated fatty acid amides having one or more unsaturated bonds present in an amount which is effective to prevent premature coloration and (2) other wax.

4,352,856

SHAPED RIGID ARTICLES CONTAINING FLY ASH AND RESIN

John G. Smillie, Aurora, Ill., assignor to Aurora Industries, Inc., Montgomery, Ill.

Filed Apr. 23, 1979, Ser. No. 32,270

Int. Cl.³ B32B *5/16, 27/00;* **C08G** *51/04*

U.S. Cl. 428—329 **11 Claims**

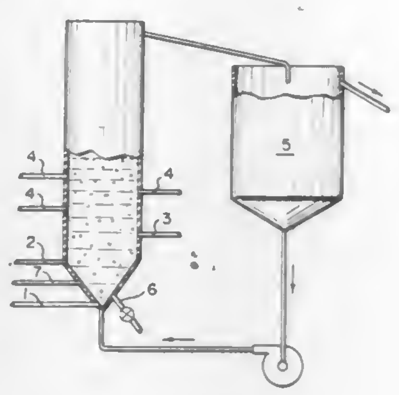
1. A method of manufacturing shaped rigid articles, said method comprising the steps of

preparing a mixture of thermally stable particulate material and a liquid resin having a viscosity of less than about 10 Stokes to form a thin coating of resin on said particles, at least a major portion of said particulate material comprising hollow fly ash spheres, and

forming the resulting mixture into a preselected shape with said resin bonding said particles together to form a rigid article of said preselected shape containing less than about 15% by weight resin and in which a major portion of said particulate material still comprises hollow fly ash spheres.

4,352,857
SPHERICAL CRYSTALLINE SODIUM URANATE AND PROCESS OF PRODUCING SAME BY ADJUSTING THE URANIUM CONTAINING SOLUTION IN CRYSTALLIZER

Jacques Dugua, Vernaison, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France
Filed Dec. 7, 1979, Ser. No. 101,235
Claims priority, application France, Dec. 8, 1978, 78 34581
Int. Cl.³ B32B *15/02*
U.S. Cl. 428—402 3 Claims

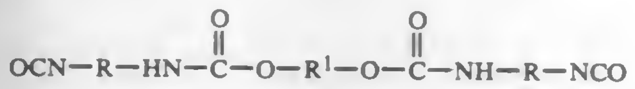


2. In a process for producing sodium uranate crystals which comprises introducing an uranium containing solution containing about 1 to 40 g/l of uranium and sodium hydroxide into a crystallizer to produce a supersaturated solution of sodium uranate and maintaining the uranium containing solution in the state of a fluidized bed by a continuous ascending flow of a supersaturated solution of the same sodium urante, the improvement which comprises adding to the uranium containing solution being introduced into the crystallizer, before it is introduced into the crystallizer mother liquors of crystallization of sodium uranate, in a sufficient amount to adjust the uranium content to between about 0.5 and 5.18 g/l within a period of less than about 2 seconds.

4,352,858
POLYURETHANE ADHESIVE COMPOSITIONS MODIFIED WITH A DICARBAMATE ESTER USEFUL IN LAMINATING SUBSTRATES

Henry Stanley, Cedar Grove, N.J., assignor to National Starch and Chemical Corp., Bridgewater, N.J.
Filed Sep. 4, 1981, Ser. No. 299,352
Int. Cl.³ C08G *18/79;* **C09J** *3/02;* **B32B** *27/40*
U.S. Cl. 428—423.1 9 Claims

1. An improved modified polyurethane adhesive composition comprising an isocyanate-terminated prepolymer having a molecular weight of at least about 1000, and 2.5–100% by weight, based on said prepolymer, of a dicarbamate ester reaction product of two moles of an organic diisocyanate and one mole of a dihydroxy compound, of the general formula:

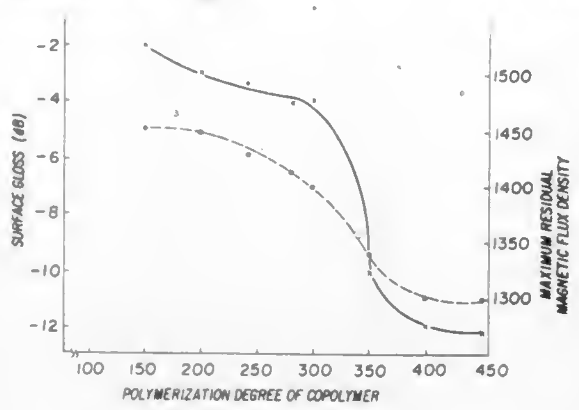


$$OCN-R-HN-\overset{O}{\overset{\|}{C}}-O-R^1-O-\overset{O}{\overset{\|}{C}}-NH-R-NCO$$

wherein R is a divalent hydrocarbon radical and R^1 is a divalent aliphatic radical, and said dicarbamate esters is compatible with said prepolymer and has a molecular weight no greater than 800.

4,352,859
MAGNETIC RECORDING MEDIUM

Kuniichi Yoda; Takehisa Ohkawa, and Hitoshi Azegami, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Jul. 20, 1981, Ser. No. 285,288
Claims priority, application Japan, Jul. 31, 1980, 55-104392
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—425.9 6 Claims

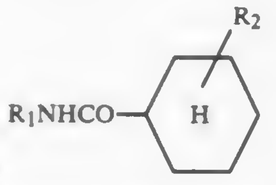


1. A magnetic recording medium which comprises a substrate coated with a magnetic layer comprising a magnetic powder and a binder comprising an urethane resin or a polyester and a vinyl chloride type copolymer of vinyl chloride-vinyl acetate-vinyl alcohol copolymer, vinyl chloride-vinyl acetate-maleic acid copolymer or vinyl chloride-vinylidene chloride copolymer having a polymerization degree of less than 300.

4,352,860
THERMOSENSITIVE RECORDING MATERIAL

Keishi Kubo, and Eiichi Kawamura, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed May 7, 1981, Ser. No. 261,558
Claims priority, application Japan, May 13, 1980, 55-62312; Jun. 19, 1980, 55-82167
Int. Cl.³ B41M *5/18*
U.S. Cl. 428—478.2 25 Claims

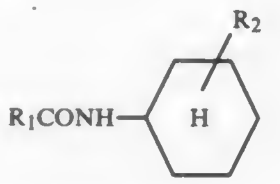
1. A thermosensitive recording material comprising a support member and a thermosensitive layer formed on said support member, said thermosensitive layer comprising a leuco dye and an acidic material capable of forming a color upon application of heat thereto, and at least one amide compound selected from the group consisting of an amide compound (1) represented by the formula (1)



(1)

wherein R_1 represents an alkyl group with 1 to 30 carbon atoms, a phenyl group or a substituted phenyl group; and R_2 represents hydrogen or an alkyl group with 1 to 4 carbon atoms;

an amide compound (2) represented by the formula (2)

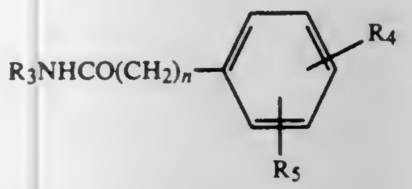


(2)

wherein R_1 represents an alkyl group with 1 to 30 carbon atoms, a phenyl group or a substituted phenyl group, and

R_2 represents hydrogen or an alkyl group with 1 to 4 carbon atoms; and

an amide compound (3) represented by the formula (3)

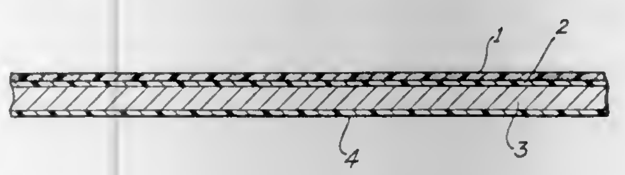


(3)

wherein R_3 represents an alkyl group with 1 to 30 carbon atoms; R_4 and R_5 individually represent hydrogen, a halogen atom, an alkyl group with 1 to 4 carbon atoms or an alkoxy group with 1 to 4 carbon atoms; and n is an integer, 0 or 1.

4,352,861
PHOTOGRAPHIC PAPER BASE WITH IMPROVED DURABILITY

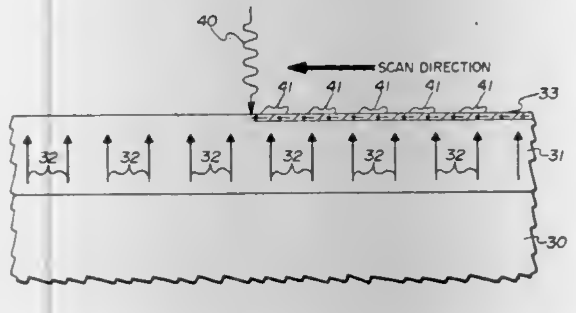
Walter von Meer, Bad Iburg; Uwe Jensen, Osnabruck, and Reiner Anthonsen, Bramsche, all of Fed. Rep. of Germany, assignors to Felix Schoeller, Jr. GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany
Filed Oct. 8, 1980, Ser. No. 195,252
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2940870
Int. Cl.³ B32B *23/08*
U.S. Cl. 428—511 6 Claims



1. A photographic paper base comprising a base paper and first and second resin layers arranged one on top of the other on at least one side of said said base paper, said first resin layer lying on the paper and said second resin layer lying on the first layer and having a surface which is adapted to contact and receive a photographic layer, wherein said second layer includes a polyolefin and only said second layer at the time of application to said first layer contains at least one of stabilizer and antioxidant compositions for stabilization of said resins against degradation from oxidation or light.

4,352,862
THERMALLY STABLE MAGNETIC FILM WHICH RESISTS HARD BUBBLES

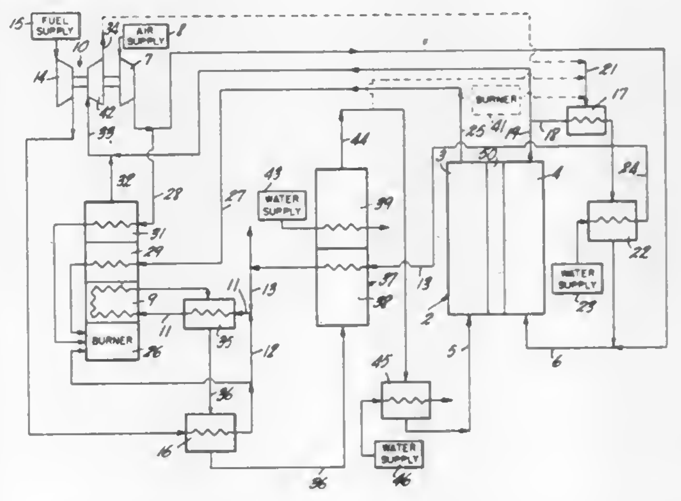
Michael H. Nemiroff, Del Mar, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 10, 1980, Ser. No. 205,100
Int. Cl.³ H01F *1/00;* **B05D** *3/06*
U.S. Cl. 428—694 13 Claims



1. A crystalline magnetic film which resists hard bubbles from forming in it; said film having oppositely facing top and bottom surfaces with said bottom surface being disposed on a substrate; said film containing at least two rare-earth elements symmetrically disposed at lattice sites in the film's interior and bottom surface to there produce a magnetic moment perpendicular to the film's surfaces; wherein the chemical composition at said film's interior and said film's surfaces is the same, and said rare-earth elements are less symmetrically disposed at the lattice sites in a region at said film's top surface than at said film's interior and bottom surface, to there produce a magnetic moment parallel to said top surface.

4,352,863
APPARATUS AND METHOD FOR PRODUCING HIGH PRESSURE STEAM IN A FUEL CELL SYSTEM

Hansraj C. Maru, Brookfield Center, Conn., assignor to Energy Research Corporation, Danbury, Conn.
Filed Jan. 21, 1981, Ser. No. 226,901
Int. Cl.³ H01M *8/06*
U.S. Cl. 429—17 26 Claims



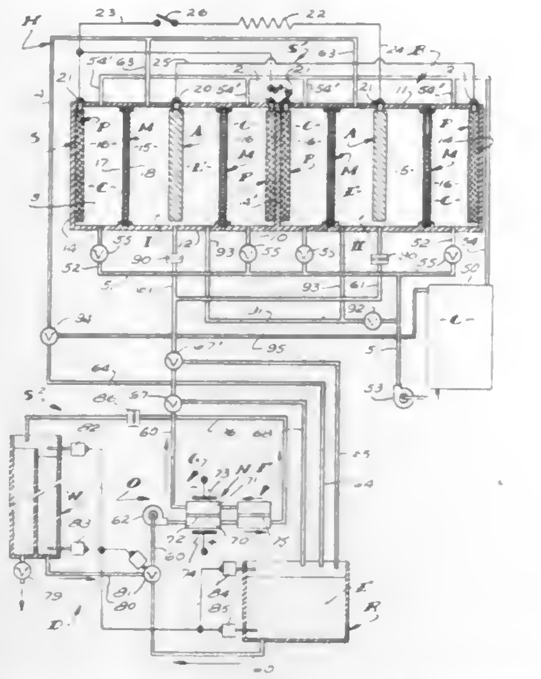
1. A fuel cell system comprising:
- a fuel cell including a cathode section for receiving oxidant process gas and an anode section for receiving fuel process gas;
- and means responsive to exhausted process gas and to gas at a higher temperature for producing steam, said steam producing means including:
  - heat exchanger means for receiving said exhausted process gas and said higher temperature gas in heat exchange relationship to increase the temperature of said exhausted process gas to a point where said exhausted process gas can be placed in heat exchange relationship with water to produce steam.

4,352,864
METAL/ACID ION PERMEABLE MEMBRANE FUEL CELL

Ralph C. Struthers, Saugus, Calif., assignor to Universal Fuel Systems, Inc., Saugus, Calif.
Filed Apr. 6, 1981, Ser. No. 251,488
Int. Cl.³ H01M *8/24*
U.S. Cl. 429—18 14 Claims

1. A fuel cell comprising an elongate container, a pair of flat, vertical, longitudinally spaced ion permeable fluid barrier membranes in the container and defining a central anode compartment and longitudinally spaced cathode compartments at the opposite ends of the anode compartment, a flat, vertical anode plate of metal fuel in the anode compartment in spaced parallel relationship with and between membranes, a flat, vertical electron distributor catalyst plate in each cathode compartment in spaced parallel relationship from the membrane of that compartment, a base electrolyte solution in the anode compartment, an acid cathode solution in the cathode compartments and electric circuit means connected with the anode plate to

conduct electrons from that plate and connected with the electron distributor catalyst plates to conduct electrons to those plates for distribution and introduction into the cathode solution.



4,352,865

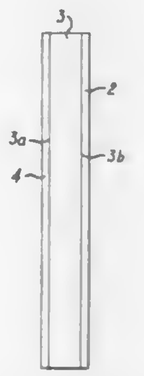
FUEL CELL MATRIX HAVING CURLING COMPENSATION

Renato DiPasquale, Toms River, N.J., assignor to Energy Research Corporation, Danbury, Conn.

Filed Jul. 30, 1981, Ser. No. 288,521

Int. Cl.³ H01M *2/14*

U.S. Cl. 429—41 17 Claims



1. A fuel cell matrix for carrying an electrolyte comprising:
a first layer having opposing first and second surfaces;
second and third layers disposed adjacent said first and second surfaces, said first layer expanding to a different degree than said second layer upon the addition of said electrolyte, whereby said first and second layers tend to curl upon such electrolyte addition,
and said third layer expanding upon electrolyte addition such as to substantially cancel said curling of said first and second layers.

4,352,866

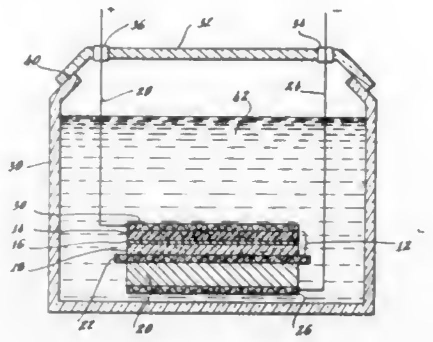
ELECTROCHEMICAL CELL WITH IMPROVED CATHODE CURRENT COLLECTOR AND METHOD

Keith A. Klinedinst, Marlborough, Mass., and Francis G. Murphy, Tiverton, R.I., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 971,571, Dec. 20, 1978, Pat. No. 4,219,443. This application Jan. 30, 1980, Ser. No. 116,721

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—101 18 Claims



1. A primary electrochemical cell comprising:
(a) an oxidizable active anode material;
(b) a cathode current collector comprising
 a layer of finely-divided catalyst for reducing the soluble cathode,
 an inert, electrically-conductive substrate, and
 a thin, fused, intermediate bonding layer comprising a finely-divided thermoplastic polymer and a minor amount of a finely-divided, inert, electrically-conductive material bonding the layer of finely-divided catalyst to the substrate,
 the thickness of the cathode current collector being less than 400 micrometers; and
(c) an electrolytic solution, in contact with the anode and cathode current collector, comprising a reducible soluble cathode and an electrolyte solute dissolved therein.

4,352,867

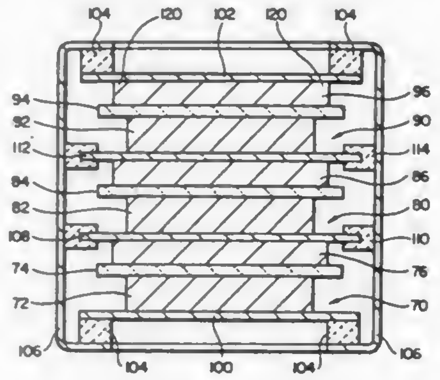
ELECTROCHEMICAL CELL STRUCTURE

Vincent O. Catanzarite, Las Vegas, Nev., assignor to Altus Corporation, San Jose, Calif.

Division of Ser. No. 144,660, Apr. 28, 1980. This application Sep. 25, 1981, Ser. No. 305,463

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—101 6 Claims



1. A bipolar electrical battery including a plurality of cells providing the primary electrochemical path for current through said battery, each cell having
cathode means connected to a second cell terminal,
anode means connected to a first terminal,
separator means located between said anode means and cathode means, and
electrolyte;

wherein each cell has at least one cell terminal being common with a cell terminal of an adjacent cell;
said battery further characterized in that in each cell a portion of said anode means is juxtaposed with the said second cell terminal but mechanically spaced therefrom by said separator means thereby forming a low-resistance secondary electrochemical path for current externally imposed upon said battery which is different from said primary path, said second path including in each cell said portion of said anode means, said separator means and said second cell terminal.

4,352,868

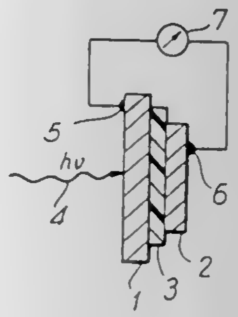
DOUBLE PHOTOELECTROCHEMICAL CELL FOR CONVERSION OF SOLAR ENERGY TO ELECTRICITY

Terje Skotheim, IFM, University of Linköping, 581 83 Linköping, Sweden

Filed Nov. 18, 1980, Ser. No. 208,059

Int. Cl.³ H01M *6/36*

U.S. Cl. 429—111 14 Claims



1. A multiple junction photoelectric device for converting incident electromagnetic radiation into electricity comprising a first semiconductor having a first band gap and a first conductivity type; a second semiconductor having a different band gap and opposite conductivity type; a thin dry solid film polymer electrolyte between said first and second semiconductors; said polymer electrolyte being transparent, and capable of transporting electric charges between the two semiconductors; one of said semiconductors being partially transparent, absorbing part of the spectrum of incident radiation and the other absorbing other parts of the spectrum of radiation.

4,352,869

SOLID STATE ELECTROLYTES

Geoffrey W. Mellors, North Royalton, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 219,875, Dec. 24, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,486

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 11 Claims

1. A composition which can be used as a solid state electrolyte comprising at least 70 mole percent of at least one trifluoride selected from the group consisting of cerium trifluoride and lanthanum trifluoride, at least one alkaline earth metal compound selected from the group consisting of fluorides, chlorides and carbonates; and at least one alkali metal compound selected from the group consisting of fluorides, sulfates, chlorides and carbonates.

4,352,870

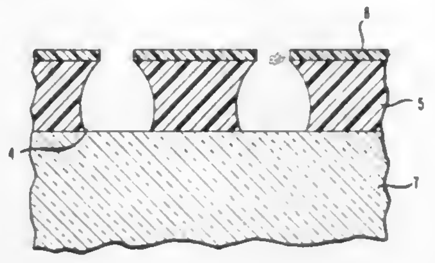
HIGH RESOLUTION TWO-LAYER RESISTS

Richard E. Howard, Holmdel; Evelyn L. Hu, Somerset, and Lawrence D. Jackel, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 97,809, Nov. 27, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,267

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—271 9 Claims



1. A resist element comprising an upper positive resist layer in intimate contact with a lower positive resist layer wherein said lower positive resist layer is in intimate contact with a substrate and wherein said upper and lower resist materials undergo a change upon impingement of exposing energy CHARACTERIZED IN THAT the sensitivity of said lower resist material is greater than the sensitivity of said upper resist material, said lower resist material requires less than one-half the development time as that required for an equal thickness of said upper resist material, and the thickness of said lower resist material is greater than the thickness of said upper resist material wherein said upper resist material and the thickness of said upper resist material are chosen to allow production of an aperture in the upper surface of 5000 Å or less whereby the sensitivities and thicknesses of said upper and lower layers yield a resolution better than 5000 Å upon using said exposing energy.

4,352,871

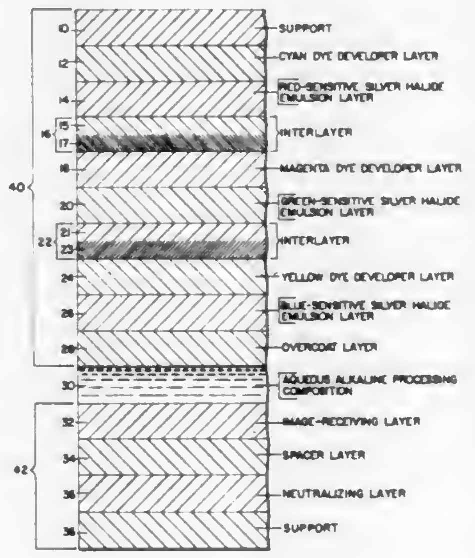
POLYMERIC HYDROXAMIC ACID POLYVALENT METAL SALT INTERLAYER FOR PHOTOGRAPHIC DIFFUSIÓN TRANSFER PRODUCTS

Lloyd D. Taylor, Lexington, and William C. Schwarzel, Billerica, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 17, 1980, Ser. No. 217,548

Int. Cl.³ G03C *5/54, 1/42*

U.S. Cl. 430—505 20 Claims


10
SUPPORT
12
CYAN DYE DEVELOPER LAYER
14
RED-SENSITIVE SILVER HALIDE EMULSION LAYER
16
15
17
INTERLAYER
18
MAGENTA DYE DEVELOPER LAYER
40
20
GREEN-SENSITIVE SILVER HALIDE EMULSION LAYER
22
21
23
INTERLAYER
24
YELLOW DYE DEVELOPER LAYER
26
BLUE-SENSITIVE SILVER HALIDE EMULSION LAYER
28
OVERCOAT LAYER
30
AQUEOUS ALKALINE PROCESSING COMPOSITION
32
IMAGE-RECEIVING LAYER
42
34
SPACER LAYER
36
NEUTRALIZING LAYER
38
SUPPORT

1. A photosensitive element for use in diffusion transfer photographic processes which comprises:
at least two selectively sensitized silver halide layers having image-dye forming materials associated herewith; and

an interlayer separating said silver halide layers comprising an alkali-permeable polymeric hydroxamic acid polyvalent metal salt, said interlayer comprising said alkali-permeable polymeric hydroxamic acid polyvalent metal salt serving as a barrier to migration of alkali-solubilized image-dye forming material and being rendered permeable to said alkali-solubilized image-dye forming material subsequent to contact of said interlayer with an organic alkali-soluble sequestering agent for the polyvalent metal of the polymeric hydroxamic acid salt.

4,352,872
STABILIZATION OF LATENT IMAGES IN PHOTOTHERMOGRAPHIC ELEMENTS

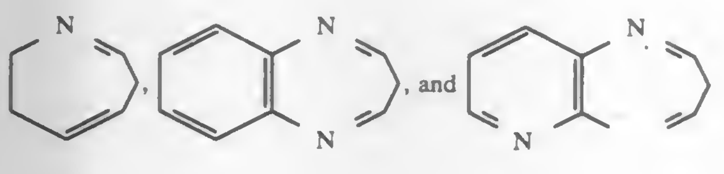
Jack E. Reece, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 27, 1981, Ser. No. 239,011

Int. Cl.^{3} G03C *1/02*

U.S. Cl. 430—523 **13 Claims**

1. A photothermographic element comprising a binder, light sensitive silver halide in catalytic proximity to a light insensitive silver source material in said element which contains a reducible source of silver ions, a reducing agent for silver ion and an effective latent image stabilizing amount of a compound selected from the class consisting of diazepines and fused aromatic diazepines having a central nucleus selected from the group consisting of



4,352,873
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Yuzo Toda; Junji Koizumi; Masasi Ogawa; Hidefumi Sera, and Seiiti Kubodera, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

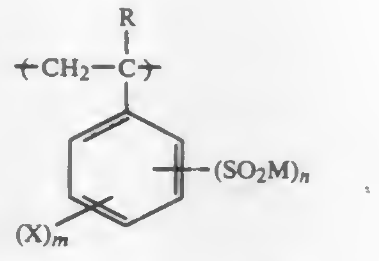
Filed Apr. 27, 1981, Ser. No. 258,216

Claims priority, application Japan, Apr. 25, 1980, 55-55085

Int. Cl.^{3} G03C *1/40, 1/72*

U.S. Cl. 430—545 **9 Claims**

1. A silver halide color photographic material comprising: a support; and a plurality of photographic layers including silver halide emulsion layer formed thereon, wherein one of said photographic layers is comprised of a compound containing recurring unit represented by the formula (I) in an amount of at least 0.01 mole percent



wherein R represents hydrogen, an alkyl group having 1 to 6 carbon atoms, or a halogen group; M represents hydrogen, an alkali metal, an alkaline earth metal, or an organic base; X represents an alkyl group having 1 to 6 carbon atoms, an alkoxy group, an alkylamino group or a halogen group; m represents 0, 1, or 2 and n represents 1 or 2.

4,352,874
METHOD FOR FORMING A PHOTOSENSITIVE SILVER HALIDE ELEMENT

Edwin H. Land, Cambridge, and Vivian K. Walworth, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,638

Int. Cl.^{3} G03C *1/76, 1/02*

U.S. Cl. 430—568 **35 Claims**

20. A method for forming a photosensitive element comprising a plurality of single effective silver halide grains in a predetermined spaced array which comprises the following steps in sequence:

(a) depositing a fine-grain silver halide emulsion in a surface containing a plurality of predetermined spaced depressions;
(b) applying a solution of silver halide solvent saturated with a silver salt in an amount sufficient to partially dissolve said grains in said depressions; said
(c) coalescing said grains to a single effective silver halide grain in substantially each depression.

4,352,875
VOLTAGE DISTRIBUTION DIFFERENCE ELECTROPHOTOGRAPHIC PROCESS

Shunichi Ishihara, Kodaira; Yuji Nishigaki, Tokyo; Nobuo Kitajima, Toride, and Nobuko Kitahara, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

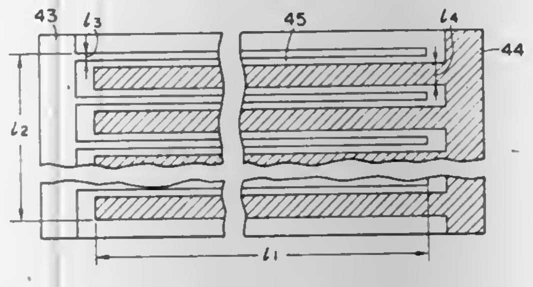
Filed Jan. 27, 1981, Ser. No. 228,723

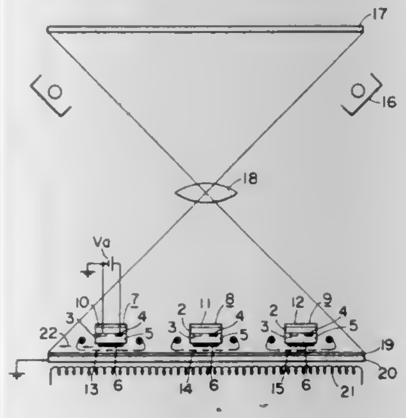
Claims priority, application Japan, Feb. 5, 1980, 55-12684; Mar. 4, 1980, 55-27734

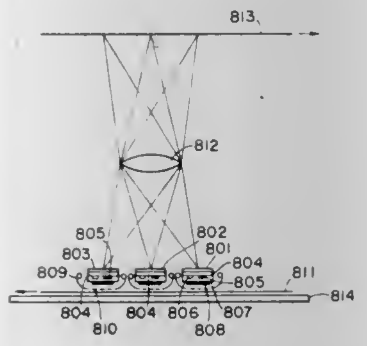
Int. Cl.^{3} G03G *13/01*

U.S. Cl. 430—42 **5 Claims**

1. An electrophotographic process which comprises:
applying voltage between a transparent electrode and an opaque electrode of an electrophotographic photosensitive member comprising isolated electrically conductive members forming image elements, a photoconductive layer, transparent electrodes and opaque electrodes, conducting imagewise exposure from the side opposite to the side where the isolated electrically conductive members are arranged, resulting in the formation of differences with regard to a distribution voltage between the area where light passes through a transparent electrode and the area where light does not pass through the transparent electrode, said distribution voltage being a voltage distributed between the transparent electrode and the isolated electrically conductive electrode and a voltage distributed between the opaque electrode and the isolated electrically conductive member thereby forming a voltage image depending upon the change of voltage of the isolated electrically conductive member produced corresponding to the difference in the distribution voltage, and
(a) scanning the electrophotographic photosensitive member within the area where imagewise exposure is carried out, or
(b) moving an image receiving member and an optical image projected on the electrophotographic photosensitive member in relatively opposite directions, simultaneously with the attachment of a developer to the image receiving member based on an electric field produced by the voltage image.







4,352,876
COMPLEX TYPE ELECTROPHOTOGRAPHIC PLATE AND ELECTROPHOTOGRAPHIC METHOD USING THE SAME

Shigeo Suzuki, Hitachi; Atsushi Kakuta, Hitachiota; Hiroyuki Oka, Hitachi; Yasuki Mori, Hitachi, and Hirosada Morishita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

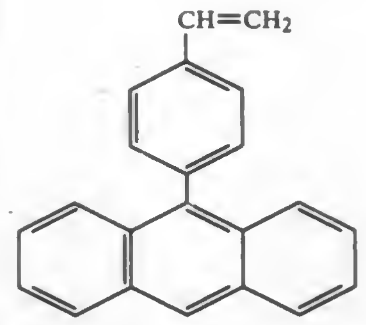
Filed Sep. 12, 1980, Ser. No. 186,651

Claims priority, application Japan, Sep. 14, 1979, 54-117308

Int. Cl.^{3} G03G *5/02, 5/14*

U.S. Cl. 430—58 **19 Claims**

1. In a complex type electrophotographic plate comprising an electroconductive support and a photosensitive material layer containing a charge generating layer and a charge transport layer formed on the electroconductive support, the improvement wherein the charge generating layer contains a copper phthalocyanine and the charge transport layer contains (a) a nitrofluorenone and (b) at least one polycyclic aromatic vinyl polymer selected from the group consisting of a homopolymer of a polyacrylic aromatic vinyl compound, a copolymer of said polycyclic aromatic vinyl compound and one or more other vinyl compounds, a brominated homopolymer of said polycyclic aromatic vinyl compound and a brominated copolymer of said polycyclic aromatic vinyl compound and one or more of said other vinyl compounds, said polycyclic aromatic vinyl compound being represented by the formula:



(III)

4,352,877
ELECTROPHOTOGRAPHIC DEVELOPING PROCESS USING FLASH FIXATION AND TONER THEREFOR

Toshiaki Narusawa, Sagamihara; Seiji Okada, Kawasaki; Kiyohide Muramatsu, Tokyo; Teruo Yagishita, Yokohama, and Hirohumi Okuyama, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP80/00187, § 371 Date Apr. 22, 1981, § 102(e) Date Apr. 21, 1981, PCT Pub. No. WO81/00628, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 20, 1980, Ser. No. 253,837

Claims priority, application Japan, Aug. 22, 1979, 54-105954

Int. Cl.^{3} G03G *13/12*

U.S. Cl. 430—97 **5 Claims**

1. An improvement in an electrophotographic process for developing an electrostatic latent image with finely divided toner particles and fixing the developed image by irradiating it with a high energy ultraviolet or visible light, said improvement comprising using as the toner particles those which consist essentially of, based on the weight of the toner particles, 0.6 to 8% by weight of carbon as a colorant and 0 to 50% by weight of a dye as a colorant, and 62 to 99.4% by weight of a binder resin; at least 95% by weight of said binder resin being a bisphenol A/epichlorohydrin type epoxy resin having a melting point of from 60° to 160° C., an epoxy equivalent of from about 450 to about 5,500 and a weight average molecular weight of from about 900 to about 8,250.

5. An improvement in an electrophotographic process for developing an electrostatic latent image with finely divided toner particles and fixing the developed image by irradiating it with a high energy ultraviolet or visible light, said improvement comprising using as the toner particles those which consist essentially of, based on the weight of the toner particles, 0.6 to 8% by weight of carbon as a colorant and 0 to 5% by weight of a dye as a colorant, 62 to 99.4% by weight of a binder resin, and about 1% to about 20% by weight of a montanic acid ester wax, at least 95% by weight of said binder resin being a bisphenol A/epichlorohydrin type epoxy resin having a melting point of from 60° to 160° C., an epoxy equivalent of from about 450 to about 5,500 and a weight average molecular weight of from about 900 to about 8,250.

4,352,878
PHOTORESIST COMPOSITION

Kiyoshi Miura; Naomitsu Watanabe, and Yoshifumi Tomita, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 970,363, Dec. 28, 1978, Pat. No. 4,254,197, which is a continuation of Ser. No. 496,854, Aug. 12, 1974, abandoned. This application Oct. 6, 1980, Ser. No. 194,465

Claims priority, application Japan, Oct. 24, 1973, 48/119006

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.^{3} G03C *1/74, 1/71, 1/78*

U.S. Cl. 430—167 **13 Claims**

1. A photoresist coated article which comprises a photosensitive photoresist layer on a glass substrate in which a photoresist composition is coated on the substrate by rotation of said substrate and the composition is allowed to dry to form said photoresist layer, the photoresist composition comprising a

bisazide photo-crosslinking agent, a water-soluble polymeric substance capable of being photo-crosslinked by said bisazide photo-crosslinking agent, and 5 to 300 parts by weight per 100 parts by weight of said water-soluble polymeric substance of dihydric alcohol having a molecular weight of 60 to 110.

4,352,879

SELF-PROCESSING TYPE PHOTOGRAPHIC FILM UNIT WITH A TRAP MEMBER HAVING GAS DISCHARGING MEANS

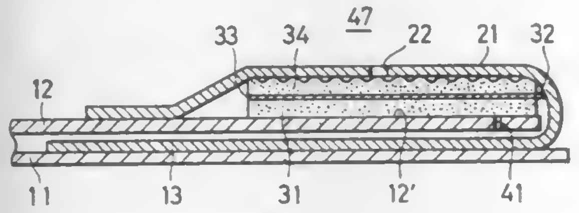
Yoshio Hara, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 26, 1980, Ser. No. 210,713

Claims priority, application Japan, Nov. 29, 1979, 54/154618

Int. Cl.^{3} G03C *1/48;* G03D *9/02*

U.S. Cl. 430—209 9 Claims



1. A self-processing type photographic film unit comprising: a first sheet member; a second sheet member; a bonding member disposed between said first and second sheet members and forming a single unit therewith; container means for holding processing solution, said container means being openable under an external pressure to discharge said processing solution into said unit; and trap means for catching surplus processing solution, said trap means comprising:

- a trap cover member;
- a partition member dividing a pouch-shaped hollow interior formed by said trap cover member into an upper chamber and a lower chamber and forming a U-shaped flow path which communicates with gas discharging through-holes formed in the upper surface of said trap cover member; and
- first and second spacer members provided adjacent the lower and upper surfaces of said partition member, said first spacer member disposed in said lower chamber and said second spacer member disposed in said upper chamber, said first and second spacer members permitting said U-shaped flow path to pass gas in said unit and retaining surplus processing solution.

4,352,880

DIFFUSION BIOASSAY FOR THE QUANTITATIVE DETERMINATION OF MUTAGENICITY

Tamara E. Awerbuch, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 17, 1979, Ser. No. 76,199

Int. Cl.^{3} C12Q *1/68*

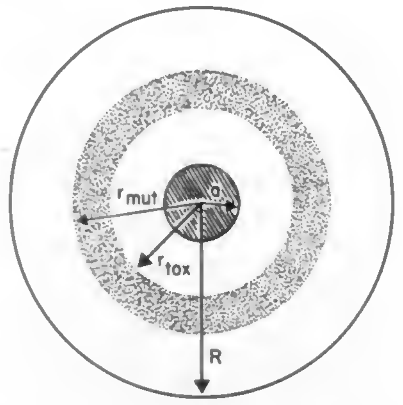
U.S. Cl. 435—6 6 Claims

1. A bioassay for determining the degree of mutagenicity of an agent, comprising:

a. forming a culture of living cells, said cells being a tester strain for mutagenesis;

b. applying a spot of test agent in known concentration to said culture whereby said test agent diffuses outwardly from said spot to form a ring-shaped mutagenic band in which viable mutant cells are produced, said ring-shaped mutagenic band being concentric to the spot of test agent;

c. measuring the length of a radius from said spot to said ring-shaped mutagenic band; and,



d. employing the length of said radius to determine the degree of mutagenicity of said agent.

4,352,881

METHOD OF MEASURING CREATINE KINASE ACTIVITY

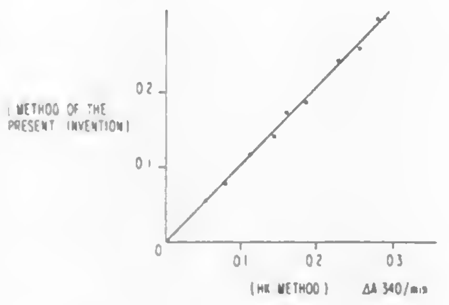
Masanobu Inagawa; Toshiyuki Sai; Seiichi Kawarabuki, and Naoto Miwa, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 101,381, Dec. 7, 1979, abandoned. This application Sep. 16, 1981, Ser. No. 302,868

Claims priority, application Japan, Dec. 12, 1978, 53-153311

Int. Cl.^{3} C12Q *1/50*

U.S. Cl. 435—17 4 Claims



1. A method for measuring creatine kinase (CK) activity which comprises combining a test sample with the reagents necessary to carry out the following reactions at a pH of about 6 to 7.5:

$$\text{Creatine phosphate} + \text{ADP} \rightleftarrows \text{Creatine} + \text{ATP} \tag{1}$$

$$\text{ATP} + \text{3-Phosphoglycerate} \rightleftarrows \text{ADP} + \text{1,3-Diphosphoglycerate} \tag{2}$$

$$\text{1,3-[Phosphoglycerate]Diphosphoglycerate} + \text{NADH} \rightleftarrows \text{Glyceraldehyde-3-phosphate} + \text{NAD} + \text{Inorganic phosphate} \tag{3}$$

wherein one of those reagents is a composition consisting essentially of 0.5 to 50 u/ml of phosphoglycerate kinase (PGK) and 0.5 to 100 u/ml of glyceraldehyde-3-phosphate dehydrogenase (GAPDH), the ratio of PGK to GAPDH being about 1:0.2 to 2 and the total amount of PGK and GAPDH in the test being about 0.1 to 30 mg/ml, and as another one of said reagents a buffer solution capable of maintaining said pH of about 6 to 7.5, and optically measuring the rate of reduction of NADH optical absorption.

4,352,882

PRODUCTION OF XANTHAN GUM BY EMULSION FERMENTATION

Lucien G. Maury, Wilmington, Del., assignor to Kelco Biospecialties Limited, London, England

Filed Sep. 8, 1981, Ser. No. 299,709

Int. Cl.^{3} C12P *19/04, 19/06*

U.S. Cl. 435—101 4 Claims

1. In the method of conducting a fermentation reaction wherein an aqueous culture medium comprising a carbohydrate source and a nitrogen source is inoculated with a polysaccharide gum producing microorganism and said medium is mechanically agitated and aerated under conditions to effect fermentation thereof, the improvement which comprises said culture medium being dispersed in about 20 to 80% of its weight of a water insoluble oil in which the resultant polysaccharide is also insoluble.

4,352,883

ENCAPSULATION OF BIOLOGICAL MATERIAL

Franklin Lim, Richmond, Va., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 953,413, Oct. 23, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,600

Int. Cl.^{3} C12N *11/10, 11/04, 5/00*

U.S. Cl. 435—178 22 Claims

2. A process for encapsulating a core material within a semipermeable membrane, said process comprising the steps of:

A. placing the material in a solution of a water-soluble substance that can be reversibly gelled;

B. forming the solution into droplets;

C. gelling the droplets to produce discrete shape-retaining temporary capsules;

D. forming semipermeable membranes about the temporary capsules; and

E. reliquifying the gel within said membranes.

13. A process for encapsulating a core material within a membrane permeable to proteins of a molecular weight no greater than about 100 thousand daltons, said process comprising the steps of:

A. suspending the core material in an aqueous medium which contains a water-soluble gum containing acid groups;

B. forming the suspension into droplets;

C. subjecting the droplets to a solution of multivalent, cations to gel the droplets as discrete, shape-retaining, water insoluble temporary capsules; and

D. permanently cross-linking surface layers of said temporary capsules to produce a semipermeable membrane about said droplets by subjecting them to a polymer containing substitutents reactive with the acid groups of said gum, said polymer having a molecular weight within the range of 3000–100,000 daltons.

4,352,884

CARRIER HAVING ACRYLATE COPOLYMER COATING FOR IMMOBILIZATION OF BIOACTIVE MATERIALS

Toshihide Nakashima; Masao Tanihara, both of Kurashiki, and Koichi Takakura, Okayama, all of Japan, assignors to Kuraray Co., Ltd, Kurashiki, Japan

Filed Feb. 9, 1981, Ser. No. 232,394

Claims priority, application Japan, Feb. 19, 1980, 55-19906

Int. Cl.^{3} G01N *33/50, 33/54, 31/08, 27/30*

U.S. Cl. 435—180 14 Claims

1. A carrier for immobilization of bio-active materials which comprises a base material coated with a copolymer of (i) a hydrophilic acrylate or methacrylate monomer of the general formula $CH_2{=}(R_1)CO_2R_2OR_3$, wherein R_1 is H or methyl; R_2 is a substituted or unsubstituted divalent alkylene radical of 2 to 3 carbon atoms or a poly(oxyalkylene) radical; R_3 is H or an alkyl radical of 1 to 3 carbon atoms, which alkyl radical can be further substituted by polar substituent groups and (ii) a copolymerizable unsaturated carboxylic acid of the general formula $CH_2{=}C(R_1)CO_2H$, wherein R_1 is H or methyl or (iii) a copolymerizable unsaturated amine of the general formula $CH_2{=}C(R_1)CO_2R_2NHR_3$, wherein R_1 is H or methyl; R_2 is a divalent alkylene radical of 2 or 3 carbon atoms; and R_3 is H or an alkyl radical of 1 to 3 carbon atoms, said copolymerizable component being present in amount of from about 1 to 50 weight percent based on the total weight of monomers.

6. A clinical selective adsorbent comprising a bio-active material immobilized on a base material coated with a copolymer as claimed in claim 1.

4,352,885

PREPARATION OF A NOVEL NADP LINKED ALCOHOL-ALDEHYDE/KETONE OXIDOREDUCTASE FROM THERMOPHILIC ANAEROBIC BACTERIA FOR ANALYTICAL AND COMMERCIAL USE

Joseph G. Zeikus, Madison, Wis., and Raphael J. Lamed, Schenectady, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 9, 1980, Ser. No. 148,243

Int. Cl.^{3} C12N *9/02, 9/04;* C12Q *1/32*

U.S. Cl. 435—189 6 Claims

1. A method for producing thermostable enzymes, said method comprising the steps of:

(a) inoculating a culture medium with a strain of thermophilic bacteria selected from the group consisting of *Thermoanaerobium brockii* and *Clostridium thermohydrosulfuricum;*

(b) incubating said bacteria at a temperature between 50° C. and 75° C.;

(c) purifying the bacteria from spent culture supernatant fluids by heating to a temperature in the range of 85°–98° C.; and

(d) isolating from the bacteria thermostable NADP linked alcohol, aldehyde/ketone oxidoreductases that are formed.

4,352,886

PROCESS FOR TREATING WASTEWATER CONTAINING PHENOLICS AND MICROORGANISM CAPABLE OF DEGRADING PHENOLICS

Lewis J. Pillis, Roanoke, and Lois T. Davis, Salem, both of Va., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 27, 1981, Ser. No. 229,025

Int. Cl.^{3} C07C *7/00*

U.S. Cl. 435—262 7 Claims

1. A process for removing phenolics wastewater containing the same comprising treating wastewater containing the phenolics with *Pseudomonas putida* CB-173 (ATCC-31800) under aerobic conditions for a time sufficient to degrade the phenolics present in the wastewater and remove them or break them down into components capable of being degraded by other organisms normally found in the biological wastewater treatment systems.

4,352,887

METHOD AND ARTICLE FOR CULTURING DIFFERENTIATED CELLS

Lola C. M. Reid, Rye, N.Y., and Marcos Rojkind, Ciudad Satelite, Mexico, assignors to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,167

Int. Cl.^{3} C12M *3/00;* C12N *5/00, 5/02*

U.S. Cl. 435—240 32 Claims

1. A method for in vitro culturing of differentiated cells comprising providing connective tissue-derived fibers comprising collagens, non-collagenous proteins and carbohydrates as a substrate for an in vitro differentiated cell culture whereby the differentiated cell culture remains substantially differentiated.

23. A cell culture solid-state support consisting essentially of

a base support for containing a culture medium and said cells cultured thereon and a plurality of connective tissue derived fibers disposed within said base support, said connective tissue-derived fibers consisting essentially of collagens, non-collagenous proteins and carbohydrates.

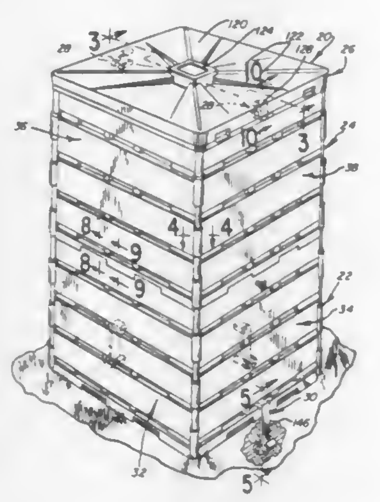
4,352,888
CONTAINER FOR HOLDING ORGANIC MATTER DURING DECOMPOSITION

Cosmo N. Tisbo, and Thomas A. Tisbo, both of Barrington, Ill., assignors to Custom Plastics, Inc., Elk Grove Village, Ill.

Filed Dec. 23, 1981, Ser. No. 333,701

Int. Cl.^{3} C12M *1/00*

U.S. Cl. 435—287 **12 Claims**



1. A plastic container for holding organic matter during decomposition of said organic matter comprising: a lower section including a plurality of flat sides positioned in a substantially vertical attitude joined at opposite edges to form a closed figure having an open bottom, an upper section including an equal number of flat sides as the lower section, the flat sides of the upper section positioned in a substantially vertical attitude joined at opposite edges to form a closed figure mounted on the lower section with the respective flat sides of the upper and lower sections being vertically aligned, each of said flat sides having a rectangular outline, each of said flat sides having a bead along a vertical edge, an elongated socket formed integral with the opposite vertical edge of each of said flat sides, each socket being adapted for slidably receiving the bead of a flat side in its respective section, each of said flat sides having a plurality of horizontal recesses, a vent in each of the recesses to allow gases to pass from one side of the flat side to the other side of the flat side, each flat side having an indentation on its upper edge, a ridge formed integral with the flat side in the indentation, each of said flat sides having a flexible ear on its lower edge mateably releasably positionable in the indentation on a like flat side, each ear having a groove for mateably receiving the ridge in the indentation for locking adjacent flat sides to each other, and a cover removably engageable with the upper edge of the upper section.

4,352,889
TIN OXIDE, TITANIUM OXIDE AND/OR ZIRCONIUM OXIDE COATED β-EUCRYPTITE PARTICLES HAVING A NEGATIVE COEFFICIENT OF LINEAR THERMAL EXPANSION AND SEALING COMPOSITIONS CONTAINING SAID PARTICLES

Akio Takami, and Kazuo Kondo, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Division of Ser. No. 77,810, Sep. 21, 1979, Pat. No. 4,310,598. This application Sep. 14, 1981, Ser. No. 301,860

Claims priority, application Japan, Sep. 21, 1978, 53-116318; Jan. 5, 1979, 54-41

Int. Cl.^{3} C03C *3/10, 14/00, 3/30*

U.S. Cl. 501—15 **8 Claims**

1. A sealing composition having low expansivity which consists essentially of up to about 30% by weight of β-eucryptite particles and a lead borate glass, said β-eucryptite particles having on the surface thereof a single layer of or multiple layers of a member selected from the group consisting of tin oxide, titanium oxide, zirconium oxide and a mixture of two or more of said oxides, said oxides being present in a thickness of about 1 micron or less.

4,352,890
DIOPSIDE CRYSTAL PRECURSOR GLASS FRIT FLUX IN PRODUCTION OF SANITARY WARE AND FELDSPATHIC BODIES

Werner F. Votava, Broadview Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 188,919, Sep. 19, 1980, Pat. No. 4,337,316. This application Nov. 23, 1981, Ser. No. 323,810

Int. Cl.^{3} C04B *33/00, 33/24*

U.S. Cl. 501—141 **8 Claims**

1. In a process of forming ceramic materials into a sanitary-ware body and then firing the body to a solid form, the improvement comprising incorporating with said material a completely vitrified, clear frit containing in solution the diopside precursors, CaO, MgO and SiO_2, precipitating crystals of diopside from said frit in situ during said firing of the body, said frit constituting from about 0.1 to 10% weight of said body, said precipitated crystals having an average particle size less than one micron, said firing being carried out at a lower temperature than would be required in the absence of said crystals, said frit containing deflocculent oxides in a quantity sufficient to counterbalance the effect of flocculent alkaline earths present to the extent they are respectively leached upon dispersal of said frit in a ceramic slip, said frit having essentially a composition of about:

	Wt. %
CaO	15 to 25
MgO	10 to 20
SiO_2	35 to 50
Additive	5 to 20

said additive being selected from one or more of the following in approximately the percent indicated based on the total weight of the glass:

K_2O	0 to 5%
Na_2O	0 to 10%
Li_2O	0 to 5%
Al_2O_3	0 to 12%

2. The process of claim 1 wherein the frit contains 0 to 3.6 weight percent P_2O_5.

4,352,891
DIETHYLCARBAMAZINE RESINATE AND STYRLPYRIDINIUM RESINATE-DIETHYLCARBAMAZINE RESINATE EDIBLE ANTHELMINTIC TABLETS FOR COMPANION ANIMALS

James M. Quinlan, Trenton, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 74,211, Sep. 10, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,242

Int. Cl.^{3} B01J *41/12;* **A61K** *31/495*

U.S. Cl. 521—32 **5 Claims**

1. A palatable, anthelmintic resinate composition having improved storage and handling characteristics, comprising: about 3% by weight of diethylcarbamazine resinate; about 1.75 to 5.0% by weight of polyvinylpyrrolidone, carboxypolymethylene or mixtures thereof; 20% to 30% by weight of desiccated liver; 30% to 20% by weight of Brewers yeast and from 42% to 45.25% by weight of dried whey.

4,352,892
METHOD FOR THE MANUFACTURE OF LIGHTWEIGHT FOAM MATERIALS FROM CRYSTALLINE THERMOPLASTIC MATERIALS AND THE RESULTANT PRODUCTS

Ernst Lohmar, Weinheim an der Bergstrasse, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 129,166

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911719

Int. Cl.^{3} B29D *27/00*

U.S. Cl. 521—79 **32 Claims**

1. A method of preparing a lightweight foam material which comprises:

(a) forming a melt of a crystalline polyolefin in the presence of about 2 to 20 percent by weight of said crystalline polyolefin of a second polyolefin component in an extruder; wherein said second polyolefin component is selected from the group consisting of polybutadiene, an ethylene vinylacetate copolymer and an ethylene-propylene terpolymer; said melt including a radical former and a radical decomposition inhibitor wherein said radical decomposition inhibitor is selected from the group consisting of: trimethylolpropanetrimethacrylate, allylmethacrylate, tetrahydrofurylmethacrylate, triethyleneglycol-dimethacrylate and polyethylene glycol-dimethylacrylate; and

(b) injecting a volatile organic solvent foaming agent into said melt, said foaming agent comprising from about 5 to 30% by weight of said polyolefins and wherein said foaming agent and said melt are mixed at a temperature of about 180° C. to about 280° C., and at a pressure which is greater than the vapor pressure of the foaming agent, followed by

(c) extruding said melt and foaming agent from said extruder to provide a foam product having a specific bulk weight of from about 30 to about 200 kg/m^3.

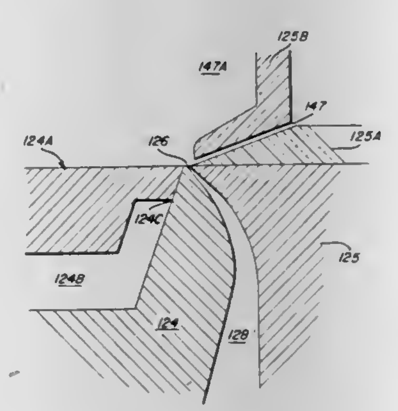
4,352,893
PRODUCTION OF FOAMED POLYMER

D. Emil Johnson, Canandaigua, and G. Vincent Sharps, Jr., Fairport, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 61,980, Jul. 30, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 153,301

Int. Cl.^{3} B29D *27/00*

U.S. Cl. 521—79 **16 Claims**



1. In a method for the production of foam sheet by forming an extrudable, foamable mass containing styrenic polymer and a foaming agent; extruding said mass from an annular die in a tubular form into an extrusion zone; drawing said tubular extrudate over an internal mandrel; and slitting said drawn tube to form a sheet; the improvement which comprises:

providing an annular inner orifice means having inner lip means defining an inner orifice surface and annular outer orifice means cooperating with said inner orifice means to form a slit-ring extrusion orifice with outer lip means defining an outer orifice surface, said inner and outer orifice means defining a flow passage for molten extrudate;

isolating the molten extrudate in a flow passage thermally from a liquid coolant medium;

extruding said foamable polymer directly into said liquid coolant medium maintained at a temperature of about 30° C. to 85° C., at ambient pressure, said coolant medium being contacted with said foamable polymer at a flow rate sufficient to prevent substantially boiling thereof by directing liquid coolant from a flow means adjacent the orifice toward the extruded polymer; and

foaming said extrudate in said liquid coolant medium to form a tubular foam structure having improved tensile properties and puncture resistance.

8. A foam structure which has been produced with the method as defined in claim 1.

4,352,894
STABLE AQUEOUS IMPREGNATING SOLUTIONS PREPARED FROM HYDROLYZED ALKYLTRIALKOXYSILANES

Werner Schmidt, St. Augustin, Fed. Rep. of Germany, assignor to Dynamit Nobel, Troisdorf, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,480

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037220

Int. Cl.^{3} C08J *9/40*

U.S. Cl. 521—91 **4 Claims**

1. Method of impregnating a foamed polyvinyl alcohol plastic for the purpose of rendering it water repellent which comprises impregnating said foamed polyvinyl alcohol with a stable aqueous solution of hydrolyzed alkyltrialkoxysilane wherein the hydrolyzed alkyltrialkoxysilane has the formula $CH_3—CH_2—Si\ (OH)_n(OR')_{3\text{-}n'}$ wherein R′ stands for an alkyl radical having from 1 to 4 carbon atoms and n can assume values between 1 and 3.

4,352,895
PROCESS AND DEVICE FOR THE CONTINUOUS PRODUCTION OF PLATES FROM FOAMED SYNTHETIC RESINS

Karl-Heinz Hilterhaus, Georgsmarienhütte, Fed. Rep. of Germany, assignor to Chemie-Anlagenbau Bischofsheim GmbH, Osnabruck, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,245

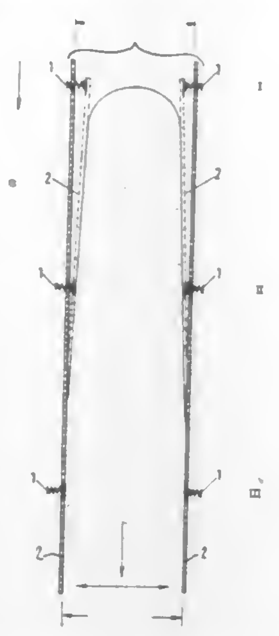
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936613

Int. Cl.^{3} B29D *27/04*

U.S. Cl. 521—99 **8 Claims**

1. A process for making a foamed synthetic resin panel which comprises pouring a liquid foamable synthetic resin mixture on an endless belt between laterally spaced endless running bands upstanding from the endless belt, allowing the said foamable mixture to foam and expand between said bands and exert a lateral pressure outwardly against the said bands, applying external pressure against the bands at longitudinally spaced points to overcome the pressure exerted by the foaming mixture and control separation of the endless bands with the pressure applied to said points decreasing progressively from

point to point along the length of the endless belt until the bands are spaced apart a width equal to the desired width of the panel and allowing the foaming mixture to solidify while the bands are thus spread apart.



4,352,896

POLYOL MIXTURES CONTAINING REACTIVE BLOWING AGENTS AND USE THEREOF FOR THE PRODUCTION OF FOAMED POLYURETHANES

Richard Kopp, Cologne; Holger Meyborg, Odenthal, and Jürgen Schwindt, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 8, 1981, Ser. No. 309,636

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039883

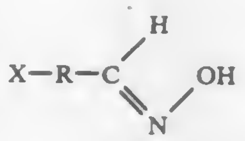
Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—118 **16 Claims**

1. Mixtures containing aldoximes as blowing agents comprising

(A) a polyol or polyol mixture which is liquid below 45° C. and has an average molecular weight of from 400 to 10,000 in which is dissolved

(B) from 0.1 to 20%, by weight, of an aldoxime reactive blowing agent corresponding to the following general formula:



$$X-R-C(H)=N-OH$$

wherein

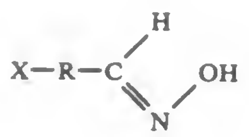
X represents —OH, —COOH, an aromatically-bound amino-NH_2, or an aromatically-bound —NH— (C_1–C_8) group; and

R represents an aliphatic radical containing from 1 to 9 carbon atoms, a cycloaliphatic radical, an aromatic radical, or an araliphatic radical wherein the aliphatic radical is bound to the aromatic nucleus by an oxygen atom.

13. A process for the preparation of a polyurethane foam comprising reacting an organic polyisocyanate with mixtures comprising

(A) a polyol or polyol mixture which is liquid below 45° C. and has an average molecular weight of from 400 to 10,000 in which is dissolved

(B) from 0.1 to 20%, by weight, of an aldoxime reactive blowing agent corresponding to the following general formula



$$X-R-C(H)=N-OH$$

wherein

X represents —OH, —COOH, an aromatically-bound amino-NH_2, or an aromatically-bound —NH—(C_1—C_8) group; and

R represents an aliphatic radical containing from 1 to 9 carbon atoms, a cycloaliphatic radical, an aromatic radical, or an araliphatic radical wherein the aliphatic radical is bound to the aromatic nucleus by an oxygen atom.

4,352,897

RESIN MOLDED STATORS

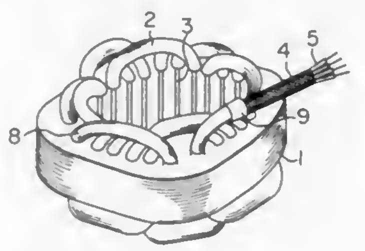
Masatsugu Ogata; Hirokazu Takasaki, both of Hitachi; Masanori Nemoto; Toshikazu Narahara, both of Ibaraki; Kenichi Hironaka, and Tetuo Ishikawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,506

Claims priority, application Japan, Dec. 20, 1978, 53-156348

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—220 12 Claims



1. A resin molded stator comprising a stator core and coils as major constituents at least parts of which are molded into one piece by a molding material, said molding material comprising

(a) a low-shrink unsaturated polyester resin,

(b) a filler material consisting of particulate filler having a particle size of 44μ or less, and

(c) a fibrous material consisting of fibers having a length of 3 mm or less,

in proportions of 15 to 40% by weight of the component (a) and 60 to 85% by weight of a total of the components (b) and (c), and a weight ratio of the component (b) to the component (c) being 3 to 30/1; all of any filler material contained in the molding material consisting of component (b).

4,352,898

WATER-REDUCIBLE EPOXY COATING COMPOSITIONS WITHOUT EMULSIFIER

Richard A. Albers, Irvine, Calif., assignor to Deft, Inc., Irvine, Calif.

Filed Apr. 25, 1980, Ser. No. 143,916

Int. Cl.³ C08J *3/08;* **C08L** *63/00;* **C07D** *3/58*

U.S. Cl. 523—414 **51 Claims**

1. A homogeneous water-reducible coating composition comprising epoxy resin and sufficient modified polyamine resin to cure the epoxy resin, the modified polyamine resin being homogeneously reduced in an aqueous system comprising nitroparaffin in an amount of at least 2% by weight of the modified polyamine resin and water in an amount of at least 50% by weight of the modified polyamine resin, the composition containing substantially no emulsifier, the nitroparaffin having the formula C_nX_{2n+2} where n is an integer from 1 to 4 and each X is independently selected from the group consisting of chlorine, hydrogen, and NO_2, where at least one but no more than two X's are NO_2, the modified polyamine resin being inherently insoluble and non-dispersible in water.

4,352,899

COATING COMPOSITION FOR METAL-SUBSTRATE

Fusao Tada, Toyonaka; Takeshi Itoh, Sakai; Joji Oka, Tokyo, and Akira Okamoto, Yokohama, all of Japan, assignors to Sakai Chemical Industry Co., Ltd., Osaka and Nippon Steel Corporation, Tokyo, both of, Japan

Filed Apr. 3, 1981, Ser. No. 250,676

Claims priority, application Japan, Apr. 5, 1980, 55/44950; Apr. 5, 1980, 55/44951

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—451 **2 Claims**

1. A coating composition for a metal substrate which comprises (A) an epoxy resin, (B) an organic phosphorus compound, (C) zinc powder and (D) a magnesium compound dispersed in a liquid medium, the weight proportion of the components (A) and (B) being from 45:55 to 95:5, the content of the component (C) corresponding to from 30 to 95% by weight based on the total weight of the non-volatile components in the composition and the content of the component (D) being from 0.1 to 5% by weight based on the total weight of the non-volatile components in the composition.

4,352,900

STABILIZED THERMOSETTING POLYESTER

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,609

Int. Cl.³ C08K *5/36*

U.S. Cl. 523—507 **2 Claims**

1. A formulation consisting essentially of a thermosetting polyester, p-methylstyrene, a hydroquinone stabilizer, and 4,4′-thiobis-(3-methyl-6-t-butyl)-phenol.

4,352,901

OPAQUE JET INK COMPOSITIONS

Dorothy Maxwell, and David A. Fell, both of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 14, 1980, Ser. No. 177,944

Int. Cl.³ C08L *1/14, 93/00;* **C08K** *5/07, 5/06*

U.S. Cl. 524—38 **15 Claims**

1. A non-pigmented jet ink composition for producing opaque indicia on non-porous substrates, the ink composition having a viscosity between 1.5 and 25 centipoises at 25° C. and consisting essentially of (A) 2 to 15% by weight of a gellable cellulose ester film former having a hydroxyl content of between 2 to 8% by weight selected from the group consisting of cellulose acetate, cellulose acetate proprionate and cellulose acetate butyrate and combinations thereof; (B) between 1.5 to 15% of a binding agent selected from the group consisting of rosin based ester resins and maleic type resins soluble in dilute alkali solutions, polyvinyl acetate resins, acrylic resins, polyvinyl acetate and acrylic copolymer resins, and combinations of the same; and (C) a solvent blend, the solvent blend being a mixture of (1) a solvent selected from the group consisting of aliphatic alcohols of one of three carbons, ethers of four to ten carbons, acetone, other aliphatic ketones of four to seven carbons, acetates of three to seven carbons, and compatible combinations of the same, said acetates and other ketones being less than 50% of the solvent present in the composition, and (2) a non-solvent of low volatility within which the film former is essentially insoluble, the non-solvent being between 2 and 10% by weight of the jet ink composition and being selected from the group consisting of wate and glycerin, said solvent blend not containing an azeotrope that solubilizes the film former, and the binding agent being soluble in the solvent blend.

4,352,902

EMULSION COMPOSITION CONTAINING CELLULOSE DERIVATIVE

Yasuharu Nakayama; Hiroshi Iwai, and Hajime Sukejima, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Jan. 7, 1981, Ser. No. 223,148

Claims priority, application Japan, Jan. 8, 1980, 55-321; Feb. 1, 1980, 55-10015

Int. Cl.³ C08L *1/10*

U.S. Cl. 524—40 **23 Claims**

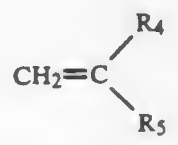
1. An emulsion composition which is the product of emulsion polymerization of a mixture of (A) at least one radical-polymerizable unsaturated monomer selected from the group consisting of vinyl aromatic compounds and acrylic and methacrylic acid esters and (B) at least one cellulose derivative having a number average moleculare weight of about 3,000 to about 200,000 and selected from ester-modified cellulose derivatives with an average degree of esterification of 15 to 70% and ether-modified cellulose derivatives with an average degree of etherification of 30 to 70%, in the presence of a water-soluble resin containing a graft-polymerizable unsaturated group in the side chain and having an acid value of 10 to 350 and a number average molecular weight of about 500 to about 100,000, said water-soluble resin being selected from the group consisting of:

(a) water-soluble resins obtained by the addition reaction of a carboxyl-containing vinyl polymer with a glycidyl containing vinyl monomer,

(b) water-soluble resins obtained by the addition reaction of a vinyl polymer containing both a carboxyl group and a hydroxyl group with vinyl isocyanate or a mono-addition product of a diisocyanate compound and a hydroxyl-containing acrylic monomer, and

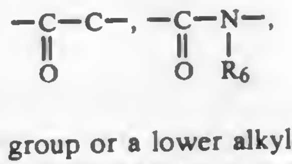
(c) copolymers of

(i) a monomer containing one radical-polymerizable unsaturated group represented by the following formula



$$CH_2=C(R_4)(R_5)$$

wherein R_4 represents a hydrogen atom or a methyl group, R_5 represents



$$-C(=O)-C-,\ -C(=O)-N(R_6)-,$$

a phenylene group or a lower alkylene group, and R_6 represents a hydrogen atom or a methyl or ethyl group,

and at least one graft-polymerizable unsaturated group,

(ii) an α,β-ethylenically unsaturated acid, and/or a monoester of a polyalkylene glycol and acrylic or methacrylic acid, and

(iii) another radical-polymerizable unsaturated monomer.

4,352,903

CHLORINATED THERMOPLASTICS STABILIZED WITH AMINOTHIOURACILS

Gerd Abeler, Darmstadt, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

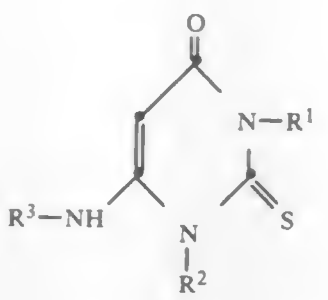
Filed Jun. 1, 1981, Ser. No. 268,558

Claims priority, application Switzerland, Jun. 2, 1980, 4261/80

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—100 **6 Claims**

1. A thermoplastic moulding composition based on a polymer of vinyl chloride, said composition containing 0.1 to 5% by weight of a 2-thio-6-aminouracil of the formula I



(I)

wherein each of R^1 and R^2 independeritly is a hydrocarbon radical of 1 to 24 carbon atoms which can be substituted by —OH, —$COOR^4$, —O(C═O)R^4, —(C═O)R^4, halogen or amino, and R^3 is hydrogen, acyl of 2 to 24 carbon atoms or —(C═O)NHR^4, whilst R^4 is a hydrocarbon radical of 1 to 24 carbon atoms.

4,352,904
MOLDING RESINS

Edward J. Deyrup, Northeast, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 882,219, Feb. 28, 1978, abandoned. This application Jan. 5, 1979, Ser. No. 631

Int. Cl.³ C08K *5/12, 5/20, 5/07, 5/41*

U.S. Cl. 524—292 **12 Claims**

1. A molding composition which provides articles having smooth, glossy surfaces on release from a mold consisting essentially of:

A. polyethylene terephthalate having an inherent viscosity of at least about 0.4;

B. between about 10 and about 60 percent by weight reinforcing or filling material;

C. a material selected from a sodium or potassium salt of a hydrocarbon acid containing between about 7 and 25 carbon atoms, or a sodium or potassium salt of an organic polymer which contains pendant carboxyl groups, said material present in an amount sufficient to provide a $\Delta H_H/\Delta H_c$ ratio of less than 0.25 to a mixture of components A, B and C;

D. a compound present in an amount sufficient to provide a Tpk at least 4° C. lower than the Tpk of a mixture of components A, B and C, said compound being selected from

(a) organic esters selected from the product of an aromatic carboxylic acid of 7–11 carbon atoms containing at least 1 carboxyl group per aromatic nucleus which is attached directly to said nucleus, and an alcohol selected from those of the formula $(HOCH_2\!\rightarrow_x R'$ wherein x is 1, 2 or 3 and R′ is a hydrocarbon radical of 2–15 carbon atoms or those of the formula $HO\!\leftarrow\!R''O\!\rightarrow_y{}'''$ wherein y is a cardinal number between 1 and 15, R″ is a hydrocarbon radical of 2–15 carbon atoms, and R‴ is —H or a hydrocarbon radical of 2–20 carbon atoms,

(b) organic ketones of the formula

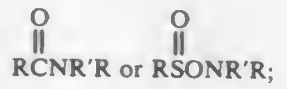
$$R\overset{O}{\overset{\|}{C}}R,$$

(c) organic sulfones of the formula RSOOR,

(d) organic sulfoxides of the formula R_2SO,

(e) organic nitriles of the formula RCN, or

(f) organic amides of the formula



$$R\overset{O}{\overset{\|}{C}}NR'R \text{ or } R\overset{O}{\overset{\|}{S}}ONR'R;$$

wherein in formulas (b) through (f) each R can be the same as, or different from, any other R and is a hydrocarbyl group of 1–25 carbon atoms, while in the formulas in (f) R′ is hydrogen or a hydrocarbyl group of 1–25 carbon atoms.

4,352,905
POLYMERS CHARACTERIZED BY 1,3-IMIDAZOLIDINE-1,3-DIYL RINGS PLASTICIZED WITH DIARYL KETONES

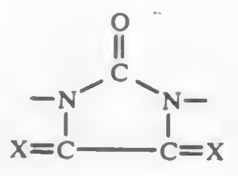
Tad L. Patton, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 26, 1981, Ser. No. 314,899

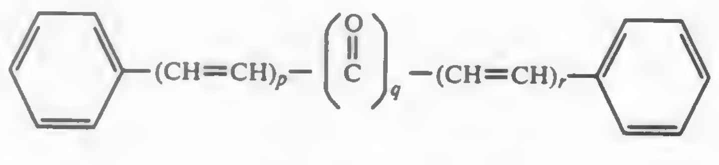
Int. Cl.³ C08K *5/07*

U.S. Cl. 524—359 **23 Claims**

1. A stable meltable composition comprising heterocyclic polymers characterized in the repeating units by the tri-substituted 1,3-imidazolidine-1,3-diyl ring:



wherein X=0 or NH, provided at least one X is 0 and a plasticizing amount of diarly ketone



wherein p is 0 to 2, q is 1 or 2 and r is 0 to 2.

4,352,906
BLISTER RESISTANT CALCIUM CARBONATE FILLED POLYISOCYANURATE RESIN MOLDING COMPOSITIONS

Weldon N. Reed, Avondale, Pa., and Thomas J. Galvin, Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

Filed Aug. 6, 1981, Ser. No. 290,524

Int. Cl.³ C08G *18/04;* **C08L** *75/04;* **C08K** *3/26*

U.S. Cl. 524—426 **10 Claims**

1. A resin blend useful in preparing blister resistent fully cured articles when heated at temperatures of 175–205° C. which comprises a polyethylenically unsaturated polyisocyanurate polymer resin, an ethylenically unsaturated monomer, a polyurethane thickener, 30–80 percent by weight of a powdered calcium carbonate filler and from 0.05–2.0 percent based upon the weight of the calcium carbonate in the blend of a polybutadiene telomer/maleic anhydride addition product formed by copolymerizing said telomer having a molecular weight in the range of 500–4000 with 5–50 parts by weight of maleic anhydride per 100 parts telomer.

4,352,907
POLYETHYLENETEREPHTHALATE TERNARY BLENDS

Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed Feb. 17, 1981, Ser. No. 234,860

Int. Cl.³ C08L *67/02;* **C08K** *3/40*

U.S. Cl. 524—537 **12 Claims**

1. A polyethylene terephthalate blend having improved toughness in products molded therefrom, comprising a ternary blend comprising:

a. 30–95 parts by weight of polyethylene terephthalate having an intrinsic viscosity of 0.7–1.0;

b. 1–30 parts by weight of a polycarbonate of a 4,4′-dihydroxy-di(mononuclear aryl)-A compound, wherein the aryl is phenyl, tolyl, xylyl, ethylphenyl or isopropylphenyl and the A radical is —CH_2, —C_2H_4—, —C_3H_6—, —C_4H_8—, —S— or —SO_2—, said polycarbonate having an intrinsic viscosity of 0.45–0.75; and

c. 2.5–10 parts by weight of a copolyester of terephthalic acid with 10–90 mole percent of ethylene glycol and 90–10 mole percent of cyclohexane-1,4-dimethanol;

the combined weight of said a, b and c totaling 100 parts by weight.

4,352,908
BLENDS OF POLYSTRENE OR POLY (P-METHYLSTYRENE) AND P-METHYLSTYRENE-DIENE-STYRENE BLOCK COPOLYMERS

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,779

Int. Cl.³ C08L *53/02, 25/06*

U.S. Cl. 525—98 **9 Claims**

1. A blend comprising at least one polymer selected from the group consisting of poly(p-methylstyrene), polystyrene, and copolymers of styrene and p-methylstyrene; and an A-B-A′ p-methylstyrene-conjugated diene-styrene block copolymer containing, by weight of the block copolymer, about 5–40% p-methylstyrene, about 5–40% styrene, and about 20–80% conjugated diene.

4,352,909
PROCESS FOR THE BROMINATION OF POLYSTYRENES

Henry J. Barda, East Brunswick, N.J., and Sandra L. Gray, Reynoldsburg, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 20, 1980, Ser. No. 179,913

Int. Cl.³ C08F *8/20, 8/22*

U.S. Cl. 525—157 **6 Claims**

1. A process for producing an essentially trihalogenated polystyrene product useful as a flame retardant additive, comprising the following steps:

a. dissolving polystyrene having a molecular weight in the range of from about 50,000 to about 750,000, as determined by gel permeation chromatography, in a chlorinated hydrocarbon solvent, at a concentration of from about 5% to about 15% by weight of said polystyrene based on said solvent;

b. reacting said polystyrene in said solution with a stoichiometric excess of bromine chloride to produce a tribrominated polystyrene product, under substantially anhydrous conditions at less than 0.02% by weight of H_2O, based on said solvent, and at a temperature in the range of from about 20° C. to about 50° C., in the presence of a catalytic amount of a Lewis acid of a metal chloride salt having a Lewis acid catalyst artivity substantially equivalent to that of antimony trichloride for a sufficient period of time to permit the reaction to produce a tribrominated polystyrene product.

4,352,910
VINYL CHLORIDE RESIN COMPOSITION WITH MULTI-STAGE IMPACT MODIFIER

Takayuki Katto, and Zenya Shliki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,198

Claims priority, application Japan, Oct. 23, 1980, 55-148729

Int. Cl.³ C08L *51/04, 27/06*

U.S. Cl. 525—83 **13 Claims**

1. A vinyl chloride resin composition with improved impact strength and anti-stress-whitening property comprising:

60 to 97% of a vinyl chloride resin; and

3 to 40% of an impact modifier copolymer comprising:

(1) 10 to 60 parts of a core polymer comprising 5 to 49% of a conjugated diene, 41 to 95% of a monoethylenically unsaturated monomer selected from the group consisting of aromatic vinyl monomers and mixtures thereof with alkyl acrylates or alkyl methacrylates, and 0 to 10% of a crosslinking agent,

(2) 20 to 75 parts of an inner layer polymer formed on the core polymer and comprising 60% or more conjugated diene, 0 to 5% of a crosslinking agent, and a remainder of a monoethylenically unsaturated monomer selected from the group consisting of aromatic vinyl monomers and mixtures thereof with alkyl acrylates or alkyl methacrylates, and

(3) 15 to 50 parts of an outer layer polymer formed on the inner layer polymer and comprising 0 to 10% of a crosslinking agent and a remainder of a monomer mixture selected from mixtures of an alkyl acrylate and an aromatic vinyl monomer and mixtures of an alkyl methacrylate, an aromatic vinyl monomer and an unsaturated nitrile,

the sum of the quantities of the polymers (1), (2) and (3) amounting to 100 parts,

all quantities expressed in percentages and parts being by weight.

4,352,911
SULFURIZED/AMINATED MIXTURE OF ETHYLENE-BASED POLYOLEFIN AND POLYISOBUTYLENE

J. Ronald Spence, Bartlesville, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 196,030, Oct. 10, 1980, Pat. No. 4,320,017. This application Sep. 4, 1981, Ser. No. 299,617

Int. Cl.³ C08L *23/32, 23/36*

U.S. Cl. 525—211 **15 Claims**

1. A dispersant viscosity index improver resistant to viscosity and molecular weight increase during production, which comprises the reaction product of an amine, sulfur or a sulfur-yielding compound and a mixture of polyisobutylene and a substantially amorphous polymer comprising ethylene and at least one monomer selected from the group consisting of a $C_{3\text{-}18}$ olefin, and a $C_{4\text{-}18}$ diene.

4,352,912
CONVERSION OF ALPHA-METHYLSTYRENE-TYPE MONOMERS IN THE FORMATION OF COPOLYMERS WITH CONJUGATED DIENE MONOMERS

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 192,798, Oct. 1, 1980, Pat. No. 4,302,558, which is a continuation of Ser. No. 36,267, May 4, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,124

Int. Cl.³ C08F *297/00, 297/04*

U.S. Cl. 525—314 **10 Claims**

1. A copolymer of at least one alpha-methylstyrene-type monomer and at least one conjugated diene monomer characterized by a structure comprising at least one block of homopolymeric poly(alpha-methylstyrene-type monomer) capped with a small block from a conjugated diene monomer and at least one block of random poly(conjugated diene/alpha-methylstyrene-type monomer).

4,352,913
DIMETHYLAMINO DERIVATIVES AND THEIR USE

Helmut Zondler, Bottmingen, and Roland Moser, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

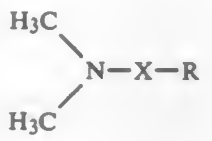
Division of Ser. No. 135,800, Mar. 31, 1980, Pat. No. 4,324,739. This application Aug. 21, 1981, Ser. No. 295,054

Int. Cl.³ C08G *59/42, 59/50*

U.S. Cl. 525—504 **3 Claims**

1. A curable mixture containing (a) a polyepoxide compound which contains on average more than one epoxy group in the

molecule and (b) a curing agent which is a dimethylamino derivative of the formula I

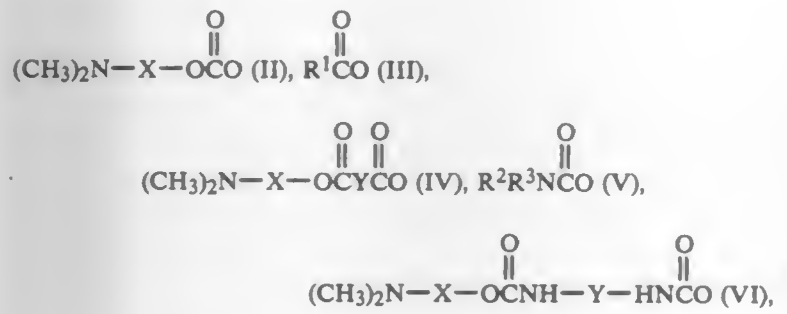


$$\begin{matrix}H_3C\diagdown & \\ & N-X-R\\ H_3C\diagup & \end{matrix}\qquad (I)$$

wherein

X is 1,3-propylene or ethylene or alkyl-substituted ethylene, and

R is the radical of the formulae



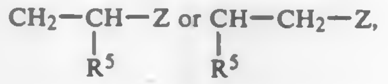
$$(CH_3)_2N-X-O\overset{O}{\overset{\|}{C}}O\ (II),\ R^1\overset{O}{\overset{\|}{C}}O\ (III),$$

$$(CH_3)_2N-X-O\overset{O}{\overset{\|}{C}}Y\overset{O}{\overset{\|}{C}}O\ (IV),\ R^2R^3N\overset{O}{\overset{\|}{C}}O\ (V),$$

$$(CH_3)_2N-X-O\overset{O}{\overset{\|}{C}}NH-Y-HN\overset{O}{\overset{\|}{C}}O\ (VI),$$

OR^4 (VII) or $OR^{11}OXN(CH_3)_2$(XI),

wherein R^1 is alkyl, cycloalkyl, or aryl or aralkyl which is unsubstituted or substituted by halogen or C_1–C_4 alkyl, Y is a direct bond, alkylene, alkenylene, cycloalkylene or arylene, R^2 is a hydrogen atom or has the meaning of R^3, and R^3 is alkyl, cycloalkyl, or aryl or aralkyl which is unsubstituted or substituted by C_1–C_4alkyl or halogen, R^4 is alkyl, alkenyl, cycloalkyl, cycloalkylalkylene, or aryl or aralkyl which is unsubstituted or substituted by C_1–C_4 alkyl or halogen, or is

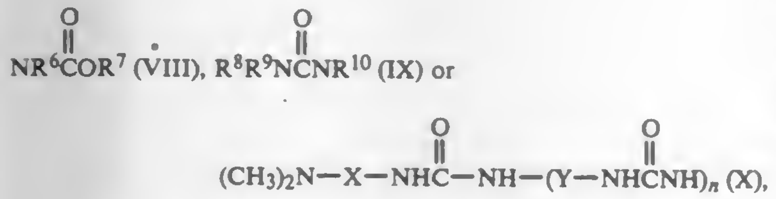


$$\underset{R^5}{CH_2-\underset{|}{CH}}-Z \text{ or } \underset{R^5}{\underset{|}{CH}}-CH_2-Z,$$

wherein R^5 is a hydrogen atom or methyl and Z is CN, CH_2NH_2 or $CH_2N(CH_3)_2$, and R^{11} is alkylene, cycloalkylene or arylene, and X is additionally neopentylene if R is the radical OR^4, or

X is ethylene, 1,3-propylene or 1,3-propylene which is substituted in the 1- or 2-position by methyl, and

R is the radical of the formulae



$$NR^6\overset{O}{\overset{\|}{C}}OR^7\ (VIII),\ R^8R^9N\overset{O}{\overset{\|}{C}}NR^{10}\ (IX) \text{ or}$$

$$(CH_3)_2N-X-NH\overset{O}{\overset{\|}{C}}-NH-(Y-NH\overset{O}{\overset{\|}{C}}NH)_n\ (X),$$

wherein each or X and Y independently is as defined above, n is 0 or 1, R^6 is a hydrogen atom, alkyl, cycloalkyl, β-cyanoethyl or β-cyanoethyl which is substituted in the 1- or -2 position by methyl, R^7 is alkyl, alkenyl, cyclalkyl, aryl, aralkyl, alkaryl or alkaralkyl, each of R^8 and R^{10} is a hydrogen atom and R^9 is alkyl, cycloalkyl, aryl, aralkyl, alkaryl, alkaralkyl, 3-(dimethylamino) propyl, or each of R^8 and R^9 independently is C_1–C_4 alkyl or phenyl and R^{10} is a hydrogen atom or R^8 is a hydrogen atom, R^9 is alkyl, cycloalkyl, aryl, aralkyl, alkaryl or aralkaryl, and R^{10} is β-cyanoethyl or β-cyanoethyl which is substituted in the 1- or 2-position by methyl.

4,352,914

BINDER COMPOSITION FOR FOUNDRY SAND MOLDS AND CORES

Takeshi Tobinaga, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,236

Claims priority, application Japan, Oct. 6, 1980, 55-139530; Oct. 6, 1980, 55-139531; Jun. 16, 1981, 56-92423; Jun. 16, 1981, 56-92424

Int. Cl.³ C08G *18/64, 18/54*

U.S. Cl. 525—504 **11 Claims**

1. A binder composition for foundry sand molds or cores comprising:

(a) component (a) which is an organic polyisocyanate compound; and

(b) component (b) which is a compound selected from the group consisting of (i) a polyol compound obtained by the reaction of formaldehyde with a compound selected from bisphenols, cyclic ketones in each of which both of the carbon atoms adjacent to the carbonyl group have a total of at least two hydrogen atoms, and mixtures thereof, and (ii) a derivative of the polyol compound (i) which is a reaction product of a polyol compound (i) and a monohydric alcohol,

wherein the quantitative ratio of the component (a) to the component (b) is such that the isocyanate group of the component (a) is present in the range of 0.3 to 3 equivalents per equivalent of the hydroxyl group of the component (b) and the degree of alkoxylation of the methylol groups of the component (ii) is 10% to 60%.

4,352,915

PROCESS FOR THE POLYMERIZATION OF ETHYLENE

Kentaro Mashita, and Katsumi Hanji, both of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 23, 1980, Ser. No. 152,610

Claims priority, application Japan, Jun. 7, 1979, 54-71872

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—65 **9 Claims**

1. In a slurry polymerization process for producing an ethylene homopolymer or ethylene-α-olefin copolymer in multiple stages, in which the gas phase hydrogen concentration in each stage is different, by the use of a catalyst system comprising a transition metal compound component and an organoaluminum compound component, the improvement which comprises conducting the polymerization in a molar ratio, of gas phase hydrogen to ethylene, of 0.5 to 15 in the first stage thereby polymerizing 30 to 95% by weight of the overall polymerization amount and in the second stage in a molar ratio, of gas phase hydrogen to ethylene, not exceeding 0.2, by using as the transition metal compound component a solid catalyst component comprising a titanium compound and/or vanadium compound supported on a solid carrier obtained by the reaction of an organomagnesium compound and a halogenated aluminum compound and/or halogenated silicon compound represented by the general formula

$$R'_nAlX_{3-n}$$

and/or the general formula

$$R^2_mSiX_{4-m}$$

wherein R' and R^2 are each an alkyl, cycloalkyl, aralkyl, aryl, or alkenyl group having up to 20 carbon atoms, X is a halogen atom, and n and m are numbers defined by $0 \leqq n < 3$ and $0 \leqq m < 4$, respectively; wherein the molar ratio of said organomagnesium compound to said halogenated aluminum compound and/or halogenated silicon compound is within the range of 0.1/1 to 10/1; wherein the amount of said titanium compound and/or vanadium compound supported on said solid carrier is 0.1 to 30% by weight in terms of titanium and/or vanadium atom based on the total amount of the supported compound and the carrier; wherein said reaction of the organomagnesium compound with the halogenated aluminum compound and/or halogenated silicon compound is carried out at 0° to 100° C.; and, wherein said organomagnesium compound is represented by the general formulae

$$R^3MgX \text{ and/or } R_2{}^3Mg$$

wherein R^3 is an alkyl, aralkyl, aryl, or alkenyl group having up to 20 carbon atoms.

4,352,916

USE OF HYDROPHOBICALLY MODIFIED WATER SOLUBLE POLYMERS IN SUSPENSION POLYMERIZATION

Leo M. Landoll, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jul. 17, 1981, Ser. No. 284,271

Int. Cl.³ C08F *2/00*

U.S. Cl. 526—200 **4 Claims**

1. In a process wherein at least one vinyl monomer is polymerized by dissolving a polymerization initiator in said vinyl monomer, suspending the resultant solution in water containing a suspension stabilizer and subjecting the suspension to polymerization conditions, the improvement which comprises the suspension stabilizer being selected from the class consisting of

(a) a water-soluble, nonionic cellulose ether modified with a C_6 to C_{25} alkyl radical in an amount between about 0.2% by weight and an amount sufficient to render said ether less than 1% soluble in water; and

(b) a copolymer of ethylene oxide and about 0.2 to 4% by weight of a C_6 to C_{24} alkyl epoxide.

4,352,917

HYDROPHILIC COATINGS FOR TEXTILE MATERIALS

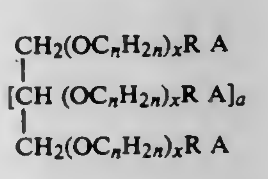
Jeffrey A. Tripp, Adrian, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Sep. 18, 1980, Ser. No. 188,210

Int. Cl.³ C08G *77/04*

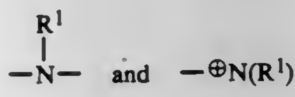
U.S. Cl. 528—26 **16 Claims**

1. A process for preparing silylated organic polymers which comprises reacting a polymeric organic acid containing at least one acid group per molecule which is obtained from the polymerization of an organic acid having aliphatic unsaturation with a silylated aminofunctional polyether at a temperature of from −10° C. to 200° C., in which the silylated aminofunctional polyether has the formula:



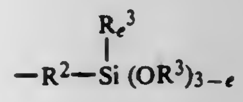
$$\begin{array}{l}CH_2(OC_nH_{2n})_xR\ A\\ |\\ [CH\ (OC_nH_{2n})_xR\ A]_a\\ |\\ CH_2(OC_nH_{2n})_xR\ A\end{array}$$

wherein R is a radical selected from the group consisting of:



$$-\overset{R^1}{\overset{|}{N}}- \quad\text{and}\quad -{}^{\oplus}N(R^1)_3,$$

R^1 is selected from the class consisting of hydrogen, a monovalent hydrocarbon radical and a silicon containing radical selected from the group consisting of:



$$-R^2-\overset{R_e^3}{\overset{|}{Si}}(OR^3)_{3-e}\qquad (a)$$

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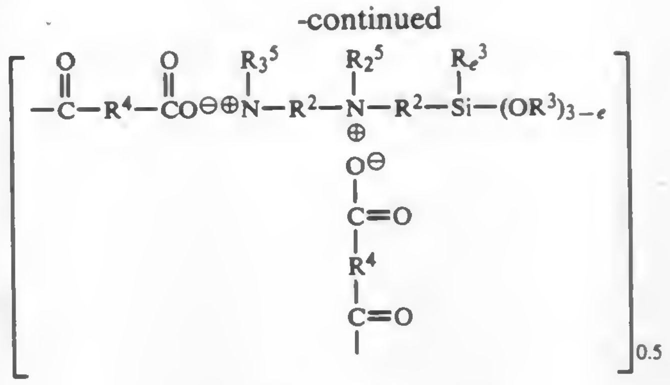
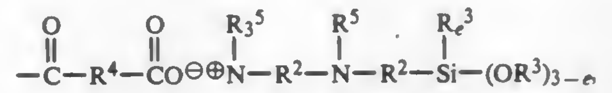
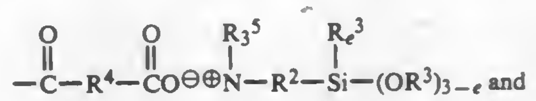


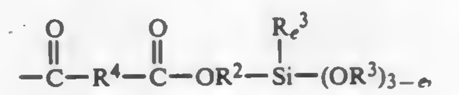
$$\left[-\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}O^{\ominus}{}^{\oplus}\overset{R_3^5}{\overset{|}{N}}-R^2-\underset{\begin{array}{c}\oplus\\ O^{\ominus}\\ |\\ C=O\\ |\\ R^4\\ |\\ C=O\\ |\end{array}}{\overset{R_2^5}{\overset{|}{N}}}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e}\right]_{0.5},\qquad (b)$$



$$-\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}O^{\ominus}{}^{\oplus}\overset{R_3^5}{\overset{|}{N}}-R^2-\overset{R^5}{\overset{|}{N}}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e},\qquad (c)$$

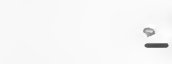


$$-\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}O^{\ominus}{}^{\oplus}\overset{R_3^5}{\overset{|}{N}}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e} \text{ and}\qquad (d)$$



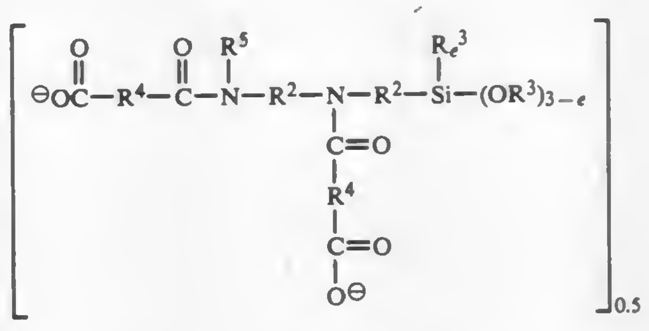
$$-\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}-OR^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e},\qquad (e)$$

and when R is

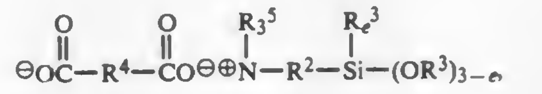


$$-\overset{\oplus}{N}(R^1)_3,$$

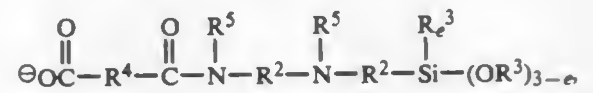
A is an anionic silicon containing radical selected from the group consisting of:



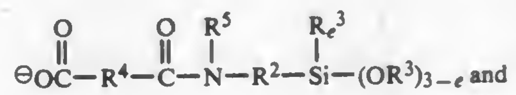
$$\left[{}^{\ominus}O\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}-\overset{R^5}{\overset{|}{N}}-R^2-\underset{\begin{array}{c}|\\ C=O\\ |\\ R^4\\ |\\ C=O\\ |\\ O^{\ominus}\end{array}}{N}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e}\right]_{0.5},\qquad (f)$$



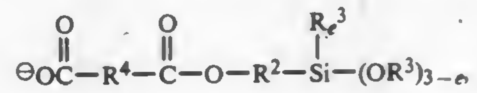
$$^{\ominus}O\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}O^{\ominus}{}^{\oplus}\overset{R_3^5}{\overset{|}{N}}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e},\qquad (g)$$



$$^{\ominus}O\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}-\overset{R^5}{\overset{|}{N}}-R^2-\overset{R^5}{\overset{|}{N}}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e},\qquad (h)$$

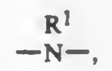


$$^{\ominus}O\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}-\overset{R^5}{\overset{|}{N}}-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e} \text{ and}\qquad (i)$$



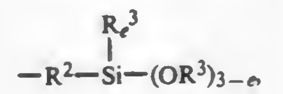
$$^{\ominus}O\overset{O}{\overset{\|}{C}}-R^4-\overset{O}{\overset{\|}{C}}-O-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e},\qquad (j)$$

and when R is



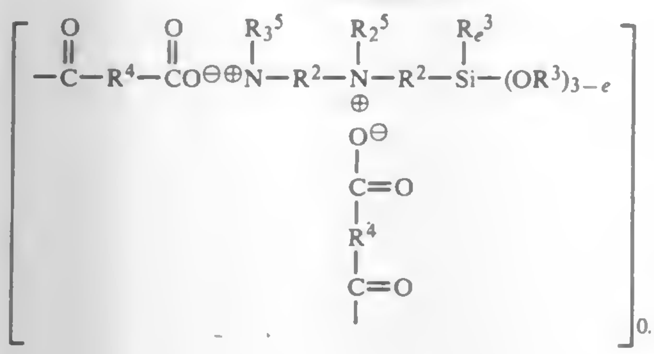
$$\overset{R^1}{-N-},$$

then A is selected from the group consisting of hydrogen, a monovalent hydrocarbon radical, and a silicon containing radical selected from the group consisting of:

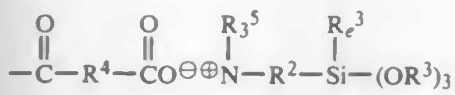


$$-R^2-\overset{R_e^3}{\overset{|}{Si}}-(OR^3)_{3-e},\qquad (k)$$

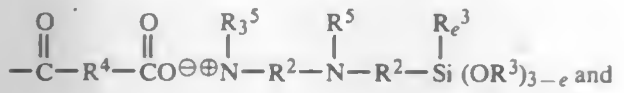
-continued



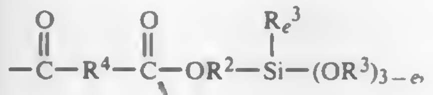
$$\left[-\overset{\overset{O}{\|}}{C}-R^4-\overset{\overset{O}{\|}}{C}O^{\ominus}{}^{\oplus}\overset{\overset{R_3^5}{|}}{N}-R^2-\underset{\substack{\oplus\\ O^{\ominus}\\ |\\ C=O\\ |\\ R^4\\ |\\ C=O\\ |}}{\overset{\overset{R_2^5}{|}}{N}}-R^2-\overset{\overset{R_e^3}{|}}{Si}-(OR^3)_{3-e}\right]_{0.5,} \quad (l)$$



$$-\overset{\overset{O}{\|}}{C}-R^4-\overset{\overset{O}{\|}}{C}O^{\ominus}{}^{\oplus}\overset{\overset{R_3^5}{|}}{N}-R^2-\overset{\overset{R_e^3}{|}}{Si}-(OR^3)_{3-e}, \quad (m)$$



$$-\overset{\overset{O}{\|}}{C}-R^4-\overset{\overset{O}{\|}}{C}O^{\ominus}{}^{\oplus}\overset{\overset{R_3^5}{|}}{N}-R^2-\overset{\overset{R^5}{|}}{N}-R^2-\overset{\overset{R_e^3}{|}}{Si}\,(OR^3)_{3-e} \text{ and} \quad (n)$$



$$-\overset{\overset{O}{\|}}{C}-R^4-\overset{\overset{O}{\|}}{C}-OR^2-\overset{\overset{R_e^3}{|}}{Si}-(OR^3)_{3-e}, \quad (o)$$

R^2 is a divalent radical, R^3 is a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, R^4 is a divalent hydrocarbon radical selected from the group consisting of $(CH_2)_y$, CH=CH or a cyclic hydrocarbon radical selected from the group consisting of C_6H_4, C_6H_8, C_6H_{10} and $C_{10}H_6$, R^5 is selected from the group consisting of hydrogen and a monovalent hydrocarbon radical, with the proviso that at least one A or R^1 is a silicone containing radical, a is a number of from 0 to 4, e is 0, 1, 2 or 3, n is a number of from 2 to 4, x is a number of from 1 to 600 and y is a number of from 0 to 16.

4,352,918

PROCESS FOR PREPARING EPOXY RESINS HAVING IMPROVED PHYSICAL PROPERTIES WHEN CURED USING QUATERNARY PHOSPHONIUM CATALYSTS

Ross C. Whiteside, Jr., Angleton; Adolphus V. Gist, Lake Jackson, both of Tex., and George A. Doorakian, Bedford, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 4, 1980, Ser. No. 212,959

Int. Cl.³ C08G *59/62*

U.S. Cl. 528—89 **11 Claims**

1. In a process for advancing epoxy resins in molecular weight by reacting (A) an epoxy resin which is a glycidyl ether of a dihydric phenol having an average of more than one glycidyl ether group per molecule with (B) a dihydric phenolic compound in the presence of (C) a phosphonium catalyst employing components (A) and (B) in quantities such that the phenolic hydroxyl to epoxide equivalent ratio is that which will provide a theoretical percent epoxide of the resultant reaction product of from about 2.7 to about 14; the improvement which comprises employing the catalyst, component (C), in a quantity such that the epoxy resin which would result when subjecting a mixture of components (A), (B) and (C) to suitable reaction conditions produces an advanced epoxy resin wherein the difference obtained by subtracting the percent epoxide obtained by analysis from the theoretical percent epoxide is from about 0.5 to about 4; thereby providing an epoxy resin which when cured with a curing quantity of a curing agent provides a composition which has an improvement in one or more of the properties selected from the group consisting of glass transition temperature and increased reactivity.

4,352,919

AMINOALKOXYPENTAERYTHRITOLS

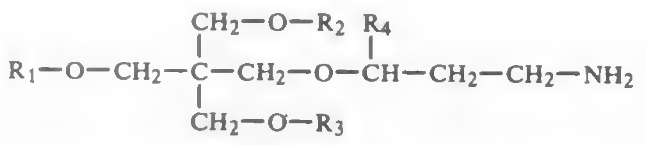
Edward W. Kluger, Pauline, and Calvin D. Welch, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,721

Int. Cl.³ C08G *59/50*

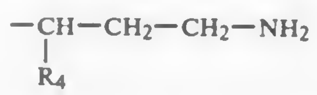
U.S. Cl. 528—111 **9 Claims**

1. Aminoalkoxypentaerythritol compounds having the following formula:



$$R_1-O-CH_2-\underset{\underset{CH_2-O-R_3}{|}}{\overset{\overset{CH_2-O-R_2}{|}}{C}}-CH_2-O-\overset{\overset{R_4}{|}}{CH}-CH_2-CH_2-NH_2$$

where R_1, R_2 and R_3 are independently selected from H and



$$-\underset{\underset{R_4}{|}}{CH}-CH_2-CH_2-NH_2$$

where R_4 is selected from H and a lower alkyl group having from 1 to about 4 carbon atoms.

4,352,920

EPOXY RESIN COMPOSITIONS

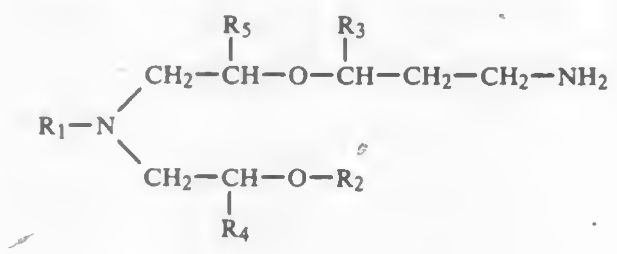
Edward W. Kluger, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,719

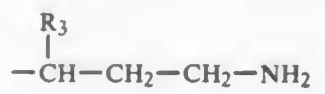
Int. Cl.³ C08G *59/50, 59/64*

U.S. Cl. 528—111 **6 Claims**

1. An epoxy resin composition comprising an epoxy resin and at least one epoxy resin curing agent of the formula:



wherein R_1 and R_2 are selected from H or



$$-\overset{\overset{R_3}{|}}{CH}-CH_2-CH_2-NH_2$$

and R_3, R_4 or R_5 are all independently selected from H and a lower alkyl group having from 1 to about 6 carbon atoms.

4,352,921

AMINOALKOXYHEXANES AND EPOXY RESIN COMPOSITIONS CONTAINING THEM

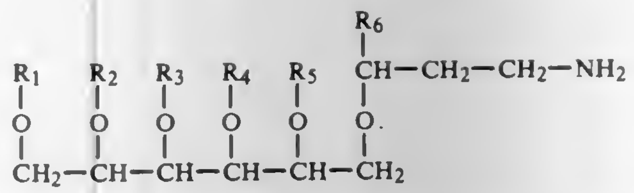
Edward W. Kluger, Pauline, and Calvin D. Welch, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 2, 1981, Ser. No. 230,723

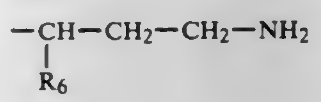
Int. Cl.³ C08G *59/50*

U.S. Cl. 528—111 **9 Claims**

1. Aminoalkoxyhexane compounds having the following formula:



wherein R_1, R_2, R_3, R_4, and R_5 are independently selected from H and



$$-\underset{\underset{R_6}{|}}{CH}-CH_2-CH_2-NH_2$$

wherein R_6 is selected from H and a lower alkyl group having from 1 to about 4 carbon atoms.

4,352,922

METHOD OF PRODUCING AN IMPROVED POLY-(AMIDE-IMIDE) RESIN BY REACTING A PHENANTHRENE WITH FORMALDEHYDE FOLLOWED BY OXIDIZING TO PRODUCE A POLYCARBOXYLATED PRODUCT FOLLOWED BY REACTION WITH AN AROMATIC DIAMINE

Joseph G. Robinson, Winchcombe; Angela M. Carswell, Longhope, and David I. Barnes, Cheltenham, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Mar. 3, 1981, Ser. No. 240,025

Claims priority, application United Kingdom, Mar. 19, 1980, 8009254

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—232 **8 Claims**

1. An improved method of producing a poly-(amide-imide) resin comprising the steps of:

(1) reacting a phenanthrene with formaldehyde or a formaldehyde donor in the presence of an acid catalyst to give a phenanthreneformaldehyde reaction product having substantially only methylene bridges;

(2) removing from the reaction product unreacted phenanthrene;

(3) treating the reaction product with formaldehyde or a formaldehyde donor in the presence of an acid catalyst to give a high molecular weight product having substantially only methylene bridges;

(4) oxidizing the high molecular weight product to break the 9, 10 bond in the phenanthreme moieties to produce a polycarboxylated reaction product; and

(5) reacting the polycarboxylated reaction product with an aromatic diamine to produce a poly-(amide-imide) resin.

4,352,923

PROCESS FOR POLYMERIZING FORMALDEHYDE

Hisashi Kono; Kenji Terai; Masaki Hisadomi; Katumi Uemura; Sumio Ohta, and Yoshiichi Yamamoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Japan

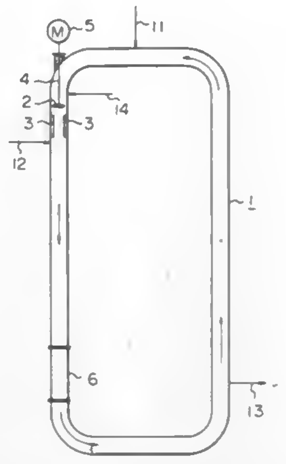
Filed Nov. 5, 1980, Ser. No. 204,353

Claims priority, application Japan, Nov. 6, 1979, 54-142828; Jun. 20, 1980, 55-82866

Int. Cl.³ C08G *2/06, 6/00*

U.S. Cl. 528—233 **23 Claims**

1. In a process for polymerizing formaldehyde wherein formaldehyde is subjected to slurry polymerization carried out in an inert organic liquid medium in the presence of a polymerization catalyst adsorbed on polyoxymethylene, the improvement comprising using a polymerization catalyst comprised of a metal chelate compound adsorbed on a polyoxymethylene, said polymerization catalyst being prepared by bringing the metal chelate compound into contact with the polyoxymethylene in an inert organic liquid medium in the presence of formaldehyde.



4,352,924

THERMOSETTING POWDER COATING COMPOSITIONS

Willis C. Wooten; Winston J. Jackson, Jr., and Herbert F. Kuhfuss, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,229

Int. Cl.³ C08G *63/16*

U.S. Cl. 528—302 **12 Claims**

1. A linear saturated crystalline polyester of an acid moiety and a moiety of a dihydric alcohol, at least 50 mole percent of the acid moeity being of trans-1,4-cyclohexanedicarboxylic acid and 0–50 mole percent being of terephthalic acid, and the dihydric alcohol moieties consisting essentially of 1,4-butanediol, said polyester being further characterized as having a molecular weight of about 700–3000, a melt viscosity of about 50–3500 cps at 160° C. and a hydroxyl number of about 35–160.

4,352,925

HEAT RESISTANT COPOLYESTER ADHESIVES

Frederick D. Petke; Bobby J. Sublett, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,818

Int. Cl.³ C08G *63/18*

U.S. Cl. 528—309 **13 Claims**

1. A heat-resistant adhesive composition comprising a copolyester derived from a dicarboxylic acid component and a glycol component, said dicarboxylic acid component comprising at least 99 mol % terephthalic acid, and said glycol component consisting essentially of from about 30 to about 50 mol % diethylene glycol and from about 70 to about 50 mol % ethylene glycol, said copolyester having an inherent viscosity of from about 0.4 to about 1.0 when measured at 25° C. using 0.25 gram of polymer per 100 ml of a solvent composed of 60 wt. % phenol and 40 wt. % tetrachloroethane.

4,352,926
BIAXIALLY DRAWN POLYHEXAMETHYLENE ADIPAMIDE FILM AND PROCESS FOR PRODUCING SAME

Yukinori Matsuoka, Moriyama; Yoshihiko Muto, Kawasaki, and Mitsuo Kohno, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

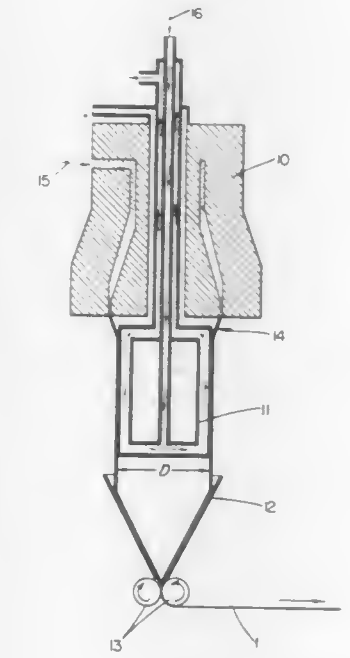
Division of Ser. No. 956,267, Oct. 31, 1978, Pat. No. 4,252,966. This application May 14, 1980, Ser. No. 149,580

Claims priority, application Japan, Nov. 18, 1977, 52-137787

The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.

Int. Cl.^{3} C08G *69/26*

U.S. Cl. 528—335 6 Claims



1. A process for producing a biaxially drawn polyhexamethylene adipamide film wherein molten polyhexamethylene adipamide is extruded through a circular die gap and the tubular extrudate is brought in sliding contact with the outer periphery of an inside mandrel thereby to be cooled, characterized in that polyhexamethylene adipamide having a relative viscosity (ηrel) of from 3.3 to 5.0, as measured at a temperature of 25° C. in aqueous 96% sulfuric acid, is used, and the tubular extrudate formed therefrom is cooled at a cooling rate (X° C./sec.) satisfying the following formula with respect to the relative viscosity (ηrel) of the polymer used,

$$-100\times\eta\mathrm{rel}+1{,}200<X<-170\times\eta\mathrm{rel}+2{,}150$$

at least in the cooling stage in which the tubular extrudate is cooled from 250° C. to 150° C.; and then, the obtained tubular film is concurrently biaxially drawn.

5. The process according to anyone of claims 1, 3 and 4 wherein the biaxially drawn film is further heat-treated under the conditions satisfying the formulae:

$$190\leqq T(^\circ\mathrm{C.})<240$$

$$-78.9\cdot\log t+268\leqq T(^\circ\mathrm{C.})\leqq-106.8\cdot\log t+388$$

wherein T is a heating temperature in °C. and t is a heating period in second.

6. A biaxially drawn polyhexamethylene adipamide film obtained by the process according to claim 5.

4,352,927
METHOD OF IMPROVING PROCESSABILITY OF RIGID POLYMERS

Frederic N. Cogswell, Welwyn Garden City, and Jiri G. Tomka, Harrogate, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 18, 1979, Ser. No. 40,452

Claims priority, application United Kingdom, May 26, 1978, 22953/78; May 26, 1978, 22954/78

Int. Cl.^{3} C08G *69/46, 73/10, 73/18*

U.S. Cl. 528—502 **11 Claims**

1. A method of fabricating a shaped article from a rigid polymer comprising improving the processability of the rigid polymer by subjecting a melt or solution of the rigid polymer to shear between relatively moving surfaces at an apparent shear rate of at least 100 sec^{-1}, wherein the rigid polymer is in a thermotropic or lyotropic state, whereby the viscosity of the melt or solution is reduced and remains reduced after the shear between the relatively moving surfaces ceases to be applied, and fabricating a shaped article from the melt or solution while the viscosity is so reduced.

4,352,928
5,6-ALKYLENEPYRIMIDINE DERIVATIVE

Hidetoshi Hiranuma; Tetsuo Sekiya; Susumu Mizogami; Motokuni Mori; Mitsuo Hanatsuka, and Toshiji Kanayama, all of Amimachi, Japan, assignors to Mitsubishi Yuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 160,080

Claims priority, application Japan, Jun. 21, 1979, 77582/54

Int. Cl.^{3} C07D *403/04, 405/14, 413/04;* **A61K** *31/505*

U.S. Cl. 542—431 10 Claims

1. A compound selected from the group consisting of 2-piperazino-4-amino-5,6-tetramethylenepyrimidine; 2-[4-{3-(furan-2-yl)-acryloyl}piperazino]-4-amino-5,6-tetramethylenepyrimidine; 2-[4-(4-chlorophenyl)-piperazino]-4-amino-5,6-tetramethylenepyrimidine; 2-piperazino-4-methylamino-5,6-tetramethylenepyrimidine; 2-piperazino-4-dimethylamino-5,6-tetramethylenepyrimidine; 2-piperazino-4-morpholino-5,6-tetramethylenepyrimidine; 2-piperazino-4-amino-5,6-trimethylenepyrimidine; 2-(4-benzylpiperazino)-4-amino-5,6-trimethylenepyrimidine; and 2-piperazino-4-amino-5,6-pentamethylenepyrimidine.

4,352,929
1,3-THIAZIN-4-ONE

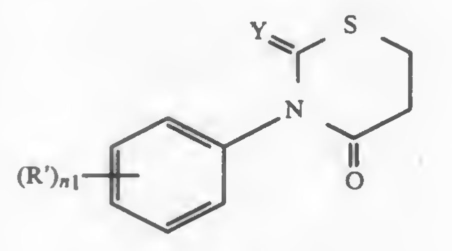
David J. Anderson, Kalamazoo, and Barbara E. Loughman, Richland, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 64,783, Aug. 8, 1979. This application May 29, 1981, Ser. No. 268,467

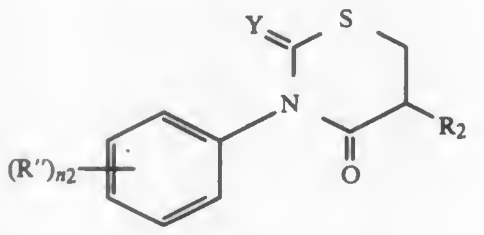
Int. Cl.^{3} C07D *279/06*

U.S. Cl. 544—54 10 Claims

1. A compound selected from the group consisting of:

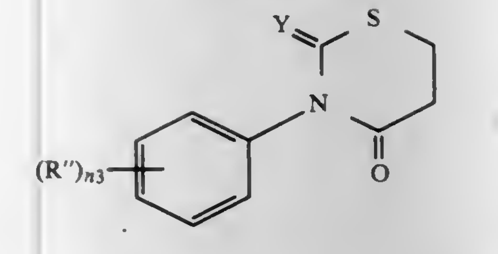


(a)



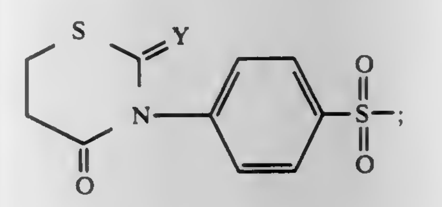
(b)

-continued



(c)

wherein R′ is alkylcarbonyl with the alkyl of from one to four carbon atoms, inclusive, or



R″ is selected from the group consisting of chlorine, fluorine, bromine and trifluoromethyl; R_2 is selected from the group consisting of acylamino with acyl of from one to four carbon atoms, inclusive; n_1 is an integer of from one to three; n_2 is an integer of from one to five; n_3 is an integer of from three to five; Y is selected from the group consisting of sulfur and oxygen.

4,352,930
BROMINE-CONTAINING 2,4-DIAMINOTRIAZINES

Leon H. Chance, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 24, 1981, Ser. No. 276,768

Int. Cl.^{3} C07D *251/18*

U.S. Cl. 544—205 7 Claims

1. 2,4-diamino-6-carbamoylmethyl-1,3,5-triazine.

4,352,931
LIN-BENZOAMINOPURINOLS

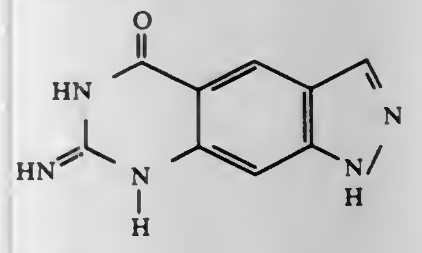
Eckehard K. T. Cuny, Seeheim; Frieder W. Lichtenthaler, Mühetal, and Alfred R. Moser, Kassel, all of Fed. Rep. of Germany, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

Filed May 22, 1980, Ser. No. 152,527

Int. Cl.^{3} C07D *487/04*

U.S. Cl. 544—251 1 Claim

1. A compound having the formula (20)



(20)

and tautomers thereof.

4,352,932
ISOINDOLINE COLORANTS

Wolfgang Lotsch, Beindersheim; Reinhard Kemper, Heidelberg, and Ernst Schefczik, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

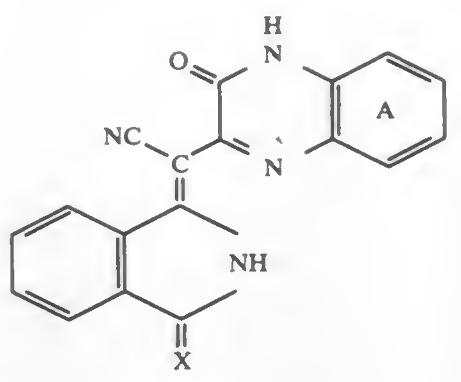
Filed Jan. 22, 1981, Ser. No. 227,279

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007299

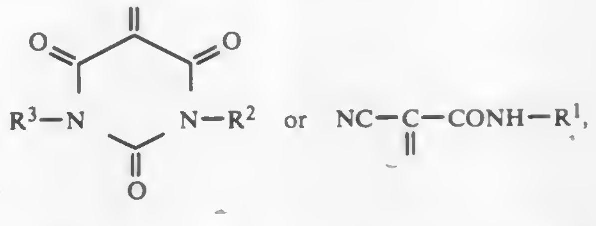
Int. Cl.^{3} C09B *57/04*

U.S. Cl. 544—295 5 Claims

1. An isoindoline colorant of the general formula



wherein X is a radical of the formula



R^1 is hydrogen, C_1–C_4-alkyl, benzyl, phenyl, 1-naphthyl, thiazol-2-yl, benzothiazol-2-yl or 1,2,4-triazol-3-yl, R^2 and R^3, independently of one another, are hydrogen, C_1–C_4-alkyl, benzyl, phenyl or 1-naphthyl, and the ring A and the phenyl, naphthyl and heterocyclic radicals in R^1, R^2 and R^3 may or may not be substituted by groups which do not confer solubility either in water or in organic solvents.

4,352,933
CHEMICAL METHODS AND INTERMEDIATES FOR PREPARING SUBSTITUTED PYRIMIDINONES

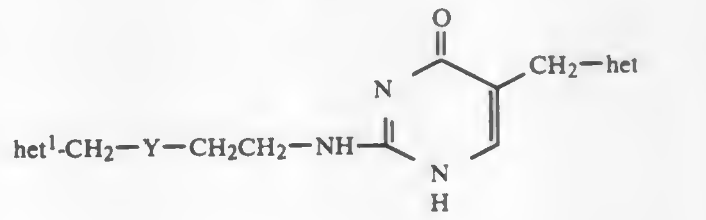
Bing L. Lam, King of Prussia, and Lendon N. Pridgen, Audubon, both of Pa., assignors to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 6, 1981, Ser. No. 232,105

Int. Cl.^{3} C07D *405/14*

U.S. Cl. 544—320 17 Claims

1. The method of preparing a biheterocyclylpyrimidinone of the formula:



wherein:

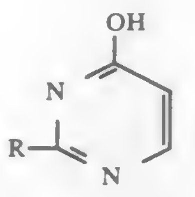
Y is —CH_2— or —S—;

het is 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-thiazolyl, 2-oxazolyl, 2-imidazole, 2-pyrimidyl or 2-pyrazyl all optionally C-substituted by methyl, ethyl, methoxy or ethoxy;

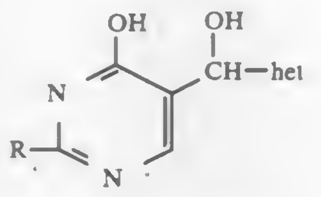
het^1 is 2- or 4-imidazolyl optionally C-substituted by $C_{1\text{-}3}$ alkyl, halo, trifluoromethyl or hydroxymethyl, 2-pyridyl optionally C-substituted by $C_{1\text{-}3}$ alkyl, $C_{1\text{-}3}$ alkoxy, halo, amino or hydroxy, 2-thiazolyl, 2-guanidino-4-thiazolyl, 3-isothiazolyl optionally C-substituted by chloro or bromo, 3-(1,2,5)-thiadiazolyl optionally C-substituted by chloro or bromo, 2-(5-amino-1,3,4-thiadiazolyl, 2-furanyl optionally 5-substituted by a $R_3R_4N(CH_2)_m$- or 2-thienyl optionally 5-substituted by a $R_3R_4N(CH_2)_m$-; and

R_3 and R_4 are $C_{1\text{-}3}$ lower alkyl or, when taken together with the nitrogen atom to which they are attached, pyrrolidino, piperidino or morpholinyl; and m is an integer of from 1-4; or a pharmaceutically acceptable acid addition salt thereof, comprising:

A. reacting in an acidic medium a compound of the formula het-CHO in which het is as defined above with a compound of the formula:

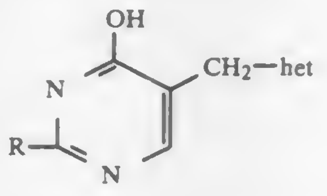


in which R is —OH, —SH or —SCH3 to give a 5-heterocyclylhydroxymethylpyrimidine of the formula:



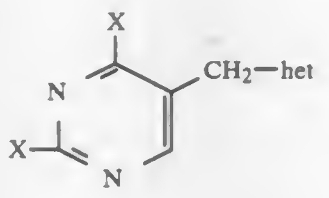
in which R and het are as defined above;

B. hydrogenolysis of said 5-heterocyclylhydroxymethylpyrimidine at the α-hydroxy position to give a 5-heterocyclylmethylpyrimidine of the formula:



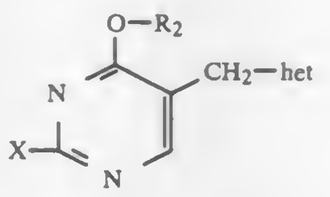
in which R is —OH and het is as defined above;

C. reacting said 5-heterocyclylmethylpyrimidine with haloesterifying agent to give a 2,4-dihalopyrimidine of the structure:



in which the X's are both either —Br or —Cl and het is as defined above.

D. reacting said 2,4-dihalopyrimidine with a substantially equimolar quantity of an alkali metal alkoxide to give a 2-halo-4-alkoxy or phenoxy pyrimidine of the formula:

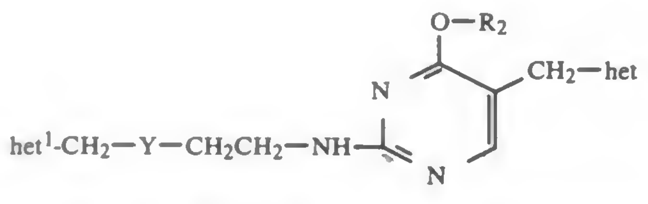


in which het and X are as defined above and R_2 is lower alkyl of 1-5 carbons, benzyl, allyl, phenyl, 2-methoxyethyl or 2,2,2-trichloroethyl;

E. condensing said 2-halo-4-alkoxy or phenoxypyrimidine with a compound of the formula:

$het^1—CH_2—Y—CH_2CH_2—NH_2$

in which het^1 is as described above and Y is —S— or —CH_2— to give a triheterocyclic compound of the formula:



in which het, het^1, Y and R_2 are as described above;

F. reacting said triheterocyclic compound with a dealkylating agent to form the desired biheterocyclylpyrimidinone; and optionally forming a pharmaceutically acceptable acid addition salt thereof.

4,352,934
ANTIBIOTIC X-14885A

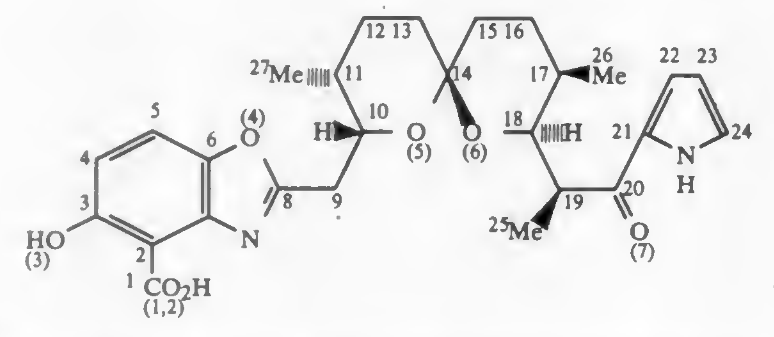
Chao-Min Liu, Cedar Grove, N.J.; Homer D. Tresner, LaFarge, Wis., and John Westley, Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 14, 1981, Ser. No. 311,132

Int. Cl.³ C07D *413/02*

U.S. Cl. 548—217 **1 Claim**

1. A compound of the formula



and the pharmaceutically acceptable salts and esters thereof.

4,352,935
PROCESS FOR OBTAINING P-ACETAMIDO PHENOL α-METHYL-4(2'THIENYL-CARBONYL) PHENYL ACETATE

Eduardo Guzman Llansa, Calle siglo XX, No. 20; Pablo Arino Maestrojuan, Corcega, 89, both of Barcelona, and Enrique Melendez Andreu, Fray-Luis Amigo, 2, Zaragoza, all of Spain

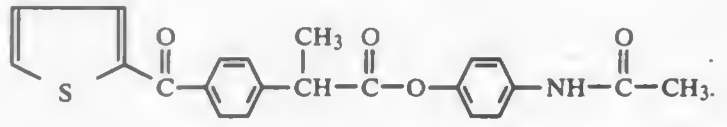
Division of Ser. No. 137,442, Apr. 4, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 323,992

Claims priority, application Spain, Apr. 4, 1979, 479.300

Int. Cl.³ C07D *333/16;* **A61K** *31/38*

U.S. Cl. 549—72 1 Claim

1. The compound of the formula



4,352,936
ANTITUMOR AGENTS

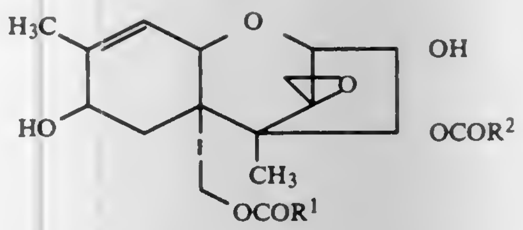
Takushi Kaneko, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 132,965, Mar. 24, 1980, abandoned, which is a division of Ser. No. 61,213, Jul. 27, 1979, Pat. No. 4,244,874. This application Jan. 16, 1981, Ser. No. 225,487

Int. Cl.³ C07D *311/78*

U.S. Cl. 549—332 **1 Claim**

1. A compound of the formula



wherein R^1 and R^2 are both methyl, with the proviso that the 8-hydroxy group must be in the β-configuration.

4,352,937
CYCLOHEXANE DERIVATIVES

Robin T. Gray, and Aaldert J. De Jong, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex. . This application Aug. 14, 1978, Ser. No. 933,328

Claims priority, application United Kingdom, Aug. 9, 1976, 33050/76

Int. Cl.³ C07D *303/32*

U.S. Cl. 549—546 2 Claims

1. 3-(3,4-epoxy-4-methylcyclohexyl)butanal.
2. 3-(1,4-dimethyl-3,4-epoxycyclohexyl)propanal.

4,352,938
EPOXY-AZIDOFORMATE COMPOUNDS

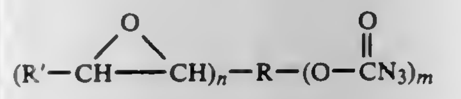
David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 702,637, Jul. 6, 1976, abandoned, and a continuation-in-part of Ser. No. 540,311, Jan. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 301,003, Oct. 26, 1972, abandoned, which is a division of Ser. No. 85,300, Oct. 29, 1970, abandoned, which is a division of Ser. No. 843,230, Jul. 18, 1969, Pat. No. 3,608,604. This application Oct. 19, 1979, Ser. No. 86,601

Int. Cl.³ C07D *303/16;* **C07H** *15/26*

U.S. Cl. 549—553 6 Claims

1. An epoxy-azidoformate compound having the general formula



$$(R'-CH\overset{O}{\frown}CH)_n-R-(O-\overset{\overset{O}{\|}}{C}N_3)_m$$

where R is a polyvalent organic radical, R' is a radical selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and aralkyl radicals, and n and m are integers from 1 to 100.

4,352,939
CHLOROBROMODICARBOXYLIC ACIDS AND PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Andre Paucot, Brussels, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

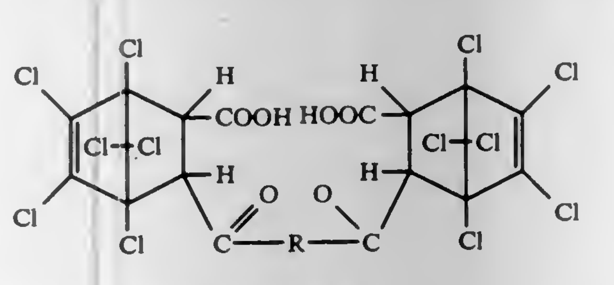
Filed Aug. 26, 1980, Ser. No. 181,354

Claims priority, application France, Aug. 27, 1979, 79 21629

Int. Cl.³ C07C *69/753*

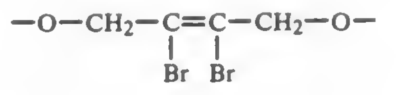
U.S. Cl. 560—120 2 Claims

1. Chlorobromodicarboxylic acid which corresponds to the formula



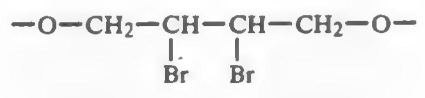
(I)

in which R represents the radical



$$-O-CH_2-\underset{Br}{\underset{|}{C}}=\underset{Br}{\underset{|}{C}}-CH_2-O- \quad \text{(II)}$$

or the radical



$$-O-CH_2-\underset{Br}{\underset{|}{CH}}-\underset{Br}{\underset{|}{CH}}-CH_2-O- \quad \text{(III)}$$

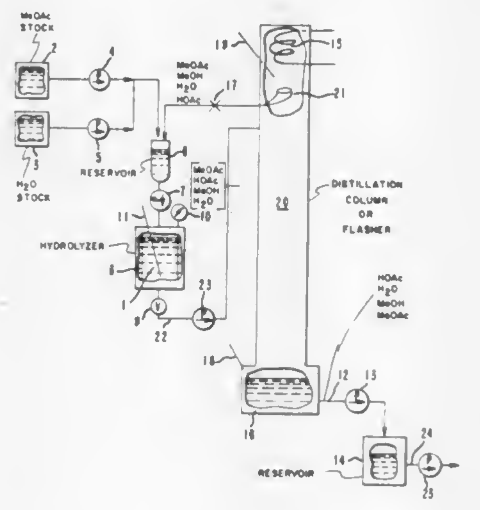
4,352,940
HYDROLYSIS OF METHYL ACETATE

Robert L. Adelman, Wilmington, Del., and Roy Segars, Jr., Seabrook, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1980, Ser. No. 144,534

Int. Cl.³ C07C *53/08, 27/28;* **B01D** *3/06*

U.S. Cl. 562—607 2 Claims



1. In a process for the recovery of methanol and acetic acid from methyl acetate in which methyl acetate is continually hydrolyzed and methanol and acetic acid separated from the resulting mixture of methanol, acetic acid, water and unreacted methyl acetate, the improvement which comprises feeding methyl acetate, water and optionally minor proportions of methanol and acetic acid to a liquid-filled hydrolyzer containing a cation exchange resin in the acid form and maintained at a temperature of about from 50°-90° C., inclusive at a gauge pressure of about from 0 to 240 kPa to produce a mixture of methanol, acetic acid, water, and unreacted methyl acetate, continuously distilling the mixture in a distillation column or flasher, continuously removing an overhead mixture of methyl acetate, water, methanol and, optionally, minor amounts of acetic acid from the top of the distillation column or flasher and returning the overhead mixture directly to the hydrolyzer, and withdrawing from the bottom of the distillation column or flasher a bottom mixture of acetic acid, water, methanol and optionally methyl acetate.

4,352,941
PROCESS FOR PURIFICATION OF PHENYLHYDRAZINE

Shinichi Hasegawa, Hirakata; Yuji Ueda, Izumi, and Hiroshige Tomita, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 28, 1978, Ser. No. 919,992

Claims priority, application Japan, Jul. 6, 1977, 52/81422

Int. Cl.³ C07C *109/04*

U.S. Cl. 564—314 **9 Claims**

1. A process for producing phenylhydrazine of high clarity, which comprises distilling crude phenylhydrazine in the presence of a glycol selected from the group consisting of ethylene

glycol, diethylene glycol, trimethylene glycol, propylene glycol, tetramethylene glycol and butylene glycol.

4,352,942

PURIFICATION PROCESS

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 11, 1981, Ser. No. 242,692
Int. Cl.^{3} C07C *49/213, 49/215*
U.S. Cl. 568—306 **16 Claims**

1. A process for reducing the amount of ortho nitro aromatic keto compounds in a mixture containing the same which comprises contacting said mixture with oleum.

4,352,943

3-BUTADIENYL-2,4,4-TRIMETHYLCYCLOHEX-2-ENONE AND DERIVATIVES THEREOF

Roman Kaiser, Uster, and Dietmar Lamparsky, Wangen-Dübendorf, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Mar. 22, 1978, Ser. No. 889,070
Claims priority, application Austria, Mar. 28, 1977, 2158/77
Int. Cl.^{3} C07C *49/647, 49/597*
U.S. Cl. 568—378 **3 Claims**

1. The compound 2,4,4-Trimethyl-3-butyl-cyclohex-2-en-1-one excepting mixtures containing same which are derived from, or identical to those derived from, natural sources.

2. Practically pure 2,4,4-Trimethyl-3-(buta-2-en-1-yl)-cyclohex-2-en-1-one.

3. Practically pure 2,4,4-Trimethyl-3-butyl-cyclohex-2-en-1-one.

4,352,944

TREATMENT OF CASHEW NUT SHELL LIQUID

John H. P. Tyman, London, England; Mahesh S. Patel, Scottsdale, Ariz., and Anthony P. Manzara, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 8, 1981, Ser. No. 223,418
Claims priority, application United Kingdom, Jan. 8, 1980, 8000551
Int. Cl.^{3} C07C *37/68*
U.S. Cl. 568—766 **9 Claims**

1. A method of treating cashew nut shell liquid to reduce the content of dihydric phenols therein comprising contacting the cashew nut shell liquid with a compound which will react with the dihydric phenol content therein to produce a reaction product which is stable under distillation conditions of high vacuum at 160° to 220° C. and which will not form a reaction product with the monohydric phenol content which is stable under the distillation conditions for a period sufficient to allow said compound to react with the dihydric phenols present in the cashew nut shell liquid and thereafter distilling the resulting mixture under high vacuum at a temperature in the range of 160° to 220° C. and collecting the distillate which comprises cashew nut shell liquid having at least 90% by weight of cardanol and a reduced content of dihydric phenols.

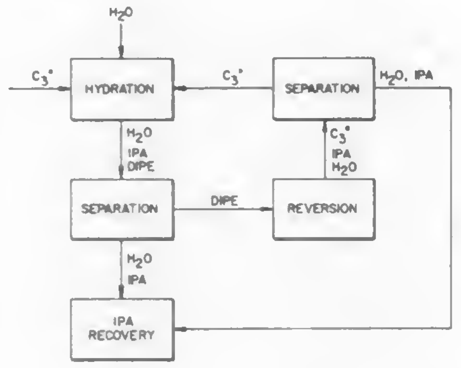
2. A method of treating cashew nut shell liquid to reduce the content of dihydric phenols therein comprising contacting the cashew nut shell liquid with a compound which will react with the dihydric phenol content therein to produce a reaction product which is stable under distillation conditions of high vacuum at 160° to 220° C. and which will not form a reaction product with the monohydric phenol content which is stable under the distillation conditions for a period sufficient to allow said compound to react with the dihydric phenols present in the cashew nut shell liquid and thereafter distilling the resulting mixture under high vacuum at a temperature in the range of 160° to 220° C. and collecting the distillate which comprises cashew nut shell liquid having at least 90% by weight of cardanol and a reduced content of dihydric phenols in which the compound with which the cashew nut shell liquid is contacted comprises (a) an amine no more volatile than n-butylamine and having a basicity higher than that of diethanolamine, (b) an organic base hydroxide, or (c) a hydroxide of a Group IA or Group IIA metal.

4,352,945

DIISOPROPYL ETHER REVERSION IN ISOPROPANOL PRODUCTION

Susan A. Bezman, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1981, Ser. No. 316,579
Int. Cl.^{3} C07C *29/04*
U.S. Cl. 568—899 **9 Claims**



1. A process for producing isopropanol comprising:
(a) contacting water and a feedstock comprising propylene with a catalyst comprising an acid ion exchange resin in a first reaction zone under hydration conditions to produce a first stream;
(b) dividing the first stream into a second stream comprising water and isopropanol and a third stream comprising diisopropyl ether;
(c) contacting the third stream with a reversion catalyst in a second reaction zone under reversion conditions to produce a fourth stream;
(d) separating propylene from the fourth stream;
(e) recycling the propylene to step (a); and
(f) recovering isopropanol from the second stream.

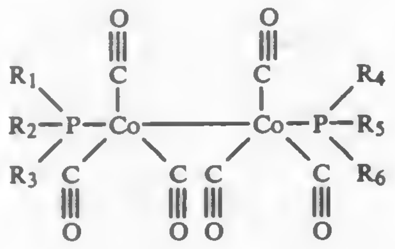
4,352,946

PROCESS FOR PRODUCING ETHANOL

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 42,516, May 25, 1979, Pat. No. 4,239,925, which is a continuation-in-part of Ser. No. 863,743, Dec. 23, 1977, abandoned. This application May 27, 1980, Ser. No. 153,190
Int. Cl.^{3} C07C *29/00*
U.S. Cl. 568—902 **15 Claims**

1. A process for the homologation of methanol to ethanol which comprises introducing into a reaction zone solely methanol, hydrogen, carbon monoxide, a cobalt tricarbonyl complex of the formula:



wherein each of R_1, R_2, R_3, R_4, R_5 and R_6 is n-butyl and an iodine promoter, and then subjecting the contents of said reaction zone to an elevated temperature and an elevated pressure for a time period sufficient to convert methanol to ethanol.

4,352,947

PROCESS FOR PRODUCING ETHANOL

Mohammad M. Habib, Allison Park, and Wayne R. Pretzer, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 3, 1981, Ser. No. 289,406
Int. Cl.^{3} C07C *29/00*
U.S. Cl. 568—902 **41 Claims**

1. A process for selectively producing ethanol which comprises introducing into a reaction zone (1) methanol, (2) carbon monoxide, (3) hydrogen, (4) cobalt, (5) iodine, (6) ruthenium and (7) a ligand containing atoms selected from the group consisting of nitrogen, phosphorus and arsenic separated by a sterically constrained carbon-carbon bond, the molar ratio of carbon monoxide to hydrogen being in the range of about 1:10 to about 5:1; the molar ratio of cobalt to said ligand being in the range of about 10:1 to about 1:5; the molar ratio of cobalt to iodine being in the range of about 8:1 to about 1:6; the molar ratio of cobalt to ruthenium being in the range of about 1:4 to about 20:1; and the weight percent of combined cobalt and iodine, based on the methanol, being in the range of about 0.01 to about ten percent; and then subjecting said contents to an elevated temperature of about 150° to about 250° C. and an elevated pressure of at least about 2200 pounds per square inch for about five minutes to about five hours, sufficient to convert methanol to a product predominating in ethanol.

ELECTRICAL

4,352,948

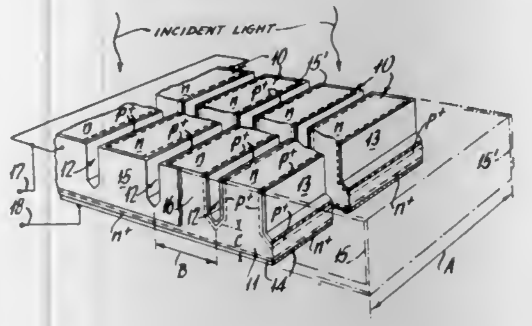
HIGH-INTENSITY SOLID-STATE SOLAR-CELL DEVICE

Roy Kaplow, Newton; Robert I. Frank, Lexington, and Joel Goodrich, Dracut, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 73,281, Sep. 7, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 209,942

Int. Cl.^{3} H01L *31/06*

U.S. Cl. 136—249 **25 Claims**



1. A vertical-junction semi-conductor solar cell, comprising a body of substrate material of a first conductivity type and having spaced parallel upper and lower surfaces, the upper one of said surfaces having a plurality of laterally spaced parallel elongate grooves to a depth more than half the body thickness and therefore close to but short of the other of said surfaces, thereby defining an integrally connected series of otherwise spaced, elongate, parallel units with upstanding sidewalls at said grooves, said grooves extending fully to and therefore open at both of the marginal edge surfaces of said body, each sidewall of the grooves of said plurality comprised of an independent localized region of a second conductivity type, each localized region of second conductivity type being exclusive to the sidewalls of its particular groove and independent of the sidewalls of any other groove, whereby a corresponding plurality of independent vertical junctions characterize said body, a separate electrically conductive metal coating bonded to and fully lining both sidewalls of each of the grooves of said plurality and having ohmic contact with the second conductivity type regions of both of the sidewalls of each said groove, first output-terminal means including a first electrically conductive metal interconnect plate bonded to and extending along one of the marginal edge surfaces and having bonded ohmic contact with the full marginal-edge inercept of each of the metal coatings of the grooves of said plurality, said first output-terminal means including a second electrically conductive metal interconnect plate bonded to and extending along the other marginal edge surface and having bonded ohmic contact with the full marginal-edge intercept of each of the metal coatings of the grooves of said plurality, and second output-terminal means including an electrically conductive metal plate having ohmic contact to said body in a lower surface region of first conductivity type.

4,352,949

TRANSMISSION LINE INCLUDING SUPPORT MEANS WITH BARRIERS

Alan H. Cookson, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1979, Ser. No. 70,582

Int. Cl.^{3} H01B *9/06*

U.S. Cl. 174—27 **10 Claims**

1. A gas-insulated transmission line comprising:

an elongated outer sheath made of an electrically-conducting material;

a plurality of inner conductors disposed within and extending along said outer sheath;

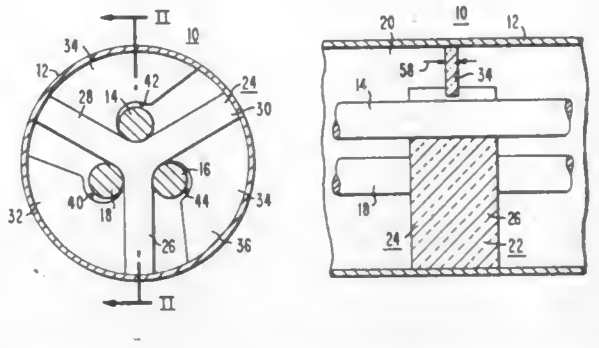
an insulating gas comprising sulfur hexafluoride electrically insulating said inner conductors from said outer sheath; and

support means for insulatably supporting said inner conductors in said outer sheath, said support means being made of a low dielectric constant material and comprising:

a main body portion including a plurality of legs extending to said outer sheath; and

barrier portions extending between said legs, said barrier portions having openings therein, adjacent said main body portion, through which said inner conductors extend;

said main body portion including said plurality of legs being of a first longitudinal thickness and said barrier portions being of a second longitudinal thickness less than said first longitudinal thickness.



4,352,950

CONNECTION DEVICE FOR A SCREENED CABLE

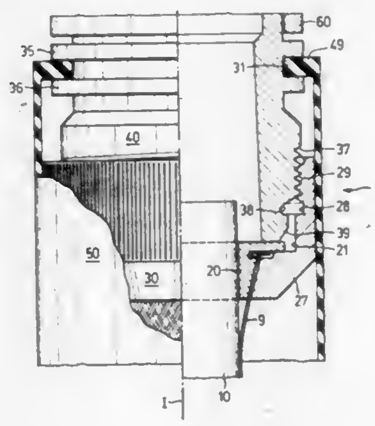
Walter Meier, Zollikon, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Jan. 19, 1981, Ser. No. 226,207

Claims priority, application Switzerland, Feb. 25, 1980, 1466/80

Int. Cl.^{3} H01R *17/00*

U.S. Cl. 174—35 C **5 Claims**



1. A radiation tight connection device for a cable having a shielding meshwork fixed by clamping, comprising:

an insert member equipped with an insert cone;

a collar formed at the insert cone;

a retaining nut having a substantially conical bore;

said insert member being inserted into the conical bore of said retaining nut;

a substantially conical contact surface provided at said insert cone;

said conical bore of said retaining nut having a contact surface;

the conical contact surface of the insert cone essentially corresponding to the contact surface of the conical bore of the retaining nut; and

the shielding meshwork exclusively being fixedly retained between both of said contact surfaces by clamping thereof.

4,352,951

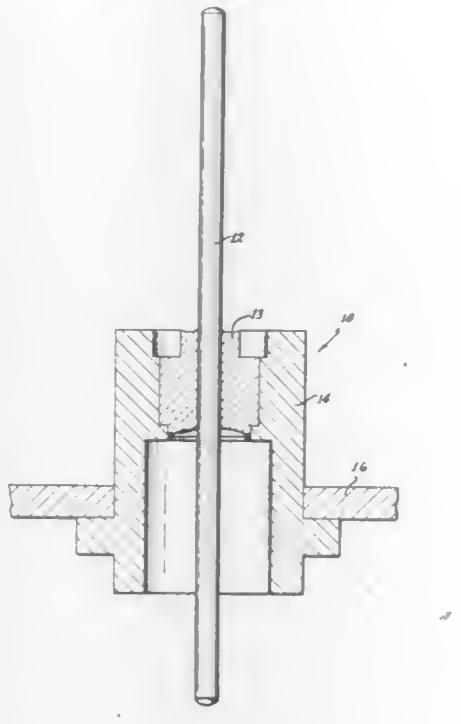
CERAMIC SEALS BETWEEN SPACED MEMBERS SUCH AS A TERMINAL PIN AND A FERRULE

James C. Kyle, Mission Viejo, Calif., assignor to Medical Components Corp., Mission Viejo, Calif.

Filed Sep. 26, 1977, Ser. No. 836,659

Int. Cl.^{3} H01B *17/26;* **C03C** *27/02, 3/04, 3/22*

U.S. Cl. 174—152 GM **40 Claims**



1. In combination,
a first member made from a noble metal,
a second member disposed in spaced but enveloping relationship to the first member and made from a material selected from the group consisting of stainless steel, steel alloy containing colbalt, steel alloy containing a combination of cobalt and molybdenum and steel alloy containing nickel and chromium, a ceramic and alumina, and
a polycrystalline insulating material preformed by heating at a first elevated temperature to have a partially crystalline and partially amorphous structure before application to the first and second members and disposed between the first and second members in hermetically sealed relationship to the first and second members and having a partially crystalline and partially amorphous structure and fused to the first and second members in an oxygen-rich atmosphere at a second elevated temperature, less than the first elevated temperature, of the first and second members and the polycrystalline insulating material, with the relative amount of the crystalline structure at the boundary of the second member being greater than the relative amount of the crystalline structure at positions removed from such boundary, the polycrystalline material being resistant to acids and alkalis.

23. In combination,
a first member,
a second member displaced outwardly from the first member, and
an insulating material hermetically sealing the first and second members and having a partially amorphous and partially crystalline composition and having an increased polycrystalline composition at the boundary with the second member than at positions displaced from the second member, including the following materials in the following range of percentages by weight:

Material	Range of Relative Precentages by Weight
Lead oxide (PbO)	28–32
Silicon dioxide (SiO_2)	38–42
Boric oxide (B_2O_3)	2–4

-continued

Material	Range of Relative Precentages by Weight
Aluminum oxide (Al_2O_3)	1–2
Manganese oxide (MnO).	6–11

4,352,952

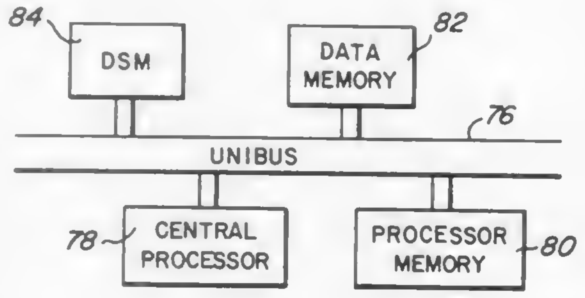
DATA SECURITY MODULE

Charles A. Boone, Mesa, and Robert F. Pfeifer, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 914,832, Jun. 12, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,808

Int. Cl.^{3} H04L *9/00*

U.S. Cl. 178—22.09 **1 Claim**



1. A data security module comprising:
(a) address buffer means connected to address lines of a computer for transmitting and receiving addresses from and to said computer;
(b) address decoder means connected to said address buffer means for decoding an address received by said address buffer and providing command words in response thereto;
(c) data buffer means connected to data lines of said computer for receiving and transmitting data from and to said computer;
(d) microprocessor means for providing control of data flow in and out of the data security module and for performing a portion of the data encryption alogrithm, and operating in response to said command words;
(e) memory means coupled to said microprocessor means for holding data words used in the encryption process;
(f) data security device means connected to said microprocessor means for performing a basic cipher alogrithm;
(g) interrupt and control means connected to control lines of said computer and to said microprocessor means for receiving control signals from said computer, decoding said control signals and returning appropriate control signals to said computer and signalling reception of said control signals to said microprocessor, and sending control signals to said computer in response to commands from said microprocessor.

4,352,953

MULTICHANNEL NON-DISCRETE AUDIO REPRODUCTION SYSTEM

Samuel Emmer, 6365 Stonecress Ave., Newark, Calif. 94560

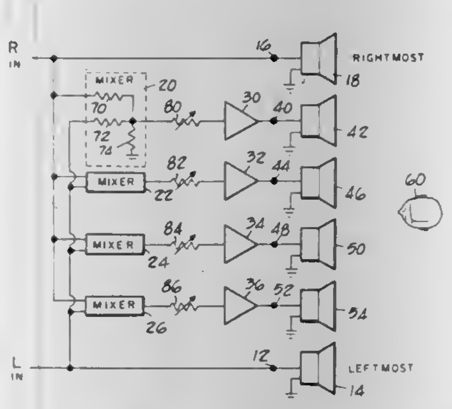
Filed Sep. 11, 1978, Ser. No. 941,151

Int. Cl.^{3} H04S *1/00*

U.S. Cl. 179—1 G **9 Claims**

1. A method for generating at least four audio output channels from first and second stereophonically related audio output signals, said output channels including a leftmost output channel, a rightmost output channel, and at least two intermediate output channels, wherein each output channel is coupled to a separate one of a plurality of speakers arranged in an ordered series such that all said speakers are in a position in front of a listener,

and including with respect to said listener a leftmost speaker for audio output of said leftmost channel, a rightmost speaker for audio output of said rightmost channel, and at least two intermediate speakers positioned between said leftmost and said rightmost speakers for audio output of said intermediate channels, comprising the steps of:
(a) coupling said first stereophonically related signal directly out as the leftmost audio output channel to said leftmost speaker;
(b) coupling said second stereophonically related signal directly out as the rightmost audio output channel to said rightmost speaker;
(c) transferring from said first signal a predetermined amplitude portion to each said intermediate channel, the amplitude of each said amplitude portion being defined to be a lesser amount as a function of the distance that the corresponding intermediate channel is away from said leftmost speaker and nearer to said rightmost speaker;
(d) transferring from said second signal a predetermined amplitude portion to each said intermediate channel, the amplitude of said amplitude portion being defined to be a lesser amount as a function of the distance that the corresponding intermediate channel is away from said rightmost speaker and nearer to said leftmost speaker to the same extent that said amplitude portion from said first signal is lessened in amplitude in the opposite direction from said leftmost speaker, such that at substantially the midpoint between said leftmost speaker and said rightmost speaker, the amplitude portion contributed by each said first and second signal is substantially equal;



(e) additively combining into one signal, in each said intermediate channel, the predetermined amplitude portion of said first and second signal transferred thereto; and
(f) equalizing said combined signal in each said intermediate channel such that the signal amplitude output from each said intermediate channel coupled to its respective speaker is of the same relative amplitude as the signal amplitude output from said leftmost audio channel and said rightmost audio channel.

4,352,954

ARTIFICIAL REVERBERATION APPARATUS FOR AUDIO FREQUENCY SIGNALS

Nico V. Franssen, deceased, late of Knegsel, Netherlands, and by Friedrich J. de Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

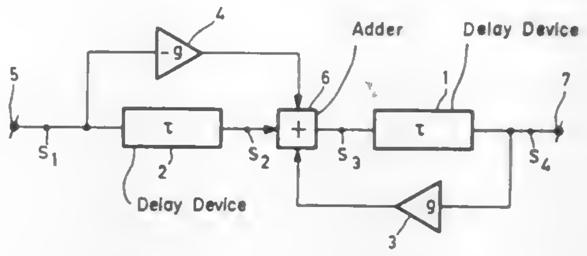
Continuation-in-part of Ser. No. 965,360, Nov. 30, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,697

Claims priority, application Netherlands, Dec. 29, 1977, 7714502

Int. Cl.^{3} H04R *3/00*

U.S. Cl. 179—1 J **8 Claims**

1. An artificial reverberation apparatus for audio frequency signals comprising, an input terminal, an adder having first, second and third inputs and an output, a delay device having an input coupled to the output of the adder and provided with a feedback circuit which couples an output of the delay device to the first input of the adder, the feedback gain factor of the feedback circuit being smaller than 1, a second delay device having the same delay time as the first delay device, means coupling the input terminal to the second input of the adder via said second delay device, and a transmission circuit coupling the input terminal to a third input of the adder, the transmission circuit having an equal but opposite transmission gain factor to that of said feedback gain factor.



4,352,955

CONTROL SIGNAL TRANSMISSION SYSTEM FOR USE IN A MOBILE RADIO COMMUNICATION SYSTEM

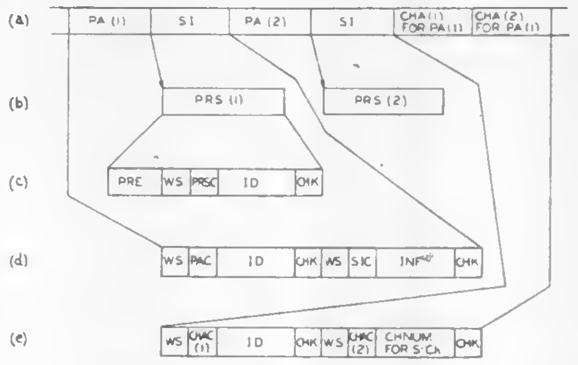
Tomokazu Kai, and Akio Saito, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1980, Ser. No. 116,773

Claims priority, application Japan, Feb. 14, 1979, 54-16630

Int. Cl.^{3} H04Q *7/00*

U.S. Cl. 179—2 EB **2 Claims**



1. A control signal transmission system for use in mobile radio communications, said system having a plurality of mobile units each of which is identified by an individually associated identification number, at least one control center, and at least first and second common paging channel means linking each of said mobile units and said control center and using transmission via cyclically recurring time frames, said control center including first means for transmitting a pair of paging signals and system information signals to said mobile units via said first common paging channel means, at least one of said time frames carrying said system information signals following each time frame of said paging signals, and said mobile units including second means for transmitting response signals corresponding to said paging signals, to said control center via said second common paging channel means, each of said response signals including an identification number for a specific one of said mobile units.

4,352,956

MULTI-RESPONDER TELEPHONE INTERCEPT APPARATUS

George P. Gallet, 2, rue de Flandre, 35000 Reenes, France

Continuation of Ser. No. 936,232, Aug. 24, 1978, abandoned. This application May 5, 1980, Ser. No. 146,763

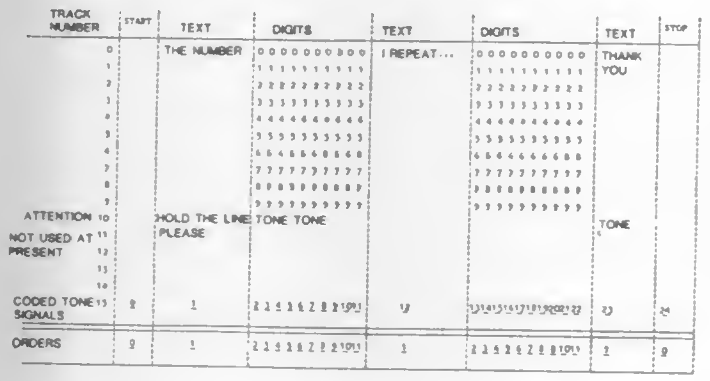
Claims priority, application France, Sep. 2, 1977, 77 27157

Int. Cl.^{3} H04M *1/64, 3/50*

U.S. Cl. 179—6.04 **7 Claims**

1. A telephone system having a plurality of two-wire sub-

scriber lines terminating in individually associated line circuits, at least some of said lines being equipped for interception of telephone calls and having simulated subscriber line circuit means associated therewith, a multi-responder call intercept recording machine including a multi-track recording machine incorporating, ten of said tracks including individually associated DIGIT zones for recording spoken digit words in a digit-by-digit mode, at least one coded tone signal track to indicate a zone or a sub-zone which is being read, and at least one supplementary track having a recorded message requesting the caller to hold the line, reading head means individually associated with each of the tracks and being connected via electronic switches in parallel to apply recorded signals to said simulated subscriber line circuit means, said call intercept means including a translator means having a memory for selectively connecting each simulated subscriber line circuit means to individual ones of the said reading heads, via said electronic switches,


TRACK NUMBER
START
TEXT
DIGITS
TEXT
DIGITS
TEXT
STOP
THE NUMBER
I REPEAT...
THANK YOU
ATTENTION
HOLD THE LINE PLEASE
TONE TONE
TONE
NOT USED AT PRESENT
CODED TONE SIGNALS
ORDERS

means responsive to signals from the reading head of the signalling track then being reproduced for giving order signals to the translator means for individually operating the electronic switches as indicated by each order signal received, and each simulated subscriber line circuit means incorporating a ringing current detector means which initiates an operation of the means for connecting the line circuit, means in the simulated line circuit for activating a supplementary one of said electronic switches between the time when the said ringing current detector means operates and the time when a first of said signalling track is read, said supplementary electronic switch causing a reproduction of the hold the line message and preventing a digit line reproduction responsive to an operation of said translator means, means for thereafter opening said supplementary electronic switch and closing other electronic switches selected by the said translator means, and finally releasing the said simulated line circuit means following the reading of a zone from a signalling track.

4,352,957

SPEECH DETECTOR CIRCUIT WITH ASSOCIATED GAIN CONTROL FOR A TASI SYSTEM

Peter G. Ruether, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 131,159, Mar. 17, 1980. This application Mar. 4, 1981, Ser. No. 237,758

Int. Cl.^{3} H04J *6/02*

U.S. Cl. 179—15 C **8 Claims**

1. A centralized circuit for determining whether input signals from a plurality of input channels are speech, said circuit comprising:

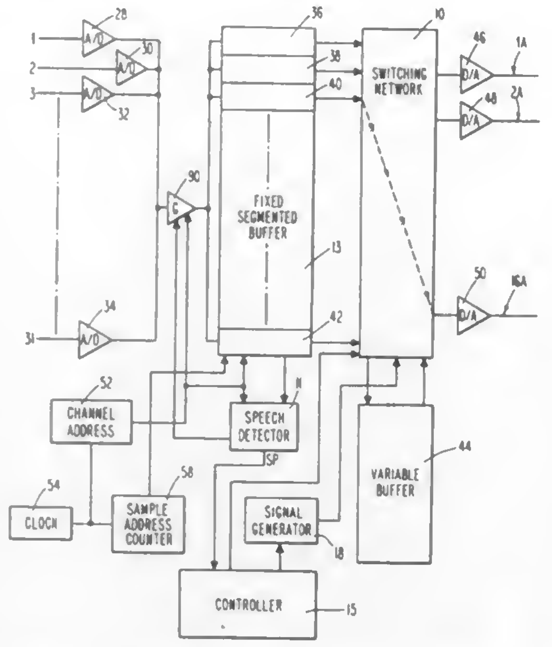
a sampling means associated with each of said input channels for continuously providing digital samples of the input signals on each of said channels;

a gain control circuit for producing gain adjusted samples from said digital samples;

a memory means for storing said gain adjusted samples from each channel, said gain adjusted samples being stored at a first rate;

a means for retrieving said gain adjusted samples from a selected channel at a second rate greater than said first rate to produce a gain adjusted, time compressed input signal for each channel;

a storage means for storing a representation of the old speech level for each channel, said gain control circuit being responsive to said old speech level; and



a first means for comparing the power of said gain adjusted, time compressed input signal from one channel against a selected threshold for that channel, said threshold being derived from the old speech level for that channel, whereby speech is determined to be present when said threshold is exceeded.

4,352,958

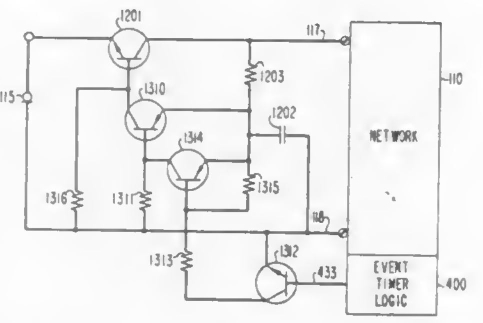
ELECTRONICALLY-SWITCHED MULTIFREQUENCY GENERATOR WITH TRANSDUCER CONTROL

Paul C. Davis, Reading, Pa.; Raymond G. Jackson, Indianapolis, Ind.; Joseph J. Nahas, Wyomissing, Pa.; Dale H. Nelson, Cumberland, Ind.; DeWitt G. Ong, Tempe, Ariz., and Brian A. Wittman, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 13, 1979, Ser. No. 103,403

Int. Cl.^{3} H04M *1/50*

U.S. Cl. 179—84 VF **34 Claims**



1. A multifrequency generator for providing tone signaling in a telephone including a transmitter (**115**) and a receiver (**120**), the generator comprising:

a logic control means (**400, 500**);

tone generator means (**100, 200, 600, 700, 800, 1000, 1600**) for providing tone signals in response to control signals provided by the logic control means; and

a common switching circuit (**1200**) comprising a series of solid-state switching devices (**1201, 1401**), each of the devices being controlled by the logic control means characterized in that

at least one of the switching devices in the common switching circuit operates as receive amplifying means (**1401**) for providing gain to the receiver.

4,352,959

DEVICE FOR VISUAL DISPLAY OF TELEPHONE OPERATION SYMBOLS

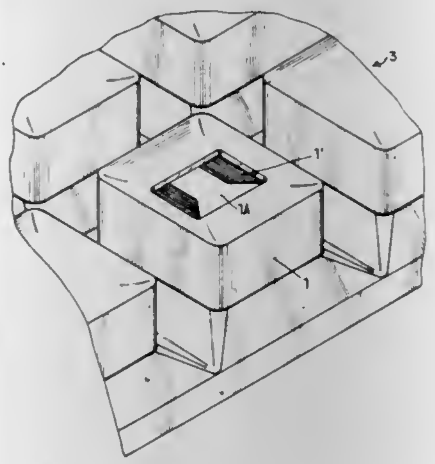
Gunter Warnecke, and Gerhard Schiller, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,644

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949449

Int. Cl.^{3} H04M *1/23*

U.S. Cl. 179—90 K **4 Claims**



1. A device for visual display of telephone operation symbols in telecommunication apparatus comprising a two-set installation having a free-speaking or loudspeaker option permitting dialing with the receiver replaced, said device comprising:

a key-dialing block having a plurality of keys thereon;

a liquid crystal display element incorporated in said key-dialing block in the form of one of said keys; and

an electronic circuit coupled to said display element for control thereof, said circuit also being coupled to said key-dialing block and said telephone sets;

whereby under control of said circuit, said display element shows a first symbol when one of said telephone sets is in use, and shows a second symbol when said key-dialing block is employed to dial a number with the receiver replaced, said circuit comprising:

an oscillator coupled to said display element; and

means responsive to current flow in said one telephone set for enabling said oscillator, thereby energizing said display element to provide said first symbol.

4,352,960

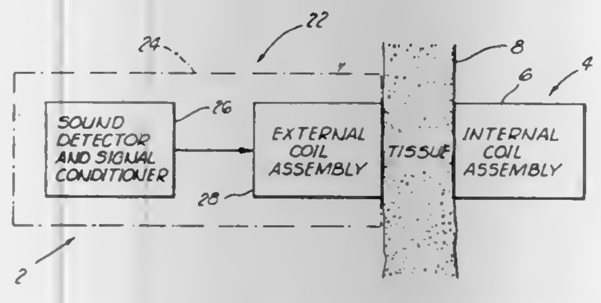
MAGNETIC TRANSCUTANEOUS MOUNT FOR EXTERNAL DEVICE OF AN ASSOCIATED IMPLANT

Kenneth J. Dormer, Edmond, and Gordon L. Richard, Minco, both of Okla., assignors to Baptist Medical Center of Oklahoma, Inc., Oklahoma City, Okla.

Filed Sep. 30, 1980, Ser. No. 192,480

Int. Cl.^{3} A61F *1/00, 11/00*

U.S. Cl. 179—107 BC **21 Claims**



1. A transcutaneous coupling apparatus, comprising:

a first member positioned subcutaneously;

a second member positioned supercutaneously; and

magnet means for magnetically securing said second member to said first member.

4,352,961

TRANSPARENT FLAT PANEL PIEZOELECTRIC SPEAKER

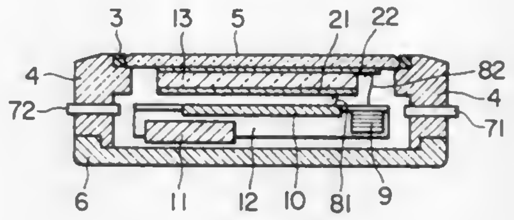
Akio Kumada, Kokubunji, and Shigeo Nakamura, Hino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,228

Claims priority, application Japan, Jun. 15, 1979, 54-74698; Apr. 25, 1980, 55-54226

Int. Cl.^{3} H04R *1/02, 17/00*

U.S. Cl. 179—110 A **13 Claims**



1. A transparent flat panel speaker comprising:

(a) a resonator plate having a periphery in the shape of a smooth curve or in the shape of straight lines connected by smooth curves, in either case the curve or curves forming said periphery having at least two centers of curvature;

(b) means for inducing a resonance in said resonator plate comprising:

(i) a plate of transparent piezoelectric material; and

(ii) electrodes disposed on opposite faces of said plate of piezoelectric material; and

(c) each of said resonator plate, said plate of piezoelectic material and said electrodes being transparent.

4,352,962

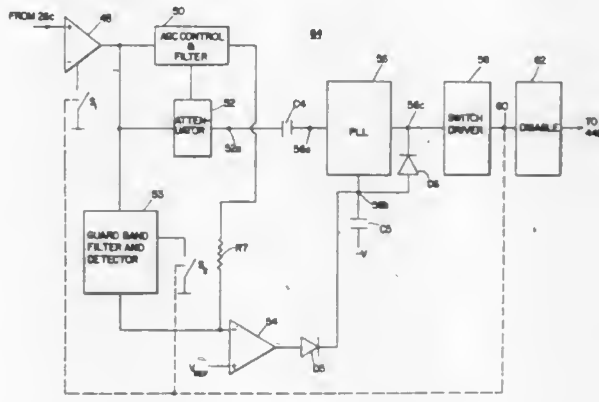
TONE RESPONSIVE DISABLING CIRCUIT

Hilary LaMothe, Shenandoah, Ga., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jun. 27, 1980, Ser. No. 163,929

Int. Cl.^{3} H04B *3/20*

U.S. Cl. 179—170 R **24 Claims**



1. A circuit for disabling a device connected to a transmission line, said device improving a voice frequency signal transmitted on said line, said circuit responsive to a tone signal transmitted on said line having a predetermined amplitude and a frequency falling within a predetermined frequency band of said voice frequency signal comprising:

(a) signal processing means for generating an enabling output signal when the amplitude of a first control signal exceeds the amplitude of a second control signal and a reference signal wherein said signal processing means is responsive to said signal transmitted on said transmission line for generating said first control signal having an amplitude which is a function of the total energy of said transmission line signal and said second control signal having an amplitude which is a function of the energy in said transmission line signal which lies in a predetermined band of frequencies which are outside of said tone signal frequency band; and

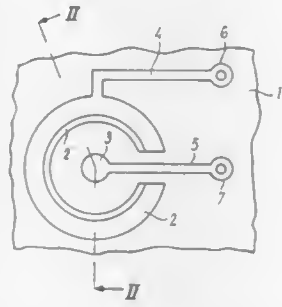
(b) tone signal detection and capture means responsive to both said transmission line signal and said enabling signal for detecting and capturing said tone signal and generating upon capture a disabling signal whereby said device is disabled.

4,352,963

LOW PROFILE MICROSWITCHES, PARTICULARLY USEFUL FOR THE COMPOSITION OF KEYBOARDS AND METHOD OF MAKING

Pietro De Filippis; Amedeo Salvatore, and Luigi Abbondandolo, all of Naples, Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1980, Ser. No. 175,230
Int. Cl.^{3} H01H *13/70*
U.S. Cl. 200—5 A **7 Claims**



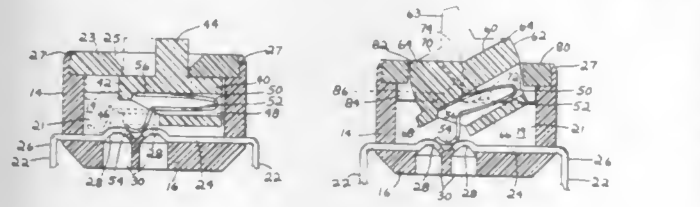
1. A low profile microswitch particularly useful for keyboards of the kind having an electrically conductive movable contact spherical cap member able to invert its sense of curvature with the application of pressure thereon, characterized in that a first generally annular contact is disposed on a generally planar surface on an insulating substrate arranged for contacting the peripheral area of said cap member; at least three protuberances are formed in the substrate extending above said generally planar surface spaced about each microswitch and adjacent thereto to laterally center the cap member in registry with the annular contact; and a second contact is disposed as a button substantially at the center of said first contact and in such a way so as to be electrically isolated from the first contact.

4,352,964

SLIDE AND ROCKER SWITCH ASSEMBLIES HAVING DOUBLE CANTILEVERED CONTACTOR

Jack A. English, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Mar. 25, 1981, Ser. No. 247,409
Int. Cl.^{3} H01H *3/00*
U.S. Cl. 200—5 A **10 Claims**



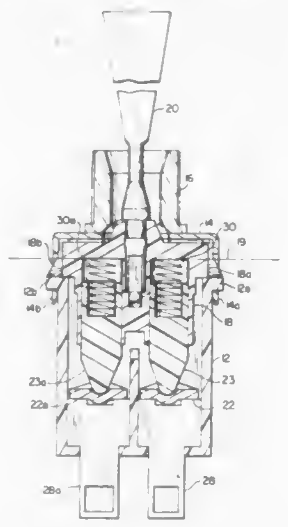
1. A miniature slide switch assembly comprising a box-like housing having a base, side walls, and a plurality of transversely extending walls forming individual chambers therein, a plurality of apertures extending between the upper and lower surfaces of said base and communicating with said chambers, a plurality of terminals secured to said base, said terminals disposed in pairs of oppositely disposed terminals with one pair in each of said chambers, each of said oppositely disposed terminals including an arcuate shaped terminal head disposed over one of said apertures and a longitudinal portion embedded in the upper surface of said base and extending outwardly of said housing, a plurality of actuators each disposed in one of said chambers and including an upwardly extending post and a longitudinal passage formed in the subsurface of said actuator, a plurality of double cantilevered contactors each comprising a reversely bent contactor arm integral with an arcuately shaped contactor head, each of said contactors having its reversely bent contactor arm disposed in a respective one of said passages to fixedly secure the contactor within a respective actuator, and a cover having a plurality of apertures therein, each of said posts projecting through a cover aperture for actuation of the respective slide switch.

4,352,965

TOGGLE SWITCH ASSEMBLY

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,686
Int. Cl.^{3} H01H *3/00, 13/00, 19/00*
U.S. Cl. 200—6 R **10 Claims**



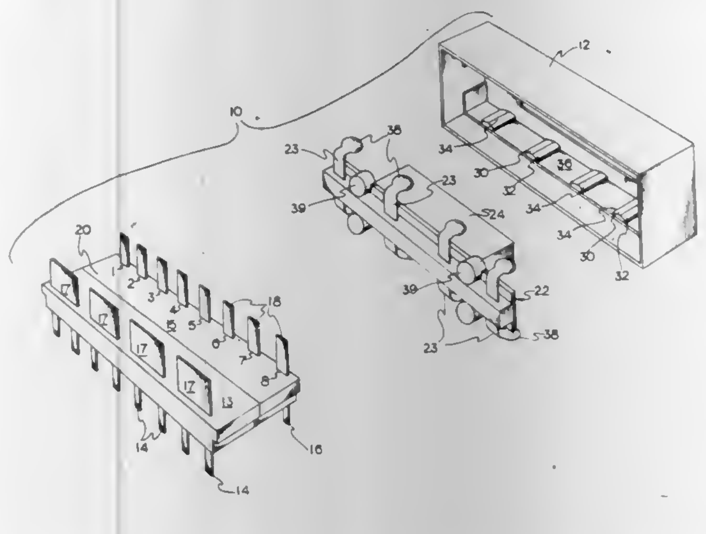
1. A toggle switch assembly comprising a housing which includes at least a case, a cover for the case, and an upwardly open bushing fitted to the cover; fixed contacts carried by the case, a movable contact element for selectively bridging certain of these fixed contacts, a plastic actuator pivotally mounted in the housing for movement about a lateral axis, at least one spring biased plunger mounted in a plunger opening of said actuator for engaging and moving said contact element in response to pivotal movement of said actuator, at least two toggles for selective assembly with said actuator, one of said toggles including a paddle shaped portion adapted to project outwardly of said housing and through said bushing to facilitate pivotal movement of said actuator, said paddle shaped toggle having a metal shank portion adapted to be received in a toggle opening defined by said actuator on assembly therewith, said shank portion having a stepped portion of circular cross section providing a permanent interference fit with a cylindrical outer portion of said toggle opening, and said shank portion having a non-circular inner cross sectional portion of reduced section size adapted to be received in a complementary shaped portion of said toggle opening to prevent rotation of said toggle in said actuator after assembly.

4,352,966

SLIDE SWITCH

Jack A. English, Elkhart; James E. Greve, South Bend; James N. Hufford, Elkhart, all of Ind., and Durward H. Priebe, Paso Rubles, Calif., assignors to CTS Corporation, Elkhart, Ind.

Filed Feb. 29, 1980, Ser. No. 125,871
Int. Cl.^{3} H01H *15/00*
U.S. Cl. 200—16 D **11 Claims**



1. A slide switch comprising a housing having oppositely disposed walls including a base wall, first and second laterally spaced apart rows of terminals projecting from one side of the base wall, a plurality of collector plates projecting from an opposite side of the base wall and each collector plate electrically connected to a pair of terminals from the first row of terminals, a plurality of upwardly projecting contacts disposed opposite the collector plates and each contact electrically connected to a respective terminal of the second row of said terminals, a slider in slideable bearing relation with the opposite side of said base wall and selectively moveable in relation to said collector plates and contacts, resilient contact switch members molded integrally with said slider to effect a distortion-free, positive and slip-free connection therebetween, with said resilient contact switch members projecting in diverging directions from opposite sides of said slider, each of said switch members being wipably engageable with a collector plate and contact respectively, means secured to said slider and projecting from said housing for manually displacing the slider to switch positions wherein the switch members are disposed in corresponding selected circuit positions, and biasing means slideably engageable by selected ones of said switch members and separating the corresponding circuit positions to yieldably oppose the manual displacement of said slider and respective switch members which are yieldably deformed as they pass over said biasing means and thereafter positively hold said slider at a switch position.

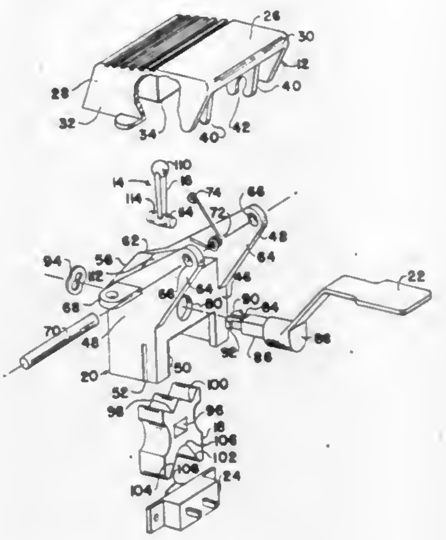
4,352,967

SWITCH ACTUATING MECHANISM

Dean H. Buchtel, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Jul. 11, 1980, Ser. No. 167,659
Int. Cl.^{3} H01H *21/24*
U.S. Cl. 200—153 J **1 Claim**

1. A switch actuating means including;
(a) an operator contactable member,
(b) a thrust member pivoted to said operator contactable member,
(c) a cam arranged to be contactable by said thrust member and moved to at least two positions,
(d) a switch including an actuating button,
(e) said switch button disposed so as to be engageable by said cam member for on and off actuation,
(f) means provided for bearingly mounting an axle on said operator contactable member, said means comprising aligned tabs on said operator contactable member, said tabs having aligned open ended slots for receiving said axle,
(g) outwardly extending opposite walls on said operator contactable member,
(h) an axle inserted into said open ended slots and extending through said slots for bearingly mounting said axle, and
(i) said outwardly extending opposite walls extending outwardly of said axle to closely abut the ends of said axle and maintain it in position,



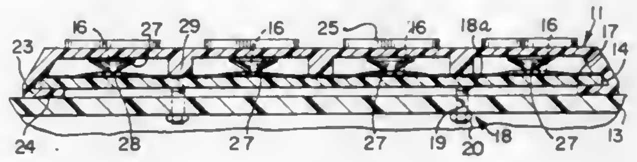
(j) a switch actuating means housing,
(k) said switch actuating means housing having a pair of upstanding tabs,
(l) aligned bores through said tabs, and
(m) said axle extending through said bores, outboard of said slots, to closely abut said ends of said axle with said outwardly extending opposite walls.

4,352,968

ELASTOMERIC BOOT FOR A KEYBOARD SUBASSEMBLY

Walter R. Pounds, Lafayette, Colo., assignor to KB Denver, Inc., Frederick, Colo.

Filed Feb. 9, 1981, Ser. No. 232,918
Int. Cl.^{3} H01H *13/06*
U.S. Cl. 200—302 **8 Claims**

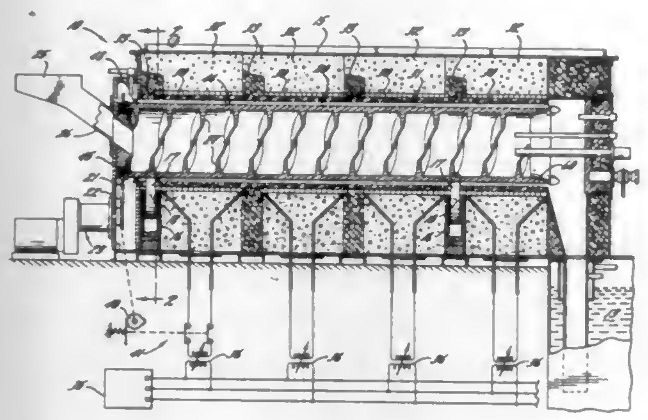


1. In a keyboard assembly having a printed circuit board with conductive paths and dome switches coacting with said paths, and a cover member for said board, wherein said board includes fastening means for mounting the assembly on a support panel, the improvement being in the cover member which comprises an elastomeric boot overlying the board and sealing said board to said support panel against the entry of contaminants, said boot having coacting button and dome actuating portions aligned with said dome switches, and sealing means disposed peripherally of the board and between the board and panel.

4,352,969
INDUCTIVELY HEATED ROTARY RETORT HEAT TREATING FURNACE

Karl A. Wulf, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Nov. 17, 1980, Ser. No. 207,211
Int. Cl.^{3} H05B *6/10*
U.S. Cl. 219—10.75 **6 Claims**



1. A rotary heat treating furnace comprising a tubular retort made of electrically conductive and heat resistant material and having an upstream inlet end and a downstream exit end, means for rotating said retort about its own axis, stationary upstream and downstream electric coils surrounding said retort and operable when excited to induce a flow of current in said retort thereby to inductively heat said retort, a source of alternating current voltage for exciting said coils, means for introducing a flow of particulate workpieces into the inlet end of said retort, a substantially helical flight secured to and extending around and along the inner wall of said retort and operable to advance the workpieces from the inlet end of the retort toward the exit end thereof in response to rotation of the retort, and means for periodically and automatically interrupting the flow of current between said voltage source and the most upstream one of said coils and for causing the frequency of the current interruptions to be directly proportional to the angular velocity of said retort whereby the magnetic field created by said one coil is periodically collapsed to prevent said workpieces from magnetically clinging to the upstream end portion of said retort.

4,352,970
WET WELDING ELECTRODES

Henri L. Mathy, Fexle-Le-Haut-Clocher, and Jacques A. DeFourny, Herstal, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

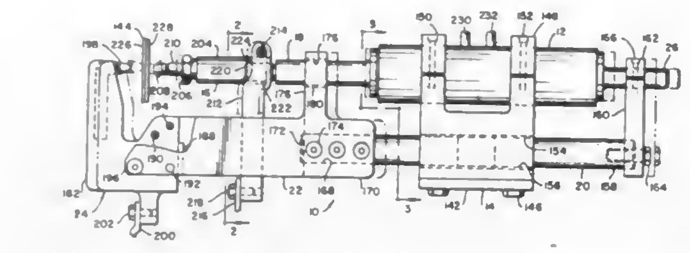
Continuation-in-part of Ser. No. 9,946, Feb. 6, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 205,944
Claims priority, application Belgium, Feb. 9, 1980, 863.821
Int. Cl.^{3} B23K *35/38*
U.S. Cl. 219—72 **8 Claims**

1. A wet welding electrode for manual arc welding under water, comprising a consumable steel core containing at least 95 percent by weight iron, and a flux coating containing at least one oxidizing agent, wherein the steel core contains not more than 5 percent by weight of at least one hardening constituent from the group comprising copper, aluminum oxide and aluminum nitride.

4,352,971
SELF-EQUALIZING WELDING STRUCTURE

Clyde G. Slade, 2147 E. Ten Mile Rd., Warren, Mich. 48091

Filed Oct. 6, 1980, Ser. No. 193,910
Int. Cl.^{3} B23K *9/12*
U.S. Cl. 219—86.61 **4 Claims**

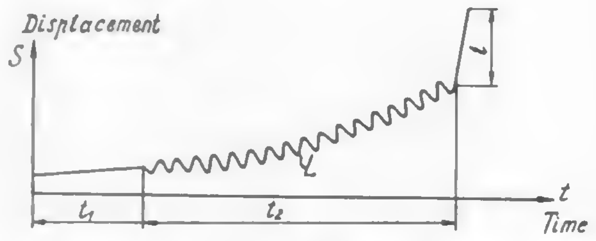


1. A self-equalizing welding gun comprising a fixed base, a piston and cylinder structure having two ends and a longitudinally extending axis of generation secured to the fixed base, first and second cylinder means each having an end positioned for sliding telescopic movement axially of the piston and cylinder structure in each of the two ends of the piston and cylinder structure, means for selectively moving the cylinder means ends into or out of the ends of the piston and cylinder structure under equalized pressure, a welding electrode secured to the first cylinder means at one end of the piston and cylinder structure, a travel rod extending parallel to the piston and cylinder structure through the fixed base, one end of which is connected to the second cylinder means, and means securing a second welding electrode to the other end of the travel rod.

4,352,972
METHOD OF RESISTANCE FLASH BUTT WELDING

Vladimir K. Lebedev, ulitsa Engelsa, 25, kv. 12; Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Valery G. Krivenko, ulitsą Ordzhonikidze, 3, kv. 35; Mikhail V. Bogorsky, ulitsa Ozernaya, 30/51, kv. 120; Vitaly T. Cherednichok, Zadorozhny pereulok, 6, kv. 41; Anatoly A. Toldin, prospekt Nauki, 142/1, kv. 34, and Vasily A. Sakharnov, ulitsa Solomenskaya, 41, kv. 93, all of Kiev, U.S.S.R.

Filed Jul. 7, 1980, Ser. No. 166,326
Int. Cl.^{3} B23K *11/04*
U.S. Cl. 219—100 **5 Claims**

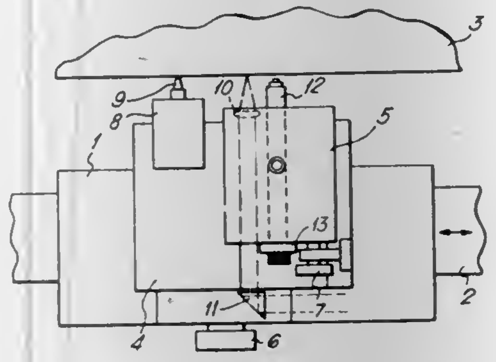


1. A method of resistance flash butt welding workpieces, said method comprising the steps of:
preheating the workpieces;
continuously, during said preheating step, moving the workpieces being welded toward each other without oscillation, thereby fusing them;
simultaneously measuring at least one variable selected from a group of variables comprising fusion time, fusion current, power consumed, and length of the fused portion;
imparting oscillations along the direction of the movement of at least one of the workpieces after said at least one variable has reached a preselected value which corresponds to heating of the contact region to 650° to 800° C.; and
upsettting the workpieces.

4,352,973
MACHINE FOR SIMULTANEOUSLY TURNING AND LASER ENGRAVING PRINTING CYLINDERS

Bryan B. Chase, Layer-de-la-Haye, England, assignor to Crosfield Electronics Limited, London, England

Filed Feb. 19, 1980, Ser. No. 122,893
Claims priority, application United Kingdom, Feb. 23, 1979, 7906596
Int. Cl.^{3} B23K *27/00*
U.S. Cl. 219—121 LH **4 Claims**

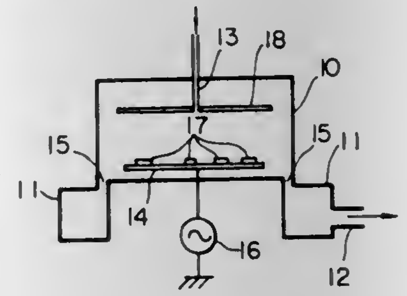


1. In a laser engraving machine for engraving cylindrical intaglio printing members including means for supporting and rotating a cylindrical printing member, a slide-way extending parallel to the axis of rotation of said printing member, a traversing carriage mounted for movement along said slide-way, and a primary sliding carriage mounted on said traversing carriage for movement in a direction transverse to said slide-way, said primary carriage carrying a laser engraving head, the improvement wherein a secondary sliding carriage is mounted on said primary sliding carriage for movement transverse to said slide-way, and wherein said primary and said secondary sliding carriages carry a turning tool holder and said laser engraving head whereby the relationship of said laser engraving head to said turning tool holder and hence to a turned surface of said printing member is set by movement of said secondary sliding carriage relative to said primary sliding carriage and then, thereafter, both said primary and said secondary sliding carriages are moved together as a single unit to turn and engrave said printing member simultaneously on a single pass of said traversing carriage.

4,352,974
PLASMA ETCHER HAVING ISOTROPIC SUBCHAMBER WITH GAS OUTLET FOR PRODUCING UNIFORM ETCHING

Tatsumi Mizutani, Kokubunji; Norio Kanai, Kodaira; Kunio Harada, Hachioji; Hideo Komatsu, Hinodemachi, and Shinya Iida, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1980, Ser. No. 173,364
Claims priority, application Japan, Aug. 1, 1979, 54-97280
Int. Cl.^{3} B23K *9/00;* C23F *1/02*
U.S. Cl. 219—121 PD **23 Claims**



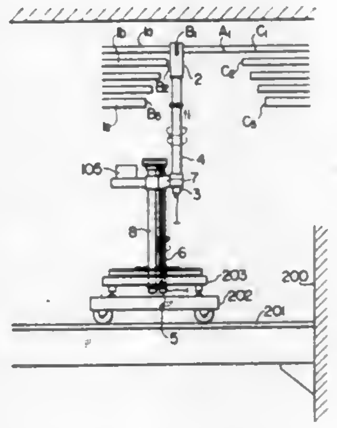
1. In an etcher for etching surfaces of articles with a gaseous discharge plasma generated within an etching chamber provided with a plurality of electrodes, a plasma etcher comprising

(i) an etching chamber containing at least a pair of electrodes, one of said electrodes being arranged to support thereon articles to be etched;
(ii) means defining a gas inlet which serves to introduce a gas directly into said etching chamber;
(iii) means for effecting an isotropic emission of gas from said etching chamber including a joint part forming a restricted passage which is isotropically disposed outside an outer fringe of the electrode for supporting said articles and into and through which said gas can flow from said etching chamber;
(iv) an isotropically-configured subchamber which is coupled with said etching chamber through said joint part and which has a capacity as well as a fluid conductance greater than that of said joint part, said subchamber having an annular configuration and said passage formed by said joint part being restricted to an extent necessary to restrain the gas pressure in said etching chamber in the vicinity of said passage from becoming substantially lower than the gas pressure in other parts of said etching chamber; and
(v) means defining a gas outlet provided in said subchamber for accommodating the outflow of gas.

4,352,975
PIPE WELDING APPARATUS

Tugio Oyamada; Kenichi Suzuki; Toshikazu Kishi, and Eizo Shibato, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,682
Claims priority, application Japan, Dec. 26, 1979, 54-168283
Int. Cl.^{3} B23K *9/225*
U.S. Cl. 219—125.11 **7 Claims**



1. A pipe welding apparatus comprising: a welding unit including a first clamping means adapted to clamp an already-laid pipe, a second clamping means adapted to clamp a new pipe piece which is to be welded between sections of said already-laid pipe, a moving means for moving said second clamping means in the direction of longitudinal axis of said already-laid pipe, in a direction parallel to a vertical plane containing said longitudinal axis and a horizontal direction perpendicular to said vertical plane, and welding means attached to said first clamping means and adapted to move along the periphery of said already-laid pipe clamped by said first clamping means; and a manipulator mounting said welding unit.

4,352,976

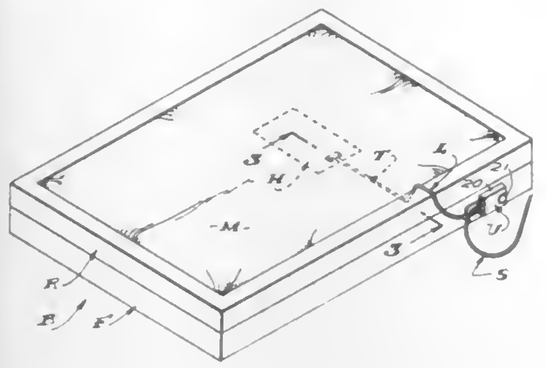
TEMPERATURE CONTROLLED HEATER

James P. McMullan, 12300 Monarch St., Garden Grove, Calif. 92641

Filed Sep. 15, 1980, Ser. No. 186,975

Int. Cl.³ H05B *3/00*

U.S. Cl. 219—217 **8 Claims**



1. In combination, a water bed structure comprising a flat horizontal mattress supporting platform, a water filled bladder type flotation mattress with top, bottom and side walls positioned above the platform with its bottom wall opposing said platform and a retainer projecting upwardly from the platform and occurring about the mattress in supported engagement with the side walls thereof; and a heater system to heat and maintain the mattress at a set operating temperature including a flat, horizontal heater with an elongate electric resistance element arranged between and in heat conducting contact with the platform and bottom wall of the mattress and spaced inward from the sides thereof; a control unit for the heater at the exterior of the bed structure and including a switching circuit connected with an electric power supply by an elongate service cord and controlled by a remote temperature sensing device in heat transfer relationship with the mattress to start and stop the flow of current through the heater when the temperature of the mattress is below and when that temperature reaches the set operating temperature, an elongate flexible electrical loom having inner and outer end portions and including an outer jacket, a pair of jacketed power lines coextensive with the loom and a pair of current conductors coextensive with the outer end portion of the loom, a thermo-responsive temperature sensing device within a central portion of the loom defined by the joinder of said inner and outer end portions and connected with and between the conductors, the inner end portion of the loom is joined with the heater with the ends of said lines connected with said element, the outer end portion of the loom joins with the control unit with said lines and said conductors connected with said switching circuit, the outer end portion of the loom extends from the unit between the platform and mattress and the inner end portion of the loom extends from the heater between the platform and the mattress to a zone between the platform and the mattress which is in thermally isolated spaced relationship from the heater and where said central portion of the loom in which the device is arranged is in heat conducting engagement with the mattress.

4,352,977

WELDING APPARATUS AND METHOD

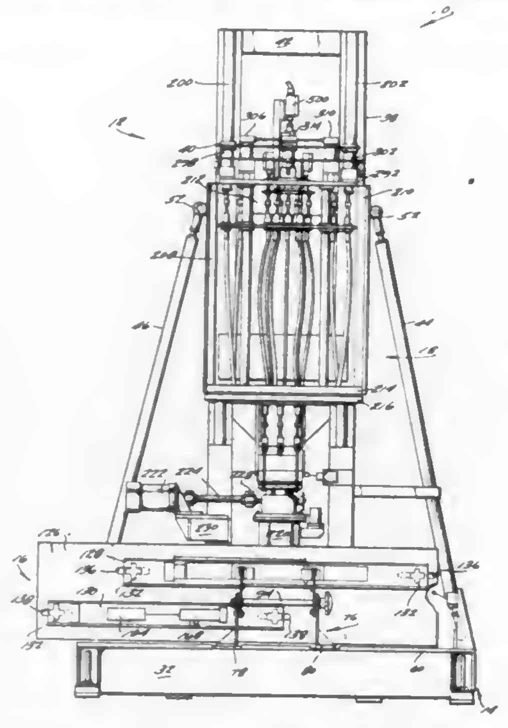
James S. Hardigg; Joseph C. Strzegowski, Jr., both of Conway; Asial L. Burgess, Jr., Ludlow, and David B. Neal, Northampton, all of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Filed Feb. 8, 1980, Ser. No. 119,972

Int. Cl.³ B65B *51/10*

U.S. Cl. 219—243 **30 Claims**

30. Welding apparatus for welding plastic covers onto plastic containers positioned at a welding station within said welding apparatus comprising: a main frame for supporting the apparatus, means defining a work zone having loading, welding, and unload stations; means for moving containers successively from said loading station to said welding station and following welding to said unload station, welding means positioned above said welding station for controlling the relationship between said cover and container during welding and for forming a welded joint, said welding means including a welding frame slidably mounted to said main frame so as to be vertically movable thereon between predetermined positions, means defining a plurality of movably mounted independently controllable heating and clamping assemblies so as to be at least horizontally movable on said welding frame, each of said heating assemblies being vertically and pivotally movable and each of said clamping assemblies being pivotally movable, drive means for operating said apparatus, and control means for actuating said drive means in a predetermined sequence.



4,352,978

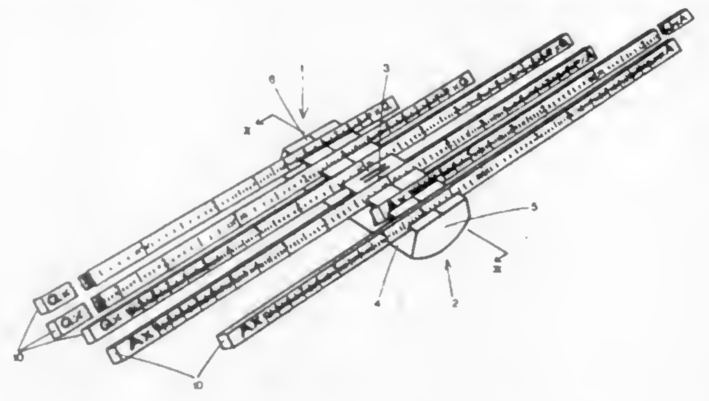
ANALOG BALANCE

James Chappell, P.O. Box 783, Nelson, New Zealand

Filed Oct. 5, 1981, Ser. No. 308,781

Int. Cl.³ G06G *1/02*

U.S. Cl. 235—70 R **6 Claims**



1. A calculating device comprising a rockable cradle adapted to be rocked about an axis of rotation and to support a plurality of beams, each of which has longitudinal sliding movement within said cradle in a direction parallel to the other said beams, and transverse to the said axis of rotation; the said cradle having a cursor line which extends parallel to the said axis of rotation; wherein at least two of the beams are slidable separately within the cradle to provide a rotating torque about the axis of rotation of the said cradle, said rotating torque being dependent upon the combined out-of-balance weight of the beams in relation to the said cursor line, and wherein at least one further beam is longitudinally slidable within the cradle to a position where it may impart a further rotating torque about the axis of rotation of the said cradle, said further rotating torque being antiphase to the combined rotating torque of the said two beams.

4,352,979

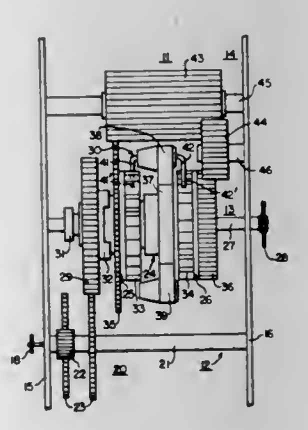
UNIDIRECTIONAL REGISTER APPARATUS

Gene C. Knecht, Durham, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,096

Int. Cl.³ G06M *1/00;* **F16H** *5/52;* **G01R** *11/16, 11/24*

U.S. Cl. 235—91 A **5 Claims**



1. A unidirectional register apparatus for maintaining true totalizing registration comprising:

a dial register assembly including a front plate, a back plate, a gear train and a plurality of dial indicators, said gear train being carried for rotation between said front plate and said back plate and coupling said dial indicators adjacent said front plate;

a ratchet assembly including a drive shaft, a rotatable input means carried about on said shaft with the rotations thereof being totalized by said dial register assembly and a rotatable output means mounted on said shaft in driving engagement with said gear train of said dial register assembly, said ratchet assembly further including a drive member mounted on said drive shaft in driving engagement with said rotatable input means and first and second driven members mounted on said drive shaft on opposite sides of said drive member, each of said first and second driven members having ratchet teeth disposed at the periphery thereof with said first driven member being in driving engagement with said rotatable output means, said ratchet assembly still further including a pawl member pivotally mounted on the periphery of said drive member having first and second diverging wire segments, each of said first and second wire segments including an end portion disposed on opposite sides of said drive shaft for mutually alternate released and engaged relationships with the ratchet teeth of said first and second driven members respectively in response to the opposite directions of rotation of said drive member where upon rotation of said drive member in a first direction effects the ratchet teeth engagement of said first wire segment with said first driven member for driving said rotatable output means in a true registering direction; and

means transferring rotation from said second driven member to said rotatable output means for rotation in said true registering direction when rotation of said drive member is in a second and opposite direction that effects ratchet teeth engagement of said second wire segment with said second driven member.

4,352,980

PAPER SHEET COUNTING MACHINE PROVIDED WITH SAFETY DEVICE

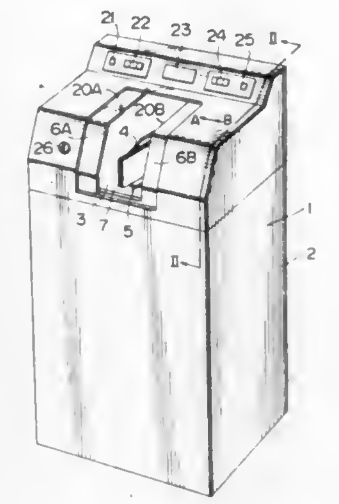
Eikoh Hibari, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 140,974

Claims priority, application Japan, Apr. 20, 1979, 54/48595

Int. Cl.³ G06M *9/02*

U.S. Cl. 235—92 SB **9 Claims**



1. A paper sheet counting machine comprising:

a paper sheet counting mechanism including a holder for receiving a bundle of paper sheets, suction cylinders for turning over the paper sheets one by one, and a counting circuit for counting the number of paper sheets turned over by the suction cylinders;

a pair of double leaf type sound-proof covers made movable between an open position for providing easy access to said holder and a closed position at which said sound-proof covers extend above the section containing said paper sheet counting mechanism;

obstacle detecting means for detecting an obstacle which hinders the normal closing operation of said sound-proof covers to generate a signal;

a motor for closing said sound-proof covers after said holder receives said paper sheets and for opening the covers after the completion of the counting operation; and

control means for controlling to actuate or stop said motor and including means for receiving said signal from said obstacle detecting means to stop said motor in response to said signal.

4,352,981

PHOTOELECTRIC FOCUS AND TRACKING APPARATUS

Toshio Sugiyama, Toyokawa, and Takeshi Maeda, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1980, Ser. No. 144,920

Claims priority, application Japan, May 9, 1979, 54-55729

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **14 Claims**

1. A light beam position control apparatus comprising:

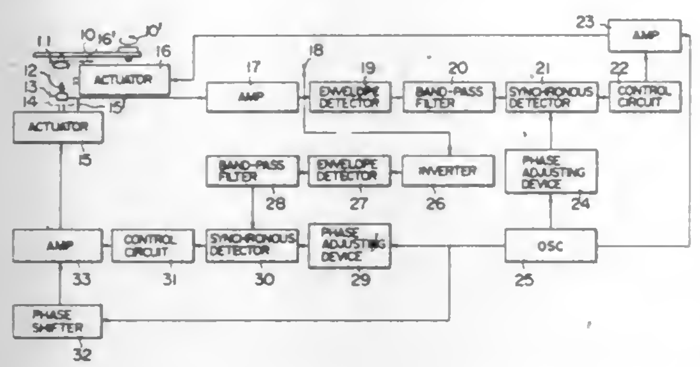
means for radiating a light beam onto a rotatable recording medium carrying trains of information pits on tracks on the recording medium to produce a modulated light beam in accordance with the presence and absence of information pits;

wobbling means for oscillating said radiating means so that said light beam is oscillated periodically in a direction transverse to the tracks carrying the information pit trains;

light detecting means for detecting the intensity of said modulated light beam;

envelope detector means for detecting only that portion of the envelope of the output of said light detecting means which portion corresponds to the presence of information pits;

means for effecting synchronous detection of the output of said envelope detector means with a signal having a phase identical with that of the oscillation of said light beam; and



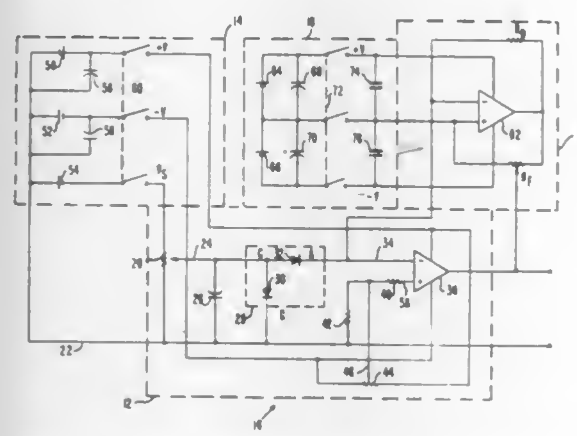
tracking means responsive to the output of said synchronous detection means for controlling said light beam so that the light beam tracks said information pit trains on said tracks.

4,352,982
PHOTODIODE CIRCUIT USING A LOW NOISE ARTIFICIAL LOAD RESISTOR
Robert L. Forward, Oxnard, and Gary D. Thurmond, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 21, 1980, Ser. No. 180,078

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—214 A **1 Claim**



1. An improved photodiode circuit using a low noise artificial load resistor, said circuit comprising:

power supply means;

a first operational amplifier having first and second input terminals;

a photodiode connected between said first input terminal of said first operational amplifier and said power supply means;

variable resistive means connected between said second input terminal of said first operational amplifier and said power supply means; and

a two-terminal network connected between the output terminal and said first input terminal of said first operational amplifier, having an equivalent resistance R_{eq} and comprising:

a second operational amplifier with first and second input terminals and an output terminal, said first input terminal of said second amplifier being connected to said first input terminal of said amplifier;

a first resistor R_D connected between said first input terminal and said output terminal of said second amplifier;

a second resistor R_F having a variable resistance terminal and first and second fixed resistance terminals, said first fixed resistance terminal being connected to said second input terminal of said second operational amplifier and said power supply means, and said second fixed resistance terminal connected to said output terminal of said second operational amplifier and said variable resistance terminal being connected to the output terminal of said first amplifier which is also the output of said photodiode circuit;

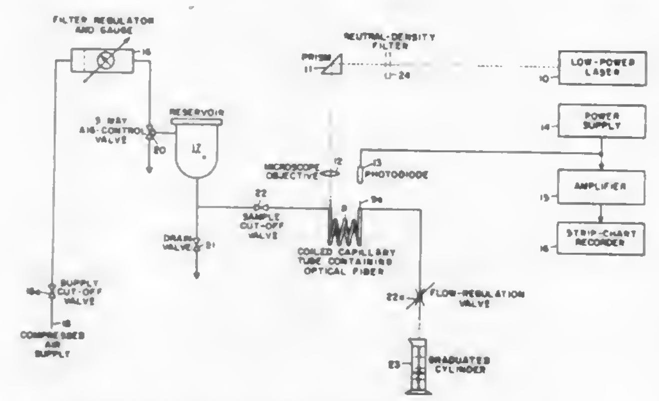
whereby said variable resistor R_F may be adjusted to change R_{eq} and to make the signal to noise ratio of said photodiode circuit substantially independent of the value of R_{eq}.

4,352,983
METHOD AND APPARATUS FOR MEASURING CONCENTRATION OF SUSPENDED OILS IN WATER
Howard S. Silvus, Jr.; Francis M. Newman, Jr., and Robert K. Swanson, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 21, 1980, Ser. No. 141,768

Int. Cl.³ G02B *5/16*

U.S. Cl. 250—227 **18 Claims**



1. A method of quantitatively measuring the concentration of suspended oils in water comprising the following steps:

passing light through an unclad optical fiber;

treating said unclad optical fiber with hydrocarbon groups that are chemically attached to a surface of said unclad optical fiber by interatomic bonding to produce a surface which adsorbs very small quantities of said suspended oils and holds said suspended coils on said surface of said unclad optical fiber;

contacting said unclad optical fiber with an oil-in-water suspension;

detecting the light transmitted through the unclad optical fiber; and

measuring the intensity of transmitted light, said transmitted light intensity being functionally related to the concentration of oils in suspension in water.

4,352,984
LIGHT BEAM SCANNING DEVICE
Yuji Ohara, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

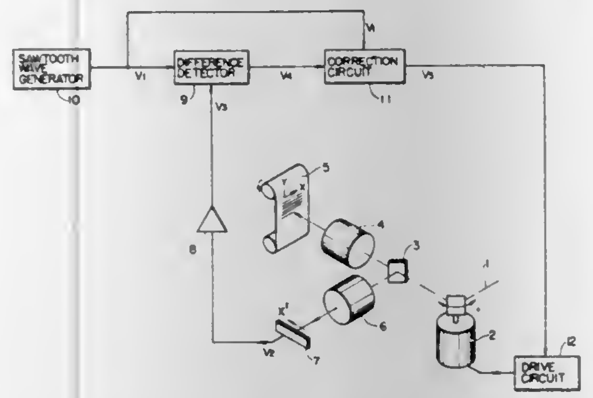
Filed Jun. 13, 1980, Ser. No. 159,276

Claims priority, application Japan, Jun. 15, 1979, 54/76164

Int. Cl.³ H01J *3/14*

U.S. Cl. 250—234 **6 Claims**

1. A light beam scanning device comprising: a light beam comprised of a main laser beam and a reference laser beam having a different wavelength from that of said main laser beam, said main laser beam and said reference laser beam being projected along a common path; means for scanning said light beam over a surface; position detecting means responsive to said reference laser beam for detecting a position of said light beam over said surface to be scanned; and feedback loop means for controlling said optical deflector in response to a signal outputted by said position detecting means to cause said light beam to scan said surface to be scanned at a constant

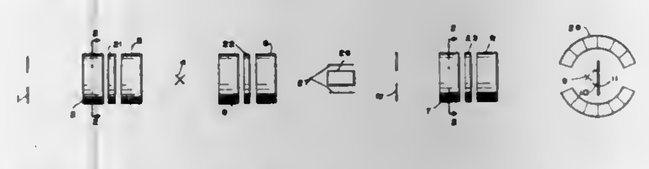


4,352,985
SCANNING ION MICROSCOPE
Frederick W. Martin, Colebrook Rd., North Stratford, N.H. 03590

Continuation of Ser. No. 431,745, Jan. 8, 1974, abandoned. This application Sep. 18, 1979, Ser. No. 76,573

Int. Cl.³ H01J *37/26*

U.S. Cl. 250—306 **8 Claims**



1. A scanning ion microscope comprising an accelerator of ions which are more massive than helium; a series of electromagnetic ion-optical lenses comprising one or more stages of quadrupole lens doublets and suitable deflection means, which both direct the ions to a predetermined position on the specimen and focus the ions onto a microscopically small area of the specimen, thereby forming a directable, focused ion beam; a detector, such as a semiconductor detector or an electron multiplier, which detector is sensitive to the occurrence and to the time of occurrence of emissions consisting of individual X rays, individual soft X rays, or individual Auger electrons produced by the interaction of the positive ions of the beam with individual atoms in the specimen; and electronic means of sweeping the focused ion beam in a pattern across the specimen while recording (or displaying) the number of emissions occurring when the ion beam is at each point in the pattern.

4,352,986
TOMOGRAPHIC APPARATUS FOR THE PRODUCTION OF TRANSVERSE LAYER IMAGES
Manfred Pfeiler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

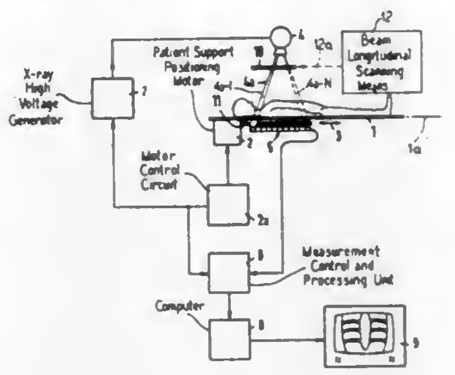
Filed Jun. 11, 1980, Ser. No. 158,627

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1979, 2932182

Int. Cl.³ A61B *6/00*

U.S. Cl. 378—14 **3 Claims**

1. Tomographic apparatus for the production of transverse layer images of a radiography subject, comprising a patient support, a radiation measuring arrangement having a radiation source which generates a beam of rays which is fan-shaped in the layer plane, penetrating the radiography subject, whose cross sectional extent perpendicular to the layer plane is equal to the layer thickness, and a radiation receiver comprising a series of detector means, the series extending transversely to the longitudinal axis of the support so as to determine the radiation intensity at successive transversely offset points behind the subject, a rotating device for the measuring arrangement for rotation about an axis parallel to the longitudinal axis of the patient support, and a measured value converter for the conversion of the signals supplied by the radiation receiver into a tomographic image, means for the scanning of several parallel transverse layers and for the calculation and reproduction of an x-ray shadow image, whose length corresponds to the distance between the two exterior transverse layers and whose width corresponds to the width of the radiation receiver, characterized in that said detector means (**5***a*, series


X-ray High Voltage Generator
Patient Support Positioning Motor
Beam Longitudinal Scanning Means
Motor Control Circuit
Measurement Control and Processing Unit
Computer
12
12a
4a-1
4a
4a-N
1a
10
11
7
1
2
3
8
9

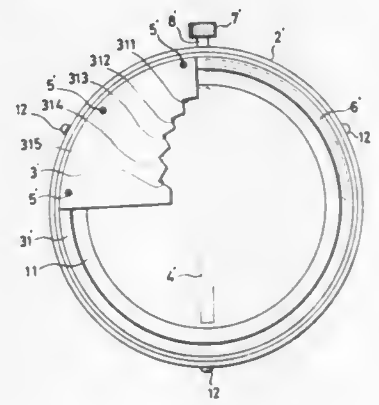
connection **5***b*) of the radiation receiver each has an extent in a longitudinal direction parallel to the longitudinal axis of the support so as to provide for the formation of the x-ray shadow image by means of line-by-line scanning of the radiation receiver with the radiation (**4***a*) issuing from the patient, in lines running perpendicularly to the longitudinal axis of the support, and characterized in that each detector means of the radiation receiver is formed as a series connection of a plurality of detector elements (**5***b*), such that the radiation receiver (**5**) is formed from a matrix of detector elements (**5***b*).

4,352,987
STRUCTURE OF DENTAL X-RAY APPARATUS
Kazuo Hayashi, and Mitsuhiko Hotta, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 864,538, Dec. 27, 1977, abandoned. This application Feb. 25, 1980, Ser. No. 124,532

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—150 **1 Claim**



1. An X-ray generator for X-raying an entire jaw for dental purposes including an X-ray source and a vertical X-ray emitting slit comprising a screening plate provided adjacent said X-ray emitting slit, said screening plate being rotatable relative to said slit, said screening plate covering at least one end of said radiation emitting slit, said screening plate further comprising:

a fan-shaped plate spanning substantially 90°; and

a plurality of notch steps provided on an edge of said fan-shaped plate which intercepts said emitting slit, each of said steps being arranged and configured to intercept said emitting plate substantially perpendicularly when said screening plate is rotated;

whereby a vertical height of said emitting slit can be adjusted.

4,352,988
APPARATUS FOR DISCRIMINATING SHEETS

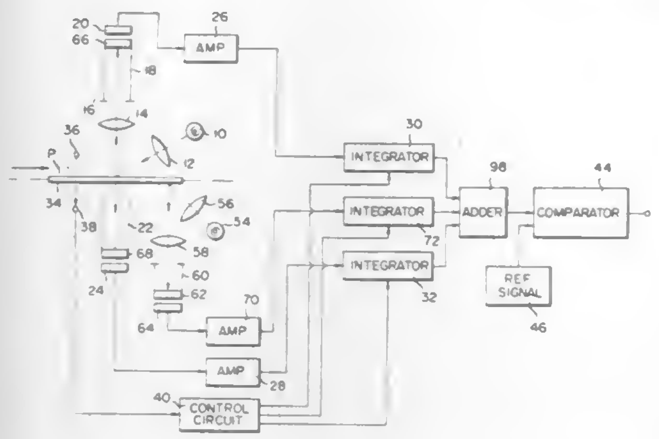
Tsuyoshi Ishida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 14, 1980, Ser. No. 206,894

Claims priority, application Japan, Nov. 22, 1979, 54-150603

Int. Cl.^{3} G01N *21/86*

U.S. Cl. 250—559 **10 Claims**



1. An apparatus for discriminating sheets being transferred into adequate and inadequate sheets through detection of contamination of these sheets, comprising:
  a reference signal generator;
  a first detecting system for detecting light transmitted through said sheets;
  a second detecting system for detecting light reflected by the front surface of said sheets;
  a third detecting system for detecting light reflected by the rear surface of said sheets;
  a detector for detecting the passage of each of said sheets therethrough;
  first to third amplifiers for amplifying the outputs of said respective first to third detecting systems;
  first to third integrators for integrating the outputs of said respective first to third amplifiers;
  a control circuit for supplying an integration period signal to each of said first to third integrators according to a detection signal produced from said detector;
  an adder for taking the sum of the output signals from said first to third integrators; and
  a comparator for comparing the output signal coupled as one of two inputs from said adder and the output signal coupled as the other input from said reference signal generator thereby effecting the determination as to whether or not the sheet in question is adequate.

4,352,989
HYDROMOTIVE SET

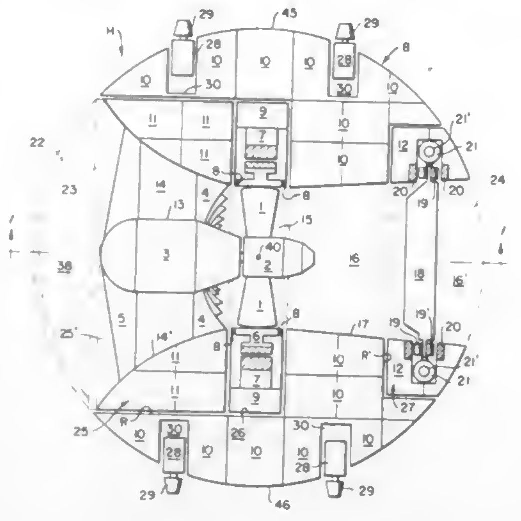
Francisco J. Gutierrez Atenclo, Estafeta Dr. Garcia 3101, Diamante Entre Rios, Argentina

Filed Aug. 19, 1980, Ser. No. 180,167

Int. Cl.^{3} E02B *9/00*

U.S. Cl. 290—53 **19 Claims**

10. A hydromotive assembly for placement adjacent the fluid flow passageway of a dam main body, said assembly including a normally horizontally disposed fluid flow conduit having opposite first and second open ends at extreme opposite faces of said assembly, an energy transformation unit having at least one rotatable element disposed within said conduit, means within said conduit guiding the circulation path of fluid passing through said conduit, means in said conduit displaceable to control the volume of fluid flow through said conduit, said assembly including a main body component, said guiding means and displaceable means comprising separate, independent removable sub-component bodies insertable within said main body component, said two assembly opposite faces and conduit opposite open ends configured to allow alternative positioning of either said conduit open end in coincidence with said dam fluid flow passageway, said energy transformation unit including an additional sub-component body medially disposed within said conduit, said guiding means sub-component body disposed intermediate said rotatable element and said first conduit open end, buoyancy means in said assembly operable to vary the flotation and sinking of the assembly to permit its displacement for removal, exchange, repair or the like.



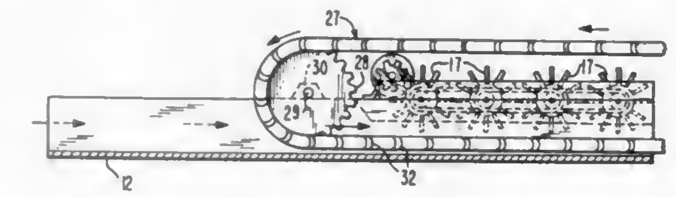
4,352,990
WATER POWERED ELECTRIC GENERATOR

Ano J. Aucoin, Jr., 213 Utah St., Morgan City, La. 70380

Filed Mar. 12, 1981, Ser. No. 243,199

Int. Cl.^{3} F03B *7/00, 9/00*

U.S. Cl. 290—54 **1 Claim**



1. A water power system, comprising, in combination, a pair of spaced-apart pontoons, for being stationarily anchored in a moving body of water, a channel thus being formed between said pontoons for a portion of said water to flow therethrough, a row of rotatable paddle wheels in said channel being affixed on shafts supported between said pontoons, so that said water turns said paddle wheels, and an electric generator driven by said paddle wheels; an endless belt surrounding all said row of paddles in spaced relation thereto, by extending above and below said paddle wheels, said endless belt comprising a pair of spaced-apart, endless chains and a plurality of curved vanes secured between said chains, a lower run of said belt being in said water of said channel, so as to move said belt, a plurality of gears beyond each end of said row of paddles, said belt chains being rotated around said gears, and an electric generator driven by said gears; a plurality of angular ducts between an underside of said pontoons and a bottom wall, and a portion of said bottom wall extending under said channel being upwardly inverted V-shaped, whereby said angular ducts and V-shaped bottom wall directs water from along an outer side of said pontoon toward said belt and paddles.

4,352,991
PORTABLE LIFE SUPPORT SYSTEM

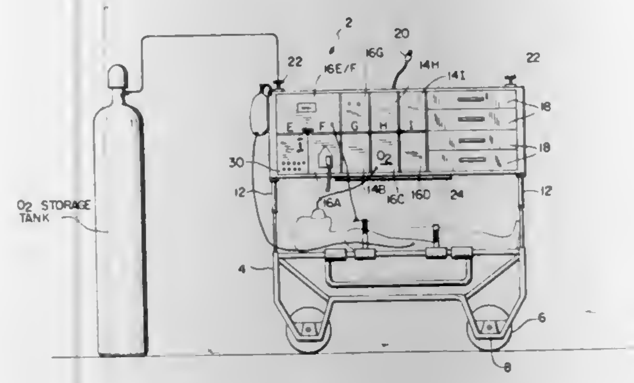
Arthur Kaufman, 100 Delford Ave., Silver Spring, Md. 20904

Filed May 4, 1981, Ser. No. 261,727

Int. Cl.^{3} B60R *13/00;* H02J *7/00*

U.S. Cl. 307—9 **14 Claims**

1. A life support system for field use and for use in a vehicle having power supply means, said life support system comprising:
  (a) a plurality of separate electrically operable life support units,
  (b) a support structure including means for connecting same to a stretcher for transport with said stretcher and means for supporting each of said life support units,
  (c) a portable DC power supply electrically connectable to said life support units for operating same and connected to one of said support structure and stretcher for transporting same, and
  (d) each of said life support units having input power supply terminal means adapted to receive input power from said portable DC power supply and said vehicle power supply,
  whereby said life support units may be operated for field use using said portable DC power supply, and operable in said vehicle using said vehicle power supply.



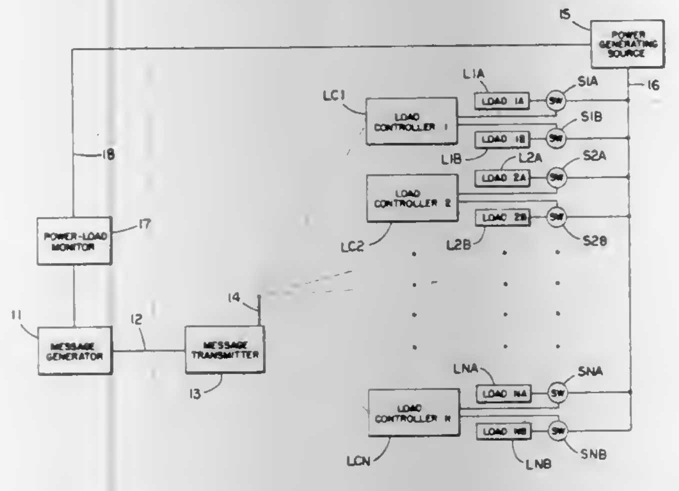
4,352,992
APPARATUS FOR ADDRESSABLY CONTROLLING REMOTE UNITS

James A. Buennagel, Indianapolis, Ind., and Richard C. Koch, Cherry Hills Village, Colo., assignors to Regency Electronics, Inc., Indianapolis, Ind.

Filed Feb. 27, 1980, Ser. No. 125,285

Int. Cl.^{3} G01R *21/00*

U.S. Cl. 307—40 **38 Claims**



1. A load management system for a power network, the power network including a power generating source and a plurality of separately controllable loads, said load management system comprising:
  a. central message generator means for transmitting coded radio frequency messages, said messages including a plurality of bits, for each bit there being at least a pair of tones with the upper tone of said pair indicating a first logic state and the lower tone of said pair indicating a second logic state, said messages including a load address indication and a command indication; and
  b. a plurality of load controllers, said load controllers being responsive to messages transmitted by said central message generator means, each of said load controllers being responsive to a specific load address indication, each of said load controllers including means for connecting and disconnecting a load to and from the power generating source in response to command indications from said central message generator means; each of said load controllers further including decoder means for translating said radio frequency messages into digital information, said decoder means including:
  (1) input means for detecting a particular phase in the cycle of a tone;
  (2) several window registers, each for accumulating single bit data applied to its input;
  (3) sequencing means for repetitively and sequentially applying the output of said input means to the inputs of a number N of said window registers, said sequencing means including means for sequencing N window registers in a base period of time which is an integer X times the period of said upper tone and an integer Y times the period of said lower tone;
  (4) means for detecting repetition in the pattern of data in said N window registers and for generating a first logic signal where there is repetition in each N/X^{th} window register, and for generating a second logic signal where there is repetition in each N/Y^{th} window register.

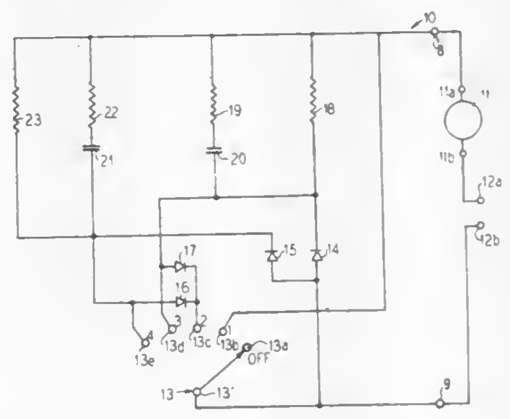
4,352,993
MULTIPLE POSITION POWER SWITCH

James R. Hannas, Thiensville, Wis., assignor to Silent Running Corporation, Clearwater, Fla.

Filed Sep. 9, 1981, Ser. No. 300,691

Int. Cl.^{3} H01H *9/30;* H02P *1/24*

U.S. Cl. 307—112 **7 Claims**



1. A multiple position power control switch for series connection with a load to operate it at different power levels from a power source, comprising: first and second output points for connection to a series circuit comprised of the power source and load; a multiple position switch having a common terminal and at least four other selectively connectible terminals; the common terminal being connected to the first output point and further connecting to a first conductivity type region of first and second diodes; a first of the multiple position switch terminals connecting to the second output point; a second terminal of the switch connecting to second conductivity type regions of third and fourth diodes; a third position of the switch connecting to a first conductivity type region of the third diode and also to one end of a first capacitor whose other end is connected to the second output point; a fourth terminal of the switch connecting to a first conductivity type region of the fourth diode and also to one end of a second capacitor whose other end connects to the second output point; a second conductivity type region of the first diode connecting to the third switch terminal; and a second conductivity type region of the second diode connecting to the fourth terminal of the switch.

4,352,994

DOUBLE-FACE PRINTED-CIRCUIT BOARD

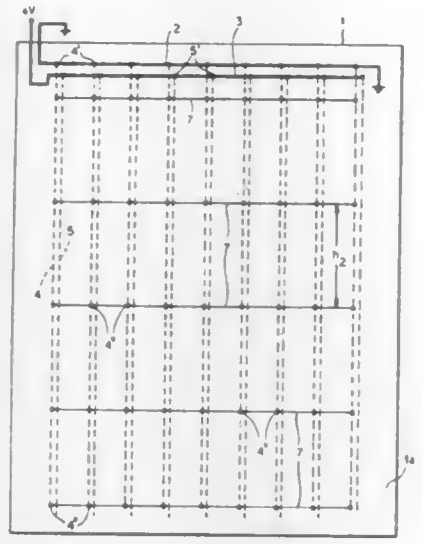
Luciano Inzoli, Lodi, and Gino Piccioni, Noviglia, both of Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed May 8, 1981, Ser. No. 261,698

Claims priority, application Italy, May 9, 1980, 21934 A/80

Int. Cl.^{3} H02J *1/00*

U.S. Cl. 307—149 **6 Claims**



1. A printed-circuit board for the energization of a multiplicity of loads, comprising:
- a generally rectangular dielectric plate;
- a first and a second main conductor strip on one face of said plate close to an edge thereof, said first and second conductor strips being respectively connected to an ungrounded and a grounded terminal of a direct-current source;
- a multiplicity of ancillary conductor strips spacedly disposed parallel to said main conductor strips on said one face; and
- a multiplicity oi branch lines perpendicular to said main and ancillary conductor strips on an opposite face of said plate, each of said branch lines consisting of two closely spaced leads respectively joined to said first conductor strip and to said second and ancillary conductor strips by connectors traversing said plate.

4,352,995

PULSE GENERATING CIRCUIT WITH CLOCK PULSE CEASING FEATURE

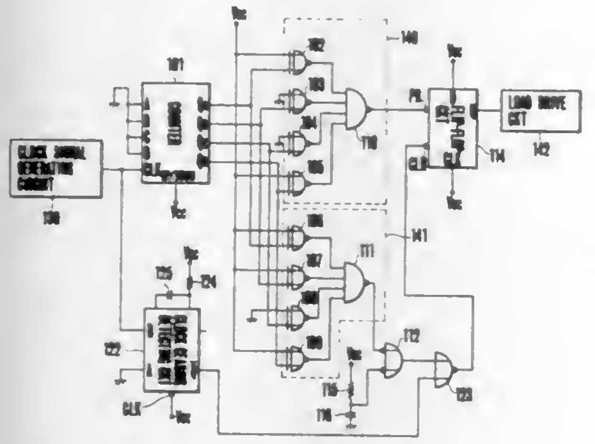
Kazutoshi Yoshida; Ryuji Yano, and Kazuhiro Ishida, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 186,905

Claims priority, application Japan, Nov. 5, 1979, 54-142091

Int. Cl.^{3} H03K *5/05, 13/32*

U.S. Cl. 307—265 **3 Claims**



1. A pulse generating circuit comprising:
- a clock signal generating circuit;
- a counter which receives an output of said clock generating circuit;
- first and second decoders for decoding the contents of said counter;
- a flip-flop circuit having a preset input terminal to which an output signal of said first decoder is supplied as an preset input signal, a clear input terminal to which an output signal of said second decoder is supplied as a clear input signal, and an output terminal which delivers a pulse whose duration is determined by said preset input and clear input signals; and
- an electrical circuit means coupled between said clock generating circuit and the clear input terminal of said flip-flop circuit for detecting ceasing of a clock signal and supplying a detected signal to the clear input terminal of said flip-flop circuit.

4,352,996

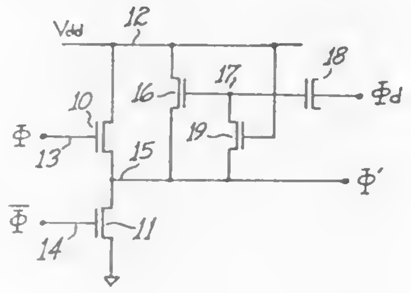
IGFET CLOCK GENERATOR CIRCUIT EMPLOYING MOS BOATSTRAP CAPACITIVE DRIVE

Lionel S. White, Jr., Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1980, Ser. No. 133,378

Int. Cl.^{3} H03K *5/01, 5/05, 17/10, 17/284*

U.S. Cl. 307—269 **11 Claims**



1. A clock driver circuit for producing a slightly delayed clock signal at full supply voltage level, comprising first, second and third transistors, each of said transistors having a current path and a control electrode, the current paths of the first and second transistors being connected in series between a supply voltage and reference potential with the juncture between the current paths of the first and second transistors being an output node, the current path of the third transistor being separately connected between said output node and supply voltage, means for applying an input clock signal to the control electrode of the first transistor and the complement of the input clock signal to the control electrode of the second transistor, conductive coupling means for connecting the control electrode of the third transistor to the output node and to a clock voltage having a transition after that of said input clock signal.

4,352,997

STATIC MOS MEMORY CELL USING INVERTED N-CHANNEL FIELD-EFFECT TRANSISTOR

Joseph H. Raymond, Jr., and Keith H. Gudger, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

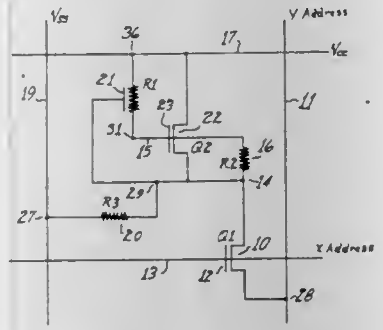
Continuation of Ser. No. 801,694, May 31, 1977, Pat. No. 4,139,786. This application Feb. 12, 1979, Ser. No. 11,573

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.^{3} G11C *11/40;* **H01L** *29/04, 29/78*

U.S. Cl. 307—279 **1 Claim**

1. A semiconductor integrated circuit formed at a face of a semiconductor body comprising first and second insulated-gate field-effect transistors each having a source-drain path and a gate, the source-drain path of the first transistor being connected between a first node and a source of logic levels, the gate of the first transistor being connected to a different source of logic levels the source-drain path of the second transistor being connected between the first node and voltage supply means, the gate of the second transistor being connected to a second node, first conductive means exhibiting at least some impedance connecting the first node to the second node, second conductive means exhibiting at least some impedance connecting the first node to reference potential, third conductive means connecting the second node to voltage supply means, the third conductive means exhibiting a low impedance state when the voltage on the first node is near that of the voltage supply means and exhibiting a high impedance state when the voltage on the first node is near that of the reference potential, at least one of the first, second and third conductive means being formed wholly in a deposited layer on said face.



4,352,998

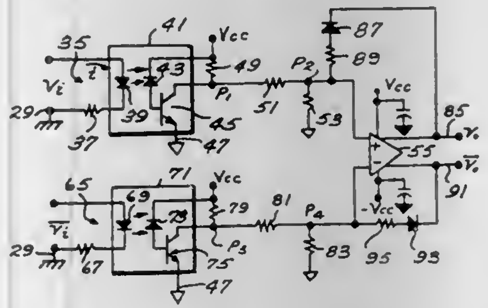
COMMON MODE REJECTION COUPLER

Richard H. Baker, Bedford, Mass., and Bruce D. Semanchik, Bridgewater, N.J., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Apr. 7, 1980, Ser. No. 138,251

Int. Cl.^{3} H03K *3/42;* **H03F** *3/45*

U.S. Cl. 307—311 **9 Claims**



1. In a circut having a comon mode voltage between the input and the output thereof, a common mode rejection coupler comprising:
- a first circuit means for receiving an input signal and for generating a first signal in response thereto, said first circuit means normally isolating said first signal with respect to said common mode voltage;
- a second circuit means for receiving the complement of said input signal and for generating a second signal in response thereto, said second circuit means normally isolating said second signal with respect to said common mode voltage, said second signal being the complement of said first signal;
- a comparator for receiving said first and second signals and for generating at least one output signal, said comparator changing the output signal state when said first and second signals complement states; and
- means connected to the output of said comparator for limiting the magnitude of transient changes in one of said first and second signals to less than the magnitude of the non-transient difference between said first and second signals, said limiting means preventing said comparator from changing state when a common mode transient voltage change occurs in one of said first and second signals.

4,352,999

ZERO-CROSSING COMPARATORS WITH THRESHOLD VALIDATION

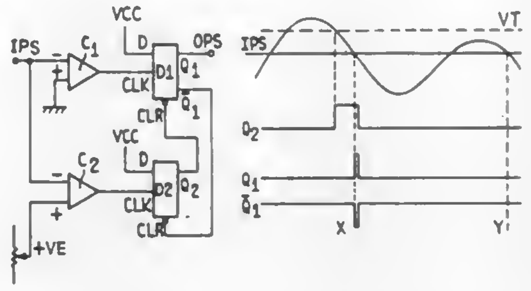
Robert K. Galpin, Marlow, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Sep. 12, 1980, Ser. No. 186,760

Claims priority, application United Kingdom, Sep. 14, 1979, 7931927

Int. Cl.^{3} H03K *5/153;* **G01R** *19/175*

U.S. Cl. 307—354 **2 Claims**



1. A circuit arrangement for use in carrier and timing recovery circuits of a digital data transmission system, the circuit arrangement comprising in combination first and second differential amplifiers and first and second toggles, the first differential amplifier receiving an input signal and producing an output signal when the input signal passes through zero in a first direction, the second differential amplifier receiving the input signal and producing an output signal when the input signal falls in said first direction below a predetermined reference threshold value, the first toggle being connected to the first differential amplifier for receiving the output of the first differential amplifier, the second toggle being connected to the second differential amplifier for receiving the output of the second differential amplifier, wherein the second toggle includes enabling means connected to the first toggle for enabling the first toggle to produce a short pulse in response to the zero transmission of the input signal only when the input signal has previously exceeded the predetermined reference threshold during an immediately preceding half cycle of the input signal.

4,353,000

DIVIDER CIRCUIT

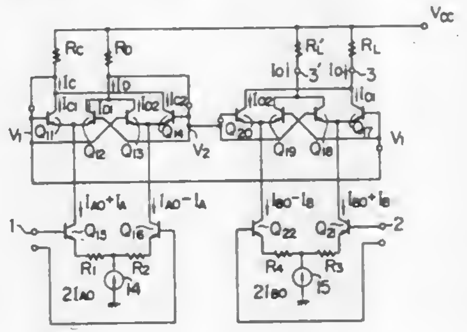
Masaru Noda, Fujisawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,084

Claims priority, application Japan, Jun. 16, 1978, 53/72839; Jun. 16, 1978, 53/72840; Jun. 16, 1978, 53/72841

Int. Cl.^{3} H03G *3/00;* **G06G** *7/12, 7/20*

U.S. Cl. 307—490 **14 Claims**



1. A divider circuit for dividing a second electrical signal by a first electrical signal, comprising:
- a first variable gain circuit including a first differential amplifier having first and second transistors, a second differential amplifier having third and fourth transistors, a third differential amplifier having fifth and sixth transistors, first and second loads, a first current source, and first, second, third, and fourth terminals, the base of said first transistor

being connected to said first terminal, the collector of said first transistor being connected to said first load on one hand and to the base of said first transistor by feedback means on the other hand, the base and the collector of said second transistor being connected to said second terminal, the base of said third transistor being connected to said first terminal, the collector of said third transistor being connected to said second terminal, the base of said fourth transistor being connected to said second terminal, the collector of said fourth transistor being connected to said first load, said second terminal being connected to said second load, the emitters of said first and second transistors being connected to the collector of said fifth transistor, the emitters of said third and fourth transistors being connected to the collector of said sixth transistor, the emitters of said fifth and sixth transistors being connected to said first current source, the base of said fifth transistor being connected to said third terminal, the base of said sixth transistor being connected to the fourth terminal;

a second variable gain circuit including a fourth differential amplifier having seventh and eighth transistors, a fifth differential amplifier having ninth and tenth transistors a sixth differential amplifier having 11th and 12th transistors, a second current source, and fifth, sixth, seventh, eighth, ninth and tenth terminals, the base of said seventh transistor being connected to the base of said ninth transistor on one hand and to said fifth terminal on the other hand, the base of said eighth transistor being connected to the base of said tenth transistor on one hand and to said sixth terminal on the other hand, the collector of said seventh transistor being connected to the collector of said tenth transistor on one hand and to the seventh terminal on the other hand, the collector of said eighth transistor being connected to the collector of said ninth transistor on one hand and to said eighth terminal on the other hand, the emitters of said seventh and eighth transistors being connected to the collector of said 11th transistor, the emitters of said ninth and tenth transistors being connected to the collector of said 12th transistor, the emitters of said 11th and 12th transistors being connected to said second current source, the base of said 11th transistor being connected to said ninth terminal, the base of said 12th transistor being connected to said tenth terminal;

first connection means for connecting said first terminal and said fifth terminal to each other;

second connection means for connecting said second terminal and said sixth terminal to each other;

first input means for applying the first electrical signal to said third and fourth terminals;

second input means for applying the second electrical signal to said ninth and tenth terminals; and

output means for producing a third electrical signal from selected one of said seventh and eighth terminals.

4,353,001
NOISE SIGNAL SUPPRESSOR HAVING IMPROVED OUTPUT SIGNALS

Kyoji Tanahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

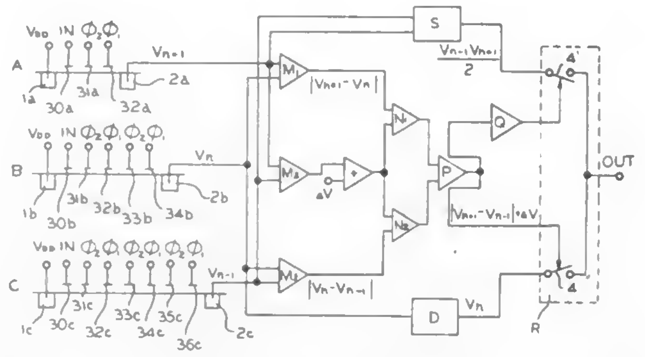
Filed Oct. 7, 1980, Ser. No. 194,803

Claims priority, application Japan, Oct. 8, 1979, 54-129713

Int. Cl.^{3} H03K *17/16*

U.S. Cl. 307—542 **13 Claims**

1. A noise suppressor for suppressing noise components contained in an input signal V, said suppressor comprising means for obtaining a value V_{n-1} of said signal V at time t_{n-1}, a value V_n of said signal V at time t_n, and a value V_{n+1} of said signal V at time t_{n+1}, means for receiving a predetermined signal increment V, means for producing quantities $|V_n - V_{n-1}|$, $|V_n - V_{n+1}|$, and $|V_{n-1} - V_{n+1}| + \Delta V$ from said values V_{n-1}, V_n, V_{n+1}, and ΔV, means for generating a control signal when said quantities simultaneously satisfy the relations of $|V_n - V_{n-1}| \geqq |V_{n-1} - V_{n+1}| + \Delta V$ and $|V_n - V_{n+1}| \geqq |V_{n-1} - V_{n+1}| + \Delta V$, and signal synthesizer means for deriving a quantity $(V_{n-1} + V_{n+1})/2$ when said control signal is present and outputting said signal value V_n when said control signal is absent.



4,353,002
ROTARY ELECTRICAL MACHINE CONNECTED TO HIGH-TEMPERATURE LOAD

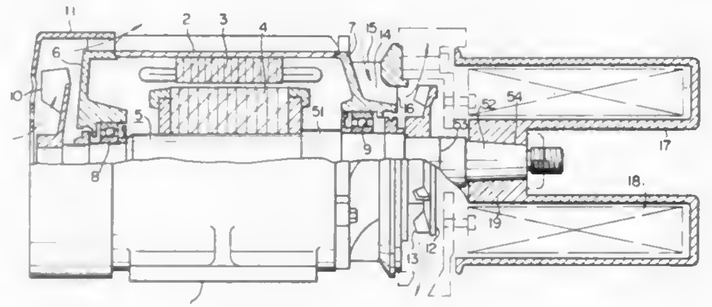
Hideaki Kobayashi, Sakura; Yasuharu Tamuro, Narashino; Takashi Yasuhara, Yotsukaidomachi, and Kunio Ishii, Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 145,230

Claims priority, application Japan, Jun. 27, 1979, 54-80183

Int. Cl.^{3} H02K *7/10*

U.S. Cl. 310—64 **6 Claims**



1. In a rotary electrical machine for use with a high-temperature load comprising:

a tubular stator;

a cylindrical rotor disposed within said stator;

a rotary shaft secured to said rotor and extending through said rotor; and

bearing means located outside said rotor for journaling said rotary shaft;

the improvement comprises:

a first member formed of a first material of low thermal conductivity constituting a portion of said rotary shaft journalled by said bearing means and supporting said rotor;

a second member formed of a second material of high hardness constituting an output end portion of said rotary shaft remote from said bearing means;

a joint uniting said first member and said second member together located opposite said rotor with respect to said bearing means; and

cooling means mounted on said first member between the vicinity of said joint and said bearing means and being formed of a material having a thermal conductivity greater than that of the material of said first member.

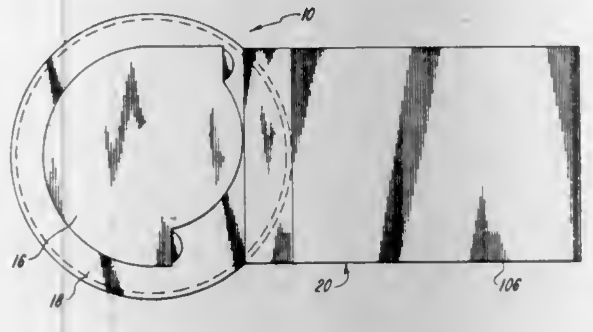
4,353,003
SOLAR ELECTRIC GENERATOR

Dale Sommers, 3001 S. Ogden, Englewood, Colo. 80110

Filed Nov. 17, 1980, Ser. No. 207,376

Int. Cl.^{3} H02K *45/00*

U.S. Cl. 310—306 **18 Claims**



1. A solar electric generator comprising:

a housing including a transparent window portion;

first and second bearing members mounted in said housing;

an elongated shaft rotatably mounted between said first and second bearing members and defining an axis of rotation;

a propeller rigidly mounted on said shaft in a plane transverse to its axis of rotation, said propeller having a plurality of arms positioned about said shaft and extending in a radially outward direction therefrom;

a vane member mounted on the end of each said arm, each said vane having first and second face surfaces, said first face surface being coated with a light absorbing material operative to absorb light in the visible spectrum; and

a generator means associated with said shaft for converting rotational energy of said shaft into electrical energy.

4,353,004
CIRCUIT FOR ALTERNATE TRANSMISSION AND RECEPTION WITH ONLY ONE SOUND SOURCE TRANSDUCER

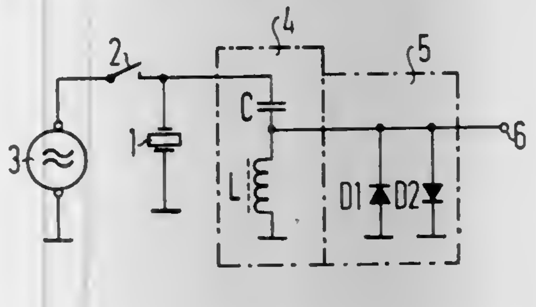
Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,187

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003317

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—318 **7 Claims**



1. A circuit arrangement for supplying transmission oscillator voltage to a piezoelectric sound source transducer and further permitting the transducer to operate as a receiving transducer, comprising:

an oscillator for providing an excitation voltage:

a transducer responsive to an excitation voltage to emit waves and responsive to received waves to produce a reception voltage signal;

switching means connected between said oscillator and said transducer and operable to couple and decouple the same;

a series resonant circuit connected in parallel with said transducer and including an inductor and a capacitor and having a resonant frequency f_O defined by

$$L \cdot C = (\tfrac{1}{2}\pi f_O)^2$$

where L and C are the inductance and capacitance values, respectively;

a pair of diodes poled opposite to one another and connected in parallel to one of said elements of said resonant circuit; and

a receiver output connected to said resonant circuit.

4,353,005
CAMERA TUBE WITH MUTUALLY INSULATED, LIGHT ABSORBING PARTICLES ON GUN SIDE OF TARGET

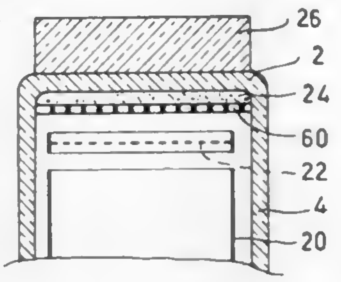
Hendricus F. J. J. van Tongeren; Paulus P. M. Schampers; Willem P. Weijland, and Marino G. Carasso, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 16,590, Mar. 1, 1979, Pat. No. 4,251,748, which is a continuation of Ser. No. 780,168, Mar. 22, 1977, abandoned. This application Jun. 20, 1980, Ser. No. 161,546

Claims priority, application Netherlands, Apr. 12, 1976, 7603838

Int. Cl.^{3} H01J *29/45, 31/26*

U.S. Cl. 313—371 **4 Claims**



1. A camera tube comprising an envelope having an entrance window, a photosensitive target arranged in said envelope at a position such that light passing through said window is incident on a first side of said target, a signal electrode on the first side of the target, and means for producing an electron beam for scanning said target, characterized in that said camera tube further comprises means, disposed on a side of said target opposite said first side, for absorbing light passing through said target, said means having a mosaic structure of mutually insulated areas.

4,353,006
CRT WITH MEANS FOR SUPPRESSING ARCING THEREIN

Horst E. P. Schade, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.

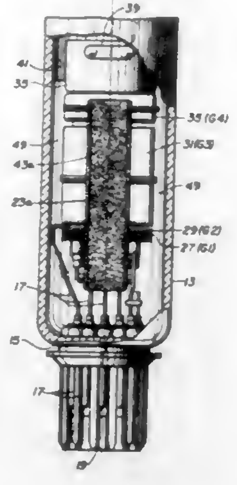
Filed May 28, 1980, Ser. No. 153,970

Int. Cl.^{3} H01J *29/02, 29/82*

U.S. Cl. 313—457 **7 Claims**

1. A cathode-ray tube comprising an evacuated envelope including an electrically-insulating neck, and an electron-gun mount assembly in said neck, said mount assembly comprising a plurality of electrodes mounted on at least two electrically-

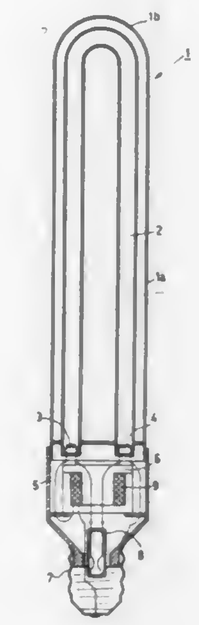
insulating support rods, said assembly being closely spaced from the inner surface of said neck, at least a portion of the surface of each of said support rods opposite said neck carrying a patch coating of chromium oxide.



4,353,007
DISCHARGE LAMP UNIT INCLUDING INTEGRAL BALLAST

Jozef C. Moerkens, and Leonard Woldring, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 934,961, Aug. 18, 1978, abandoned.
This application Feb. 26, 1980, Ser. No. 124,879
Claims priority, application Netherlands, Aug. 23, 1977, 7709264
Int. Cl.³ H01J *7/44, 17/34, 23/16, 29/96;* **H01K** *1/62*
U.S. Cl. 315—62 **1 Claim**

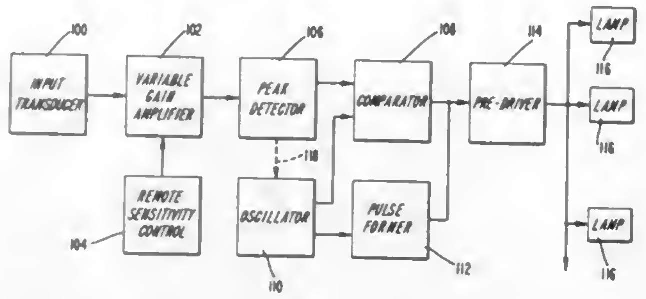


1. A lamp unit comprising a mercury-vapor discharge tube and an inductive stabilization ballast for said discharge tube, said ballast forming one mechanical whole with said discharge tube, said discharge tube being provided with at least two internal electrodes, a discharge path between said electrodes being electrically in series with said stabilization ballast, means for applying a voltage which is nominally S volts to the series connection of the discharge path and said stabilization ballast, said lamp unit having only one lamp base, said discharge tube being a low-pressure discharge tube whose arc voltage is between 0.54 S Volt and 0.64 S Volt, said lamp being substantially ballasted by said inductive stabilization ballast, the volume of the discharge space of the discharge tube being smaller than 40 cubic centimeters and said internal electrodes of the discharge tube are of a preheatable type.

4,353,008
DISPLAY APPARATUS FOR A DRUM

Walter Dorfman, Warminster, Pa., assignor to Alfred T. Moffatt, Fort Washington, Pa., a part interest

Filed Jul. 7, 1980, Ser. No. 165,961
Int. Cl.³ H01K *7/00;* **H01J** *7/24*
U.S. Cl. 315—114 **13 Claims**



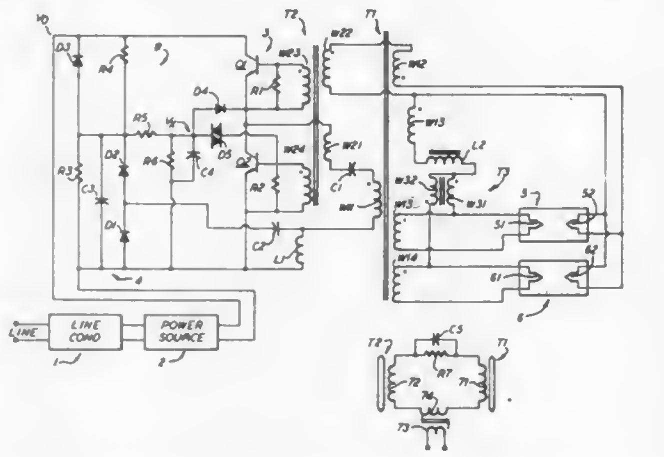
1. A display apparatus responsive to an audio signal comprising:

(a) a light source having a variable resistance, said resistance having an initial value when said light source is cold and a larger value when said light source is warm;
(b) modulator means responsive to said audio signal for controlling the illumination of said light source; and
(c) circuit means, including a pulse generator means for periodically passing pulses of current through said light source, for warming said light source prior to said illumination of said light source by said modulator means sufficient to increase said resistance above said initial value.

4,353,009
DIMMING CIRCUIT FOR AN ELECTRONIC BALLAST

William C. Knoll, Turbotville, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,311
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—220 **9 Claims**



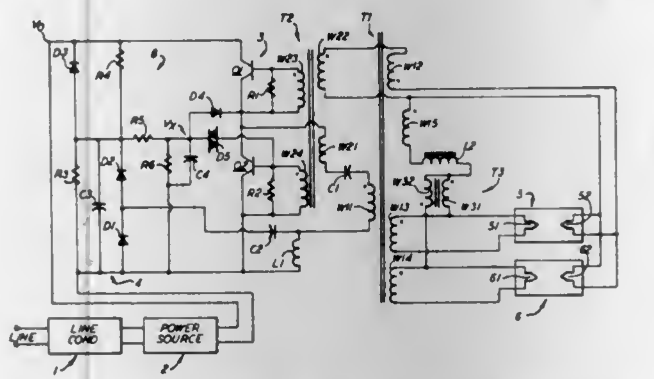
1. In an electronic ballast circuit including an interstage transformer having a primary winding adapted to be coupled to a lamp filament and a secondary winding coupled to an input of an inverter, said interstage transformer for supplying a feedback signal to the inverter, and an output transformer having a primary winding coupled to an output of the inverter and a secondary winding adapted to be coupled to a lamp filament, said output transformer for supplying current to the lamp filament, a dimmer circuit in the form of a feedback loop comprising:

a first winding on the primary of the output transformer;
a second winding on the primary of the interstage transformer; and
dimmer control means coupling the first and second windings for varying the impedance in the loop and therefore the amount of feedback applied to the inverter input and the amount of power supplied to the lamp filament.

4,353,010
TRANSISTOR DRIVE SCHEME FOR FLUORSCENT LAMP BALLAST

William C. Knoll, Turbotville, and David L. Bay, Muncy, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,388
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—220 **2 Claims**

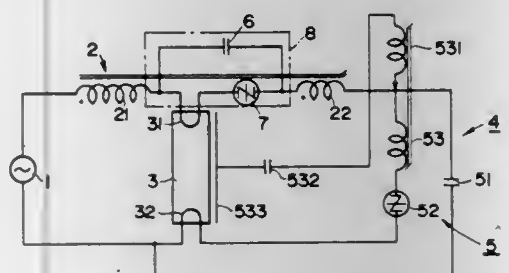


1. In an electronic ballast circuit including a transistor inverter and an interstage transformer, said interstage transformer including a first primary winding adapted to be coupled in series with at least one lamp filament for developing a feedback signal derived from the filament current and including at least one secondary winding coupled to an input of the inverter, an improved transistor drive scheme including a phase-feedback winding on the primary of the interstage winding, said phase feedback winding coupled in series with an inverter output circuit loop for developing a phase-feedback signal in proportion to the output circuit loop current, which phase feedback signal is coupled to an input of the inverter via a secondary winding on the interstage transformer.

4,353,011
HOT CATHODE DISCHARGE LAMP LIGHTING DEVICE

Isao Kaneda, Otsu, Japan, assignor to New Nippon Electric Company, Ltd., Osaka, Japan

Filed Nov. 28, 1980, Ser. No. 211,158
Claims priority, application Japan, Nov. 27, 1979, 54-154092
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—240 **12 Claims**

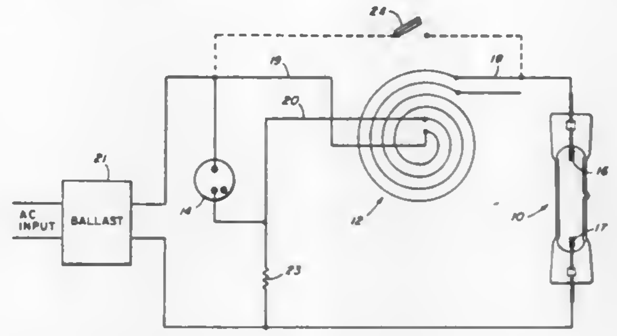


1. A discharge lamp lighting device, comprising hot cathode type discharge lamp means having filaments connected across an a.c. power source through current limiting means, high frequency, high voltage generating means connected in parallel with said discharge lamp means to apply a high frequency and high voltage output thereto at least at the time of initial ignition, and a parallel circuit including a capacitor and a switching element connected to one of said filaments, said switching element comprising a current controlled resistance type switching semiconductor having a break-over voltage lower than the terminal voltage of said capacitor at the initial ignition period and higher than said capacitor terminal voltage during the lamp operating reignition period, whereby the current flowing through said one filament is reduced during the lit operation of the lamp.

4,353,012
PULSE INJECTION STARTING FOR HIGH INTENSITY DISCHARGE METAL HALIDE LAMPS

Charles N. Fallier, Jr., Westford, and Joseph M. Proud, Wellesley Hills, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 24, 1981, Ser. No. 256,865
Int. Cl.³ H05B *37/00*
U.S. Cl. 315—289 **11 Claims**



1. A light source comprising:

a high pressure discharge lamp including a discharge tube having electrodes sealed therein at opposite ends and enclosing a fill material which emits light during discharge; and
a starting circuit including
  a spiral line pulse generator including two conductors and two insulators, each in the form of an elongated sheet, in an alternating and overlapping arrangement which is rolled together in a spiral configuration having a plurality of turns, said spiral line pulse generator including an output terminal coupled to one of said electrodes of said lamp and a pair of input terminals, one of said input terminals and the other of said electrodes of said lamp being adapted for coupling to a source of lamp operating power and for delivering lamp operating power, received from the source, through said spiral line pulse generator to said discharge lamp,
  means for applying ac voltage between the conductors of said spiral line pulse generator, and
  a breakdown switch coupled between the conductors of said spiral line generator and arranged to short circuit said conductors at a firing selected to be less than the peak of said ac voltage, and higher than the normal discharge voltage of said lamp whereupon

said spiral line pulse generator provides at said output terminal a high voltage, short duration pulse of sufficient energy to initiate discharge in said discharge lamp causing said ac voltage to drop below said firing voltage.

4,353,013
DRIVE CIRCUITS FOR A HIGH RESOLUTIONS CATHODE RAY TUBE DISPLAY

Frederick D. Lehman, Rockford, Minn., assignor to CPT Corporation, Eden Prairie, Minn.

Division of Ser. No. 896,813, Apr. 17, 1978, Pat. No. 4,238,774.
This application Dec. 17, 1979, Ser. No. 103,998
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—387 **6 Claims**

1. In a cathode ray tube display circuit having a high frequency two-way scan circuit, a high frequency video circuit and a vertical yoke, a drive circuit for vertical scanning comprising:

receiving means for receiving an input sync pulse for vertical retrace;
means for generating a linear ramp signal after the input signal has been received, the ramp generating means com-

prising an energy source and energy storage means connected to the energy source for accumulating energy to generate the ramp signal;

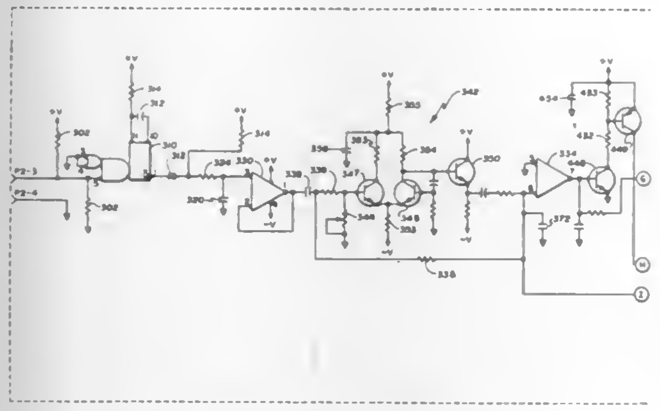
solid state shaping means for shaping the linear ramp to compensate for nonlinearities due to the surface of the tube;

summing means connected to the ramp generating means and the shaping means for producing a vertical drive signal compensated for nonlinearities due to the surface of the tube;

vertical retrace means for causing a retrace scan;

output means connected to the yoke to drive the yoke according to the signal produced, the output means including means for decoupling high frequencies caused by the two-way scan circuit and video circuit; and

wherein the receiving means comprises timing means for generating a finite time interval during which the energy accumulated by the energy storage means is dissipated and wherein the drive signal produced by the ramp generating means and the shaping means causes a trace scan to occur and wherein the means for causing a retrace scan comprises solid state components connected to the summing means and the vertical yoke of the tube for generating a retrace scan signal after the energy has been dissipated from the energy storage means.



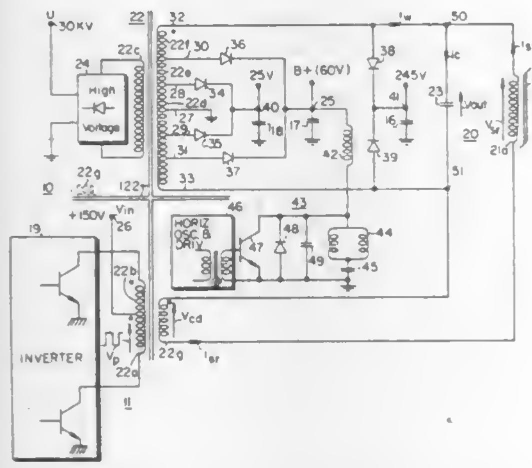
4,353,014
TELEVISION RECEIVER FERRORESONANT LOAD POWER SUPPLY WITH REDUCED SATURABLE REACTOR CIRCULATING CURRENT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,396

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 21 Claims



1. A saturating core power supply providing a regulated ultor voltage for a television display system, comprising:

a source of alternating input voltage;

a saturable reactor including a magnetizable core and a winding located on said core;

means coupled to said source and to said saturable reactor winding for developing a magnetizing current to generate an alternating magnetic flux in said magnetizable core that links said winding so as to develop an alternating polarity output voltage;

a capacitance for developing a circulating current that generates a magnetic flux in a core section associated with said reactor winding that aids in magnetically saturating said associated core section during each cycle of said alternating polarity output voltage;

a source of compensating voltage coupled to said saturable reactor winding and related to said alternating input voltage so that the combined effect of the development of said circulating current by said capacitance and the application of said compensating voltage to said saturable reactor winding provides regulation of said alternating polarity output voltage;

an ultor terminal; and

means including a high voltage rectifier arrangement coupled to said ultor terminal and responsive to said regulated alternating polarity output voltage for developing a regulated ultor voltage at said ultor terminal.

4,353,015
APPARATUS FOR CHANGING THE RELATIVE PHASE ANGLES OF OUTPUT SHAFTS OF A MULTIPLE MOTOR ELECTRIC DRIVE

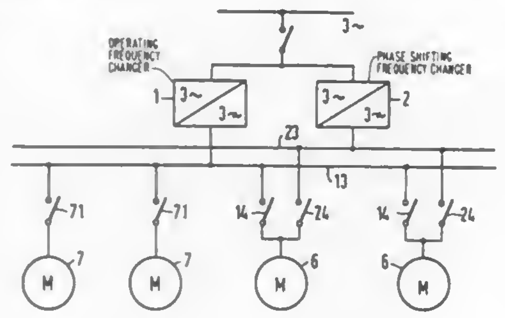
Dietrich Krampe, Neunkirchen, and Herbert Schleicher, Dettlingen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 19,562, Mar. 12, 1979, abandoned. This application May 22, 1981, Ser. No. 266,582

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811292

Int. Cl.³ H02P *1/54*

U.S. Cl. 318—41 6 Claims



1. In an arrangement comprising an electrical multiple-motor drive having plural output shafts, each output shaft being coupled to a synchronous motor, an operating static frequency changer having an output voltage coupled to the synchronous motors and having an input for a control frequency, the output of the operating static frequency changer depending as to frequency and phase on the control frequency at the input, and an operating frequency generator having an output coupled to the input of the operating static frequency changer, the improvement comprising:

apparatus to permit changing the relative angle between the output shaft of one synchronous motor and the output shaft of another synchronous motor including:

a phase-shifting frequency generator having a variable frequency output;

a phase-shifting static frequency changer having a control input and having the same voltage output level as the operating frequency changer;

means for varying the output frequency of the phase-shifting frequency generator;

synchronizing means having as inputs the output voltages of both static frequency changers for determining when the phases of the output voltages are in agreement and generating a control signal in response thereto;

first switching means for selectively coupling the input of the synchronous motor, the shaft angle of which is to be varied, to the output of the phase-shifting static frequency changer or to the output of the operating static frequency changer;

second switching means for selectively coupling the input of the phase-shifting static frequency changer to the output of the operating frequency generator; and

means to permit operation of the first switching means only when the control signal indicating agreement in phase between the output voltages of the static frequency changers is present,

whereby, when it is desired to vary the relative angle, the input of the synchronous motor being changed may be coupled by the first switching means to the output of the phase-shifting frequency changer, the input of the phase-shifting frequency changer may be coupled by the second switching means to the output of the frequency-shifting generator, the frequency of the frequency-shifting generator may be changed to carry out the change in relative angle, the input of the phase shifting frequency changer may be shifted back to the output of the operating frequency generator, and the input of the synchronous motor may be shifted back to the output of the operating frequency changer, with switching between the operating static frequency changer and the phase-shifting static frequency changer occurring substantially without phase angle error.

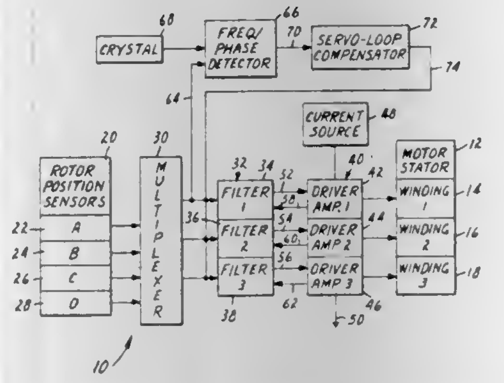
4,353,016
LINEAR MOTOR CONTROL SYSTEM FOR BRUSHLESS DC MOTOR

Vernon A. Born, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 22, 1981, Ser. No. 256,383

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—254 6 Claims



1. A motor control system adapted to control a brushless direct current motor of the type having a rotor having a plurality of permanent magnet poles at equal angular locations about the axis thereof, the angular spacing therebetween being 360°/N where N is the number of poles, and a stator having at least three windings for providing at least three fields per pole comprising

(a) means for sensing the position of the rotor relative to the stator, including a multisector marking means secured to said rotor for identifying each pole and at least four sensors positioned proximate to said marking means for detecting said sectors of the marking means and, being angularly spaced from each other to provide at least three sequential signals indicative of the incremental passage of a pole through an angular segment corresponding to said angular spacing, each sensor providing a square wave output signal, each transition of which denotes the passage of one pole past that sensor,

(b) multiplex means for alternately selecting and passing therethrough output signals from a first or second group of said sensors, the first group including a succession of at least three equally angularly spaced sensors, and the second group including a similar succession of at least three equally angularly spaced sensors including the second and third sensor of said first group, whereby switching from the first to the second group enables the processing of square wave output signals indicative of a set of incremental positions of the rotor advanced in time over that provided by said first group to offset subsequent electrical time delays,

(c) filter means including at least three independent filter sections, each filter section being coupled to process signals corresponding to a given sensor output passed through said multiplex means, and having a limited upper frequency cutoff to provide, in response thereto, time delayed motor control signals having an essentially sinusoidal waveform,

(d) driver amplifier means including at least three linear amplifiers, each of which is coupled to one of said filter sections for amplifying one of said motor control signals and is further coupled between a direct current power source and a selected winding, for sequentially energizing said windings to provide a succession of fields corresponding to the incremental passage of a pole through said angular segment, and

(e) negative feedback means including at least three separate feedback loops between each of said linear amplifiers and an associated filter section for responding to the current supplied to each of said windings to thereby control the intensity of each of said motor control signals such as to maintain said supplied current at a relatively constant level, whereby improved control over motor speed is effected, the substantially sinusoidal drive through said linear amplifiers markedly reducing motor noise and incremental speed variations.

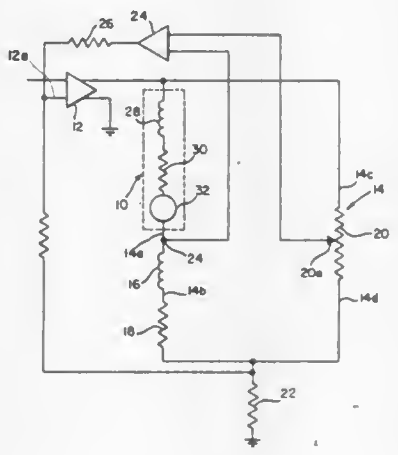
4,353,017
VELOCITY COMPENSATION FOR LIMITED DISPLACEMENT MOTORS

Edward F. Burke, Jr., Reading, Mass., assignor to M.F.E. Corporation, Salem, N.H.

Filed Dec. 1, 1976, Ser. No. 746,467

Int. Cl.³ G05B *5/01*

U.S. Cl. 318—331 4 Claims



1. A veocity-compensated motor circuit comprising:

A. a limited-displacement motor having a control winding,

B. means for supplying a signal for said control winding to effect a mechanical displacement by said motor,

C. a bridge circuit incorporating

1. said control winding in a first arm of said bridge circuit, and

2. means for balancing said bridge circuit to eliminate the effect of current from said signal supplying means on the output of said bridge circuit, whereby the bridge circuit output signal represents the velocity of said motor, said balancing means including a reactance in another arm of said bridge to balance out the reactance of said control winding, and

D. feedback circuitry for applying the bridge output signal to damp said motor.

4,353,018
CONTROL SYSTEM FOR SYNCHRONIZED OPERATION OF MACHINE TOOL MOTORS

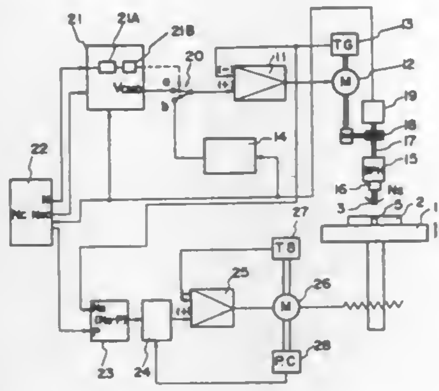
Yoshinori Kohzai, and Yoshiki Fujioka, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,937

Claims priority, application Japan, Aug. 24, 1979, 54-107893

Int. Cl.^{3} G05B *19/24*

U.S. Cl. 318—571 **3 Claims**



1. A control system for synchronizing the operation of motors in a machine tool for performing tapping on a workpiece, which control system comprises:

first operation control section means for controlling a spindle drive motor which rotates the spindle of the machine tool, the spindle being configured for holding a tap for the tapping operation; and

second operation control section means for controlling a motor which moves the workpiece and the spindle relative to one another axially of the spindle;

wherein said first operation control section means includes controller means for stopping the spindle firmly at a rotational position set at a predetermined angle of rotation, the controller means including a comparator and a function generator for producing a signal indicative of the rotational position at which the spindle is to be stopped, said comparator comparing the output of said function generator with a signal which is obtained from a resolver and which corresponds to the actual angle of rotation of the spindle, the spindle being stopped firmly at such point that the output of said comparator becomes zero; and

wherein said second operation control system means includes means for moving the workpiece and the spindle relative to one another at all times at a speed which is the product of the rotational speed of the spindle and the pitch of the threads on the tap that performs the tapping operation.

4,353,019
ADAPTIVE PULSING MOTOR CONTROL FOR POSITIONING SYSTEM

James S. Sweeney, Jr., Laguna Beach, Calif., assignor to Unisen, Inc., Irvine, Calif.

Filed Jul. 29, 1980, Ser. No. 173,274

Int. Cl.^{3} G05B *11/18*

U.S. Cl. 318—594 **26 Claims**

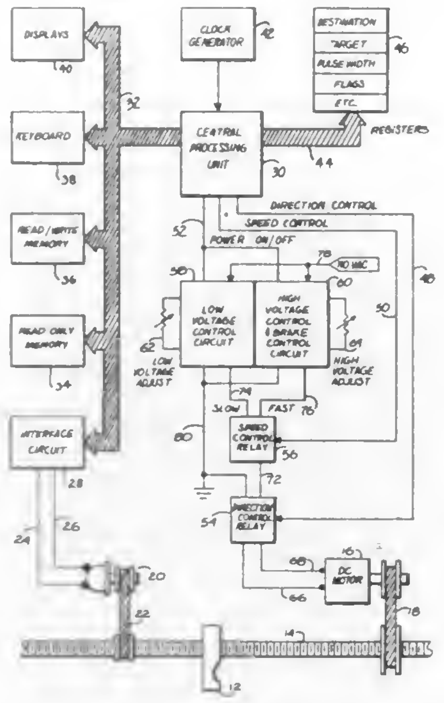
1. In a positioning system for moving a driven element precisely to a destination, in combination with (a) a direct current motor which moves the driven element in response to on-off driving pulses and which is capable of exerting variable amounts of moving effort on the driven element depending on the duration of the driving pulses; (b) means for measuring the position of the driven element and its distance from the destination; and (c) means for causing the motor to move the driven element to the vicinity of the destination relatively quickly:

means for providing to the motor a first short duration driving pulse once the driven element has reached the vicinity of the destination;

means for determining whether said pulse has moved the driven element toward the destination;

means for providing to the motor successive driving pulses in a pulsing cycle, each pulse in a cycle having a slightly longer duration than the previous pulse, until the driven element has moved toward the destination; and

means for beginning the next pulsing cycle with a pulse having the short duration of the first pulse after each measured movement of the driven element toward the destination.



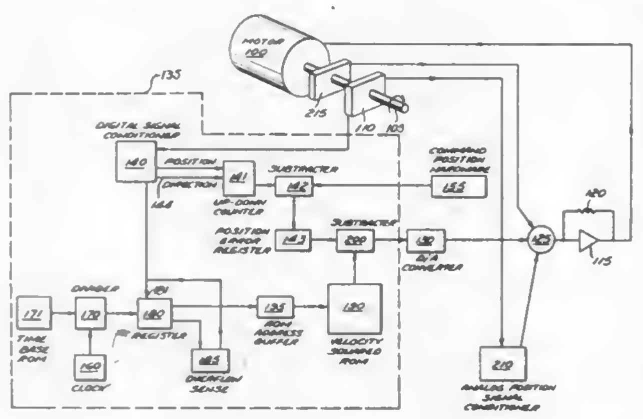
4,353,020
IMPACT PRINTER PROGRAMMED SERVO SYSTEM

John R. Veale, Manhattan Beach, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.

Filed Nov. 1, 1978, Ser. No. 956,735

Int. Cl.^{3} G05B *19/28*

U.S. Cl. 318—601 **23 Claims**



1. A positioning control system for controlling a positioning mechanism within a control range, comprising:

a digital feedback control system generating a digital position error input signal for coarse control of said positioning mechanism;

an analog feedback control system generating an analog position error input signal to said positioning mechanism, said analog position error signal varying periodically with distance, the period of said variation being short in comparison with said control range of said servo system, said analog position error input signal having a peak periodic amplitude which is small in comparison with the amplitude of said digital position error signal except when said servo system is within a predetermined distance from a desired location, and thus, providing fine control of said positioning mechanism; and

said digital and analog feedback control systems providing continuous and simultaneous feedback to control said positioning mechanism.

4,353,021
CONTROL CIRCUIT FOR A PULSE MOTOR

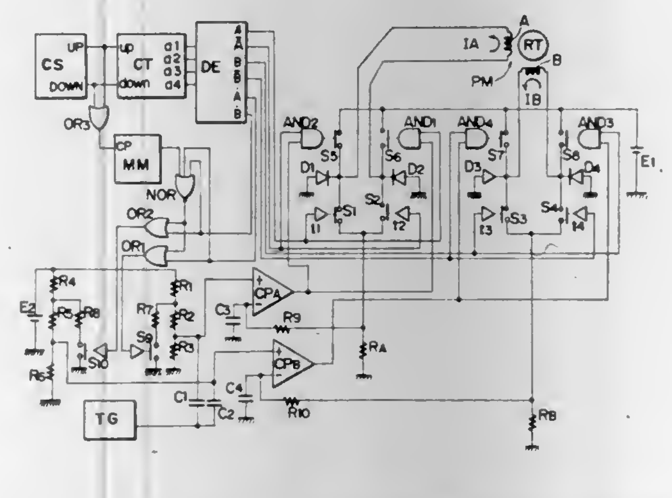
Kazuo Watanabe, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,358

Claims priority, application Japan, Mar. 26, 1979, 54-35211

Int. Cl.^{3} G05B *19/40*

U.S. Cl. 318—696 **5 Claims**



1. A control circuit for use with a pulse motor, the circuit comprising:

(a) first and second windings, the first and second windings being adapted to be energized either separately or together in a certain predetermined sequence so as to effect control and rotation of the motor, the motor being either rotated thereby in discrete steps or being operated at a stand still;

(b) first and second bridge means, each first and second bridge means having switch means for allowing the first and second windings to be energized;

(c) a sequencer means connected to the first and second bridge means for driving said first and second bridge means in a manner to allow connection and disconnection of the first and second bridge means from a power source provided by the circuit in a predetermined sequence;

(d) a first generator means connected to the sequencer for providing the sequencer with pulse drive motor signals;

(e) a comparative stage connected to the first and second windings and the first bridges and second bridge means, respectively, the comparative stage being adapted to control the switch means in response to receiving a load current of the motor;

(f) a comparison reference changing means connected between the comparator stage and the sequencer for selectively providing the comparator stage with a comparison reference signal in response to receiving motor drive pulse signals, the comparator reference signal comprising a full load current signal and a reduced load current signal;

(g) control means connected between the sequencer and the comparison reference changing means for switching the comparison reference changing means in response to certain motor drive pulse signals so as to enable either one of the first and second windings or both of the first and second windings to be energized with either the full current or the reduced current, whereby the reduced current signal is provided at the comparator stage whom the motor is in a standstill mode of operation.

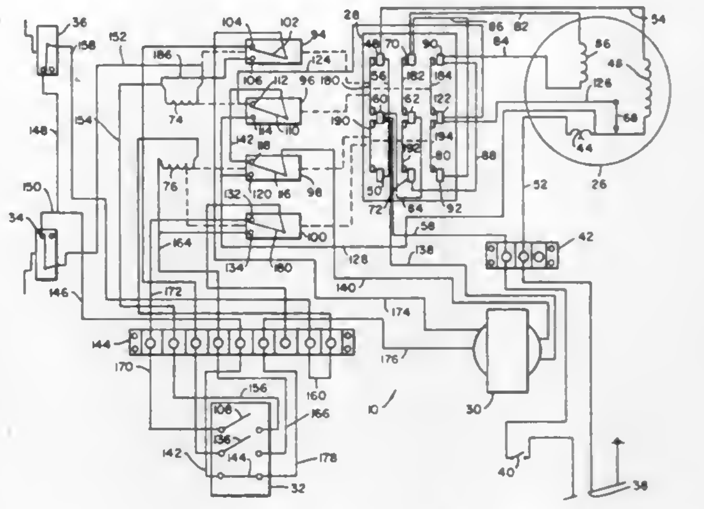
4,353,022
TORQUE REVERSING MOTOR CONTROL STRUCTURE AND METHOD

Richard A. Young, Little Rock, Ark., assignor to The Ceco Corporation, Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 113,058

Int. Cl.^{3} H02P *1/44, 3/18*

U.S. Cl. 318—753 **4 Claims**



1. Torque reverse motor control structure for use in conjunction with split phase or capacitive start motors capable of operation in both forward and reverse directions comprising a switch for detecting and indicating when the motor has stopped, comprising a motor contactor operably associated with said switch including open and close contactor relays and means operably associated with the motor contactor for preventing reversing of the motor contactor without the switch being closed to insure a positive motor reverse including a transformer having a primary and secondary circuit operably associated with the contactor having the open and close contactor relays in the secondary circuit thereof and the switch in the primary circuit.

4,353,023
OPERATION CONTROL APPARATUS FOR AC MOTORS

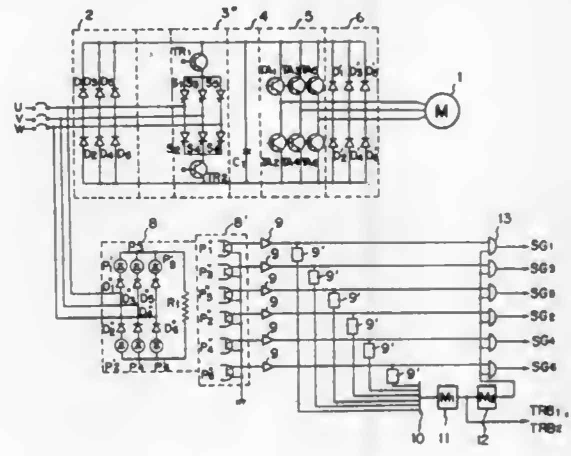
Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,508

Claims priority, application Japan, Aug. 16, 1979, 54-104443

Int. Cl.^{3} H02P *3/18*

U.S. Cl. 318—762 **11 Claims**



1. An apparatus for controlling the operation of an AC motor, said apparatus connected to a three-phase AC power source, said apparatus comprising:

means for receiving an externally applied command signal;

a rectifier, connected to the three-phase AC power source, for converting alternating current into direct current;

a variable-voltage variable-frequency inverter, operatively connected to said rectifier, for applying drive signals to the AC motor upon receiving the direct current output of said rectifier, said drive signals having a supply voltage and frequency which are varied in accordance with the externally applied command signal;

first and second switching transistors operatively connected between said inverter and said rectifier;

a thyristor bridge circuit for regenerative action operatively connected in series between said first and second switching transistors;

a smoothing capacitor operatively connected in parallel with said variable-voltage variable-frequency inverter; and

a firing control circuit, operatively connected to the three-phase AC power source, said thyristor bridge circuit and to said first and second switching transistors, for controlling the firing of each thyristor in said thyristor bridge circuit, and for controlling the switching action of said first and second switching transistors in synchronism with the firming of the thyristors, said firing control circuit comprising:

a phase signal forming circuit, operatively connected to the three-phase AC power source, for forming a plurality of phase signals on the basis of the three-phase AC power source;

a first firing control signal generating circuit, operatively connected to said phase signal forming circuit and to said first and second switching transistors, responsive to the phase signals formed by said phase signal forming circuit to generate first firing control signals for controlling the on-off action of said first and second switching transistors; and

a second firing control signal generating circuit, operatively connected to said phase signal forming circuit, said first firing control signal generating circuit and said thyristor bridge rectifier circuit, responsive to the phase signals formed by said phase signal forming circuit to generate second firing control signals for controlling the firing of said thyristors.

4,353,024

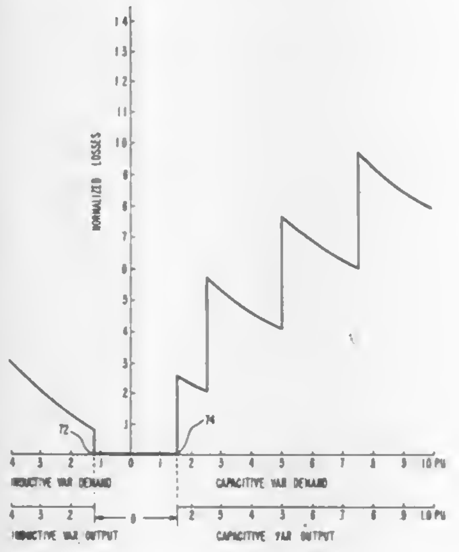
CONTROL FOR VAR GENERATOR WITH DEADBAND

Laszlo Gyugyi, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 10, 1980, Ser. No. 158,107

Int. Cl.^{3} G05F *1/70*

U.S. Cl. 323—211 **17 Claims**



1. A VAR generator of the type which provides a controlled conduction path for reactive current between two conductors in an electrical system across which the voltage of said electrical system may deviate from a nominal value, comprising:

(a) capacitance means disposed as part of said conduction path for providing a capacitive component of said reactive current in said conduction path during a predetermined increment of time;

(b) inductance means disposed as part of said conduction path for providing an inductive component of said reactive current in said conduction path during a predetermined increment of time; and

(c) control means interconnected with said capacitance means and said inductance means for determining the magnitude of said reactive current required as a function of said deviation of said voltage from said nominal value and for cooperating with said capacitance means and said inductance means to provide said required reactive current except in a predetermined range of deviation of said voltage.

4,353,025

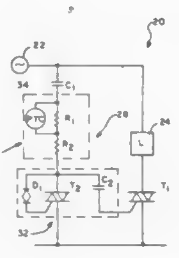
PHASE CONTROLLED VOLTAGE REDUCING CIRCUIT HAVING LINE VOLTAGE COMPENSATION

Robert C. Dobkin, Hillsborough, Calif., assignor to Hybrinetics, Inc., Santa Rosa, Calif.

Filed Dec. 8, 1980, Ser. No. 214,011

Int. Cl.^{3} G05F *5/00*

U.S. Cl. 323—300 **10 Claims**



1. A circuit device for reducing by a predetermined amount the RMS value of an incoming AC line voltage applied to a given load, said device comprising:

(a) externally controllable switching means operable between a conductive state for electrically connecting said given load with said line voltage and a non-conductive state for electrically disconnecting said load from said line voltage; and

(b) a control circuit including

  (i) means responsive to said line voltage for producing an AC control voltage and associated control current which leads said line voltage by about 90 degrees, and

  (ii) control means free of any RC timing circuitry connected with said switching means and responsive to the amplitude of said control current during each half cycle of said line voltage for determining directly from said control voltage and associated current the period during each of said half cycles that said switching means is in said conductive state without resorting to RC timing circuitry, whereby to controllably reduce the amount of said AC line voltage applied to said load by said predetermined amount while minimizing fluctuations in said predetermined amount as a result of fluctuations in the amplitude and/or frequency of said line voltage.

4,353,026

SHORT CHASER WITH RELAY OPERATED INDICATOR FOR LOCATING AND INDICATING THE CLEARANCE OF SHORT CIRCUITS

Harry J. Edwards, Jr., 1009 Baldwin Rd., Richmond, Va. 23229

Filed Feb. 12, 1980, Ser. No. 120,774

Int. Cl.^{3} G01R *31/02, 31/08*

U.S. Cl. 324—51 **5 Claims**

1. A short circuit monitoring and locating apparatus for use in locating and clearing short circuits in wiring circuits between a high potential terminal and a low potential terminal, said apparatus comprising:

a casing;

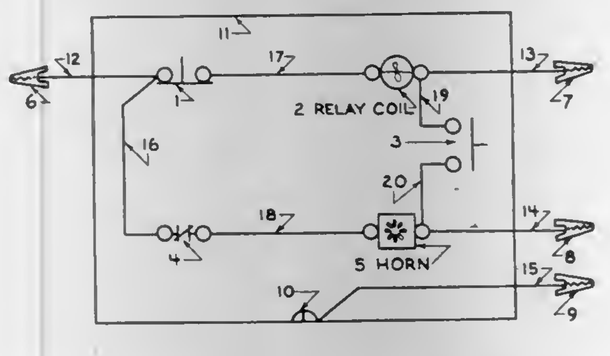
first conductor means adapted for connection to said high potential terminal;

second conductor means adapted for connection to a first wire of the shorted circuit which has been decoupled from said high potential terminal;

third conductor means adapted for connection to the low potential terminal of said wiring circuits;

relay means having a relay coil means and relay contact means, said relay coil means being connected in series between said first and second conductor means for conducting current therebetween and said contact means being connected between said first and third conductors for changing between normal and energized states, one state being open and the other closed, in response to a current in said relay coil means;

audible indicating means, said contact means of said relay means and said audible indicating means being connected in series between said first and third conductor means; whereby when said connections are established to the high potential terminal, to said shorted circuit first wire and to said low-potential terminal, a circuit path is established through the first conductor means, the relay coil means and the second conductor means by the short circuit and over which path sufficient current flows to energize said relay coil means and change the state of said relay contact means, thereby changing the state of current flow to said audible indicating means, with said new state of current flow being maintained so long as the short circuit remains, and when the short circuit is cleared, said relay coil means becomes deenergized causing said relay contact means to return to their normal state, thus again changing the state of current flow to said audible indicatior means to indicate clearing of said short circuit; and,



a normally open switch means connected between said second and third connector means for closing a momentary circuit path through said relay coil means and said second and third conductor means, to energize said relay coil means and thereby change said relay contact means to said energized state when the short circuit current is insufficient to energize said relay coil means to change said relay contact means to said energized state, but is sufficient to maintain the relay contact means in said energized state.

4,353,027

CONTACTLESS RESISTIVITY MEASUREMENT METHOD AND APPARATUS

Arthur Ballato, Long Branch, and Gerald J. Iafrate, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1980, Ser. No. 200,627

Int. Cl.^{3} G01R *29/22*

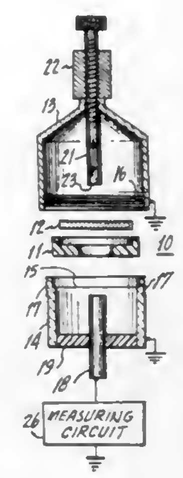
U.S. Cl. 324—56 **14 Claims**

1. A non-destructive, contactless method of measuring the resistivity of a semiconducting crystalline material, which comprises the steps of:

(a) supporting a disc of said semiconducting crystalline material in an air gap in such a manner that the disc is free to vibrate;

(b) establishing an alternating electric field in said air gap thereby to cause said disc to vibrate piezoelectrically;

(c) adjusting the frequency of said alternating electric field to drive said disc into and beyond resonance; and



(d) comparing the current drawn by said disc in step (c) above with previously prepared characteristic graphs for said crystalline material thereby to determine the resistivity of the sample under test.

4,353,028

MEASURING CIRCUIT FOR INTEGRATING ELECTRICAL SIGNALS IN A GAMMA CAMERA

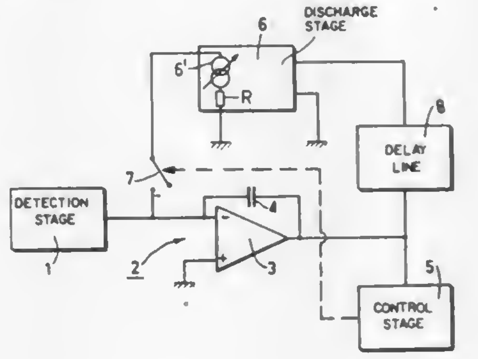
Hans Faddegon, Haarlem, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,697

Claims priority, application France, Dec. 18, 1978, 78 35600

Int. Cl.^{3} G01R *19/00;* G01T *1/20*

U.S. Cl. 324—111 **6 Claims**



1. In a circuit for measuring electric charge which is produced by a detection device, which circuit comprises charge integrating means having an input connected to receive current from the detection device, an output, and means for accumulating electric charge to produce a voltage at the output which is proportional to the integral of the current received at the input and discharge means having a control input and including a voltage controlled current source which is connected to discharge the means for accumulating charge upon the occurrence of a predetermined control condition and at a rate which is proportional to a voltage at the control input; the improvement comprising:

a delay line connected between the output of the integrating stage and the control input of the discharge means.

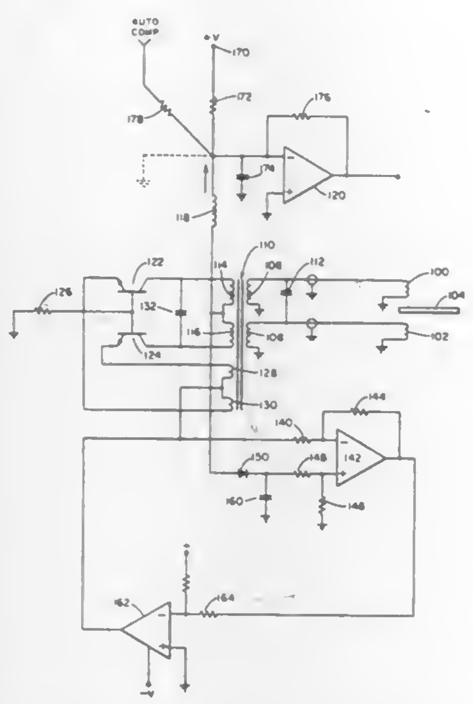
4,353,029
SELF INVERTING GAUGING SYSTEM

Robert C. Abbe, Newton, and Noel S. Poduje, Needham Heights, both of Mass., assignors to ADE Corporation, Watertown, Mass.

Division of Ser. No. 877,332, Feb. 13, 1978, Pat. No. 4,217,542. This application Feb. 29, 1980, Ser. No. 125,989

Int. Cl.³ G01R ***33/12***

U.S. Cl. 324—236 **6 Claims**



1. A conductance gauging system for the conductance of an element comprising:

a pair of transistors;

a center tapped transformer primary in the collector circuit of said transistor pair;

means for driving said transistors through the center tap;

a center tapped transformer secondary in the base-emitter circuit of said transistor pair to provide regenerative feedback;

means for maintaining a predetermined signal level between the center taps of said primary and secondary;

a resonant circuit responsive to the signal across said primary to apply a flux to said element; and

means for detecting the drive applied to said transistor pair as an indication of element conductance.

4,353,030
PULSE FREQUENCY MULTIPLIER CIRCUIT

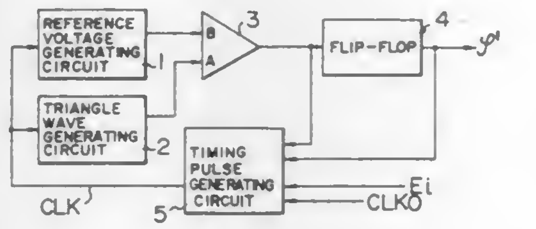
Hideo Nakamura, Tokyo; Tsuneo Funabashi, Hachioji, and Haruo Koizumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,312

Claims priority, application Japan, Sep. 10, 1979, 54/115297

Int. Cl.³ H03K ***5/00***

U.S. Cl. 328—38 **6 Claims**


REFERENCE VOLTAGE GENERATING CIRCUIT
1
B
A
3
FLIP-FLOP
4
f₀
TRIANGLE WAVE GENERATING CIRCUIT
2
TIMING PULSE GENERATING CIRCUIT
5
CLK
CLK
Ei

1. A pulse frequency multiplying circuit comprising:

a reference voltage generating circuit which after a first capacitor charged to a given potential is discharged at a fixed voltage attenuating rate of a period corresponding to the pulse width of a reference pulse, produces the terminal voltage of said first capacitor as a reference voltage;

a triangle wave voltage generating circuit which alternately discharges a pair of second capacitors charged to a given potential at a voltage attenuating rate n times that of said first capacitor, and alternately produces in the form of a triangle wave shape an attenuated voltage obtained at the terminal of said second capacitors during the discharge period;

a comparator circuit for producing pulse when said reference voltage is coincident with said triangle wave voltage;

a flip-flop circuit which is driven by an output pulse from said comparator circuit; and

a timing pulse generating circuit which responds to an output pulse from said flip-flop circuit and produce a timing signal for switching the charge/discharge operation of each of said second capacitors for transfer to said triangle wave voltage generating circuit,

whereby a pulse of a frequency n times of said reference pulse is produced from said flip-flop circuit.

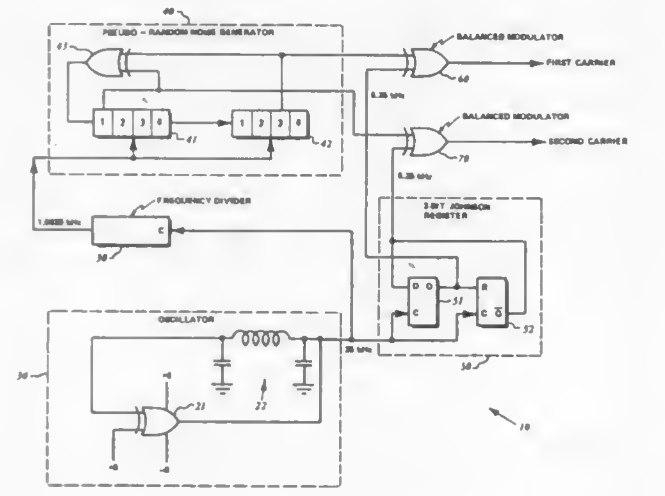
4,353,031
ORTHOGONAL SIGNAL GENERATOR

Ditmar H. Bock, Colden, N.Y., assignor to Calspan Corporation, Columbus, Ind.

Filed Apr. 14, 1980, Ser. No. 139,920

Int. Cl.³ H03K ***3/01***

U.S. Cl. 328—62 **6 Claims**



1. An orthogonal signal generator, comprising:

(a) a source of clock pulses at a fixed frequency,

(b) pseudo-random noise generating means responsive to said clock pulses for generating a pseudo-random code in the form of two signals one of which is delayed with respect to the other,

(c) means for generating a pair of orthogonal carrier signals, and

(d) means for modulating one of said two signals onto one of said pair of orthogonal carrier signals and the other of said two signals onto the other of said pair of orthogonal carrier signals.

4,353,032
GLITCH DETECTOR

Keith A. Taylor, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 2, 1980, Ser. No. 155,363

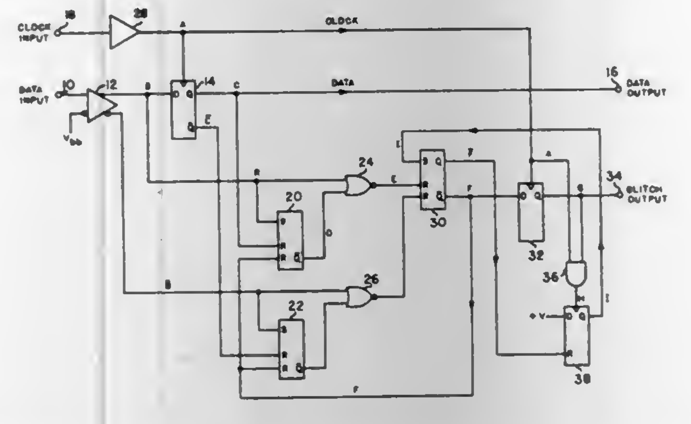
Int. Cl.³ H03K ***13/32, 5/26***

U.S. Cl. 328—165 **8 Claims**

1. A circuit for detecting two or more successive transitions of an input digital signal which occur within a clock period, comprising:

first bistable circuit means for producing a changed logic state in response to the first of said two or more successive transitions of said input signal;

means responsive to both said changed logic state and the second of said two or more successive transitions of said input signal for producing a detection signal; and



second bistable circuit means responsive to said detection signal for producing a changed logic state indicating said detection.

4,353,033
MAGNETIC POLE STRUCTURE OF AN ISOCHRONOUS-CYCLOTRON

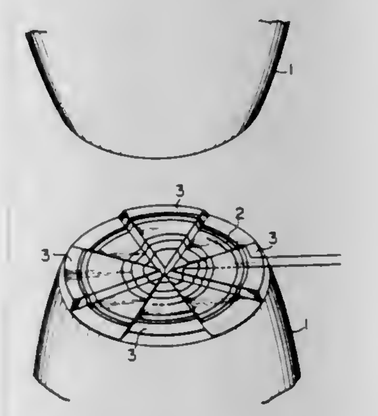
Takashi Karasawa, Fuchu, Japan, assignor to Rikagaku Kenkyusho, Wako, Japan

Filed Feb. 26, 1980, Ser. No. 124,939

Claims priority, application Japan, Mar. 7, 1979, 54-26571

Int. Cl.³ H05H ***13/00***

U.S. Cl. 328—234 **11 Claims**



1. An isochronous cyclotron having a magnetic pulse structure comprising a pair of opposing electromagnetic poles for establishing a magnetic field, said poles having opposing surfaces and a single helical winding on each opposing pole surface, the number per turns per unit radial length of each winding being proportional to the radius of the pole at the surface.

4,353,034
FM DETECTING CIRCUIT

Yuji Kimoto, Gunma, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Gunma, both of, Japan

Filed Nov. 16, 1979, Ser. No. 94,768

Claims priority, application Japan, May 18, 1979, 54-61886

Int. Cl.³ H03D ***3/00***

U.S. Cl. 329—103 **8 Claims**

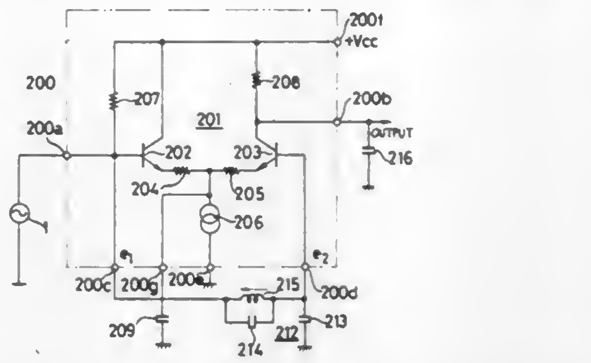
1. An FM detecting circuit for discriminating an FM signal comprising:

differential and detector circuit means including a pair of transistors, each having first, second and third electrodes, wherein said second electrodes are commonly coupled to a reference potential through a constant current source of relatively high impedance;

a discriminator network means for converting the FM signal to two AM signals of substantially opposite phase;

input means for coupling said discriminator network means to said first electrodes, thereby applying said AM signals to the respective first electrodes of said pair of transistors in substantially an opposite phase relationship;

filter means comprising capacitor means connected between the common coupling of said second electrodes and the reference potential, wherein the capacitance of said capacitor means has a value sufficient to pass the carrier signal of said FM signal and does not pass low frequency signals;



means for coupling said third electrodes to a voltage source; and

output means for withdrawing a detected output from said third electrode of at least one of said pair of transistors of said differential and detector circuit means.

4,353,035
CIRCUIT FOR COMPRESSION OR EXPANSION OF AN ELECTRICAL SIGNAL

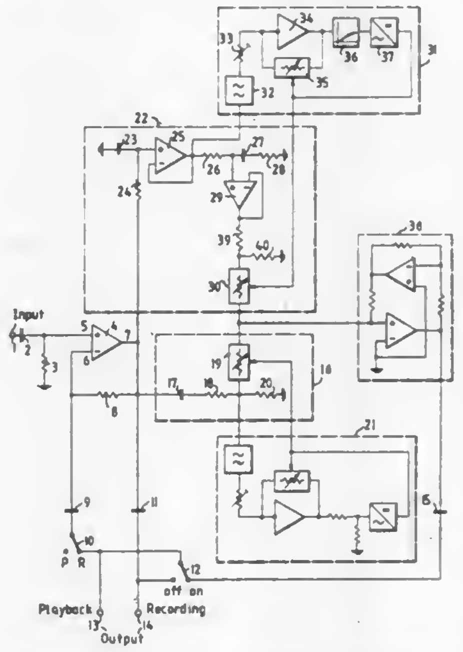
Ernst Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,933

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919280

Int. Cl.³ H03F ***3/68; H04B*** ***1/64***

U.S. Cl. 330—126 **7 Claims**



1. A circuit for optional automatic dynamic range compression or expansion including subdivision of the frequency spectrum into several frequency selective channels containing adjusting elements for controlling the effective transmission factor and including a combining circuit for the outputs of the channels, wherein a low frequency channel contains means for controlling the transmission factor with respect to frequencies in the upper portion of the frequency band associated with the low frequency channel differently than with respect to frequencies in the lower portion of that band for causing the low frequency channel to present a high frequency emphasis net-

work in the "compression" type of operation and a high frequency de-emphasis network in the "expansion" type of operation.

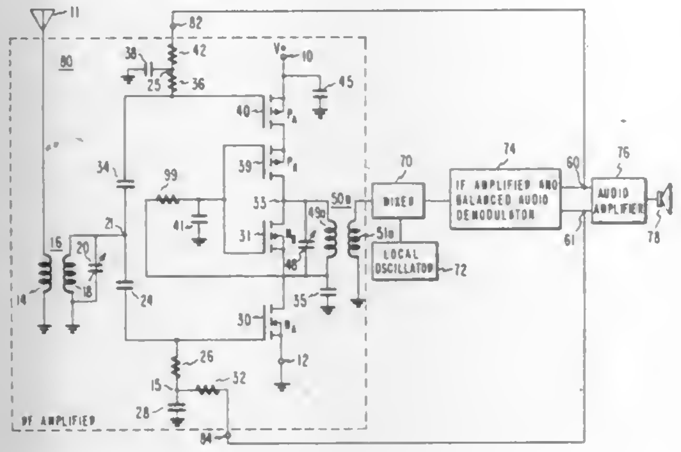
4,353,036
FIELD EFFECT TRANSISTOR AMPLIFIER WITH VARIABLE GAIN CONTROL

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,787

Int. Cl.^{3} H03F *3/30;* **H03G** *3/30*

U.S. Cl. 330—264 **11 Claims**



1. An apparatus comprising:
first and second field effect transistors of opposite conductivity type each having respective source, drain, and gate electrodes, said first and second field effect transistors being connected as a complementary symmetry field effect amplifier;
means for applying an operating potential between said source electrodes of said first and second field effect transistors;
input means for applying an input signal to said amplifier;
output means connecting the respective drain electrodes of said first and second field effect transistors to an output terminal for developing an output signal at said output terminal;
detector means responsive to said output signal for developing first and second balanced differential dc control signals each representing the AC amplitude of said output signal; and
feedback means for applying said first and second balanced differential dc control signals to the respective gate electrodes of said first and second field effect transistors.

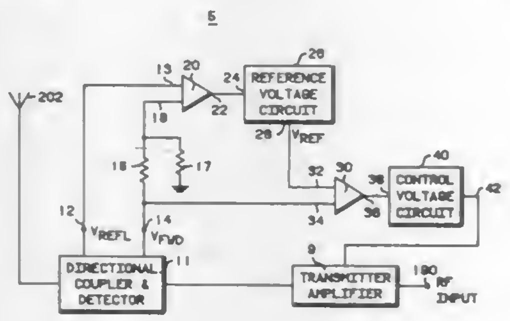
4,353,037
AMPLIFIER PROTECTION CIRCUIT

Gene D. Miller, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 11, 1980, Ser. No. 176,628

Int. Cl.^{3} H02H *7/20*

U.S. Cl. 330—298 **7 Claims**



1. A protection circuit, for controlling the power of a transmitter amplifier which produces an output varying in response to a control signal applied thereto, comprising:
sensing means, coupled to the transmitter amplifier, for generating a forward power signal representative of the forward power and reflected power signal representative of the reflected power;
first comparator means, coupled to the sensing means for generating a reference voltage at an output, and for reducing the reference voltage to a predetermined value in response to the ratio of the reflected power to the forward power exceeding a predetermined level; and
second comparator means, having a first input coupled to the output of the first comparator means and a second input coupled to the sensing means, for generating a control signal which varies in accordance with the difference between the reference voltage and the forward power signal, said second comparator means being coupled to the transmitter amplifier for applying said control signal thereto to vary the power developed by the transmitter amplifier.

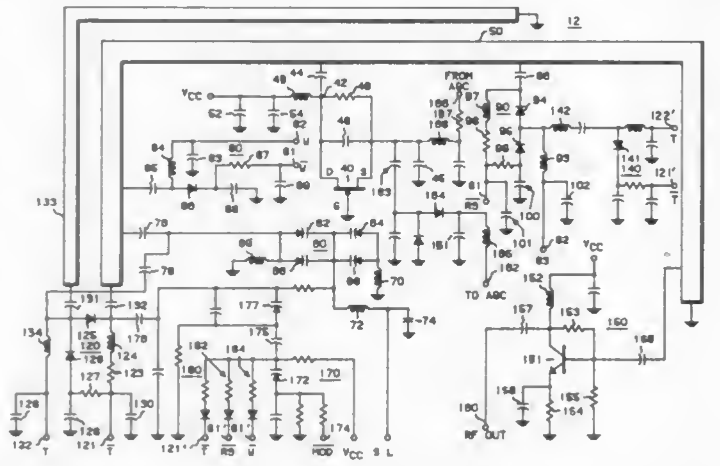
4,353,038
WIDEBAND, SYNTHESIZER SWITCHED ELEMENT VOLTAGE CONTROLLED OSCILLATOR

Richard A. Rose, Streamwood; James K. Gehrke, Palatine; Terrance J. Goedken, Roselle, and Roger Vilmur, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1981, Ser. No. 249,535

Int. Cl.^{3} H03B *5/12, 5/18;* **H03C** *3/22;* **H03L** *7/16*

U.S. Cl. 331—36 C **10 Claims**



1. A wideband switched element voltage controlled oscillator, including in combination:
oscillator means including capacitive and inductive elements forming a tank circuit;
means including at least one varactor tuning element coupled to said tank circuit for changing the frequency of said oscillator means within a predetermined band of frequencies;
a plurality of pin diode frequency shift networks selectively switchable into said tank circuit for changing the frequency of said oscillator means in selectable discrete binary steps over a range of frequencies substantially greater than said predetermined band of frequencies; and
means to prevent parasitic oscillation modes in said oscillator means when said binary frequency shift networks are in a switched off, inactuated mode.

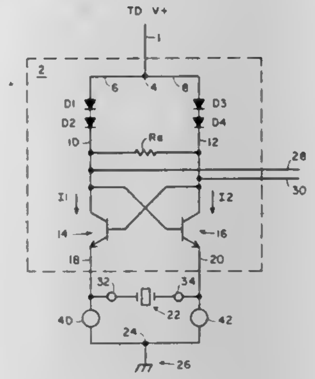
4,353,039
MONOLITHIC ASTABLE MULTIVIBRATOR CIRCUIT

Christopher R. Huntley, Burnaby, Canada, assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed May 15, 1980, Ser. No. 150,371

Int. Cl.^{3} H03B *5/36;* **H03K** *3/282*

U.S. Cl. 331—113 R **5 Claims**



1. An oscillator in which the loop gain is well controlled comprising:
a source of direct current power having a positive and a ground terminal;
first and second transistors having base, emitter and collector electrodes, the base of the first transistor being directly connected to the collector of the second transistor, and the base of the second transistor being directly connected to the collector of the first transistor;
a current source having first and second input terminals arranged for connection to the emitters of said first and second transistors, respectively, and having a third terminal connected to said ground terminal;
a frequency determining component having a pair of terminals the first one of the pair being connected to the emitter of said first transistor and the other terminal of the pair being connected to the emitter of said second transistor; and
a collector load impedance comprising
a first pair of diodes, the first diode of the pair having its anode connected to said positive terminal, and the second diode having its anode connected to the cathode of said first diode and its cathode connected to the collector of said first transistor;
a second pair of diodes, the first diode of the second pair having its anode connected to said positive terminal, and the second diode of the second pair having its anode connected to the cathode of said first diode of said second pair and its cathode connected to the collector of said second transistor; and
a resistor having one end thereof connected to the collector of said first transistor and the other end connected to the collector of said second transistor, said resistor performing the function of limiting the amplitude of oscillation and the value of said resistor being selected to obtain the desired amplitude.

4,353,040
MULTI-LAYER MODULE WITH CONSTANT CHARACTERISTIC IMPEDANCE

Horst Krumm, Steinenbronn; Helmut Schettler, Dettenhausen; Rainer Stahl, Schoenaich, and Rainer Zühlke, Leonberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

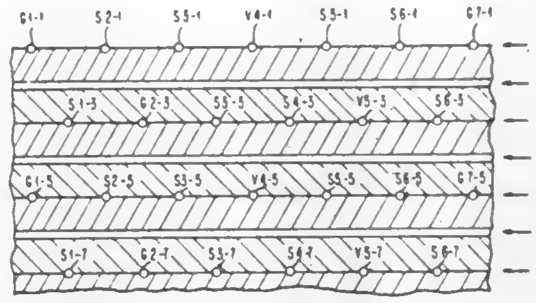
Filed Oct. 2, 1980, Ser. No. 192,972

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940593

Int. Cl.^{3} H01P *3/00*

U.S. Cl. 333—1 **7 Claims**

1. A multi-layer module with several conductor line planes extending parallel to each other, conductor lines of adjacent superposed planes being orthogonally aligned to each other, the conductor lines in each plane comprising:
two signal lines being arranged between a ground line and a voltage supply line;
an additional two signal lines arranged between said voltage supply line and an additional ground line;



other conductor lines arranged in the same sequence of ground line, two signal lines. voltage supply line, and two additional signal lines, consecutively repeated in sequence; and
the spacing between each said signal line and its adjacent ground or voltage supply line being identical in each case.

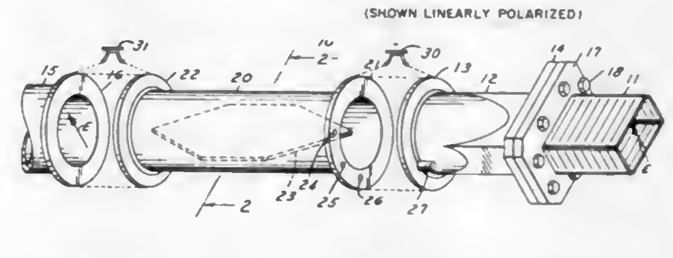
4,353,041
SELECTABLE LINEAR OR CIRCULAR POLARIZATION NETWORK

Lawrence G. Bryans, Mountain View, and Loren R. Murchison, Santa Clara, both of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Continuation-in-part of Ser. No. 100,675, Dec. 5, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,804

Int. Cl.^{3} H01P *1/165, 1/17*

U.S. Cl. 333—21 A **6 Claims**

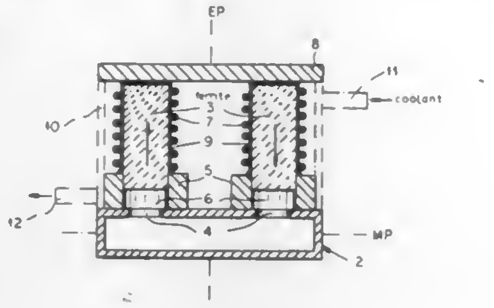


1. A polarization network for selectively converting between linear and circular polarization comprising:
a rectangular waveguide means having a generally rectangular cross section and being twistable about its longitudinal axis;
a transducer waveguide means for interfacing between said rectangular waveguide means and circular waveguide, said transducer waveguide means having a first end having a generally rectangular cross section coupled to said rectangular waveguide means and a second end having a generally circular cross section;
a polarizer having a third end and a fourth end, said third end being coupled to said second end, said polarizer being adaptable to change electromagnetic radiation between linear and circular polarization; and
a first coupling means to permit relative rotation between said transducer waveguide means and said polarizer to any of three rotational positions: a first position permitting a linearly polarized signal to remain linearly polarized after passing through said polarizer, a second position converting between a linearly polarized signal and a right hand circularly polarized signal, and a third position converting between a linearly polarized signal and a left hand circularly polarized signal.

4,353,042

DIFFERENTIAL PHASE SHIFTER FOR A WAVEGUIDE CARRYING HIGH-POWER MICROWAVES

Enzo C. D'Oro, Monza, and Girolamo Ocera, Palermo, both of Italy, assignors to Italtel S.p.A., Milan, Italy
Filed Dec. 16, 1980, Ser. No. 216,905
Claims priority, application Italy, Dec. 18, 1979, 28145 A/79
Int. Cl.³ H01P *1/19*
U.S. Cl. 333—24.1 **8 Claims**



1. In a waveguide of rectangular cross-section with two major surfaces defined by conductive sidewalls paralleling a magnetic plane in which a propagating electromagnetic wave gives rise to two counterrotating magnetic fields on opposite sides of an electric plane perpendicular thereto,

the combination therewith of:

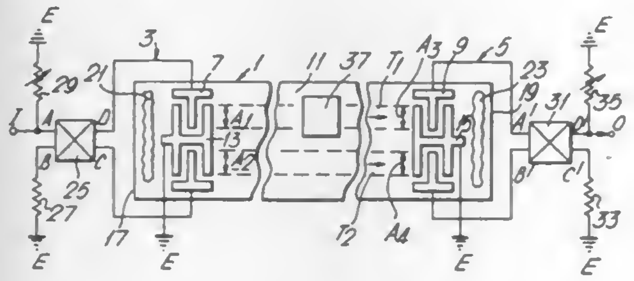
at least one pair of ferrite bodies rising externally of said waveguide from at least one of said sidewalls on opposite sides of said electric plane, said one of said sidewalls being provided with apertures confronting proximal end faces of said bodies for enabling said counterrotating fields to induce corresponding fields traveling outward in said bodies and returning after reflection at remote end faces thereof to said waveguide with identical phase shifts experienced in said bodies, said apertures being surrounded on the outer surface of said one of said sidewalls by ferromagnetic collars respectively embracing said bodies at said proximal end faces thereof; and

conductor means juxtaposed with said bodies for inducing therein opposite unidirectional magnetic fields controlling the magnitude of said phase shifts.

4,353,043

SURFACE ACOUSTIC WAVE DEVICES AND SYSTEMS INCLUDING SUCH DEVICES

David J. Gunton, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Oct. 15, 1980, Ser. No. 197,370
Claims priority, application United Kingdom, Oct. 22, 1979, 7936587
Int. Cl.³ H03H *9/64, 9/68, 9/72*
U.S. Cl. 333—151 **13 Claims**



1. A surface acoustic wave device comprising:

a substrate having two surface acoustic wave propagation tracks;

input means, at one end of the two tracks, including at least one input transducer, for launching surface acoustic waves on each track, in response to an electrical input signal;

two output transducers, one at the end of each track;

an output coupler having two input ports and two output ports, the two input ports being arranged to couple the two tracks; and,

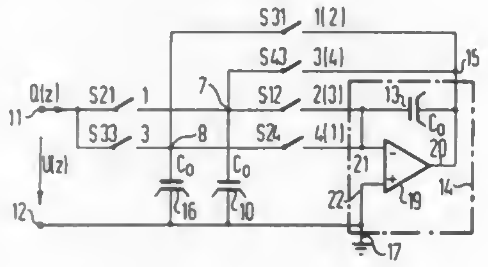
phase differentiation means for providing a non-zero phase difference ϕ between the two input ports of the coupler;

the output coupler giving a constructive output signal at one of the output ports when signals of phase difference ϕ are presented to the input ports, and an effectively null output signal at this output port when signals of phase difference 3ϕ are presented.

4,353,044

SWITCHED-CAPACITOR FILTER CIRCUIT HAVING AT LEAST ONE SIMULATED INDUCTOR AND HAVING A RESONANCE FREQUENCY WHICH IS ONE-SIXTH OF THE SAMPLING FREQUENCY

Josef Nossek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jan. 7, 1981, Ser. No. 223,033
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3002041
Int. Cl.³ H03H *19/00, 11/48, 17/02*
U.S. Cl. 333—173 **14 Claims**



1. A switched-capacitor filter circuit having at least one simulated inductance, said filter circuit operating as the equivalent of a parallel resonance circuit having an inductance L and a capacitance C and having a resonance frequency which is one-sixth of the sampling frequency for the circuit, said circuit comprising:

first and second input terminals;

a first capacitor;

a means for connecting said first capacitor across said input terminals during a first clock phase;

a second capacitor;

an inverting integration circuit having a feedback capacitor and having an output;

a means for connecting said second capacitor to the output of said inverting integration circuit during said first clock phase;

a means for transferring a charge from said first capacitor to aid feedback capacitor during a second clock phase;

a means for charging said first capacitor by the output of the integration circuit during a third clock phase;

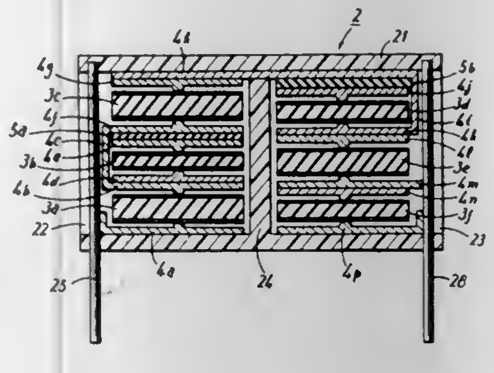
a means for connecting said second capacitor across said input terminals during said third clock phase; and

a means for transferring a charge from said second capacitor to said feedback capacitor during a fourth clock phase, said first, second, third and fourth clock phases operating in cyclical fashion with non-overlapping duty times at the same clock frequency.

4,353,045

LADDER TYPE FILTER

Toshiharu Matsui, Hakui, and Sasuga Kakehi, Kanazawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Oct. 1, 1980, Ser. No. 193,184
Claims priority, application Japan, Oct. 9, 1979, 54/139990[U]
Int. Cl.³ H03H *9/05, 9/10, 9/60*
U.S. Cl. 333—190 **13 Claims**



1. A ladder type filter, comprising:

a casing having a box-like shape and having a top portion, a bottom portion and at least one side portion;

first and second sets of plate-like piezoelectric resonators, each of the resonators in a said set of resonators being stacked with respect to one another and housed in said casing;

said casing having at least one opening on the side portion and a partitioning member therein for partitioning the inside of said casing into first and second compartments;

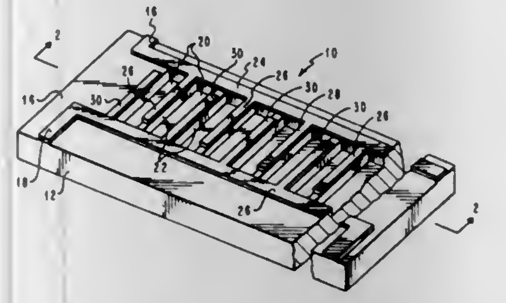
said first and second sets of piezoelectric resonators being located in said first and second compartments, respectively, each said set of resonators forming a column of resonators in its respective said compartment; and

blocking means at least partially blocking said at least one opening for preventing said first and second sets of piezoelectric resonators from slipping out of said casing.

4,353,046

SURFACE ACOUSTIC WAVE DEVICE WITH REFLECTORS

Clinton S. Hartmann, Dallas, Tex., assignor to R F Monolithics, Inc., Dallas, Tex.
Filed Nov. 4, 1980, Ser. No. 204,064
Int. Cl.³ H03H *9/25, 9/64, 9/145*
U.S. Cl. 333—194 **19 Claims**



1. A surface wave device comprising in combination:

substrate means having at least a surface layer of piezoelectric material;

acoustic surface wave transducer means disposed on the piezoelectric surface of the substrate means and being operable to convert between an electrical signal and acoustic surface waves propagating on the piezoelectric surface of the substrate means; and

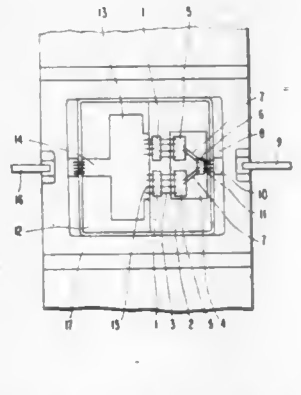
means other than transducer means defining reflective structures on the device responsive to acoustic surface waves wherein the means defining reflective structures causes reflections of acoustic surface waves in the portion of the piezoelectric surface over which the transducer means is disposed, and

wherein the acoustic surface wave transducer means comprises opposing pads have alternating groups of electrodes in interdigitated relationship to define a split electrode transducer and the means defining reflective structures forms grooves in the piezoelectric surface between at least one pair of the electrodes comprising a group.

4,353,047

(1 − X)BAO.XTIO$_2$ SYSTEM DIELECTRIC MATERIAL FOR USE IN A MICROWAVE DEVICE

Tsutomu Noguchi; Yuji Kajiwara; Masanori Suzuki, and Hideo Takamizawa, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 116,413, Jan. 29, 1980, abandoned. This application Apr. 28, 1981, Ser. No. 258,355
Claims priority, application Japan, Jan. 29, 1979, 54-8967
Int. Cl.³ H01P *1/00;* **C04B** *35/49*
U.S. Cl. 333—247 **8 Claims**



1. A transistor device having an internal impedance matching circuit, comprising a conductor block, a transistor chip having input, output and common electrodes, said common electrode of said transistor chip being connected to said conductor block, a sheet of dielectric material directly mounted on said conductor block, an electrode layer formed on said dielectric material and electrically connected to said input electrode and/or said output electrode of said transistor chip, said electrode layer cooperating with said dielectric material and said conductor block to constitute a capacitive element in said internal impedance matching circuit, a conductive layer electrically to said electrode layer and separated from said conductor block by an insulating layer, said conductive layer cooperating with said insulating layer and said conductor block to constitute a strip line, a lead wire connected to said conductive layer, and a package housing encapsulating at least said transistor chip and said sheet of dielectric material, said dielectric material having as a principal constituent $(1-x)$BaO.xTiO$_2$, where the parameter x falls in the range of $0.7 \leqq x \leqq 0.95$, and containing manganese in an amount of 0.035 to 0.07% by weight per amount of said principal constituent and zirconium in an amount of 0.37 to 2.6% by weight per amount of said principal constituent.

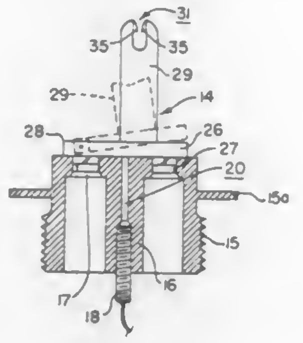
4,353,048

GAS-FILLED ENVELOPE ENCLOSED HIGH VOLTAGE RELAY

Victor E. DeLucia, 11846 Mississippi Ave., Los Angeles, Calif. 90025
Filed Sep. 25, 1981, Ser. No. 305,453
Int. Cl.³ H01H *1/66*
U.S. Cl. 335—151 **2 Claims**

1. In a relay which includes an envelope having a generally tubular configuration, a first electrically conductive contact pin extending radially into the envelope, a first arcuately-shaped movable contact extending transversely to the axis of said first contact pin, electrically conductive means affixed to an intermediate part of said movable contact and pivotally

mounted on said first contact pin to cause said movable contact to be electrically connected to said first contact pin, and a pair of further electrically conductive pins extending radially into said envelope on each side of said first pin to be selectively engaged by the ends of said movable contact as the movable contact is pivotally moved between a first and second angular position, and magnetic armature means mounted in said envelope and mechanically coupled to said movable contact to turn said movable contact selectively about the axis of said first contact pin between said first and second angular positions, a second electrically conductive contact pin extending radially into said envelope diametrically opposite said first pin and coaxially therewith, a second arcuate movable contact pivotally mounted on said second contact pin at an intermediate part of said arcuate movable contact, a second pair of further electrically conductive contact pins extending radially into said envelope on each side of said second pin to be engaged selectively by said second movable contact as it is turned between a first and a second angular position about the common axis of said first and second contact pins, said envelope being filled with a high pressure gas to prevent ionization between said contacts and to provide cooling therefor; an insulating rod formed of glass-filled epoxy resin interconnecting said first and second movable contacts, said rod extending parallel to said common axis but displaced therefrom, and said magnetic armature being mechanically coupled to said rod.



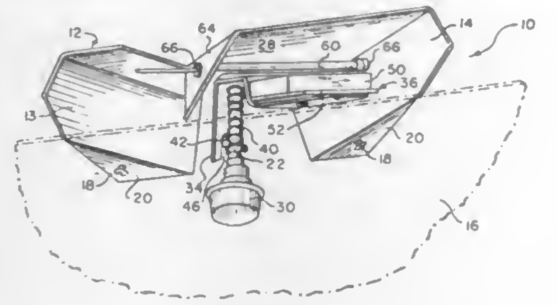
4,353,049
MAGNETICALLY DETENTED ROTARY SWITCH

Irwin S. Lerner, Orange, and Melvin Spat, Stamford, both of Conn., assignors to Lerner Laboratories, Inc., New Haven, Conn.

Filed Aug. 27, 1980, Ser. No. 181,707

Int. Cl.³ H01H *9/20, 5/02*

U.S. Cl. 335—205 **12 Claims**



1. A switch comprising:

a housing having two confronting magnetizable walls;
a shaft secured to said housing for rotation relative thereto; means at one end of said shaft for effecting manual rotation thereof;
a magnetic member; means for securing said magnetic member to said shaft for rotation therewith between said confronting walls, whereby said magnetic member is in magnetic detented contact with one of said magnetizable walls when said shaft is rotated to a first position and in magnetic detented contact with the confronting magnetizable wall when said shaft is rotated to a second position; and
a magnetic reed switch supported in said housing in the vicinity of said one magnetizable wall, whereby said switch is activated when said shaft is in said first position and deactivated when said shaft is in said second position.

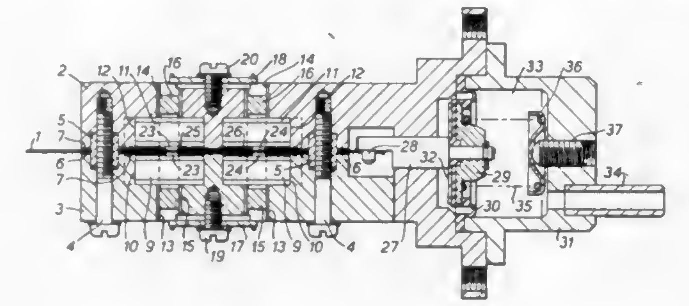
4,353,050
DISPLACEMENT MEASURING TRANSDUCER

Alan Pelczyk, Hockenheim, Fed. Rep. of Germany; Robert F. Purssell, Plymouth, England; Alfred J. Woollard, Hurst, Tex.; Albert L. Fowler, Kirkcaldy, Scotland; David M. Walker, Glenrothes, Scotland; Alan G. Henderson, Markinch, Scotland, and Alastair K. Stevenson, Glenrothes, Scotland, assignors to Ranco Incorporated, Dublin, Ohio

Filed Jun. 13, 1980, Ser. No. 159,291

Int. Cl.³ H01F *21/02*

U.S. Cl. 336—30 **15 Claims**



1. A displacement-measuring transducer comprising a linearly displaceable laminar member mounted for sliding movement within a metal sleeve located in a housing, the laminar member having two apertures spaced apart in the direction of displacement of the member, and at least two electromagnetic pick-up devices cooperating with said apertures and spaced apart in the said direction, the metal sleeve acting as an electromagnetic shield and having apertures therein at the positions of the respective pick-up devices, so that upon displacement of the laminar member the displacement of the two apertures of the laminar member relative to the respective pick-up devices with which they cooperate results in respective electrical outputs from the pick-up devices which can be utilized to provide a measurement of the displacement of the laminar member relative to the housing.

4,353,051
COIL FORM FOR ELECTRIC COILS

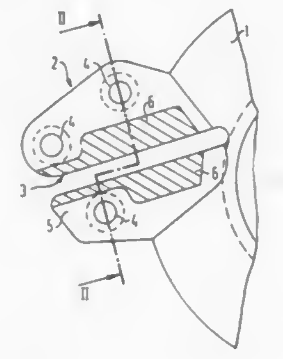
Roger Wille, Oostkamp, Belgium, and Gerhard Meindl, Alling, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,007

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004747

Int. Cl.³ H01F *15/10, 27/30*

U.S. Cl. 336—192 **2 Claims**



1. Coil form for electric coils comprising a coil core having end flanges defining a winding space therebetween, one of said end flanges being formed with bars extending transversely to said coil core and having elongated rectilinear wire guide slots formed therein and open at one end thereof, said bars being rounded in direction transverse to longitudinal direction of said slots at a transition location between said slots and said winding space, said bars carrying contact pin terminals for connection with wires wound on the coilform and having a part thereof formed as a wire catching beak for forcibly guiding into the respective wire guide slots winding wires which are to be connected by soldering to said contact pin terminals, said bars having surfaces defining said wire guide slots, said surfaces being inclined in direction of said contact pin terminals, said wire guide slots being widened in vicinity of said contact pin terminals and in a direction transverse to longitudinal direction of said slots so that crossover locations of the winding wires are shifted out of a zone wherein the winding wires are soldered to the contact pin terminals and into said wire guide slots.

4,353,052
IRON CORE WITH PLANISHED CLAMPING SURFACES FOR ELECTRIC MACHINE, SUCH AS TRANSFORMER, CHOKE, VOLTAGE STABILIZER OR THE LIKE

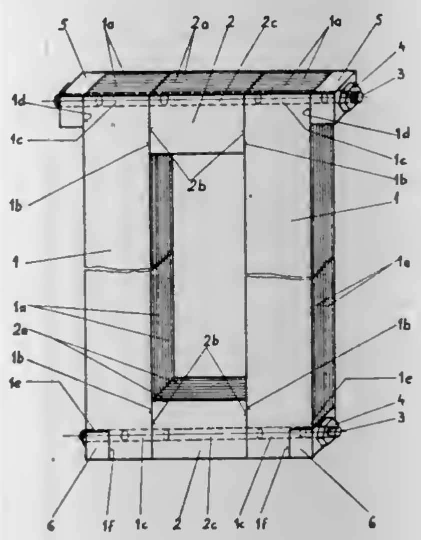
Hugo-Werner Geschka, Düsseldorf, Fed. Rep. of Germany, assignor to E. Blum GmbH & Co., Vaihingen, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,791

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827179

Int. Cl.³ H01F *27/26*

U.S. Cl. 336—210 **4 Claims**



1. Iron core for an electric machine such as a transformer, a choke, a voltage stabilizer and the like, assembled of a plurality of individual parallelipipedal core parts formed of laminated layers mutally held together, the core parts having mutually abutting joints formed with smoothly finished surfaces free of any metallic connection between the individual layers, comprising clamping means applied to a planished clamping surface at outer contours of the core and extending transversely to the laminated layers, clamping elements clamping said clamping means so as to hold the individual core parts together, said clamping means being means for distributing clamping force at least approximately uniformly to the individual laminated layers between said clamping means and the respective planished clamping surface.

4,353,053
ROTARY VARIABLE RESISTOR

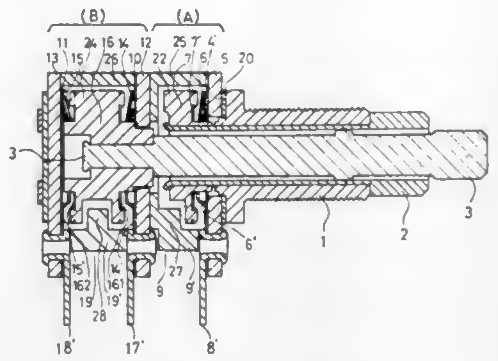
Hiroshi Matsui; Matsuo Nishioka, both of Hirakata, and Takashi Onizawa, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 14, 1980, Ser. No. 196,566

Claims priority, application Japan, Oct. 19, 1979, 54-145527[U]

Int. Cl.³ H01C *10/32*

U.S. Cl. 338—184 **3 Claims**



1. In a rotary variable resistor comprising:

at least one insulation substrate having a partial-ring form registor layer on the surface thereof,
an operational shaft rotatably supported at a central portion of said insulation substrate,
a brush supporter in the form of a rotational body disposed substantially at one tip of said operational shaft and holding a brush rotatably sliding on said resistor layer, and
a cover case of molded insulation material covering said brush and said brush supporter,
the improvement wherein:
a side of each such insulation substrate has lead terminals;
said cover case is constituted by a peripheral side wall with two ends, defining an internal space which is open at both ends without any intervening partition wall, said peripheral side wall having an internal surface; and
a protrusion for stopping the rotationalal movement of said brush supporter is disposed on said inner surface of said peripheral side wall of said cover case on the side of said at least one insulation substrate having said lead terminals.

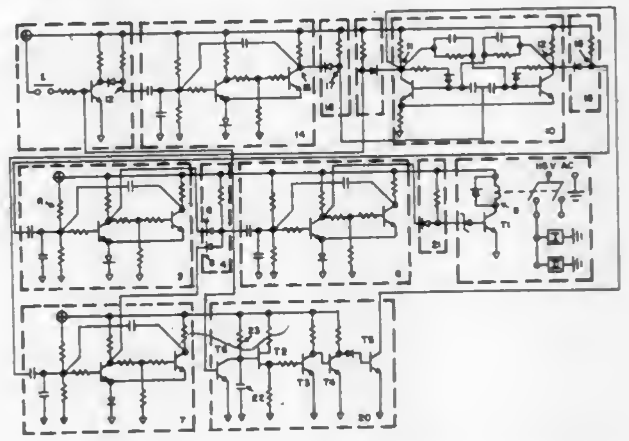
4,353,054
STOP SIGN WATCHER, A DEVICE FOR MONITORING VEHICLES AT FULL STOP SIGN INTERSECTIONS

Lawrence J. King, and Irene T. King, both of 27 Cambridge Dr., Smithtown, L. I., N.Y. 11787

Continuation-in-part of Ser. No. 773,471, Mar. 2, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,839

Int. Cl.³ G08G *1/10*

U.S. Cl. 340—31 C **7 Claims**



1. A ground based detection device, capable of generating an electrical pulse whenever a monitored vehicle fails to essentially make a "Full Stop" at roadway intersections where "Full

Stop" signs are posted; said ground based device comprising means for counting the offending vehicles, audible alarm means actuable in response to the offending vehicle, and control means for controlling the operation of photographic equipment for taking a picture of the offending vehicle, said ground based device further comprising: a source of electrical energy for the operation of the device, a single sensor means laid across a single lane for detecting the passage of the front and rear wheels of the monitored vehicle and producing a first and second output pulse respectively, a first monostable multivibrator switching means triggered by either said first or second output pulse of said sensor means and utilized for blocking contact bounce or false signals originating from said sensor means,

five single input gates, the first and second of which serve as interface inputs to said first monostable multivibrator switching means and a single bistable switching means respectively, the third and fourth input gates serving as interface inputs to a second and third monostable multivibrator switching means respectively the fifth single input gate serving as an interface input to an output switching relay means, said second input gate coupled to the output of said first monostable switching means;

said single bistable switching means controlled directly by said first monostable switching means through said second single input gate; said third and fourth single input gates coupled to the inputs of said second and third monostable switching means respectively, first and second output of said bistable switching means controlling the triggering of said second and third monostable switching means respectively, via said third and fourth input gates, said second monostable switching means triggered by said first output of said single bistable switching means via said third input gate whenever said first output pulse of said sensor means is produced in response to the vehicle front wheel passage over said sensor means,

a two input AND gate having one input coupled to the output or metastable state of said second monostable switching means; the time period of said metastable state of said second monostable switching means having limits which established a partial gate enablement time and constitutes a Full Stop Period, this period being adjusted by variable resistance in said second monostable switching means,

said third monostable switching means triggered by said second output of said bistable switching means via said fourth input gate whenever the said second output pulse of said sensor means is produced in response to the vehicle rear wheel passage over said sensor means, the output or metastable state of said third monostable switching means having a period less than the period of the metastable state of said second monostable switching means, said output of said third monostable switching means being coupled to the other input of said AND gate,

said two input AND gate being controlled by said second and third monostable switching means, the period of the AND gate output being determined by the period of the metastable state of said third monostable switching means,

a fourth monostable switching means triggered by the output of said AND gate; an output of said fourth monostable switching means controlling the operation of said output relay means via said fifth input gate,

said output relay means controlling said counter means, alarm means, and photographic control means,

an independent time controlled pulse generator means controlling the quiescent state of said single bistable switching means.

4,353,055
ALARMING APPARATUS OF VEHICLE

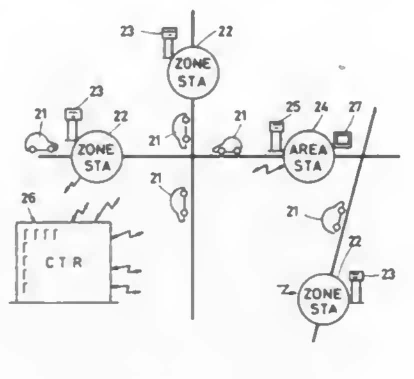
Shiro Kawakatsu, and Toshikazu Kawasaki, both of Suita, Japan, assignors to Daihatsu Motor Co., Ltd., Ikeda, Japan

Filed May 14, 1980, Ser. No. 149,717

Claims priority, application Japan, May 24, 1979, 54-69748[U]; Aug. 15, 1979, 54-113166[U]

Int. Cl.^{3} G08B *29/00*

U.S. Cl. 340—52 D **25 Claims**



1. An alarming apparatus in a vehicle including an auxiliary device for implementing an auxiliary function of said vehicle, comprising:

first alarming means provided to raise an alarm inside said vehicle,

second alarming means provided to raise an alarm outside said vehicle,

using state selecting means for selecting a using state or a non-using state of said vehicle,

state detecting means for detecting a predetermined undesired state of said auxiliary device for implementing an auxiliary function of said vehicle, said predetermined undesired state of said device being undesired in said non-using state of said vehicle,

first control means responsive to said state detecting means and said using state selecting means for enabling said first alarming means when said predetermined undesired state is detected by said state detecting means and said non-using state is selected by said using state selecting means, and

second control means for enabling said second alarming means a predetermined period of time after said first alarming means is enabled by said first control means.

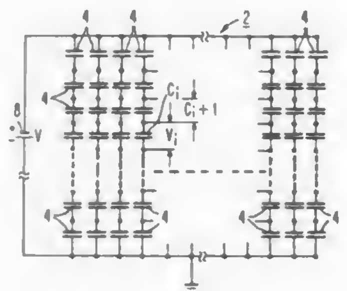
4,353,056
CAPACITIVE FINGERPRINT SENSOR

Constantine Tsikos, Pennsauken, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Jun. 5, 1980, Ser. No. 156,571

Int. Cl.^{3} G06K *9/00*

U.S. Cl. 340—146.3 E **4 Claims**



1. A fingerprint sensor comprising in combination:

(a) a sensing member having a sensing surface for pressing a finger thereto;

(b) sensing means for sensing the ridges and valleys of the skin of said finger, said sensing means containing a multitude of capacitors located in said sensing member, the size of said capacitors being less than the size of said valleys; and

(c) said sensing member containing a multitude of metal plates, each forming a first electrode of said multitude of capacitors, whereby the capacitances of respective ones of said capacitors are locally changed in accordance with said ridges and valleys when said finger is pressed against said surface.

4,353,057
SYSTEM FOR DIGITIZING TRANSIENT SIGNALS

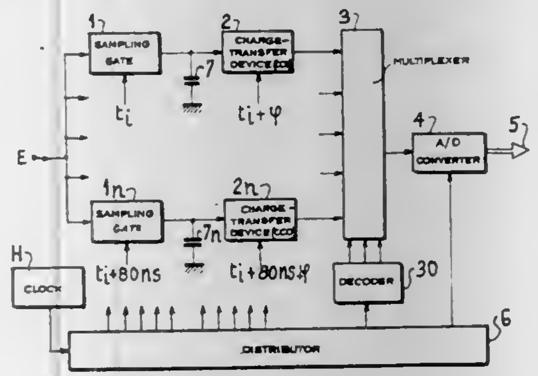
Jean-Marie Bernet, and Gabriel Lejeune, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 8, 1979, Ser. No. 46,818

Claims priority, application France, Jun. 13, 1978, 78 17621

Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 SH **7 Claims**



1. A system for digitizing transient signals appearing at an input terminal, comprising:

a plurality of sampling gates connected in parallel to said input terminal;

a plurality of charge-transfer devices respectively connected to said sampling gates, each of said devices including a multiplicity of cells, a multiplicity of first switches for successively loading associated cells with incoming signal samples from the respective sampling gate and a multiplicity of second switches for successively reading out the contents of associated cells in the order of their loading to an output circuit common to all said cells, each of said first switches being paired for joint operation with a respective second switch associated with a different cell;

an analog-digital converter;

multiplexer means inserted between said charge-transfer devices and said converter for cyclically connecting the output circuits of all said devices to said converter until the contents of the cells of all said devices have been read out;

utilization means connected to said converter, and

timing means connected to said sampling gates, said charge-transfer devices and said multiplexer means for briefly opening said sampling gates in cyclic succession at a relatively fast clock-pulse rate and for jointly operating said first and second switches of the respective charge-transfer devices in synchronism therewith during a first operational phase, said timing means being modified upon the loading of the cells of all said devices for thereupon jointly operating said first and second switch means of said charge-transfer devices in cyclic succession and in synchronism with said multiplexer means at a relatively slow clock-pulse rate for successively reading out the contents of all cells to said converter during a second operational phase, said output circuits being grounded during said first operational phase for clearing each cell via the associated second switch prior to loading same via the associated first switch, the connections between said sampling gates and said charge-transfer devices being blocked during said second operational phase.

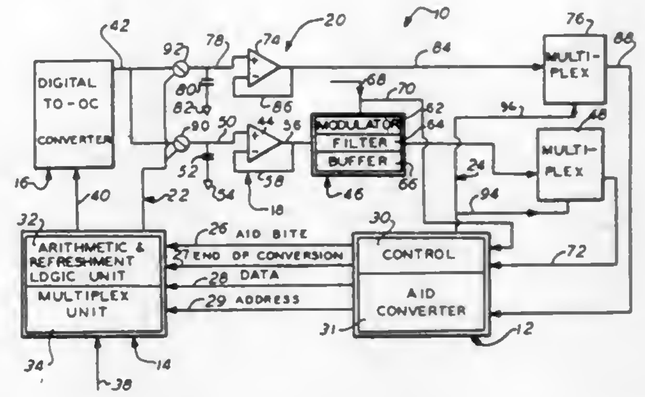
4,353,058
DIGITAL TO ANALOG CONVERTER HAVING AN ANALOG TO DIGITAL CONVERTER PORTION FOR AN AC OPERATION OR A DC OPERATION

Sidney M. Sacks, Monsey, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed May 9, 1980, Ser. No. 148,118

Int. Cl.^{3} H03K *13/02*

U.S. Cl. 340—347 CC **2 Claims**



1. A digital to analog converter responsive to input digital command signals and including error compensation and being adapted to employ an analog to digital converter having an ac or dc mode of operation, comprising:

an arithmetic logic unit adapted to connect to the analog to digital converter, having a first input for receiving digital correction signals from the analog to digital converter for error compensation, and having a second input for receiving the input digital command signals,

a digital to dc converter portion coupled to the arithmetic logic unit, having an input for receiving corrected input digital command signals from the arithmetic logic unit, and

a multiplex circuit means coupled to the digital to dc converter portion and adapted to connect to the analog to digital converter, wherein the multiplex circuit means includes:

an ac multiplex circuit means having a plurality of ac channels and an ac multiplex unit for ac operation, and each channel of the ac multiplex circuit means includes a sample and hold amplifier, a capacitor coupled to the sample and hold amplifier, and a modulator assembly coupled to the sample and hold amplifier and coupled to the ac multiplex unit, said modulator assembly including a modular section and a filter section and a buffer section, and

a dc multiplex circuit means having a plurality of dc channels and a dc multiplex unit for dc operation, and each channel of the dc multiplex circuit means includes a sample and hold amplifier coupled to the dc multiplex unit, and a capacitor coupled to the sample and hold amplifier, and

said ac multiplex unit and said dc multiplex unit each being arranged to couple a selected channel of the ac multiplex circuit means or a selected channel of the dc multiplex circuit means to the analog to digital converter.

4,353,059
MULTITHRESHOLD CONVERTER UTILIZING REFERENCE TRACKING AMPLIFIERS

Rimantas L. Vaitkus, Phoenix, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 16, 1980, Ser. No. 150,538

Int. Cl.^{3} H03K *13/175*

U.S. Cl. 340—347 AD **1 Claim**

1. A multithreshold A/D converter having primary and secondary quantizing stages comprising:

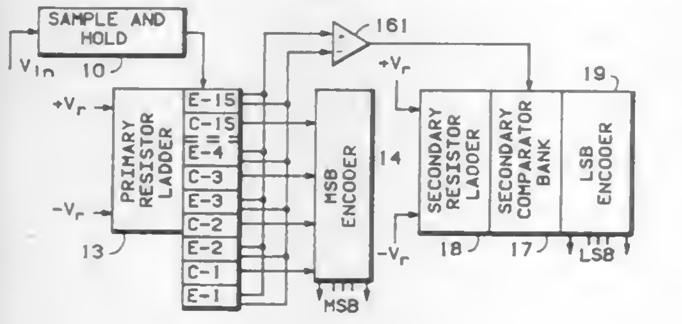
primary threshold voltage network means for providing primary threshold reference voltage levels;

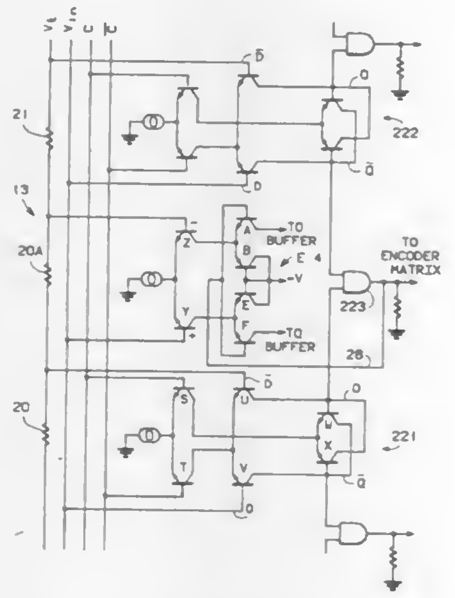
a plurality of primary comparators each coupled to a different primary voltage level of said primary threshold voltage network means for comparing a given analog input signal to the primary threshold reference voltage levels and supplying outputs encoded to provide digital signals representative of the most significant bits (MSB) of the digital equivalent of the analog input signal;

secondary threshold voltge network means for providing secondary threshold reference voltage levels;

reference tracking amplifier means coupled to said primary and secondary threshold voltage network means for amplifying at least one of the primary threshold reference voltage levels and applying the amplified voltage level across said secondary threshold voltage network whereby any drift in the primary reference voltage levels will be tracked by said secondary threshold voltage network;

a plurality of error amplifiers each coupled to a different primary threshold reference voltage level intermediate those primary threshold reference voltage levels utilized





by adjacent pairs of said plurality of primary comparators, a selected one of said error amplifiers outputting a signal differential of said intermediate threshold reference voltage level and said given analog input signal;

a plurality of secondary comparators each coupled to a different secondary voltage level of said secondary threshold voltage network means and to said plurality of error amplifiers for comparing the signal differential from the selected error amplifier to the secondary threshold reference voltage levels and supplying outputs encoded to provide digital signals representative of the least significant bits (LSB) of the digital equivalent of the analog input signal; and

said reference tracking amplifier means and said plurality of error amplifiers being matched by formation of monolithically fabricated integrated circuits whereby said reference tracking amplifier means and said plurality of error amplifiers are identical to each other and track under conditions imposed by operation and environment.

4,353,060

ANALOG TO DIGITAL CONVERTER SYSTEM WITH AN OUTPUT STABILIZING CIRCUIT

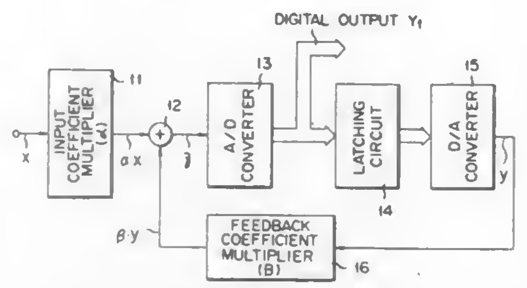
Kenjiro Endoh; Yoshiyuki Ishizawa; Masanori Tanaka, all of Yokohama, and Koji Iwasaki, Gotenba, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 1, 1980, Ser. No. 165,037

Claims priority, application Japan, Jul. 13, 1979, 54-88769

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 AD **8 Claims**



1. An A/D converter system with an output stabilizing circuit comprising:

an adder for summing an analog input signal and a positive feedback signal;

an A/D converter for converting the output signal from said adder into a digital signal;

a D/A converter means for producing an analog feedback signal corresponding to the output signal from said A/D converter after at least one converting operation period of said A/D converter, said D/A converter means including a D/A converter and a signal delay means; and

a feedback coefficient multiplier for producing said positive feedback signal obtained by multiplying a given feedback coefficient valued at less than 1 by said analog feedback signal and an input coefficient multiplier which multiplies a first analog input signal by a given input coefficient and produces said first analog input signal as a second analog input signal to be supplied to said adder, and the sum of said input coefficient and said given feedback coefficient is 1.

4,353,061

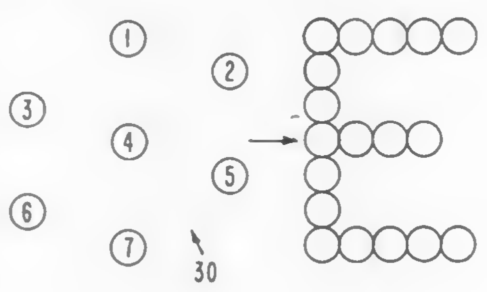
APPARATUS AND METHOD FOR PROVIDING ELECTRON BEAM PATTERNS USING EXPANDED BEAM ARRAY

Vernon D. Beck, Ridgefield, Conn., assignor to International Business Machines, Armonk, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,337

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—720 **16 Claims**



1. An apparatus for forming a scanned electron beam pattern which substantially avoids or reduces mutual beam repulsion, beam intermodulation, and grid mounting problems, comprising:

electron beam emitter means (**40**, **42**) for emitting a plurality of electron beams which are disposed in relation to each other so as to form an array of beams,

means for deflecting (**72**) each of said beams through a plurality of spaced apart, parallel scan lines, each said scan line being comprised of a plurality of successively disposed scanning positions,

said array of beams being such that at any one time each beam lies on a different scan line and having a geometric shape such that a first line connecting the two points on the outline of said shape which are spaced furthest from each other and a second line perpendicular to and bisecting said first line and connecting two other points on said outline, are of comparable length, and

means for selectively controlling each of said beams (**80–120**) at each of said scanning positions to effect said pattern.

4,353,062

MODULATOR CIRCUIT FOR A MATRIX DISPLAY DEVICE

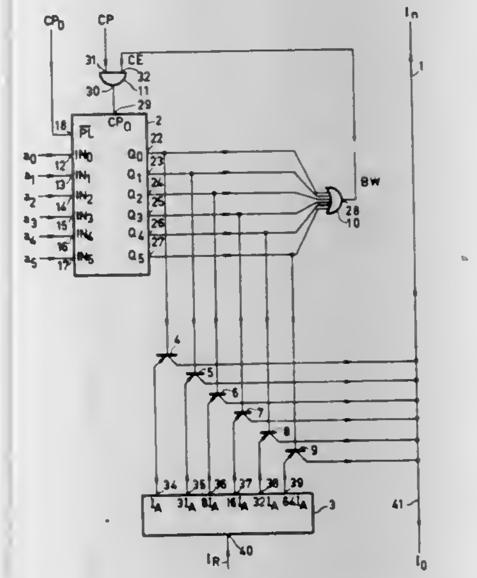
Jean H. J. Lorteije; Geert Warrink, and Henri W. Schneider, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,406

Claims priority, application Netherlands, May 4, 1979, 7903515

Int. Cl.³ G09G *3/22*

U.S. Cl. 340—767 **14 Claims**



1. A modulator circuit for a matrix display device having k columns and r rows, comprising a row selection means for sequentially electrically exciting r rows, and k column excitation means for exciting the k column conductors respectively, each column excitation means comprising a counting circuit having N counting elements and a current source circuit, means for adjusting said counting means, shortly prior to the selection of a next row to initial positions corresponding to the (display) picture information applied to said modulator circuit for the corresponding elements of this row, means for applying a number of counting pulses to all of said counting means during a row selection period, this number not exceeding 2^N, each of said counting means counting by means of the counting pulses produced by said means for applying a number of counting pulses, from the preset initial position until a fixed final position has been reached to determine the pulse width of the excitation pulse applied to a picture element corresponding with that counting means and the current source circuit determining the maximum amplitude of this excitation pulse, characterized in that for the duration of the excitation pulse the current source circuit for a column applies a finite current which varies with time, to the picture element selected in the column, this current always corresponding with the number of used, consecutive positions of the counting circuit.

4,353,063

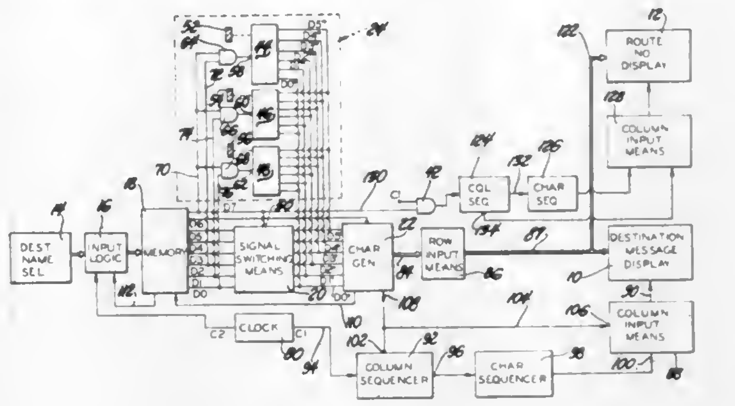
BUS DESTINATION SIGN WITH PROGRAMMED DESTINATION NAME AND MANUALLY SETTABLE ROUTE NUMBERS FOR COMBINED DISPLAY

Thomas A. Devlin, Waterford, Mich., assignor to Vultron, Inc., Waterford, Mich.

Filed Jul. 30, 1980, Ser. No. 173,787

Int. Cl.³ G09G *3/20*

U.S. Cl. 340—798 **8 Claims**



1. In a sign of the type comprising an alphanumeric display device,

a memory for storing a multiplicity of primary word signals each constituting one part of a message,

means including a first manually actuable selector means coupled with said memory for selectively accessing any one said primary word signals,

a character generator operatively coupled with said display device and responsive to a word signal for producing a character generator signal to control the energization of said display device to display a word corresponding to the word signal,

said sign being characterized in that it comprises a secondary word selector including a second manually actuable selector means for producing a selected one of a multiplicity of secondary word signals each constituting another part of a message,

said secondary word selector being coupled with said character generator for causing the display device to display a message including a selected secondary word,

and control means including switching means operatively coupled between the memory and the the character generator for causing the display device to display,

said control means including additional means responsive to said memory for actuating the switching means and for enabling the second manually actuable selector means to cause the display device to display the selected secondary word with the selected primary word.

4,353,064

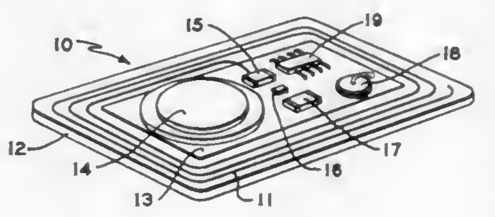
BATTERY OPERATED ACCESS CONTROL CARD

Thomas A. Stamm, Chicago, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 14, 1981, Ser. No. 225,087

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.31 **38 Claims**



1. An access control card used in access control systems comprising:

a battery;

wireless signal receiving means for receiving a coded wireless signal generated by a card reader;
clock means connected to the battery and including a receiver connected to the antenna for supplying a received signal based upon said coded wireless signal;
memory means for storing first and second stored codes; and,
transmit means connected to said wireless signal receiving means, to said clock means and to said memory means for comparing said first stored code and said received signal and for transmitting said second stored code when there is a match between said received signal and said first stored code.

4,353,065

DIGITAL RADIO PAGING COMMUNICATION SYSTEM

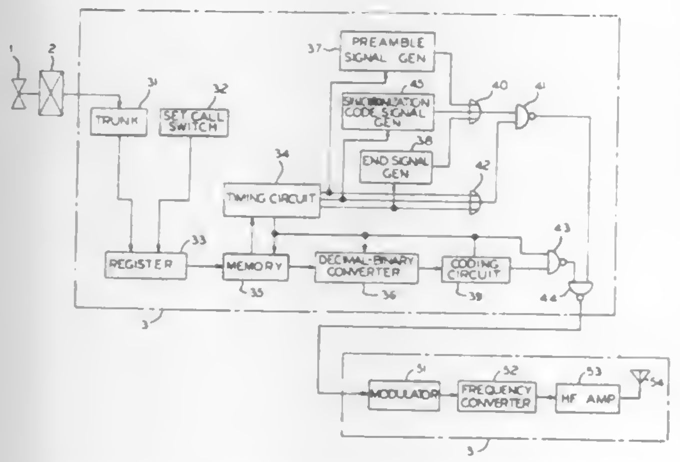
Toshihiro Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,873

Claims priority, application Japan, Mar. 28, 1980, 55/39038

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 340—825.44 **14 Claims**



1. A digital radio paging communication system having a transmitter and a plurality of receivers, said transmitter comprising:

(a) first, second, third and fourth means for generating a preamble signal, a synchronization signal, a plurality of calling signals and a stabilization signal, respectively;
(b) fifth means for selectively controlling the outputs of said first, second, third and fourth means to arrange them into a sequence of first signals including said preamble signal and at least a batch of signals, said batch of signals including said synchronization signal and said plurality of calling signals which are divided into a plurality of groups, each group of signals having said stabilization signal at the leading portion thereof; and
(c) sixth means for modulating a carrier wave with said sequence of first signals and for transmitting the modulated carrier wave, each of said plurality of receivers comprising:
(d) seventh means for receiving said modulated carrier wave and demodulating it into said sequence of second signals;
(e) eighth means responsive to at least the demodulated preamble signal and stabilization signal for providing a reference voltage;
(f) ninth means for waveform-converting the demodulated sequence of second signals into said sequence of first signals with said reference voltage;
(g) tenth means coupled to the output of said ninth means for providing a first control signal upon detection of said preamble signal and for providing a second control signal upon detection of said synchronization signal; and
(h) eleventh means including means for continuously supplying power to at last said seventh means in response to said first control signal, and means for supplying power to at least said seventh means during a period of time allocated for reception of said group of signals for its own receiver in response to said second control signal.

4,353,066

CHANNEL SWITCHING NETWORK

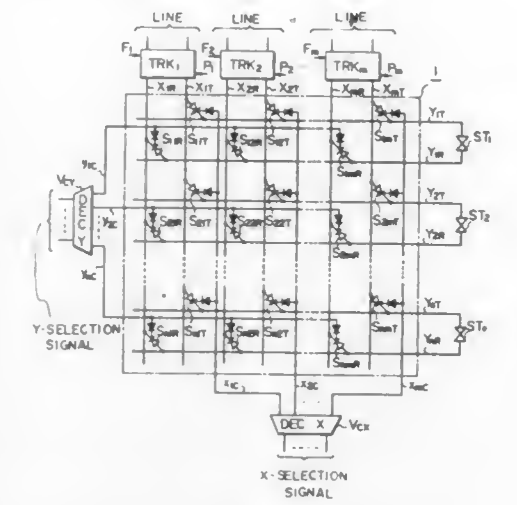
Tetsuro Inomata, Kawasaki; Kazutada Katsukura, Tachikawa, and Hikaru Takematsu, Higashikurume, all of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Nov. 25, 1980, Ser. No. 210,317

Claims priority, application Japan, Nov. 29, 1979, 54-154660

Int. Cl.^{3} H04Q *3/52*

U.S. Cl. 340—825.96 **3 Claims**



1. A channel switch network comprising:
a plurality of cross-point switches arranged in a switch matrix, each cross-point of which is constituted as a channel switch of balanced type having two PNPN semiconductor elements, each of the two PNPN semiconductor elements being arranged in a forward direction with respect to a direct current flowing from the channel switching network to a corresponding terminal equipment connected to said switch matrix;
selection means for designating in response to a pair of selection signals a column of cross-point switches and a line of cross-point switches in the switch matrix to select a simultaneously designated cross-point switch;
power source terminal means for receiving a direct current from a power source; and
control means provided for each pair of the incoming lines and the outgoing lines of the switch matrix to flow the direct current in the PNPN semiconductor elements at a cross-point of the switch matrix selected by said selection means so that the terminal voltage thereof for flowing the direct current in the selected PNPN semiconductor elements from said power source terminal means is controlled to temporarily rise to turn ON the selected PNPN semiconductor elements and thereafter to drop to a value as to only maintain the selected PNPN semiconductor elements in the ON states.

4,353,067

METHOD OF REDUCING SIDE LOBES OF COMPLEMENTARY CODED PULSES IN A COHERENT PULSE COMPRESSION DOPPLER RADAR RECEIVING SYSTEM

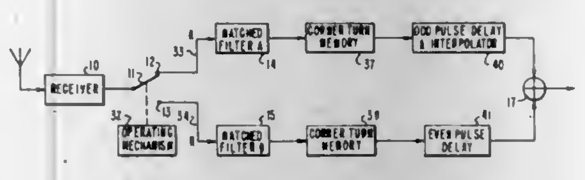
James H. Mims, Millersville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 29, 1980, Ser. No. 182,390

Int. Cl.^{3} G01S *13/28*

U.S. Cl. 343—17.2 PC **3 Claims**

1. A method of receiving sequentially applied radar pulses, alternate ones of which are phase encoded with intervening pulses of a complementary code, comprising switching alternate ones of each of the pulses to provide a first channel for each of the pulses encoded with one of the coomplementary codes and to provide a second channel for each of the pulses encoded with the other of the complementary codes; correlating the pulses in each individual channel to provide a separate matched output for each of the complementary codes; weighting each of the pulses in said first channel to provide a replica substantially corresponding to the amplitude and phase of a predetermined pulse in the second channel, delaying the pulses in the second channel to provide time coincidence with the weighted replicas of the first channel, and combining the weighted replicas of said first channel with pulses of said second channel.



4,353,068

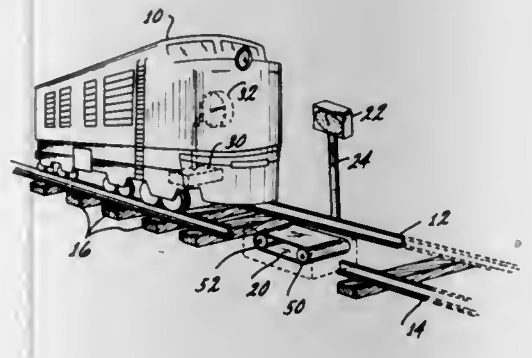
METHOD FOR CALIBRATING BEAM EMITTER TYPE SPEED SENSOR FOR RAILROAD ROLLING STOCK

Emilio A. Fernandez, 1019 Salt Meadow La., McLean, Va. 22101

Filed May 23, 1980, Ser. No. 152,586

Int. Cl.^{3} G01S *7/40;* **G01P** *3/00;* **B61B** *13/00*

U.S. Cl. 343—17.7 **7 Claims**



1. A method of calibrating as railroad vehicle speedometer in which speed is measured by a beam emitter type speed sensor mounted on the undercarriage of the railroad vehicle, and is displayed on a readout meter of the speedometer mounted in the vehicle, comprising the steps of:
a. Positioning an endless belt adapted to be moved in a longitudinal direction substantially parallel to a rail of a railroad track;
b. Rolling said railroad vehicle on said track over said endless belt to a position at which beams emitted by said speed sensor reflect off said endless belt;
c. Rotating said endless belt at a predetermined speed relative to said railroad vehicle; and
d. Calibrating said speedometer to display on its indicator a speed having a predetermined relationship to said predetermined speed.

4,353,069

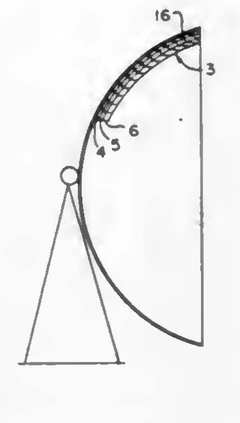
ABSORPTIVE COATING FOR THE REDUCTION OF THE REFLECTIVE CROSS SECTION OF METALLIC SURFACES AND CONTROL CAPABILITIES THEREFOR

Peter H. Handel, 20 Roclare La., St. Louis, Mo. 63131; James A. Jungman, 611 Dougherty Terrace Dr., St. Louis, Mo. 63011, and Stephen N. Honickman, 1870 Clover Ridge Ct., Chesterfield, Mo. 63017

Filed Sep. 10, 1980, Ser. No. 185,979

Int. Cl.^{3} H01Q *17/00*

U.S. Cl. 343—18 A **21 Claims**



1. An absorptive coating for reduction of the reflective cross section of a metallic surface, comprising:
a first layer of N dopant material of predetermined thickness, said N dopant material having an increasing conductivity from its boundary outboard of the metallic surface to the N dopant material boundary with the metallic surface, the dielectric constant of the material likewise increasing along the thickness of the N dopant material in a direction toward the boundary of the N dopant material with the metallic surface; and
a second layer of P dopant material of predetermined thickness, said P dopant material having an increasing conductivity from its boundary outboard of the metallic surface to its boundary with the N dopant material, said P dopant material having a generally increasing dielectric constant along its thickness in a direction toward its boundary with the N dopant material.

4,353,070

BROAD BAND SYSTEM OPERATING IN THE SUBMILLIMETER WAVE RANGE

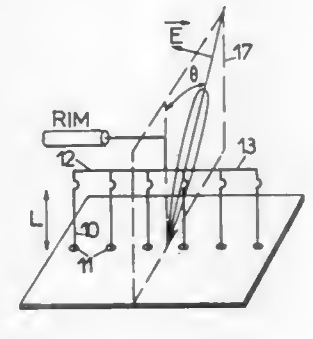
Maurice Pyee, Le Plessis Trevise, France, assignor to Agence Nationale de Valorization de la Recherche, Paris, France

Filed Jul. 28, 1980, Ser. No. 173,067.

Claims priority, application France, Aug. 1, 1979, 79 19762

Int. Cl.^{3} H01Q *3/26*

U.S. Cl. 343—701 **12 Claims**



1. A high speed microwave system for operation in the submillimeter wave radiation range, comprising a plurality of non-linear elements distributed in a regular planar array and an antenna structure for coupling said plurality of elements to the submillimeter wave radiation field, said antenna structure comprising a curtain of antenna members connected in parallel electrically and having point-like contacts which make electri-

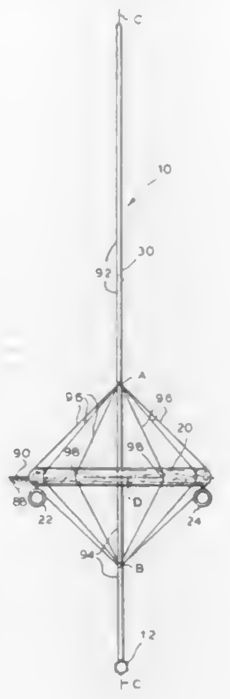
cal contact with said plurality of elements, said antenna members being constituted by a plate-like construction coupled to said non-linear elements through said point-like contacts.

4,353,071
SELF-ERECTING FLOATABLE STRUCTURE

Robert G. Bernstein, and David A. Clunies, both of Gaithersburg, Md., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed Apr. 28, 1981, Ser. No. 258,407
Int. Cl.³ H01Q *1/34*

U.S. Cl. 343—709 **8 Claims**



1. Self-erecting floatable structure comprising a collapsible extendible element, storage means associated with said collapsible extendible element for storing said collapsible extendible element in its collapsed configuration, inflatable means operatively connected to said collapsible extendible element for causing said collapsible extendible element and said storage means to float in a liquid such as water or the like and chemically gas generating means operatively connected to said inflatable means for chemically reacting with the liquid and generating a gas to inflate said inflatable means when in contact with said liquid.

4,353,072
CIRCULARLY POLARIZED RADIO FREQUENCY ANTENNA

George J. Monser, Goleta, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 210,094
Int. Cl.³ H01Q *13/02*

U.S. Cl. 343—725 **2 Claims**

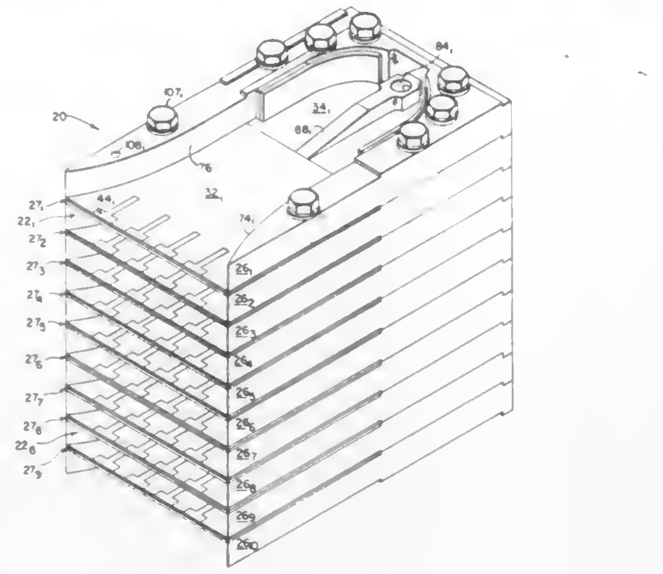
1. A radio frequency antenna for producing circularly polarized radio frequency energy comprising:

(a) a waveguide section having a pair of opposing walls;

(b) a first feed means for establishing radio frequency energy in such waveguide section having a linear polarization with an electric field disposed normal to the pair of opposing walls of the waveguide;

(c) a first microwave circuit means for establishing radio frequency energy having a linear polarization disposed normal to the electric field of the first mentioned linear polarization, such microwave circuit means comprising: a dielectric; a strip conductor circuit disposed over a first surface of the dielectric; and a ground plane conductor disposed over a second opposite surface of the dielectric, such ground plane providing one of the pair of opposing walls of the waveguide;

(d) a second microwave circuit means for establishing radio frequency energy having a linear polarization disposed normal to the electric field of the first mentioned linear polarization, such microwave circuit means comprising: a second dielectric; a second strip conductor circuit disposed over a first surface of the second dielectric; and a second ground plane conductor disposed over a second surface of the second dielectric, such second ground plane conductor providing the second one of the pair of opposing walls of the waveguide section; and,



(e) a power distribution means for coupling radio frequency energy to the first and second microwave circuit means with equal power and equal phase shift and for coupling radio frequency energy to the first feed means with a phase shift 90° with respect to the phase shift of the energy fed to the first and second microwave circuit means.

4,353,073
ANTENNA ARRANGEMENT FOR A RADAR SURVEILLANCE METHOD FOR TARGET LOCATING WITH ALTITUDE ACQUISITION

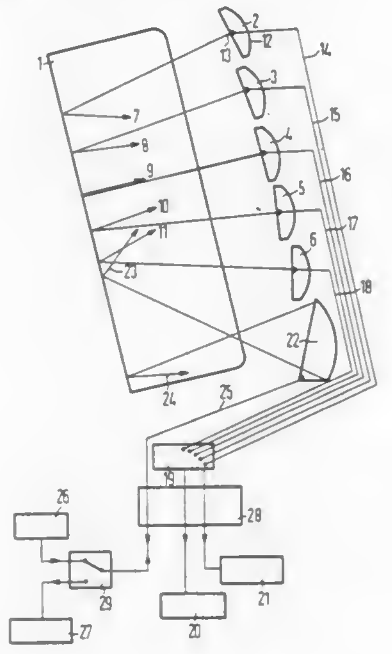
Anton Brunner, Wangen, and Erwin Kress, Woerthsee, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,280

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945789

Int. Cl.³ H01Q *3/24, 19/15*

U.S. Cl. 343—779 **17 Claims**



1. An antenna arrangement for radar surveillance for target locating having altitude acquisition, comprising:

a parabolic cylinder reflector mounted for rotation about a vertical axis; and

a primary radiator row arranged along the focal line of said reflector including a plurality of individual radiators,

each of said individual radiators operable with a beam which is narrow in its horizontal extent and all individual radiators inclined in a vertical plane with respect to one another so that their individual lobes lie one above another to form a vertical pattern, and

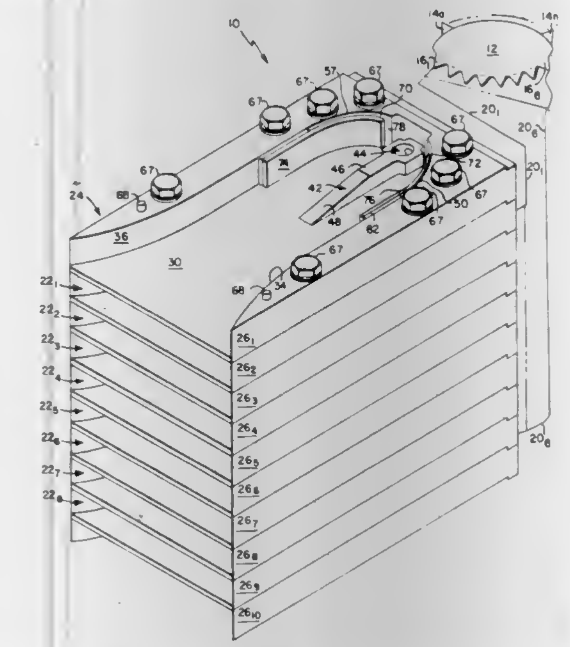
each of said individual radiators including a vertical dimension providing a predetermined bundling of the individual lobes.

4,353,074
RADIO FREQUENCY RIDGED WAVEGUIDE ANTENNA

George J. Monser, Goleta, and Albert A. Roy, Lompoc, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 24, 1980, Ser. No. 209,936
Int. Cl.³ H01Q *13/02*

U.S. Cl. 343—786 **8 Claims**



1. A radio frequency antenna element comprising a waveguide having opposing relatively wide, upper and lower wall portions, a pair of opposing relatively narrow side wall portions, and a relatively narrow rear wall portion, such portions being electrically connected to provide a cavity having an open end disposed opposite the rear wall portion, the separation between the side wall portions decreasing as such side wall portions extend towards the rear wall portions;

a ridge disposed within the cavity adjacent the rear wall portion, the decreasingly separated side wall portions being disposed between the ridge and the rear wall portion of the waveguide; and

a pair of channels disposed along the side wall portions of the waveguide having an open end and a closed end, such open end being closer to the rear wall portion of the waveguide than the closed end.

4,353,075
TELESCOPING VEHICLE RADIO ANTENNA WITH COMPRESSIBLE O-RING SEAL

Ralph W. Edwards, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1981, Ser. No. 252,599
Int. Cl.³ H01Q *1/10*

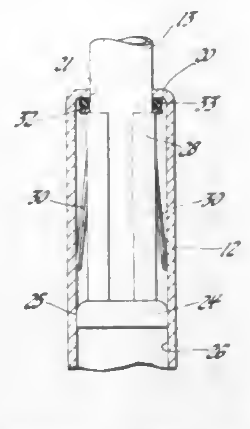
U.S. Cl. 343—903 **1 Claim**

1. A telescoping, multi-tube, vehicle radio antenna adapted for power extension and retraction, comprising, in combination:

an outer metallic antenna tube having an inward bent upper end defining an inner annular bearing surface;

an inner metallic cylindrical antenna member in telescoping relationship within the tube, the element having an expanded diameter rigid lower end defining an outer annular bearing surface and being slidably supported in the tube at the axially separated inner and outer annular bearing surfaces, the cylindrical antenna member further having outer circumferential shoulder means spaced upwardly from the lower end; and

a circumferential sealing element fixed to the cylindrical member in a position abutting the upper side of the outer circumferential shoulder means, said sealing element being compressible between the outer circumferential shoulder means and the inward bent upper end of the tube when the antenna is extended to prevent entry of water into the tube but being smaller in outer diameter than the inner diameter of the remainder of the tube so as to contribute no additional sliding friction or tendency to bind between the tube and cylindrical member during antenna extension and retraction.



4,353,076
APPARATUS FOR CONTROLLING A RECORDER

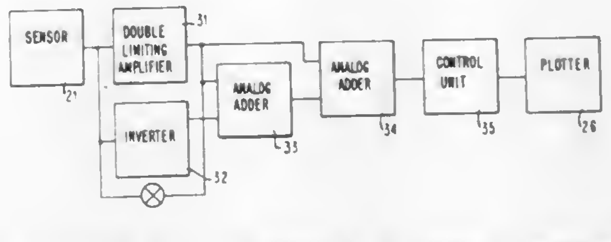
Armin Bohg, Weil im Schonbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1980, Ser. No. 138,952

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935596

Int. Cl.³ G01D *9/02*

U.S. Cl. 346—65 **13 Claims**



1. An apparatus for controlling a recorder in response to measured values (Y_M) to be recorded in curve form in a recording field of a recording medium, comprising:

recording elements means being energized for marking purposes by on scale and off-scale excursions of the measured values (Y_M), on the basis of comparison results ($Y_{MIN}<Y_M<Y_{MAX}$) and ($Y_{MIN}>Y_M>Y_{MAX}$) respectively of the respective measured values (Y_M) with reference values (Y_{MIN} and Y_{MAX}) predetermined by the upper and lower margins of the recording filed; and

a recording control unit means including:

means for providing a ramp function of the measured values to be recorded in curve form of the detected measured values (Y_M), in which the ramp amplitude determines the margin conditions defined by the reference values (Y_{MIN} and Y_{MAX}), one ramp section of said ramp function, with the direct measured value recording, having at least one associated ramp section for the indirect measured value recording, said ramp function is symmetrical with respect to rise and fall and the sequential ramp sections are equal and each correspond to one semi-period;

means for applying the symmetrical ramp function for releasing the transition from indirect to direct measured value recording, or vice versa, having a two-sided clipper defining the recording width of the recording field, an inverter, a sensor which is applied to the inputs of said clipper and said inverter, a first analog adder and a second analog adder, the outputs of the clipper and of the inverter are connected to the inputs of said first analog adder, and the outputs of the two-sided clipper and of the first analog adder are connected to the inputs of said second analog adder, a control device to which is connected the output of the second analog adder, and said control device is connected to said recording element means;

said recording control unit means, upon direct recording for detecting measured values ($Y_{MIN}<Y_M<Y_{MAX}$) existing inside the recording field, energizes said recording elements effective within the recording field for continuing the curve recording with simultaneous marking by specific recording element control of the respective curve section extending inside the recording field; and

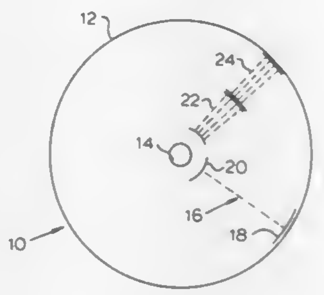
said recording control unit, upon indirect recording for detecting measured values ($Y_{MIN}>Y_M>Y_{MAX}$) existing outside the recording field, energizes said recording elements effective within the recording field for continuing the curve recording with simultaneous marking by specific recording element control of the respective curve section extending outside the recording field.

4,353,077

OPTICAL FLOPPY DISC DATA STORAGE AND RETRIEVAL TECHNIQUES

Phillip E. Gokey; Donovan W. Hurlbut; Emma L. Sederholm; Angel F. Terry, and Alan A. Jewer, all of Whitewater, Wis., assignors to News Log International, Inc., Fort Atkinson, Wis.

Filed Sep. 10, 1979, Ser. No. 74,095
Int. Cl.^{3} G01D *15/24*
U.S. Cl. 346—137 **12 Claims**



1. An information record comprising:

a circular body including a peripheral edge and adapted for rotation about an axis;

optically retrievable information carried by said body in radial lines between said axis and said peripheral edge; and

address information carried by said body identifying locations of respective portions of said optically retrievable information,

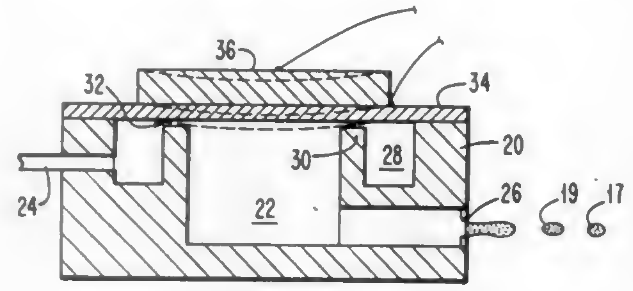
said address information including a plurality of line addresses each located within a respective line of said optically retrievable information.

4,353,078

INK JET PRINT HEAD HAVING DYNAMIC IMPEDANCE ADJUSTMENT

Francis C. Lee, San Jose; Ross N. Mills, Morgan Hill, and Frank E. Talke, Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,410
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—140 R **9 Claims**



1. A drop-on-demand ink jet printing head comprising:

a fluid chamber for receiving ink;

a fluid inlet chamber separated from said fluid chamber by a relatively narrow passageway;

an orifice communicating with said fluid chamber;

a membrane member forming at least part of a wall of said fluid chamber and overlying and adjacent to said fluid inlet chamber said fluid chamber and said relatively narrow passageway; and

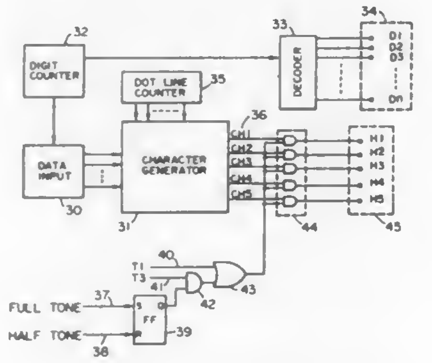
an electromechanical transducer fixed to said membrane member in a position overlying said narrow passageway, said fluid inlet chamber and said fluid chamber; said electromechanical transducer being selectively actuable in response to electrical signals to provide deflection of the part of said membrane member fixed to said electromechanical transducer to reduce the volume of said fluid chamber and to substantially close, along its entire length, said relatively narrow passageway to force a single drop of ink from said orifice and to substantially close the flow path from said fluid chamber to said fluid inlet chamber during formation of the drop of ink.

4,353,079

ELECTRONIC DEVICE HAVING A VARIABLE DENSITY THERMAL INK JET RECORDER

Tsuyoshi Kawanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,302
Claims priority, application Japan, Apr. 2, 1979, 54/39474
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—140 R **4 Claims**



1. An electronic device having a thermal ink jet printer comprising:

a character generator for generating character information to be recorded on a recording medium;

an AND gate, one input terminal of which receives the output of said character generator;

heater means for receiving the output of said AND gate and for causing an ink jet nozzle to eject droplets of a recording fluid in response to said AND gate's output;

a keyboard provided with an instruction key for instructing the number of outputs of said AND gate; and

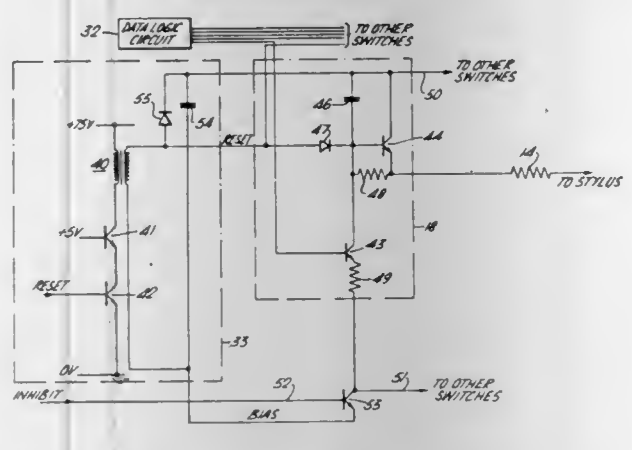
a control section connected to another input terminal of said AND gate for controlling the number of outputs from said AND gate in accordance with the operation of said instruction key.

4,353,080

CONTROL SYSTEM FOR ELECTROGRAPHIC STYLUS WRITING APPARATUS

David A. Cross, Wrestlingworth, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,800
Claims priority, application United Kingdom, Dec. 21, 1978, 49534/78
Int. Cl.^{3} G03G *15/044;* G01D *15/06*
U.S. Cl. 346—153.1 **5 Claims**



1. A control system for an electrographic stylus writing apparatus including a set of styli, a matrix connected to supply selectively to each stylus two electrical pulses which are required to have coincidence to render the stylus operative, first electrical drive means for supplying one of said two pulses which is connected in parallel to said matrix through a plurality of first selectable switches and resistors, each such resistor connected in series with a stylus, second electrical drive means for supplying the other of said two pulses which is connected to said matrix through a plurality of second selectable switches and capacitors, each such capacitor coupled to subgroups of said stylus, electrical control means arranged to open and close said first and second selectable switches such that said pulses are applied to operate each selected stylus, and timing means arranged to control the selection of said first selectable switches before the application of the first pulse from said first electrical drive means and to control the selection of said second selectable switches before the application of the second pulse from said second electrical drive means.

4,353,081

GRADED BANDGAP RECTIFYING SEMICONDUCTOR DEVICES

Christopher L. Allyn, Morristown; Arthur C. Gossard, Warren, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

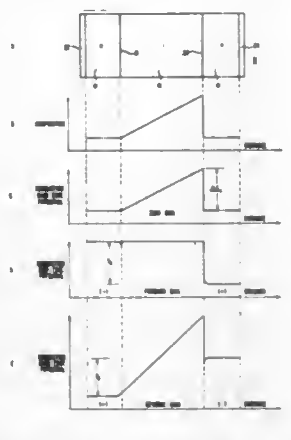
Filed Jan. 29, 1980, Ser. No. 116,622
Int. Cl.^{3} H01L *29/161, 27/14*
U.S. Cl. 357—16 **11 Claims**

1. A semiconductor device **(10)** comprising

first and second relatively narrow bandgap semiconductor layers **(12, 14)**

a wider bandgap semiconductor layer **(16)** interposed between said first and second layers, said wider bandgap layer having a graded bandgap which increases from one of said first and second layers to the other, characterized in that said device is capable of unipolar rectification, and

said first and second layers have the same conductivity type, and



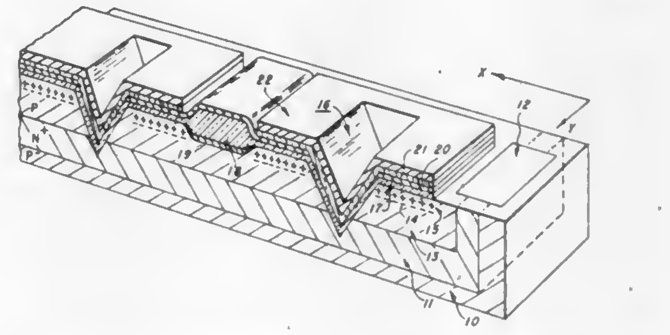
said wider bandgap layer is a barrier layer having a thickness large enough to prevent substantial tunneling therethrough and smaller than the depletion length of carriers therein.

4,353,082

BURIED SENSE LINE V-GROOVE MOS RANDOM ACCESS MEMORY

Pallab K. Chatterjee, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 29, 1977, Ser. No. 820,179
Int. Cl.^{3} H01L *29/78, 29/06, 27/10, 29/04*
U.S. Cl. 357—23 **5 Claims**



1. A memory cell for a semiconductor memory device comprising in combination:

a substrate of silicon material of one conductivity type having a top surface which is at least partially planar;

capacitance means formed at said planar surface and including a layer of polycrystalline silicon which is separated from said surface by a relatively thin silicon dioxide insulating layer and further including a storage region within said surface underlying said layer of polycrystalline silicon;

said silicon substrate being provided with a V-groove formed in the top surface thereof, said V-groove being located adjacent said storage region and the bottom of said V-groove extending into said silicon substrate;

transistor means forming a transfer region within said silicon substrate and being defined in a side wall of said V-groove by said layer of polycrystalline silicon lying within said V-groove and separated from said side wall thereof by a relatively thin silicon dioxide insulating layer, said transfer region including a source to drain path located within said silicon substrate adjacent said side wall of said V-groove, said storage region being located at one end of said path; and

a sense region formed by a heavily doped region of the opposite conductivity type with respect to said silicon substrate and embedded within said silicon substrate so as to underlie said storage region and said transfer region, the bottom of said V-groove contacting said sense region, and said sense region being located at the other end of said source to drain path.

4,353,083

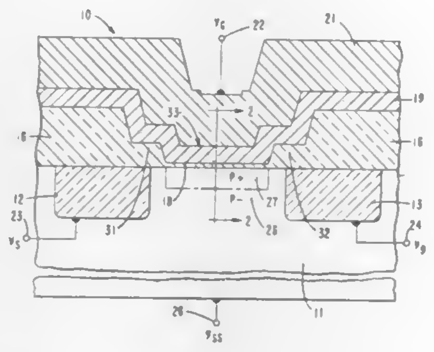
LOW VOLTAGE NONVOLATILE MEMORY DEVICE

Murray L. Trudel, Centerville; George C. Lockwood, Dayton, and G. Glenn Evans, Kettering, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 964,014, Nov. 27, 1978, abandoned. This application Oct. 1, 1980, Ser. No. 192,977

Int. Cl.^{3} H01L *29/78, 29/90, 29/34;* G11C *11/34*

U.S. Cl. 357—23 **9 Claims**



1. An avalanche-written semiconductor memory device comprising:

a semiconductive substrate of a first conductivity type;

a charge storage gate structure formed on said substrate and having at least a memory portion;

a first relatively thin surface-adjacent substrate region having a first, relatively high concentration of at least about 10^{18} per cubic centimeter of impurities of the first conductivity type and having a predetermined thickness, said first region extending along the length of the memory portion of the gate structure;

a second substrate region beneath said first region and having a second, relatively low concentration of impurities of the first conductivity type;

said gate structure further including a gate electrode for applying a write voltage across the first surface-adjacent substrate region to thereby form in said first substrate region an inverted region and an underlying depletion region of a thickness substantially less than said first substrate region thickness; and

an impurity region of a second conductivity type formed in said substrate for applying a control voltage between said inverted region and said second substrate region causing avalanche breakdown of said depletion region and thereby providing charges to said gate structure to write said device by transfer of said charges to said gate structure.

4,353,084

READOUT CIRCUIT FOR A MONOLITHICALLY INTEGRATED CIRCUIT FOR LINEAR IMAGE SCANNING

Heiner Herbst, and Matthias Niemeyer, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,718

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939518

Int. Cl.^{3} H01L *27/14*

U.S. Cl. 357—30 **4 Claims**

1. A monolithically integrated circuit for linear image scanning disposed on a semiconductor substrate comprising:

a first row of opto-electronic sensor elements;

a first type of color filter covering each of said sensor elements in said first row;

a first charge transfer device coupled to said opto-electronic sensor elements in said first row for readout thereof;

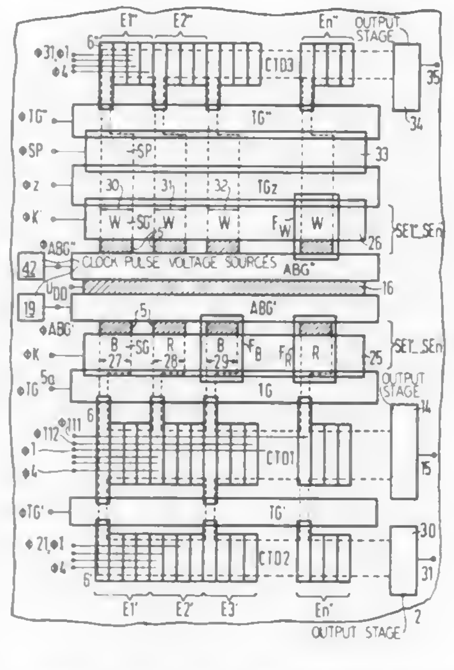
a second row of opto-electronic sensor elements;

second and third types of color filters alternately covering said sensor elements in said second row, said first, second and third types of color filters having respectively different spectral ranges;

an overflow drain zone disposed at a boundary surface of said semiconductor substrate and having an opposite conductivity with respect thereto;

said first and second rows of sensor elements being parallel and said overflow drain zone being parallelly disposed between said first and second rows;

a first overflow gate disposed between said first row of sensor elements and said overflow drain zone;



a second overflow gate disposed between said second row of sensor elements and said drain zone; and

a clock pulse voltage source connected to said first and second overflow gates for supplying respective pulses to said first and second overflow gates which alternate between a lower voltage value for blocking flow of charge from said sensor elements into said overflow drain zone and an upper voltage value for permitting flow of charge from said sensor elements into said overflow drain zone, whereby said sensor elements in said first and second rows are cyclically scanned and emptied and said lower voltage value prevents overlapping of charge between successive scanning cycles.

4,353,085

INTEGRATED SEMICONDUCTOR DEVICE HAVING INSULATED GATE FIELD EFFECT TRANSISTORS WITH A BURIED INSULATING FILM

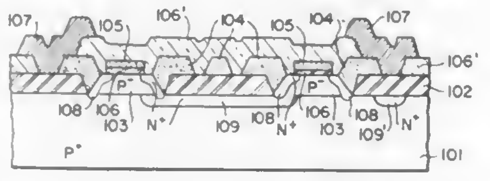
Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 26, 1979, Ser. No. 15,427

Claims priority, application Japan, Feb. 27, 1978, 53-21912; Jun. 29, 1978, 53-78931; Nov. 13, 1978, 53-138805

Int. Cl.^{3} H01L *27/02, 29/06, 29/04*

U.S. Cl. 357—42 **16 Claims**



1. An integrated semiconductor device comprising

a semiconductor substrate of a first conductivity type,

an insulating film formed on said substrate, said insulating film comprising a plurality of apertures each exposing a part of the surface of said substrate,

a semiconductor layer formed selectively on said insulating film and on said exposed parts of said surface of said substrate, said semiconductor layer comprising an epitaxial layer where in contact with the exposed parts of said substrate and a polycrystal layer on said insulating film, said polycrystal layer comprising wiring portions,

a plurality of active elements formed in said epitaxial layer within selected ones of said apertures, each of said elements comprising at least a first region of a second conductivity type opposite to said first conductivity type, and

a second region of said second conductivity type formed in said substrate under said insulating film, said second region extending so as to selectively cross said wiring portions of said polycrystal layer so as to electrically connect said first regions of at least two of said active elements.

4,353,086

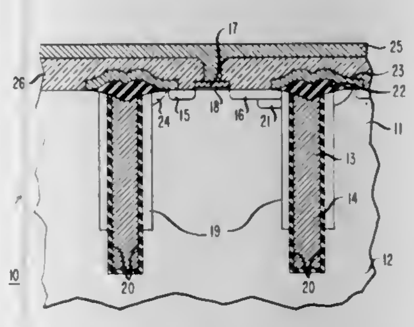
SILICON INTEGRATED CIRCUITS

Ralph J. Jaccodine, Allentown, Pa., and John A. Michejda, Clinton, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 7, 1980, Ser. No. 147,466

Int. Cl.^{3} H01L *27/02*

U.S. Cl. 357—51 **6 Claims**



1. A memory comprising a plurality of memory cells arranged in an array of rows and columns, each memory cell including an access transistor and a storage capacitor serially connected, comprising a monocrystalline silicon chip which is grooved to form a plurality of individual mesas (**11**) arranged in columns and rows

characterized in that

polycrystalline doped silicon (**14**) fills the grooves (**13**) and is isolated from the mesas by a dielectric layer (**20**), a separate access transistor is formed on the surface of each mesa, and a separate storage capacitor is associated with each mesa, one plate of the capacitor being formed by a layer (**19**) on the sidewall of the mesa and the other plate by the polycrystalline silicon fill (**14**), and the sidewall layer including a low resistance connection to a source/-drain region of the surface access transistor.

4,353,087

AUTOMATIC MASK ALIGNMENT

Daniel G. Berry, Newtown, and David A. Markle, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 12, 1979, Ser. No. 19,964

Int. Cl.^{3} H04N *7/18*

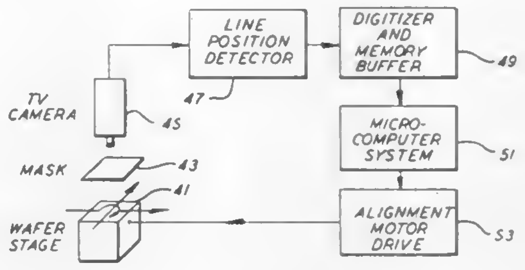
U.S. Cl. 358—101 **11 Claims**

1. Apparatus for detecting and aligning first and second diamond shaped targets of a size that can be printed on a microcircuit chip without interfering with the lines thereon, consisting only of lines diagonally disposed with respect to the image transducer which may also be inclined with respect to the chip edges, said targets being of different sizes, said first target on a microcircuit and said second target on a mask to be exposed thereon, comprising:

(a) a television camera and optical system for viewing said first target on the microcircuit and said second target on the mask to be exposed;

(b) means having the output of said camera as an input for detecting the edge of each diagonal line on said microcircuit and said mask;

(c) means for storing coordinates representing the line position location of each detected edge; and



(d) computing means for:

(1) calculating from the stored line position locations the centers of the diamond shaped targets.

(2) calculating the difference between the location of the centers of said two targets.

4,353,088

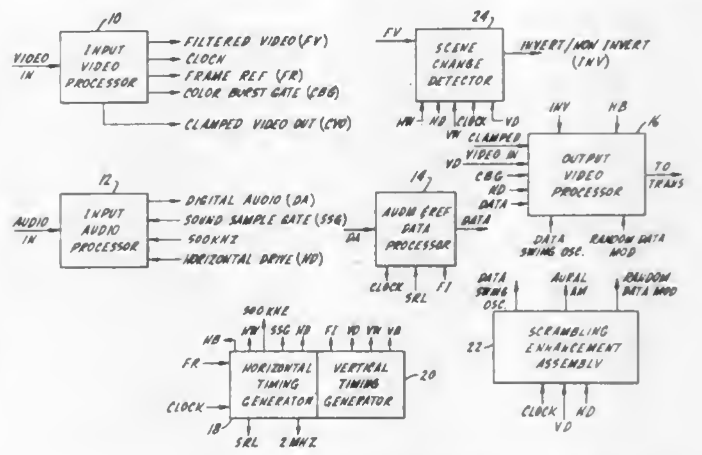
CODING AND DECODING SYSTEM FOR VIDEO AND AUDIO SIGNALS

Pieter den Toonder, Dordrecht, and Pieter J. Fondse, Papendrecht, both of Netherlands, assignors to Oak Industries, Inc., Rancho Bernardo, Calif.

Filed May 14, 1980, Ser. No. 149,707

Int. Cl.^{3} H04N *7/16;* H04K *1/02*

U.S. Cl. 358—120 **2 Claims**



1. Means for coding video and audio signals including:

(a) means for suppressing synchronizing information during video horizontal blanking intervals,

(b) means for inserting digital sound data and decoder clock data into the suppressed horizontal blanking intervals,

(c) and means for applying sine wave amplitude modulation of approximate line frequency to the aural carrier to prevent the chrominance subcarrier from providing receiver synchronization.

4,353,089

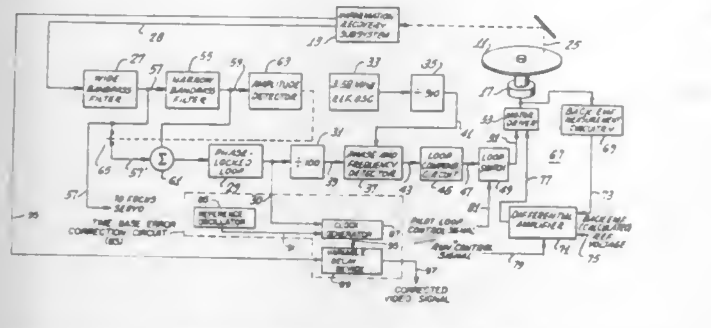
APPARATUS FOR CORRECTING THE TIME BASE OF INFORMATION RECOVERED FROM A MOVABLE INFORMATION STORAGE MEDIUM

John S. Winslow, Altadena, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 920,701, Jun. 30, 1978, Pat. No. 4,236,050. This application Aug. 11, 1980, Ser. No. 177,149

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—337 **5 Claims**



1. Apparatus for recovering information from a movable storage medium and for correcting variations in the time base of the recovered information, wherein an information signal and a separate pilot signal are recorded on the storage medium in a plurality of substantially parallel information tracks, said pilot signal having a prescribed, constant frequency, said apparatus comprising:

information recovery means for recovering the recorded signals from the storage medium;

means for producing a reference signal having a predetermined constant frequency corresponding to the nominal frequency of the recovered pilot signal; means for extracting the pilot signal from the recovered signals; and

delay means responsive to the recovered pilot signal and to the reference signal for delaying the recovered information by an amount that varies in accordance with any difference in the phase angles of the two signals, thereby correcting for any time base variations, in the recovered information,

the phase angle of the pilot signal recorded on the storage medium being substantially aligned with itself on adjacent information tracks, whereby the apparatus is operable to correct for time base variations even when said information recovery means is positioned relative to the storage medium such that it is recovering signals from more than one information track simultaneously or is traversing the storage medium from one track to another.

4,353,090

EXTENDED PLAY VIDEO RECORDING AND REPRODUCING SYSTEM WITH SELECTION OF MULTIPLEXED AUDIO

Kent D. Broadbent, Rancho Palos Verdes, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 50,188, Jun. 20, 1979. This application May 5, 1980, Ser. No. 146,819

Int. Cl.³ H04N *5/76, 5/78*

U.S. Cl. 358—342 **13 Claims**

1. A video reproducing system comprising:

a recording medium having recorded thereon frames of video information, encoded frame repeat counts indicative of the number of times each of the recorded frames is to be reproduced, and a plurality of channels of audio information associated with each frame;

transducer means for reading the recorded information from said recording medium and producing therefrom a corresponding electrical signal;

drive means for moving said transducer means with respect to said recording medium;

means for decoding the frame repeat counts encoded in the recorded video signal;

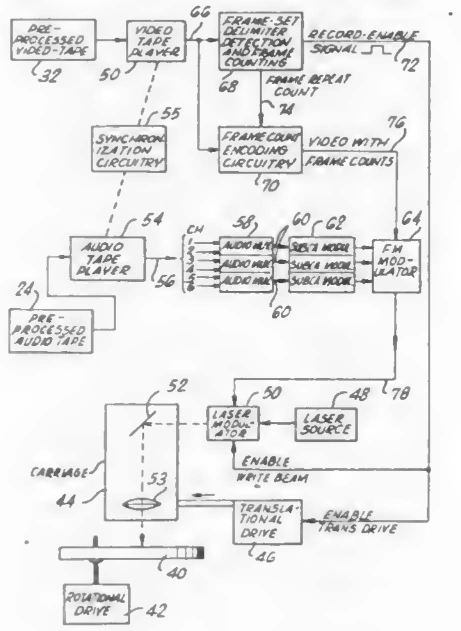
means responsive to the decoded repeat count, for controlling the position of said transducer means in such a manner as to read each frame of video information a selected number of times;

bandpass filter means, for separating the audio channel subcarriers;

a plurality of demodulators, for demodulating each subcarrier to obtain a multiplexed audio signal;

demultiplexing means to derive two audio channels from a selected multiplexed audio signal;

and means for selecting one of said audio channels for reproduction, based upon the value of the decoded repeat count and the number of times that a frame has already been repeated;



wherein said means responsive to the decoded repeat count includes an up/down counter capable of assuming a zero or non-zero count condition;

means for detecting a zero count condition in said counter;

means responsive to said means for detecting a zero count condition and operative when said counter is at a zero count, for incrementing said counter by the value of a decoded frame repeat count;

means responsive to said means for detecting a zero count condition and operative when said counter is at a non-zero count, for decrementing said counter by one for each frame reproduced by said transducer means; and

means for generating a read/repeat signal based on the value stored in said counter, wherein said transducer means is directed to read a new frame when the value in said counter is zero, and to repeat a frame when the value in said counter is non-zero.

4,353,091

CIRCUIT FOR DETECTING FAULTS IN HORIZONTAL SYNC PULSE SIGNALS

Karl-Heinz Hoppe, Darmstadt-Wixhausen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 216,862

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951023

Int. Cl.³ H04N *7/02, 7/04, 5/04;* **H03K** *5/18*

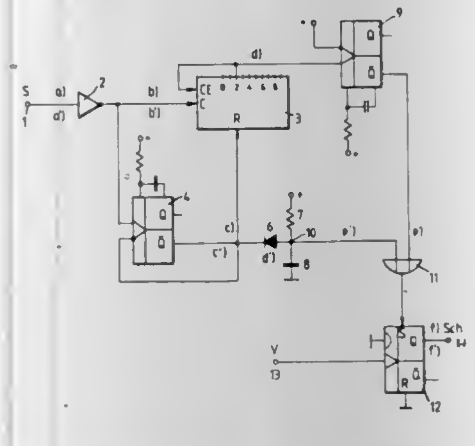
U.S. Cl. 358—139 **6 Claims**

1. Electrical circuit for detecting faults in a first sequence of pulse signals having a first keying ratio, said circuit including

a counter (e) which has a clock input terminal (C) for applying pulse signals of said first sequence, a control input terminal (R) for applying a second sequence of pulse signals having the same pulse frequency as said first sequence and having a second keying ratio which is different from said first keying ratio, an output terminal corresponding to a predetermined count state and a clear terminal (CE) which is connected to said output terminal,

a monostable flip-flop (9),

an OR-gate (11) having a first OR input terminal, a second OR input terminal, and an OR output terminal, for producing a switching signal upon detection of a fault in said first pulse signals, the output terminal of said counter being connected by means of said flip-flop (9) to said first OR input terminal,



an RC-link (7, 8), and

a diode (6) for supplying to said RC-link (7, 8) said second sequence of pulse signals, said RC-link (7, 8) being connected to said second OR input terminal.

4,353,092

REAL TIME HISTOGRAM MODIFICATION SYSTEM

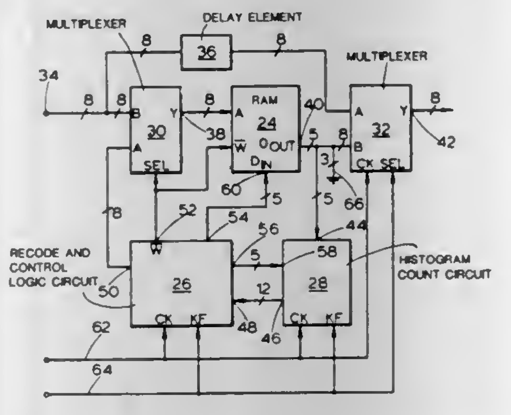
Peter K. Bailey, Uckfield, and Leslie H. Guildford, Haywards Heath, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,969

Claims priority, application United Kingdom, Mar. 29, 1979, 7910951

Int. Cl.³ H04N *5/14*

U.S. Cl. 358—160 **14 Claims**



1. A real time histogram modification system in which a recoding strategy of pixels in a digitized input video signal is determined by processing iteratively the number of pixels in respective grey levels of output picture information using a predetermined scene adaptive quantizer comprising:

means for compressing the number of grey levels in the input video signal into a predetermined number of grey levels in accordance with an encoding strategy;

means, coupled to said compressing means, for counting and storing the number of pixels in the compressed video signal appearing in each of said predetermined number of grey levels;

means, coupled to said counting and storing means, for determining whether each of said counts is within, above or below a range of values, called a window, about each of respective predetermined theoretical values, which theoretical values collectively form said scene adaptive quantizer; and

means for generating said encoding strategy and for recoding said strategy, when any of said counts are above or below said respective window, by adjusting the number of input grey levels for the respective output grey level.

4,353,093

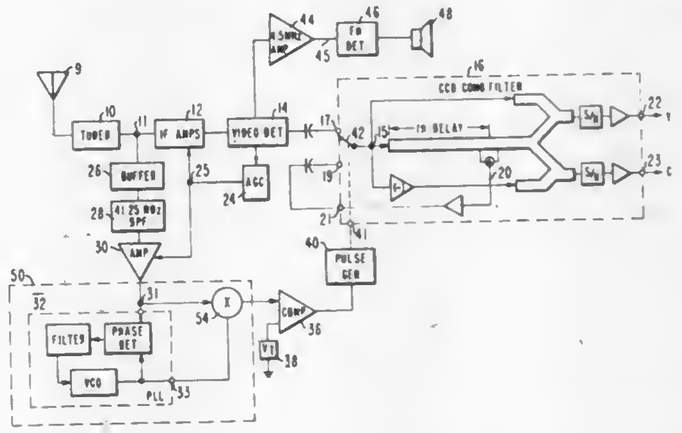
IMPULSE NOISE REDUCTION SYSTEM FOR TV RECEIVERS

Jesse Durbin, Jr., Carmel, Ind., and Dalton H. Pritchard, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,782

Int. Cl.³ H04N *5/14, 5/21, 9/535, 5/76*

U.S. Cl. 358—160 **17 Claims**



1. A television receiver for processing broadcast picture and sound signals comprising:

circuitry responsive to a control signal for reducing the effects of electrical noise present in the picture signal; and

noise detection circuitry responsive to said sound signals for generating said control signals.

4,353,094

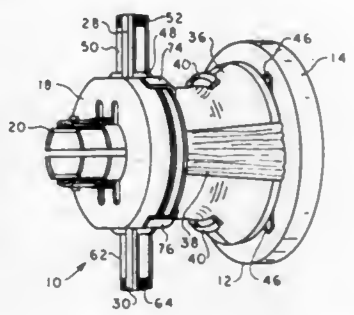
ADJUSTABLE YOKE ASSEMBLY

Robert Dam, Paletine, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 27, 1980, Ser. No. 200,805

Int. Cl.³ H04N *5/64, 5/655*

U.S. Cl. 358—249 **13 Claims**



1. In a cathode ray tube yoke assembly which includes a liner carrying a first winding and a core mounted on the liner and carrying a second winding, a mechanism for accurately positioning the second winding relative to the first winding, comprising:

at least one elongated member which projects radially outwardly from the liner; and

a ring adapted to mate fixedly with the core and carrying at least one finger which projects radially outwardly from the ring and which carries detent means such that, when the ring is mated with the core on the liner, said detent means engages said elongated member so that the core may be manually rotated with respect to the liner in a series of detented increments, thereby to accurately adjust the relative positions of the windings.

4,353,095
FACSIMILE BANDWIDTH COMPRESSION METHOD SYSTEM AND APPARATUS

Kenzou Tatematsu, Amagasaki; Yasuhiro Sugihara, Katano; Hiroyuki Andou, Hirakata; Tatsuo Seki, Osaka; Yoshito Dezaki, Osaka, and Yasukazu Nishino, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 24, 1979, Ser. No. 6,245

Claims priority, application Japan, Jan. 31, 1978, 53-10104; Jun. 22, 1978, 53-76054; Jun. 22, 1978, 53-76055

Int. Cl.^{3} H04N *7/12*

U.S. Cl. 358—260 **41 Claims**

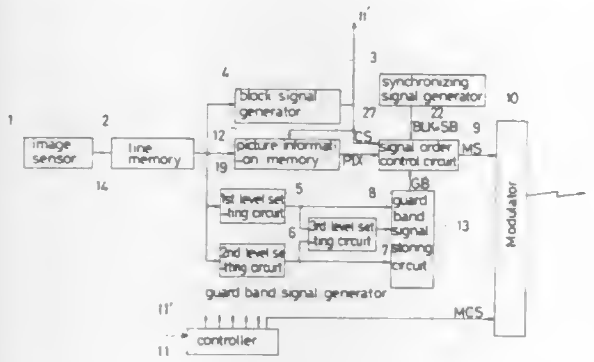


image sensor
line memory
block signal generator
synchronizing signal generator
picture information memory
signal order control circuit
1st level setting circuit
2nd level setting circuit
3rd level setting circuit
guard band signal storing circuit
guard band signal generator
Modulator
controller
BLK-SB
CS
PIX
MS
GB
MCS
1
2
3
4
5
6
7
8
9
10
11
11'
12
13
14
19
22
27

1. A facsimile system, having at least one transmitting end and at least one receiving end; in which a control signal part and a picture information part of a scanning line signal are respectively encoded and decoded in accordance with a white block skipping method; and in which a facsimile signal comprising a carrier modulated by respective scanning line signals is transmitted, a scanning line signal being distinguished from a neighboring scanning line signal by a synchronizing signal part, comprising:

means for generating a reference signal part having a first binary signal level; and

means for composing a scanning line signal; said reference signal part being inserted after said synchronizing signal part having a second binary signal level and being before said control signal part to distinguish therebetween; and said picture information part following said control signal part,

wherein said synchronizing signal part, said reference signal part, said control signal part, and said picture information part are represented by bits, and the bits of said picture information part are grouped into a plurality of first blocks of uniform length each block including a guard band of a specified number of bits; the total of the number of bits of said synchronizing signal part, said reference signal part, and said control signal part being an integral multiple of a number determined in accordance with the number of bits in a first block.

4,353,096
DIGITAL FACSIMILE SYSTEM TO BAND-COMPRESS HALF-TONE PICTURE SIGNALS

Hidekazu Sakurai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,635

Claims priority, application Japan, Oct. 5, 1978, 53-12324; Apr. 6, 1979, 54-41787

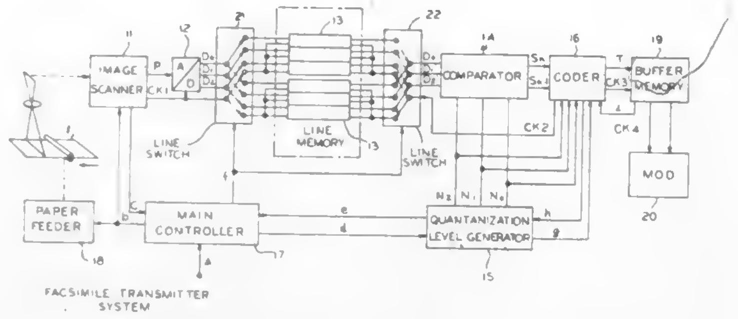
Int. Cl.^{3} H04N *7/12*

U.S. Cl. 358—263 **4 Claims**

1. A system for transmitting digital facsimile signals representing an optical image, said system transmitting half-tone components of said image with reduced redundancy, said system comprising:

first means for photo-electrically scanning said image in one direction while said image is being shifted in a direction perpendicular to said one direction, in order to provide a video signal including a series of line segments, each of said segments corresponding to one scan by said first means;

second means for providing a reference signal representative of n reference voltages which cyclically vary in a set of n reference voltages (n being an integer greater than one);



third means for controlling said first and second means so that each of said line segment video signals is repeated n times while each of said n reference voltages appear sequentially for the duration of a line segment;

fourth means for comparing said video signal with said reference signal voltages to provide a two-level representation of the difference therebetween; and

fifth means for converting said two-level representation into a binary representation for transmission with reduced redundancy.

4,353,097
FACSIMILE APPARATUS

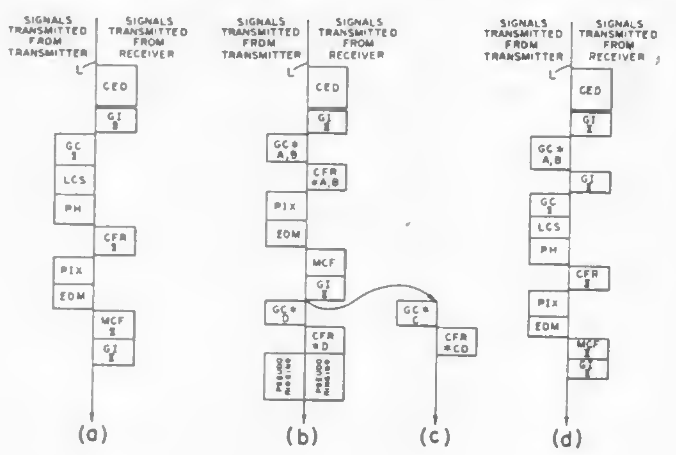
Takashi Takeda, Higashimurayama; Minoru Ogata, Yokohama, and Sadasuke Kurabayashi, Asaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,530

Claims priority, application Japan, Oct. 29, 1979, 54-140039; Oct. 29, 1979, 54-140040; Oct. 29, 1979, 54-140041

Int. Cl.^{3} H04N *1/32, 1/42*

U.S. Cl. 358—287 **14 Claims**


SIGNALS TRANSMITTED FROM TRANSMITTER
SIGNALS TRANSMITTED FROM RECEIVER
CED
GI
GC
LCS
PH
CFR
PIX
EOM
MCF
(a)
(b)
(c)
(d)

1. A facsimile apparatus comprising:

original size detection means for detecting whether the size of an original document is a first size or a second size;

reading means for reading picture information on said original document and for transmitting electrical picture signals representative of the size of said original document corresponding to either said first size or said second size;

receiving means for receiving information indicating (i) whether a second apparatus interconnected thereto is in a specified reception mode and (ii) whether the size of a recording sheet in said second apparatus is said first size or said second size; and

control means for (1) causing said reading means to transmit said electrical picture signals corresponding to a given size in the event that said receiving means receives information indicating that (a) said second apparatus is in said specified reception mode, and (b) said recording sheet is of said given size, and (2) for causing said reading means to transmit electrical picture signals corresponding to the smaller size of said first and second sizes in the event that said receiving means receives information indicating that (c) said second party apparatus is in said specified receiption mode and (d) said recording sheet is the first size, and that said original size detection means detects the second size.

4,353,098
METHOD OF STORING DIGITAL COLOR TELEVISION SIGNALS ON MAGNETIC TAPE

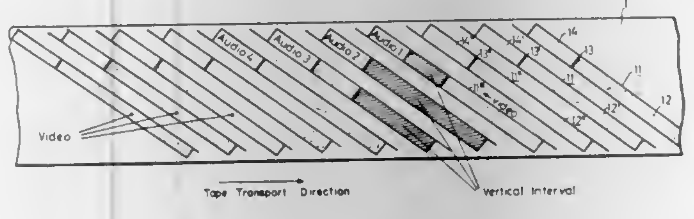
Richard Heinz, Pfungstadt, and Reinhard Kutzner, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 149,948

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921892

Int. Cl.^{3} H04N *5/79*

U.S. Cl. 360—9.1 **13 Claims**



1. A method of storing a digital color television signal on magnetic tape, in which the signal includes video information signals and associated audio information signals, comprising

guiding the tape helically around a headwheel;

recording the color television signal by at least one magnetic recording head disposed on the periphery of the rotatable headwheel to form a recording track which has a plurality of discontinuous substantially parallel track segments extending at an angle with respect to the longitudinal direction of the tape;

wherein the recording step comprises

recording at least portions of audio information signals alternating with at least portions of video information signals on said track segments extending at an angle to the longitudinal direction of the tape,

at least some of the track segments containing a section of the audio information signals recorded at a predetermined position on the track segment adjacent a section of the video information;

and wherein at least the audio information is recorded in time compressed form.

4,353,099
TAPE-RECORDED SIGNAL RECOVERY METHOD AND APPARATUS

Edward K. Shum, San Jose, and John J. Peterson, Woodside, both of Calif., assignors to Precision Data, Inc., Mountain View, Calif.

Filed Mar. 12, 1981, Ser. No. 242,954

Int. Cl.^{3} G11B *5/02, 5/04*

U.S. Cl. 360—27 **12 Claims**

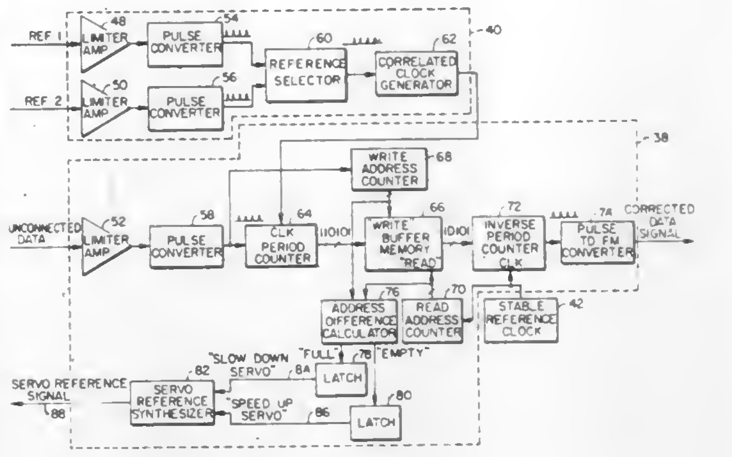
1. A method for recovering a frequency modulated analog information signal recorded on an information storage medium subject to time base recovery errors, said method comprising the steps of:

generating a clock signal correlated with said information signal;

measuring periods between zero crossings of said information signal with a clock whose rate is based on said correlated clock signal to produce accurate values representative of said periods between zero crossings;

serially storing said values;

thereafter serially retrieving said stored values at a clock rate based on a stable reference clock; and



reconstructing said information signal from said retrived values by modulating the period between zero crossings of a carrier signal which is derived from a stable reference clock.

4,353,100
MAGNETIC RECORDING SYSTEM WITH SIGNAL-CONTROLLED BIAS AND EQUALIZATION

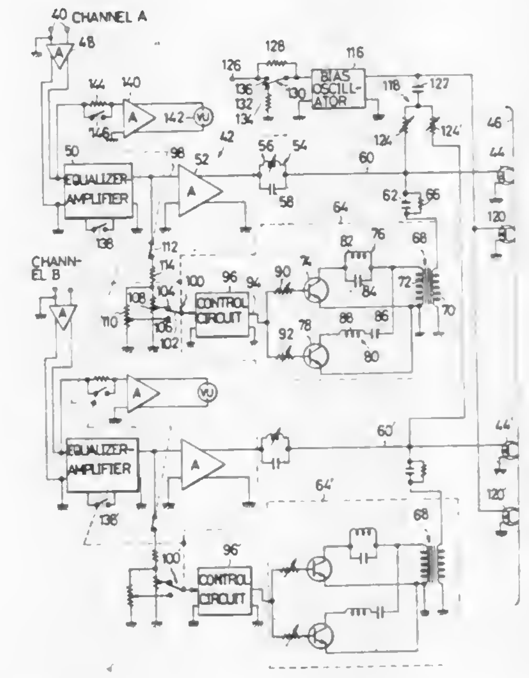
Hideo Inoue, Mitaka, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,710

Claims priority, application Japan, Aug. 31, 1979, 54-111858; Nov. 8, 1979, 54-144833

Int. Cl.^{3} G11B *5/45, 5/47*

U.S. Cl. 360—65 **6 Claims**



1. A magnetic recording system for recording information signals on magnetic record media, comprising:

(a) a magnetic head for magnetically recording an information signal on a magnetic record medium;

(b) an information signal processing circuit coupled to the magnetic head for processing the incoming information signal prior to delivery to the magnetic head, the information signal processing circuit including:

(1) equalizer means for increasing the level of the information signal at high frequencies; and

(2) current-regulating impedance means for holding substantially constant the current flowing to the magnetic

head irrespective of changes in the impedance of the magnetic head;

(c) a bias oscillator for feeding to the magnetic head a bias current having a frequency higher than the spectrum of the information signal;

(d) impedance means connected between the bias oscillator and the magnetic head for setting the magnitude of the bias current fed to the magnetic head;

(e) a transformer comprising a primary winding and a secondary winding, the primary winding of the transformer being connected in parallel with the magnetic head;

(f) a bias control transistor connected in parallel with the secondary winding of the transformer; and

(g) a control circuit connected to a base of the bias control transistor for varying the impedance thereof, the control circuit being effective to reduce the impedance of the transistor for decreasing the magnitude of the bias current fed to the magnetic head and to increase the impedance of the transistor for increasing the magnitude of the bias current fed to the magnetic head.

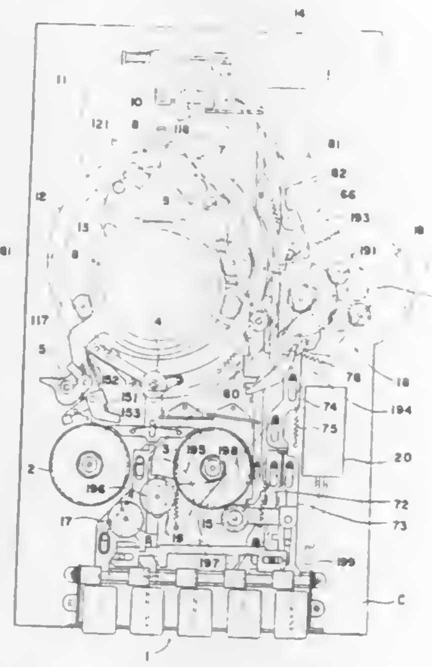
4,353,101
VIDEO TAPE RECORDER

Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Co., Ltd., Osaka and Efuti Giken Co., Ltd., Yokohama, both of, Japan

Filed May 8, 1980, Ser. No. 147,831

Int. Cl.^{3} G11B *15/66, 23/04*

U.S. Cl. 360—85 **22 Claims**



1. A videotape tape cassette recorder device of the type wherein magnetic tape is stored in a cassette containing a supply spool and a take-up spool disposed side-by-side on spaced parallel axes, the tape being withdrawn from the cassette by loading means for operative engagement with rotary video transducing means, the combination comprising:

audio transducer head means and erasing head means fixedly mounted for operative engagement with said magnetic tape when withdrawn from said cassette;

capstan means for driving said tape when withdrawn from said cassette;

said rotary video transducing head means being rotatable about an axis parallel with the axes of said spools and disposed generally between said spools and the group comprising the audio transducing head means and erasing head means;

said loading means comprising pinch roller means and take-out pin means;

and means to move said pinch roller means and take-out pin means in respective arcuate paths in opposite directions from an unloaded position within a cassette to a loaded position to withdraw tape from the cassette and wrap a portion of tape around a portion of the circumference of the video transducer head means in a helical path and into said operative engagement with the audio transducer head means, erasing head means and capstan means.

4,353,102
THIN-FILM MAGNETIC HEAD

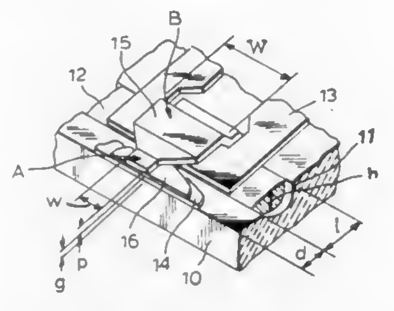
Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi; Noboru Nomura, Kyoto, and Norimoto Nouchi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 3, 1980, Ser. No. 165,941

Claims priority, application Japan, Jul. 4, 1979, 54-85202; Nov. 20, 1979, 54-151046

Int. Cl.^{3} G11B *5/22, 5/20, 5/25*

U.S. Cl. 360—126 **5 Claims**



1. A thin film magnetic head comprising a base of magnetic material, a magnetic core layer forming a head core structure in conjunction with said base so as to provide an operating gap portion at the front end of the head, and a rear junction at the rear end of the magnetic core layer, and a conductor layer forming a winding of the head for activating said head core structure;

wherein said magnetic core layer has a smaller width at said operating gap portion and a larger width at a back region which crosses over said conductor layer, the thickness of the magnetic core layer being substantially constant; and

wherein a groove is formed in said base, said groove being filled with a non-magnetic material above which said magnetic core layer and said conductor layer cross each other.

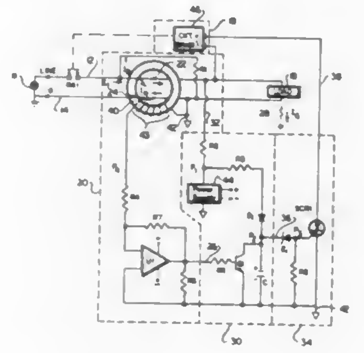
4,353,103
GROUND FAULT INTERRUPTER CIRCUIT

George A. Whitlow, Box CL96-1, Murchison, Tex. 75778

Filed Apr. 8, 1981, Ser. No. 252,149

Int. Cl.^{3} H02H *3/16*

U.S. Cl. 361—45 **28 Claims**



1. A ground fault interrupter circuit for use in a power distribution system that interrupts the current flow therein whenever a ground fault current exeeding a predetermined value is detected, said ground fault interrupter circuit comprising:

a pair of conductors for connecting a load across an input circuit of alternating current, a first conductor of said pair of conductors having an alternating line voltage thereon and a second conductor of said pair of conductors having a zero voltage thereon with respect to a ground reference potential, said second conductor therefore being the return or neutral conductor;

switch means capable of opening at least said first conductor of said pair of conductors for preventing current from being delivered to said load from said input circuit in response to a trigger signal;

differential current sensing means for sensing the difference between the current flowing through said first conductor at a first coupling point thereof and the current returning through said second conductor at a second coupling point thereof, and for generating a control signal that is a function of said instantaneous difference;

charging circuit means coupled to said pair of conductors for charging a storage element with an electrical charge during at least a portion of each cycle of said alternating current in response to a first condition of said control signal, said first condition indicating that the difference sensed by said differential current sensing means is at least as great as said predetermined value of ground fault current, and for discharging said storage element during at least a portion of each cycle of said alternating current in response to a second condition of said control signal, said second condition indicating that said difference sensed by said differential current sensing means is less than said predetermined value of ground fault current; and

trigger means coupled to said charging circuit means for generating said signal whenever a predetermined value of electrical charge accumulates on said storage element.

4,353,104
OUTPUT INTERFACE CIRCUITS

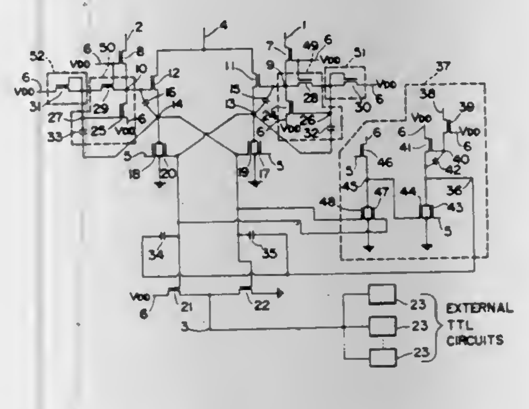
Tanaka Takayuki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,372

Claims priority, application Japan, Jun. 27, 1980, 55-86509

Int. Cl.^{3} H02H *3/20*

U.S. Cl. 361—91 **2 Claims**



1. An output interface circuit comprising:

a first MOS FET having a source electrode, a drain electrode connected to a first MOS level signal input terminal, and a gate electrode connected to a first source of fixed voltage;

a second MOS FET having a source electrode, a drain electrode connected to a second MOS level signal input terminal, and a gate electrode connected to said first source of fixed voltage;

a third MOS FET having a source electrode connected to a first output terminal, a gate electrode connected to the source electrode of said first MOS FET, and a drain electrode connected to a first start signal input terminal;

a fourth MOS FET having a source electrode connected to a second output terminal, a gate electrode connected to the source electrode of said second MOS FET, and a drain electrode connected to said first start signal input terminal;

a first capacitor connected between the gate and source electrodes of said third MOS FET;

a second capacitor connected between the gate and source electrodes of said fourth MOS FET;

a first transfer gate circuit for executing a NOR logic function of a reset signal and a signal at said second output terminal, and having an output terminal connected to said first output terminal;

a second transfer gate circuit for executing a NOR logic function of said reset signal and the signal at said first output terminal and having an output terminal connected to said second output terminal;

an output circuit for selectively converting signals at said first and second output terminals into a TTL level output signal;

a delay circuit supplied with said signals at said first and second output terminals for outputting a delayed signal corresponding to a logic "1" of said output signal of said output circuit in accordance with a second start signal inputted thereto earlier than said first start signal;

a third capacitor connected between an output terminal of said delay circuit and said second output terminal;

a level holding circuit comprising a capacitor and a pair of MOS FETs for compensating for a decrease in a gate potential of said fourth MOS FET, said level holding circuit being connected across said second capacitor so as to render said fourth MOS FET nonconductive; and

a protective circuit means, operatively connected to said pair of MOS FETs in said level holding circuit for preventing damage to said MOS FETs in said level holding circuit by limiting the voltage levels thereof.

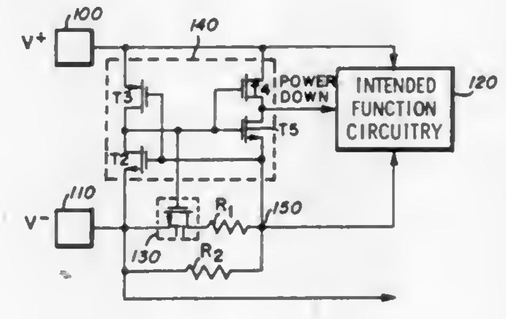
4,353,105
CMOS LATCH-UP PROTECTION CIRCUIT

William C. Black, Berkeley, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 8, 1980, Ser. No. 214,401

Int. Cl.^{3} H02H *9/04*

U.S. Cl. 361—101 **5 Claims**



1. A protection circuit for limiting the current flow in a current path comprising:

a first resistance in the current path;

series circuit means comprising a second resistance and a first MOS transistor, the series circuit means coupled in parallel with the first resistance, the first MOS transistor for selectively providing a current path through the series circuit means in response to a control signal and for interrupting the current path through the series circuit means otherwise;

means for providing a first voltage and means for providing a second voltage wherein the first resistance has one terminal coupled to the means for providing said first voltage; and

a first load having first and second terminals, the first terminal coupled to the means for providing a second voltage and the second terminal coupled to the other terminal of said first resistance said second terminal also being coupled to the gate of the first MOS transistor by way of a second MOS transistor acting as an inverter and wherein the first load means is coupled in series with said first resistance and coupled for applying the control signal to the first MOS transistor in response to the voltage across the first resistance being less than a threshold voltage and for not applying the control signal to the first MOS transistor otherwise.

4,353,106
TRIMMER CAPACITOR

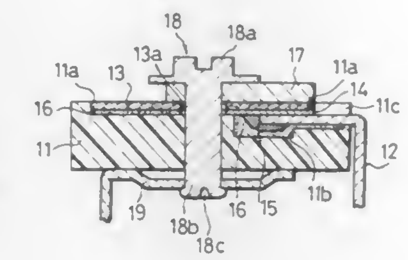
Takashi Shirakawa, Morioka, Japan, assignor to Alps Electric Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,229

Claims priority, application Japan, Jul. 31, 1979, 54-105844[U]

Int. Cl.^{3} H01G *5/06*

U.S. Cl. 361—293 **3 Claims**



1. In a trimmer capacitor comprising a rotor electrode, a stator electrode, and a ceramic dielectric member held on an insulating substrate, the rotor electrode being rotatably supported, and the stator electrode and the rotor electrode having a confronting area therebetween changed by rotation of the rotor electrode, the improvement wherein the stator electrode is formed by printing conductive paste onto the dielectric member and a terminal is connected electrically and mechanically to said stator electrode by soldering, said dielectric member and terminal fitting within recesses in the insulating substrate and held therein by adhesive.

4,353,107
ELECTRICAL CAPACITOR

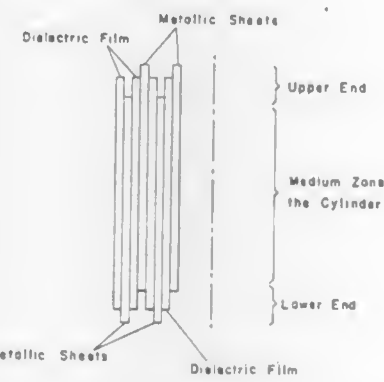
Jean-Yves Decroix, Arras; Gerard Seytre, Sainte-For-les-Lyon; Pierre Charlot, Quetigny, and Jean-Claude Dubois, Cressely, all of France, assignors to CdF Chimie, Societe Chimique des Charbonnages, Bully-les-Mines and Thomson-CSF, Paris, both of, France

Continuation of Ser. No. 948,589, Oct. 4, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 234,502

Claims priority, application France, Oct. 5, 1977, 77 29986

Int. Cl.^{3} H01G *4/20*

U.S. Cl. 361—323 **10 Claims**



1. An electrical capacitor comprising conductive electrodes and a dielectric spacer between the electrodes, said spacer comprising a biaxially oriented film made from a mixture of 5 to 80 percent by weight of isotactic polypropylene and 20 to 95 percent by weight of isotactic polybutene-1.

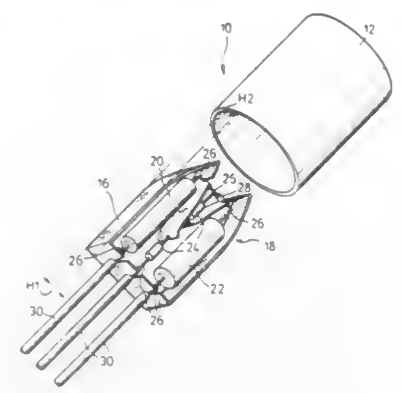
4,353,108
FRAME ASSEMBLY FOR ELECTRONIC COMPONENTS

Bob M. Chippel, Toronto, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Oct. 6, 1980, Ser. No. 194,053

Int. Cl.^{3} H05K *7/20*

U.S. Cl. 361—386 **8 Claims**



1. A potted electronic circuit component assembly comprising:
- a shell-type metal housing having curving walls,
- discrete electronic components within the housing having wire leads and connected in a circuit,
- a frame structure formed of a thin strip of dielectric material having two opposing major portions surrounding said components, the edges of the strip in said major portions engaging the walls of the housing to locate the structure within the housing and assure space between the curving wall and the strip portions,
- said strip of dielectric material having V-shaped slots cut therein from an edge and terminating in apertures accommodating said wire leads to support said components in a spaced-apart, non-contacting and electrically insulating manner relative to the walls of said housing,
- and an electrically insulating and thermally conductive compound filling the empty spaces within said housing to provide heat transfer between said components and the walls of said housing.

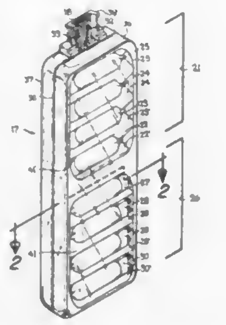
4,353,109
FLASH LAMP ARRAY HAVING COMBINED SHIELD AND CONNECTOR

Vincent H. Weber, Parma, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,625

Int. Cl.^{3} G03B *15/02*

U.S. Cl. 362—13 **4 Claims**



1. A photoflash lamp array comprising a circuit board provided with a set of first and second terminals for connection to a source of lamp-firing voltage pulses, a plurality of flash lamps arranged in a planar configuration, forwardly of said circuit board, and an electrically conductive shield positioned behind and parallel to said circuit board, wherein the improvement comprises a circuit run on said board which directly connects said first terminal with one lead-in wire of a first one of said lamps only, said one lead-in wire and also a lead-in wire of each of the other lamps extending rearwardly and contacting said shield, whereby said lead-in wire of each lamp and said shield are electrically connected to said first terminal, said circuit board being devoid of circuit runs to said lead-in wires of each lamp other than said first lamp.

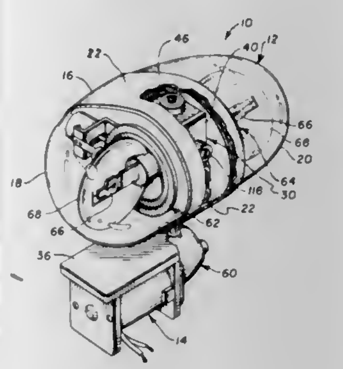
4,353,110
SEARCH AND WARNING LIGHT SYSTEM

Richard D. Ellis, 6714 Dudley Ave., Minneapolis, Minn. 55428

Filed Sep. 12, 1980, Ser. No. 186,828

Int. Cl.^{3} F21V *21/30*

U.S. Cl. 362—35 **13 Claims**



1. A search and warning light system comprising, in combination: at least a first lamp assembly for emitting a beam of light; first means for rotating the first lamp assembly about a horizontal axis; second means for rotating the first lamp assembly about a vertical axis; and third means for providing electric connection to the lamp assembly and the first and second means allowing the lamp assembly to be used as a search light with the direction of the beam of light being changeable by slow rotation of the lamp assembly about its vertical and/or horizontal axis by the first and second means and allowing the lamp assembly to be used as a warning light by rotating the lamp assembly about its vertical and/or horizontal axis by the first and second means.

4,353,111
MOTOR VEHICLE WITH A REARWARD SWING-UP BODY MEMBER

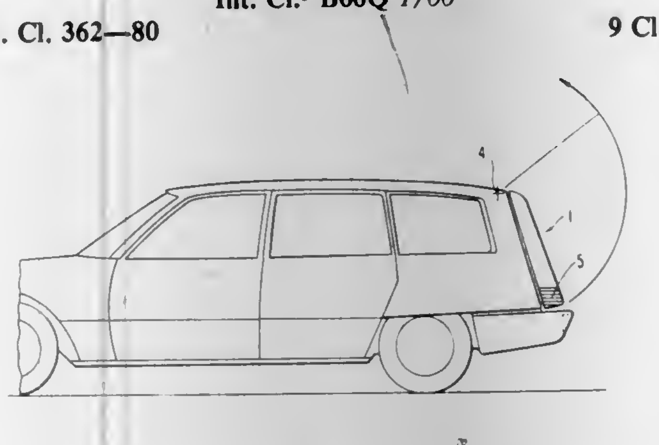
Josef Gallitzendörfer; Gerard Cardiet, and Johann Tomforde, all of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,902

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948524

Int. Cl.^{3} B60Q *1/00*

U.S. Cl. 362—80 **9 Claims**



1. A motor vehicle comprising a rearward body end member adapted to be swung upwardly about a transverse axis of the vehicle, the body end member consisting essentially of a synthetic resin and including a rear window and an end wall, characterized in that the lighting elements are arranged on a side of the body end member facing an interior of the vehicle, and in that the body end member has a transparent zone in the area of the lighting elements for defining light-emitting areas for the lighting elements.

4,353,112
SWITCHED-MODE VOLTAGE CONVERTER

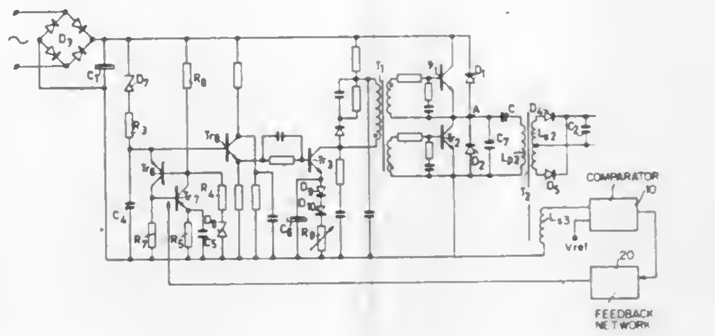
Jan J. Rietveld, Eindhoven, Netherlands, and Alain Moreau, Puteaux, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,261

Claims priority, application Netherlands, Sep. 11, 1978, 7809226

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—16 **23 Claims**



1. A switched-mode converter for converting an input DC voltage into an output DC voltage comprising, an input terminal for connection to a source of input DC voltage, an inductive network, a signal generator coupled to the input terminal and arranged to apply to said inductive network a periodic square-wave signal of substantially constant duty cycle whose amplitude depends on the input voltage, a rectifier, a smoothing capacitor, means coupling the rectifier and capacitor to the inductive network so that a smoothed voltage is present across the capacitor, an output terminal for said DC output voltage coupled to said capacitor, and means responsive to the input DC voltage at the input terminal for controlling the frequency of the generated square-wave signal in dependence on the input DC voltage so that the product of the input DC voltage and the period T of the square-wave signal exhibits a predetermined characteristic relative to a variation of the input DC voltage at said input terminal.

4,353,113
SWITCH MODE CONVERTERS

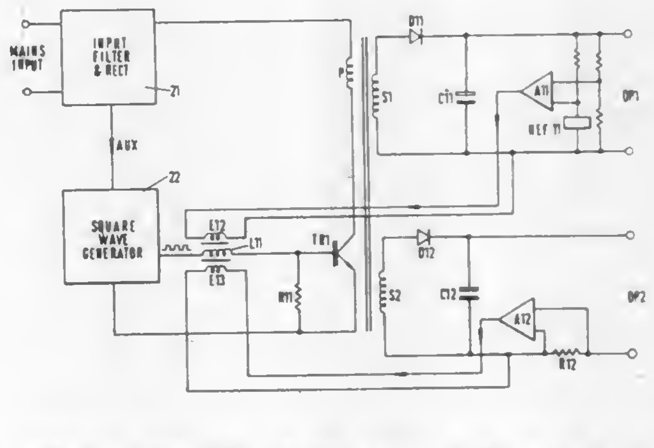
Keith H. Billings, Ilfracombe, England, assignor to Electrotech Instruments Limited, Devon, England

Filed Mar. 20, 1981, Ser. No. 245,660

Claims priority, application United Kingdom, Mar. 21, 1980, 8009706

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—21 **8 Claims**



1. A magnetic amplifier having a main winding and at least one secondary reset winding, and a core composed of amorphous magnetic material, the amplifier being arranged to operate at a frequency greater than 20 KH_z, wherein the amor-

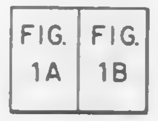
phous magnetic material has the following characteristics measured at a frequency of 35 KH_z:

(i) a remanence ratio B_R/B_S greater than 0.7, where B_R is the remanence and B_S the magnetic flux at notional saturation;
(ii) a post-saturation permeability $\Delta B/\Delta H$ of less than 1000, when measured at a magnetic field strength of $H=1$ ampere turn per cm., where the flux B is measured in Tesla;
(iii) a permeability $\Delta B/\Delta H$ of greater than 50,000 when measured at magnetic flux $B=0$, using units of Tesla and ampere turns per cm.; and
(iv) a coercivity such that the high frequency power loses of the core are less than 100 watts per kg of core material measured at a maximum flux of 0.4 Tesla.

4,353,114
DC/DC CONVERTER

Mustafa Y. Saleh, Margate, Fla., assignor to Siemens Corporation, Iselin, N.J.

Filed Mar. 30, 1981, Ser. No. 249,390
Int. Cl.^{3} H02M *3/335*
U.S. Cl. 363—21 **8 Claims**



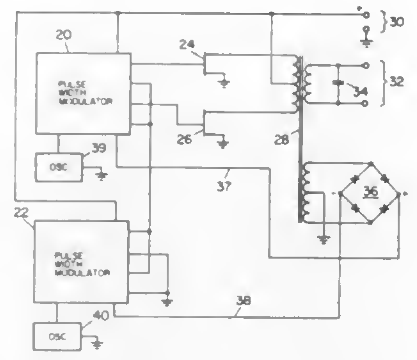
1. A DC/DC converter for converting an input voltage of one magnitude into at least one output voltage of a different magnitude, said converter comprising, in combination:

(a) a transformer having a primary winding and at least one secondary winding;
(b) pulse generator means for producing a train of pulses of variable pulse width, said pulse generator means having a first control input and inputs for a resistor and a capacitor, respectively, said resistor and capacitor defining a time constant for the pulse repetition period of said train of pulses;
(c) first switch means, connected to said pulse generator means, for switching at least a portion of said input voltage across said primary winding in response to the receipt of said pulses;
(d) rectifier and filter means, connected to said at least one secondary winding, for producing at least one rectified and filtered first output voltage of a prescribed magnitude that is dependent upon the pulse widths of said pulses;
(e) first voltage sensor means, connected to said first control input of said pulse generator means, for deriving a signal dependent upon said at least one output voltage and applying said signal to said pulse generator means for varying said pulse widths, thereby to maintain said at least one output voltage substantially constant;
(f) an external clock input adapted to receive clock pulses from an external source;
(g) a first resistor connected to said resistor input of said pulse generator means;
(h) a capacitor connected to said capacitor input of said pulse generator means, said first resistor and said capacitor defining a time constant which is greater than the pulse repetition period of the clock pulses applied to said external clock input; and
(i) second switch means, coupled to said external clock input, for connecting a second resistor in parallel with said first resistor in response to the receipt of clock pulses from said external clock input, thereby reducing said time constant and synchronizing the pulse repetition period of said pulse generator means with that of the clock pulses applied to said external clock input.

4,353,115
APPARATUS FOR SYNTHESIZING A SINUSOIDAL OUTPUT

Ray Ruble, Torrance, and Werner S. Treitel, Woodland Hills, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 134,828, Mar. 28, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 276,275
Int. Cl.^{3} H02P *13/20*
U.S. Cl. 363—42 **19 Claims**



1. Apparatus for synthesizing a sinusoidal output, comprising:

first and second switching means;
transformer means having a primary winding with a center tap and first and second input terminals at the opposite ends thereof, and secondary and tertiary windings, said secondary winding have third and fourth output terminals at the opposite ends thereof;
capacitance means connected across said output terminals;
rectification means connected across said tertiary winding;
a source of power connected to the center tap of said primary winding, thence to said first and second switching means via said opposite ends of said primary winding and thence to ground to establish a sinusoidal signal across said output terminals due to the resonance of said secondary winding and said capacitance means;
first and second pulse width modulators;
a less than unity gain, positive feedback loop circuit connected from said rectification means to said second pulse width modulator and thence to said first pulse width modulator; and
a high gain, negative feedback loop circuit connected from said rectification means to said first pulse width modulator to control said first and second switching means and thereby provide feedback control of the sinusoidal output voltage amplitude across said output terminals by using said sinusoidal voltage output as its own reference signal, and the shape of said sinusoidal output across said output terminals being controlled by said positive feedback loop which controls said second modulator and said first and second switches through said first modulator.

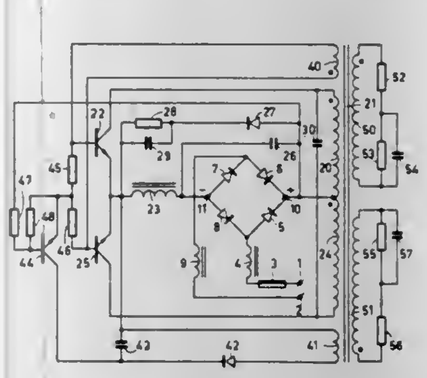
4,353,116
DIRECT CURRENT TO ALTERNATING CURRENT CONVERTER

Hilbert Palmers, and Hubertus M. J. Chermin, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,052
Claims priority, application Netherlands, Mar. 17, 1980, 8001557
Int. Cl.^{3} H02M *7/537*
U.S. Cl. 363—133 **18 Claims**

1. A direct current to alternating current converter comprising two input terminals for connection to a source of direct current, an output transformer, means connecting the two input terminals to a first series arrangement including at least a first transistor and a first primary winding of the transformer and by a second series arrangement including at least a second

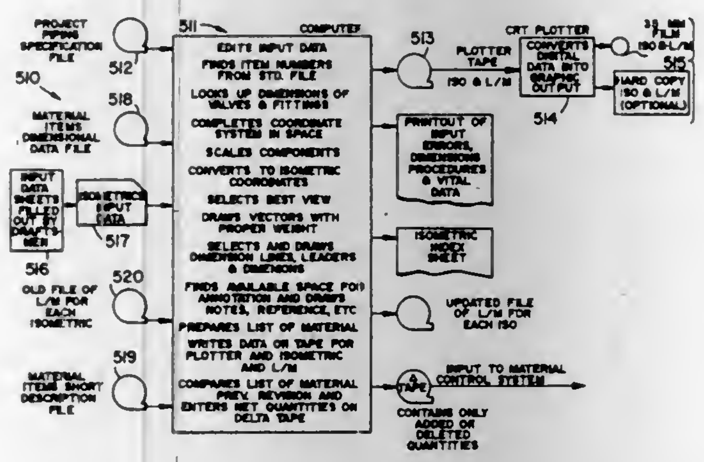
transistor and a second primary winding of the transformer, a third winding of the transformer connecting the base of the first transistor directly to the base of the second transistor, a control circuit coupled to the base electrodes of the two transistors, an auxiliary d.c. voltage source coupled to the control circuit so that the control circuit is predominantly supplied from said auxiliary d.c. voltage source, the combination of the auxiliary d.c. voltage source and the control circuit comprising a current blocking means such that an instantaneous voltage between the input terminals which is less than 5% of the rated effective voltage between those terminals causes the auxiliary d.c. voltage source to supply substantially no current to the control circuit.



4,353,117
METHOD OF DIAGNOSING ERRORS OFF-LINE IN PIPE SPECIFICATION FILES OF A COMPUTER-AIDED GRAPHICS SYSTEM

Richard A. Spellmann, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 28, 1979, Ser. No. 108,267
Int. Cl.^{3} G06F *15/56*
U.S. Cl. 364—300 **4 Claims**


PROJECT PIPING SPECIFICATION FILE
512
510
MATERIAL ITEMS DIMENSIONAL DATA FILE
518
INPUT DATA SHEETS FILLED OUT BY DRAFTSMEN
ISOMETRIC INPUT DATA
517
516
OLD FILE OF L/M FOR EACH ISOMETRIC
520
519
MATERIAL ITEMS SHORT DESCRIPTION FILE
511
COMPUTER
EDITS INPUT DATA
FINDS ITEM NUMBERS FROM STD. FILE
LOOKS UP DIMENSIONS OF VALVES & FITTINGS
COMPLETES COORDINATE SYSTEM IN SPACE
SCALES COMPONENTS
CONVERTS TO ISOMETRIC COORDINATES
SELECTS BEST VIEW
DRAWS VECTORS WITH PROPER WEIGHT
SELECTS AND DRAWS DIMENSION LINES, LEADERS & DIMENSIONS
FINDS AVAILABLE SPACE FOR ANNOTATION AND DRAWS NOTES, REFERENCE, ETC
PREPARES LIST OF MATERIAL
WRITES DATA ON TAPE FOR PLOTTER AND ISOMETRIC AND L/M
COMPARES LIST OF MATERIAL PREV. REVISION AND ENTERS NET QUANTITIES ON DELTA TAPE
513
PLOTTER TAPE
ISO & L/M
CRT PLOTTER
CONVERTS DIGITAL DATA INTO GRAPHIC OUTPUT
514
35 MM FILM ISO & L/M
515
HARD COPY ISO & L/M (OPTIONAL)
PRINTOUT OF INPUT ERRORS, DIMENSIONS PROCEDURES & VITAL DATA
ISOMETRIC INDEX SHEET
UPDATED FILE OF L/M FOR EACH ISO
Δ TAPE
INPUT TO MATERIAL CONTROL SYSTEM
CONTAINS ONLY ADDED OR DELETED QUANTITIES

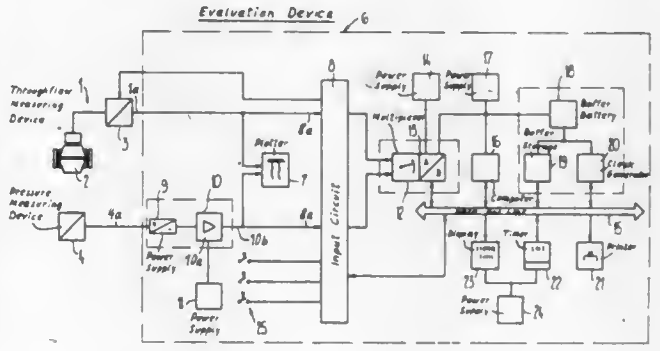
1. An off-line method for aiding updating of a graphical system for producing in a plane having two-dimensional pipeline coordinate axes, a planar, axonometric representation of a three-dimensional pipeline in which material and non-material aspects of piping elements of said pipeline are associated with a multibit digital code representative of a series of workpoints compatible for use within a digital computer system, said workpoints being paired into overlapping sets, each set containing dominant and subservient points having known coordinates with respect to intersecting axes X, Y and Z, and being identified in relative three-dimensional coordinates by a distance (d) between points and values of angles of a straight line intersecting them as related to orthogonal planes of reference, comprising:

(A) by means of said digital computer system, storing and sorting pipe specification information about said pipeline both as (i) machine readable data words or portions of words, and (ii) as a function of field locations within a preselected data format for operation within said system;
(B) by means of said digital computer system, inputting off-line updated pipe specification data in said format on an iterative basis;
(C) by means of said digital computer system, comparing said updated pipe specification data with said stored and sorted pipe specification data; and
(D) by means of said digital computer system, indicating correctness of said compared data whereby errors associated with said updated pipe specification data, can be determined and then corrected, off-line.

4,353,118
APPARATUS FOR DETERMINING THE THROUGHFLOW IN PIPE CONDUITS

Hans Heimgartner, Jona, and Karl Wirz, Meilen, both of Switzerland, assignors to Häny & Cie AG, Meilen, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,061
Claims priority, application Switzerland, Aug. 3, 1979, 7131/79
Int. Cl.^{3} G01F *7/00*
U.S. Cl. 364—510 **17 Claims**



1. An apparatus for determining the rate of flow of a medium conveyed with varying velocity through at least one pipe conduit by means of a pump device, comprising:

a flow rate measuring device arranged in the pipe conduit and generating measuring value signals corresponding to the rate of flow of the medium through the pipe conduit;
an evaluation device connected to the flow rate measuring device for processing the measuring value signals; and
means for the indication of the quantity of medium conveyed through the pipe conduit both as a function of time and the total quantity of medium;
said evaluation device containing a computer for adding the received measuring value signals and generating at certain time intervals, based upon the addition of such received measuring value signals, first output signals corresponding to the total quantity of conveyed medium and generating in each of successive time periods second output signals by forming a mean value based upon the measuring value signals received during a given time period;
said second output signals being characteristic of the momentary rate of flow of the medium during said given time period; and
said first and second output signals serving to control said indication means.

4,353,119
ADAPTIVE ANTENNA ARRAY INCLUDING BATCH COVARIANCE RELAXATION APPARATUS AND METHOD

Sam M. Daniel, Tempe, and Louis A. McRoberts, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 13, 1980, Ser. No. 159,027
Int. Cl.^{3} H04B *7/00;* G06F *15/20*
U.S. Cl. 364—517 **12 Claims**

1. In the general statement $Cw+b=0$ for a system of N

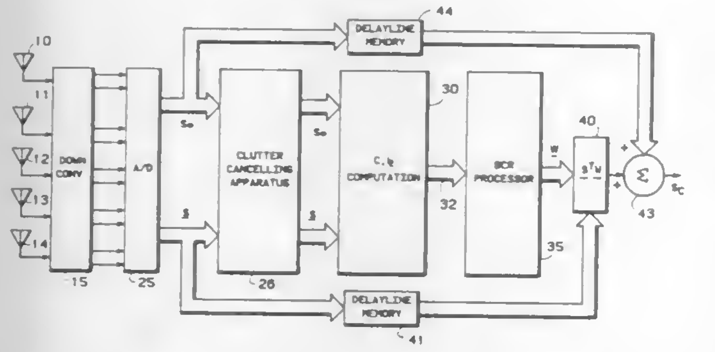
complex equations, where C is an N×N complex Hermitian covariance matrix of a first set of N signals and b is a complex forcing N-vector produced by the cross-correlation between the first set of N signals and a second signal, apparatus providing a signal representative of a near optimum value of the complex weight vector w comprising:

(a) input storage means for storing signals representative of C and b therein;

(b) vector storage means including separate storage areas for signals representative of the complex weight vector w, a complex residual vector r, a complex relaxation vector p, and the matrix-vector product Cp and output means for selectively supplying any one of these signals upon command;

(c) arithmetic means having two inputs and an output for selectively adding and subtracting signals on the two inputs upon command and supplying a signal representative of the addition or subtraction at the output;

(d) a central processing unit having multiplying means for multiplying vectors and scalars, said multiplying means having two inputs and means for conjugating signals applied to one of the inputs, said central processing unit further having summing means with an input connected to an output of said multiplying means;



(e) division means having a divisor input, a dividend input and an output;

(f) scalar storage means including output means for selectively supplying any one of the stored signals upon command; and

(g) means including timing controls for selectively coupling the signals representative of C and b to one input of said arithmetic means and to either input of said multiplying means, for coupling the output means of said vector storage means to the one input of said arithmetic means and to the inputs of said multiplying means, for coupling the output of said arithmetic means to the vector storage means, for coupling an output of said multiplying means to the second input of said arithmetic means, for selectively coupling an output of said summing means to said vector storage means, the divisor and dividend inputs of said division means and the scalar storage means and for selectively coupling the output means of said scalar storage means to the divisor and dividend inputs of said division means, either of the two inputs of said multiplying means and the one input of said arithmetic means in a proper sequence to provide an output signal representative of a near optimum value of w.

4,353,120

LOW-FREQUENCY SOUND SOURCE FOR TOWED ARRAY CONDITION APPRAISER SYSTEM (TACAS)

George O. Pickens, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

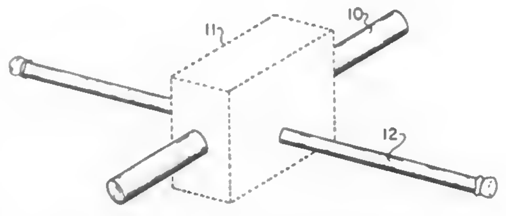
Filed Apr. 2, 1981, Ser. No. 250,523

Int. Cl.^{3} H04R *29/00*

U.S. Cl. 367—13 **11 Claims**

1. In an apparatus for enabling an in situ determination of operational parameters of an elongate array of spaced acoustic elements covered by a hose-like sheath on which a longitudinally displaceable member is adapted to travel, an improvement therefor is provided comprising:

means mounted on the longitudinally displaceable member for ensonifying the spaced acoustic elements with acoustic energy in the low frequency range as it moves along the array, the low frequency ensonifying means is provided with first and second tubes each having one open end extending outwardly from the array and the other open end positioned adjacent the elongate array and a projector of acoustic energy is disposed in each tube to ensonify the spaced acoustic elements with low frequency acoustic energy.



4,353,121

HIGH RESOLUTION, MARINE SEISMIC STRATIGRAPHIC SYSTEM

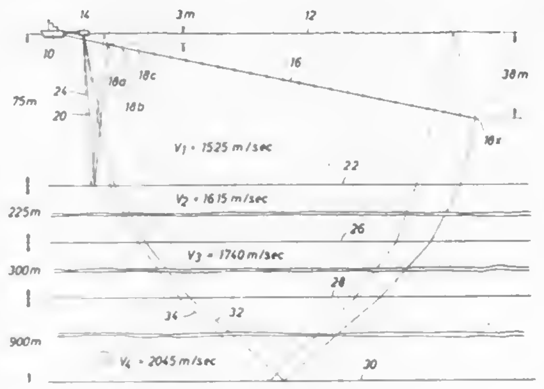
Clifford H. Ray, and Neil A. Moore, both of Houston, Tex., assignors to Fairfield Industries, Inc., Houston, Tex.

PCT No. PCT/US80/00925, § 371 Date Jul. 24, 1980, § 102(e) Date Jul. 24, 1980, PCT Pub. No. WO82/00365, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 24, 1980, Ser. No. 179,283

Int. Cl.^{3} G01V *1/36, 1/38*

U.S. Cl. 367—21 **23 Claims**



1. A marine seismic system comprising

a moving seismic source for producing an acoustic wavelet into the water,

a detector towed by a vessel moving synchronously with said source, comprising

a streamer including a plurality of hydrophone arrays spaced along its length,

buoyancy means provided to said streamer so as to provide a different depth below the water surface for each of the hydrophone arrays,

each of said arrays detecting primary reflections directly from subsurface interfaces and ghost reflections from the air-water interface, the time difference between primary reflections and ghost reflections being different for each hydrophone array in the streamer, and

primary reflection correction means for correcting the primary reflections to a datum, gathering data traces into common depth point files, applying NMO corrections to substantially align the primary reflections and in so doing misalign the ghost reflections, and stacking the common depth point traces in said common depth point files, thereby substantially deemphasizing the appearance of the ghost reflections, while emphasizing the primary reflections.

4,353,122

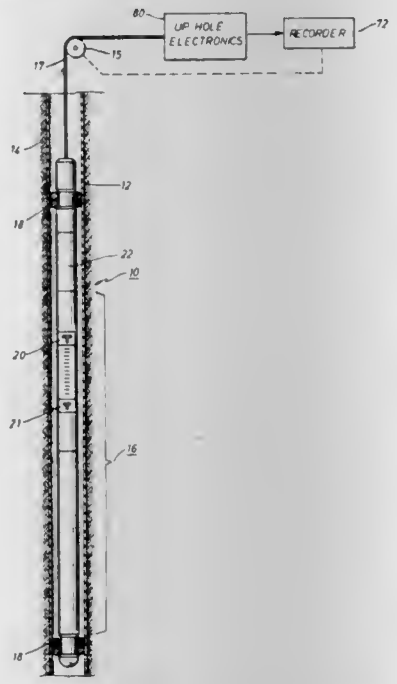
DIFFERENTIAL NOISE LOGGING METHOD AND APPARATUS

Walter E. Cubberly, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed May 19, 1980, Ser. No. 151,386

Int. Cl.^{3} G01V *1/40*

U.S. Cl. 367—25 **9 Claims**



1. Borehole noise logging apparatus comprising:

(a) a mandrel adpated for movement along a borehole,

(b) at least two acoustic transducers cylindrically disposed about said mandrel in an oil filled annulus between the mandrel and a thin tubular metal diaphragm cylindrically surrounding the mandrel, and spaced a predetermined distance from one another for generating electrical noise signals proportional to noise in the borehole at each transducer,

(c) a rubber covering about the metal diaphragm surrounding each acoustic transducer and extending along a portion of the entire axial extent of each acoustic transducer,

(d) circuit means for high pass filtering each noise signal and generating respective filtered noise signals,

(e) root-mean-square circuit means responsive to the respective filtered noise signals for generating RMS noise signals proportional to the RMS value of each filtered noise signal,

(f) differential amplifier means for generating a difference noise signal proportional to the difference between the RMS noise signals, and

(g) means for transmitting the difference noise signal to surface instrumentation for recording as a function of depth in the borehole.

4,353,123

ULTRASONIC TRANSMITTER

Helmut Rost, Uttenreuth, and Alfred Walz, Burgthann, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

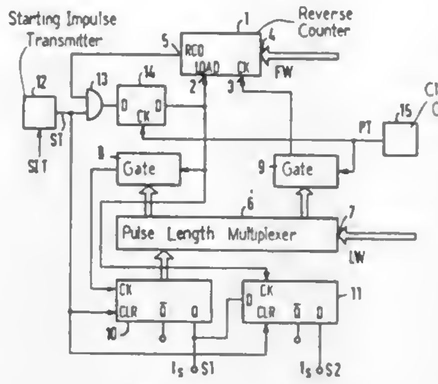
Filed Jan. 23, 1981, Ser. No. 227,995

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1980, 3006106

Int. Cl.^{3} G01S *7/52;* G10K *11/00*

U.S. Cl. 367—137 **17 Claims**

1. An ultrasonic transmitter for operating ultrasonic transducers, said transmitter comprising a pulse generator for supplying excitation pulses, the pulse generator comprising a digital frequency control member (1) for controlling the pulses to be supplied to an ultrasonic transducer element, said digital frequency control member (1) having circuit means whereby at least the pulse frequency (fs) is selectable in response to an input digital value (FW), and said circuit means comprising a second digital control member (6) responsive to a second input digital value (LW) to determine the number of pulses to be supplied to an ultrasonic transducer element within an excitation phase, thereby also to determine the total duration of an excitation of such ultrasonic transducer element.



4,353,124

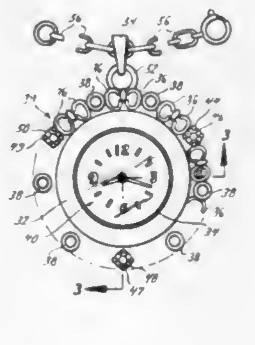
ORNAMENTAL MOUNTING FOR WATCH

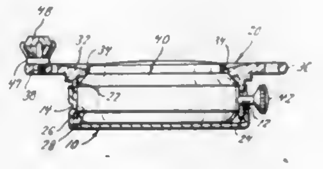
Michael Weinzettel, St. Louis, Mo., and Walter Weeks, Collinsville, Ill., assignors to Eisenstadt Company, St. Louis, Mo.

Filed Jul. 7, 1980, Ser. No. 166,484

Int. Cl.^{3} G04B *37/00*

U.S. Cl. 368—258 **11 Claims**





1. A housing for a watch which comprises a front portion, a rear portion, interacting surfaces on said portions that normally hold said portions in fixedly-assembled relation throughout the time said watch is held by said housing, said portions coacting to define a recess in which said watch can be disposed and held when said portions are in assembled relation, said front portion having an opening therein through which the time-indicating elements of said watch can be viewed while said interacting surfaces on said portions hold said portions in fixedly-assembled relation, an annular gallery which is fixedly secured to and which fixedly projects laterally outwardly from one of said portions, said annular gallery being spaced outwardly relative to said opening in said front portion to assure ready viewing of said time-indicating elements of said watch while said interacting surfaces on said portions hold said portions in fixedly-assembled relation, said annular gallery comprising a plurality of filigree-forming elements that coact to provide an ornamental filigree-like configuration for said annu-

lar gallery, some of said filigree-forming elements being stud-receiving sockets with holding surfaces therein which are formed and dimensioned to accommodate and to hold complementary surfaces on the studs of stud-type gem mountings which have gems projecting forwardly from the fronts thereof and which have the studs thereof extending rearwardly therefrom to have said complementary surfaces thereon disposable within and held by said holding surfaces in said stud-receiving sockets to hold said gems forwardly of said stud-receiving sockets, said stud-receiving sockets being spaced outwardly and away from said opening in said front portion and hence outwardly and away from said time-indicating elements of said watch and said gems being dimensioned so they are disposed outwardly and away from said opening in said front portion and hence outwardly and away from said time-indicating elements of said watch whenever said studs of said stud-type gem mountings are within said stud-receiving sockets, whereby said stud-receiving sockets and said gems permit full and free viewing of said time-indicating elements of said watch while said interacting surfaces on said portions hold said portions in fixedly-assembled relation, said stud-receiving sockets being displaced circumferentially from each other, whereby one or more of said stud-type gem mountings can be disposed at different locations circumferentially of said annular gallery to dispose one or more of said gems at different locations circumferentially of said annular gallery, said annular gallery enclosing said watch by enclosing said opening in said front portion, whereby said annular gallery can make said watch a center of interest within a gem-studded filigree-like annular gallery, each of said stud-receiving sockets having filigree-forming elements adjacent thereto so said stud-type gem mountings hold said gems adjacent exposed and visible filigree-forming elements of said annular gallery whenever said complementary surfaces on said studs are disposed within and held by said holding surfaces in said stud-receiving sockets, said annular gallery having an area which is much larger than the area of any of said stud-receiving sockets so substantial portions of said filigree-forming elements will be exposed to view even after the stud of a stud-type gem mounting is disposed within and held by one of said stud-receiving sockets.

4,353,125

ELECTROMAGNETIC PICKUP CARTRIDGE

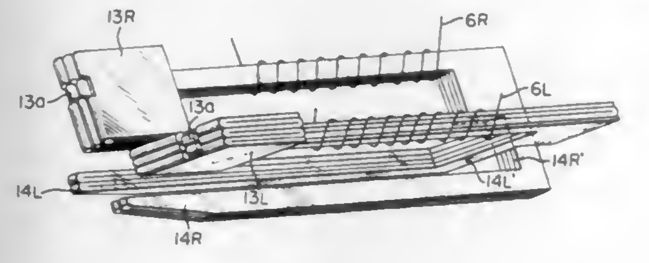
Masashi Itoh, Settsu, and Kazuo Teramae, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 19, 1980, Ser. No. 208,297

Claims priority, application Japan, Nov. 29, 1979, 54-155373

Int. Cl.³ H04R *11/12*

U.S. Cl. 369—136 7 Claims



1. An electromagnetic pickup cartridge comprising:
- U-shaped right-channel and left-channel yokes having an open end and a base portion formed from an apertured magnetic thin strip in the form of a rectangular frame folded many times over itself;
- coils mounted on said right-channel and left-channel yokes, respectively;
- said right-channel and left-channel yokes with the coils being disposed along the axis of the maximum sensitivity of the right- and left-channels wherein the base portions of said right-channel and left-channel yokes cross each other, and
- an armature disposed within each of said right-channel and left-channel yokes adjacent to the open end thereof.

4,353,126

METHOD FOR CODED DATA TRANSMISSION IN HALF-DUPLEX OPERATION BETWEEN DATA TERMINAL EQUIPMENT OF TWO DATA STATIONS

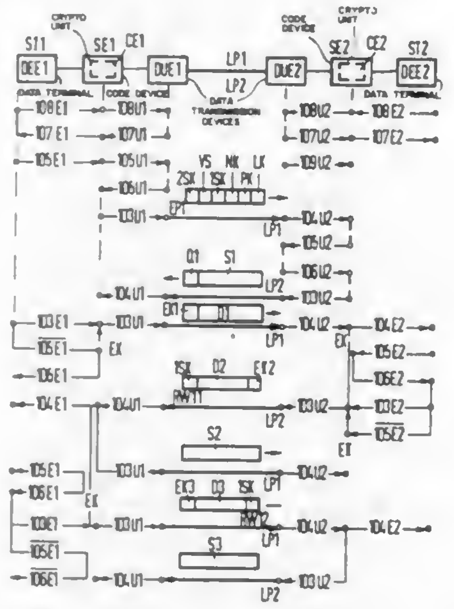
Eduard Bergmann, Luedenscheid, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,792

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929252

Int. Cl.³ **H04L** *9/00, 5/14*

U.S. Cl. 370—24 **5 Claims**



1. A method for coded data transmission in half-duplex operation between data terminal devices of two data stations, in which a first code device in a first data station transmits a phase-in program to a second code device of the second data station, and in which the second code device responds with an acknowledgement, the improvement therein comprising the steps of:
- transmitting between the first and second code devices, via respective first and second data transmission devices, in full-duplex operation;
- phasing-in first and second crypto units in the respective first and second data stations; and
- after phase-in of the crypto units, transmitting change of direction programs, data and end identification in one transmission direction and simultaneously transmitting synchronizing signals in the opposite direction.

4,353,127

DUPLEX TRANSCEIVER ARRANGEMENTS FOR REBROADCAST OF SIGNALS

Christopher K. Richardson, Romsey, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

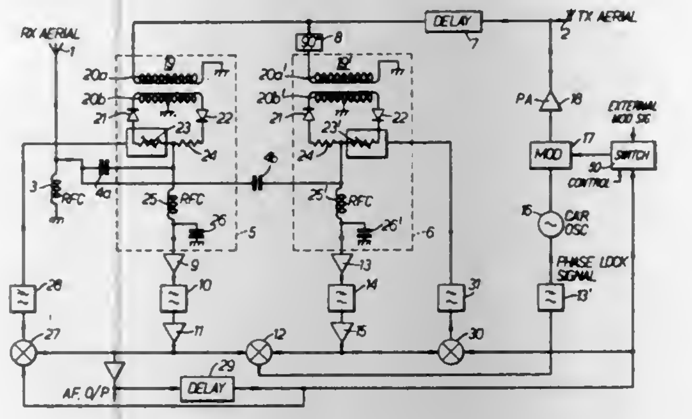
Filed Jun. 2, 1980, Ser. No. 155,763

Claims priority, application United Kingdom, Jun. 8, 1979, 7919963

Int. Cl.³ H04J *1/00;* **H04L** *5/14*

U.S. Cl. 370—32 **9 Claims**

1. A duplex transceiver comprising a receiver aerial and a transmitter aerial, a pair of balanced mixers each fed from the transmitter aerial and from the receiver aerial, a phase quadrature device interposed in a signal path between one of the said aerials and one of the said balanced mixers, a multiplier fed from the said mixers, an oscillator/modulator arrangement feeding the transmitter aerial and phased locked to the frequency of a received carrier signal by means of a phase control signal fed from the multiplier, a first phase detector fed from that one of the balanced mixers which is fed via the phase quadrature device, a delay device via which the said first phase detector is fed also from the other of the balanced mixers thereby to provide a just control signal which is fed back to control the balance of the said one balanced mixer, and a second phase detector fed from the said other of the balanced mixers with an undelayed signal and via the said delay device with a delayed signal from the said other of the balanced mixers thereby to produce a second control signal which is fed back to control the balance of the said other balanced mixer from which an output signal from the transceiver is derived.



4,353,128

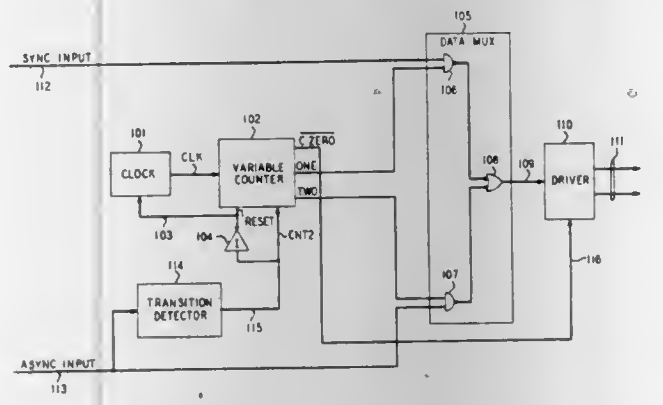
SYNCHRONOUS/ASYNCHRONOUS DATA COMMUNICATION ARRANGEMENT

Peter Cummiskey, Clark, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1980, Ser. No. 161,203

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—44 39 Claims



1. A circuit arranged to multiplex an asynchronous binary data input signal with a synchronous binary data input signal such that the binary transition timing of said asynchronous binary data input signal is preserved at the output of said circuit

CHARACTERIZED IN THAT

said circuit comprises:
- means for providing at said circuit output at timed intervals said synchronous data input signal as a binary data word having a fixed number of data bits,
- means for detecting a binary transition in said asynchronous binary data input signal, and
- means controlled by said detecting means for both adjusting a next one of said timed intervals and for inserting an extra data bit in a next one of said provided output data words.

32. A receiver unit for use in a communication system, said receiver arranged to receive an asynchronous multiplexed data word including one part consisting of a fixed number of bits of synchronous data and another part consisting of a fixed number of bits of asynchronous data

CHARACTERIZED IN THAT

said receiver unit comprises:
- means for determining an increase in the number of bits in a received asynchronous multiplexed data word, and
- means controlled by said determining means for demultiplexing said received asynchronous multiplexed data into said synchronous data part and asynchronous data part such that said asynchronous data is provided at an output a fixed time period after the beginning of reception of said received multiplexed data word.

4,353,129

DIGITAL DATA TRANSMISSION SYSTEM

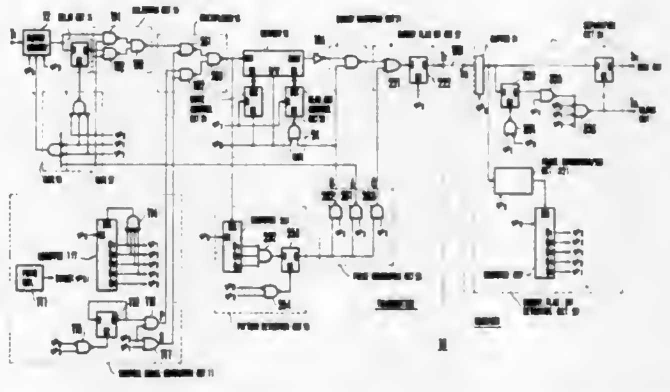
Mitsuo Nishiwaki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,940

Claims priority, application Japan, Mar. 10, 1980, 55-29971

Int. Cl.³ H04L *7/04*

U.S. Cl. 375—112 **6 Claims**



1. A digital data transmission system comprising a transmitter and a receiver, said transmitter comprising storage means for temporarily storing a data bit string forming a coded digital video signal, means for supplying a read request signal for reading out said data bit string from said storage means, means for forming one frame out of time slots alloted to a frame synchronization bit, a predetermined number of data bit of said data bit string and a dummy flag bit which indicates whether or not a dummy bit exists in said one frame, means for detecting whether or not a fixed bit pattern is formed in said one frame, means for providing said dummy bit to a predetermined one of said time slots in response to the result of said detection, means for inserting a dummy flag bit indicative of whether or not the dummy bit has been inserted to a time slot for said dummy flag bit, means for supplying a data bit which have dropped out by addition of said dummy bit to said frame forming means so that said dropped data bit is inserted as a part of said data bits forming a succeeding frame, and means for suspending the supply of said read request signal for the bit corresponding to said dropped data bit; said receiver comprising an input terminal for receiving in serial fashion the transmitted data bit string supplied from said transmitter, means for detecting said dummy flag bit in said transmitted data bit string, and means for separating said transmitted data bit string into a dummy bit and input data bits in response to the detection of said dummy flag bit.

4,353,130

DEVICE FOR PROCESSING SERIAL INFORMATION WHICH INCLUDES SYNCHRONIZATION WORDS

Marino G. Carasso, and Jakob G. Nijboer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,725

Claims priority, application Netherlands, Jun. 16, 1980, 8003477

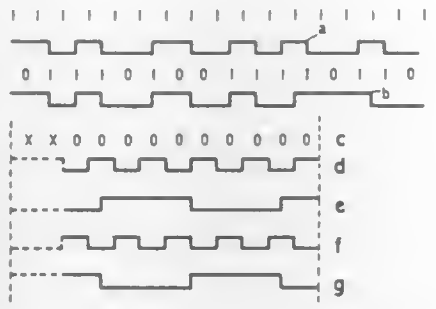
Int. Cl.³ H04L *7/08*

U.S. Cl. 375—114 **3 Claims**

1. A device for the synchronized reading of a serial medium

which present a series of synchronization words (S), wherein each pair of successive synchronization words is separated by a fixed number of n data words (D0 . . . D7), the synchronization words in undisturbed condition having mutually corresponding bit patterns which differ from the set of allowable data word bit patterns, said device comprising:

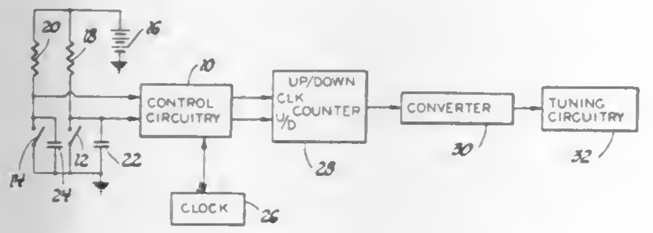
a. an input (**20**) for interfacing to said medium;
b. a serial buffer memory fed by said input and comprising:
b1. a first section (**22**) for accommodating a synchronization word:
b2. an odd number of m (m=1,3 . . .) serial modules, each module consisting of a second section (**24**) for accommodating said fixed number of n data words and a third section (**26**) for accommodating a further synchronization word;



b3. an output section (**28***a*) for accommodating a number of p data words, wherein p is the closest integer to the value of n/2, and serially presenting the buffered data words and synchronization words to its output (**38**);
b4. additional memorizing means (**28***b*, **30**) for memorizing the occurrence of a synchronization word at said output during an interval corresponding to the length of (n−p) data words plus one synchronization word;
c. majority means (**32**, **34**, **36**, **40**) connected to respective outputs of said first section, said odd number of third sections and said memorizing means for generating a majority signal upon detection of (k+1)/2 synchronization word signals;
d. timing means (**152**) having a control input connected to said majority means for generating a series-to-parallel control signal for a conversion device (**156**) fed by said output.

4,353,131
TOUCH ACTUATED ELECTRONICALLY TUNED RECEIVER

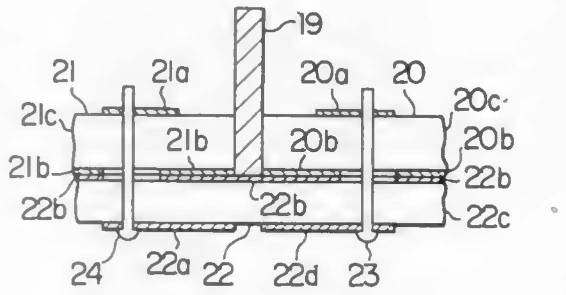
Chang L. Yueh, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 9, 1979, Ser. No. 65,382
Int. Cl.³ H03J ***7/28***
U.S. Cl. 455—179 **5 Claims**



1. A receiver including means for effecting tuning of the receiver in response to a binary code, first and second manually actuable switch means, code generating means for supplying said binary code, said code generating means responsive to actuation of said first switch means for less than a predetermined time interval for incrementing said code to a value representing the next higher channel, said code generating means responsive to actuation of said second switch means for less than said predetermined time interval for decrementing said code to a value representing the next lower channel, said code generating means responsive to continuous actuation of said first switch means for at least said predetermined time interval for thereafter incrementing said code at a first rate for the duration of actuation of said first switch means and responsive to actuation of said second switch means subsequent to actuation of said first switch means for incrementing said code at a second higher rate for the duration of concurrent actuation of said first and second switch means.

4,353,132
DOUBLE SUPERHETERODYNE TUNER

Takeshi Saitoh; Toshio Nagashima, both of Yokohama; Hiroshi Hatashita, Tokyo, and Susumu Yamamoto, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 21, 1981, Ser. No. 226,826
Claims priority, application Japan, Jan. 28, 1980, 55-7827
Int. Cl.³ H04B ***1/26***
U.S. Cl. 455—315 **3 Claims**



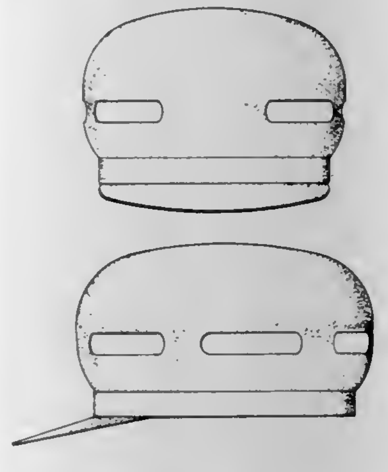
1. A double superheterodyne tuner including a first and a second frequency converter and a bandpass filter connecting said first and second frequency converters electrically each of which is built on a substrate constituted by microstrip lines comprising line conductors provided on one main surface of a flat dielectric plate and grounding conductors provided on the other surface of said flat dielectric plate, wherein the improvement comprises: means for juxtaposing a first and second microstrip line substrates in which said first and second frequency converters are respectively built, with said line conductors of said first and second substrates disposed on the same side, with said grounding conductors of said first and second substrates disposed on the same side and in a plane; a shielding plate provided between and perpendicularly to said first and second substrates; and means for arranging a third microstrip line substrate in which said bandpass filter is constructed, back to back with said first and second substrates, with the grounding conductor of said third substrate kept in contact with said grounding conductors of said first and second substrates and with said third substrate extending over said first and second substrates, whereby high-frequency isolation of each circuit element can be securely established.

DESIGNS

OCTOBER 5, 1982

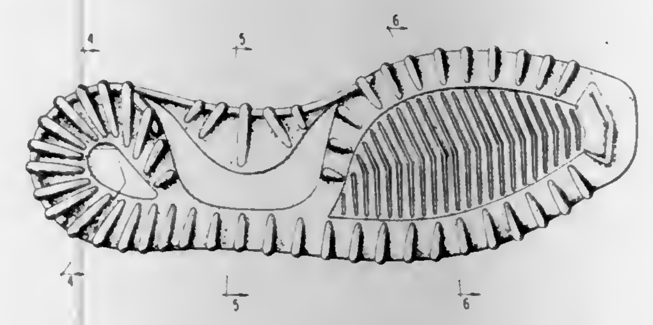
266,370
CAP

Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Filed Jul. 14, 1980, Ser. No. 168,002
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—244



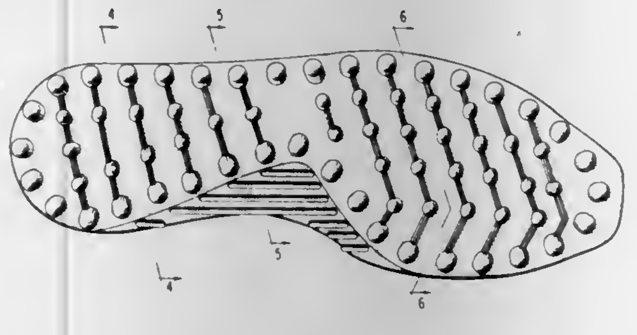
266,371
SHOE SOLE

Jerry D. Stubblefield, 11725 NW. Damascus, Portland, Oreg. 97229
Filed Nov. 3, 1980, Ser. No. 203,067
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



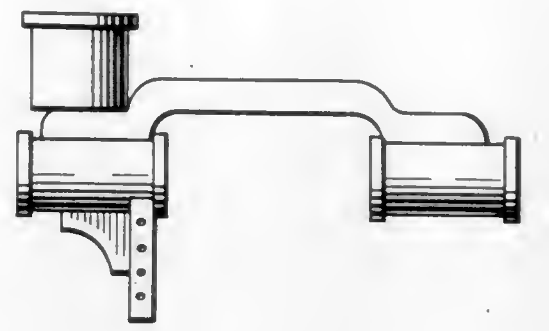
266,372
SHOE SOLE

Jerry D. Stubblefield, 11725 NW. Damascus, Portland, Oreg. 97229
Filed Nov. 3, 1980, Ser. No. 203,068
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



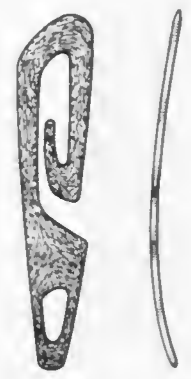
266,373
GOLF CLUB CARRIER

Roberto J. Baptista, Caracas, Venezuela, assignor to Roanto Investment N.V., Caracas, Venezuela
Filed Aug. 18, 1980, Ser. No. 178,761
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—37



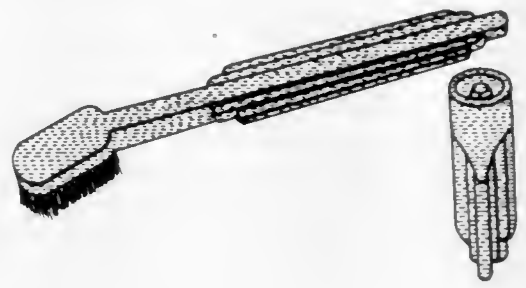
266,374
KEY HOLDER

Cal V. Drake, P.O. Box 9217, Marina del Rey, Calif. 90291
Filed Apr. 14, 1980, Ser. No. 140,203
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



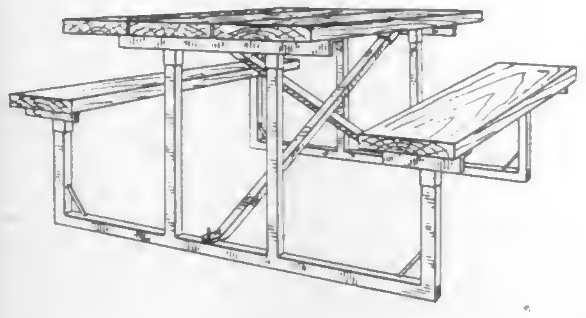
266,375
TOOTHBRUSH AND TOOTHPASTE TUBE CAP SET

Channing Cassett, New York, N.Y., assignor to Valdor International Cosmetics Ltd., New York, N.Y.
Filed Sep. 11, 1980, Ser. No. 186,251
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18



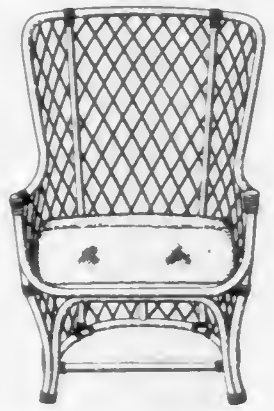
266,376
PICNIC TABLE

Bryan H. Musgrove, 3615 S. Locust Grove, Meridian, Id. 83642
Filed Apr. 21, 1980, Ser. No. 142,063
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—45



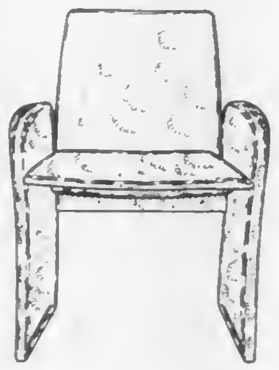
266,377
CHAIR

Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Apr. 28, 1980, Ser. No. 144,999
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—57



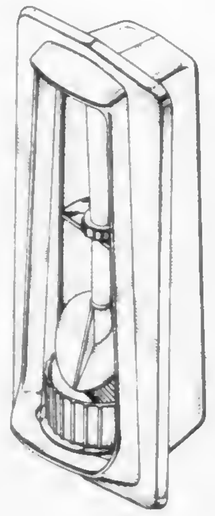
266,378
CHAIR

Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Italy
Filed Mar. 19, 1980, Ser. No. 131,648
Claims priority, application Italy, Sep. 19, 1979, 60933/79[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



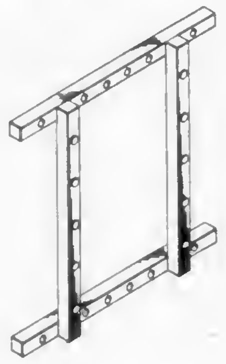
266,379
COMBINED TOILET BOWL BRUSH AND HOUSING THEREFOR

Tacko D. Alissandratos, P.O. Box 606, Tarpon Springs, Fla. 33589
Filed Nov. 6, 1979, Ser. No. 91,992
Term of patent 14 years
Int. Cl. D23—*02;* D4—*02;* D6—*04*
U.S. Cl. D6—86



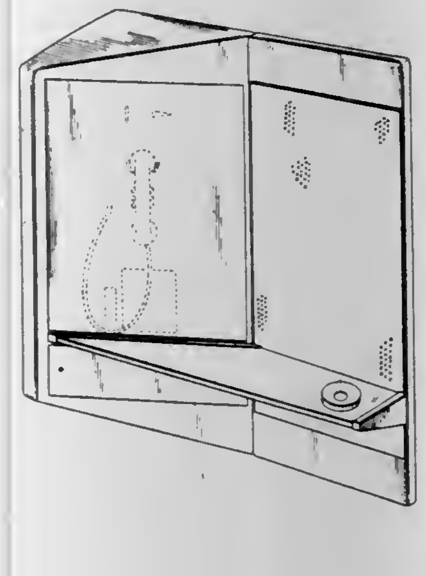
266,380
EASEL

Richard J. Ploeger, 318 Elm St., Santa Cruz, Calif. 95060
Filed Sep. 19, 1979, Ser. No. 76,918
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



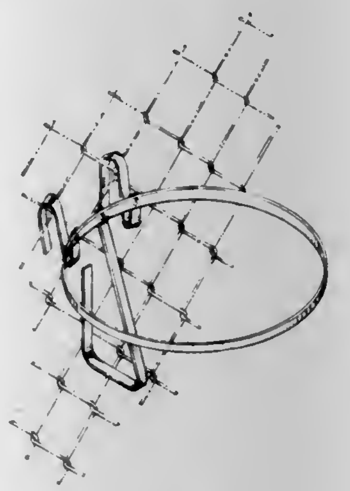
266,381
PUBLIC TELEPHONE SHELF

Donald M. Genaro, Haworth, N.J.; John N. McGarvey, Drexel Hill, Pa., and Dale F. Milsark, Summit, N.J., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Mar. 9, 1979, Ser. No. 19,197
Term of patent 14 years
Int. Cl. D25—*03;* D6—*04*
U.S. Cl. D6—133



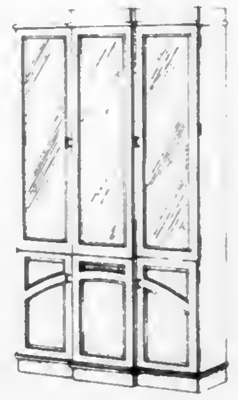
266,382
FLOWER POT HOLDER

Burton W. Hutchinson, 29770 Wistaria Valley Rd., Canyon Country, Calif. 91351
Filed Jun. 19, 1980, Ser. No. 161,096
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D6—137



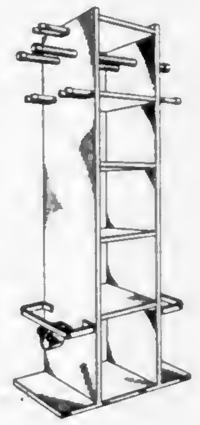
266,383
CHINA CABINET OR THE LIKE

Haywood L. West, High Point, N.C., assignor to Burlington Furniture Division of Burlington Industries, Inc., Greensboro, N.C.
Filed Mar. 20, 1980, Ser. No. 131,884
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—172



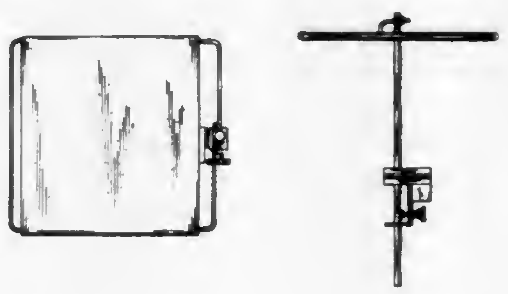
266,384
STORAGE RACK FOR SKI EQUIPMENT

Morris A. Lundin, 8721 Beard Rd., Minneapolis, Minn. 55431
Filed May 27, 1980, Ser. No. 153,542
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



266,385
SUN SHADE ATTACHMENT FOR A CHAIR

Donovon E. Musgrove, and Wilbur D. Vos, both of Sully, Iowa 50251
Filed Jan. 14, 1980, Ser. No. 111,587
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



266,386
FURNITURE ARM

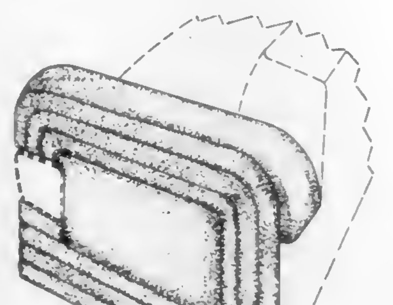
James L. DiPersia, New York, N.Y., assignor to Avento Designs, Inc., New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,952

Term of patent 14 years

Int. Cl. D6—*06*

U.S. Cl. D6—194



266,387
COMBINED TUMBLER AND SUPPORTING NECKLACE THEREFOR

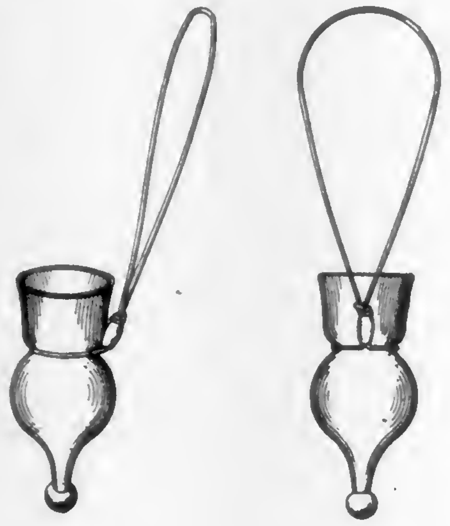
Anthony D. Angarone, 108 Marilyn Ter., Addison, Ill. 60101

Filed Nov. 28, 1980, Ser. No. 211,255

Term of patent 14 years

Int. Cl. D07—*01*

U.S. Cl. D7—6



266,388
GOBLET

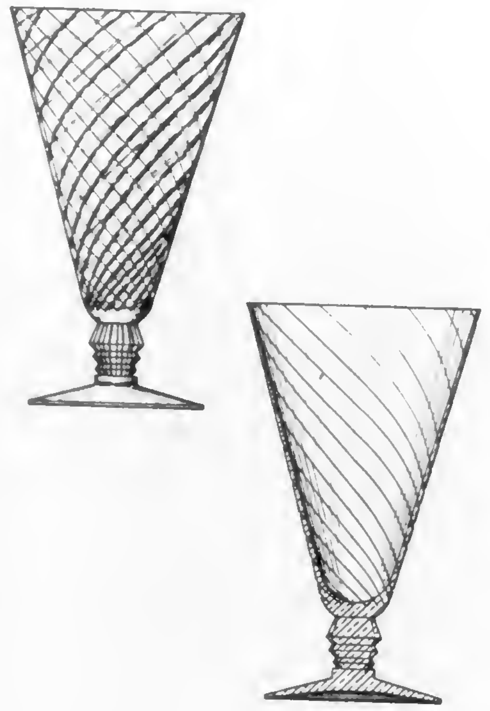
Jon R. Saffell, Glen Dale, W. Va., assignor to Fostoria Glass Company, Moundsville, W. Va.

Filed Oct. 24, 1980, Ser. No. 200,230

Term of patent 14 years

Int. Cl. D07—*01*

U.S. Cl. D7—13



266,389
DISH COVER OR SIMILAR ARTICLE

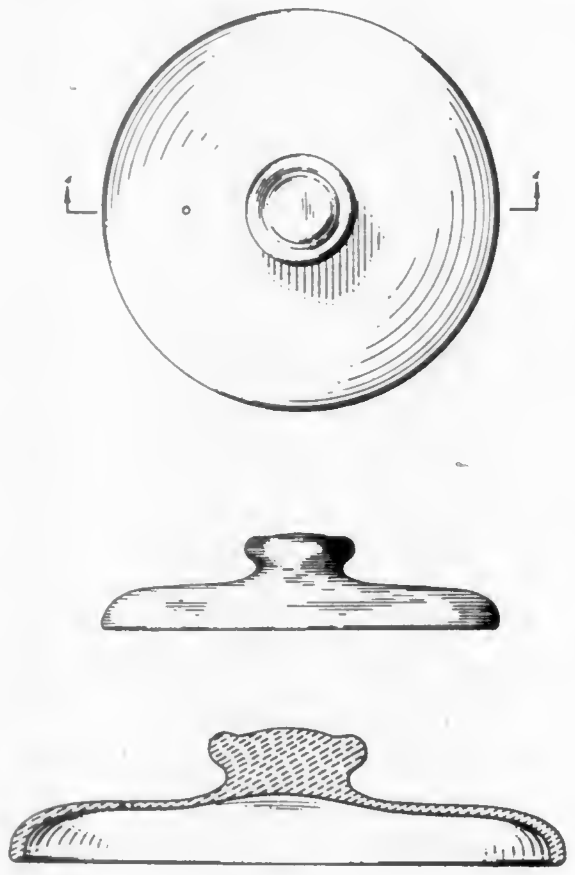
George B. Jensen, deceased, late of Syracuse, N.Y., and by Stanley F. Campion, executor, Fayetteville, N.Y., assignors to Syracuse China Corporation, Syracuse, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,547

Term of patent 14 years

Int. Cl. D7—*01*

U.S. Cl. D7—40



266,390
CONDIMENT DISPENSER OR THE LIKE

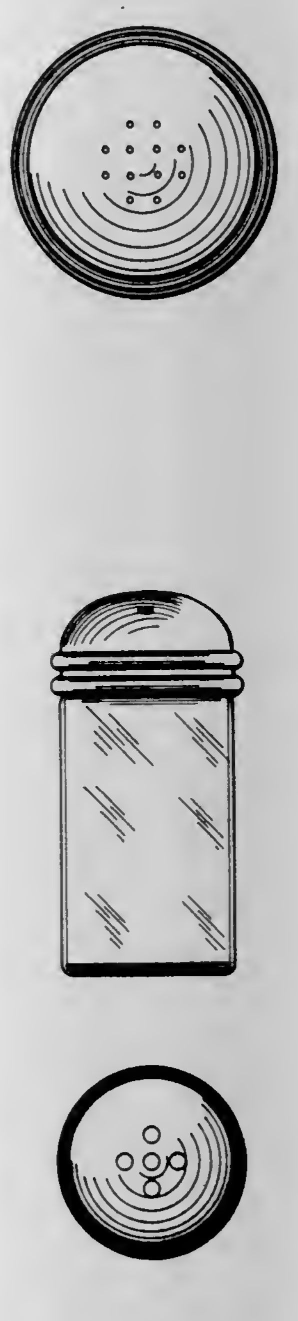
Richard V. Haner, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 20, 1980, Ser. No. 179,893

Term of patent 14 years

Int. Cl. D07—*06*

U.S. Cl. D7—54



266,391
INSULATED CAN HOLDER

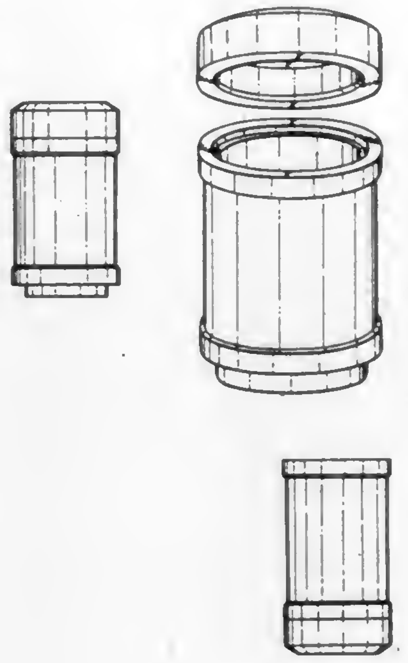
Vincent W. Jordon, 4805 Moscow Rd., Spring Arbor, Mich. 49283

Filed Sep. 18, 1980, Ser. No. 188,500

Term of patent 14 years

Int. Cl. D07—*01, 06*

U.S. Cl. D7—70



266,392
SABBATH BREAD KNIFE

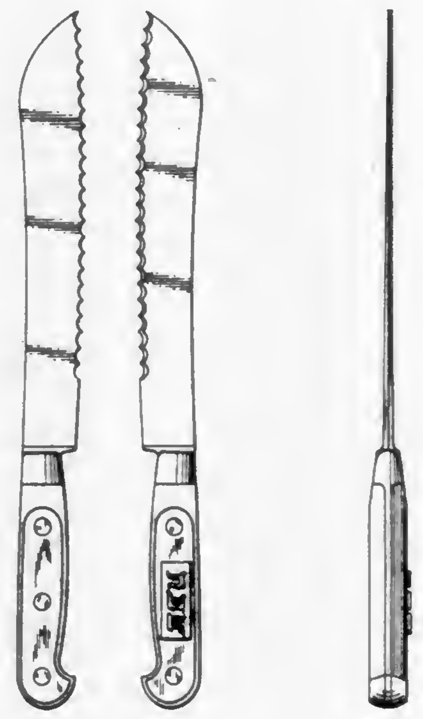
Charles C. Hoffberger, 1715 N. Lake Shore Dr., Sarasota, Fla. 33581

Filed Jan. 14, 1980, Ser. No. 111,799

Term of patent 14 years

Int. Cl. D07—*03*

U.S. Cl. D7—142



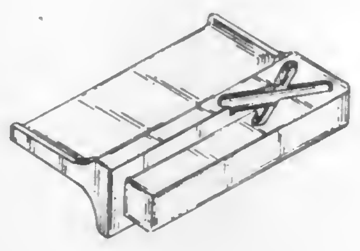
266,393

KNIFE SHARPENER

Paul C. Mayer, Wausau, Wis., and James R. Reichow, Minneapolis, Minn., assignors to Fiskars Manufacturing Company, Wausau, Wis.

Filed Jun. 11, 1980, Ser. No. 158,551
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D8—93



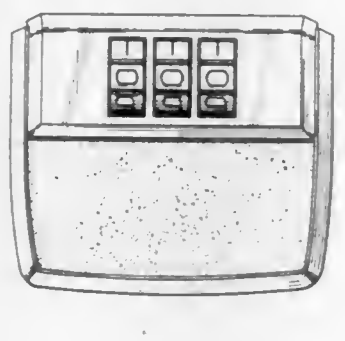
266,394

COMBINATION LOCK

Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Aug. 25, 1980, Ser. No. 181,202
Term of patent 14 years
Int. Cl. D8—*07*

U.S. Cl. D8—336



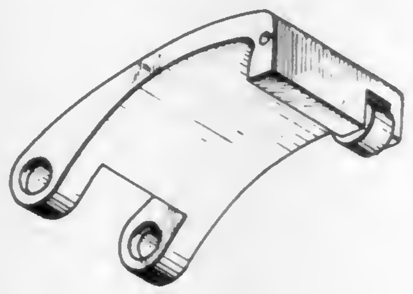
266,395

COMBINATION LOCK FENCE LEVER FOR BANK VAULTS, SAFE DOORS AND THE LIKE

Harry C. Miller, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Sep. 15, 1980, Ser. No. 187,175
Term of patent 14 years
Int. Cl. D8—*343*

U.S. Cl. D8—343



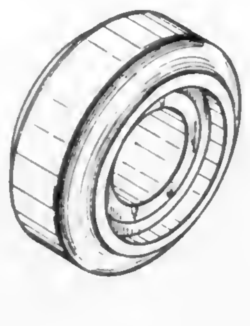
266,396

ROLLER

Donald Neville, Los Angeles County, Calif., assignor to Plastiglide Manufacturing Corporation, Hawthorne, Calif.

Filed Dec. 18, 1978, Ser. No. 970,376
Term of patent 14 years
Int. Cl. D8—*08*

U.S. Cl. D8—375



266,397

BOTTLE

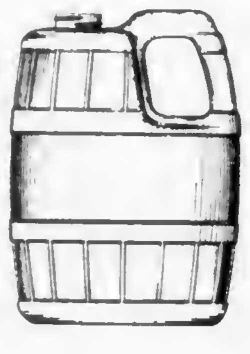
Raymond C. Coniglio, Burlington, Canada, assignor to Twinpak Ltd., Dorval, Canada

Filed Dec. 18, 1979, Ser. No. 104,962

Claims priority, application Canada, Jun. 18, 1979, 1806-79-17

Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—325



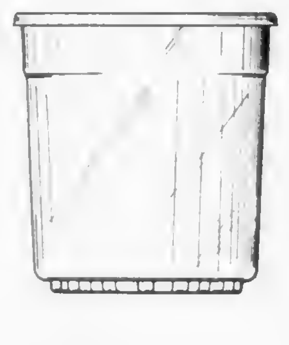
266,398

PACKAGING CONTAINER OR SIMILAR ARTICLE

John H. Haag, Sr., Evansville, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Apr. 11, 1979, Ser. No. 29,367
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—370



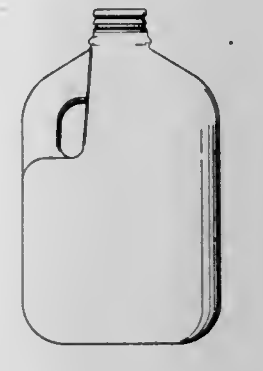
266,399

CONTAINER FOR LIQUIDS

John A. Cox, Bethel Park, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Feb. 7, 1980, Ser. No. 119,600
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—378



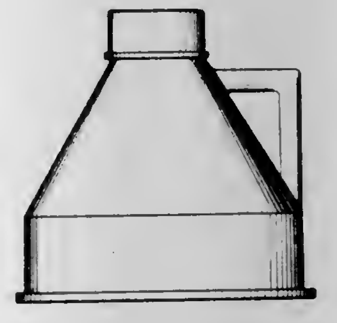
266,400

COMBINED FUNNEL AND STORAGE CONTAINER

Martin Shatz, 2247 W. Peralta Ave., Mesa, Ariz. 85202

Filed Oct. 1, 1980, Ser. No. 192,857
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—383



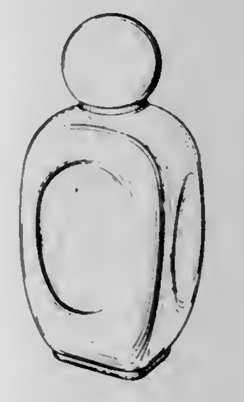
266,401

BOTTLE

Bernard T. Picot, Paris, France, assignor to Parfums Christian Dior S.A., Paris, France

Filed Jan. 28, 1980, Ser. No. 117,530
Claims priority, application France, Jul. 27, 1979, 42672
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—384



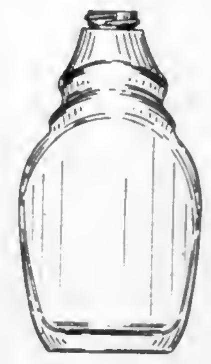
266,402

BOTTLE OR SIMILAR ARTICLE

George R. Conrad, Elk Grove, Ill., assignor to Fantasy Flavors, Inc., Wheaton, Ill.

Filed Sep. 4, 1980, Ser. No. 184,437
Term of patent 14 years
Int. Cl. D9—*01*

U.S. Cl. D9—404



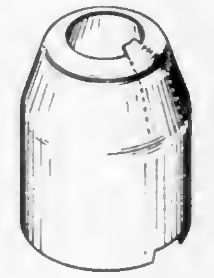
266,403

HEAT SHRINKABLE CAPSULE FOR A CHAMPAGNE BOTTLE

Edward H. Norman, Kenwood, Calif., assignor to Fleming-Potter Company, Inc., Peoria, Ill.

Filed Mar. 27, 1980, Ser. No. 134,539
Term of patent 14 years
Int. Cl. D9—*07*

U.S. Cl. D9—438



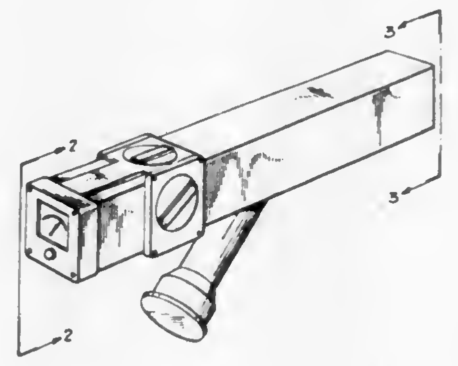
266,404

RADIOACTIVITY SPECTROMETER

George R. Goldak, P.O. Box 54, Langham, Saskatchewan, Canada (S0K 2L0)

Filed Mar. 24, 1980, Ser. No. 132,952
Claims priority, application Canada, Feb. 26, 1980, 26-02-80-7
Term of patent 14 years
Int. Cl. D10—*04*

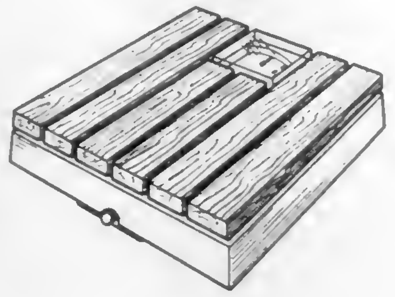
U.S. Cl. D10—46



266,405

BATHROOM SCALE

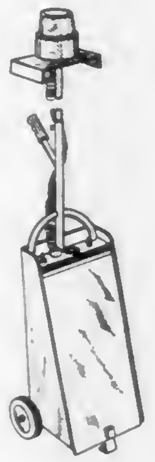
André Garrigues, Monnetier-Mornex, France, assignor to Terraillon, Juvigny, France
Filed Jul. 18, 1980, Ser. No. 171,936
Claims priority, application Hague, Feb. 1, 1980, 69.926
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—92



266,406

PORTABLE WARNING LIGHT

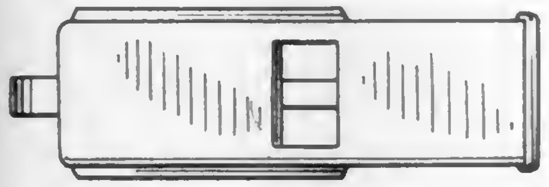
Robert J. De Fontes, 207 Bradley St., Seekonk, Mass. 02771
Filed Sep. 17, 1979, Ser. No. 75,976
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—114



266,407

ILLUMINATED WHISTLE

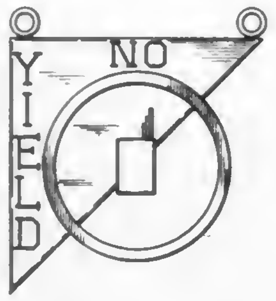
Dietmar Nagel, 147 South Rd., Chester, N.J. 07930
Filed Apr. 21, 1980, Ser. No. 142,661
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—119



266,408

NON-SMOKER'S NECKLACE PENDANT OR SIMILAR ARTICLE

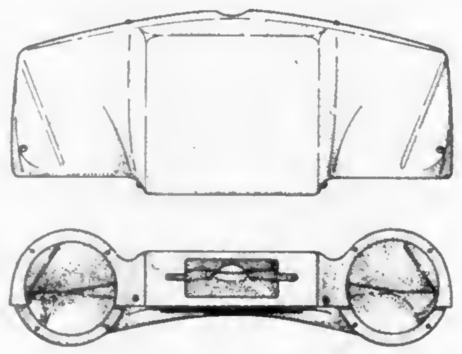
Dale A. Dotson, 1005 Mantooth, Lufkin, Tex. 75901
Filed Jun. 30, 1980, Ser. No. 163,921
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81



266,409

MOTORCYCLE RADIO HOUSING

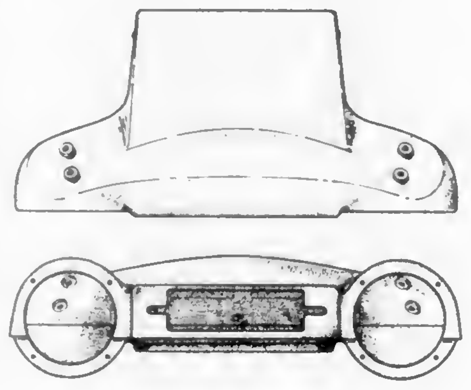
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed Aug. 4, 1980, Ser. No. 175,274
Term of patent 14 years
Int. Cl. D12—*11;* D14—*03*
U.S. Cl. D12—114



266,410

MOTORCYCLE RADIO HOUSING

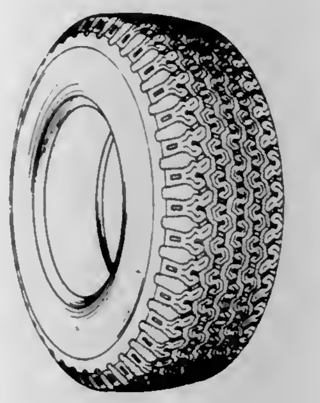
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163
Filed Aug. 4, 1980, Ser. No. 175,275
Term of patent 14 years
Int. Cl. D12—*11;* D14—*03*
U.S. Cl. D12—114



266,411

VEHICLE TIRE

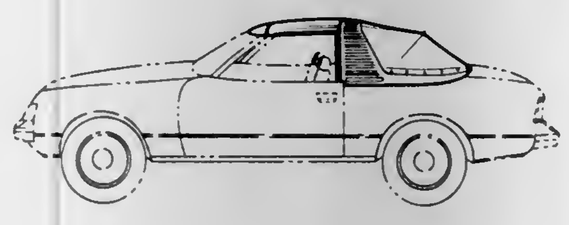
Hideaki Nishio, Urawa, and Kazunari Takaki, Akikawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 20, 1979, Ser. No. 105,700
Claims priority, application Japan, Aug. 16, 1979, 54-34117
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



266,412

CONVERTIBLE TOP

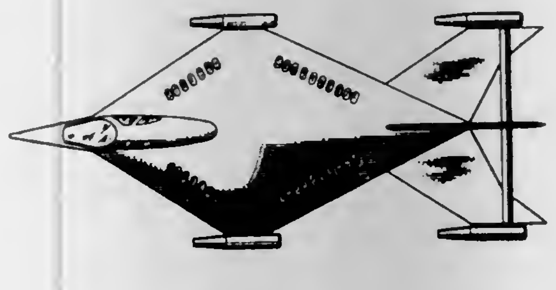
Dann T. Deaver, 20565 Williamsburg Ct., Harper Woods, Mich. 48236
Filed Jun. 13, 1979, Ser. No. 48,250
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



266,413

AIRPLANE

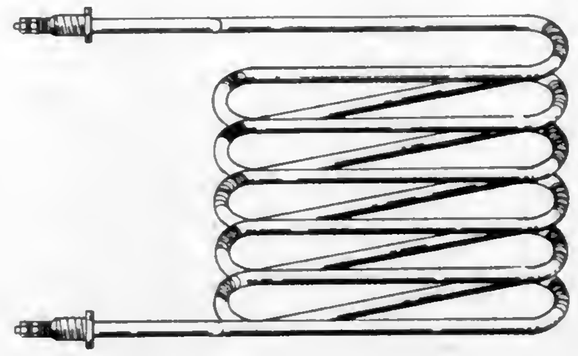
Perry B. Johnson, 169 N. Main St., Paterson, N.J. 07522
Division of Ser. No. 929,854, Jul. 31, 1978, Pat. No. Des. 259,713. This application May 27, 1980, Ser. No. 153,067
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—326



266,414

SHEATHED ELECTRIC HEATING ELEMENT

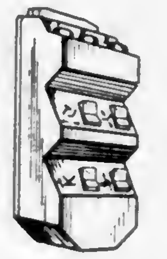
Richard W. Brent, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Apr. 14, 1980, Ser. No. 140,140
Term of patent 14 years
Int. Cl. D13—*99;* D23—*03*
U.S. Cl. D13—21



266,415

CONTROL UNIT FOR INTERIOR OF MOTOR VEHICLE

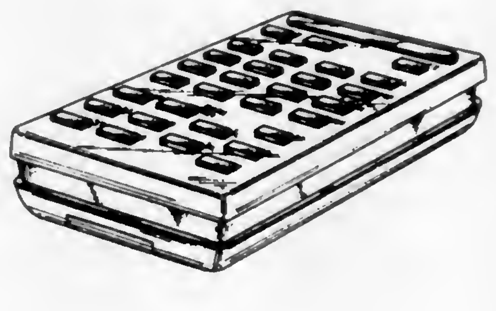
Heinz P. Cremer, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany
Filed Dec. 12, 1979, Ser. No. 102,948
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, MR747
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



266,416

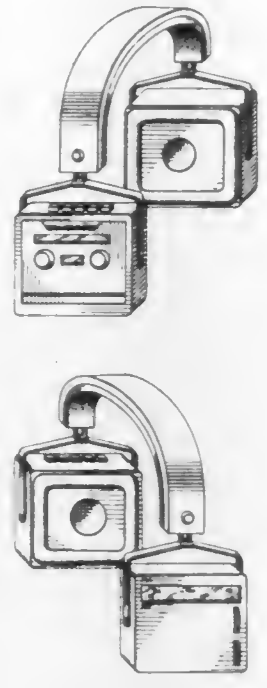
REMOTE CONTROL FOR VIDEODISC PLAYER

Takayuki Hiraki, Yokohama, Japan, assignor to Universal Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 11, 1980, Ser. No. 120,402
Term of patent 7 years
Int. Cl. D13—*03;* D14—*01*
U.S. Cl. D14—1



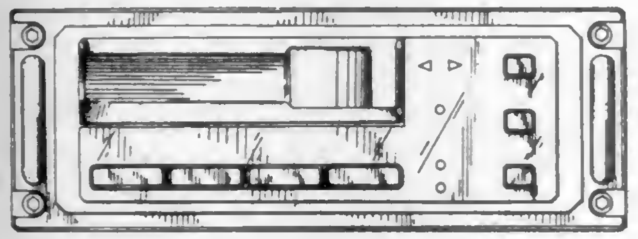
266,417
COMBINED CASSETTE PLAYER, HEADSET AND RADIO

Damaso Perez, 10325 NW. 35 Ct., Miami, Fla. 33147
Filed Sep. 11, 1980, Ser. No. 186,174
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5



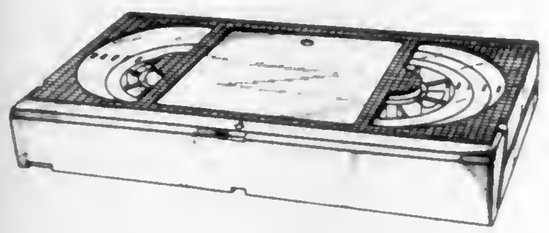
266,418
AUTOMOBILE CASSETTE DECK

Toshiyoshi Kikuhara, Naka, Japan, assignor to Clarion Co. Ltd., Tokyo, Japan
Filed Oct. 26, 1979, Ser. No. 88,627
Claims priority, application Japan, Apr. 26, 1979, 17298
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—7



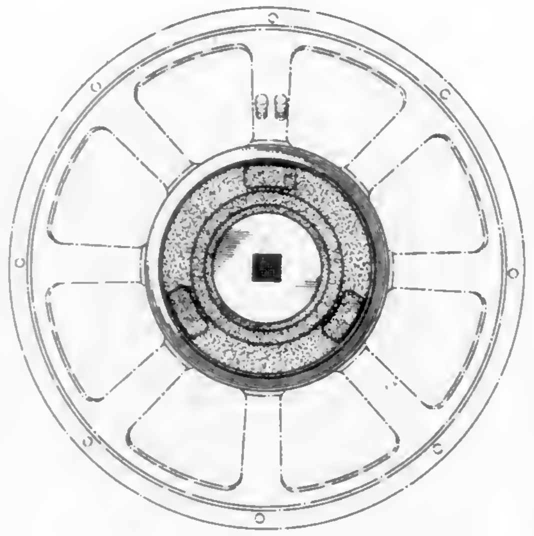
266,419
MAGAZINE OF MAGNETIC TAPE

Hidehisa Hashimoto, Funabashi, and Keiichi Yoshizawa, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1979, Ser. No. 45,834
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11



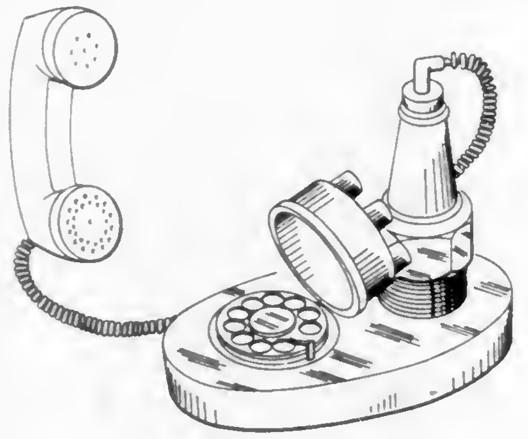
266,420
LOUDSPEAKER MAGNET HOUSING

Douglas J. Warner, Berkeley, Calif., assignor to James B. Lansing Sound, Inc., Chicago, Ill.
Filed Oct. 9, 1979, Ser. No. 82,683
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—37



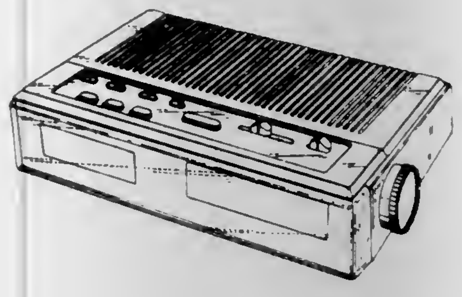
266,421
TELEPHONE

Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 15, 1980, Ser. No. 112,306
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



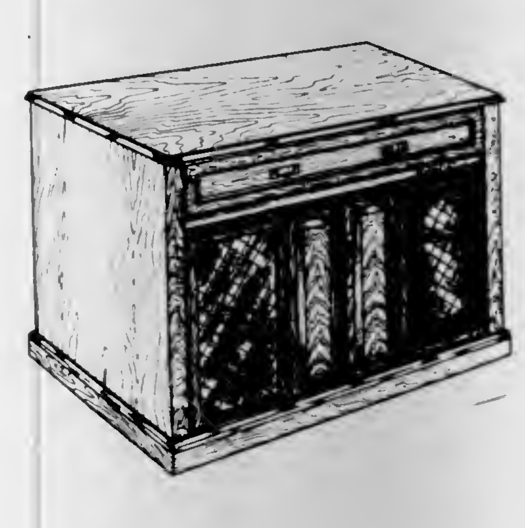
266,422
CLOCK RADIO

Pak-Hung Yip, Hong Kong, Hong Kong, assignor to Vita Electronics Corp., Ltd., Hong Kong, Hong Kong
Filed Sep. 7, 1979, Ser. No. 73,417
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73



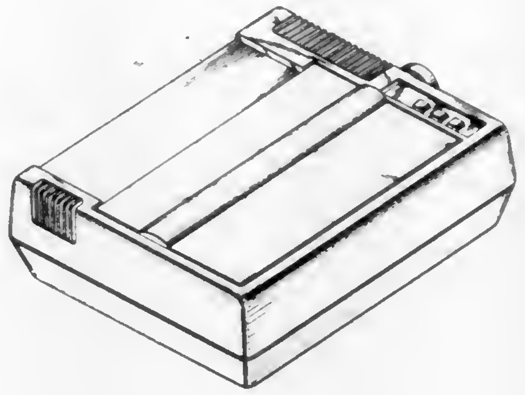
266,423
PROJECTION TELEVISION RECEIVER

Melvin H. Boldt, Glenview; David P. Chuboff, North Barrington; Clement W. Trottier, Prospect Heights, and Robert E. Slater, Vernon Hills, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.
Filed Feb. 2, 1981, Ser. No. 230,986
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—83



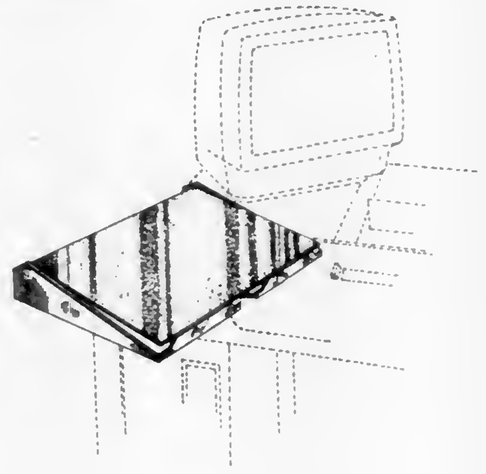
266,424
ELECTRONIC PRINTER

Shunichi Nagaya, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha, both of Nagano, Japan
Filed Jul. 31, 1980, Ser. No. 174,062
Claims priority, application Japan, Feb. 1, 1980, 55-3137
Term of patent 14 years
Int. Cl. D14—*02;* D18—*02*
U.S. Cl. D14—111



266,425
COMPUTER CABINET WORK SURFACE

Richard W. Reaume, Farmington Hills, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 31, 1979, Ser. No. 108,836
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—114

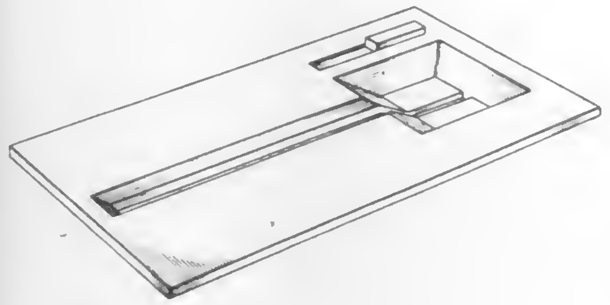


266,426
FRONT PANEL FOR FLOPPY DISC DRIVE

William F. Dresselhaus, Redwood City, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 20, 1980, Ser. No. 161,274
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—115

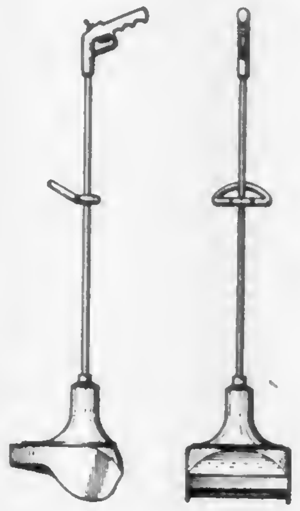


266,427
PORTABLE ROTARY SNOW THROWER

Robert L. McMickle; Gary B. Ader, and Steven L. Grice, all of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Jun. 25, 1979, Ser. No. 51,374
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D15—12

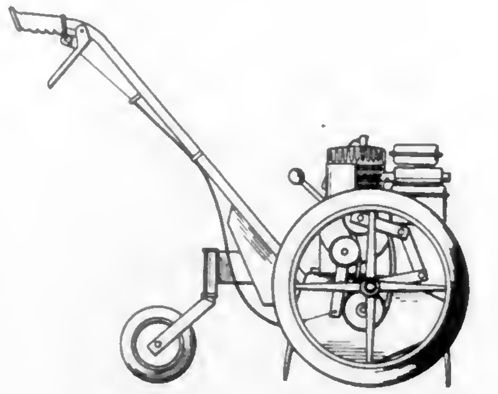


266,428
SELF-PROPELLED FLAIL BLADE LAWN MOWER

Douglas F. Green, 155 Fison Ave., Eagle Farm, Brisbane, Queensland, Australia (4007)

Filed Mar. 10, 1980, Ser. No. 129,095
Term of patent 14 years
Int. Cl. D15—*03*

U.S. Cl. D15—16

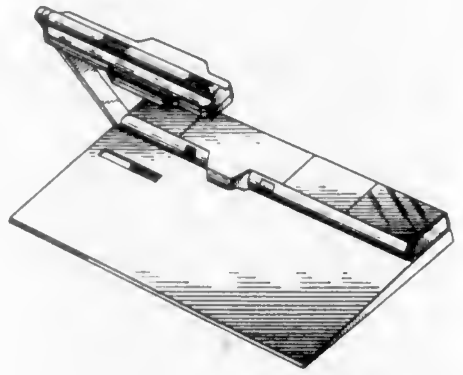


266,429
MICROFILM READER

John W. Overman, Phoenix, Ariz., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 23, 1980, Ser. No. 162,469
Term of patent 14 years
Int. Cl. D16—*03*

U.S. Cl. D16—11



266,430
REAR SCREEN MOTION PICTURE PROJECTOR WITH FILM SPOOL STORAGE UNIT

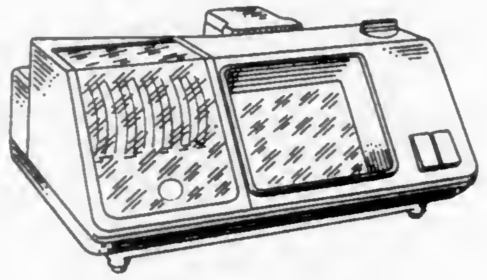
Norbert Schlagheck, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 120,078

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, G166/79

Term of patent 14 years
Int. Cl. D16—*02*

U.S. Cl. D16—14

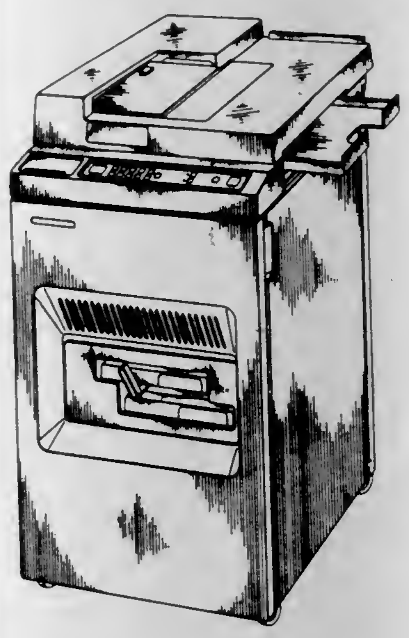


266,431
COPYING MACHINE

Robert A. Clowe, Penfield; Donald A. Robertson, Fairport, and Gregory P. Wright, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 4, 1980, Ser. No. 174,779
Term of patent 14 years
Int. Cl. D16—*03*

U.S. Cl. D16—30

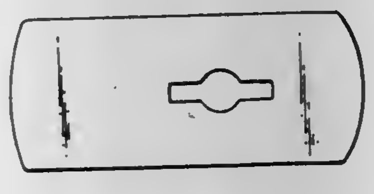


266,432
LENS MASK

Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563

Filed Jun. 13, 1980, Ser. No. 159,373
Term of patent 14 years
Int. Cl. D16—*05*

U.S. Cl. D16—38

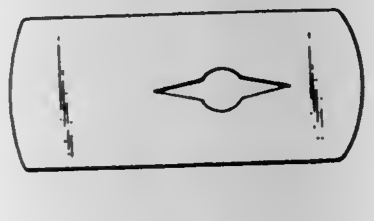


266,433
LENS MASK

Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563

Filed Jun. 13, 1980, Ser. No. 159,374
Term of patent 14 years
Int. Cl. D16—*05*

U.S. Cl. D16—38

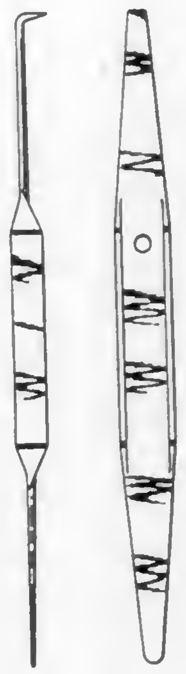


266,434
CLAY MOLDING TOOL

Chester W. Kowalski, 639 Parsons St., Des Plaines, Ill. 60016

Filed Oct. 3, 1980, Ser. No. 193,632
Term of patent 14 years
Int. Cl. D8—*05*

U.S. Cl. D19—35

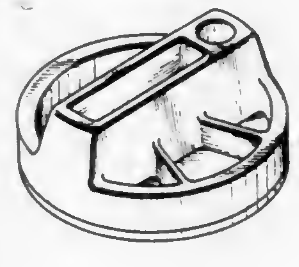


266,435
DESK TRAY

Clayton A. Laughlin, Minneapolis, Minn., assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed Sep. 4, 1980, Ser. No. 184,435
Term of patent 14 years
Int. Cl. D19—*02*

U.S. Cl. D19—75

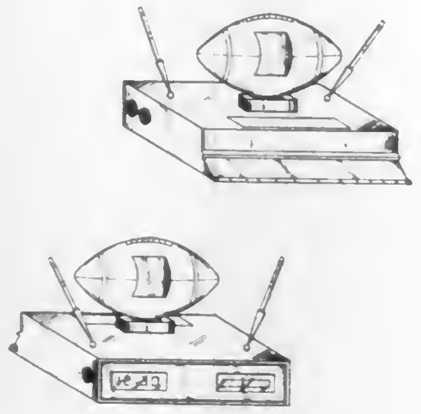


266,436

DESK ORNAMENT

Albert E. Smith, 906 Monticello St., Greensboro, N.C. 27410
Filed Feb. 21, 1979, Ser. No. 13,060
Term of patent 14 years
Int. Cl. D19—*02*

U.S. Cl. D19—77

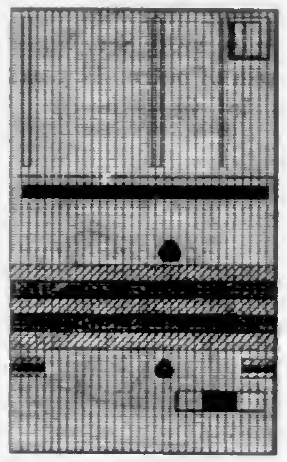


266,437

LABEL FOR A CASSETTE HOLDER

Keiichi Yoshizawa, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Aug. 6, 1979, Ser. No. 63,695
Claims priority, application Japan, Feb. 7, 1979, 54-4208
The portion of the term of this patent subsequent to Oct. 5, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D19—*08*

U.S. Cl. D20—27

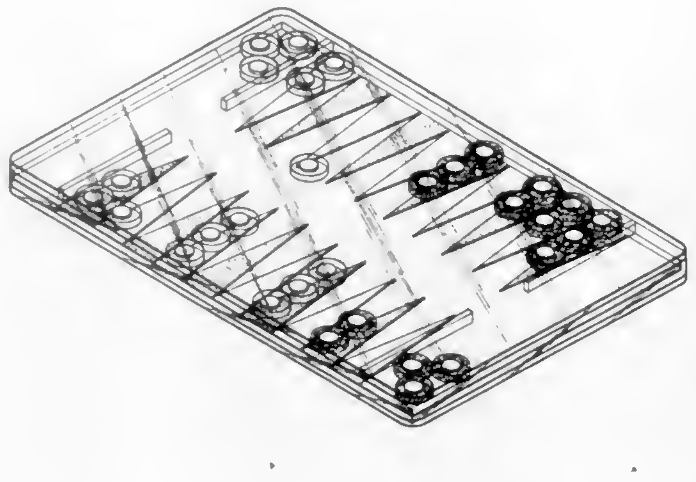


266,438

SELF-CONTAINED MAGNETIC BACKGAMMON BOARD AND GAME PIECES

Ron Reisman, 413½ S. Willaman Dr., Los Angeles, Calif. 90048
Filed Dec. 26, 1979, Ser. No. 106,690
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—16

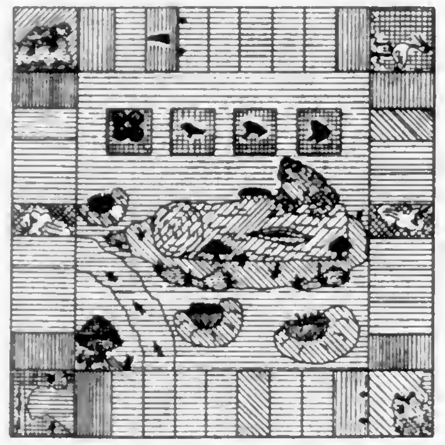


266,439

GAME BOARD

Arden K. Stewart; Olga J. Lawson, both of 4032 Prytania St., New Orleans, La. 70115, and Ann F. Lichtenstein, 786 Glen Cove La., Gretna, La. 70053
Filed Apr. 25, 1980, Ser. No. 143,664
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—25

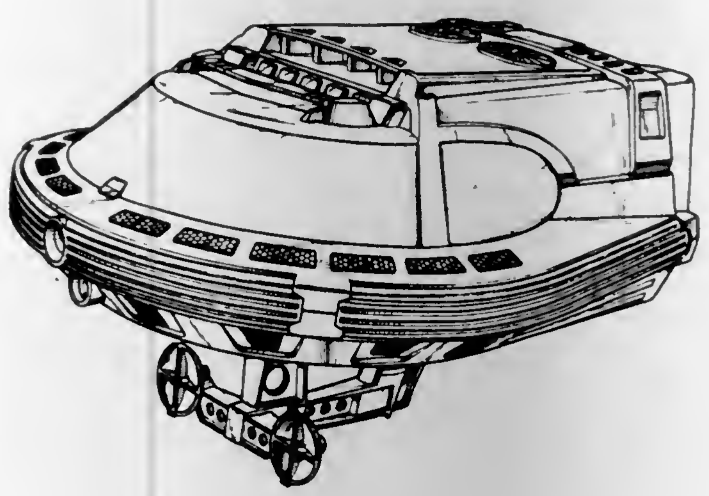


266,440

TOY SPACE VEHICLE

Jose M. A. Pibet, Barcelona, Spain, assignor to Exin-Iber, S.A., Barcelona, Spain
Filed Jul. 15, 1980, Ser. No. 169,210
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—87

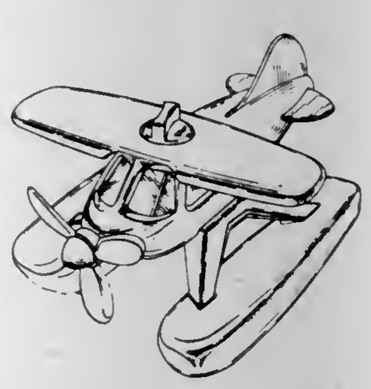


266,441

TOY SEAPLANE

Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039, and George Kress, Scotch Plains, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Feb. 17, 1981, Ser. No. 234,621
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—90

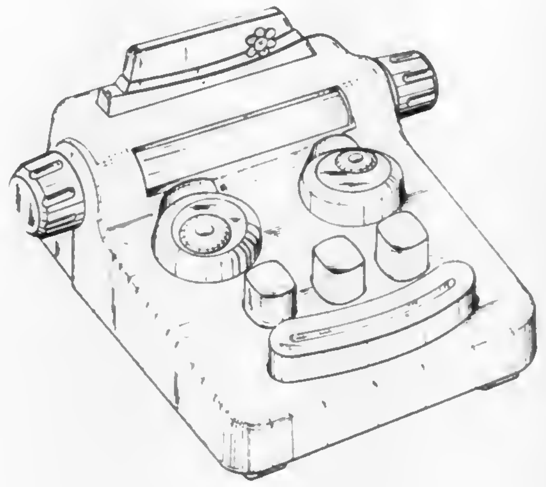


266,442

TOY TYPEWRITER

Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; Paul B. Means, III, Basking Ridge, N.J.; James J. Wilcox, Summit, N.J., and David W. Reina, Huntington, N.Y., assignors to Mel Appel, Livingston, N.J.
Filed Apr. 11, 1979, Ser. No. 29,118
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—109

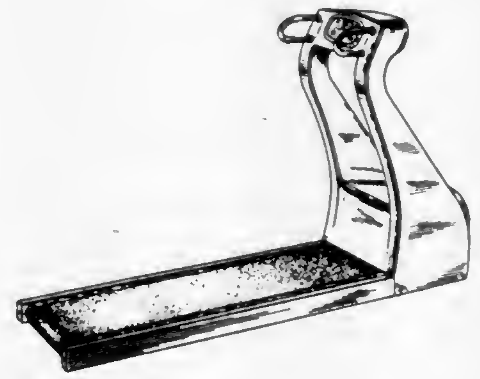


266,443

EXERCISE TREADMILL AND THE LIKE

Raymond L. Summerlot, Terre Haute, Ind., assignor to Nissen Corporation, Cedar Rapids, Iowa
Filed Oct. 20, 1980, Ser. No. 198,641
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—192

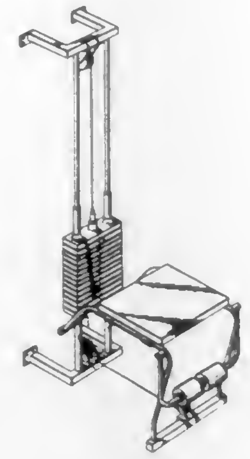


266,444

PHYSICAL EXERCISER

Roger P. Fry, Llantwit Major, Great Britain, assignor to Gympac Systems Limited, Barry, Great Britain
Filed Jul. 24, 1980, Ser. No. 171,995
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—195

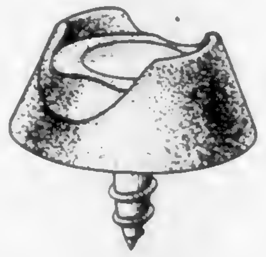


266,445

GOLF BALL MARKER HOLDER

Mitsuru Yokotaki, 10-10, Nishifuna 4-chome, Funabashi-shi, Chiba-ken, Japan
Filed Feb. 19, 1980, Ser. No. 122,822
Term of patent 7 years
Int. Cl. D21—*02*

U.S. Cl. D21—221

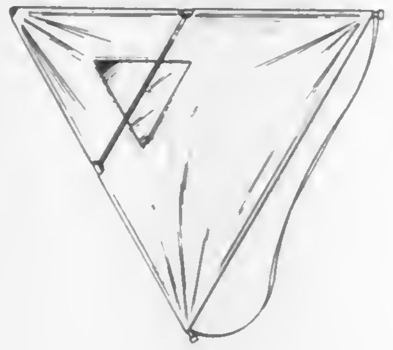


266,446

SKATE SAIL

Stephen M. Verdon, 1211 SW. 128th Ave., Miami, Fla. 33184
Filed Sep. 4, 1979, Ser. No. 72,062
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—224

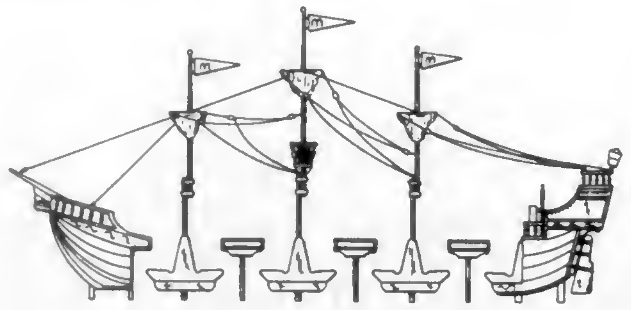


266,447

PLAYGROUND SEATING UNIT

Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,363
Term of patent 14 years
Int. Cl. D21—*03*

U.S. Cl. D21—242

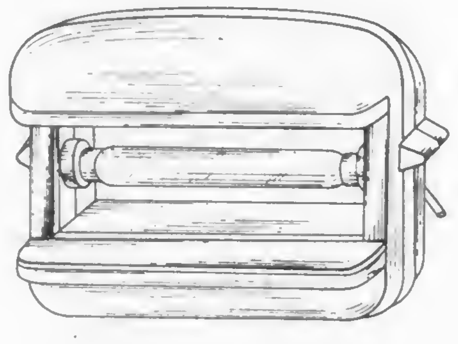


266,448

FLYING INSECT TRAP

William A. Schneider, Lancaster, Pa., assignor to Pestolite, Inc., Lancaster, Pa.
Filed Mar. 19, 1980, Ser. No. 131,809
Term of patent 14 years
Int. Cl. D22—*06*

U.S. Cl. D22—19

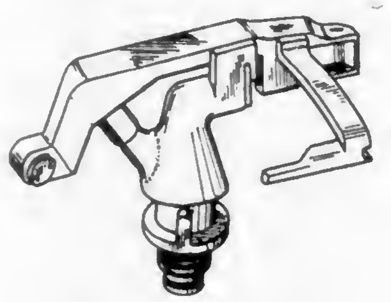


266,449

SPRINKLER

Martin Foreman, Merbein, Australia, assignor to Namerof Pty. Ltd., Merbein, Australia
Filed Oct. 10, 1979, Ser. No. 83,392
Claims priority, application Australia, Sep. 5, 1979, 78909
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—7

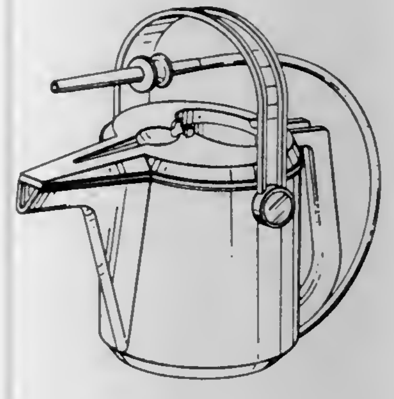


266,450

WATERING CAN OR THE LIKE

James B. Swett, Altamonte Springs, Fla.; Joseph W. Blake, III, New Canaan, Conn., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 27, 1980, Ser. No. 181,606
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—11

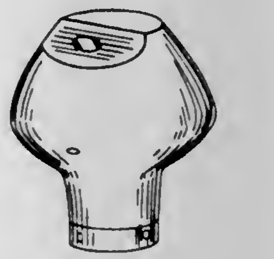


266,451

FOUNTAIN HEAD

Richard L. Berry, Jr., 178 Roycroft Ave., Long Beach, Calif.
Filed Aug. 27, 1979, Ser. No. 69,900
Term of patent 14 years
Int. Cl. D23—*99*

U.S. Cl. D23—13

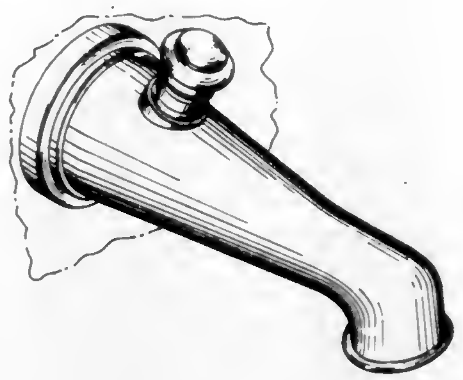


266,452

TUB SPOUT

Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 10, 1980, Ser. No. 138,830
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—32

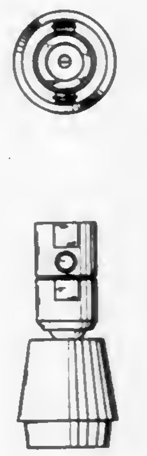


266,453

SHOWERHEAD

Scott W. Miller, 420 Pilgrim La., Stratford, Conn. 06497
Filed Nov. 23, 1981, Ser. No. 323,864
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35

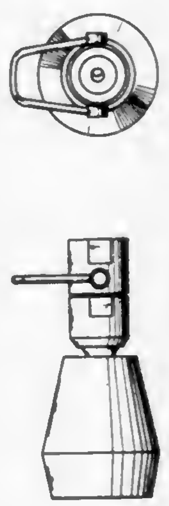


266,454

SHOWERHEAD

Scott W. Miller, 420 Pilgrim La., Stratford, Conn. 06497
Filed Nov. 23, 1981, Ser. No. 323,866
Term of patent 14 years
Int. Cl. D23—*01*

U.S. Cl. D23—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Nattermann & Cie GmbH: *See—*
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- Abe, Tadafumi: *See—*
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- Bernet, Jean-Marie; and Lejeune, Gabriel, to Thomson-CSF. System for digitizing transient signals. 4,353,057, Cl. 340-347.0SH.

- Bernstein, Robert G.; and Clunies, David A., to Fairchild Industries, Inc. Self-erecting floatable structure. 4,353,071, Cl. 343-709.000.
- Berry, Daniel G.; and Markle, David A., to Perkin-Elmer Corporation, The. Automatic mask alignment. 4,353,087, Cl. 358-101.000.
- Bertolini, William A. Front locking pin for gooseneck container chassis. 4,352,517, Cl. 296-35.300.
- Bertolini, William A. Gear operated twist lock. 4,352,613, Cl. 410-82.000.
- Bethlehem Steel Corporation: *See—*
  - Moore, Edward A., Jr., 4,352,229, Cl. 29-116.00R.
- Bettinger, George E.; and Orban, John N., to Du Pont de Nemours, E. I., and Company. Protecting colloidal silica aquasols from bacterial degradation. 4,352,744, Cl. 252-313.00S.
- Bezman, Susan A., to Chevron Research Company. Diisopropyl ether reversion in isopropanol production. 4,352,945, Cl. 568-899.000.
- Bezner, Baruch J., to Helioset Advanced Technologies Ltd. Method and apparatus for injection-molding a manifold onto a set of hollow elements. 4,352,772, Cl. 264-229.000.
- Billett, Ronald J.; Anderson, David N.; and Easter, William M., to FMC Corporation. Method for extracting frozen confections. 4,352,830, Cl. 426-421.000.
- Billings, Keith H., to Electrotech Instruments Limited. Switch mode converters. 4,353,113, Cl. 363-21.000.
- Binder, Dieter, to Laevosan-Gesellschaft mbH & Co. KG. Novel 1-[3-(2-hydroxy-3-alkylaminopropoxy)-2-thienyl]-3-phenyl-1-propanones and their salts and a process for the preparation thereof. 4,352,819, Cl. 424-275.000.
- Biswas, Chandi P.: *See—*
  - Larson, Hugo R.; and Biswas, Chandi P., 4,352,416, Cl. 188-251.00M.
- Bittar, Joseph; and Nowak, Frederick H., to Otis Elevator Company. Operational control of elevator car calls. 4,352,410, Cl. 187-29.00R.
- Bittar, Joseph; and Nowak, Frederick H., to Otis Elevator Company. Elevator express priority service. 4,352,412, Cl. 187-29.00R.
- Bittar, Joseph: *See—*
  - Nowak, Frederick H.; and Bittar, Joseph, 4,352,411, Cl. 187-29.00R.
- Bjorklund, Gary C.; Bloom, David M.; and Liao, Paul F., to Bell Telephone Laboratories, Incorporated. Detection of birefringence in irregularly shaped objects. 4,352,566, Cl. 356-364.000.
- Black Clawson Inc.: *See—*
  - Artiano, Adrian, 4,352,431, Cl. 209-600.000.
- Black & Decker Inc.: *See—*
  - Wagster, Robert P., 4,352,489, Cl. 269-75.000.
- Black, William C., to National Semiconductor Corporation. CMOS Latch-up protection circuit. 4,353,105, Cl. 361-101.000.
- Blakeslee, Frederick R., to Textron, Inc. Combined payoff and winder for strip rolling mills. 4,352,470, Cl. 242-72.100.
- Blaney, Frank E., to Beecham Group Limited. Bicyclo[3.3.1]nonyl-benzamide. 4,352,802, Cl. 424-246.000.
- Blattry, Hans; and Antoni, Herbert, to Paul Forkardt Kommanditgesellschaft. Clamping chuck for turning machines. 4,352,500, Cl. 279-121.000.
- Blay, George A.; and Witt, Enrique R., to Celanese Corporation. Anaerobic filter. 4,352,738, Cl. 210-612.000.
- Bloom, David M.: *See—*
  - Bjorklund, Gary C.; Bloom, David M.; and Liao, Paul F., 4,352,566, Cl. 356-364.000.
- Boccardo, Hector O. M.; and Jolly, Thomas W., to Commonwealth Industrial Gases Limited, The. Pressure vessel safety valve. 4,352,365, Cl. 137-68.00R.
- Bochumer Eisenhuette Heintzmann GmbH & Co.: *See—*
  - Plaga, Kurt, 4,352,602, Cl. 405-291.000.
- Bock, Ditmar H., to Calspan Corporation. Orthogonal signal generator. 4,353,031, Cl. 328-62.000.
- Boden, Richard M.; and Geiger, John H., Jr, John H., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of a detergent with aliphatic C_{11} branched chain aldehydes and alcohols. 4,352,743, Cl. 252-174.110.
- Boeing Company, The: *See—*
  - Yankovoy, Alexander; and Ozer, Theodore, 4,352,610, Cl. 408-1.00R.
- Boelens, Harmannus: *See—*
  - Traas, Petrus C.; Renes, Harrie; and Boelens, Harmannus, 4,352,748, Cl. 252-522.00R.
- Boettner, George B., to Corning Glass Works. Furnace delivery system. 4,352,687, Cl. 65-134.000.
- Bogorsky, Mikhail V.: *See—*
  - Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.
- Bohg, Armin, to International Business Machines Corporation. Apparatus for controlling a recorder. 4,353,076, Cl. 346-65.000.
- Bolderoff, Jack. Container handling apparatus. 4,352,625, Cl. 414-494.000.
- Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Protective clothing. 4,352,353, Cl. 128-201.240.
- Bom, Cornelis J. G.: *See—*
  - van der Lely, Ary; and Bom, Cornelis J. G., 4,352,268, Cl. 56-370.000.
- Bonaddio, Robert M.; and Dahlberg, John R., to PPG Industries, Inc. Method of and apparatus for sideward displacement of sheets. 4,352,447, Cl. 225-2.000.
- Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., to Smithkline Corporation. Method of producing alpha$_2$ antagonism. 4,352,809, Cl. 424-258.000.
- Boone, Charles A.; and Pfeifer, Robert F., to Motorola Inc. Data security module. 4,352,952, Cl. 178-22.090.
- Borg, Bernt V.: *See—*
  - Lewis, Roy D.; and Borg, Bernt V., 4,352,444, Cl. 222-309.000.
- Borg-Warner Corporation: *See—*
  - Smith, Grant H., 4,352,276, Cl. 464-109.000.
- Born, Maurice: *See—*
  - Jacquin, Yves; Huynh, Dai-Nghia; and Born, Maurice, 4,352,729, Cl. 208-209.000.
- Born, Vernon A., to Minnesota Mining and Manufacturing Company. Linear motor control system for brushless DC motor. 4,353,016, Cl. 318-254.000.
- Bornstein, Norman D., to W. R. Grace & Co. Method of making a thermoplastic receptacle having improved high temperature seal. 4,352,702, Cl. 156-84.000.
- Bornstein, Norman D., to W. R. Grace & Co. Thermoplastic film having improved handling and sealing characteristics and receptacle formed therefrom. 4,352,844, Cl. 428-35.000.
- Bostroem, Theodore. Dipless metallizing process. 4,352,838, Cl. 427-209.000.
- Bowbin, John F.: *See—*
  - Kolchinsky, Abel E.; Bowbin, John F.; and Davis, Wayne M., 4,352,318, Cl. 91-395.000.
- Bowditch, Malcolm R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Surface pre-treatment prior to underwater bonding. 4,352,841, Cl. 427-292.000.
- Bowmar, Bryce: *See—*
  - Siemsen, Henry S., 4,352,639, Cl. 417-134.000.
- Bozik, John E.: *See—*
  - Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,352,946, Cl. 568-902.000.
- Bracco Industria Chimica S.p.A.: *See—*
  - Felder, Ernst; and Pitre, Davide, 4,352,788, Cl. 424-5.000.
- Bracco, Umberto; Viret, Jean-Louis; and Rehacek, Josef, to Societe d'Assistance Technique Pour Produits Nestle S.A. Process for the production of oxidation-inhibiting substances. 4,352,746, Cl. 252-398.000.
- Bradley, Martin P. T.: *See—*
  - Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.
- Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., to Dow Chemical Co., The. Scrapless forming of plastic articles. 4,352,766, Cl. 264-45.500.
- Brandberg, S. B. Thomas: *See—*
  - Rosenlind, K. Goran; and Brandberg, S. B. Thomas, 4,352,441, Cl. 222-99.000.
- Brandenburg, Lloyd W., Jr., to J. I. Case Company. Cab heating system. 4,352,456, Cl. 237-12.30R.
- Brandenstein, Manfred: *See—*
  - Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,352,419, Cl. 192-98.000.
- Brandow, Charles R.: *See—*
  - Berger, Harvey L.; and Brandow, Charles R., 4,352,459, Cl. 239-102.000.
- Branson Ultrasonics Corporation: *See—*
  - Toth, Leslie, 4,352,711, Cl. 156-497.000.
- Brauer, Roger L. Prefabricated vehicle maintenance apparatus. 4,352,322, Cl. 98-33.00R.
- Braun, Jimmy E.: *See—*
  - Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.
- Brenner, Hermann, to Grossbuchbinderei Sigloch GmbH & Co. KG. Device for arranging objects in stacking layers, for loading pallets. 4,352,616, Cl. 414-31.000.
- Brenot, Claude G. Steam generator with direct evaporation. 4,352,252, Cl. 38-16.000.
- Breslow, David S., to Hercules Incorporated. Epoxy-azidoformate compounds. 4,352,938, Cl. 549-553.000.
- Brest van Kempen, Carel J. H. Device and method for controlling time dependent parameter variability. 4,352,600, Cl. 405-259.000.
- Bridel, Laiteries E.: *See—*
  - Rialland, Jean P.; and Barbier, Jean P., 4,352,828, Cl. 426-271.000.
- Bridgestone Tire Co., Ltd.: *See—*
  - Matsumoto, Kenji; and Suzuki, Yasuo, 4,352,383, Cl. 152-352.00R.
- Bristol-Myers Company: *See—*
  - Kaneko, Takushi, 4,352,936, Cl. 549-332.000.
- British Aerospace: *See—*
  - Morrison, Jeffrey; Dixon, Stanley R. E.; and Barnes, Arthur G., 4,352,664, Cl. 434-14.000.
- Broadbent, Kent D., to Discovision Associates. Extended play video recording and reproducing system with selection of multiplexed audio. 4,353,090, Cl. 358-342.000.
- Brunner, Anton; and Kress, Erwin, to Siemens Aktiengesellschaft. Antenna arrangement for a radar surveillance method for target locating with altitude acquisition. 4,353,073, Cl. 343-779.000.
- Bryan, Deborah L.: *See—*
  - Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,352,757, Cl. 549-513.000.
- Bryans, Lawrence G.; and Murchison, Loren R., to Ford Aerospace & Communications Corp. Selectable linear or circular polarization network. 4,353,041, Cl. 333-21.00A.

Buchs, Wolfgang; Nowak, Franz; and Woerndle, Rudolf, to Messerschmitt-Boelkow-Blohm GmbH. Hingeless rotor, especially for a helicopter. 4,352,631, Cl. 416-134.00A.

Buchtel, Dean H., to Hoover Company, The. Switch actuating mechanism. 4,352,967, Cl. 200-153.00J.

Buennagel, James A.; and Koch, Richard C., to Regency Electronics, Inc. Apparatus for addressably controlling remote units. 4,352,992, Cl. 307-40.000.

Burgess, Asial L., Jr.: *See—*

Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.

Burkarth, Jack L., to Gulton Industries, Inc. Air diffuser. 4,352,323, Cl. 98-40.00D.

Burke, Edward F., Jr., to M.F.E. Corporation. Velocity compensation for limited displacement motors. 4,353,017, Cl. 318-331.000.

Burke, John A.; and Gross, James B., to Greene, Tweed & Co., Inc. Spring seal. 4,352,498, Cl. 277-1.000.

Burney, Charles F., to Travel Accessories Manufacturing Co., Inc. Vehicle speed control system. 4,352,403, Cl. 180-176.000.

Burroughs Corporation: *See—*

Nemiroff, Michael H., 4,352,862, Cl. 428-694.000.

Bursk, William M.; and Doll, Jacob G., to Pease Company. Adjustable sill and threshold. 4,352,258, Cl. 49-468.000.

Buske, Ervin; and Buske, Gerd, to Buske Industries, Inc. Sheet metal panel brake. 4,352,282, Cl. 72-321.000.

Buske, Gerd: *See—*

Buske, Ervin; and Buske, Gerd, 4,352,282, Cl. 72-321.000.

Buske Industries, Inc.: *See—*

Buske, Ervin; and Buske, Gerd, 4,352,282, Cl. 72-321.000.

Butler, John; Valle, L. George; and Wall, Donald E., to Liken Home Furnishings. Automatic cord lock device. 4,352,386, Cl. 160-178.00C.

Butschko, Gerhard: *See—*

Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

C. van der Lely N.V.: *See—*

van der Lely, Ary; and Bom, Cornelis J. G., 4,352,268, Cl. 56-370.000.

Calspan Corporation: *See—*

Bock, Ditmar H., 4,353,031, Cl. 328-62.000.

Campbell, Diane, administratrix: *See—*

Michaud, Roger P.; and Campbell, Douglas B., deceased, 4,352,656, Cl. 431-72.000.

Campbell, Douglas B., deceased: *See—*

Michaud, Roger P.; and Campbell, Douglas B., deceased, 4,352,656, Cl. 431-72.000.

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Chippel, Bob M., 4,353,108, Cl. 361-386.000.

Canon Kabushiki Kaisha: *See—*

Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, 4,352,875, Cl. 430-42.000.

Kawanabe, Tsuyoshi, 4,353,079, Cl. 346-140.00R.

Minoura, Kazuo; and Minami, Setsuo, 4,352,541, Cl. 350-6.600.

Takeda, Takashi; Ogata, Minoru; and Kurabayashi, Sadasuke, 4,353,097, Cl. 358-287.000.

Capurro, Sergio. Timed diathermocautery comprising a timer unaffected by disturbances of electromagnetic origin. 4,352,357, Cl. 128-303.130.

Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., to Molins Limited. Feeding device for cigarette filters and similar rods. 4,352,604, Cl. 406-28.000.

Carasso, Marino G.; and Nijboer, Jakob G., to U.S. Philips Corporation. Device for processing serial information which includes synchronization words. 4,353,130, Cl. 375-114.000.

Carasso, Marino G.: *See—*

van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.

Cardiet, Gerard: *See—*

Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, 4,353,111, Cl. 362-80.000.

Carino, Charles M. Protective shield for open container. 4,352,438, Cl. 220-90.000.

Carl Freudenberg, Firma: *See—*

Lohmar, Ernst, 4,352,892, Cl. 521-79.000.

Carl Freudenberg, Firma: *See—*

Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, 4,352,846, Cl. 428-105.000.

Carl Still GmbH & Co., KG, Firma: *See—*

Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, 4,352,720, Cl. 202-124.000.

Carlingswitch, Inc.: *See—*

Sorenson, Richard W., 4,352,965, Cl. 200-6.00R.

Carson, John C.; and Dahlgren, Paul F., to Irvine Sensors Corporation. Detector array module fabrication. 4,352,715, Cl. 156-634.000.

Carswell, Angela M.: *See—*

Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., 4,352,922, Cl. 528-232.000.

Catanzarite, Vincent O., to Altus Corporation. Electrochemical cell structure. 4,352,867, Cl. 429-101.000.

Caterpillar Tractor Co.: *See—*

Vidal-Meza, Gonzalo D., 4,352,393, Cl. 165-166.000.

Cavanagh, John F.; and Cavanagh, Paul A., to Cavanagh & Sons. Method for manufacturing wafers. 4,352,831, Cl. 426-497.000.

Cavanagh, Paul A.: *See—*

Cavanagh, John F.; and Cavanagh, Paul A., 4,352,831, Cl. 426-497.000.

Cavanagh & Sons: *See—*

Cavanagh, John F.; and Cavanagh, Paul A., 4,352,831, Cl. 426-497.000.

CdF Chimie, Societe Chimique des Charbonnages: *See—*

Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.

Ceco Corporation, The: *See—*

Young, Richard A., 4,353,022, Cl. 318-753.000.

Celanese Corporation: *See—*

Blay, George A.; and Witt, Enrique R., 4,352,738, Cl. 210-612.000.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*

Mathy, Henri L.; and DeFourny, Jacques A., 4,352,970, Cl. 219-72.000.

Cerberonics, Inc.: *See—*

Kimble, Joe W.; and Dotson, Edsel E., 4,352,665, Cl. 434-22.000.

Certain-teed Corporation: *See—*

Janssen, Kermit W.; and Mitchell, Andrew, 4,352,512, Cl. 285-419.000.

Kopenhaver, Robert L., 4,352,837, Cl. 427-187.000.

Chambers, James W., to Atwood Vacuum Machine Company. Straddle mount trailer coupler. 4,352,505, Cl. 280-495.000.

Chance, Leon H., to United States of America, Agriculture. Bromine-containing 2,4-diaminotriazines. 4,352,930, Cl. 544-205.000.

Chapman, Ivan B., Jr., to Western Electric Company, Inc. Adjustable support. 4,352,479, Cl. 248-405.000.

Chappell, James. Analog balance. 4,352,978, Cl. 235-70.00R.

Charlot, Pierre: *See—*

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Charlotte Pipe and Foundry Company: *See—*

Barber, Jasper D., 4,352,652, Cl. 425-525.000.

Chartier, Robert M.; and Richard, Jean P., to Consumers Glass Company Limited. Pilferproof cap. 4,352,436, Cl. 215-252.000.

Chase, Bryan B., to Crosfield Electronics Limited. Machine for simultaneously turning and laser engraving printing cylinders. 4,352,973, Cl. 219-121.0LH.

Chatterjee, Pallab K., to Texas Instruments Incorporated. Buried sense line V-groove MOS random access memory. 4,353,082, Cl. 357-23.000.

Chemie-Anlagenbau Bischofsheim GmbH: *See—*

Hilterhaus, Karl-Heinz, 4,352,895, Cl. 521-99.000.

Chen, Hwang-Chuan; and Jih, Peter E.P., to Chen, Hwang-Chuan. Continuous and automatic oil-water mixing method and its installation. 4,352,572, Cl. 366-145.000.

Cheney, Marvin C., Jr., to United Technologies Corporation. Wind turbine. 4,352,629, Cl. 416-18.000.

Cherednichok, Vitaly T.: *See—*

Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.

Chermin, Hubertus M. J.: *See—*

Palmers, Hilbert; and Chermin, Hubertus M. J., 4,353,116, Cl. 363-133.000.

Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., to Nabisco Brands Inc. Gum base, chewing gum containing same and method. 4,352,822, Cl. 426-4.000.

Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., to Nabisco Brands, Inc. Coextruded chewing gum containing a soft non-SBR gum core portion. 4,352,823, Cl. 426-5.000.

Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., to Nabisco Brands, Inc. Coextruded chewing gum containing a soft core portion. 4,352,825, Cl. 426-5.000.

Chesler, Richard. Dental appliance cleaning device. 4,352,361, Cl. 134-58.00R.

Chevron Research Company: *See—*

Bezman, Susan A., 4,352,945, Cl. 568-899.000.

Spellmann, Richard A., 4,353,117, Cl. 364-300.000.

Chia, E. Henry: *See—*

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Chiarelli, Gerard: *See—*

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Chida, Yoshinori; and Tada, Satoru, to Seikosha Co., Ltd. Cassette type ink ribbon device. 4,352,577, Cl. 400-196.100.

Childress, Ray; and Childress, Steve. Belt cleaner. 4,352,425, Cl. 198-499.000.

Childress, Steve. Pressure vessel valve housing. 4,352,370, Cl. 137-382.000.

Childress, Steve: *See—*

Childress, Ray; and Childress, Steve, 4,352,425, Cl. 198-499.000.

Childs, William R.; and Melton, Randall. Method and apparatus for stitching material along a curve. 4,352,334, Cl. 112-266.100.

Chippel, Bob M., to Canadian General Electric Company Limited. Frame assembly for electronic components. 4,353,108, Cl. 361-386.000.

Christensen, Inc.: *See—*

Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., 4,352,400, Cl. 175-330.000.

Christner, Heinz, to Gustav Magenwirth GmbH & Co. Gas control grip for the steering device of a motor-driven double-wheeled vehicle. 4,352,303, Cl. 74-489.000.

Christopher, Glenn B., to Jet Research Center, Inc. Methods, apparatus and pyrotechnic compositions for severing conduits. 4,352,397, Cl. 166-297.000.

Chuang, Wen-Shou: *See—*

Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, 4,352,786, Cl. 423-98.000.

Ciba-Geigy AG: *See—*

Tomka, Ivan, 4,352,695, Cl. 106-135.000.

Ciba-Geigy Corporation: *See—*

Abeler, Gerd, 4,352,903, Cl. 524-100.000.

Zondler, Helmut; and Moser, Roland, 4,352,913, Cl. 525-504.000.

Clark, K. Warren: *See—*

Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.

Claudius Peters AG: *See—*

Grun, Gustav, 4,352,718, Cl. 159-48.00R.

Krauss, Werner, 4,352,569, Cl. 366-107.000.

Cleereman, Kenneth J.: *See—*

Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,352,766, Cl. 264-45.500.

Clunies, David A.: *See—*

Bernstein, Robert G.; and Clunies, David A., 4,353,071, Cl. 343-709.000.

Coal Industry (Patents) Limited: *See—*

Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., 4,352,922, Cl. 528-232.000.

Cogswell, Frederic N.; and Tomka, Jiri G., to Imperial Chemical Industries Limited. Method of improving processability of rigid polymers. 4,352,927, Cl. 528-502.000.

Collonia, Harald, to VDO Adolf Schindling AG. Safety circuit for an apparatus for regulating the traveling speed of a vehicle. 4,352,402, Cl. 180-170.000.

Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, to Produits Chimiques de la Montagne Noire. Method of combating cercariae using certain amphoteric surface active agents. 4,352,812, Cl. 424-273.00R.

Commercial Shearing, Inc.: *See—*

Williams, Arthur J., 4,352,375, Cl. 137-596.130.

Commissariat a l'Energie Atomique: *See—*

Arnaud, Georges; and Chiarelli, Gerard, 4,352,778, Cl. 376-365.000.

Perodjon, Jean, 4,352,294, Cl. 73-642.000.

Commonwealth Industrial Gases Limited, The: *See—*

Boccardo, Hector O. M.; and Jolly, Thomas W., 4,352,365, Cl. 137-68.00R.

Compagnie Francaise des Petroles: *See—*

Fery, Jean J., 4,352,674, Cl. 23-230.0EP.

Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris": *See—*

Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., 4,352,598, Cl. 405-222.000.

Conair, Inc.: *See—*

Peterson, Russell I., Jr., 4,352,426, Cl. 198-657.000.

Concorde Battery Corp.: *See—*

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Conoco Inc.: *See—*

Goldsmith, Riley G., 4,352,599, Cl. 405-224.000.

Consumers Glass Company Limited: *See—*

Chartier, Robert M.; and Richard, Jean P., 4,352,436, Cl. 215-252.000.

Contraves AG: *See—*

Meier, Walter, 4,352,950, Cl. 174-35.00C.

Cook, P. Dan, to Warner-Lambert Company. 7-β-D-Arabinofuranosyl-7H-pyrrolo[2,3-d]pyrimidine compounds and methods for their production. 4,352,795, Cl. 424-180.000.

Cooke, Anson R.: *See—*

Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,352,689, Cl. 71-86.000.

Cookson, Alan H., to United States of America, Energy. Transmission line including support means with barriers. 4,352,949, Cl. 174-27.000.

Cooley, William H.: *See—*

Allison, Kenneth C.; and Cooley, William H., 4,352,589, Cl. 403-408.000.

Coomber, Barry A.: *See—*

Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.

Corbin, Edgar A., Jr.: *See—*

Pearline, Donald I.; Corbin, Edgar A., Jr.; and Garner, Marvin A., 4,352,826, Cl. 426-39.000.

Cornelius, Gail; and Olson, Lloyd C., to R. M. Wade & Co. Irrigation line wind brace. 4,352,464, Cl. 239-713.000.

Corning Glass Works: *See—*

Boettner, George B., 4,352,687, Cl. 65-134.000.

Cotter, James F. Automatic transmission shifter for bicycles. 4,352,503, Cl. 280-238.000.

CPT Corporation: *See—*

Lehman, Frederick D., 4,353,013, Cl. 315-387.000.

Cremona, Angelo. Log clamping devices used in half round or stay log cutting. 4,352,488, Cl. 269-54.200.

Crookston, James A.; and Hill, James L., to A. P. Green Refractories Co. Shaft kiln. 4,352,661, Cl. 432-14.000.

Crosby, E. Eugene, to Owens-Corning Fiberglas Corporation. Spinner rotating apparatus. 4,352,686, Cl. 65-15.000.

Crosby, Lawton H., to Morley Furniture Spring Corporation. Improvement in upholstered furniture. 4,352,524, Cl. 297-452.000.

Crosfield Electronics Limited: *See—*

Chase, Bryan B., 4,352,973, Cl. 219-121.0LH.

Cross, David A., to Xerox Corporation. Control system for electrographic stylus writing apparatus. 4,353,080, Cl. 346-153.100.

Croxen, Robert E.: *See—*

Beevers, Shannon D.; and Croxen, Robert E., 4,352,668, Cl. 114-344.000.

Crutcher Resources Corporation: *See—*

LaRue, Forrest N.; and Wheeler, Lionel H., 4,352,285, Cl. 72-466.000.

Cser, Gyula; and Pataki, Arpad, to Autoipari Kutato Intezet. Automatic ventilation apparatus for liquid systems with forced flow. 4,352,342, Cl. 123-41.540.

CTS Corporation: *See—*

English, Jack A., 4,352,964, Cl. 200-5.00A.

English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.

Cubberly, Walter E., Jr., to Schlumberger Technology Corporation. Differential noise logging method and apparatus. 4,353,122, Cl. 367-25.000.

Cummiskey, Peter, to Bell Telephone Laboratories, Incorporated. Synchronous/asynchronous data communication arrangement. 4,353,128, Cl. 370-44.000.

Cuny, Eckehard K. T.; Lichtenthaler, Frieder W.; and Moser, Alfred R., to Siegfried Aktiengesellschaft. Lin-benzoaminopurinols. 4,352,931, Cl. 544-251.000.

Curchod, Donald B.; and Arnold, Arthur K., to Nortron Corporation. Wheel balancing machine. 4,352,291, Cl. 73-462.000.

Curtis, Benson M.: *See—*

Scurlock, James E.; and Curtis, Benson M., 4,352,820, Cl. 424-329.000.

Custom Plastics, Inc.: *See—*

Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,352,888, Cl. 435-287.000.

Cusumano, Philip; and Cusumano, Vincent. Building material applicator. 4,352,445, Cl. 222-611.000.

Cusumano, Vincent: *See—*

Cusumano, Philip; and Cusumano, Vincent, 4,352,445, Cl. 222-611.000.

Dahlberg, John R.: *See—*

Bonaddio, Robert M.; and Dahlberg, John R., 4,352,447, Cl. 225-2.000.

Dahlgren, Paul F.: *See—*

Carson, John C.; and Dahlgren, Paul F., 4,352,715, Cl. 156-634.000.

Daihatsu Motor Co., Ltd.: *See—*

Kawakatsu, Shiro; and Kawasaki, Toshikazu, 4,353,055, Cl. 340-52.00D.

Daimler-Benz Aktiengesellschaft: *See—*

Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, 4,353,111, Cl. 362-80.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*

Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,352,803, Cl. 424-251.000.

Dakin, Wayne R.: *See—*

Winslow, John S.; and Dakin, Wayne R., 4,353,089, Cl. 358-337.000.

Daly, James M., to Rocket Research Company. Catalytic gas generator. 4,352,782, Cl. 422-179.000.

Dam, Robert, to Zenith Radio Corporation. Adjustable yoke assembly. 4,353,094, Cl. 358-249.000.

D'Amelia, Ronald P.: *See—*

Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., 4,352,822, Cl. 426-4.000.

Damon Corporation: *See—*

Lim, Franklin, 4,352,883, Cl. 435-178.000.

Daniel, Sam M.; and McRoberts, Louis A., to Motorola Inc. Adaptive antenna array including batch covariance relaxation apparatus and method. 4,353,119, Cl. 364-517.000.

Dasco Products, Inc.: *See—*

Provi, Michael A., 4,352,381, Cl. 145-2.00R.

Davies, Benjamin, III. Wood joint. 4,352,588, Cl. 403-382.000.

Davis, John S.: *See—*

Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., 4,352,400, Cl. 175-330.000.

Davis, Kenneth. Bit breaker and handle. 4,352,399, Cl. 175-315.000.

Davis, Lois T.: *See—*

Pillis, Lewis J.; and Davis, Lois T., 4,352,886, Cl. 435-262.000.

Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., to Bell Telephone Laboratories, Incorporated. Electronically-switched multifrequency generator with transducer control. 4,352,958, Cl. 179-84.0VF.

Davis, Pauls; and Wilson, Joe C., to BASF Wyandotte Corporation. Alcohol composition containing novel hydroxy-substituted aliphatic silicone sulfonate-silicate copolymers. 4,352,742, Cl. 252-75.000.

Davis, Wayne M.: *See—*

Kolchinsky, Abel E.; Bowbin, John F.; and Davis, Wayne M., 4,352,318, Cl. 91-395.000.

DBM Industries Limited: *See—*

Perrella, Guido, 4,352,388, Cl. 164-305.000.

Dearborn Chemical Company: *See—*

Every, Richard L.; Lewandowski, Franklin D.; and Lech, Jerome F., 4,352,747, Cl. 252-500.000.

Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, to CdF Chimie, Societe Chimique des Charbonnages; and Thomson-CSF. Electrical capacitor. 4,353,107, Cl. 361-323.000.

De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, to Texas Instruments Incorporated. Low profile microswitches, particularly useful for the composition of keyboards and method of making. 4,352,963, Cl. 200-5.00A.
DeFourny, Jacques A.: *See—*
  Mathy, Henri L.; and DeFourny, Jacques A., 4,352,970, Cl. 219-72.000.
Deft, Inc.: *See—*
  Albers, Richard A., 4,352,898, Cl. 523-414.000.
de Haan, Friedrich J., administrator: *See—*
  Franssen, Nico V., deceased; and de Haan, Friedrich J., administrator, 4,352,954, Cl. 179-1.00J.
De Jong, Aaldert J.: *See—*
  Gray, Robin T.; and De Jong, Aaldert J., 4,352,937, Cl. 549-546.000.
de Jong, Leonardus P. A.: *See—*
  Benschop, Hendrik P.; Kepner, Larry A.; and de Jong, Leonardus P. A., 4,352,810, Cl. 424-263.000.
DeLucia, Victor E. Gas-filled envelope enclosed high voltage relay. 4,353,048, Cl. 335-151.000.
DeMaria, Francesco, to American Cyanamid Company; and Hamilton, Relmond H. Reinforced plastic matrix of thermosetting resin embedded with acrylonitrile polymer fiber. 4,352,852, Cl. 428-290.000.
DeMarinis, Robert M.: *See—*
  Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.
Demmer, Erhard: *See—*
  Janovsky, Franz; and Demmer, Erhard, 4,352,352, Cl. 128-76.00R.
Denmán, Owen S.: *See—*
  Gertz, David C.; and Denman, Owen S., 4,352,484, Cl. 256-13.100.
Dennison Manufacturing Company: *See—*
  Amberkar, Suresh D., 4,352,684, Cl. 55-382.000.
den Toonder, Pieter; and Fondse, Pieter J., to Oak Industries, Inc. Coding and decoding system for video and audio signals. 4,353,088, Cl. 358-120.000.
Dettke, Manfred; and Stein, Ludwig, to Schering Aktiengesellschaft. Acid gold bath for the electroless deposition of gold. 4,352,690, Cl. 106-1.230.
Development Finance Corporation of New Zealand, The: *See—*
  Hennessy, John B.; and Twizell, Rodney J., 4,352,245, Cl. 33-169.00B.
Devlin, Thomas A., to Vultron, Inc. Bus destination sign with programmed destination name and manually settable route numbers for combined display. 4,353,063, Cl. 340-798.000.
de Vries, Huibert, to Koninklijke Bos Kalis Westminster Group N.V. Suction dredger installation. 4,352,250, Cl. 37-58.000.
Deyrup, Edward J., to Du Pont de Nemours, E. I., and Company. Molding resins. 4,352,904, Cl. 524-292.000.
Dezaki, Yoshito: *See—*
  Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.
Didier Engineering GmbH: *See—*
  Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, 4,352,618, Cl. 414-148.000.
  Hackler, Erich, 4,352,680, Cl. 55-48.000.
Diebold Incorporated: *See—*
  Anders, Walter G., 4,352,603, Cl. 406-27.000.
Dietz, Peter W., to General Electric Company. Electrostatically augmented cyclone apparatus. 4,352,681, Cl. 55-127.000.
Dijkhuis, Jacob I., to Holec N.V. Method for cleaning a magnetic separator and magnetic separator. 4,352,730, Cl. 209-8.000.
Dimitraki, Sergei N.: *See—*
  Grechanliisky, Stepan S.; Grishanov, Ivan I.; Dimitraki, Sergei N.; Miroshnichenko, Vladimir S.; and Nastas, Vitaly I., 4,352,465, Cl. 242-7.120.
Dineen, John J., to Mechanical Technology Incorporated. Stirling engine combustor. 4,352,269, Cl. 60-517.000.
Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., to General Electric Company. Rotary feed for tonographic scanning apparatus. 4,352,530, Cl. 339-5.00M.
DiPasquale, Renato, to Energy Research Corporation. Fuel cell matrix having curling compensation. 4,352,865, Cl. 429-41.000.
Discovision Associates: *See—*
  Broadbent, Kent D., 4,353,090, Cl. 358-342.000.
  Winslow, John S.; and Dakin, Wayne R., 4,353,089, Cl. 358-337.000.
Dixon, Stanley R. E.: *See—*
  Morrison, Jeffrey; Dixon, Stanley R. E.; and Barnes, Arthur G., 4,352,664, Cl. 434-14.000.
Dobbs, Gregg; and Dobbs, Laura P., to Fotozines, Inc. Controlled double exposure method and apparatus. 4,352,555, Cl. 355-77.000.
Dobbs, Laura P.: *See—*
  Dobbs, Gregg; and Dobbs, Laura P., 4,352,555, Cl. 355-77.000.
Dobkin, Robert C., to Hybrinetics, Inc. Phase controlled voltage reducing circuit having line voltage compensation. 4,353,025, Cl. 323-300.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
  Trenkler, Werner, 4,352,521, Cl. 296-191.000.
Dohren, Hans: *See—*
  Seipenbusch, Jurgen; and Dohren, Hans, 4,352,675, Cl. 48-73.000.
Doll, Jacob G.: *See—*
  Bursk, William M.; and Doll, Jacob G., 4,352,258, Cl. 49-468.000.
Doorakian, George A.: *See—*
  Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,352,918, Cl. 528-89.000.
Doran, Mark A.; and Rumolo, Thomas R., to Shaklee Corporation. Sweet tableting agent. 4,352,821, Cl. 424-361.000.
Dorfman, Walter, to Moffatt, Alfred T., a part interest. Display apparatus for a drum. 4,353,008, Cl. 315-114.000.
Dormer, Kenneth J.; and Richard, Gordon L., to Baptist Medical Center of Oklahoma, Inc. Magnetic transcutaneous mount for external device of an associated implant. 4,352,960, Cl. 179-107.0BC.
D'Oro, Enzo C.; and Ocera, Girolamo, to Italtel S.p.A. Differential phase shifter for a waveguide carrying high-power microwaves. 4,353,042, Cl. 333-24.100.
Dotson, Edsel E.: *See—*
  Kimble, Joe W.; and Dotson, Edsel E., 4,352,665, Cl. 434-22.000.
Doucet, Charles. Method of filtering a fluid and filter. 4,352,734, Cl. 210-741.000.
Doura, Fumihiro: *See—*
  Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.
Dow Chemical Co., The: *See—*
  Bradley, Norbert L.; Cleereman, Kenneth J.; and Wessling, Ritchie A., 4,352,766, Cl. 264-45.500.
  Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,352,918, Cl. 528-89.000.
Dowa Mining Co., Ltd.: *See—*
  Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,352,717, Cl. 159-4.00E.
Dresser Industries, Inc.: *See—*
  Orth, Heinz W.; and Sloot, James W., 4,352,287, Cl. 73-60.000.
Dubinenko, Askold F.: *See—*
  Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.
Dubois, Jean-Claude: *See—*
  Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
Dugua, Jacques, to PCUK Produits Chimiques Ugine Kuhlmann. Spherical crystalline sodium uranate and process of producing same by adjusting the uranium containing solution in crystallizer. 4,352,857, Cl. 428-402.000.
Dungs, Horst: *See—*
  Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, 4,352,720, Cl. 202-124.000.
Dunlop Limited: *See—*
  Williams, Arthur R.; and Williams, Gareth T., 4,352,704, Cl. 156-125.000.
Dunn, William F.; and Milan, Ernest A., to Goodyear Tire & Rubber Company, The. Method of spiral winding strip material. 4,352,467, Cl. 242-55.000.
Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., to International Business Machines Corporation. Paperboard ribbon cartridge. 4,352,578, Cl. 400-208.000.
Du Pont de Nemours, E. I., and Company: *See—*
  Adelman, Robert L.; and Segars, Roy, Jr., 4,352,940, Cl. 562-607.000.
  Bettinger, George E.; and Orban, John N., 4,352,744, Cl. 252-313.00S.
  Deyrup, Edward J., 4,352,904, Cl. 524-292.000.
  Marshall, Larry R., 4,352,650, Cl. 425-174.80E.
Durbin, Jesse, Jr.; and Pritchard, Dalton H., to RCA Corporation. Impulse noise reduction system for TV receivers. 4,353,093, Cl. 358-160.000.
Durkoppwerke GmbH: *See—*
  Grube, Erwin, 4,352,328, Cl. 104-172.00S.
Duvall, Paul F., to Foseco Trading AG. Hot tops. 4,352,482, Cl. 249-106.000.
Duveau, Francois, to Pompes Essa Mico. Apparatus for the accumulation and release of energy. 4,352,298, Cl. 74-84.00R.
Dyett, Derek H.: *See—*
  Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., 4,352,604, Cl. 406-28.000.
Dynamit Nobel: *See—*
  Schmidt, Werner, 4,352,894, Cl. 521-91.000.
Dynamit Nobel Aktiengesellschaft: *See—*
  Spiess, Karl-Heinz; and Stock, Harald, 4,352,672, Cl. 8-444.000.
Dzioba, Donald L.: *See—*
  Wendler, Paul O.; and Dzioba, Donald L., 4,352,296, Cl. 74-55.000.
Dzus Fastener Co., Inc.: *See—*
  Gunther, Conrad J., 4,352,513, Cl. 292-113.000.
E. Blum GmbH & Co.: *See—*
  Geschka, Hugo-Werner, 4,353,052, Cl. 336-210.000.
Easter, William M.: *See—*
  Billett, Ronald J.; Anderson, David N.; and Easter, William M., 4,352,830, Cl. 426-421.000.
Eastman, George Y., to Thermacore, Inc. Mechanically assisted evaporator surface. 4,352,392, Cl. 165-104.250.
Eastman Kodak Company: *See—*
  Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., 4,352,925, Cl. 528-309.000.
  Wooten, Willis C.; Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,352,924, Cl. 528-302.000.
Eaton Corporation: *See—*
  Kolze, Lawrence A., 4,352,372, Cl. 137-504.000.
Eckert, Ronald P., to Thomas A. Schutz Co., Inc. Component for a multiplanar device. 4,352,843, Cl. 428-33.000.
Edelmann, Frank E.; and Post, James R. Method of sealing cracks and apparatus therefor. 4,352,262, Cl. 52-744.000.

Edgington, Robert E. Method for soldering aluminum. 4,352,450, Cl. 228-205.000.
Edwards, Harry J., Jr. Short chaser with relay operated indicator for locating and indicating the clearance of short circuits. 4,353,026, Cl. 324-51.000.
Edwards, Ralph W., to General Motors Corporation. Telescoping vehicle radio antenna with compressible O-ring seal. 4,353,075, Cl. 343-903.000.
Efuti Giken Co., Ltd.: *See—*
  Kawai, Tsutomu, 4,353,101, Cl. 360-85.000.
Eggert, John N.: *See—*
  Revells, Robert G.; and Eggert, John N., 4,352,221, Cl. 15-77.000.
Eguchi, Osamu: *See—*
  Fukui, Tomonori; and Eguchi, Osamu, 4,352,321, Cl. 98-2.110.
Eisai Co., Ltd.: *See—*
  Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Eisenstadt Company: *See—*
  Weinzettel, Michael; and Weeks, Walter, 4,353,124, Cl. 368-258.000.
Eisert, Wolfgang, to Gesellschaft fur Strahlen-und Umweltforschung mbh, Munchen. Apparatus for measuring particle characteristics. 4,352,558, Cl. 356-39.000.
Electrotech Instruments Limited: *See—*
  Billings, Keith H., 4,353,113, Cl. 363-21.000.
Eliasson, Erik. Loose leaf binder. 4,352,582, Cl. 402-38.000.
El-Kafrawy, Adel: *See—*
  Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.
Ellis, Richard D. Search and warning light system. 4,353,110, Cl. 362-35.000.
Emerson Electric Co.: *See—*
  Lombard, Marco H., 4,352,243, Cl. 30-276.000.
Emmer, Samuel. Multichannel non-discrete audio reproduction system. 4,352,953, Cl. 179-1.00G.
Endo, Tsuneo: *See—*
  Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, 4,352,510, Cl. 280-727.000.
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog to digital converter system with an output stabilizing circuit. 4,353,060, Cl. 340-347.0AD.
Energy Absorption Systems, Inc.: *See—*
  Gertz, David C.; and Denman, Owen S., 4,352,484, Cl. 256-13.100.
Energy Incorporated: *See—*
  Baston, Virgil F., 4,352,332, Cl. 110-346.000.
Energy Research Corporation: *See—*
  DiPasquale, Renato, 4,352,865, Cl. 429-41.000.
  Maru, Hansraj C., 4,352,863, Cl. 429-17.000.
Engel, Herbert; and Hahnel, Thomas, to Messerschmitt-Bolkow-Blohm GmbH. Device for releasably securing a coupling head to an external load mounted on an aircraft. 4,352,314, Cl. 89-1.50F.
Engelbrecht & Lemmerbrock GmbH & Co.: *See—*
  Julke, Bernhard, 4,352,606, Cl. 406-81.000.
English Card Clothing Company Ltd., The: *See—*
  Grimshaw, Keith; and Spratt, Roger C., 4,352,224, Cl. 19-97.000.
English, Jack A., to CTS Corporation. Slide and rocker switch assemblies having double cantilevered contactor. 4,352,964, Cl. 200-5.00A.
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., to CTS Corporation. Slide switch. 4,352,966, Cl. 200-16.00D.
Epstein, James, to GTE Laboratories Incorporated. Fiber reinforced cathode for electrochemical cell. 4,352,768, Cl. 264-105.000.
Ernst Leitz Wetzlar GmbH: *See—*
  Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, 4,352,557, Cl. 356-39.000.
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, to Hoechst Aktiengesellschaft. Production of acetyl chloride. 4,352,761, Cl. 260-544.00A.
Errichiello, Dominic R. Binders for telephone directories and like books and tamper proof lanyard suspension thereof. 4,352,583, Cl. 402-75.000.
Esch, Johannes H. L. H., to Vitafin N.V. Combined linear and circular drive mechanism. 4,352,300, Cl. 74-89.150.
Eschen, Frank W., to Manville Service Corporation. Friction material for railroad brake shoes. 4,352,750, Cl. 523-156.000.
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, to Institut Francais du Petrole; and Societe Labofina S.A. Method and device for determining the organic carbon content of a sample. 4,352,673, Cl. 23-230.0EP.
ETA A.G. Ebauches-Fabrik: *See—*
  Hauert, Ulrich, 4,352,246, Cl. 33-174.00L.
Etablissements A. Voisin: *See—*
  Le Bozec, Alain, 4,352,389, Cl. 164-343.000.
Etschenberg, Eugen: *See—*
  Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, 4,352,799, Cl. 424-244.000.
Evans, G. Glenn: *See—*
  Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, 4,353,083, Cl. 357-23.000.
Evans, Wilbur F.: *See—*
  Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,352,689, Cl. 71-86.000.
Every, Richard L.; Lewandowski, Franklin D.; and Lech, Jerome F., to Dearborn Chemical Company. Method to lower fly-ash resistivity. 4,352,747, Cl. 252-500.000.
Ewan, George B.: *See—*
  Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.
Ewing, James P. Wood burning heater. 4,352,454, Cl. 237-8.00R.
Exxon Research & Engineering Co.: *See—*
  Patton, Tad L., 4,352,905, Cl. 524-359.000.
Ezis, Andre: *See—*
  Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, 4,352,308, Cl. 82-1.00C.
Faddegon, Hans, to U.S. Philips Corporation. Measuring circuit for integrating electrical signals in a gamma camera. 4,353,028, Cl. 324-111.000.
Fahmy, Mohamed A., to Rhone-Poulenc Agrochimie. Process for the production of s-tertiaryalkyl phosphonodithoic halides. 4,352,762, Cl. 260-972.000.
Fahrenschon, Anthony. Selectively engageable and disengageable drive for wheeled devices such as grain augers or the like. 4,352,406, Cl. 180-308.000.
Fairchild Camera and Instrument: *See—*
  Pierce, John M., 4,352,239, Cl. 29-590.000.
Fairchild Camera & Instrument Corp.: *See—*
  Smith, Ronald A., 4,352,492, Cl. 273-1.0GC.
Fairchild Industries, Inc.: *See—*
  Bernstein, Robert G.; and Clunies, David A., 4,353,071, Cl. 343-709.000.
Fairfield Industries, Inc.: *See—*
  Ray, Clifford H.; and Moore, Neil A., 4,353,121, Cl. 367-21.000.
Fallier, Charles N., Jr.; and Proud, Joseph M., to GTE Laboratories Incorporated. Pulse injection starting for high intensity discharge metal halide lamps. 4,353,012, Cl. 315-289.000.
Fara, John: *See—*
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- Galpin, Robert K., to Plessey Overseas Limited. Zero-crossing comparators with threshold validation. 4,352,999, Cl. 307-354.000.
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  - Rodenbeck, Philip G., 4,352,305, Cl. 84-9.510.
  - Weber, Vincent H., 4,353,109, Cl. 362-13.000.
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- General Motors Corporation: *See—*
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- Guibert, Raul. Automatic dough-processing apparatus. 4,352,567, Cl. 366-76.000.
- Guildford, Leslie H.: *See—*
  - Bailey, Peter K.; and Guildford, Leslie H., 4,353,092, Cl. 358-160.000.
- Guimbretiere, Pierre L., to Glaenzer Spicer. Rolling bearing having two rows of rolling elements and device for mounting a vehicle wheel. 4,352,528, Cl. 308-189.00R.
- Gulf Research & Development Company: *See—*
  - Habib, Mohammad M.; and Pretzer, Wayne R., 4,352,947, Cl. 568-902.000.
  - Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,352,942, Cl. 568-306.000.
  - Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,352,946, Cl. 568-902.000.
- Gulton Industries, Inc.: *See—*
  - Burkarth, Jack L., 4,352,323, Cl. 98-40.00D.
- Gunther, Conrad J., to Dzus Fastener Co., Inc. Toggle latch with spring catch. 4,352,513, Cl. 292-113.000.

Gunton, David J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Surface acoustic wave devices and systems including such devices. 4,353,043, Cl. 333-151.000.

Gustav Magenwirth GmbH & Co.: *See—*
Christner, Heinz, 4,352,303, Cl. 74-489.000.

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., to Hoffmann-La Roche Inc. Chlorocitric acids. 4,352,758, Cl. 549-521.000.

Gutierrez Atencio, Francisco J. Hydromotive set. 4,352,989, Cl. 290-53.000.

Gutter, David H., to AMP Incorporated. Commoning element for an electrical connector. 4,352,531, Cl. 339-14.00R.

Guzman Llansa, Eduardo; Arino Maestrojuan, Pablo; and Melendez Andreu, Enrique. Process for obtaining P-acetamido phenol α-methyl-4(2'thienyl-carbonyl) phenyl acetate. 4,352,935, Cl. 549-72.000.

Gylland, E. Frederick, Jr.: *See—*
Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,352,509, Cl. 280-716.000.

Gyugyi, Laszlo, to Westinghouse Electric Corp. Control for VAR generator with deadband. 4,353,024, Cl. 323-211.000.

H.F. & Ph.F. Reemtsma G.m.b.H. & Co.: *See—*
Maier, Maxemin; Wittkugel, Heinz; Liepelt, Klaus J.; and Homeier, Jorn, 4,352,430, Cl. 209-577.000.

Habib, Mohammad M.; and Pretzer, Wayne R., to Gulf Research & Development Company. Process for producing ethanol. 4,352,947, Cl. 568-902.000.

Hackler, Erich, to Didier Engineering GmbH. Process and/or facility for driving off dissolved, corrosive gaseous constituents from watery solutions. 4,352,680, Cl. 55-48.000.

Haefliger, Erwin; Hinden, Fritz; and Lardelli, Aldo, to Kern & Co. AG. Reflector for electrooptical distance measurement. 4,352,556, Cl. 356-1.000.

Hahnel, Thomas: *See—*
Engel, Herbert; and Hahnel, Thomas, 4,352,314, Cl. 89-1.50F.

Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., to Bell Telephone Laboratories, Incorporated. Fabrication of circuit packages. 4,352,449, Cl. 228-123.000.

Hamilton, Relmond H.: *See—*
DeMaria, Francesco, 4,352,852, Cl. 428-290.000.

Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, to AGFA-Gevaert Aktiengesellschaft. Apparatus for drying sheet-like photographic material. 4,352,448, Cl. 226-108.000.

Hammett, Dillard S., to Sedco, Inc. Stab system for equipment removal. 4,352,596, Cl. 405-195.000.

Hanatsuka, Mitsuo: *See—*
Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.

Handel, Peter H.; Jungman, James A.; and Honickman, Stephen N. Absorptive coating for the reduction of the reflective cross section of metallic surfaces and control capabilities therefor. 4,353,069, Cl. 343-18.00A.

Hanji, Katsumi: *See—*
Mashita, Kentaro; and Hanji, Katsumi, 4,352,915, Cl. 526-65.000.

Hannas, James R., to Silent Running Corporation. Multiple position power switch. 4,352,993, Cl. 307-112.000.

Hansel, Otto; Lesch, Hans; and Lesch, Hans-Bernd, to Otto Hansel GmbH. Apparatus for producing bar packages of preferably individually wrapped sweets or similar pieces of confectionery. 4,352,265, Cl. 53-541.000.

Hany & Cie AG: *See—*
Heimgartner, Hans; and Wirz, Karl, 4,353,118, Cl. 364-510.000.

Hara, Yoshio, to Fuji Photo Film Co., Ltd. Self-processing type photographic film unit with a trap member having gas discharging means. 4,352,879, Cl. 430-209.000.

Harada, Fumio: *See—*
Murayama, Akira; Harada, Fumio; and Suefuji, Kazutaka, 4,352,642, Cl. 417-312.000.

Harada, Kunio: *See—*
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.

Haraguchi, Youichiro: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichiro; and Hayashi, Koji, 4,352,709, Cl. 156-380.600.

Harbert, Charles A.: *See—*
Welch, Willard M.; and Harbert, Charles A., 4,352,807, Cl. 424-256.000.

Hardigg Industries, Inc.: *See—*
Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.

Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., to Hardigg Industries, Inc. Welding apparatus and method. 4,352,977, Cl. 219-243.000.

Hardin, George T., to Robertshaw Controls Company. Manifolding means for electrical and/or pneumatic control units and parts and methods therefor. 4,352,532, Cl. 339-15.000.

Hardt, Jean; and Widrig, Jakob, to Swiss Aluminium Ltd. Device for conducting away the exhaust gases from internal combustion engines. 4,352,408, Cl. 181-249.000.

Harnischfeger Corporation: *See—*
Wieschel, John E., 4,352,622, Cl. 414-277.000.

Harris Data Communications, Inc.: *See—*
Goldberg, Gerald J., 4,352,536, Cl. 339-75.0MP.

Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and by Midland Bank Trust Company Limited, legal representative, The, to United Kingdom Atomic Energy Authority. Method of improving the wear resistance of metals. 4,352,698, Cl. 148-4.000.

Hartmann, Clinton S., to R F Monolithics, Inc. Surface acoustic wave device with reflectors. 4,353,046, Cl. 333-194.000.

Harvatin, Louis J.: *See—*
Anderson, Arthur I.; and Harvatin, Louis J., 4,352,331, Cl. 105-248.000.

Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige; to Sumitomo Chemical Company, Limited. Process for purification of phenylhydrazine. 4,352,941, Cl. 564-314.000.

Hashimoto, Kazuo: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.

Hatakeyama, Noboru, to Konishiroku Photo Industry Co., Ltd. Deflecting device for sorter or the like. 4,352,490, Cl. 271-289.000.

Hatashita, Hiroshi: *See—*
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, 4,353,132, Cl. 455-315.000.

Hatfield, Raymond W.: *See—*
Ladney, Michael, Jr.; and Hatfield, Raymond W., 4,352,767, Cl. 264-46.600.

Hauert, Ulrich, to ETA A.G. Ebauches-Fabrik. Tracer head for machine tools. 4,352,246, Cl. 33-174.00L.

Hayashi, Kazuo; and Hotta, Mitsuhiko, to Kabushiki Kaisha Morita Seisakusho. Structure of dental X-ray apparatus. 4,352,987, Cl. 378-150.000.

Hayashi, Koji: *See—*
Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichiro; and Hayashi, Koji, 4,352,709, Cl. 156-380.600.

Hayden, William L., to Ford Motor Company. Linkage system. 4,352,586, Cl. 403-163.000.

Heath, Robert H.: *See—*
Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,352,607, Cl. 406-88.000.

Hecht, Sidney M., to Wofor AG. Biologically active extracts from *Myristica castaneifolia* (Myristicaceae) Fiji and a method of obtaining same. 4,352,797, Cl. 424-195.000.

Hehn, Wilfried: *See—*
Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, 4,352,448, Cl. 226-108.000.

Heilmann, Steven M.: *See—*
Larimore, Franklin C.; and Heilmann, Steven M., 4,352,359, Cl. 128-640.000.

Heimberger, Helmut, to Optilon W. Erich Heilmann GmbH. Apparatus for the production of small synthetic resin articles. 4,352,654, Cl. 425-545.000.

Heimgartner, Hans; and Wirz, Karl, to Hany & Cie AG. Apparatus for determining the throughflow in pipe conduits. 4,353,118, Cl. 364-510.000.

Heinz, Richard; and Kutzner, Reinhard, to Robert Bosch GmbH. Method of storing digital color television signals on magnetic tape. 4,353,098, Cl. 360-9.100.

Heitz, Roger M.; and Hill, Franklin, to United States of America, Navy. Void filler foam fire suppression system. 4,352,851, Cl. 428-250.000.

Helioset Advanced Technologies Ltd.: *See—*
Bezner, Baruch J., 4,352,772, Cl. 264-229.000.

Henderson, Alan G.: *See—*
Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.

Hennessy, John B.; and Twizell, Rodney J., to Hennessy, John B.; and Development Finance Corporation of New Zealand, The. Distance indicating devices. 4,352,245, Cl. 33-169.00B.

Herbst, Heiner; and Niemeyer, Matthias, to Siemens Aktiengesellschaft. Readout circuit for a monolithically integrated circuit for linear image scanning. 4,353,084, Cl. 357-30.000.

Hercules Incorporated: *See—*
Breslow, David S., 4,352,938, Cl. 549-553.000.
Landoll, Leo M., 4,352,916, Cl. 526-200.000.
Zeigler, Edward H., Jr., 4,352,699, Cl. 149-109.600.

Herr, Alfons K., to Kataflox Patentverwaltungsgesellschaft mbH. Method for producing combustion resistant fibrous products. 4,352,719, Cl. 162-128.000.

Hibari, Eikoh, to Laurel Bank Machine Co., Ltd. Paper sheet counting machine provided with safety device. 4,352,980, Cl. 235-92.0SB.

Hibbard, William M., to His Way. Gold and silver separator. 4,352,733, Cl. 209-430.000.

Hieble, Jacob P.: *See—*
Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.

Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., to Imperial Chemical Industries Limited. Production of maleic anhydride. 4,352,755, Cl. 549-258.000.

Hill, Franklin: *See—*
Heitz, Roger M.; and Hill, Franklin, 4,352,851, Cl. 428-250.000.

Hill, James L.: *See—*
Crookston, James A.; and Hill, James L., 4,352,661, Cl. 432-14.000.

Hilterhaus, Karl-Heinz, to Chemie-Anlagenbau Bischofsheim GmbH. Process and device for the continuous production of plates from foamed synthetic resins. 4,352,895, Cl. 521-99.000.

Hilti Aktiengesellschaft: *See—*
Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.

Hilton, Carl W., to Toolmakers, Incorporated. Powdered metal press and tooling therefor. 4,352,648, Cl. 425-78.000.

Hinden, Fritz: *See—*
Haefliger, Erwin; Hinden, Fritz; and Lardelli, Aldo, 4,352,556, Cl. 356-1.000.

Hirabayashi, Yuji, to Nissan Motor Co., Ltd. Steam feeding apparatus for a multicylinder steam engine. 4,352,271, Cl. 60-670.000.

Hirahara, Shuzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Quality control copying apparatus. 4,352,553, Cl. 355-14.00E.

Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, to Mitsubishi Paper Mills, Ltd. Transfer-onto-plain paper type pressure-sensitive copying paper. 4,352,855, Cl. 428-320.400.

Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, to Mitsubishi Yuka Pharmaceutical Co., Ltd. 5,6-Alkylenepyrimidine derivative. 4,352,928, Cl. 542-431.000.

Hironaka, Kenichi: *See—*
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.

Hiroshi Teramachi: *See—*
Imai, Katsuhito, 4,352,526, Cl. 308-6.00C.

Hirsch, Herbert L., to Microdot Inc. Tamper resistant threaded fastener. 4,352,614, Cl. 411-427.000.

His Way: *See—*
Hibbard, William M., 4,352,733, Cl. 209-430.000.

Hisadomi, Masaki: *See—*
Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.

Hitachi, Ltd.: *See—*
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Kumada, Akio; and Nakamura, Shigeo, 4,352,961, Cl. 179-110.00A.
Kurihara, Nobuo; Nishikawa, Mitsuyo; Nagahashi, Yoshitoshi; and Takechi, Masafumi, 4,352,293, Cl. 73-593.000.
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,352,878, Cl. 430-167.000.
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.
Murayama, Akira; Harada, Fumio; and Suefuji, Kazutaka, 4,352,642, Cl. 417-312.000.
Nakamura, Hideo; Funabashi, Tsuneo; and Koizumi, Haruo, 4,353,030, Cl. 328-38.000.
Noda, Masaru, 4,353,000, Cl. 307-490.000.
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.
Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, 4,353,132, Cl. 455-315.000.
Sugiyama, Toshio; and Maeda, Takeshi, 4,352,981, Cl. 250-201.000.
Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.
Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, 4,352,561, Cl. 356-332.000.
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, 4,352,995, Cl. 307-265.000.

Hixenbaugh, Dennis L., to Pennsylvania Engineering Corp. Pressure probe for metallurgical vessels. 4,352,486, Cl. 266-99.000.

Hoath, Grantley R.: *See—*
Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., 4,352,604, Cl. 406-28.000.

Hoechst Aktiengesellschaft: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, 4,352,761, Cl. 260-544.00A.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Strupczewski, Joseph T.; and Allen, Richard C., 4,352,811, Cl. 424-267.000.

Hoefler, Andrew C.: *See—*
Wood, Robert W.; Parnell, John V.; and Hoefler, Andrew C., 4,352,832, Cl. 426-589.000.

Hoelscher, James R.: *See—*
Smith, Barry L.; and Hoelscher, James R., 4,352,475, Cl. 246-34.0CT.

Hoffman, Richard E., to United States of America, Army. Cure rate inhibitors for ferrocene-containing propellants. 4,352,700, Cl. 149-19.200.

Hoffmann-La Roche Inc.: *See—*
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,352,758, Cl. 549-521.000.
Hunkeler, Walter; and Kyburz, Emilio, 4,352,815, Cl. 424-273.00R.
Hunkeler, Walter; and Kyburz, Emilio, 4,352,816, Cl. 424-273.00R.
Hunkeler, Walter; and Kyburz, Emilio, 4,352,817, Cl. 424-273.00R.
Hunkeler, Walter; and Kyburz, Emilio, 4,352,818, Cl. 424-273.00R.
Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,352,934, Cl. 548-217.000.

Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, to Institute of Nuclear Energy Research. Treatment of copper refinery anode slime. 4,352,786, Cl. 423-98.000.

Holbrook, Walter R.; and Sponsler, William A., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Masking portions of a substrate. 4,352,835, Cl. 427-38.000.

Holec N.V.: *See—*
Dijkhuis, Jacob I., 4,352,730, Cl. 209-8.000.

Hollet, Ronald J.: *See—*
Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., 4,352,364, Cl. 137-43.000.

Hollings, Jack: *See—*
Grange, Arthur; and Hollings, Jack, 4,352,571, Cl. 366-127.000.

Holobaugh, Raymond E., Jr., to Mohasco Corp. Manually-operated spring-assisted reclining chairs. 4,352,523, Cl. 297-85.000.

Homeier, Jorn: *See—*
Maier, Maxemin; Wittkugel, Heinz; Liepelt, Klaus J.; and Homeier, Jorn, 4,352,430, Cl. 209-577.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, 4,352,640, Cl. 417-273.000.

Honeywell Inc.: *See—*
Stamm, Thomas A., 4,353,064, Cl. 340-825.310.

Honickman, Stephen N.: *See—*
Handel, Peter H.; Jungman, James A.; and Honickman, Stephen N., 4,353,069, Cl. 343-18.00A.

Hoover Company, The: *See—*
Buchtel, Dean H., 4,352,967, Cl. 200-153.00J.

Hoover, Merle V., to RCA Corporation. Field effect transistor amplifier with variable gain control. 4,353,036, Cl. 330-264.000.

Hopkins, David A., to Valeron Corporation, The. Face milling cutter. 4,352,609, Cl. 407-42.000.

Hoppe, Karl-Heinz, to Robert Bosch GmbH. Circuit for detecting faults in horizontal sync pulse signals. 4,353,091, Cl. 358-139.000.

Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, to Alps Patent Department. Serial printer having a single drive motor. 4,352,576, Cl. 400-154.400.

Hormann, Rudolf: *See—*
Stiglmaier, Manfred; and Hormann, Rudolf, 4,352,520, Cl. 296-182.000.

Hornady Manufacturing Company: *See—*
Schreiber, Charles J., 4,352,225, Cl. 29-1.230.

Hornberger, Michael E., to Frog, Switch & Manufacturing Company, The. Method and arrangement for support of contact elements of hammermills and the like. 4,352,774, Cl. 264-263.000.

Horvath, Mihaly: *See—*
Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.

Hotta, Mitsuhiko: *See—*
Hayashi, Kazuo; and Hotta, Mitsuhiko, 4,352,987, Cl. 378-150.000.

Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., to Bell Telephone Laboratories, Incorporated. High resolution two-layer resists. 4,352,870, Cl. 430-271.000.

Howland, Frank L.: *See—*
Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., 4,352,449, Cl. 228-123.000.

Howmedica, Inc.: *See—*
Greene, David J.; and Walker, Peter S., 4,352,212, Cl. 3-1.910.

Hu, Evelyn L.: *See—*
Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,352,870, Cl. 430-271.000.

Huber, William E.: *See—*
Ribble, Franklin; and Huber, William E., 4,352,511, Cl. 285-91.000.

Hubscher Ribbon Corporation Limited: *See—*
Perron, Reginald F., 4,352,703, Cl. 156-88.000.

Huck, William V., to Minnesota Mining and Manufacturing Company. Spool for photographic film. 4,352,469, Cl. 242-71.800.

Hufford, James N.: *See—*
English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.

Hughes Aircraft Company: *See—*
Forward, Robert L., 4,352,481, Cl. 248-550.000.
Forward, Robert L.; and Thurmond, Gary D., 4,352,982, Cl. 250-214.00A.

Humanicare International Inc.: *See—*
Tong, David P., 4,352,356, Cl. 128-288.000.

Humber, David C.: *See—*
Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., 4,352,798, Cl. 424-242.000.

Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Imidazo-benzodiazepines and their use. 4,352,815, Cl. 424-273.00R.

Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Azeto-imidazo-diazepines and their use. 4,352,816, Cl. 424-273.00R.

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Hunt, Paulmer D.: *See—*
Riggs, Robert R.; and Hunt, Paulmer D., 4,352,299, Cl. 74-84.00R.

Hunter Douglas International, N.V.: *See—*
Vecchiarelli, Francis, 4,352,385, Cl. 160-177.000.

Huntley, Christopher R., to GTE Automatic Electric Laboratories, Inc. Monolithic astable multivibrator circuit. 4,353,039, Cl. 331-113.00R.

Hurlbut, Donovan W.: *See—*
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.

Hutchings, Graham J.: *See—*
Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.

Huynh, Dai-Nghia: *See—*
Jacquin, Yves; Huynh, Dai-Nghia; and Born, Maurice, 4,352,729, Cl. 208-209.000.

Hybrinetics, Inc.: *See—*
Dobkin, Robert C., 4,353,025, Cl. 323-300.000.
Iacoponi, Stefano, to Fiat Auto S.p.A. Differential throttle opening control mechanism. 4,352,483, Cl. 251-229.000.
Iafrate, Gerald J.: *See—*
Ballato, Arthur; and Iafrate, Gerald J., 4,353,027, Cl. 324-56.000.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Removable duct panel for multiband open front display case. 4,352,275, Cl. 62-256.000.
Ichizawa, Yoshiyuki; and Nomoto, Tsugio, to Yoshino Kogyosho Co., Ltd. Device for conveying molded pieces. 4,352,424, Cl. 198-482.000.
ICI Americas Inc.: *See—*
Reed, Weldon N.; and Galvin, Thomas J., 4,352,906, Cl. 524-426.000.
Iida, Shinya: *See—*
Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, 4,352,974, Cl. 219-121.0PD.
Iijima, Nobuo, to Fujitsu Limited. Structure for vibration isolation in an apparatus with a vacuum system. 4,352,643, Cl. 417-313.000.
Ikuta, Hironori: *See—*
Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Imai, Katsuhito, to Hiroshi Teramachi. Slide roller bearing. 4,352,526, Cl. 308-6.00C.
Imai, Toshihiro, to Olympus Optical Co., Ltd. Wide-angle photographic camera lens system. 4,352,544, Cl. 350-464.000.
Imperial Chemical Industries Limited: *See—*
Cogswell, Frederic N.; and Tomka, Jiri G., 4,352,927, Cl. 528-502.000.
Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.
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Inagaki, Shigemi: *See—*
Inaba, Hajimu; Nakajima, Seiichiro; and Inagaki, Shigemi, 4,352,620, Cl. 414-225.000.
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Ingestrand, Tore, to Aktiebolaget Bofors. Barrel seal. 4,352,315, Cl. 89-36.00L.
Inomata, Tetsuro; Katsukura, Kazutada; and Takematsu, Hikaru, to Iwasaki Tsushinki Kabushiki Kaisha. Channel switching network. 4,353,066, Cl. 340-825.960.
Inoshita, Yasushi: *See—*
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
Inoue, Hideo, to Teac Corporation. Magnetic recording system with signal-controlled bias and equalization. 4,353,100, Cl. 360-65.000.
Institut Francais du Petrole: *See—*
Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,352,673, Cl. 23-230.0EP.
Jacquin, Yves; Huynh, Dai-Nghia; and Born, Maurice, 4,352,729, Cl. 208-209.000.
Institute of Nuclear Energy Research: *See—*
Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, 4,352,786, Cl. 423-98.000.
Intel Corporation: *See—*
McCollum, John L., 4,352,236, Cl. 29-571.000.
International Business Machines: *See—*
Beck, Vernon D., 4,353,061, Cl. 340-720.000.
International Business Machines Corporation: *See—*
Bohg, Armin, 4,353,076, Cl. 346-65.000.
Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., 4,352,578, Cl. 400-208.000.
Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.
Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,353,078, Cl. 346-140.00R.
Schaible, Paul M.; and Schwartz, Geraldine C., 4,352,716, Cl. 156-643.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; and Geiger, John H., Jr, John H., 4,352,743, Cl. 252-174.110.
International Harvester Co.: *See—*
Schantz, Ronald K., 4,352,398, Cl. 172-812.000.
International Telephone and Telegraph Corporation: *See—*
Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.
Interpace Corporation: *See—*
McNabney, John C., 4,352,453, Cl. 236-13.000.
Inzoli, Luciano; and Piccioni, Gino, to Italtel Societa Italiana Telecomunicazioni S.p.A. Double-face printed-circuit board. 4,352,994, Cl. 307-149.000.
Irvine Sensors Corporation: *See—*
Carson, John C.; and Dahlgren, Paul F., 4,352,715, Cl. 156-634.000.
Ishida, Hiroshi: *See—*
Kawada, Shigeki; and Ishida, Hiroshi, 4,353,023, Cl. 318-762.000.
Ishida, Kazuhiro: *See—*
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, 4,352,995, Cl. 307-265.000.
Ishida, Tsuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for discriminating sheets. 4,352,988, Cl. 250-559.000.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,352,277, Cl. 68-175.000.
Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Voltage distribution difference electrophotographic process. 4,352,875, Cl. 430-42.000.
Ishii, Kunio: *See—*
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Ishikawa, Tetuo: *See—*
Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.
Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, to Hoffmann-La Roche Inc. 3-Alkoxyflavone antiviral agents. 4,352,792, Cl. 424-180.000.
Ishizawa, Yoshiyuki: *See—*
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.
Iskra, Anton L.; Kharchenko, Mikhail S.; and Vasiliev, Jury N. Dam spillway. 4,352,593, Cl. 405-108.000.
Iso-Aho, Kalevi, to Valmet OY. Apparatus for rotatably driving a shell-type roll for use in a paper making machine or the like. 4,352,228, Cl. 29-115.000.
Isoyama, Seizi: *See—*
Watanabe, Yasuo; Isoyama, Seizi; and Yamamichi, Yoshikazu, 4,352,717, Cl. 159-4.00E.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Inzoli, Luciano; and Piccioni, Gino, 4,352,994, Cl. 307-149.000.
Italtel S.p.A.: *See—*
D'Oro, Enzo C.; and Ocera, Girolamo, 4,353,042, Cl. 333-24.100.
Itoh, Masashi; and Teramae, Kazuo, to Matsushita Electric Industrial Co., Ltd. Electromagnetic pickup cartridge. 4,353,125, Cl. 369-136.000.
Itoh, Takeshi: *See—*
Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
ITW Limited: *See—*
Meeks, Alan M. G., 4,352,476, Cl. 248-74.00R.
Iwai, Hiroshi: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,352,902, Cl. 524-40.000.
Iwao, Soichi, to Minolta Camera Kabushiki Kaisha. Electrophotographic fixing device. 4,352,551, Cl. 355-3.0FU.
Iwasaki, Koji: *See—*
Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.
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Iwata, Hiroshi; Yamaoka, Tetsuo; and Morioka, Akitoshi, to West Electric Co., Ltd. Camera selectively settable to either standard photographic mode or supertelephotographic mode. 4,352,546, Cl. 354-126.000.
Iwatsu Electric Co., Ltd.: *See—*
Uchida, Kozo, 4,352,550, Cl. 355-3.00R.
J. I. Case Company: *See—*
Brandenburg, Lloyd W., Jr., 4,352,456, Cl. 237-12.30R.
Frisbee, Claude M.; and Seaberg, David H., 4,352,626, Cl. 414-722.000.
Jaccodine, Ralph J.; and Michejda, John A., to Bell Telephone Laboratories, Incorporated. Silicon integrated circuits. 4,353,086, Cl. 357-51.000.
Jackel, Lawrence D.: *See—*
Howard, Richard E.; Hu, Evelyn L.; and Jackel, Lawrence D., 4,352,870, Cl. 430-271.000.
Jackson, Raymond G.: *See—*
Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.
Jackson, Winston J., Jr.: *See—*
Wooten, Willis C.; Jackson, Winston J., Jr.; and Kuhfuss, Herbert F., 4,352,924, Cl. 528-302.000.
Jacobellis, A. A., to VSI Corporation. Method of forming a low pressure low cost accumulator. 4,352,231, Cl. 29-157.00R.
Jacobsen, Edmond M.; Nielsen, Otto V.; and Persson, Torsten B., to Scan-Web I/S. Apparatus for producing a non-woven web from particles and/or fibers. 4,352,649, Cl. 425-83.100.
Jacquin, Yves; Huynh, Dai-Nghia; and Born, Maurice, to Institut Francais du Petrole. Process for hydrotreating heavy hydrocarbons in the presence of a molybdenum containing catalyst. 4,352,729, Cl. 208-209.000.
James, David E.; and Koeritz, Richard N., to Standard Oil Company (Indiana). Liquid mobile phase. 4,352,745, Cl. 252-364.000.
Janome Sewing Machine Co. Ltd.: *See—*
Watanabe, Kazuo; and Makabe, Hachiro, 4,353,021, Cl. 318-696.000.
Janovsky, Franz; and Demmer, Erhard. Head gear manipulator for invalids. 4,352,352, Cl. 128-76.00R.
Janssen, Kermit W.; and Mitchell, Andrew, to Certain-teed Corporation. Molded fittings. 4,352,512, Cl. 285-419.000.
Jenkins, Trevor L., to Norton Company. Method of mounting a grinding wheel on a spindle. 4,352,773, Cl. 264-262.000.
Jensen, Uwe: *See—*
von Meer, Walter; Jensen, Uwe; and Anthonsen, Reiner, 4,352,861, Cl. 428-511.000.

Jervis, Franklin D.: *See—*
Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., 4,352,578, Cl. 400-208.000.
Jet Research Center, Inc.: *See—*
Christopher, Glenn B., 4,352,397, Cl. 166-297.000.
Jewell, Walter: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., 4,352,822, Cl. 426-4.000.
Jewer, Alan A.: *See—*
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.
Jih, Peter E.P.: *See—*
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Johansen, Richard P.: *See—*
Grader, Ronald J.; and Johansen, Richard P., 4,352,740, Cl. 210-760.000.
Johansson, Mats A. Device relating to a circular saw blade of centerless type. 4,352,241, Cl. 30-123.400.
Johansson, Olof J. A.; and Ulmsten, Ulf I., to Perstorp AB. Medical preparation containing prostaglandin. 4,352,790, Cl. 424-78.000.
Johns Hopkins University, The: *See—*
Walser, Mackenzie, 4,352,814, Cl. 424-273.00R.
Johnson, Carl W. Means for tracking the sun. 4,352,350, Cl. 126-425.000.
Johnson, D. Emil; and Sharps, G. Vincent, Jr., to Mobil Oil Corporation. Production of foamed polymer. 4,352,893, Cl. 521-79.000.
Johnson & Johnson Baby Products Company: *See—*
Mesek, Frederick K.; and Mesek, Virginia R., 4,352,355, Cl. 128-287.000.
Johnson, Lennart B., to Teradyne, Inc. Bus bar. 4,352,534, Cl. 339-19.000.
Jolly, Thomas W.: *See—*
Boccardo, Hector O. M.; and Jolly, Thomas W., 4,352,365, Cl. 137-68.00R.
Jones, Hartl R.: *See—*
Kemp, David M., Jr.; and Jones, Hartl R., 4,352,682, Cl. 55-165.000.
Jones, James S. Regulator for gas and air mixture. 4,352,677, Cl. 48-180.00C.
Jones, Robert A.; and Reed, David A., to Lever Brothers Company. Thickened abrasive bleaching compositions. 4,352,678, Cl. 51-307.000.
Jonsson, Kurt A., to Rederiaktiebolaget Nordstjernan. Method and apparatus for recovering heat in waste water. 4,352,391, Cl. 165-1.000.
Joseph, Horst: *See—*
Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, 4,352,618, Cl. 414-148.000.
Journet, Gerard, to Fives-Cail Babcock. Centrifugal drier. 4,352,451, Cl. 233-27.000.
Julius Blum Gesellschaft m. b. H.: *See—*
Mages, Bernhard; and Rock, Erich, 4,352,222, Cl. 16-287.000.
Julke, Bernhard, to Engelbrecht & Lemmerbrock GmbH & Co. Device for extracting hay from a tower silo. 4,352,606, Cl. 406-81.000.
Jungman, James A.: *See—*
Handel, Peter H.; Jungman, James A.; and Honickman, Stephen N., 4,353,069, Cl. 343-18.00A.
Jyojiki, Masao: *See—*
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Kabushiki Kaisha Daini Seikosha: *See—*
Shimbo, Masafumi, 4,352,238, Cl. 29-579.000.
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Hayashi, Kazuo; and Hotta, Mitsuhiko, 4,352,987, Cl. 378-150.000.
Kaganowicz, Grzegorz: *See—*
Robinson, John W.; and Kaganowicz, Grzegorz, 4,352,836, Cl. 427-39.000.
Kai, Tomokazu; and Saito, Akio, to Nippon Electric Co., Ltd. Control signal transmission system for use in a mobile radio communication system. 4,352,955, Cl. 179-2.0EB.
Kaiser, Roman; and Lamparsky, Dietmar, to Givaudan Corporation. 3-Butadienyl-2,4,4-trimethylcyclohex-2-enone and derivatives thereof. 4,352,943, Cl. 568-378.000.
Kajiwara, Yuji: *See—*
Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.
Kakehi, Sasuga: *See—*
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Kakuta, Atsushi: *See—*
Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.
Kamada, Akira, to Kyoto Yakuhin Kyogo Kabushiki Kaisha; and Sawai Seiyaku Kabushiki Kaisha. Adjuvant for promoting absorption of therapeutically active substances through the digestive tract. 4,352,800, Cl. 424-246.000.
Kaminaka, Nobuyuki: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
Kammann, Wilfried, to Werner Kammann Maschinenfabrik GmbH. Screen printing machine. 4,352,326, Cl. 101-123.000.
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, to Matsushita Electric Industrial Co., Ltd. Thin-film magnetic head. 4,353,102, Cl. 360-126.000.
Kanai, Norio: *See—*
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Kanayama, Toshiji: *See—*
Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
Kaneda, Isao, to New Nippon Electric Company, Ltd. Hot cathode discharge lamp lighting device. 4,353,011, Cl. 315-240.000.
Kaneko, Takushi, to Bristol-Myers Company. Antitumor agents. 4,352,936, Cl. 549-332.000.
Kansai Paint Co., Ltd.: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,352,902, Cl. 524-40.000.
Kapitelman, Leonid V.: *See—*
Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel, to Massachusetts Institute of Technology. High-intensity solid-state solar-cell device. 4,352,948, Cl. 136-249.000.
Karasawa, Takashi, to Rikagaku Kenkyusho. Magnetic pole structure of an isochronous-cyclotron. 4,353,033, Cl. 328-234.000.
Kataflox Patentverwaltungsgesellschaft mbH: *See—*
Herr, Alfons K., 4,352,719, Cl. 162-128.000.
Kato, Toshikazu: *See—*
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Katto, Takayuki; and Shiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin composition with multi-stage impact modifier. 4,352,910, Cl. 525-83.000.
Katz, Lawrence E.; and Gay, Walter A., to Olin Corporation. Selected 2-trichloromethyl-4-pyrimidinyl carboxylic esters and their use as fungicides. 4,352,806, Cl. 424-251.000.
Kaufman, Arthur. Portable life support system. 4,352,991, Cl. 307-9.000.
Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. Operation control apparatus for AC motors. 4,353,023, Cl. 318-762.000.
Kawai, Tsutomu, to Funai Electric Co., Ltd.; and Efuti Giken Co., Ltd. Video tape recorder. 4,353,101, Cl. 360-85.000.
Kawakatsu, Shiro; and Kawasaki, Toshikazu, to Daihatsu Motor Co., Ltd. Alarming apparatus of vehicle. 4,353,055, Cl. 340-52.00D.
Kawamura, Chikara: *See—*
Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, 4,352,736, Cl. 210-321.300.
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Kubo, Keishi; and Kawamura, Eiichi, 4,352,860, Cl. 428-478.200.
Kawanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Electronic device having a variable density thermal ink jet recorder. 4,353,079, Cl. 346-140.00R.
Kawano, Kyoichiro: *See—*
Murase, Teruo; Kawano, Kyoichiro; and Oshitani, Akiyoshi, 4,352,533, Cl. 339-17.00L.
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Takagi, Izumi, 4,352,501, Cl. 280-16.000.
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Kay, Charles. Slide dock. 4,352,597, Cl. 405-219.000.
Kay, George; and Keskinen, Alan, to Vacco Industries. Disc-reel sound suppressor. 4,352,373, Cl. 137-561.00A.
Kaye, Stanton; and Schreier, Curtis, to Kaye, Stanton. Title edge apparatus for serially produced collated copy. 4,352,554, Cl. 355-40.000.
KB Denver, Inc.: *See—*
Pounds, Walter R., 4,352,968, Cl. 200-302.000.
Kehoe, Gary: *See—*
Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.
Kelco Biospecialties Limited: *See—*
Maury, Lucien G., 4,352,882, Cl. 435-101.000.
Kelsey-Hayes Co.: *See—*
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Kemp, David M.: *See—*
Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., 4,352,679, Cl. 55-38.000.
Kemp, David M., Jr.; and Jones, Hartl R., to FMC Corporation. Deoxygenating apparatus. 4,352,682, Cl. 55-165.000.
Kemper, Reinhard: *See—*
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Kempter, Michael: *See—*
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Kenergy Corporation: *See—*
Weisner, Kent A.; and Walls, Lester L., Jr., 4,352,776, Cl. 264-522.000.
Kepner, Larry A.: *See—*
Benschop, Hendrik P.; Kepner, Larry A.; and de Jong, Leonardus P. A., 4,352,810, Cl. 424-263.000.

- Kern & Co. AG: *See—*
  - Haefliger, Erwin; Hinden, Fritz; and Lardelli, Aldo, 4,352,556, Cl. 356-1.000.
- Keskinen, Alan: *See—*
  - Kay, George; and Keskinen, Alan, 4,352,373, Cl. 137-561.00A.
- Kharchenko, Mikhail S.: *See—*
  - Iskra, Anton L.; Kharchenko, Mikhail S.; and Vasiliev, Jury N., 4,352,593, Cl. 405-108.000.
- Khomchenko, Eduard N.: *See—*
  - Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.
- Khomutov, Semen M.: *See—*
  - Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.
- Kierstead, Richard W.: *See—*
  - Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,352,758, Cl. 549-521.000.
- Kiesewetter, Holger: *See—*
  - Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, 4,352,557, Cl. 356-39.000.
- Kim, Dong H.; and McCaully, Ronald J., to American Home Products Corporation. 3-[[(2,3-Dihydro-1H-indol-2-yl)carbonyl]thio]-propanoic (and acetic) acids as intermediates. 4,352,753, Cl. 260-326.12R.
- Kimble, Joe W.; and Dotson, Edsel E., to Cerberonics, Inc. Small arms laser training device. 4,352,665, Cl. 434-22.000.
- Kimbrough, Laurence B.; and Wilbur, Leonard P., to RCA Corporation. System for applying and tensioning an implosion protecting band to a CRT with a tension between selected limits. 4,352,226, Cl. 29-25.190.
- Kimoto, Yuji, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. FM Detecting circuit. 4,353,034, Cl. 329-103.000.
- Kimura, Kenji: *See—*
  - Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
- King, Irene T.: *See—*
  - King, Lawrence J.; and King, Irene T., 4,353,054, Cl. 340-31.00C.
- King, Lawrence J.; and King, Irene T. Stop sign watcher, a device for monitoring vehicles at full stop sign intersections. 4,353,054, Cl. 340-31.00C.
- King, Wendell L., to Medtronic, Inc. Semiconductor low-threshhold electrode. 4,352,360, Cl. 128-786.000.
- Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., to Garrett Corporation, The. Fluid conditioning apparatus and system. 4,352,273, Cl. 62-87.000.
- Kinzig, Charles M.: *See—*
  - Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,352,757, Cl. 549-513.000.
- Kirby, Robert: *See—*
  - Parker, William R.; and Kirby, Robert, 4,352,590, Cl. 405-17.000.
- Kirsch Company: *See—*
  - Ford, James A., 4,352,433, Cl. 211-105.100.
- Kishi, Toshikazu: *See—*
  - Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.
- Kitahara, Nobuko: *See—*
  - Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, 4,352,875, Cl. 430-42.000.
- Kitajima, Nobuo: *See—*
  - Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, 4,352,875, Cl. 430-42.000.
- Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Circuit for alternate transmission and reception with only one sound source transducer. 4,353,004, Cl. 310-318.000.
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- Klockner-Humboldt-Deutz AG: *See—*
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Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.

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Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.

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Sugiyama, Toshio; and Maeda, Takeshi, 4,352,981, Cl. 250-201.000.

Maehara, Osamu; and Sasaki, Tooru, to Ono Sokki Co., Ltd. Instantaneous torque determining apparatus. 4,352,295, Cl. 73-862.340.

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Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.

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Watanabe, Kazuo; and Makabe, Hachiro, 4,353,021, Cl. 318-696.000.

Makhijani, Raju T., to American Sterilizer Company. Apparatus for closing the door of a pressure chamber. 4,352,439, Cl. 220-316.000.

Makley, James A., to Monarch Marking Systems, Inc. Hand-held labeler. 4,352,710, Cl. 156-384.000.

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Pearline, Donald I.; Corbin, Edgar A., Jr.; and Garner, Marvin A., 4,352,826, Cl. 426-39.000.

MAN Maschinenfabrik Augsburg-Nuernberg AG: *See—*
Vogel, Hans, 4,352,683, Cl. 55-192.000.

Manenkov, Konstantin M.: *See—*
Goldraikh, Genrikh M.; Dubinenko, Askold F.; Kapitelman, Leonid V.; Krivak, Viktor A.; Livshits, Viktor Y.; Manenkov, Konstantin M.; Khomutov, Semen M.; and Khomchenko, Eduard N., 4,352,611, Cl. 408-37.000.

Manville Service Corporation: *See—*
Eschen, Frank W., 4,352,750, Cl. 523-156.000.

Manzara, Anthony P.: *See—*
Tyman, John H. P.; Patel, Mahesh S.; and Manzara, Anthony P., 4,352,944, Cl. 568-766.000.

Marandet, Andre, to Labavia - S.G.E. Control devices for speed reducers. 4,352,405, Cl. 180-282.000.

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Sydansk, Robert D., 4,352,395, Cl. 166-292.000.

Marchionda, Tony F. Tennis racket. 4,352,495, Cl. 273-73.00C.

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Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, 4,352,812, Cl. 424-273.00R.

Marcus, Konrad H.: *See—*
Prince, Edgar D.; and Marcus, Konrad H., 4,352,518, Cl. 296-97.00H.

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Berry, Daniel G.; and Markle, David A., 4,353,087, Cl. 358-101.000.

Marshall, Larry R., to Du Pont de Nemours, E. I., and Company. Nozzle for flash-extrusion apparatus. 4,352,650, Cl. 425-174.80E.

Martin, Frederick W. Scanning ion microscope. 4,352,985, Cl. 250-306.000.

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Maru, Hansraj C., to Energy Research Corporation. Apparatus and method for producing high pressure steam in a fuel cell system. 4,352,863, Cl. 429-17.000.

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Stiglmaier, Manfred; and Hormann, Rudolf, 4,352,520, Cl. 296-182.000.

Masel, Ruben, to Koor Metals Ltd. Saturated vapor gun. 4,352,458, Cl. 239-77.000.

Mashita, Kentaro; and Hanji, Katsumi, to Sumitomo Chemical Company, Limited. Process for the polymerization of ethylene. 4,352,915, Cl. 526-65.000.

Masica, Michael J., Jr.: *See—*
Wengler, Leonard M.; Wicker, Harold J.; and Masica, Michael J., Jr., 4,352,707, Cl. 156-359.000.

Massachusetts Institute of Technology: *See—*
Awerbuch, Tamara E., 4,352,880, Cl. 435-6.000.
Kaplow, Roy; Frank, Robert I.; and Goodrich, Joel, 4,352,948, Cl. 136-249.000.

Massicotte, Raymond C., to Kelsey-Hayes Co. Flotation system. 4,352,732, Cl. 209-17.000.

Masuda, Kazuo. Method of producing a decorative, cylindrical, coated article. 4,352,235, Cl. 29-527.400.

Mathy, Henri L.; and DeFourny, Jacques A., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Wet welding electrodes. 4,352,970, Cl. 219-72.000.

Matsui, Hiroshi; Nishioka, Matsuo; and Onizawa, Takashi, to Matsushita Electric Industrial Co., Ltd. Rotary variable resistor. 4,353,053, Cl. 338-184.000.

Matsui, Michikage: *See—*
Ozaki, Kiyotaka; Matsui, Michikage; and Minemura, Norihiro, 4,352,705, Cl. 156-155.000.

Matsui, Toshiharu; and Kakehi, Sasuga, to Murata Manufacturing Co., Ltd. Ladder type filter. 4,353,045, Cl. 333-190.000.

Matsumoto, Hiroshi: *See—*
Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, 4,352,736, Cl. 210-321.300.

Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, to Dainippon Pharmaceutical Co., Ltd.; and Laboratoire Roger Bellon. Novel naphthyridine derivatives, intermediates thereof, processes for preparation thereof, and use thereof. 4,352,803, Cl. 424-251.000.

Matsumoto, Kenji; and Suzuki, Yasuo, to Bridgestone Tire Co., Ltd. Heavy duty pneumatic radial tire. 4,352,383, Cl. 152-352.00R.

Matsumoto, Tom T., to Matsumoto, Tom T. Refuse compaction trailer. 4,352,624, Cl. 414-400.000.

Matsuoka, Michio: *See—*
Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,352,286, Cl. 73-23.000.

Matsuoka, Yukinori; Muto, Yoshihiko; and Kohno, Mitsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Biaxially drawn polyhexamethylene adipamide film and process for producing same. 4,352,926, Cl. 528-335.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Itoh, Masashi; and Teramae, Kazuo, 4,353,125, Cl. 369-136.000.
Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
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Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,352,286, Cl. 73-23.000.
Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.

Matsushita, Toshihiko: *See—*
Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,352,855, Cl. 428-320.400.

Maury, Lucien G., to Kelco Biospecialties Limited. Production of xanthan gum by emulsion fermentation. 4,352,882, Cl. 435-101.000.

Mautz, Karlheinz: *See—*
Schwarz, Alois; Mautz, Karlheinz; and Schroder, Alexander, 4,352,632, Cl. 416-134.00A.

Maxey, Kirk M., to Upjohn Company, The. Organic compounds substituted heptadeca-5,9- and 5,10-dienoic acid. 4,352,760, Cl. 260-404.000.

Maxwell, Dorothy; and Fell, David A., to American Can Company. Opaque jet ink compositions. 4,352,901, Cl. 524-38.000.

Maycock, Ian C., to Automotive Products Limited. Friction clutch driven plate. 4,352,420, Cl. 192-106.200.

McAuliffe, Gerald N.; and Pearce, Richard E., to Outboard Marine Corporation. Control for hydrostatic transmission. 4,352,302, Cl. 74-474.000.

McCall, John M., to Upjohn Company, The. Methods of treating psychosis. 4,352,805, Cl. 424-250.000.

McCaully, Ronald J.: *See—*
Kim, Dong H.; and McCaully, Ronald J., 4,352,753, Cl. 260-326.12R.

McCollum, John L., to Intel Corporation. Double field oxidation process. 4,352,236, Cl. 29-571.000.

McConnell, Richard L.: *See—*
Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., 4,352,925, Cl. 528-309.000.

McCormack, William: *See—*
Godding, Ronald G.; and McCormack, William, 4,352,605, Cl. 406-29.000.

McCoy, Oval O., Jr. Slatted window insulating insert. 4,352,384, Cl. 160-172.000.

McElroy, Arthur H. Defined force fusion machine for joining plastic pipe. 4,352,708, Cl. 156-378.000.

McGowan, Philip J., to Outboard Marine Corporation. Marine propulsion device with trim sensitive movable trim tab. 4,352,666, Cl. 440-53.000.

McLandrich, Matthew N., to United States of America, Navy. Method of providing phase biasing in a continuous single-mode fiber ring interferometer. 4,352,563, Cl. 356-350.000.

McMullan, James P. Temperature controlled heater. 4,352,976, Cl. 219-217.000.

McMurray, John C.; and Kudelko, Arthur G. Prevailing torque lock nut and method of forming same. 4,352,219, Cl. 10-86.00A.

McNabney, John C., to Interpace Corporation. Fan control for variable air volume terminal unit. 4,352,453, Cl. 236-13.000.

McNamee, James W., Sr.; and Kosareo, Daniel N., to General Motors Corporation. Electrical connector. 4,352,535, Cl. 339-75.0MP.

McRoberts, Louis A.: *See—*
Daniel, Sam M.; and McRoberts, Louis A., 4,353,119, Cl. 364-517.000.

Meador, Richard A.: *See—*
Paap, Hans J.; Meador, Richard A.; and Arnold, Dan M., 4,352,288, Cl. 73-61.00R.

Mechanical Technology Incorporated: *See—*
Dineen, John J., 4,352,269, Cl. 60-517.000.

Meckel, Joachim: *See—*
Flockenhaus, Claus; Joseph, Horst; and Meckel, Joachim, 4,352,618, Cl. 414-148.000.

Medical Components Corp.: *See—*
Kyle, James C., 4,352,951, Cl. 174-152.0GM.

Medlin, Richard C. Lightweight armored vehicle and method of making same using woven polyester glass protective sheets. 4,352,316, Cl. 89-36.00A.

Medtronic, Inc.: *See—*
King, Wendell L., 4,352,360, Cl. 128-786.000.

Meeks, Alan M. G., to ITW Limited. Cable clamps. 4,352,476, Cl. 248-74.00R.

Meier, Walter, to Contraves AG. Connection device for a screened cable. 4,352,950, Cl. 174-35.00C.

Meindl, Gerhard: *See—*
Wille, Roger; and Meindl, Gerhard, 4,353,051, Cl. 336-192.000.

Melendez Andreu, Enrique: *See—*
Guzman Llansa, Eduardo; Arino Maestrojuan, Pablo; and Melendez Andreu, Enrique, 4,352,935, Cl. 549-72.000.

Mellinger Manufacturing Co., Inc.: *See—*
Mellinger, Paul B., 4,352,267, Cl. 56-341.000.

Mellinger, Paul B., to Mellinger Manufacturing Co., Inc. Chemical dispenser for a round baler. 4,352,267, Cl. 56-341.000.

Mellors, Geoffrey W., to Union Carbide Corporation. Solid state electrolytes. 4,352,869, Cl. 429-191.000.

Melton, Randall: *See—*
Childs, William R.; and Melton, Randall, 4,352,334, Cl. 112-266.100.

Menard, Christian; and Gaches, Philippe, to Thomson-CSF. Shaft position sensor for internal combustion engine equipped with an electronic ignition system. 4,352,345, Cl. 123-414.000.

Menk, Hermann; and Kempter, Michael, to Metzeler Kautschuk GmbH. Method for producing rubber articles by subjecting powdered caoutchou composition to intensive mixing and high-speed electrons. 4,352,765, Cl. 264-22.000.

Mennona, Francis A.: *See—*
Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,352,758, Cl. 549-521.000.

Mersch, Roland: *See—*
Metz, Paul; Schockmel, Robert; and Mersch, Roland, 4,352,764, Cl. 264-8.000.

Mesek, Frederick K.; and Mesek, Virginia R., to Johnson & Johnson Baby Products Company. Diaper with contoured panel and contoured elastic means. 4,352,355, Cl. 128-287.000.

Mesek, Virginia R.: *See—*
Mesek, Frederick K.; and Mesek, Virginia R., 4,352,355, Cl. 128-287.000.

Messerschmitt-Boelkow-Blohm GmbH: *See—*
Buchs, Wolfgang; Nowak, Franz; and Woerndle, Rudolf, 4,352,631, Cl. 416-134.00A.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Engel, Herbert; and Hahnel, Thomas, 4,352,314, Cl. 89-1.50F.
Schwarz, Alois; Mautz, Karlheinz; and Schroder, Alexander, 4,352,632, Cl. 416-134.00A.

Metz, Paul; Schockmel, Robert; and Mersch, Roland, to Arbed S.A. Method of making slag sand and slag wool. 4,352,764, Cl. 264-8.000.

Metzeler Kautschuk GmbH: *See—*
Menk, Hermann; and Kempter, Michael, 4,352,765, Cl. 264-22.000.

Metzger, Hubert, to Printing Machinery & Electronics Corporation, Inc. Rotogravure cylinder plating and de-plating apparatus. 4,352,727, Cl. 204-212.000.

Meyborg, Holger: *See—*
Kopp, Richard; Meyborg, Holger; and Schwindt, Jurgen, 4,352,896, Cl. 521-118.000.

Meyer, James H. M., to Sundstrand Corporation. Solenoid pump adapted for noiseless operation. 4,352,645, Cl. 417-417.000.

Meyer, Leonard S., to Victor United, Inc. Method for simultaneously molding a plurality of products. 4,352,769, Cl. 264-134.000.

Meyers, George L.; and Gorshe, Thomas M., to American Can Company. Box transfer apparatus. 4,352,422, Cl. 198-404.000.

- Michaud, Roger P.; and Campbell, Douglas B., deceased (by Campbell, Diane, administratrix), to American Stabilis, Inc. Gas appliance control device. 4,352,656, Cl. 431-72.000.
- Michejda, John A.: *See—*
  - Jaccodine, Ralph J.; and Michejda, John A., 4,353,086, Cl. 357-51.000.
- Michel, Dominique: *See—*
  - Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., 4,352,598, Cl. 405-222.000.
- Microdot Inc.: *See—*
  - Hirsch, Herbert L., 4,352,614, Cl. 411-427.000.
- Midland Bank Trust Company Limited, legal representative, The: *See—*
  - Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and Midland Bank Trust Company Limited, legal representative, The, 4,352,698, Cl. 148-4.000.
- Miisho, Kazuyuki: *See—*
  - Aoyama, Shunichi; and Miisho, Kazuyuki, 4,352,344, Cl. 123-90.180.
- Milan, Ernest A.: *See—*
  - Dunn, William F.; and Milan, Ernest A., 4,352,467, Cl. 242-55.000.
- Miles, Alan J.: *See—*
  - Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., 4,352,353, Cl. 128-201.240.
- Miller, Donald E., to Allen Industries, Inc. Automobile headliner and method of making same. 4,352,522, Cl. 296-214.000.
- Miller Fluid Power Corporation: *See—*
  - Kolchinsky, Abel E.; Bowbin, John F.; and Davis, Wayne M., 4,352,318, Cl. 91-395.000.
- Miller, Gene D., to Motorola, Inc. Amplifier protection circuit. 4,353,037, Cl. 330-298.000.
- Miller, Lee H. Process for applying a metallic image in register to a document of value. 4,352,706, Cl. 156-233.000.
- Miller, Leslie A.: *See—*
  - Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.
- Milliken Research Corporation: *See—*
  - Kluger, Edward W.; and Welch, Calvin D., 4,352,919, Cl. 528-111.000.
  - Kluger, Edward W., 4,352,920, Cl. 528-111.000.
  - Kluger, Edward W.; and Welch, Calvin D., 4,352,921, Cl. 528-111.000.
- Mills, Ross N.: *See—*
  - Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,353,078, Cl. 346-140.00R.
- Milz, Frederick. Locking assembly for structural products. 4,352,587, Cl. 403-252.000.
- Mims, James H., to Westinghouse Electric Corp. Method of reducing side lobes of complementary coded pulses in a coherent pulse compression doppler radar receiving system. 4,353,067, Cl. 343-17.2PC.
- Minami, Setsuo: *See—*
  - Minoura, Kazuo; and Minami, Setsuo, 4,352,541, Cl. 350-6.600.
- Minden, Henry T., to Sperry Corporation. Passive ring laser rate of turn device with acousto-optic modulation. 4,352,562, Cl. 356-350.000.
- Minemura, Norihiro: *See—*
  - Ozaki, Kiyotaka; Matsui, Michikage; and Minemura, Norihiro, 4,352,705, Cl. 156-155.000.
- Minnesota Mining and Manufacturing Company: *See—*
  - Born, Vernon A., 4,353,016, Cl. 318-254.000.
  - Huck, William V., 4,352,469, Cl. 242-71.800.
  - Larimore, Franklin C.; and Heilmann, Steven M., 4,352,359, Cl. 128-640.000.
  - Newman, Charles L., 4,352,429, Cl. 206-439.000.
  - Reece, Jack E., 4,352,872, Cl. 430-523.000.
  - Thiel, Charles G., 4,352,789, Cl. 424-46.000.
  - Tyman, John H. P.; Patel, Mahesh S.; and Manzara, Anthony P., 4,352,944, Cl. 568-766.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Iwao, Soichi, 4,352,551, Cl. 355-3.0FU.
- Minoura, Kazuo; and Minami, Setsuo, to Canon Kabushiki Kaisha. Optical scanning device with constant speed scan. 4,352,541, Cl. 350-6.600.
- Miroshnichenko, Vladimir S.: *See—*
  - Grechanliisky, Stepan S.; Grishanov, Ivan I.; Dimitraki, Sergei N.; Miroshnichenko, Vladimir S.; and Nastas, Vitaly I., 4,352,465, Cl. 242-7.120.
- Miska, Stanley R., to Schlegel Corporation. Pile weather strip with barrier fibers and body fibers. 4,352,845, Cl. 428-88.000.
- Mitchell, Andrew: *See—*
  - Janssen, Kermit W.; and Mitchell, Andrew, 4,352,512, Cl. 285-419.000.
- Mitsubishi Denki Kabushiki Kaisha: *See—*
  - Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, 4,352,853, Cl. 428-304.400.
- Mitsubishi Paper Mills, Ltd.: *See—*
  - Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,352,855, Cl. 428-320.400.
- Mitsubishi Pencil Co., Ltd.: *See—*
  - Ando, Yoichi, 4,352,580, Cl. 401-29.000.
- Mitsubishi Petrochemical Co., Ltd.: *See—*
  - Inagawa, Masanobu; Sai, Toshiyuki; Kawarabuki, Seiichi; and Miwa, Naoto, 4,352,881, Cl. 435-17.000.
  - Tobinaga, Takeshi, 4,352,914, Cl. 525-504.000.
- Mitsubishi Yuka Pharmaceutical Co., Ltd.: *See—*
  - Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
- Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, to Hitachi, Ltd. Photoresist composition. 4,352,878, Cl. 430-167.000.
- Miwa, Naoto: *See—*
  - Inagawa, Masanobu; Sai, Toshiyuki; Kawarabuki, Seiichi; and Miwa, Naoto, 4,352,881, Cl. 435-17.000.
- Miyajima, Mikio: *See—*
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- Miyamoto, Reiji: *See—*
  - Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.
- Mizogami, Susumu: *See—*
  - Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
- Mizutani, Tatsumi; Kanai, Norio; Harada, Kunio; Komatsu, Hideo; and Iida, Shinya, to Hitachi, Ltd. Plasma etcher having isotropic subchamber with gas outlet for producing uniform etching. 4,352,974, Cl. 219-121.0PD.
- Mobil Oil Corporation: *See—*
  - Johnson, D. Emil; and Sharps, G. Vincent, Jr., 4,352,893, Cl. 521-79.000.
  - Murray, James G., 4,352,900, Cl. 523-507.000.
  - Murray, James G., 4,352,908, Cl. 525-98.000.
- Modster, Rudolph W.: *See—*
  - Rowe, James M.; and Modster, Rudolph W., 4,352,565, Cl. 356-360.000.
- Moerkens, Jozef C.; and Woldring, Leonard, to U.S. Philips Corporation. Discharge lamp unit including integral ballast. 4,353,007, Cl. 315-62.000.
- Moffatt, Alfred T.: *See—*
  - Dorfman, Walter, 4,353,008, Cl. 315-114.000.
- Mohasco Corp.: *See—*
  - Holobaugh, Raymond E., Jr., 4,352,523, Cl. 297-85.000.
- Molins Limited: *See—*
  - Carascon, Walter; Dyett, Derek H.; and Hoath, Grantley R., 4,352,604, Cl. 406-28.000.
- Monarch Marking Systems, Inc.: *See—*
  - Makley, James A., 4,352,710, Cl. 156-384.000.
- Mondini, Giancarlo: *See—*
  - Graf Felix; Wirz, Armin; and Mondini, Giancarlo, 4,352,223, Cl. 19-65.0CR.
- Monser, George J., to Raytheon Company. Circularly polarized radio frequency antenna. 4,353,072, Cl. 343-725.000.
- Monser, George J.; and Roy, Albert A., to Raytheon Company. Radio frequency ridged waveguide antenna. 4,353,074, Cl. 343-786.000.
- Moore, Edward A., Jr., to Bethlehem Steel Corporation. Bearing retaining and positioning means. 4,352,229, Cl. 29-116.00R.
- Moore, Neil A.: *See—*
  - Ray, Clifford H.; and Moore, Neil A., 4,353,121, Cl. 367-21.000.
- Morabito, Joseph M.: *See—*
  - Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., 4,352,449, Cl. 228-123.000.
- Moreau, Alain: *See—*
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- Morgan, Charles R., to W. R. Grace & Co. Method of curing a dual UV/thermally curable acrylate composition. 4,352,723, Cl. 204-159.190.
- Mori, Motokuni: *See—*
  - Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
- Mori, Shigemitsu: *See—*
  - Furusawa, Motoyoshi; and Mori, Shigemitsu, 4,352,543, Cl. 350-252.000.
- Mori, Toshihiro, to Nippon Electric Co., Ltd. Digital radio paging communication system. 4,353,065, Cl. 340-825.440.
- Mori, Yasuki: *See—*
  - Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.
- Morino, Toshiharu: *See—*
  - Yamada, Nobuo; and Morino, Toshiharu, 4,352,763, Cl. 261-72.00R.
- Morioka, Akitoshi: *See—*
  - Iwata, Hiroshi; Yamaoka, Tetsuo; and Morioka, Akitoshi, 4,352,546, Cl. 354-126.000.
- Morishita, Hirosada: *See—*
  - Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.
- Morishita, Sadao: *See—*
  - Hiraishi, Shigetoshi; Morishita, Sadao; and Matsushita, Toshihiko, 4,352,855, Cl. 428-320.400.
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  - Cuny, Eckehard K. T.; Lichtenthaler, Frieder W.; and Moser, Alfred R., 4,352,931, Cl. 544-251.000.

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  - Boone, Charles A.; and Pfeifer, Robert F., 4,352,952, Cl. 178-22.090.
  - Daniel, Sam M.; and McRoberts, Louis A., 4,353,119, Cl. 364-517.000.
  - Miller, Gene D., 4,353,037, Cl. 330-298.000.
  - Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, 4,353,038, Cl. 331-36.00C.
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  - Sakai, Masao; and Nishida, Takayuki, 4,352,617, Cl. 414-95.000.
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  - Bryans, Lawrence G.; and Murchison, Loren R., 4,353,041, Cl. 333-21.00A.
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- Mussler, Klaus: *See—*
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- Nabisco Brands Inc.: *See—*
  - Cherukuri, Subraman R.; Friello, Dominick R.; Ferroti, Michael; Jewell, Walter; and D'Amelia, Ronald P., 4,352,822, Cl. 426-4.000.
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  - Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., 4,352,824, Cl. 426-5.000.
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- Nahas, Joseph J.: *See—*
  - Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.
- Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, to Takeda Chemical Industries, Ltd. Hot-melt adhesive composition. 4,352,749, Cl. 525-149.000.
- Nakajima, Seiichiro: *See—*
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- Nakamura, Hideo; Funabashi, Tsuneo; and Koizumi, Haruo, to Hitachi, Ltd. Pulse frequency multiplier circuit. 4,353,030, Cl. 328-38.000.
- Nakamura, Shigeo: *See—*
  - Kumada, Akio; and Nakamura, Shigeo, 4,352,961, Cl. 179-110.00A.
- Nakamura, Shunichi, to Aisin Seiki Kabushiki Kaisha. Sliding window for vehicles. 4,352,257, Cl. 49-406.000.
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  - Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,352,277, Cl. 68-175.000.
- Nakashima, Toshihide; Tanihara, Masao; and Takakura, Koichi, to Kuraray Co., Ltd. Carrier having acrylate copolymer coating for immobilization of bioactive materials. 4,352,884, Cl. 435-180.000.
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  - Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,352,286, Cl. 73-23.000.
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- Nakatsuka, Kenro: *See—*
  - Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
- Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, to Kansai Paint Co., Ltd. Emulsion composition containing cellulose derivative. 4,352,902, Cl. 524-40.000.
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- Nardi, Giovanni, to Whitehead Motofides S.p.A. Mechanism for varying the relative angular velocity of two shafts, in a proportionally continuous manner. 4,352,297, Cl. 74-63.000.
- Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, to Fujitsu Limited. Electrophotographic developing process using flash fixation and toner therefor. 4,352,877, Cl. 430-97.000.
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- National Semiconductor Corporation: *See—*
  - Black, William C., 4,353,105, Cl. 361-101.000.
- National Starch and Chemical Corp.: *See—*
  - Stanley, Henry, 4,352,858, Cl. 428-423.100.
- Naylor, Floyd E., to Phillips Petroleum Company. Conversion of alpha-methylstyrene-type monomers in the formation of copolymers with conjugated diene monomers. 4,352,912, Cl. 525-314.000.
- NCR Corporation: *See—*
  - Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, 4,353,083, Cl. 357-23.000.
- Neal, David B.: *See—*
  - Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.
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- Negi, Shigeto: *See—*
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- Neils, John J. Heat transfer measuring apparatus. 4,352,290, Cl. 374-110.000.
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- Nemiroff, Michael H., to Burroughs Corporation. Thermally stable magnetic film which resists hard bubbles. 4,352,862, Cl. 428-694.000.
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  - Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, 4,352,561, Cl. 356-332.000.
- Nemoto, Masanori: *See—*
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- Neukomm, Walter, to LNS SA. Feeder for automatic lathe. 4,352,615, Cl. 414-17.000.
- Neville, Leonard H. Rigger for a rowing or sculling boat. 4,352,667, Cl. 440-105.000.
- New Hudson Corporation: *See—*
  - Sukenik, Robert J., 4,352,230, Cl. 29-125.000.
- New Nippon Electric Company, Ltd.: *See—*
  - Kaneda, Isao, 4,353,011, Cl. 315-240.000.
- Newman, Charles L., to Minnesota Mining and Manufacturing Company. Means for the storage and aseptic delivery of sterilized articles. 4,352,429, Cl. 206-439.000.
- Newman, Francis M., Jr.: *See—*
  - Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., 4,352,983, Cl. 250-227.000.
- News Log International, Inc.: *See—*
  - Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.
- Neyret, Guy, to Sodex-Magister, Societe d'Exploitation des Brevets Neiman. Anti-theft devices on motor vehicles. 4,352,278, Cl. 70-252.000.
- NGK Spark Plug Co., Ltd.: *See—*
  - Takami, Akio; and Kondo, Kazuo, 4,352,889, Cl. 501-15.000.
- Nichols, Philip T. Tent apparatus and method. 4,352,362, Cl. 135-3.00E.

- Nielsen, Otto V.: *See—*
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- Niemeyer, Matthias: *See—*
  - Herbst, Heiner; and Niemeyer, Matthias, 4,353,084, Cl. 357-30.000.
- Nijboer, Jakob G.: *See—*
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- Niki, Eiji: *See—*
  - Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.
- Nippon Electric Co., Ltd.: *See—*
  - Kai, Tomokazu; and Saito, Akio, 4,352,955, Cl. 179-2.0EB.
  - Mori, Toshihiro, 4,353,065, Cl. 340-825.440.
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  - Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.
  - Sakurai, Hidekazu, 4,353,096, Cl. 358-263.000.
  - Tanahashi, Kyoji, 4,353,001, Cl. 307-542.000.
- Nippon Hoso Kyokai: *See—*
  - Taketoshi, Kazuhisa; and Ogusu, Chihaya, 4,352,834, Cl. 427-38.000.
- Nippon Kogaku K.K.: *See—*
  - Sasaya, Toshihiro, 4,352,547, Cl. 354-200.000.
  - Toyoda, Kenji, 4,352,548, Cl. 354-286.000.
- Nippon Steel Corporation: *See—*
  - Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
- Nippondenso Co., Ltd.: *See—*
  - Fukui, Tomonori; and Eguchi, Osamu, 4,352,321, Cl. 98-2.110.
- Nishida, Takayuki: *See—*
  - Sakai, Masao; and Nishida, Takayuki, 4,352,617, Cl. 414-95.000.
- Nishigaki, Yuji: *See—*
  - Ishihara, Shunichi; Nishigaki, Yuji; Kitajima, Nobuo; and Kitahara, Nobuko, 4,352,875, Cl. 430-42.000.
- Nishikawa, Mitsuyo: *See—*
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- Nishimura, Yoshiro: *See—*
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- Nishino, Yasukazu: *See—*
  - Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.
- Nishioka, Matsuo: *See—*
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- Nishiwaki, Mitsuo, to Nippon Electric Co., Ltd. Digital data transmission system. 4,353,129, Cl. 375-112.000.
- Nishiyodo Air Conditioner Co., Ltd.: *See—*
  - Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, 4,352,227, Cl. 29-33.00F.
- Nissan Motor Co., Ltd.: *See—*
  - Aoyama, Shunichi; and Miisho, Kazuyuki, 4,352,344, Cl. 123-90.180.
  - Hirabayashi, Yuji, 4,352,271, Cl. 60-670.000.
  - Osano, Hisashi; and Morozumi, Takuro, 4,352,346, Cl. 123-440.000.
  - Osano, Hisashi; and Morozumi, Takuro, 4,352,347, Cl. 123-440.000.
  - Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, 4,352,510, Cl. 280-727.000.
  - Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
- Nissho Corporation: *See—*
  - Ujihara, Yoshio, 4,352,354, Cl. 128-214.00R.
- Noda, Masaru, to Hitachi, Ltd. Divider circuit. 4,353,000, Cl. 307-490.000.
- Noguchi, Takeshi: *See—*
  - Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
- Noguchi, Tetsuo: *See—*
  - Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
- Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, to Nippon Electric Co., Ltd. $(1-x)BaO.xTiO_2$ System dielectric material for use in a microwave device. 4,353,047, Cl. 333-247.000.
- Noh, Edwin C. S. Frying pan with a removable grease catcher. 4,352,324, Cl. 99-425.000.
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- Nomoto, Tsugio: *See—*
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- Nomura, Noboru: *See—*
  - Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
- Noorlander, Daniel O. Method of making inflation for teat cup assembly. 4,352,234, Cl. 29-450.000.
- Norcem A.S.: *See—*
  - Smith-Johannsen, Robert, 4,352,694, Cl. 106-106.000.
- Norden Packaging Machinery Aktiebolag: *See—*
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- Norlin Industries, Inc.: *See—*
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- North American Car Corporation: *See—*
  - Anderson, Arthur I.; and Harvatin, Louis J., 4,352,331, Cl. 105-248.000.
- North American Van Lines, Inc.: *See—*
  - Gasper, John S., 4,352,516, Cl. 294-81.00R.
- Norton Company: *See—*
  - Jenkins, Trevor L., 4,352,773, Cl. 264-262.000.
- Norton, James F.: *See—*
  - Olson, Daniel R.; Griffing, Bruce F.; and Norton, James F., 4,352,839, Cl. 427-240.000.
- Norton, William W., to Baxter Travenol Laboratories, Inc. Process and apparatus for manufacturing plastic containers. 4,352,669, Cl. 493-213.000.
- Nortron Corporation: *See—*
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- Norwood, William L., to Logic Controls Corp. Controller for well installations. 4,352,376, Cl. 137-624.150.
- Nossek, Josef, to Siemens Aktiengesellschaft. Switched-capacitor filter circuit having at least one simulated inductor and having a resonance frequency which is one-sixth of the sampling frequency. 4,353,044, Cl. 333-173.000.
- Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., to FMC Corporation. Deoxygenating equipment and method of operation. 4,352,679, Cl. 55-38.000.
- Nouchi, Norimoto: *See—*
  - Kanai, Kenji; Kaminaka, Nobuyuki; Nomura, Noboru; and Nouchi, Norimoto, 4,353,102, Cl. 360-126.000.
- Novak, Frank A.: *See—*
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- Nowak, Franz: *See—*
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- Nowak, Frederick H.; and Bittar, Joseph, to Otis Elevator Company. Elevator floor cutoff. 4,352,411, Cl. 187-29.00R.
- Nowak, Frederick H.: *See—*
  - Bittar, Joseph; and Nowak, Frederick H., 4,352,410, Cl. 187-29.00R.
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- Noyes, Robert M.; and Voeller, Roger W., to Procter & Gamble Company, The. Coffee extraction process. 4,352,829, Cl. 426-387.000.
- Ny, Nils O., to RCA Corporation. Musical keyboard for home computer. 4,352,313, Cl. 84-425.000.
- Nylen, Ulf T. G., to Gambro AB. Apparatus for diluting a concentrated solution. 4,352,374, Cl. 137-564.500.
- Oak Industries, Inc.: *See—*
  - den Toonder, Pieter; and Fondse, Pieter J., 4,353,088, Cl. 358-120.000.
- O'Brien, Larry, to Leco Corporation. Combustion system. 4,352,781, Cl. 422-78.000.
- Occidental Research Corporation: *See—*
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- Ocera, Girolamo: *See—*
  - D'Oro, Enzo C.; and Ocera, Girolamo, 4,353,042, Cl. 333-24.100.
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- Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, to Hitachi, Ltd. Resin molded stators. 4,352,897, Cl. 523-220.000.
- Ogata, Minoru: *See—*
  - Takeda, Takashi; Ogata, Minoru; and Kurabayashi, Sadasuke, 4,353,097, Cl. 358-287.000.
- Ogawa, Masasi: *See—*
  - Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, 4,352,873, Cl. 430-545.000.
- Ogusu, Chihaya: *See—*
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- Ohara, Yuji, to Fuji Photo Film Co., Ltd. Light beam scanning device. 4,352,984, Cl. 250-234.000.
- Ohashi, Toshio: *See—*
  - Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.
- Ohata, Yasufumi: *See—*
  - Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, 4,352,853, Cl. 428-304.400.
- Ohkawa, Takehisa: *See—*
  - Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, 4,352,859, Cl. 428-425.900.
- Ohkawa, Tihiro, to General Atomic Company. Integrated photovoltaic electrolytic cell. 4,352,722, Cl. 204-129.000.
- Ohshima, Ken: *See—*
  - Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
- Ohta, Sumio: *See—*
  - Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.

- Ojima, Iwao; and Suga, Shigemi, to Sagami Chemical Research Center. Process for the preparation of dipeptides. 4,352,752, Cl. 260-112.50R.
- Oka, Hiroyuki: *See—*
  - Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, 4,352,876, Cl. 430-58.000.
- Oka, Joji: *See—*
  - Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
- Okabe, Yoichi: *See—*
  - Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.
- Okada, Seiji: *See—*
  - Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, 4,352,877, Cl. 430-97.000.
- Okamoto, Akira: *See—*
  - Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
- Oki Electric Industry Co., Ltd.: *See—*
  - Takayuki, Tanaka, 4,353,104, Cl. 361-91.000.
- Okiyama, Toshiaki, to Fuji Photo Film Co., Ltd. Transfer film for use in electrophotographic copiers. 4,352,847, Cl. 428-141.000.
- Okuyama, Hirohumi: *See—*
  - Narusawa, Toshiaki; Okada, Seiji; Muramatsu, Kiyohide; Yagishita, Teruo; and Okuyama, Hirohumi, 4,352,877, Cl. 430-97.000.
- Olin Corporation: *See—*
  - Katz, Lawrence E.; and Gay, Walter A., 4,352,806, Cl. 424-251.000.
- Oliver, John E., Jr.; and Lott, W. Gerald. Completion and workover fluid filtration system. 4,352,739, Cl. 210-739.000.
- Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Self centering clutch thrust bearing. 4,352,419, Cl. 192-98.000.
- Olson, Daniel R.; Griffing, Bruce F.; and Norton, James F., to General Electric Company. Method of forming a layer of polymethyl methacrylate on a surface of silicon dioxide. 4,352,839, Cl. 427-240.000.
- Olson, Lloyd C.: *See—*
  - Cornelius, Gail; and Olson, Lloyd C., 4,352,464, Cl. 239-713.000.
- Olsson, Alvar; and Giacomelli, Peter, to Tetra Pak Developpement SA. Arrangement for the oriented feeding out of caps. 4,352,421, Cl. 198-392.000.
- Olympus Optical Co., Ltd.: *See—*
  - Imai, Toshihiro, 4,352,544, Cl. 350-464.000.
  - Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
- Ong, DeWitt G.: *See—*
  - Davis, Paul C.; Jackson, Raymond G.; Nahas, Joseph J.; Nelson, Dale H.; Ong, DeWitt G.; and Wittman, Brian A., 4,352,958, Cl. 179-84.0VF.
- Onizawa, Takashi: *See—*
  - Matsui, Hiroshi; Nishioka, Matsuo; and Onizawa, Takashi, 4,353,053, Cl. 338-184.000.
- Ono Sokki Co., Ltd.: *See—*
  - Maehara, Osamu; and Sasaki, Tooru, 4,352,295, Cl. 73-862.340.
- Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Purification process. 4,352,942, Cl. 568-306.000.
- Optilon W. Erich Heilmann GmbH: *See—*
  - Heimberger, Helmut, 4,352,654, Cl. 425-545.000.
- Orban, John N.: *See—*
  - Bettinger, George E.; and Orban, John N., 4,352,744, Cl. 252-313.00S.
- Orima, Hajime, to Firster Corporation Limited. Shock absorbing device. 4,352,514, Cl. 293-110.000.
- Orion Industries, Inc.: *See—*
  - Aro, Ernesto M., 4,352,519, Cl. 296-97.00G.
- Orlandoni, Franco. Portable keyboard musical instrument. 4,352,310, Cl. 84-1.010.
- O'Rourke, Peter W. Water bed base. 4,352,217, Cl. 5-451.000.
- Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., to Concorde Battery Corp. Nonspill vented closure assembly for storage battery. 4,352,364, Cl. 137-43.000.
- Orta, Phillip N.; and Spector, George. Hand signals. 4,352,461, Cl. 239-211.000.
- Orth, Heinz W.; and Sloot, James W., to Dresser Industries, Inc. Rotational viscometer. 4,352,287, Cl. 73-60.000.
- Osaka Chemical Laboratory Co., Ltd.: *See—*
  - Arichi, Shigeru; and Uchida, Yoshihiro, 4,352,796, Cl. 424-195.000.
- Osano, Hisashi; and Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Electronic control system for a carburetor. 4,352,346, Cl. 123-440.000.
- Osano, Hisashi; and Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Electronic control system for a carburetor. 4,352,347, Cl. 123-440.000.
- Osegowitsch, Viktor: *See—*
  - Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, 4,352,448, Cl. 226-108.000.
- Oshitani, Akiyoshi: *See—*
  - Murase, Teruo; Kawano, Kyoichiro; and Oshitani, Akiyoshi, 4,352,533, Cl. 339-17.00L.
- Oswalt, William L. Livestock identification system. 4,352,253, Cl. 40-300.000.
- Ota, Akiho: *See—*
  - Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,352,435, Cl. 215-1.00C.
- Otis Elevator Company: *See—*
  - Bittar, Joseph; and Nowak, Frederick H., 4,352,410, Cl. 187-29.00R.
  - Bittar, Joseph; and Nowak, Frederick H., 4,352,412, Cl. 187-29.00R.
  - Nowak, Frederick H.; and Bittar, Joseph, 4,352,411, Cl. 187-29.00R.
- Otis Engineering Corporation: *See—*
  - Fisher, Ernest P., Jr., 4,352,366, Cl. 137-71.000.
- Ott, Lothar; and Gessner, Dieter, to tpT Machinery Corporation. Clamping device for molds used in the blow molding of hollow plastic articles. 4,352,653, Cl. 425-541.000.
- Ott, Louis E., to Standard Oil Company (Indiana). Nitrogen fertilizers. 4,352,688, Cl. 71-11.000.
- Otto Hansel GmbH: *See—*
  - Hansel, Otto; Lesch, Hans; and Lesch, Hans-Bernd, 4,352,265, Cl. 53-541.000.
- Outboard Marine Corporation: *See—*
  - Lloyd, Ronald B.; and Wick, Gerald H., 4,352,266, Cl. 56-11.300.
  - McAuliffe, Gerald N.; and Pearce, Richard E., 4,352,302, Cl. 74-474.000.
  - McGowan, Philip J., 4,352,666, Cl. 440-53.000.
- Owatari, Akio; and Yamada, Yuki, to Shinshu Seiki Kabushiki Kaisha. Liquid ink for printers. 4,352,691, Cl. 106-20.000.
- Owatonna Tool Company: *See—*
  - Landrum, Michael T.; and Anderson, Terrance M., 4,352,644, Cl. 417-402.000.
- Owen, James G.; and Grimes, John M., to Fieldcrest Mills, Inc. Decorative sheeting fabric. 4,352,380, Cl. 139-426.00R.
- Owens-Corning Fiberglas Corporation: *See—*
  - Crosby, E. Eugene, 4,352,686, Cl. 65-15.000.
- Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, to Hitachi, Ltd. Pipe welding apparatus. 4,352,975, Cl. 219-125.110.
- Ozaki, Kiyotaka; Matsui, Michikage; and Minemura, Norihiro, to Teijin Limited. Process for the preparation of leatherlike sheet materials. 4,352,705, Cl. 156-155.000.
- Ozawa, Takashi, to Rank Xerox Limited. Electrophotographic copying method and apparatus. 4,352,549, Cl. 355-3.00R.
- Ozer, Theodore: *See—*
  - Yankovoy, Alexander; and Ozer, Theodore, 4,352,610, Cl. 408-1.00R.
- P.O.P. Displays, Inc.: *See—*
  - Loew, Jonathan A., 4,352,478, Cl. 248-221.300.
- Paap, Hans J.; Meador, Richard A.; and Arnold, Dan M., to Texaco Inc. Measurement of salt content in petroleum flow lines. 4,352,288, Cl. 73-61.00R.
- Palfalvi, Gyorgy: *See—*
  - Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.
- Palmers, Hilbert; and Chermin, Hubertus M. J., to U.S. Philips Corporation. Direct current to alternating current converter. 4,353,116, Cl. 363-133.000.
- Pandolfe, William D., to Gaulin Corporation. Homogenizing method. 4,352,573, Cl. 366-176.000.
- Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., to Compagnie Generale pour les Developpements Operationnels des Richesses Sous-Marines "C.G. Doris". Concrete structure for the transmission of loads from the steel lattice of a marine platform and a method of forming said structure. 4,352,598, Cl. 405-222.000.
- Park, Timothy A.; and Turner, Brian C., to Ano-Coil Limited. Process for applying designs to aluminum strip. 4,352,721, Cl. 204-35.00N.
- Parker, William R.; and Kirby, Robert. Stabilization of erodible marine or fluviatile sediments. 4,352,590, Cl. 405-17.000.
- Parks, Robert E., to Antek Instruments, Inc. Chemiluminescent sulfur detection apparatus and method. 4,352,779, Cl. 422-52.000.
- Parlebas, Gerard G.; and Lebars-Parlebas, Solange. Device for mounting closures on door panels. 4,352,279, Cl. 70-451.000.
- Parnell, John V.: *See—*
  - Wood, Robert W.; Parnell, John V.; and Hoefler, Andrew C., 4,352,832, Cl. 426-589.000.
- Parravicini, Roberto. Cardiac valve prosthesis. 4,352,211, Cl. 3-1.500.
- Pascucci, Vito S.; and Aiello, Elmer J., to G. Leblanc Corporation. Reed holder. 4,352,428, Cl. 206-314.000.
- Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, to Carl Freudenberg, Firma. Cleaning cloth. 4,352,846, Cl. 428-105.000.
- Pataki, Arpad: *See—*
  - Cser, Gyula; and Pataki, Arpad, 4,352,342, Cl. 123-41.540.
- Patel, Mahesh S.: *See—*
  - Tyman, John H. P.; Patel, Mahesh S.; and Manzara, Anthony P., 4,352,944, Cl. 568-766.000.
- Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., to Paton, H. Neil; and Skilling, John B. Damped rubber tired vehicle suspension. 4,352,509, Cl. 280-716.000.
- Patterson, Charlton A.; and Wilson, Richard M., to Union Carbide Corporation. Method for making a metal-to-ceramic insulator seal for electrochemical cells. 4,352,714, Cl. 156-626.000.
- Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., to Spectra-Physics, Inc. Dual piston pump. 4,352,636, Cl. 417-22.000.
- Patton, Tad L., to Exxon Research & Engineering Co. Polymers characterized by 1,3-imidazolidine-1,3-diyl rings plasticized with diaryl ketones. 4,352,905, Cl. 524-359.000.
- Paucot, Andre, to Solvay & Cie. (Societe Anonyme). Chlorobromodicarboxylic acids and processes for their manufacture and their use. 4,352,939, Cl, 560-120.000.

Paul Forkardt Kommanditgesellschaft: *See—*

Blattry, Hans; and Antoni, Herbert, 4,352,500, Cl. 279-121.000.

Paul, William A. Apparatus for applying gasket-forming material to workpieces. 4,352,712, Cl. 156-540.000.

Paulet, Jacques: *See—*

Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,352,673, Cl. 23-230.0EP.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*

Dugua, Jacques, 4,352,857, Cl. 428-402.000.

Pearce, Richard E.: *See—*

McAuliffe, Gerald N.; and Pearce, Richard E., 4,352,302, Cl. 74-474.000.

Pearcey, Dale A.: *See—*

Pearcey, Leroy G.; and Pearcey, Dale A., 4,352,260, Cl. 52-80.000.

Pearcey, Leroy G.; and Pearcey, Dale A. Underground house and construction method. 4,352,260, Cl. 52-80.000.

Pearline, Donald I.; Corbin, Edgar A., Jr.; and Garner, Marvin A., to Mallinckrodt International Corp. Process for preparing acid cheese curd. 4,352,826, Cl. 426-39.000.

Pease Company: *See—*

Bursk, William M.; and Doll, Jacob G., 4,352,258, Cl. 49-468.000.

Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., to Ranco Incorporated. Displacement measuring transducer. 4,353,050, Cl. 336-30.000.

Pendleton, Robert G.: *See—*

Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.

Pennsylvania Engineering Corp.: *See—*

Hixenbaugh, Dennis L., 4,352,486, Cl. 266-99.000.

Perkin-Elmer Corporation, The: *See—*

Berry, Daniel G.; and Markle, David A., 4,353,087, Cl. 358-101.000.

Perodjon, Jean, to Commissariat a l'Energie Atomique. Optical system for scanning a part with a beam and especially an ultrasonic or electromagnetic beam. 4,352,294, Cl. 73-642.000.

Perrella, Guido, to DBM Industries Limited. Die vent for mold cavities. 4,352,388, Cl. 164-305.000.

Perron, Reginald F., to Hubscher Ribbon Corporation Limited. Free-spinning embossers. 4,352,703, Cl. 156-88.000.

Persson, Torsten B.: *See—*

Jacobsen, Edmond M.; Nielsen, Otto V.; and Persson, Torsten B., 4,352,649, Cl. 425-83.100.

Perstorp AB: *See—*

Johansson, Olof J. A.; and Ulmsten, Ulf I., 4,352,790, Cl. 424-78.000.

Peter, Kurt; and Muck, Gerhard. Cartridge package for rapid loading of a magazine or clip for automatic and semiautomatic weapons. 4,352,254, Cl. 42-88.000.

Petersen, Godber, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Sheet folding apparatus for use with continuous web printing machine. 4,352,671, Cl. 493-424.000.

Peterson, John J.: *See—*

Shum, Edward K.; and Peterson, John J., 4,353,099, Cl. 360-27.000.

Peterson, Russell I., Jr., to Conair, Inc. Auger feed device. 4,352,426, Cl. 198-657.000.

Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., to Eastman Kodak Company. Heat resistant copolyester adhesives. 4,352,925, Cl. 528-309.000.

Pfeifer, Robert F.: *See—*

Boone, Charles A.; and Pfeifer, Robert F., 4,352,952, Cl. 178-22.090.

Pfeiler, Manfred, to Siemens Aktiengesellschaft. Tomographic apparatus for the production of transverse layer images. 4,352,986, Cl. 378-14.000.

Pfizer Inc.: *See—*

Welch, Willard M.; and Harbert, Charles A., 4,352,807, Cl. 424-256.000.

Wernau, William C., 4,352,741, Cl. 252-8.55D.

Pharr, David M.: *See—*

Fleming, Henry P.; Pharr, David M.; and Thompson, Roger L., 4,352,827, Cl. 426-270.000.

Phillipps, Gordon H.; Humber, David C.; Ewan, George B.; and Coomber, Barry A., to Glaxo Group Limited. 11 α-Amino-androstanes. 4,352,798, Cl. 424-242.000.

Phillips Petroleum Company: *See—*

Naylor, Floyd E., 4,352,912, Cl. 525-314.000.

Siedenstrang, Roy W.; and Thorsrud, Agmund K., 4,352,854, Cl. 428-318.800.

Piaggio & C. S.p.A.: *See—*

Batoni, Giovanni, 4,352,343, Cl. 123-51.0BA.

Pianalto, Adriano, to Gipiemme s.r.l. Rear brake holder for bicycles. 4,352,504, Cl. 280-281.00R.

Piccioni, Gino: *See—*

Inzoli, Luciano; and Piccioni, Gino, 4,352,994, Cl. 307-149.000.

Pickens, George O., to United States of America, Navy. Low-frequency sound source for towed array condition appraiser system (TACAS). 4,353,120, Cl. 367-13.000.

Pierce, John M., to Fairchild Camera and Instrument. Process for suppressing electromigration in conducting lines formed on integrated circuits by control of crystalline boundary orientation. 4,352,239, Cl. 29-590.000.

Pierre, Gallet G. Multi-responder telephone intercept apparatus. 4,352,956, Cl. 179-6.040.

Pike, Russell E.: *See—*

Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,352,808, Cl. 424-258.000.

Pillis, Lewis J.; and Davis, Lois T., to Sybron Corporation. Process for treating wastewater containing phenolics and microorganism capable of degrading phenolics. 4,352,886, Cl. 435-262.000.

Pitre, Davide: *See—*

Felder, Ernst; and Pitre, Davide, 4,352,788, Cl. 424-5.000.

Plaga, Kurt, to Bochumer Eisenhuette Heintzmann GmbH & Co. Roof support for a mine gallery which extends at a relatively large angle inclined to the horizontal. 4,352,602, Cl. 405-291.000.

Plastics Engineering Company: *See—*

Lee, Chung J., 4,352,907, Cl. 524-537.000.

Plessey Handel und Investments AG: *See—*

Richardson, Christopher K., 4,353,127, Cl. 370-32.000.

Plessey Overseas Limited: *See—*

Galpin, Robert K., 4,352,999, Cl. 307-354.000.

Plessey Peripheral Systems: *See—*

Veale, John R., 4,353,020, Cl. 318-601.000.

Plet, Catherine. Apparatus for producing a skewered stack of food. 4,352,242, Cl. 30-130.000.

Pleus, Edwin F. Apparatus for processing whole beets. 4,352,325, Cl. 99-483.000.

Poduje, Noel S.: *See—*

Abbe, Robert C.; and Poduje, Noel S., 4,353,029, Cl. 324-236.000.

Polaroid Corporation: *See—*

Land, Edwin H.; and Walworth, Vivian K., 4,352,874, Cl. 430-568.000.

Taylor, Lloyd D.; and Schwarzel, William C., 4,352,871, Cl. 430-505.000.

Polensky & Zollner: *See—*

Wittfoht, Hans, 4,352,220, Cl. 14-1.000.

Pollman, Frederic W., to Sundstrand Corporation. Electro-hydraulic control structure. 4,352,367, Cl. 137-82.000.

Pompes Essa Mico: *See—*

Duveau, Francois, 4,352,298, Cl. 74-84.00R.

Poock, Darwin N., to FMC Corporation. Pendant supported hydraulic extensible boom. 4,352,434, Cl. 212-186.000.

Popp, Franz: *See—*

Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.

Post, James R.: *See—*

Edelmann, Frank E.; and Post, James R., 4,352,262, Cl. 52-744.000.

Pounds, Walter R., to KB Denver, Inc. Elastomeric boot for a keyboard subassembly. 4,352,968, Cl. 200-302.000.

Powell, Ralph E. Brakes. 4,352,415, Cl. 188-156.000.

PPG Industries, Inc.: *See—*

Bonaddio, Robert M.; and Dahlberg, John R., 4,352,447, Cl. 225-2.000.

Prather, Richard A., to Upjohn Company, The. Process and composition. 4,352,696, Cl. 106-163.00R.

Precision Data, Inc.: *See—*

Shum, Edward K.; and Peterson, John J., 4,353,099, Cl. 360-27.000.

Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing ethanol. 4,352,946, Cl. 568-902.000.

Pretzer, Wayne R.: *See—*

Habib, Mohammad M.; and Pretzer, Wayne R., 4,352,947, Cl. 568-902.000.

Preuhs, Hans-Jurgen: *See—*

Baumges, Hans; and Preuhs, Hans-Jurgen, 4,352,466, Cl. 242-18.0PW.

Pridgen, Lendon N.: *See—*

Lam, Bing L.; and Pridgen, Lendon N., 4,352,933, Cl. 544-320.000.

Priebe, Durward H.: *See—*

English, Jack A.; Greve, James E.; Hufford, James N.; and Priebe, Durward H., 4,352,966, Cl. 200-16.00D.

Prince Corporation: *See—*

Prince, Edgar D.; and Marcus, Konrad H., 4,352,518, Cl. 296-97.00H.

Prince, Edgar D.; and Marcus, Konrad H., to Prince Corporation. Visor. 4,352,518, Cl. 296-97.00H.

Pring, Peter: *See—*

Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Pring, Peter, 4,352,761, Cl. 260-544.00A.

Printing Machinery & Electronics Corporation, Inc.: *See—*

Metzger, Hubert, 4,352,727, Cl. 204-212.000.

Pritchard, Dalton H.: *See—*

Durbin, Jesse, Jr.; and Pritchard, Dalton H., 4,353,093, Cl. 358-160.000.

Procter & Gamble Company, The: *See—*

Noyes, Robert M.; and Voeller, Roger W., 4,352,829, Cl. 426-387.000.

Produits Chimiques de la Montagne Noire: *See—*

Combes, Claude; Arnaudis, Jean; Arnaudis, Germaine; and Marcou, Lucien, 4,352,812, Cl. 424-273.00R.

Proud, Joseph M.: *See—*

Fallier, Charles N., Jr.; and Proud, Joseph M., 4,353,012, Cl. 315-289.000.

Provi, Michael A., to Dasco Products, Inc. Tool head and handle interconnection. 4,352,381, Cl. 145-2.00R.

Prussin, Samuel: *See—*

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,352,833, Cl. 427-4.000.

Puglia, Wayne J.; Kehoe, Gary; Witzel, Frank; Clark, K. Warren; and Mackay, Donald A. M., to Nabisco Brands, Inc. Chewing gum containing fatty or gelatinous sweetner and method. 4,352,824, Cl. 426-5.000.

Pulawski, Casimir: *See—*

Notardonato, Luigi; Pulawski, Casimir; and Kemp, David M., 4,352,679, Cl. 55-38.000.

Purssell, Robert F.: *See—*

Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.

Purtell, Rufus J., to Tri-Matic, Inc. Automatic furrow guide. 4,352,460, Cl. 239-184.000.

Pyee, Maurice, to Agence Nationale de Valorization de la Recherche. Broad band system operating in the submillimeter wave range. 4,353,070, Cl. 343-701.000.

Quinlan, James M., to American Cyanamid Co. Diethylcarbamazine resinate and styrlpyridinium resinate-diethylcarbamazine resinate edible anthelmintic tablets for companion animals. 4,352,891, Cl. 521-32.000.

R F Monolithics, Inc.: *See—*

Hartmann, Clinton S., 4,353,046, Cl. 333-194.000.

R. M. Wade & Co.: *See—*

Cornelius, Gail; and Olson, Lloyd C., 4,352,464, Cl. 239-713.000.

Racek, Alfred. Gas lighter. 4,352,658, Cl. 431-254.000.

Racz, Janos A.: *See—*

Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,352,530, Cl. 339-5.00M.

Ragettli, Christian. Method and apparatus for bending pipes. 4,352,281, Cl. 72-131.000.

Ralston Purina Company: *See—*

Krinski, Thomas L.; and Garey, Carroll L., 4,352,692, Cl. 106-79.000.

Ranco Incorporated: *See—*

Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.

Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., to Schering Corporation. 3-Aralkyloxy-2,3-dihydro-2-(imidazolylmethyl)benzo(b)thiophenes and related derivatives, their use as antimicrobials and pharmaceutical formulations useful therefore. 4,352,808, Cl. 424-258.000.

Rank Xerox Limited: *See—*

Ozawa, Takashi, 4,352,549, Cl. 355-3.00R.

Raudenbusch, Werner T.: *See—*

Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.

Ray, Clifford H.; and Moore, Neil A., to Fairfield Industries, Inc. High resolution, marine seismic stratigraphic system. 4,353,121, Cl. 367-21.000.

Raymond, Joseph H., Jr.; and Gudger, Keith H., to Texas Instruments Incorporated. Static MOS memory cell using inverted N-channel field-effect transistor. 4,352,997, Cl. 307-279.000.

Raytheon Company: *See—*

Monser, George J., 4,353,072, Cl. 343-725.000.

Monser, George J.; and Roy, Albert A., 4,353,074, Cl. 343-786.000.

RCA Corporation: *See—*

Durbin, Jesse, Jr.; and Pritchard, Dalton H., 4,353,093, Cl. 358-160.000.

Hoover, Merle V., 4,353,036, Cl. 330-264.000.

Kimbrough, Laurence B.; and Wilbur, Leonard P., 4,352,226, Cl. 29-25.190.

Ny, Nils O., 4,352,313, Cl. 84-425.000.

Roach, William R., 4,352,564, Cl. 356-354.000.

Robinson, John W.; and Kaganowicz, Grzegorz, 4,352,836, Cl. 427-39.000.

Schade, Horst E. P., 4,353,006, Cl. 313-457.000.

Willis, Donald H., 4,353,014, Cl. 315-411.000.

Rederiaktiebolaget Nordstjernan: *See—*

Jonsson, Kurt A., 4,352,391, Cl. 165-1.000.

Reece, Jack E., to Minnesota Mining and Manufacturing Company. Stabilization of latent images in photothermographic elements. 4,352,872, Cl. 430-523.000.

Reed, David A.: *See—*

Jones, Robert A.; and Reed, David A., 4,352,678, Cl. 51-307.000.

Reed, Weldon N.; and Galvin, Thomas J., to ICI Americas Inc. Blister resistant calcium carbonate filled polyisocyanurate resin molding compositions. 4,352,906, Cl. 524-426.000.

Regency Electronics, Inc.: *See—*

Buennagel, James A.; and Koch, Richard C., 4,352,992, Cl. 307-40.000.

Rehacek, Josef: *See—*

Bracco, Umberto; Viret, Jean-Louis; and Rehacek, Josef, 4,352,746, Cl. 252-398.000.

Reid, Lola C. M.; and Rojkind, Marcos, to Albert Einstein College of Medicine of Yeshiva University. Method and article for culturing differentiated cells. 4,352,887, Cl. 435-240.000.

Reliance Electric Company: *See—*

Baker, Richard H.; and Semanchik, Bruce D., 4,352,998, Cl. 307-311.000.

LaMothe, Hilary, 4,352,962, Cl. 179-170.00R.

Renes, Harrie: *See—*

Traas, Petrus C.; Renes, Harrie; and Boelens, Harmannus, 4,352,748, Cl. 252-522.00R.

Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, to A. Nattermann & Cie GmbH. 2-Phenyl-1,2-benzisoselenazol-3(2H)-one containing pharmaceutical preparations and process for the treatment of rheumatic diseases. 4,352,799, Cl. 424-244.000.

Revells, Robert G.; and Eggert, John N., to Libbey-Owens-Ford Company. Apparatus for washing curved sheets. 4,352,221, Cl. 15-77.000.

Rhone-Poulenc Agrochimie: *See—*

Fahmy, Mohamed A., 4,352,762, Cl. 260-972.000.

Rialland, Jean P.; and Barbier, Jean P., to Bridel, Laiteries E. Cation-exchange of milk and products thereof. 4,352,828, Cl. 426-271.000.

Ribble, Franklin; and Huber, William E., to Wilkerson Corporation. Releasable clamp for modular connector. 4,352,511, Cl. 285-91.000.

Richard, Gordon L.: *See—*

Dormer, Kenneth J.; and Richard, Gordon L., 4,352,960, Cl. 179-107.0BC.

Richard, Jean P.: *See—*

Chartier, Robert M.; and Richard, Jean P., 4,352,436, Cl. 215-252.000. .

Richardson, Christopher K., to Plessey Handel und Investments AG. Duplex transceiver arrangements for rebroadcast of signals. 4,353,127, Cl. 370-32.000.

Richter, Hanno: *See—*

Leibhard, Erich; Richter, Hanno; Lang, Gusztav; Popp, Franz; and Goellnitz, Heinz, 4,352,442, Cl. 222-146.0HE.

Rickabaugh, Lawrence J.: *See—*

Hall, Peter M.; Howland, Frank L.; Morabito, Joseph M.; and Rickabaugh, Lawrence J., 4,352,449, Cl. 228-123.000.

Ricoh Company, Ltd.: *See—*

Kubo, Keishi; and Kawamura, Eiichi, 4,352,860, Cl. 428-478.200.

Rieter Machine Work, Ltd.: *See—*

Graf Felix; Wirz, Armin; and Mondini, Giancarlo, 4,352,223, Cl. 19-65.0CR.

Rietveld, Jan J.; and Moreau, Alain, to U.S. Philips Corporation. Switched-mode voltage converter. 4,353,112, Cl. 363-16.000.

Riggs, Robert R.; and Hunt, Paulmer D., to Bendix Corporation, The. Intermittent motion gear apparatus. 4,352,299, Cl. 74-84.00R.

Rikagaku Kenkyusho: *See—*

Karasawa, Takashi, 4,353,033, Cl. 328-234.000.

Roach, William R., to RCA Corporation. Missing order defect detection apparatus. 4,352,564, Cl. 356-354.000.

Robert Bosch GmbH: *See—*

Heinz, Richard; and Kutzner, Reinhard, 4,353,098, Cl. 360-9.100.

Hoppe, Karl-Heinz, 4,353,091, Cl. 358-139.000.

Robertshaw Controls Company: *See—*

Hardin, George T., 4,352,532, Cl. 339-15.000.

Robinson, John W.; and Kaganowicz, Grzegorz, to RCA Corporation. Method for obtaining an abrasive coating. 4,352,836, Cl. 427-39.000.

Robinson, Joseph G.; Carswell, Angela M.; and Barnes, David I., to Coal Industry (Patents) Limited. Method of producing an improved poly-(amide-imide) resin by reacting a phenanthrene with formaldehyde followed by oxidizing to produce a polycarboxylated product followed by reaction with an aromatic diamine. 4,352,922, Cl. 528-232.000.

Rocco, Harold S. Insulated tire press bag well and a method therefor. 4,352,647, Cl. 425-48.000.

Rochkind, Allen B.: *See—*

Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.

Rock, Erich: *See—*

Mages, Bernhard; and Rock, Erich, 4,352,222, Cl. 16-287.000.

Rocket Research Company: *See—*

Daly, James M., 4,352,782, Cl. 422-179.000.

Rockwell International Corporation: *See—*

Ghosh, Amit K., 4,352,280, Cl. 72-38.000.

Scott, James P., 4,352,414, Cl. 188-73.340.

Rodenbeck, Philip G., to General Electric Company. Apparatus for stripping insulation from wire. 4,352,305, Cl. 84-9.510.

Rodionov, Vladimir I.: *See—*

Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.

Roeschlaub, John G.: *See—*

Moudgil, Brij M.; and Roeschlaub, John G., 4,352,731, Cl. 209-9.000.

Rogers, William J., Jr. Method for positioning portable structures. 4,352,628, Cl. 414-786.000.

Rohde, Norbert-Josef. Square level for drawing angles and parallels. 4,352,247, Cl. 33-428.000.

Rojkind, Marcos: *See—*

Reid, Lola C. M.; and Rojkind, Marcos, 4,352,887, Cl. 435-240.000.

Rose, Boyd W., to FMC Corporation. Fruit dryer. 4,352,249, Cl. 34-212.000.

Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, to Motorola, Inc. Wideband, synthesizer switched element voltage controlled oscillator. 4,353,038, Cl. 331-36.00C.

Rosenlind, K. Goran; and Brandberg, S. B. Thomas, to Svenska Streck Aktiebolag. Tube key. 4,352,441, Cl. 222-99.000.

Rosso, John R.: *See—*

Valiga, Richard E.; and Rosso, John R., 4,352,601, Cl. 405-270.000.

Rost, Helmut; and Walz, Alfred, to Siemens Aktiengesellschaft. Ultrasonic transmitter. 4,353,123, Cl. 367-137.000.

Rowe, James M.; and Modster, Rudolph W. Speckle pattern interferometer. 4,352,565, Cl. 356-360.000.

Roy, Albert A.: *See—*

Monser, George J.; and Roy, Albert A., 4,353,074, Cl. 343-786.000.

Roy, Raymond L.: *See—*

Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., 4,352,823, Cl. 426-5.000.

Cherukuri, Subraman R.; Roy, Raymond L.; Friello, Dominick R.; and Wolf, Stephen H., 4,352,825, Cl. 426-5.000.

Ruble, Ray; and Treitel, Werner S., to Litton Systems, Inc. Apparatus for synthesizing a sinusoidal output. 4,353,115, Cl. 363-42.000.
RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: *See—*
  Weidler, Erhard A., 4,352,382, Cl. 152-189.000.
Ruether, Peter G., to Storage Technology Corporation. Speech detector circuit with associated gain control for a tasi system. 4,352,957, Cl. 179-15.00C.
Ruhl, Rolf: *See—*
  Schneider, Franz; and Ruhl, Rolf, 4,352,627, Cl. 414-752.000.
Ruhrkohle Aktiengesellschaft: *See—*
  Seipenbusch, Jurgen; and Dohren, Hans, 4,352,675, Cl. 48-73.000.
Rumolo, Thomas R.: *See—*
  Doran, Mark A.; and Rumolo, Thomas R., 4,352,821, Cl. 424-361.000.
Ruschek, Gerhard: *See—*
  Stier, Bernhard; and Ruschek, Gerhard, 4,352,289, Cl. 73-114.000.
S&C Electric Company: *See—*
  Bernatt, Joseph, 4,352,437, Cl. 220-89.00A.
S. Eisenberg & Co., Division of Creative Industries, Inc.: *See—*
  Lake, Connie, 4,352,427, Cl. 206-45.330.
Saba, Michael P.: *See—*
  Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., 4,352,273, Cl. 62-87.000.
Sabourin, Edward T.: *See—*
  Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,352,942, Cl. 568-306.000.
Sacks, Sidney M., to Singer Company, The. Digital to analog converter having an analog to digital converter portion for an AC operation or a DC operation. 4,353,058, Cl. 340-347.0CC.
Sagami Chemical Research Center: *See—*
  Ojima, Iwao; and Suga, Shigemi, 4,352,752, Cl. 260-112.50R.
Sai, Toshiyuki: *See—*
  Inagawa, Masanobu; Sai, Toshiyuki; Kawarabuki, Seiichi; and Miwa, Naoto, 4,352,881, Cl. 435-17.000.
Saipem S.p.A: *See—*
  Scodino, Ambrogio, 4,352,595, Cl. 405-158.000.
Saito, Akio: *See—*
  Kai, Tomokazu; and Saito, Akio, 4,352,955, Cl. 179-2.0EB.
Saito, Isao: *See—*
  Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.
Saito, Kenji: *See—*
  Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, 4,352,756, Cl. 549-497.000.
Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, to Nissan Motor Company, Ltd. Support bracket. 4,352,510, Cl. 280-727.000.
Saitoh, Takeshi; Nagashima, Toshio; Hatashita, Hiroshi; and Yamamoto, Susumu, to Hitachi, Ltd. Double superheterodyne tuner. 4,353,132, Cl. 455-315.000.
Saitou, Sinichi: *See—*
  Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
Sakai Chemical Industry Co., Ltd.: *See—*
  Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, 4,352,899, Cl. 523-451.000.
Sakai, Kiyotoshi. Blast furnace installations. 4,352,619, Cl. 414-174.000.
Sakai, Masao; and Nishida, Takayuki, to Murata Kikai Kabushiki Kaisha. Bucket stacking and conveying apparatus. 4,352,617, Cl. 414-95.000.
Sakai, Masayuki: *See—*
  Nakatani, Yoshihiko; Sakai, Masayuki; Nakatani, Seiichi; and Matsuoka, Michio, 4,352,286, Cl. 73-23.000.
Sakai, Shigeru: *See—*
  Saito, Yoshihiro; Sakai, Shigeru; and Endo, Tsuneo, 4,352,510, Cl. 280-727.000.
Sakharnov, Vasily A.: *See—*
  Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.
Sakurai, Hidekazu, to Nippon Electric Co., Ltd. Digital facsimile system to band-compress half-tone picture signals. 4,353,096, Cl. 358-263.000.
Sakurai, Junji, to Fujitsu Limited. Integrated semiconductor device having insulated gate field effect transistors with a buried insulating film. 4,353,085, Cl. 357-42.000.
Saleh, Mustafa Y., to Siemens Corporation. DC/DC Converter. 4,353,114, Cl. 363-21.000.
Salmela, Erkki; and Kulo, Vaino, to Asko-Uop Oy. Method of heating an end of a length of plastic pipe and a circulating air furnace for carrying out the method. 4,352,659, Cl. 432-10.000.
Salvatore, Amedeo: *See—*
  De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, 4,352,963, Cl. 200-5.00A.
Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, to Ford Motor Company. Method of cutting cast iron with Si_3N_4 composite cutting tool material. 4,352,308, Cl. 82-1.00C.
Sando Iron Works Co., Ltd.: *See—*
  Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, 4,352,277, Cl. 68-175.000.
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Nakano, Eiichi, to Sando Iron Works Co., Ltd. Apparatus for applying a treating solution to a cloth as foams continuously. 4,352,277, Cl. 68-175.000.
Sandstrom, Anders, to Scatra AB. Water-lubricated bearing construction for ship's propeller shaft. 4,352,527, Cl. 308-26.000.
Sandvik-Kosta GmbH: *See—*
  Benatti, Edmo, 4,352,612, Cl. 409-233.000.
Sandys, Jeffrey P.: *See—*
  Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,352,509, Cl. 280-716.000.
Sanitary-Dash Manufacturing Company, Inc.: *See—*
  Landgarten, Gerald, 4,352,368, Cl. 137-247.450.
Sankyo Oilless Industry, Inc.: *See—*
  Yamaguchi, Shinjiro, 4,352,387, Cl. 164-132.000.
Santen, Salomon, to Stork Amsterdam B.V. Conveying apparatus. 4,352,423, Cl. 198-472.000.
Sanyo Electric Co., Ltd.: *See—*
  Kimoto, Yuji, 4,353,034, Cl. 329-103.000.
Sasaki, Tooru: *See—*
  Maehara, Osamu; and Sasaki, Tooru, 4,352,295, Cl. 73-862.340.
Sasaya, Toshihiro, to Nippon Kogaku K.K. Focusing screen of a camera. 4,352,547, Cl. 354-200.000.
Sato, Shigeji: *See—*
  Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.
Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, to Olympus Optical Co., Ltd. Tape cassette. 4,352,473, Cl. 242-199.000.
Saunders, James F., to Trane Company, The. Multi-speed fan assembly. 4,352,635, Cl. 417-16.000.
Sawai Seiyaku Kabushiki Kaisha: *See—*
  Kamada, Akira, 4,352,800, Cl. 424-246.000.
Sawyer, Ernest R.: *See—*
  Orsino, Joseph A.; Sawyer, Ernest R.; and Hollet, Ronald J., 4,352,364, Cl. 137-43.000.
Scan-Web I/S: *See—*
  Jacobsen, Edmond M.; Nielsen, Otto V.; and Persson, Torsten B., 4,352,649, Cl. 425-83.100.
Scatra AB: *See—*
  Sandstrom, Anders, 4,352,527, Cl. 308-26.000.
Schade, Horst E. P., to RCA Corporation. CRT with means for suppressing arcing therein. 4,353,006, Cl. 313-457.000.
Schaible, Paul M.; and Schwartz, Geraldine C., to International Business Machines Corporation. Dry etching of copper patterns. 4,352,716, Cl. 156-643.000.
Schampers, Paulus P. M.: *See—*
  van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.
Schantz, Ronald K., to International Harvester Co. Circuit for pitch and tilt of dozer blade. 4,352,398, Cl. 172-812.000.
Schefczik, Ernst: *See—*
  Lotsch, Wolfgang; Kemper, Reinhard; and Schefczik, Ernst, 4,352,932, Cl. 544-295.000.
Scheffler, Andreas: *See—*
  Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, 4,352,557, Cl. 356-39.000.
Schellin, Winfrid O. E., to Western Electric Co., Inc. Crystal grower with torque supportive collapsible pulling mechanism. 4,352,785, Cl. 422-249.000.
Schering Aktiengesellschaft: *See—*
  Dettke, Manfred; and Stein, Ludwig, 4,352,690, Cl. 106-1.230.
Schering Corporation: *See—*
  Rane, Dinanath F.; Wright, John J.; and Pike, Russell E., 4,352,808, Cl. 424-258.000.
Schettler, Helmut: *See—*
  Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.
Schick, Karl G., to Fiatron Systems, Inc. Device for controlled injection of fluids. 4,352,780, Cl. 422-67.000.
Schiller, Gerhard: *See—*
  Warnecke, Gunter; and Schiller, Gerhard, 4,352,959, Cl. 179-90.00K.
Schlegel Corporation: *See—*
  Miska, Stanley R., 4,352,845, Cl. 428-88.000.
Schleicher, Herbert: *See—*
  Krampe, Dietrich; and Schleicher, Herbert, 4,353,015, Cl. 318-41.000.
Schlumberger Technology Corporation: *See—*
  Cubberly, Walter E., Jr., 4,353,122, Cl. 367-25.000.
Schmid-Schonbein, Holger; Kiesewetter, Holger; Mussler, Klaus; Myrenne, Heinz; and Scheffler, Andreas, to Ernst Leitz Wetzlar GmbH. Determining a test value corresponding to blood subsidence. 4,352,557, Cl. 356-39.000.
Schmidt, Werner, to Dynamit Nobel. Stable aqueous impregnating solutions prepared from hydrolyzed alkyltrialkoxysilanes. 4,352,894, Cl. 521-91.000.
Schneider, Franz; and Ruhl, Rolf, to L. Schuler GmbH. Loading device for a press. 4,352,627, Cl. 414-752.000.
Schneider, Henri W.: *See—*
  Lorteije, Jean H. J.; Warrink, Geert; and Schneider, Henri W., 4,353,062, Cl. 340-767.000.
Schockmel, Robert: *See—*
  Metz, Paul; Schockmel, Robert; and Mersch, Roland, 4,352,764, Cl. 264-8.000.
Schreiber, Charles J., to Hornady Manufacturing Company. Jacketed bullet and method of manufacture. 4,352,225, Cl. 29-1.230.

Schreier, Curtis: *See—*
  Kaye, Stanton; and Schreier, Curtis, 4,352,554, Cl. 355-40.000.
Schreurs, Gerardus C. M.: *See—*
  Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Schroder, Alexander: *See—*
  Schwarz, Alois; Mautz, Karlheinz; and Schroder, Alexander, 4,352,632, Cl. 416-134.00A.
Schroder, Ernst, to Licentia Patent-Verwaltungs G.m.b.H. Circuit for compression or expansion of an electrical signal. 4,353,035, Cl. 330-126.000.
Schumacher, John B. Pin-actuated rotatable ram bar apparatus and carrier adapter. 4,352,515, Cl. 293-145.000.
Schumacher, Rolf: *See—*
  Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, 4,352,846, Cl. 428-105.000.
Schwarte, Erwin. Recovery of high purity N-acyl taurine in high yield. 4,352,759, Cl. 260-401.000.
Schwartz, Geraldine C.: *See—*
  Schaible, Paul M.; and Schwartz, Geraldine C., 4,352,716, Cl. 156-643.000.
Schwarz, Alois; Mautz, Karlheinz; and Schroder, Alexander, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Rotor mounting assembly for rotary wing aircraft. 4,352,632, Cl. 416-134.00A.
Schwarzel, William C.: *See—*
  Taylor, Lloyd D.; and Schwarzel, William C., 4,352,871, Cl. 430-505.000.
Schwindt, Jurgen: *See—*
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Scodino, Ambrogio, to Saipem S.p.A. Apparatus for and method of supporting pipe suspended over depressions in the sea bed. 4,352,595, Cl. 405-158.000.
Scott, James: *See—*
  Luce, David A.; and Scott, James, 4,352,311, Cl. 84-1.190.
Scott, James P., to Rockwell International Corporation. Friction pad and support for a disc brake. 4,352,414, Cl. 188-73.340.
Scurlock, James E.; and Curtis, Benson M., to Virginia Mason Research Center. Method for providing long-lasting local anesthesia and compounds and compositions therefore. 4,352,820, Cl. 424-329.000.
Seaberg, David H.: *See—*
  Frisbee, Claude M.; and Seaberg, David H., 4,352,626, Cl. 414-722.000.
Sedco, Inc.: *See—*
  Hammett, Dillard S., 4,352,596, Cl. 405-195.000.
Sederholm, Emma L.: *See—*
  Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000.
Sedillot, Francois G.: *See—*
  Parat, Hubert J. L.; Michel, Dominique; and Sedillot, Francois G., 4,352,598, Cl. 405-222.000.
Seelen-Kruijssen, Josepha M. E.: *See—*
  Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Segars, Roy, Jr.: *See—*
  Adelman, Robert L.; and Segars, Roy, Jr., 4,352,940, Cl. 562-607.000.
Seikosha Co., Ltd.: *See—*
  Chida, Yoshinori; and Tada, Satoru, 4,352,577, Cl. 400-196.100.
Seipenbusch, Jurgen; and Dohren, Hans, to Ruhrkohle Aktiengesellschaft. Coal gasification reactor. 4,352,675, Cl. 48-73.000.
Seki, Tatsuo: *See—*
  Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.
Sekiya, Mutsuo: *See—*
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Sekiya, Tetsuo: *See—*
  Hiranuma, Hidetoshi; Sekiya, Tetsuo; Mizogami, Susumu; Mori, Motokuni; Hanatsuka, Mitsuo; and Kanayama, Toshiji, 4,352,928, Cl. 542-431.000.
Selwitz, Charles M.: *See—*
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Semanchik, Bruce D.: *See—*
  Baker, Richard H.; and Semanchik, Bruce D., 4,352,998, Cl. 307-311.000.
Seppi, Edward J.: *See—*
  Dinwiddie, Kendall L.; Racz, Janos A.; and Seppi, Edward J., 4,352,530, Cl. 339-5.00M.
Sera, Hidefumi: *See—*
  Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, 4,352,873, Cl. 430-545.000.
Seragnoli, Enzo, to G. D. Societa per Azioni. Machine for wrapping and batching products. 4,352,264, Cl. 53-531.000.
Seytre, Gerard: *See—*
  Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
Shaklee Corporation: *See—*
  Doran, Mark A.; and Rumolo, Thomas R., 4,352,821, Cl. 424-361.000.
Sharp Kabushiki Kaisha: *See—*
  Kobayashi, Takehiro, 4,352,248, Cl. 34-88.000.
Sharps, G. Vincent, Jr.: *See—*
  Johnson, D. Emil; and Sharps, G. Vincent, Jr., 4,352,893, Cl. 521-79.000.
Shell Oil Company: *See—*
  Gray, Robin T.; and De Jong, Aaldert J., 4,352,937, Cl. 549-546.000.
  Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
Sherwood Refractories, Inc.: *See—*
  Larson, David L., 4,352,390, Cl. 164-351.000.
Shibata, Tsutomu: *See—*
  Satoh, Ken; Watanabe, Seizo; Saitou, Sinichi; Kato, Toshikazu; Ohshima, Ken; Shibata, Tsutomu; and Kimura, Kenji, 4,352,473, Cl. 242-199.000.
Shibato, Eizo: *See—*
  Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.
Shiiki, Zenya: *See—*
  Katto, Takayuki; and Shiiki, Zenya, 4,352,910, Cl. 525-83.000.
Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, to Nissan Motor Company, Limited. Emergency controller for an air conditioning system of an automotive vehicle. 4,352,452, Cl. 236-13.000.
Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, to Sumitomo Electric Industries, Ltd. Process for the production of highly expanded polyolefin insulated wires and cables. 4,352,701, Cl. 156-51.000.
Shimbo, Masafumi, to Kabushiki Kaisha Daini Seikosha. Process for fabricating a vertical static induction device. 4,352,238, Cl. 29-579.000.
Shinshu Seiki Kabushiki Kaisha: *See—*
  Owatari, Akio; and Yamada, Yuki, 4,352,691, Cl. 106-20.000.
Shirai, Haruyoshi: *See—*
  Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
Shirakawa, Takashi, to Alps Electric Company, Ltd. Trimmer capacitor. 4,353,106, Cl. 361-293.000.
Shirouchi, Hideo: *See—*
  Fukai, Kikuji; and Shirouchi, Hideo, 4,352,440, Cl. 221-178.000.
Shore, Sydney. Ribbon cartridge and adapter. 4,352,575, Cl. 400-250.000.
Shtarkman, Emile M., to Gould Inc. Viscous spring damper. 4,352,487, Cl. 267-35.000.
Shum, Edward K.; and Peterson, John J., to Precision Data, Inc. Tape-recorded signal recovery method and apparatus. 4,353,099, Cl. 360-27.000.
SI Handling Systems, Inc.: *See—*
  Sleep, Craig, 4,352,327, Cl. 104-170.000.
Sieber, Werner: *See—*
  Hammer, Thomas; Hehn, Wilfried; Kocourek, Franz; Sieber, Werner; and Osegowitsch, Viktor, 4,352,448, Cl. 226-108.000.
Siedenstrang, Roy W.; and Thorsrud, Agmund K., to Phillips Petroleum Company. Molded sponge-like thermoplastic elastomer articles having thin, dense skins and a process for their production. 4,352,854, Cl. 428-318.800.
Siegfried Aktiengesellschaft: *See—*
  Cuny, Eckehard K. T.; Lichtenthaler, Frieder W.; and Moser, Alfred R., 4,352,931, Cl. 544-251.000.
Siemens Aktiengesellschaft: *See—*
  Bergmann, Eduard, 4,353,126, Cl. 370-24.000.
  Brunner, Anton; and Kress, Erwin, 4,353,073, Cl. 343-779.000.
  Herbst, Heiner; and Niemeyer, Matthias, 4,353,084, Cl. 357-30.000.
  Kleinschmidt, Peter, 4,353,004, Cl. 310-318.000.
  Krampe, Dietrich; and Schleicher, Herbert, 4,353,015, Cl. 318-41.000.
  Nossek, Josef, 4,353,044, Cl. 333-173.000.
  Pfeiler, Manfred, 4,352,986, Cl. 378-14.000.
  Rost, Helmut; and Walz, Alfred, 4,353,123, Cl. 367-137.000.
  Widmann, Dietrich, 4,352,237, Cl. 29-577.00C.
  Wille, Roger; and Meindl, Gerhard, 4,353,051, Cl. 336-192.000.
Siemens Corporation: *See—*
  Saleh, Mustafa Y., 4,353,114, Cl. 363-21.000.
  Tsikos, Constantine, 4,353,056, Cl. 340-146.30E.
Siemsen, Henry S., to Bowmar, Bryce. Pneumatic pump. 4,352,639, Cl. 417-134.000.
Sievers, G. Kelly, to Turbine Metal Technology, Inc. Interdispersed phase coatings method. 4,352,840, Cl. 427-252.000.
Signetics Corporation: *See—*
  Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.
Silent Running Corporation: *See—*
  Hannas, James R., 4,352,993, Cl. 307-112.000.
Silvestri, George J., Jr., to Westinghouse Electric Corp. Method and apparatus for providing process steam of desired temperature and pressure. 4,352,270, Cl. 60-648.000.
Silvestrini, Bruno; and Baiocchi, Leandro, to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A. [(1-Benzyl-1H-indazol-3-yl)oxy] acetic acid salt with L. lysine. 4,352,813, Cl. 424-273.00N.
Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., to Southwest Research Institute. Method and apparatus for measuring concentration of suspended oils in water. 4,352,983, Cl. 250-227.000.

Simpson, Robert E.: *See—*

Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., 4,352,353, Cl. 128-201.240.

Singer Company, The: *See—*

Krupick, Walter J., 4,352,233, Cl. 29-434.000.

Sacks, Sidney M., 4,353,058, Cl. 340-347.0CC.

Sirrine, Gordon G.: *See—*

Grappendorf, Richard H.; Sirrine, Gordon G.; and Davis, John S., 4,352,400, Cl. 175-330.000.

SKF Kugellagerfabriken GmbH: *See—*

Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,352,419, Cl. 192-98.000.

Skilling, John B.: *See—*

Paton, H. Neil; Gylland, E. Frederick, Jr.; Sandys, Jeffrey P.; and Skilling, John B., 4,352,509, Cl. 280-716.000.

Skotheim, Terje. Double photoelectrochemical cell for conversion of solar energy to electricity. 4,352,868, Cl. 429-111.000.

Slade, Clyde G. Self-equalizing welding structure. 4,352,971, Cl. 219-86.610.

Sleep, Craig, to SI Handling Systems, Inc. Tow truck selector pin. 4,352,327, Cl. 104-170.000.

Sloan, Albert H. Hand operated suction dredge head and hydraulic submersible pump assembly. 4,352,251, Cl. 37-58.000.

Sloot, James W.: *See—*

Orth, Heinz W.; and Sloot, James W., 4,352,287, Cl. 73-60.000.

Smerdov, Andrei A.: *See—*

Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.

Smiley, George W. Grain distributor and method. 4,352,623, Cl. 414-294.000.

Smillie, John G., to Aurora Industries, Inc. Shaped rigid articles containing fly ash and resin. 4,352,856, Cl. 428-329.000.

Smith, Barry L.; and Hoelscher, James R., to General Signal Corp. Audio frequency track circuit for rapid transit applications with signal modulation security. 4,352,475, Cl. 246-34.0CT.

Smith, Derek R., to Union Carbide Corporation. Method of producing a joint capable of transmitting high torque. 4,352,584, Cl. 403-13.000.

Smith, Grant H., to Borg-Warner Corporation. Constant velocity universal joint with improved centering device and boot seal. 4,352,276, Cl. 464-109.000.

Smith-Johannsen, Robert, to Norcem A.S. Process of producing sorel cement. 4,352,694, Cl. 106-106.000.

Smith, Richard W.; and Frank, Robert H., to X. S. Smith, Inc. Movable inflatable ceiling or partition for greenhouse use. 4,352,259, Cl. 52-2.000.

Smith, Ronald A., to Fairchild Camera & Instrument Corp. Data storage apparatus. 4,352,492, Cl. 273-1.0GC.

Smith, Terrance R. Bicycle storage rack. 4,352,432, Cl. 211-19.000.

SmithKline Beckman Corporation: *See—*

Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,352,757, Cl. 549-513.000.

Lam, Bing L.; and Pridgen, Lendon N., 4,352,933, Cl. 544-320.000.

Smithkline Corporation: *See—*

Bondinell, William E.; DeMarinis, Robert M.; Hieble, Jacob P.; and Pendleton, Robert G., 4,352,809, Cl. 424-258.000.

Weinstock, Joseph, 4,352,754, Cl. 260-330.300.

Snyder, Fred W., Jr.: *See—*

Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., 4,352,770, Cl. 264-187.000.

Societe d'Assistance Technique Pour Produits Nestle S.A.: *See—*

Bracco, Umberto; Viret, Jean-Louis; and Rehacek, Josef, 4,352,746, Cl. 252-398.000.

Societe Labofina S.A.: *See—*

Espitalie, Jean; Madec, Marcel; Leplat, Paul; and Paulet, Jacques, 4,352,673, Cl. 23-230.0EP.

Sodex-Magister, Societe d'Exploitation des Brevets Neiman: *See—*

Neyret, Guy, 4,352,278, Cl. 70-252.000.

Solvay & Cie. (Societe Anonyme): *See—*

Paucot, Andre, 4,352,939, Cl. 560-120.000.

Sommers, Dale. Solar electric generator. 4,353,003, Cl. 310-306.000.

Sono-Tek Corporation: *See—*

Berger, Harvey L.; and Brandow, Charles R., 4,352,459, Cl. 239-102.000.

Sorenson, Richard W., to Carlingswitch, Inc. Toggle switch assembly. 4,352,965, Cl. 200-6.00R.

Southwest Research Institute: *See—*

Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., 4,352,983, Cl. 250-227.000.

Southwire Company: *See—*

Adams, Ronald D.; and Chia, E. Henry, 4,352,697, Cl. 148-2.000.

Spademan, Richard G. Releasable step-in ski binding. 4,352,508, Cl. 280-624.000.

Spalding, Wilbur J., to Alliance Manufacturing Company, Inc., The. Door operator screw coupling. 4,352,585, Cl. 403-24.000.

Spat, Melvin: *See—*

Lerner, Irwin S.; and Spat, Melvin, 4,353,049, Cl. 335-205.000.

Spector, George: *See—*

Orta, Phillip N.; and Spector, George, 4,352,461, Cl. 239-211.000.

Spectra-Physics, Inc.: *See—*

Patterson, Williams G.; Rochkind, Allen B.; Miller, Leslie A.; and Bradley, Martin P. T., 4,352,636, Cl. 417-22.000.

Spellmann, Richard A., to Chevron Research Company. Method of diagnosing errors off-line in pipe specification files of a computer-aided graphics system. 4,353,117, Cl. 364-300.000.

Spence, J. Ronald, to Standard Oil Company (Indiana). Sulfurized-/aminated mixture of ethylene-based polyolefin and polyisobutylene. 4,352,911, Cl. 525-211.000.

Sperry Corporation: *See—*

Minden, Henry T., 4,352,562, Cl. 356-350.000.

Spiess, Karl-Heinz; and Stock, Harald, to Dynamit Nobel Aktiengesellschaft. Process for the production of colorful and figurative designs of shaped synthetic-resin articles. 4,352,672, Cl. 8-444.000.

Sponsler, William A.: *See—*

Holbrook, Walter R.; and Sponsler, William A., 4,352,835, Cl. 427-38.000.

Spratt, Roger C.: *See—*

Grimshaw, Keith; and Spratt, Roger C., 4,352,224, Cl. 19-97.000.

Stabatrol Corporation: *See—*

Valiga, Richard E.; and Rosso, John R., 4,352,601, Cl. 405-270.000.

Stahl, Rainer: *See—*

Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.

Stamm, Thomas A., to Honeywell Inc. Battery operated access control card. 4,353,064, Cl. 340-825.310.

Standard Oil Company (Indiana): *See—*

James, David E.; and Koeritz, Richard N., 4,352,745, Cl. 252-364.000.

Ott, Louis E., 4,352,688, Cl. 71-11.000.

Spence, J. Ronald, 4,352,911, Cl. 525-211.000.

Stange, Klaus K., to Xerox Corporation. Multicolor development system for electrophotographic printing machines. 4,352,552, Cl. 355-4.000.

Stanley, Henry, to National Starch and Chemical Corp. Polyurethane adhesive compositions modified with a dicarbamate ester useful in laminating substrates. 4,352,858, Cl. 428-423.100.

Star Packaging Corporation: *See—*

Andrews, H. David, Jr., 4,352,263, Cl. 53-436.000.

Starkey, Philip E.: *See—*

Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.

Stein, Ludwig: *See—*

Dettke, Manfred; and Stein, Ludwig, 4,352,690, Cl. 106-1.230.

Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, to Magyar Aluminiumipari Troszt; and Krupp Polysius AG. Method and apparatus for burning fine-grain material. 4,352,660, Cl. 432-14.000.

Steinke, Mark H., to Lyon Metal Products, Incorporated. Drawer locking system. 4,352,529, Cl. 312-222.000.

Stevenson, Alastair K.: *See—*

Pelczyk, Alan; Purssell, Robert F.; Woollard, Alfred J.; Fowler, Albert L.; Walker, David M.; Henderson, Alan G.; and Stevenson, Alastair K., 4,353,050, Cl. 336-30.000.

Stier, Bernhard; and Ruschek, Gerhard, to VDO Adolf Schindling AG. Fuel consumption indicator. 4,352,289, Cl. 73-114.000.

Stier, Bernhard, to VDO Adolf Schindling AG. Device for the control of the traveling speed of a motor vehicle. 4,352,404, Cl. 180-179.000.

Stiglmaier, Manfred; and Hormann, Rudolf, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Composite of a vehicle frame and body parts. 4,352,520, Cl. 296-182.000.

Stinson, Jonathan D., to Ford Motor Company. Control valve for shock absorber pistons and the like. 4,352,417, Cl. 188-322.150.

Stock, Harald: *See—*

Spiess, Karl-Heinz; and Stock, Harald, 4,352,672, Cl. 8-444.000.

Stoll, Kurt. Single-acting operating cylinder. 4,352,320, Cl. 92-13.000.

Stone & Webster Engineering Corporation: *See—*

Gartside, Robert J.; and Woebcke, Herman N., 4,352,728, Cl. 208-127.000.

Storage Technology Corporation: *See—*

Ruether, Peter G., 4,352,957, Cl. 179-15.00C.

Stork Amsterdam B.V.: *See—*

Santen, Salomon, 4,352,423, Cl. 198-472.000.

Strang, James E.: *See—*

Kinsell, Robert C.; Saba, Michael P.; and Strang, James E., 4,352,273, Cl. 62-87.000.

Strubelt, John R. Disposable litter devices. 4,352,340, Cl. 119-1.000.

Strupczewski, Joseph T.; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Inc. 3-(1-Substituted-4-piperidyl)-1,2-benzisoxazoles. 4,352,811, Cl. 424-267.000.

Struthers, Ralph C., to Universal Fuel Systems, Inc. Metal/acid ion permeable membrane fuel cell. 4,352,864, Cl. 429-18.000.

Strzegowski, Joseph C., Jr.: *See—*

Hardigg, James S.; Strzegowski, Joseph C., Jr.; Burgess, Asial L., Jr.; and Neal, David B., 4,352,977, Cl. 219-243.000.

Stuller Engineering & Marketing Services: *See—*

Stuller, Howard E.; and Francis, Jimmie L., 4,352,608, Cl. 406-116.000.

Stuller, Howard E.; and Francis, Jimmie L., to Stuller Engineering & Marketing Services. Remotely positioned intake apparatus for a pneumatic conveying system and method of using same. 4,352,608, Cl. 406-116.000.

Styslinger, James R., to M.W. Kellogg Company, The. Waste heat boiler and steam superheater system. 4,352,341, Cl. 122-7.00R.

Sublett, Bobby J.: *See—*

Petke, Frederick D.; Sublett, Bobby J.; and McConnell, Richard L., 4,352,925, Cl. 528-309.000.

Subramanian, Krishnamoorthy: *See—*

Samanta, Shyam K.; Subramanian, Krishnamoorthy; Ezis, Andre; and Moskowitz, David, 4,352,308, Cl. 82-1.00C.

Suefuji, Kazutaka: *See—*

Murayama, Akira; Harada, Fumio; and Suefuji, Kazutaka, 4,352,642, Cl. 417-312.000.

Suga, Shigemi: *See—*

Ojima, Iwao; and Suga, Shigemi, 4,352,752, Cl. 260-112.50R.

Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, to Takashi Mukaibo. Ion selective field-effect sensor. 4,352,726, Cl. 204-195.00M.

Sugden, Keith C. Yacht keels. 4,352,335, Cl. 114-143.000.

Sugihara, Yasuhiro: *See—*

Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, 4,353,095, Cl. 358-260.000.

Sugisaki, Mutuo: *See—*

Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, 4,352,640, Cl. 417-273.000.

Sugishima, Kenji; and Takada, Tadakazu, to Fujitsu Limited. Method of manufacturing a semiconductor device. 4,352,724, Cl. 204-192.00E.

Sugiura, Hiroaki: *See—*

Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,352,435, Cl. 215-1.00C.

Sugiyama, Isao: *See—*

Nomoto, Seiichiro; Ikuta, Hironori; Machida, Yoshimasa; Negi, Shigeto; Sugiyama, Isao; Yamauchi, Hiroshi; Nakatsuka, Kenro; and Saito, Isao, 4,352,801, Cl. 424-246.000.

Sugiyama, Toshio; and Maeda, Takeshi, to Hitachi, Ltd. Photoelectric focus and tracking apparatus. 4,352,981, Cl. 250-201.000.

Suhara, Yasuji: *See—*

Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.

Sukejima, Hajime: *See—*

Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,352,902, Cl. 524-40.000.

Sukenik, Robert J., to New Hudson Corporation. Fiber covered roller for high temperature applications. 4,352,230, Cl. 29-125.000.

Sullivan, Ann C.: *See—*

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,352,758, Cl. 549-521.000.

Sumitomo Chemical Company, Limited: *See—*

Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, 4,352,941, Cl. 564-314.000.

Mashita, Kentaro; and Hanji, Katsumi, 4,352,915, Cl. 526-65.000.

Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, 4,352,756, Cl. 549-497.000.

Yamahira, Yoshiya; Noguchi, Takeshi; Fujioka, Keiji; Noguchi, Tetsuo; and Sato, Shigeji, 4,352,793, Cl. 424-180.000.

Sumitomo Electric Industries, Ltd.: *See—*

Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, 4,352,701, Cl. 156-51.000.

Sundstrand Corporation: *See—*

Meyer, James H. M., 4,352,645, Cl. 417-417.000.

Pollman, Frederic W., 4,352,367, Cl. 137-82.000.

Sutherland, David M., deceased: *See—*

Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and Midland Bank Trust Company Limited, legal representative, The, 4,352;698, Cl. 148-4.000.

Suzuki, Fumio: *See—*

Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, 4,352,701, Cl. 156-51.000.

Suzuki, Kenichi: *See—*

Oyamada, Tugio; Suzuki, Kenichi; Kishi, Toshikazu; and Shibato, Eizo, 4,352,975, Cl. 219-125.110.

Suzuki, Masanori: *See—*

Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.

Suzuki, Naoyoshi: *See—*

Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,352,452, Cl. 236-13.000.

Suzuki, Shigeo; Kakuta, Atsushi; Oka, Hiroyuki; Mori, Yasuki; and Morishita, Hirosada, to Hitachi, Ltd. Complex type electrophotographic plate and electrophotographic method using the same. 4,352,876, Cl. 430-58.000.

Suzuki, Yasuo: *See—*

Matsumoto, Kenji; and Suzuki, Yasuo, 4,352,383, Cl. 152-352.00R.

Svenska Streck Aktiebolag: *See—*

Rosenlind, K. Goran; and Brandberg, S. B. Thomas, 4,352,441, Cl. 222-99.000.

Svoboda, Josef; and Leichtfried, Friedrich, to TMC Corporation. Ski brake. 4,352,506, Cl. 280-605.000.

Svoboda, Josef: *See—*

Krob, Erwin; and Svoboda, Josef, 4,352,507, Cl. 280-605.000.

Swallow, Brian R., to Union Carbide Corporation. Process for removing nitrogen from natural gas. 4,352,685, Cl. 62-28.000.

Swanson, Robert K.: *See—*

Silvus, Howard S., Jr.; Newman, Francis M., Jr.; and Swanson, Robert K., 4,352,983, Cl. 250-227.000.

Sweeney, James S., Jr., to Unisen, Inc. Adaptive pulsing motor control for positioning system. 4,353,019, Cl. 318-594.000.

Swiss Aluminium Ltd.: *See—*

Hardt, Jean; and Widrig, Jakob, 4,352,408, Cl. 181-249.000.

SWS Silicones Corporation: *See—*

Tripp, Jeffrey A., 4,352,917, Cl. 528-26.000.

Sybron Corporation: *See—*

Pillis, Lewis J.; and Davis, Lois T., 4,352,886, Cl. 435-262.000.

Sydansk, Robert D., to Marathon Oil Company. Process for selectively reducing the permeability of a subterranean formation. 4,352,395, Cl. 166-292.000.

Szabo, Robert J., to Variform Plastics, Inc. Method and apparatus for creating random shadow patterns in formed vinyl sheet article. 4,352,771, Cl. 264-210.200.

Szloboda, David T. Apparatus for converting garbage into a fuel gas. 4,352,676, Cl. 48-76.000.

T. W. Woods Constructions Pty. Limited: *See—*

Woods, Thomas W., 4,352,284, Cl. 72-452.000.

Tabak, Viktor Y.: *See—*

Venin, Igor V.; Vidershain, Tatyana V; Rodionov, Vladimir I.; Smerdov, Andrei A.; and Tabak, Viktor Y., 4,352,351, Cl. 128-1.00C.

Tada, Fusao; Itoh, Takeshi; Oka, Joji; and Okamoto, Akira, to Sakai Chemical Industry Co., Ltd.; and Nippon Steel Corporation. Coating composition for metal-substrate. 4,352,899, Cl. 523-451.000.

Tada, Masahira: *See—*

Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, 4,352,227, Cl. 29-33.00F.

Tada, Satomi: *See—*

Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.

Tada, Satoru: *See—*

Chida, Yoshinori; and Tada, Satoru, 4,352,577, Cl. 400-196.100.

Taiyo Yuden Co., Ltd.: *See—*

Fukai, Kikuji; and Shirouchi, Hideo, 4,352,440, Cl. 221-178.000.

Takada, Tadakazu: *See—*

Sugishima, Kenji; and Takada, Tadakazu, 4,352,724, Cl. 204-192.00E.

Takagi, Izumi, to Kawasaki Jukogyo Kabushiki Kaisha. Suspension and steering assembly for snowmobile. 4,352,501, Cl. 280-16.000.

Takakura, Koichi: *See—*

Nakashima, Toshihide; Tanihara, Masao; and Takakura, Koichi, 4,352,884, Cl. 435-180.000.

Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, to Honda Giken Kogyo Kabushiki Kaisha. Fluid compressor. 4,352,640, Cl. 417-273.000.

Takami, Akio; and Kondo, Kazuo, to NGK Spark Plug Co., Ltd. Tin oxide, titanium oxide and/or zirconium oxide coated β-eucryptite particles having a negative coefficient of linear thermal expansion and sealing compositions containing said particles. 4,352,889, Cl. 501-15.000.

Takamizawa, Hideo: *See—*

Noguchi, Tsutomu; Kajiwara, Yuji; Suzuki, Masanori; and Takamizawa, Hideo, 4,353,047, Cl. 333-247.000.

Takasaki, Hirokazu: *See—*

Ogata, Masatsugu; Takasaki, Hirokazu; Nemoto, Masanori; Narahara, Toshikazu; Hironaka, Kenichi; and Ishikawa, Tetuo, 4,352,897, Cl. 523-220.000.

Takase, Yoshiyuki: *See—*

Matsumoto, Jun-ichi; Takase, Yoshiyuki; and Nishimura, Yoshiro, 4,352,803, Cl. 424-251.000.

Takashi Mukaibo: *See—*

Sugano, Takuo; Niki, Eiji; Okabe, Yoichi; and Akiyama, Tatsuo, 4,352,726, Cl. 204-195.00M.

Takayuki, Tanaka, to Oki Electric Industry Co., Ltd. Output interface circuits. 4,353,104, Cl. 361-91.000.

Takechi, Masafumi: *See—*

Kurihara, Nobuo; Nishikawa, Mitsuyo; Nagahashi, Yoshitoshi; and Takechi, Masafumi, 4,352,293, Cl. 73-593.000.

Takeda Chemical Industries, Ltd.: *See—*

Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.

Takeda, Takashi; Ogata, Minoru; and Kurabayashi, Sadasuke, to Canon Kabushiki Kaisha. Facsimile apparatus. 4,353,097, Cl. 358-287.000.

Takematsu, Hikaru: *See—*

Inomata, Tetsuro; Katsukura, Kazutada; and Takematsu, Hikaru, 4,353,066, Cl. 340-825.960.

Taketoshi, Kazuhisa; and Ogusu, Chihaya, to Nippon Hoso Kyokai. Method for fabricating a semiconductor device. 4,352,834, Cl. 427-38.000.

Takisawa, Yukihisa; Saito, Kenji; and Yamachika, Hiroshi, to Sumitomo Chemical Company, Limited. Production of furfuryl alcohols. 4,352,756, Cl. 549-497.000.

Talke, Frank E.: *See—*

Lee, Francis C.; Mills, Ross N.; and Talke, Frank E., 4,353,078, Cl. 346-140.00R.

Tamukai, Tadao: *See—*

Hori, Fumihisa; Tamukai, Tadao; and Miyajima, Mikio, 4,352,576, Cl. 400-154.400.

Tamuro, Yasuharu: *See—*

Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.

Tanahashi, Kyoji, to Nippon Electric Co., Ltd. Noise signal suppressor having improved output signals. 4,353,001, Cl. 307-542.000.

Tanaka, Hideharu: *See—*

Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, 4,352,853, Cl. 428-304.400.

Tanaka, Hiroshi: *See—*

Takamatsu, Hiroshi; Tanaka, Hiroshi; and Sugisaki, Mutuo, 4,352,640, Cl. 417-273.000.

Tanaka, Masanori: *See—*

Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.

- Taniguchi, Takuji, to Aisin Warner Kabushiki Kaisha. Strainer for automatic transmission control valve. 4,352,737, Cl. 210-455.000.
- Tanihara, Masao: *See—*
  - Nakashima, Toshihide; Tanihara, Masao; and Takakura, Koichi, 4,352,884, Cl. 435-180.000.
- Taplay, James W. Heat pump system. 4,352,272, Cl. 62-235.100.
- Tassen, Devon E. Windmill blade stalling and speed control device. 4,352,633, Cl. 416-137.000.
- Tatematsu, Kenzou; Sugihara, Yasuhiro; Andou, Hiroyuki; Seki, Tatsuo; Dezaki, Yoshito; and Nishino, Yasukazu, to Matsushita Electric Industrial Co., Ltd. Facsimile bandwidth compression method system and apparatus. 4,353,095, Cl. 358-260.000.
- Tatsumi, Tetsujiro: *See—*
  - Nakabayashi, Masamitsu; Doura, Fumihiro; Miyamoto, Reiji; and Tatsumi, Tetsujiro, 4,352,749, Cl. 525-149.000.
- Taylor, Keith A., to Tektronix, Inc. Glitch detector. 4,353,032, Cl. 328-165.000.
- Taylor, Kenneth W.: *See—*
  - Dunning, Norman D.; Jervis, Franklin D.; and Taylor, Kenneth W., 4,352,578, Cl. 400-208.000.
- Taylor, Lloyd D.; and Schwarzel, William C., to Polaroid Corporation. Polymeric hydroxamic acid polyvalent metal salt interlayer for photographic diffusion transfer products. 4,352,871, Cl. 430-505.000.
- TDC-Technology Development Corp.: *See—*
  - French, Frederic A.; and French, Douglas A., 4,352,787, Cl. 423-445.000.
- TDK Electronics Co., Ltd.: *See—*
  - Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, 4,352,859, Cl. 428-425.900.
- Teac Corporation: *See—*
  - Inoue, Hideo, 4,353,100, Cl. 360-65.000.
- Tecl, Bohuslav: *See—*
  - Passler, Michael; Tecl, Bohuslav; and Schumacher, Rolf, 4,352,846, Cl. 428-105.000.
- Teijin Limited: *See—*
  - Ozaki, Kiyotaka; Matsui, Michikage; and Minemura, Norihiro, 4,352,705, Cl. 156-155.000.
- Tektronix, Inc.: *See—*
  - Taylor, Keith A., 4,353,032, Cl. 328-165.000.
- Teradyne, Inc.: *See—*
  - Johnson, Lennart B., 4,352,534, Cl. 339-19.000.
- Terai, Kenji: *See—*
  - Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.
- Teramae, Kazuo: *See—*
  - Itoh, Masashi; and Teramae, Kazuo, 4,353,125, Cl. 369-136.000.
- Teraoka, Masao, to Tochigi-Fuji Sangyo Kabushiki Kaisha. Hub clutch. 4,352,418, Cl. 192-36.000.
- Terry, Angel F.: *See—*
  - Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; Terry, Angel F.; and Jewer, Alan A., 4,353,077, Cl. 346-137.000
- Tetra Pak Developpement SA: *See—*
  - Olsson, Alvar; and Giacomelli, Peter, 4,352,421, Cl. 198-392.000.
- Texaco Inc.: *See—*
  - Paap, Hans J.; Meador, Richard A.; and Arnold, Dan M., 4,352,288, Cl. 73-61.00R.
- Texas Instruments Incorporated: *See—*
  - Chatterjee, Pallab K., 4,353,082, Cl. 357-23.000.
  - De Filippis, Pietro; Salvatore, Amedeo; and Abbondandolo, Luigi, 4,352,963, Cl. 200-5.00A.
  - Raymond, Joseph H., Jr.; and Gudger, Keith H., 4,352,997, Cl. 307-279.000.
  - White, Lionel S., Jr., 4,352,996, Cl. 307-269.000.
- Textron, Inc.: *See—*
  - Blakeslee, Frederick R., 4,352,470, Cl. 242-72.100.
- Thalstrom, Peeter; and Westin, Karl G., to AB Westin & Backlund. Trimming and/or fin cutting tools with interchangeable cutting edges. 4,352,309, Cl. 83-697.000.
- Thermacore, Inc.: *See—*
  - Eastman, George Y., 4,352,392, Cl. 165-104.250.
- Thiel, Charles G., to Minnesota Mining and Manufacturing Company. Aerosol compositions containing finely divided solid materials. 4,352,789, Cl. 424-46.000.
- Thomas A. Schutz Co., Inc.: *See—*
  - Eckert, Ronald P., 4,352,843, Cl. 428-33.000.
- Thompson, Roger L.: *See—*
  - Fleming, Henry P.; Pharr, David M.; and Thompson, Roger L., 4,352,827, Cl. 426-270.000.
- Thompson, Worthington J. Pneumatic toroidal weir. 4,352,591, Cl. 405-87.000.
- Thomson-CSF: *See—*
  - Bernet, Jean-Marie; and Lejeune, Gabriel, 4,353,057, Cl. 340-347.0SH.
  - Decroix, Jean-Yves; Seytre, Gerard; Charlot, Pierre; and Dubois, Jean-Claude, 4,353,107, Cl. 361-323.000.
  - Menard, Christian; and Gaches, Philippe, 4,352,345, Cl. 123-414.000.
- Thorsrud, Agmund K.: *See—*
  - Siedenstrang, Roy W.; and Thorsrud, Agmund K., 4,352,854, Cl. 428-318.800.
- Thurmond, Gary D.: *See—*
  - Forward, Robert L.; and Thurmond, Gary D., 4,352,982, Cl. 250-214.00A.
- Tiggesbaumker, Peter: *See—*
  - Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.
- Tipper Tie, Inc.: *See—*
  - Winders, Gordon R.; MacKay, Fredric M.; and Whittlesey, Thomas E., 4,352,232, Cl. 29-243.560.
- Tisbo, Cosmo N.; and Tisbo, Thomas A., to Custom Plastics, Inc. Container for holding organic matter during decomposition. 4,352,888; Cl. 435-287.000.
- Tisbo, Thomas A.: *See—*
  - Tisbo, Cosmo N.; and Tisbo, Thomas A., 4,352,888, Cl. 435-287.000.
- TMC Corporation: *See—*
  - Krob, Erwin; and Svoboda, Josef, 4,352,507, Cl. 280-605.000.
  - Svoboda, Josef; and Leichtfried, Friedrich, 4,352,506, Cl. 280-605.000.
- Tobinaga, Takeshi, to Mitsubishi Petrochemical Company Limited. Binder composition for foundry sand molds and cores. 4,352,914, Cl. 525-504.000.
- Tochigi-Fuji Sangyo Kabushiki Kaisha: *See—*
  - Teraoka, Masao, 4,352,418, Cl. 192-36.000.
- Toda, Yuzo; Koizumi, Junji; Ogawa, Masasi; Sera, Hidefumi; and Kubodera, Seiiti, to Fuji Photo Film Co., Ltd. Silver halide color photographic materials. 4,352,873, Cl. 430-545.000.
- Tohyama, Shigeo; Akitomo, Nobuo; and Nemoto, Isao, to Hitachi, Ltd. Calibrating apparatus in a monochromator. 4,352,561, Cl. 356-332.000.
- Tokyo Sanyo Electric Co., Ltd.: *See—*
  - Kimoto, Yuji, 4,353,034, Cl. 329-103.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Endoh, Kenjiro; Ishizawa, Yoshiyuki; Tanaka, Masanori; and Iwasaki, Koji, 4,353,060, Cl. 340-347.0AD.
  - Hirahara, Shuzo, 4,352,553, Cl. 355-14.00E.
  - Ishida, Tsuyoshi, 4,352,988, Cl. 250-559.000.
  - Morita, Shigeru, 4,352,713, Cl. 156-612.000.
  - Watanabe, Masaru; Amada, Takayoshi; and Yamaguchi, Shinichi, 4,352,462, Cl. 239-266.000.
- Toldin, Anatoly A.: *See—*
  - Lebedev, Vladimir K.; Kuchuk-Yatsenko, Sergei I.; Krivenko, Valery G.; Bogorsky, Mikhail V.; Cherednichok, Vitaly T.; Toldin, Anatoly A.; and Sakharnov, Vasily A., 4,352,972, Cl. 219-100.000.
- Tomcsanyi, Gabor: *See—*
  - Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.
- Tomforde, Johann: *See—*
  - Gallitzendorfer, Josef; Cardiet, Gerard; and Tomforde, Johann, 4,353,111, Cl. 362-80.000.
- Tomita, Hiroshige: *See—*
  - Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, 4,352,941, Cl. 564-314.000.
- Tomita, Yoshifumi: *See—*
  - Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,352,878, Cl. 430-167.000.
- Tomka, Ivan, to Ciba-Geigy AG. Novel gelatins, processes for their preparation and their use. 4,352,695, Cl. 106-135.000.
- Tomka, Jiri G.: *See—*
  - Cogswell, Frederic N.; and Tomka, Jiri G., 4,352,927, Cl. 528-502.000.
- Tomuro, Yasushi. Straightly extensible measuring tape. 4,352,244, Cl. 33-137.00R.
- Tomy Kogyo Co., Inc.: *See—*
  - Watanabe, Hiroyuki, 4,352,493, Cl. 273-1.0GA.
- Tong, David P., to Humanicare International Inc. Urinary incontinence garment. 4,352,356, Cl. 128-288.000.
- Toolmakers, Incorporated: *See—*
  - Hilton, Carl W., 4,352,648, Cl. 425-78.000.
- Tostado, Ramon. Adjustable cleat. 4,352,336, Cl. 114-218.000.
- Toth, Jozsef T.: *See—*
  - Steiner, Janos; Wenzly, Kalman; Toth, Jozsef T.; Tiggesbaumker, Peter; Goldmann, Wolf; and Butschko, Gerhard, 4,352,660, Cl. 432-14.000.
- Toth, Leslie, to Branson Ultrasonics Corporation. Friction welding apparatus. 4,352,711, Cl. 156-497.000.
- Toyo Boseki Kabushiki Kaisha: *See—*
  - Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, 4,352,736, Cl. 210-321.300.
- Toyo Rubber Chemical Industrial Corp.: *See—*
  - Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.
- Toyoda, Kenji, to Nippon Kogaku K.K. Camera having a variable program exposure control device. 4,352,548, Cl. 354-286.000.
- tpT Machinery Corporation: *See—*
  - Ott, Lothar; and Gessner, Dieter, 4,352,653, Cl. 425-541.000.
- Traas, Petrus C.; Renes, Harrie; and Boelens, Harmannus, to Naarden International N.V. Novel acyl-polyalkylindan compounds and the use thereof as a base for perfume, as well as perfume compositions. 4,352,748, Cl. 252-522.00R.
- Trane Company, The: *See—*
  - Saunders, James F., 4,352,635, Cl. 417-16.000.

- TRANSELEKTRO Magyar Villamossagi Kulkereskedelmi Vallalat: *See—*
  - Bergmann, Gyorgy; Horvath, Mihaly; Palfalvi, Gyorgy; Tomcsanyi, Gabor; Kovacs, Gyula; and Laszlo, Kardy, 4,352,378, Cl. 138-38.000.
- Travel Accessories Manufacturing Co., Inc.: *See—*
  - Burney, Charles F., 4,352,403, Cl. 180-176.000.
- Trebilco, Deborah A.: *See—*
  - Higgins, Raymond; Hutchings, Graham J.; Trebilco, Deborah A.; and Starkey, Philip E., 4,352,755, Cl. 549-258.000.
- Treitel, Werner S.: *See—*
  - Ruble, Ray; and Treitel, Werner S., 4,353,115, Cl. 363-42.000.
- Trenkler, Werner, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Mounting element with threaded member attached to a body wall of an automotive vehicle. 4,352,521, Cl. 296-191.000.
- Tresner, Homer D.: *See—*
  - Liu, Chao-Min; Tresner, Homer D.; and Westley, John, 4,352,934, Cl. 548-217.000.
- Tresper, Erhard: *See—*
  - Lohr, Karl-Dieter; Ullrich, Martin; and Tresper, Erhard, 4,352,568, Cl. 366-84.000.
- Tri-Matic, Inc.: *See—*
  - Purtell, Rufus J., 4,352,460, Cl. 239-184.000.
- Tripp, Jeffrey A., to SWS Silicones Corporation. Hydrophilic coatings for textile materials. 4,352,917, Cl. 528-26.000.
- Trott, Richard J.: *See—*
  - Loveless, W. L.; Trott, Richard J.; Heath, Robert H.; and Glick, William L., 4,352,607, Cl. 406-88.000.
- Trudel, Murray L.; Lockwood, George C.; and Evans, G. Glenn, to NCR Corporation. Low voltage nonvolatile memory device. 4,353,083, Cl. 357-23.000.
- TRW Inc.: *See—*
  - Zehren, James N., 4,352,394, Cl. 166-106.000.
- Tsikos, Constantine, to Siemens Corporation. Capacitive fingerprint sensor. 4,353,056, Cl. 340-146.30E.
- Tsukada, Tsutomu, to Anelva Corporation. Dry etching device comprising an electrode for controlling etch rate. 4,352,725, Cl. 204-192.00E.
- Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki. Diaphragms for acoustic instruments and method of producing the same. 4,352,407, Cl. 181-167.000.
- Tucker, Edward: *See—*
  - Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
- Tucker, Edward L.: *See—*
  - Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
- Tucker, Mary L., administratrix: *See—*
  - Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
- Tucker, Willmot A.: *See—*
  - Tucker, Winston B., deceased; and Tucker, Edward L., 4,352,655, Cl. 431-1.000.
- Tucker, Winston B., deceased (by Tucker, Mary L., administratrix); and Tucker, Edward L., to Tucker, Willmot A.; and Tucker, Edward. Engine. 4,352,655, Cl. 431-1.000.
- Tuckey, Charles H., to Walbro Corporation. Self-contained rotary fuel pump. 4,352,641, Cl. 417-283.000.
- Tupper, Alan W. Apparatus for suspending, locating, moving or fastening loads. 4,352,330, Cl. 104-96.000.
- Turbak, Albin F.; El-Kafrawy, Adel; Snyder, Fred W., Jr.; and Auerbach, Andrew B., to International Telephone and Telegraph Corporation. Process for forming shaped cellulosic product. 4,352,770, Cl. 264-187.000.
- Turbine Metal Technology, Inc.: *See—*
  - Sievers, G. Kelly, 4,352,840, Cl. 427-252.000.
- Turetsky, Isadore. Filter-purifier cartridge. 4,352,735, Cl. 210-238.000.
- Turner, Brian C.: *See—*
  - Park, Timothy A.; and Turner, Brian C., 4,352,721, Cl. 204-35.00N.
- Twizell, Rodney J.: *See—*
  - Hennessy, John B.; and Twizell, Rodney J., 4,352,245, Cl. 33-169.00B.
- Tydings, John E., to United States of America, Navy. Cable connector. 4,352,542, Cl. 350-96.210.
- Tyler Refrigeration Corporation: *See—*
  - Ibrahim, Fayez F., 4,352,275, Cl. 62-256.000.
- Tyman, John H. P.; Patel, Mahesh S.; and Manzara, Anthony P., to Minnesota Mining and Manufacturing Company. Treatment of cashew nut shell liquid. 4,352,944, Cl. 568-766.000.
- Tyrsted, Ivan, to Bang and Olufsen A/S. System for detection of tape thickness in tape recorders or players. 4,352,472, Cl. 242-186.000.
- Ube Industries, Ltd.: *See—*
  - Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.
- Uchida, Kozo, to Iwatsu Electric Co., Ltd. Combination of circular/-straight line light beam scan transforming apparatus and optical device and method of fabricating circular/straight line transforming device. 4,352,550, Cl. 355-3.00R.
- Uchida, Yoshihiro: *See—*
  - Arichi, Shigeru; and Uchida, Yoshihiro, 4,352,796, Cl. 424-195.000.
- Uchikawa, Fusaoki; Tanaka, Hideharu; Sekiya, Mutsuo; and Ohata, Yasufumi, to Mitsubishi Denki Kabushiki Kaisha. Sound absorber. 4,352,853, Cl. 428-304.400.
- Ueda, Yuji: *See—*
  - Hasegawa, Shinichi; Ueda, Yuji; and Tomita, Hiroshige, 4,352,941, Cl. 564-314.000.
- Uehara, Tsutomu: *See—*
  - Yamamoto, Masataka; Uehara, Tsutomu; and Yoshimori, Minoru, 4,352,850, Cl. 428-214.000.
- Uemura, Katumi: *See—*
  - Kono, Hisashi; Terai, Kenji; Hisadomi, Masaki; Uemura, Katumi; Ohta, Sumio; and Yamamoto, Yoshiichi, 4,352,923, Cl. 528-233.000.
- Uemura, Koichi; and Uemura, Makoto. Method and apparatus for constructing underground structure. 4,352,594, Cl. 405-138.000.
- Uemura, Makoto: *See—*
  - Uemura, Koichi; and Uemura, Makoto, 4,352,594, Cl. 405-138.000.
- Ujihara, Yoshio, to Nissho Corporation. Winged retention needle. 4,352,354, Cl. 128-214.00R.
- Ukai, Tetsuo; Matsumoto, Hiroshi; and Kawamura, Chikara, to Toyo Boseki Kabushiki Kaisha. Wound flattened hollow fiber assembly having plural spaced core sections. 4,352,736, Cl. 210-321.300.
- Ullrich, Martin: *See—*
  - Lohr, Karl-Dieter; Ullrich, Martin; and Tresper, Erhard, 4,352,568, Cl. 366-84.000.
- Ulmsten, Ulf I.: *See—*
  - Johansson, Olof J. A.; and Ulmsten, Ulf I., 4,352,790, Cl. 424-78.000.
- Umeda, Isao: *See—*
  - Ishitsuka, Hideo; Shirai, Haruyoshi; Umeda, Isao; and Suhara, Yasuji, 4,352,792, Cl. 424-180.000.
- Union Carbide Corporation: *See—*
  - Fritz, Charles D.; Evans, Wilbur F.; and Cooke, Anson R., 4,352,689, Cl. 71-86.000.
  - Mellors, Geoffrey W., 4,352,869, Cl. 429-191.000.
  - Patterson, Charlton A.; and Wilson, Richard M., 4,352,714, Cl. 156-626.000.
  - Smith, Derek R., 4,352,584, Cl. 403-13.000.
  - Swallow, Brian R., 4,352,685, Cl. 62-28.000.
- Unisen, Inc.: *See—*
  - Sweeney, James S., Jr., 4,353,019, Cl. 318-594.000.
- United Kingdom Atomic Energy Authority: *See—*
  - Hartley, Nicholas E. W.; Wilcockson, Alan; Sutherland, David M., deceased; and Midland Bank Trust Company Limited, legal representative, The, 4,352,698, Cl. 148-4.000.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
  - Bolton, Colin B.; Miles, Alan J.; and Simpson, Robert E., 4,352,353, Cl. 128-201.240.
  - Gunton, David J., 4,353,043, Cl. 333-151.000.
- United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the: *See—*
  - Bowditch, Malcolm R., 4,352,841, Cl. 427-292.000.
- U.S. Cap & Closure, Inc.: *See—*
  - Libit, Sidney M., 4,352,443, Cl. 222-207.000.
- United States of America
  - Agriculture: *See—*
    - Chance, Leon H., 4,352,930, Cl. 544-205.000.
    - Fleming, Henry P.; Pharr, David M.; and Thompson, Roger L., 4,352,827, Cl. 426-270.000.
  - Army: *See—*
    - Ballato, Arthur; and Iafrate, Gerald J., 4,353,027, Cl. 324-56.000.
    - Hoffman, Richard E., 4,352,700, Cl. 149-19.200.
  - Energy: *See—*
    - Cookson, Alan H., 4,352,949, Cl. 174-27.000.
  - Navy: *See—*
    - Heitz, Roger M.; and Hill, Franklin, 4,352,851, Cl. 428-250.000.
    - Madigosky, Walter M.; and Lee, Gilbert F., 4,352,292, Cl. 73-575.000.
    - McLandrich, Matthew N., 4,352,563, Cl. 356-350.000.
    - Pickens, George O., 4,353,120, Cl. 367-13.000.
    - Tydings, John E., 4,352,542, Cl. 350-96.210.
- U.S. Philips Corporation: *See—*
  - Bailey, Peter K.; and Guildford, Leslie H., 4,353,092, Cl. 358-160.000.
  - Carasso, Marino G.; and Nijboer, Jakob G., 4,353,130, Cl. 375-114.000.
  - Faddegon, Hans, 4,353,028, Cl. 324-111.000.
  - Franssen, Nico V., deceased; and de Haan, Friedrich J., administrator, 4,352,954, Cl. 179-1.00J.
  - Lorteije, Jean H. J.; Warrink, Geert; and Schneider, Henri W., 4,353,062, Cl. 340-767.000.
  - Moerkens, Jozef C.; and Woldring, Leonard, 4,353,007, Cl. 315-62.000.
  - Palmers, Hilbert; and Chermin, Hubertus M. J., 4,353,116, Cl. 363-133.000.
  - Rietveld, Jan J.; and Moreau, Alain, 4,353,112, Cl. 363-16.000.
  - van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,353,005, Cl. 313-371.000.
- United Technologies Corporation: *See—*
  - Andrews, Merritt B., 4,352,634, Cl. 416-154.000.
  - Cheney, Marvin C., Jr., 4,352,629, Cl. 416-18.000.
- Universal Fuel Systems, Inc.: *See—*
  - Struthers, Ralph C., 4,352,864, Cl. 429-18.000.

- Uno, Naoyuki; Jyojiki, Masao; and Aoki, Harumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera focus detecting device. 4,352,545, Cl. 354-25.000.
- UOP Inc.: *See—*
  - Bailey, Charles H., 4,352,783, Cl. 422-179.000.
- Upjohn Company, The: *See—*
  - Anderson, David J.; and Loughman, Barbara E., 4,352,929, Cl. 544-54.000.
  - Maxey, Kirk M., 4,352,760, Cl. 260-404.000.
  - McCall, John M., 4,352,805, Cl. 424-250.000.
  - Prather, Richard A., 4,352,696, Cl. 106-163.00R.
- Urai, Muneharu; Abe, Tadafumi; Haraguchi, Youichiro; and Hayashi, Koji. Apparatus for producing seat cushion member. 4,352,709, Cl. 156-380.600.
- Uram, John R., Jr., to Goodyear Aerospace Corporation. Transparencies produced from epoxy resins cured with adducts of trimethoxyboroxine and benzyl alcohol and interlayers of mercaptan resins. 4,352,848, Cl. 428-192.000.
- Urbye, Klaus: *See—*
  - Weber, Heinrich; Lorenz, Kurt; Dungs, Horst; and Urbye, Klaus, 4,352,720, Cl. 202-124.000.
- Vacco Industries: *See—*
  - Kay, George; and Keskinen, Alan, 4,352,373, Cl. 137-561.00A.
- Vaitkus, Rimantas L., to Motorola Inc. Multithreshold converter utilizing reference tracking amplifiers. 4,353,059, Cl. 340-347.0AD.
- Valeron Corporation, The: *See—*
  - Hopkins, David A., 4,352,609, Cl. 407-42.000.
- Valiga, Richard E.; and Rosso, John R., to Stabatrol Corporation. Permanent bin for temporary storage of hazardous materials. 4,352,601, Cl. 405-270.000.
- Vallance, James K., to Ford Motor Company. Rotor assembly for wave compression supercharger. 4,352,638, Cl. 417-64.000.
- Valle, L. George: *See—*
  - Butler, John; Valle, L. George; and Wall, Donald E., 4,352,386, Cl. 160-178.00C.
- Valmet OY: *See—*
  - Iso-Aho, Kalevi, 4,352,228, Cl. 29-115.000.
- Valyi, Emery I. Method for forming hollow plastic objects. 4,352,777, Cl. 264-538.000.
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  - Collonia, Harald, 4,352,402, Cl. 180-170.000.
  - Stier, Bernhard; and Ruschek, Gerhard, 4,352,289, Cl. 73-114.000.
  - Stier, Bernhard, 4,352,404, Cl. 180-179.000.
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  - Fleury, Edward, 4,352,301, Cl. 74-467.000.
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  - Meyer, Leonard S., 4,352,769, Cl. 264-134.000.
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  - Vitaloni, Massimo, 4,352,401, Cl. 180-90.000.
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  - Rose, Richard A.; Gehrke, James K.; Goedken, Terrance J.; and Vilmur, Roger, 4,353,038, Cl. 331-36.00C.
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  - Scurlock, James E.; and Curtis, Benson M., 4,352,820, Cl. 424-329.000.
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- Vultron, Inc.: *See—*
  - Devlin, Thomas A., 4,353,063, Cl. 340-798.000.
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  - Bornstein, Norman D., 4,352,702, Cl. 156-84.000.
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  - Morgan, Charles R., 4,352,723, Cl. 204-159.190.
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- Wagster, Robert P., to Black & Decker Inc. Small compact lightweight portable vise suitable for use by model makers and hobbyists. 4,352,489, Cl. 269-75.000.
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  - Tuckey, Charles H., 4,352,641, Cl. 417-283.000.
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  - Olschewski, Armin; Brandenstein, Manfred; and Walter, Lothar, 4,352,419, Cl. 192-98.000.
- Walters, William R. Low-high flow rate valve. 4,352,371, Cl. 137-414.000.
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  - Land, Edwin H.; and Walworth, Vivian K., 4,352,874, Cl. 430-568.000.
- Walz, Alfred: *See—*
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  - Hoh, Ying-Chu; Lee, Bao-Dein; Ma, Tieh; Chuang, Wen-Shou; and Wang, Wei-Ko, 4,352,786, Cl. 423-98.000.
- Warehime, Norwood R. Group use toy structural construction set. 4,352,255, Cl. 46-16.000.
- Warehime, Norwood R. Football (soccer) game with mobile goals. 4,352,497, Cl. 273-411.000.
- Wargo, Louis. Skirt construction for mobile home. 4,352,261, Cl. 52-169.120.
- Warnecke, Gunter; and Schiller, Gerhard, to Krone GmbH. Device for visual display of telephone operation symbols. 4,352,959, Cl. 179-90.00K.
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  - Cook, P. Dan, 4,352,795, Cl. 424-180.000.
- Warner, Laurence A., to General Motors Corporation. Viscous damping of steering shaft. 4,352,304, Cl. 74-498.000.
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- Weick, Heinz H. Device for long-term evaporation of perfumes. 4,352,457, Cl. 239-45.000.
- Weidler, Erhard A., to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Tire protection chain. 4,352,382, Cl. 152-189.000.
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- Weinstock, Joseph, to SmithKline Corporation. 3-Thienylmethyl-6-halo-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,352,754, Cl. 260-330.300.
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- Weishew, Joseph F. Air brake. 4,352,413, Cl. 188-72.400.
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  - Kluger, Edward W.; and Welch, Calvin D., 4,352,919, Cl. 528-111.000.
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  - Chapman, Ivan B., Jr., 4,352,479, Cl. 248-405.000.
  - Holbrook, Walter R.; and Sponsler, William A., 4,352,835, Cl. 427-38.000.
  - Lin, Wen, 4,352,784, Cl. 422-249.000.
  - Schellin, Winfrid O. E., 4,352,785, Cl. 422-249.000.
- Westin, Karl G.: *See—*
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- Westinghouse Electric Corp.: *See—*
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  - Knecht, Gene C., 4,352,979, Cl. 235-91.00A.
  - Mims, James H., 4,353,067, Cl. 343-17.2PC.
  - Silvestri, George J., Jr., 4,352,270, Cl. 60-648.000.
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- Westvaco Corporation: *See—*
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- Wheeler, Lionel H.: *See—*
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  - Fritchman, Jack F., 4,352,377, Cl. 137-851.000.
- White, Lionel S., Jr., to Texas Instruments Incorporated. IGFET Clock generator circuit employing MOS boatstrap capacitive drive. 4,352,996, Cl. 307-269.000.
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- Whitlow, George A. Ground fault interrupter circuit. 4,353,103, Cl. 361-45.000.
- Whittlesey, Thomas E.: *See—*
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- Wick, Gerald H.: *See—*
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- Wicker, Harold J.: *See—*
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- Widmann, Dietrich, to Siemens Aktiengesellschaft. Method for manufacture of integrated semiconductor circuits, in particular CCD-circuits, with self-adjusting, nonoverlapping polysilicon electrodes. 4,352,237, Cl. 29-577.00C.
- Widrig, Jakob: *See—*
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- Wieschel, John E., to Harnischfeger Corporation. Warehouse crane with pin-engageable tote pans. 4,352,622, Cl. 414-277.000.
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- Wilhelm, Gary, to Llama Gabilonda y. Cia. S.A. Hammer safety block. 4,352,317, Cl. 89-154.000.
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- Williams, Arthur J., to Commercial Shearing, Inc. Control valves. 4,352,375, Cl. 137-596.130.
- Williams, Arthur R.; and Williams, Gareth T., to Dunlop Limited. Method of making porous tread. 4,352,704, Cl. 156-125.000.
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- Willis, Donald H., to RCA Corporation. Television receiver ferroresonant load power supply with reduced saturable reactor circulating current. 4,353,014, Cl. 315-411.000.
- Wilson, Gerald H. Pulpit. 4,352,338, Cl. 114-364.000.
- Wilson, Joe C.: *See—*
  - Davis, Pauls; and Wilson, Joe C., 4,352,742, Cl. 252-75.000.
- Wilson, Ralph A. Collapsible bicycle storage assembly. 4,352,363, Cl. 135-7.000.
- Wilson, Richard M.: *See—*
  - Patterson, Charlton A.; and Wilson, Richard M., 4,352,714, Cl. 156-626.000.
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- Windmoller & Holscher: *See—*
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  - Renson, Marcel; Etschenberg, Eugen; and Winkelmann, Johannes, 4,352,799, Cl. 424-244.000.
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- Wintraecken, Johannes J. M. H.: *See—*
  - Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,352,842, Cl. 427-385.500.
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  - Blay, George A.; and Witt, Enrique R., 4,352,738, Cl. 210-612.000.
- Wittfoht, Hans, to Polensky & Zollner. Method for the construction of a cable-stayed or rein-girth bridge. 4,352,220, Cl. 14-1.000.
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Yano, Ryuji: *See—*
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, 4,352,995, Cl. 307-265.000.
Yasuhara, Takashi: *See—*
Kobayashi, Hideaki; Tamuro, Yasuharu; Yasuhara, Takashi; and Ishii, Kunio, 4,353,002, Cl. 310-64.000.
Yazolino, Lauren F.: *See—*
Anderson, Jared A.; Van Gelder, Robert V.; Yazolino, Lauren F.; and Braun, Jimmy E., 4,352,274, Cl. 62-229.000.
Yi, Hyon P. Writing implement. 4,352,579, Cl. 401-19.000.
Yoda, Kuniichi; Ohkawa, Takehisa; and Azegami, Hitoshi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,352,859, Cl. 428-425.900.
Yoho, Robert W. Control circuit for air conditioning systems. 4,352,349, Cl. 126-299.00R.
Yokozeki, Shinichi: *See—*
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,352,407, Cl. 181-167.000.
Yoneyama, Goro: *See—*
Kumasaka, Sadao; Tada, Satomi; Yoneyama, Goro; and Hashimoto, Kazuo, 4,352,651, Cl. 425-261.000.
Yoshida, Kazutoshi; Yano, Ryuji; and Ishida, Kazuhiro, to Hitachi, Ltd. Pulse generating circuit with clock pulse ceasing feature. 4,352,995, Cl. 307-265.000.
Yoshihara, Motoshi: *See—*
Ogata, Masami; Yoshihara, Motoshi; and Tada, Masahira, 4,352,227, Cl. 29-33.00F.
Yoshimori, Minoru: *See—*
Yamamoto, Masataka; Uehara, Tsutomu; and Yoshimori, Minoru, 4,352,850, Cl. 428-214.000.
Yoshino Kogyosho Co., Ltd.: *See—*
Ichizawa, Yoshiyuki; and Nomoto, Tsugio, 4,352,424, Cl. 198-482.000.
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,352,435, Cl. 215-1.00C.
Yoshino, Toshikazu: *See—*
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,352,407, Cl. 181-167.000.
Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, to Yoshino Kogyosho Co., Ltd. Synthetic resin made thin-walled bottle. 4,352,435, Cl. 215-1.00C.
Young, David H., to MTI Systems Corporation. Substrate separating machine and method. 4,352,446, Cl. 225-1.000.
Young, Prussin, MGK, J.V.: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,352,833, Cl. 427-4.000.
Young, Richard A., to Ceco Corporation, The. Torque reversing motor control structure and method. 4,353,022, Cl. 318-753.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticides. 4,352,833, Cl. 427-4.000.
Yueh, Chang L., to General Motors Corporation. Touch actuated electronically tuned receiver. 4,353,131, Cl. 455-179.000.
Yuto, Masao: *See—*
Shimba, Hiroshi; Suzuki, Fumio; and Yuto, Masao, 4,352,701, Cl. 156-51.000.
Zaffaroni, Alejandro; and Fara, John, to ALZA Corporation. Potassium replacement therapy. 4,352,791, Cl. 424-153.000.
Zehren, James N., to TRW Inc. Cable-suspended well pumping systems. 4,352,394, Cl. 166-106.000.
Zeigler, Edward H., Jr., to Hercules Incorporated. Co-nitrating trimetholethane and diethylene glycol. 4,352,699, Cl. 149-109.600.
Zeikus, Joseph G.; and Lamed, Raphael J., to Wisconsin Alumni Research Foundation. Preparation of a novel NADP linked alcohol-aldehyde/ketone oxidoreductase from thermophilic anaerobic bacteria for analytical and commercial use. 4,352,885, Cl. 435-189.000.
Zenith Radio Corporation: *See—*
Dam, Robert, 4,353,094, Cl. 358-249.000.
Zenith Stairways & Bldg. Products, Inc.: *See—*
Basey, Gene, 4,352,485, Cl. 256-65.000.
Zondler, Helmut; and Moser, Roland, to Ciba-Geigy Corporation. Dimethylamino derivatives and their use. 4,352,913, Cl. 525-504.000.
Zuhlke, Rainer: *See—*
Krumm, Horst; Schettler, Helmut; Stahl, Rainer; and Zuhlke, Rainer, 4,353,040, Cl. 333-1.000.
Zust, John E. Thread tensioning and brake device. 4,352,471, Cl. 242-147.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brian, William S. Fuel-operated device. Re. 31,049, Cl. 417-343.000.
Campos, Jose G.: *See—*
Lombana, Luis A.; and Campos, Jose G., Re. 31,046, Cl. 110-187.000.
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., to Motorola Inc. Regulator for controlling capacitor charge to provide complex waveform. Re. 31,051, Cl. 307-260.000.
Essell, Albert E., deceased; by Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W. Snowplow blade extension. Re. 31,045, Cl. 37-281.000.
Essell, Christopher W.: *See—*
Essell, Albert E., deceased; Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W., Re. 31,045, Cl. 37-281.000.
Essell, Robert A. T.: *See—*
Essell, Albert E., deceased; Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W., Re. 31,045, Cl. 37-281.000.
Essell, Virginia G., executrix: *See—*
Essell, Albert E., deceased; Essell, Virginia G., executrix; Essell, Robert A. T.; and Essell, Christopher W., Re. 31,045, Cl. 37-281.000.
Frederiksen, Thomas M.: *See—*
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., Re. 31,051, Cl. 307-260.000.
Goodyear Tire & Rubber Company, The: *See—*
Ross, John A., Re. 31,047, Cl. 138-130.000.
Harig, Manfred, to N.V. Western Gear Europe, S.D. Hoisting device. Re. 31,050, Cl. 474-10.000.
Lombana, Luis A.; and Campos, Jose G., to Lurgi Corporation. Incineration method and system. Re. 31,046, Cl. 110-187.000.
Lurgi Corporation: *See—*
Lombana, Luis A.; and Campos, Jose G., Re. 31,046, Cl. 110-187.000.
Morbark Industries, Inc.: *See—*
Smith, Leward N., Re. 31,048, Cl. 241-281.000.
Motorola Inc.: *See—*
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., Re. 31,051, Cl. 307-260.000.
N.V. Western Gear Europe, S.D.: *See—*
Harig, Manfred, Re. 31,050, Cl. 474-10.000.
Ross, John A., to Goodyear Tire & Rubber Company, The. Hose structure. Re. 31,047, Cl. 138-130.000.
Shumway, Howard G.: *See—*
Davis, William F.; Shumway, Howard G.; and Frederiksen, Thomas M., Re. 31,051, Cl. 307-260.000.
Smith, Leward N., to Morbark Industries, Inc. Tree destroyer. Re. 31,048, Cl. 241-281.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Olivier, James Peter; and Hickin, George K., to Freeport Minerals Company. Apparatus and process for determining particle size by X-ray absorption analysis. B1 3,449,567. Cl. 250–362.
Freeport Minerals Company: *See—*
Olivier, James Peter; and Hickin, George K. B1 3,449,567. Cl. 250–362.

LIST OF DESIGN PATENTEES

Ader, Gary B.: *See—*
McMickle, Robert L.; Ader, Gary B.; and Grice, Steven L., 266,427, Cl. D15-12.000.
Agfa-Gevaert AG: *See—*
Schlagheck, Norbert, 266,430, Cl. D16-14.000.
Alissandratos, Tacko D. Combined toilet bowl brush and housing therefor. 266,379, 10-5-82, Cl. D6-86.000.
Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground seating unit. 266,447, 10-5-82, Cl. D21-242.000.
Ament, Duane S.: *See—*
Ament, Donald S.; and Ament, Duane S., 266,447, Cl. D21-242.000.
Angarone, Anthony D. Combined tumbler and supporting necklace therefor. 266,387, 10-5-82, Cl. D7-6.000.
Appel, Mel; and Kress, George, to Appel, Mel. Toy seaplane. 266,441, 10-5-82, Cl. D21-90.000.
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., to Appel, Mel. Toy typewriter. 266,442, 10-5-82, Cl. D21-109.000.
Apple Computer, Inc.: *See—*
Dresselhaus, William F., 266,426, Cl. D14-115.000.
Avento Designs, Inc.: *See—*
DiPersia, James L., 266,386, Cl. D6-194.000.
Ball Corporation: *See—*
Haag, John H., Sr., 266,398, Cl. D9-370.000.
Baptista, Roberto J., to Roanto Investment N.V. Golf club carrier. 266,373, 10-5-82, Cl. D3-37.000.
Bell & Howell Company: *See—*
Overman, John W., 266,429, Cl. D16-11.000.
Berkley and Company, Inc.: *See—*
McMickle, Robert L.; Ader, Gary B.; and Grice, Steven L., 266,427, Cl. D15-12.000.
Berry, Richard L., Jr. Fountain head. 266,451, 10-5-82, Cl. D23-13.000.
Blake, Joseph W., III: *See—*
Swett, James B.; Blake, Joseph W., III; and Conti, Rino, 266,450, Cl. D23-11.000.
Boden, Ogden W. Cap. 266,370, 10-5-82, Cl. D2-244.000.
Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., to Zenith Radio Corporation. Projection television receiver. 266,423, 10-5-82, Cl. D14-83.000.
Brent, Richard W., to Emerson Electric Co. Sheathed electric heating element. 266,414, 10-5-82, Cl. D13-21.000.
Bridgestone Tire Company Limited: *See—*
Nishio, Hideaki; and Takaki, Kazunari, 266,411, Cl. D12-147.000.
Burlington Furniture Division of Burlington Industries, Inc.: *See—*
West, Haywood L., 266,383, Cl. D6-172.000.
Burroughs Corporation: *See—*
Reaume, Richard W., 266,425, Cl. D14-114.000.
Campion, Stanley F., executor: *See—*
Jensen, George B., deceased; and Campion, Stanley F., executor, 266,389, Cl. D7-40.000.

- Cassett, Channing, to Valdor International Cosmetics Ltd. Toothbrush and toothpaste tube cap set. 266,375, 10-5-82, Cl. D4-18.000.
- Chuboff, David P.: *See—*
  - Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,423, Cl. D14-83.000.
- Cinque, Alphonse P. Lens mask. 266,432, 10-5-82, Cl. D16-38.000.
- Cinque, Alphonse P. Lens mask. 266,433, 10-5-82, Cl. D16-38.000.
- Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Chair. 266,377, 10-5-82, Cl. D6-57.000.
- Clarion Co. Ltd.: *See—*
  - Kikuhara, Toshiyoshi, 266,418, Cl. D14-7.000.
- Clowe, Robert A.; Robertson, Donald A.; and Wright, Gregory P., to Xerox Corporation. Copying machine. 266,431, 10-5-82, Cl. D16-30.000.
- Coniglio, Raymond C., to Twinpak Ltd. Bottle. 266,397, 10-5-82, Cl. D9-325.000.
- Conrad, George R., to Fantasy Flavors, Inc. Bottle or similar article. 266,402, 10-5-82, Cl. D9-404.000.
- Conti, Rino: *See—*
  - Swett, James B.; Blake, Joseph W., III; and Conti, Rino, 266,450, Cl. D23-11.000.
- Corning Glass Works: *See—*
  - Haner, Richard V., 266,390, Cl. D7-54.000.
- Cox, John A., to Mobay Chemical Corporation. Container for liquids. 266,399, 10-5-82, Cl. D9-378.000.
- Cremer, Heinz P., to Keiper Automobiltechnik GmbH & Co. KG. Control unit for interior of motor vehicle. 266,415, 10-5-82, Cl. D13-32.000.
- Dart Industries Inc.: *See—*
  - Swett, James B.; Blake, Joseph W., III; and Conti, Rino, 266,450, Cl. D23-11.000.
- Deaver, Dann T. Convertible top. 266,412, 10-5-82, Cl. D12-156.000.
- De Fontes, Robert J. Portable warning light. 266,406, 10-5-82, Cl. D10-114.000.
- DiPersia, James L., to Avento Designs, Inc. Furniture arm. 266,386, 10-5-82, Cl. D6-194.000.
- Dotson, Dale A. Non-smoker's necklace pendant or similar article. 266,408, 10-5-82, Cl. D11-81.000.
- Drake, Cal V. Key holder. 266,374, 10-5-82, Cl. D3-61.000.
- Dresselhaus, William F., to Apple Computer, Inc. Front panel for floppy disc drive. 266,426, 10-5-82, Cl. D14-115.000.
- Emerson Electric Co.: *See—*
  - Brent, Richard W., 266,414, Cl. D13-21.000.
- Exin-Iber, S.A.: *See—*
  - Pibet, Jose M. A., 266,440, Cl. D21-87.000.
- Fantasy Flavors, Inc.: *See—*
  - Conrad, George R., 266,402, Cl. D9-404.000.
- Fiskars Manufacturing Company: *See—*
  - Mayer, Paul C.; and Reichow, James R., 266,393, Cl. D8-93.000.
- Fleischmann, Gary A.; and Peabody, Lawrence C., to Kohler Co. Tub spout. 266,452, 10-5-82, Cl. D23-32.000.
- Fleming-Potter Company, Inc.: *See—*
  - Norman, Edward H., 266,403, Cl. D9-438.000.
- Foreman, Martin, to Namerof Pty. Ltd. Sprinkler. 266,449, 10-5-82, Cl. D23-7.000.
- Fostoria Glass Company: *See—*
  - Saffell, Jon R., 266,388, Cl. D7-13.000.
- Fratelli Saporiti: *See—*
  - Offredi, Giovanni, 266,378, Cl. D6-71.000.
- Fry, Roger P., to Gympac Systems Limited. Physical exerciser. 266,444, 10-5-82, Cl. D21-195.000.
- Garrigues, Andre, to Terraillon. Bathroom scale. 266,405, 10-5-82, Cl. D10-92.000.
- Genaro, Donald M.; McGarvey, John N.; and Milsark, Dale F., to Western Electric Company, Inc. Public telephone shelf. 266,381, 10-5-82, Cl. D6-133.000.
- Goldak, George R. Radioactivity spectrometer. 266,404, 10-5-82, Cl. D10-46.000.
- Green, Douglas F. Self-propelled flail blade lawn mower. 266,428, 10-5-82, Cl. D15-16.000.
- Grice, Steven L.: *See—*
  - McMickle, Robert L.; Ader, Gary B.; and Grice, Steven L., 266,427, Cl. D15-12.000.
- Gympac Systems Limited: *See—*
  - Fry, Roger P., 266,444, Cl. D21-195.000.
- Haag, John H., Sr., to Ball Corporation. Packaging container or similar article. 266,398, 10-5-82, Cl. D9-370.000.
- Haner, Richard V., to Corning Glass Works. Condiment dispenser or the like. 266,390, 10-5-82, Cl. D7-54.000.
- Hashimoto, Hidehisa; and Yoshizawa, Keiichi, to TDK Electronics Co., Ltd. Magazine of magnetic tape. 266,419, 10-5-82, Cl. D14-11.000.
- Hiraki, Takayuki, to Universal Pioneer Kabushiki Kaisha. Remote control for videodisc player. 266,416, 10-5-82, Cl. D14-1.000.
- Hoese, Fred O. Motorcycle radio housing. 266,409, 10-5-82, Cl. D12-114.000.
- Hoese, Fred O. Motorcycle radio housing. 266,410, 10-5-82, Cl. D12-114.000.
- Hoffberger, Charles C. Sabbath bread knife. 266.392, 10-5-82, Cl. D7-142.000.
- Hutchinson, Burton W. Flower pot holder. 266,382, 10-5-82, Cl. D6-137.000.
- James B. Lansing Sound, Inc.: *See—*
  - Warner, Douglas J., 266,420, Cl. D14-37.000.
- Jensen, George B., deceased; and by Campion, Stanley F., executor, to Syracuse China Corporation. Dish cover or similar article. 266,389, 10-5-82, Cl. D7-40.000.
- Johnson, Perry B. Airplane. 266,413, 10-5-82, Cl. D12-326.000.
- Jordon, Vincent W. Insulated can holder. 266,391, 10-5-82, Cl. D7-70.000.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Nagaya, Shunichi, 266,424, Cl. D14-111.000.
- Keiper Automobiltechnik GmbH & Co. KG: *See—*
  - Cremer, Heinz P., 266,415, Cl. D13-32.000.
- Ketcham & McDougall, Inc.: *See—*
  - Laughlin, Clayton A., 266,435, Cl. D19-75.000.
- Kikuhara, Toshiyoshi, to Clarion Co. Ltd. Automobile cassette deck. 266,418, 10-5-82, Cl. D14-7.000.
- Kohler Co.: *See—*
  - Fleischmann, Gary A.; and Peabody, Lawrence C., 266,452, Cl. D23-32.000.
- Kowalski, Chester W. Clay molding tool. 266,434, 10-5-82, Cl. D19-35.000.
- Kress, George: *See—*
  - Appel, Mel; and Kress, George, 266,441, Cl. D21-90.000.
- Laughlin, Clayton A., to Ketcham & McDougall, Inc. Desk tray. 266,435, 10-5-82, Cl. D19-75.000.
- Lawson, Olga J.: *See—*
  - Stewart, Arden K.; Lawson, Olga J.; and Lichtenstein, Ann F., 266,439, Cl. D21-25.000.
- Lewittes Furniture Enterprises, Inc.: *See—*
  - Claman, Mike T., 266,377, Cl. D6-57.000.
- Lichtenstein, Ann F.: *See—*
  - Stewart, Arden K.; Lawson, Olga J.; and Lichtenstein, Ann F., 266,439, Cl. D21-25.000.
- Lundin, Morris A. Storage rack for ski equipment. 266,384, 10-5-82, Cl. D6-186.000.
- Mayer, Paul C.; and Reichow, James R., to Fiskars Manufacturing Company. Knife sharpener. 266,393, 10-5-82, Cl. D8-93.000.
- McGarvey, John N.: *See—*
  - Genaro, Donald M.; McGarvey, John N.; and Milsark, Dale F., 266,381, Cl. D6-133.000.
- McMickle, Robert L.; Ader, Gary B.; and Grice, Steven L., to Berkley and Company, Inc. Portable rotary snow thrower. 266,427, 10-5-82, Cl. D15-12.000.
- Means, Paul B., III: *See—*
  - Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 266,442, Cl. D21-109.000.
- Miller, Harry C., to Sargent & Greenleaf, Inc. Combination lock fence lever for bank vaults, safe doors and the like. 266,395, 10-5-82, Cl. D8-343.000.
- Miller, Scott W. Showerhead. 266,453, 10-5-82, Cl. D23-35.000.
- Miller, Scott W. Showerhead. 266,454, 10-5-82, Cl. D23-35.000.
- Milsark, Dale F.: *See—*
  - Genaro, Donald M.; McGarvey, John N.; and Milsark, Dale F., 266,381, Cl. D6-133.000.
- Miracle Recreation Equipment Company: *See—*
  - Ament, Donald S.; and Ament, Duane S., 266,447, Cl. D21-242.000.
- Mobay Chemical Corporation: *See—*
  - Cox, John A., 266,399, Cl. D9-378.000.
- Musgrove, Bryan H. Picnic table. 266,376, 10-5-82, Cl. D6-45.000.
- Musgrove, Donovon E.; and Vos, Wilbur D. Sun shade attachment for a chair. 266,385, 10-5-82, Cl. D6-191.000.
- Nagaya, Shunichi, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Electronic printer. 266,424, 10-5-82, Cl. D14-111.000.
- Nagel, Dietmar. Illuminated whistle. 266,407, 10-5-82, Cl. D10-119.000.
- Namerof Pty. Ltd.: *See—*
  - Foreman, Martin, 266,449, Cl. D23-7.000.
- Neville, Donald, to Plastiglide Manufacturing Corporation. Roller. 266,396, 10-5-82, Cl. D8-375.000.
- Nishio, Hideaki; and Takaki, Kazunari, to Bridgestone Tire Company Limited. Vehicle tire. 266,411, 10-5-82, Cl. D12-147.000.
- Nissen Corporation: *See—*
  - Summerlot, Raymond L., 266,443, Cl. D21-192.000.
- Norman, Edward H., to Fleming-Potter Company, Inc. Heat shrinkable capsule for a champagne bottle. 266,403, 10-5-82, Cl. D9-438.000.
- Offredi, Giovanni, to Fratelli Saporiti. Chair. 266,378, 10-5-82, Cl. D6-71.000.
- Overman, John W., to Bell & Howell Company. Microfilm reader. 266,429, 10-5-82, Cl. D16-11.000.
- Parfums Christian Dior S.A.: *See—*
  - Picot, Bernard T., 266,401, Cl. D9-384.000.
- Peabody, Lawrence C.: *See—*
  - Fleischmann, Gary A.; and Peabody, Lawrence C., 266,452, Cl. D23-32.000.
- Perez, Damaso. Combined cassette player, headset and radio. 266,417, 10-5-82, Cl. D14-5.000.
- Pestolite, Inc.: *See—*
  - Schneider, William A., 266,448, Cl. D22-19.000.
- Pibet, Jose M. A., to Exin-Iber, S.A. Toy space vehicle. 266,440, 10-5-82, Cl. D21-87.000.
- Picot, Bernard T., to Parfums Christian Dior S.A. Bottle. 266,401, 10-5-82, Cl. D9-384.000.
- Plastiglide Manufacturing Corporation: *See—*
  - Neville, Donald, 266,396, Cl. D8-375.000.
- Ploeger, Richard J. Easel. 266,380, 10-5-82, Cl. D6-114.000.

- Presto Lock, Inc.: *See—*
  - Stolarz, Edward M., 266,394, Cl. D8-336.000.
- Reaume, Richard W., to Burroughs Corporation. Computer cabinet work surface. 266,425, 10-5-82, Cl. D14-114.000.
- Reichow, James R.: *See—*
  - Mayer, Paul C.; and Reichow, James R., 266,393, Cl. D8-93.000.
- Reina, David W.: *See—*
  - Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 266,442, Cl. D21-109.000.
- Reisman, Ron. Self-contained magnetic backgammon board and game pieces. 266,438, 10-5-82, Cl. D21-16.000.
- Roanto Investment N.V.: *See—*
  - Baptista, Roberto J., 266,373, Cl. D3-37.000.
- Robertson, Donald A.: *See—*
  - Clowe, Robert A.; Robertson, Donald A.; and Wright, Gregory P., 266,431, Cl. D16-30.000.
- Saffell, Jon R., to Fostoria Glass Company. Goblet. 266,388, 10-5-82, Cl. D7-13.000.
- Sargent & Greenleaf, Inc.: *See—*
  - Miller, Harry C., 266,395, Cl. D8-343.000.
- Schlagheck, Norbert, to Agfa-Gevaert AG. Rear screen motion picture projector with film spool storage unit. 266,430, 10-5-82, Cl. D16-14.000.
- Schneider, William A., to Pestolite, Inc. Flying insect trap. 266,448, 10-5-82, Cl. D22-19.000.
- Shatz, Martin. Combined funnel and storage container. 266,400, 10-5-82, Cl. D9-383.000.
- Shinshu Seiki Kabushiki Kaisha: *See—*
  - Nagaya, Shunichi, 266,424, Cl. D14-111.000.
- Slater, Robert E.: *See—*
  - Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,423, Cl. D14-83.000.
- Smith, Albert E. Desk ornament. 266,436, 10-5-82, Cl. D19-77.000.
- Stewart, Arden K.; Lawson, Olga J.; and Lichtenstein, Ann F. Game board. 266,439, 10-5-82, Cl. D21-25.000.
- Stolarz, Edward M., to Presto Lock, Inc. Combination lock. 266,394, 10-5-82, Cl. D8-336.000.
- Stubblefield, Jerry D. Shoe sole. 266,371, 10-5-82, Cl. D2-320.000.
- Stubblefield, Jerry D. Shoe sole. 266,372, 10-5-82, Cl. D2-320.000.
- Summerlot, Raymond L., to Nissen Corporation. Exercise treadmill and the like. 266,443, 10-5-82, Cl. D21-192.000.
- Swett, James B.; Blake, Joseph W., III; and Conti, Rino, to Dart Industries Inc. Watering can or the like. 266,450, 10-5-82, Cl. D23-11.000.
- Syracuse China Corporation: *See—*
  - Jensen, George B., deceased; and Campion, Stanley F., executor, 266,389, Cl. D7-40.000.
- Takaki, Kazunari: *See—*
  - Nishio, Hideaki; and Takaki, Kazunari, 266,411, Cl. D12-147.000.
- TDK Electronics Co., Ltd.: *See—*
  - Hashimoto, Hidehisa; and Yoshizawa, Keiichi, 266,419, Cl. D14-11.000.
  - Yoshizawa, Keiichi, 266,437, Cl. D20-27.000.
- Terraillon: *See—*
  - Garrigues, Andre, 266,405, Cl. D10-92.000.
- Thomas, Wesley L. Telephone. 266,421, 10-5-82, Cl. D14-53.000.
- Trottier, Clement W.: *See—*
  - Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,423, Cl. D14-83.000.
- Twinpak Ltd.: *See—*
  - Coniglio, Raymond C., 266,397, Cl. D9-325.000.
- Universal Pioneer Kabushiki Kaisha: *See—*
  - Hiraki, Takayuki, 266,416, Cl. D14-1.000.
- Valdor International Cosmetics Ltd.: *See—*
  - Cassett, Channing, 266,375, Cl. D4-18.000.
- Verdon, Stephen M. Skate sail. 266,446, 10-5-82, Cl. D21-224.000.
- Vita Electronics Corp., Ltd.: *See—*
  - Yip, Pak-Hung, 266,422, Cl. D14-73.000.
- Vos, Wilbur D.: *See—*
  - Musgrove, Donovon E.; and Vos, Wilbur D., 266,385, Cl. D6-191.000.
- Warner, Douglas J., to James B. Lansing Sound, Inc. Loudspeaker magnet housing. 266,420, 10-5-82, Cl. D14-37.000.
- West, Haywood L., to Burlington Furniture Division of Burlington Industries, Inc. China cabinet or the like. 266,383, 10-5-82, Cl. D6-172.000.
- Western Electric Company, Inc.: *See—*
  - Genaro, Donald M.; McGarvey, John N.; and Milsark, Dale F., 266,381, Cl. D6-133.000.
- Wilcox, James J.: *See—*
  - Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 266,442, Cl. D21-109.000.
- Wright, Gregory P.: *See—*
  - Clowe, Robert A.; Robertson, Donald A.; and Wright, Gregory P., 266,431, Cl. D16-30.000.
- Xerox Corporation: *See—*
  - Clowe, Robert A.; Robertson, Donald A.; and Wright, Gregory P., 266,431, Cl. D16-30.000.
- Yip, Pak-Hung, to Vita Electronics Corp., Ltd. Clock radio. 266,422, 10-5-82, Cl. D14-73.000.
- Yokotaki, Mitsuru. Golf ball marker holder. 266,445, 10-5-82, Cl. D21-221.000.
- Yoshizawa, Keiichi, to TDK Electronics Co., Ltd. Label for a cassette holder. 266,437, 10-5-82, Cl. D20-27.000.
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  - Hashimoto, Hidehisa; and Yoshizawa, Keiichi, 266,419, Cl. D14-11.000.
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  - Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,423, Cl. D14-83.000.

LIST OF PLANT PATENTEES

- Elliott, Charles P. Rose plant. 4,892, 10-5-82, Cl. 28.000.
- Superior Farming Company: *See—*
  - Weinberger, John H., 4,893, Cl. 41.000.
- Weinberger, John H., to Superior Farming Company. Nectarine tree. 4,893, 10-5-82, Cl. 41.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Commisso, Nicholas D. Method for the production of apertures in polystyrene foam sheet. T102,302, 10-5-82, Cl. 264-154.000.
- Morrow, Duane F. 5,6,7,8-Tetrahydrotriazolo{4,3-alpha}-pyridin-3(2H)-ones. T102,303, 10-5-82, Cl. 544-362.000.
- Walker, Kenneth R. Use of polyethylene waxes to control metal orientation in paints. T102,301, 10-5-82, Cl. 524-556.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 5, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 3	
1.5	4,352,211
1.91	4,352,212
CLASS 4	
199	4,352,213
243	4,352,214
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523	4,352,216
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CLASS 8	
444	4,352,672
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86 A	4,352,219
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1	4,352,220
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65 CR	4,352,223
97	4,352,224
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	4,352,674
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1.23	4,352,225
25.19	4,352,226
33 F	4,352,227
115	4,352,228
116 R	4,352,229
125	4,352,230
157 R	4,352,231
243.56	4,352,232
434	4,352,233
450	4,352,234
527.4	4,352,235
571	4,352,236
577 C	4,352,237
579	4,352,238
590	4,352,239
854	4,352,240
CLASS 30	
123.4	4,352,241
130	4,352,242
276	4,352,243
CLASS 33	
137 R	4,352,244
169 B	4,352,245
174 L	4,352,246
428	4,352,247
CLASS 34	
88	4,352,248
212	4,352,249
CLASS 37	
58	4,352,250
	4,352,251
281	Re.31,045
CLASS 38	
16	4,352,252
CLASS 40	
300	4,352,253
CLASS 42	
88	4,352,254
CLASS 46	
16	4,352,255
CLASS 47	
17	4,352,256
CLASS 48	
73	4,352,675
76	4,352,676
180 C	4,352,677
CLASS 49	
406	4,352,257
468	4,352,258
CLASS 51	
307	4,352,678
CLASS 52	
2	4,352,259
80	4,352,260
169.12	4,352,261
744	4,352,262
CLASS 53	
436	4,352,263
531	4,352,264
541	4,352,265
CLASS 55	
38	4,352,679
48	4,352,680
127	4,352,681
165	4,352,682
192	4,352,683
382	4,352,684
CLASS 56	
11.3	4,352,266
341	4,352,267
370	4,352,268
CLASS 60	
517	4,352,269
648	4,352,270
670	4,352,271
CLASS 62	
28	4,352,685
87	4,352,273
229	4,352,274
235.1	4,352,272
256	4,352,275
CLASS 65	
15	4,352,686
134	4,352,687
CLASS 68	
175	4,352,277
CLASS 70	
252	4,352,278
451	4,352,279
CLASS 71	
11	4,352,688
86	4,352,689
CLASS 72	
38	4,352,280
131	4,352,281
321	4,352,282
354	4,352,283
452	4,352,284
466	4,352,285
CLASS 73	
23	4,352,286
60	4,352,287
61 R	4,352,288
114	4,352,289
462	4,352,291
575	4,352,292
593	4,352,293
642	4,352,294
862.34	4,352,295
CLASS 74	
55	4,352,296
63	4,352,297
84 R	4,352,298
	4,352,299
89.15	4,352,300
467	4,352,301
474	4,352,302
489	4,352,303
498	4,352,304
CLASS 81	
177 N	4,352,306
	4,352,307
CLASS 82	
1 C	4,352,308
CLASS 83	
697	4,352,309
CLASS 84	
1.01	4,352,310
1.19	4,352,311
1.21	4,352,312
9.51	4,352,305
425	4,352,313
CLASS 89	
1.5 F	4,352,314
36 A	4,352,316
36 L	4,352,315
154	4,352,317
CLASS 91	
395	4,352,318
483	4,352,319
CLASS 92	
13	4,352,320
CLASS 98	
2.11	4,352,321
33 R	4,352,322
40 D	4,352,323
CLASS 99	
425	4,352,324
483	4,352,325
CLASS 101	
123	4,352,326
CLASS 104	
96	4,352,330
170	4,352,327
172 S	4,352,328
305	4,352,329
CLASS 105	
248	4,352,331
CLASS 106	
1.23	4,352,690
20	4,352,691
79	4,352,692
104	4,352,693
106	4,352,694
135	4,352,695
163 R	4,352,696
CLASS 110	
187	Re.31,046
346	4,352,332
CLASS 112	
266.1	4,352,334
291	4,352,333
CLASS 114	
143	4,352,335
218	4,352,336
343	4,352,337
344	4,352,668
363	4,352,218
364	4,352,338
CLASS 119	
1	4,352,340
18	4,352,339
CLASS 122	
7 R	4,352,341
CLASS 123	
41.54	4,352,342
51 BA	4,352,343
90.18	4,352,344
414	4,352,345
440	4,352,346
	4,352,347
CLASS 124	
78	4,352,348
CLASS 126	
299 R	4,352,349
425	4,352,350
CLASS 128	
1 C	4,352,351
76 R	4,352,352
201.24	4,352,353
214 R	4,352,354
287	4,352,355
288	4,352,356
303.13	4,352,357
334 R	4,352,358
640	4,352,359
786	4,352,360
CLASS 134	
58 R	4,352,361
CLASS 135	
3 E	4,352,362
7	4,352,363
CLASS 136	
249	4,352,948
CLASS 137	
43	4,352,364
68 R	4,352,365
71	4,352,366
82	4,352,367
247.45	4,352,368
270	4,352,369
382	4,352,370
414	4,352,371
504	4,352,372
561 A	4,352,373
564.5	4,352,374
596.13	4,352,375
624.15	4,352,376
851	4,352,377
CLASS 138	
38	4,352,378
97	4,352,379
130	Re.31,047
CLASS 139	
426 R	4,352,380
CLASS 145	
2 R	4,352,381
CLASS 148	
2	4,352,697
4	4,352,698
CLASS 149	
19.2	4,352,700
109.6	4,352,699
CLASS 152	
189	4,352,382
352 R	4,352,383
CLASS 156	
51	4,352,701
84	4,352,702
88	4,352,703
125	4,352,704
155	4,352,705
233	4,352,706
359	4,352,707
378	4,352,708
380.6	4,352,709
384	4,352,710
497	4,352,711
540	4,352,712
612	4,352,713
626	4,352,714
634	4,352,715
643	4,352,716
CLASS 159	
4 E	4,352,717
48 R	4,352,718
CLASS 160	
172	4,352,384
177	4,352,385
178 C	4,352,386
CLASS 162	
128	4,352,719
CLASS 164	
132	4,352,387
305	4,352,388
343	4,352,389
351	4,352,390
CLASS 165	
1	4,352,391
104.25	4,352,392
166	4,352,393
CLASS 166	
106	4,352,394
292	4,352,395
295	4,352,396
297	4,352,397
CLASS 172	
812	4,352,398
CLASS 174	
27	4,352,949
35 C	4,352,950
152 GM	4,352,951
CLASS 175	
315	4,352,399
330	4,352,400
CLASS 178	
22.09	4,352,952
CLASS 179	
1 G	4,352,953
1 J	4,352,954
2 EB	4,352,955
6.04	4,352,956
15 C	4,352,957
84 VF	4,352,958
90 K	4,352,959
107 BC	4,352,960
110 A	4,352,961
170 R	4,352,962
CLASS 180	
90	4,352,401
170	4,352,402
176	4,352,403
179	4,352,404
282	4,352,405
308	4,352,406
CLASS 181	
167	4,352,407
249	4,352,408
CLASS 182	
8	4,352,409
CLASS 187	
29 R	4,352,410
	4,352,411
	4,352,412
CLASS 188	
72.4	4,352,413
73.34	4,352,414
156	4,352,415
251 M	4,352,416
322.15	4,352,417
CLASS 192	
36	4,352,418
98	4,352,419
106.2	4,352,420
CLASS 198	
392	4,352,421
404	4,352,422
472	4,352,423
482	4,352,424
499	4,352,425
657	4,352,426
CLASS 200	
5 A	4,352,963
	4,352,964
6 R	4,352,965
16 D	4,352,966
153 J	4,352,967
302	4,352,968
CLASS 202	
124	4,352,720
CLASS 204	
35 N	4,352,721
129	4,352,722
159.19	4,352,723
192 E	4,352,724
	4,352,725
195 M	4,352,726
212	4,352,727
CLASS 206	
45.33	4,352,427
314	4,352,428
439	4,352,429
CLASS 208	
127	4,352,728
209	4,352,729
CLASS 209	
8	4,352,730
9	4,352,731
17	4,352,732
430	4,352,733
577	4,352,430
600	4,352,431
CLASS 210	
238	4,352,735
321.3	4,352,736
455	4,352,737
612	4,352,738
739	4,352,739
741	4,352,734
760	4,352,740
CLASS 211	
19	4,352,432
105.1	4,352,433
CLASS 212	
186	4,352,434
CLASS 215	
1 C	4,352,435
252	4,352,436
CLASS 219	
10.75	4,352,969
72	4,352,970
86.61	4,352,971
100	4,352,972
121 LH	4,352,973
121 PD	4,352,974
125.11	4,352,975
217	4,352,976
243	4,352,977
CLASS 220	
89 A	4,352,437
90	4,352,438
316	4,352,439
CLASS 221	
178	4,352,440
CLASS 222	
99	4,352,441
146 HE	4,352,442
207	4,352,443
309	4,352,444
611	4,352,445
CLASS 225	
1	4,352,446
2	4,352,447
CLASS 226	
108	4,352,448
CLASS 228	
123	4,352,449
205	4,352,450
CLASS 233	
27	4,352,451
CLASS 235	
70 R	4,352,978
91 A	4,352,979
92 SB	4,352,980
CLASS 236	
13	4,352,452
	4,352,453
CLASS 237	
8 R	4,352,454
12.3 R	4,352,455
	4,352,456
CLASS 239	
45	4,352,457
77	4,352,458

102	4,352,459
184	4,352,460
211	4,352,461
266	4,352,462
663	4,352,463
713	4,352,464

CLASS 241

281	Re.31,048

CLASS 242

7.12	4,352,465
18 PW	4,352,466
55	4,352,467
58.4	4,352,468
71.8	4,352,469
72.1	4,352,470
147 R	4,352,471
186	4,352,472
199	4,352,473
218	4,352,474

CLASS 246

34 CT	4,352,475

CLASS 248

74 R	4,352,476
156	4,352,477
221.3	4,352,478
405	4,352,479
443	4,352,480
550	4,352,481

CLASS 249

106	4,352,482

CLASS 250

201	4,352,981
214 A	4,352,982
227	4,352,983
234	4,352,984
306	4,352,985
559	4,352,988
362	B1 3,449,567

CLASS 251

229	4,352,483

CLASS 252

8.55 D	4,352,741
75	4,352,742
174.11	4,352,743
313 S	4,352,744
364	4,352,745
398	4,352,746
500	4,352,747
522 R	4,352,748

CLASS 256

13.1	4,352,484
65	4,352,485

CLASS 260

112 R	4,352,751
112.5 R	4,352,752
326.12 R	4,352,753
330.3	4,352,754
401	4,352,759
404	4,352,760
544 A	4,352,761
972	4,352,762

CLASS 261

72 R	4,352,763

CLASS 264

8	4,352,764
22	4,352,765
45.5	4,352,766
46.6	4,352,767
105	4,352,768
134	4,352,769
187	4,352,770
210.2	4,352,771
229	4,352,772
262	4,352,773
263	4,352,774
500	4,352,775
522	4,352,776
538	4,352,777

CLASS 266

99	4,352,486

CLASS 267

35	4,352,487

CLASS 269

54.2	4,352,488
75	4,352,489

CLASS 271

289	4,352,490

CLASS 272

144	4,352,491

CLASS 273

1 GA	4,352,493
1 GC	4,352,492
1.5 A	4,352,494
73 C	4,352,495
363	4,352,496
411	4,352,497

CLASS 277

1	4,352,498
59	4,352,499

CLASS 279

121	4,352,500

CLASS 280

16	4,352,501
154.5 R	4,352,502
238	4,352,503
281 R	4,352,504
495	4,352,505
605	4,352,506
	4,352,507
624	4,352,508
716	4,352,509
727	4,352,510

CLASS 285

91	4,352,511
419	4,352,512

CLASS 290

53	4,352,989
54	4,352,990

CLASS 292

113	4,352,513

CLASS 293

110	4,352,514
145	4,352,515

CLASS 294

81 R	4,352,516

CLASS 296

35.3	4,352,517
97 G	4,352,519
97 H	4,352,518
182	4,352,520
191	4,352,521
214	4,352,522

CLASS 297

85	4,352,523
452	4,352,524

CLASS 301

37 PB	4,352,525

CLASS 307

9	4,352,991
40	4,352,992
112	4,352,993
149	4,352,994
260	Re.31,051
265	4,352,995
269	4,352,996
279	4,352,997
311	4,352,998
354	4,352,999
490	4,353,000
542	4,353,001

CLASS 308

6 C	4,352,526
26	4,352,527
189 R	4,352,528

CLASS 310

64	4,353,002
306	4,353,003
318	4,353,004

CLASS 312

222	4,352,529

CLASS 313

371	4,353,005
457	4,353,006

CLASS 315

62	4,353,007
114	4,353,008
220	4,353,009
	4,353,010
240	4,353,011
289	4,353,012
387	4,353,013
411	4,353,014

CLASS 318

41	4,353,015
254	4,353,016
331	4,353,017
571	4,353,018
594	4,353,019
601	4,353,020
696	4,353,021
753	4,353,022
762	4,353,023

CLASS 323

211	4,353,024
300	4,353,025

CLASS 324

51	4,353,026
56	4,353,027
111	4,353,028
236	4,353,029

CLASS 328

38	4,353,030
62	4,353,031
165	4,353,032
234	4,353,033

CLASS 329

103	4,353,034

CLASS 330

126	4,353,035
264	4,353,036
298	4,353,037

CLASS 331

36 C	4,353,038
113 R	4,353,039

CLASS 333

1	4,353,040
21 A	4,353,041
24.1	4,353,042
151	4,353,043
173	4,353,044
190	4,353,045
194	4,353,046
247	4,353,047

CLASS 335

151	4,353,048
205	4,353,049

CLASS 336

30	4,353,050
192	4,353,051
210	4,353,052

CLASS 338

184	4,353,053

CLASS 339

5 M	4,352,530
14 R	4,352,531
15	4,352,532
17 L	4,352,533
19	4,352,534
75 MP	4,352,535
	4,352,536
99 R	4,352,537
126 R	4,352,538
154 L	4,352,539
196 R	4,352,540

CLASS 340

31 C	4,353,054
52 D	4,353,055
146.3 E	4,353,056
347 AD	4,353,059
	4,353,060
347 CC	4,353,058
347 SH	4,353,057
720	4,353,061
767	4,353,062
798	4,353,063
825.31	4,353,064
825.44	4,353,065
825.96	4,353,066

CLASS 343

17.2 PC	4,353,067
17.7	4,353,068
18 A	4,353,069
701	4,353,070
709	4,353,071
725	4,353,072
779	4,353,073
786	4,353,074
903	4,353,075

CLASS 346

65	4,353,076
137	4,353,077
140 R	4,353,078
	4,353,079
153.1	4,353,080

CLASS 350

6.6	4,352,541
96.21	4,352,542
252	4,352,543
464	4,352,544

CLASS 354

25	4,352,545
126	4,352,546
200	4,352,547
286	4,352,548

CLASS 355

3 FU	4,352,551
3 R	4,352,549
	4,352,550
4	4,352,552
14 E	4,352,553
40	4,352,554
77	4,352,555

CLASS 356

1	4,352,556
39	4,352,557
	4,352,558
71	4,352,559
247	4,352,560
332	4,352,561
350	4,352,562
	4,352,563
354	4,352,564
360	4,352,565
364	4,352,566

CLASS 357

16	4,353,081
23	4,353,082
	4,353,083
30	4,353,084
42	4,353,085
51	4,353,086

CLASS 358

101	4,353,087
120	4,353,088
139	4,353,091
160	4,353,092
	4,353,093
249	4,353,094
260	4,353,095
263	4,353,096
287	4,353,097
337	4,353,089
342	4,353,090

CLASS 360

9.1	4,353,098
27	4,353,099
65	4,353,100
85	4,353,101
126	4,353,102

CLASS 361

45	4,353,103
91	4,353,104
101	4,353,105
293	4,353,106
323	4,353,107
386	4,353,108

CLASS 362

13	4,353,109
35	4,353,110
80	4,353,111

CLASS 363

16	4,353,112
21	4,353,113
	4,353,114
42	4,353,115
133	4,353,116

CLASS 364

300	4,353,117
510	4,353,118
517	4,353,119

CLASS 366

76	4,352,567
84	4,352,568
107	4,352,569
127	4,352,570
	4,352,571
145	4,352,572
176	4,352,573
194	4,352,574

CLASS 367

13	4,353,120
21	4,353,121
25	4,353,122
137	4,353,123

CLASS 368

258	4,353,124

CLASS 369

136	4,353,125

CLASS 370

24	4,353,126
32	4,353,127
44	4,353,128

CLASS 374

110	4,352,290

CLASS 375

112	4,353,129
114	4,353,130

CLASS 376

365	4,352,778

CLASS 378

14	4,352,986
150	4,352,987

CLASS 400

154.4	4,352,576
196.1	4,352,577
208	4,352,578
250	4,352,575

CLASS 401

19	4,352,579
29	4,352,580
85	4,352,581

CLASS 402

38	4,352,582
75	4,352,583

CLASS 403

13	4,352,584
24	4,352,585
163	4,352,586
252	4,352,587
382	4,352,588
408	4,352,589

CLASS 405

17	4,352,590
87	4,352,591
102	4,352,592
108	4,352,593
138	4,352,594
158	4,352,595
195	4,352,596
219	4,352,597
222	4,352,598
224	4,352,599
259	4,352,600
270	4,352,601
291	4,352,602

CLASS 406

27	4,352,603
28	4,352,604
29	4,352,605
81	4,352,606
88	4,352,607
116	4,352,608

CLASS 407

42	4,352,609

CLASS 408

1 R	4,352,610
37	4,352,611

CLASS 409

233	4,352,612

CLASS 410

82	4,352,613

CLASS 411

427	4,352,614

CLASS 414

17	4,352,615
31	4,352,616
95	4,352,617
148	4,352,618
174	4,352,619
225	4,352,620
231	4,352,621
277	4,352,622
294	4,352,623
400	4,352,624
494	4,352,625
722	4,352,626
752	4,352,627
786	4,352,628

CLASS 416

18	4,352,629
70 A	4,352,630
134 A	4,352,631
	4,352,632
137	4,352,633
154	4,352,634

CLASS 417

16	4,352,635
22	4,352,636
54	4,352,637
64	4,352,638
134	4,352,639
273	4,352,640
283	4,352,641
312	4,352,642
313	4,352,643
343	Re.31,049
402	4,352,644
417	4,352,645
420	4,352,646

CLASS 422

52	4,352,779
67	4,352,780
78	4,352,781
179	4,352,782
	4,352,783
249	4,352,784
	4,352,785

CLASS 423

98	4,352,786
445	4,352,787

CLASS 424

5	4,352,788
46	4,352,789
78	4,352,790
153	4,352,791
180	4,352,792
	4,352,793
	4,352,794
	4,352,795
195	4,352,796
	4,352,797
242	4,352,798
244	4,352,799
246	4,352,800
	4,352,801
	4,352,802
250	4,352,804
	4,352,805
251	4,352,803
	4,352,806
256	4,352,807
258	4,352,808
	4,352,809
263	4,352,810
267	4,352,811
273 N	4,352,813
273 R	4,352,812
	4,352,814
	4,352,815
	4,352,816
	4,352,817
	4,352,818
275	4,352,819
329	4,352,820
361	4,352,821

CLASS 425

48	4,352,647
78	4,352,648
83.1	4,352,649
174.8 E	4,352,650
261	4,352,651
525	4,352,652
541	4,352,653
545	4,352,654

CLASS 426

4	4,352,822
5	4,352,823
	4,352,824
	4,352,825
39	4,352,826
270	4,352,827
271	4,352,828
387	4,352,829
421	4,352,830
497	4,352,831
589	4,352,832

CLASS 427

4	4,352,833
38	4,352,834
	4,352,835
39	4,352,836
187	4,352,837
209	4,352,838
240	4,352,839
252	4,352,840
292	4,352,841
385.5	4,352,842

CLASS 428

33	4,352,843
35	4,352,844
88	4,352,845
105	4,352,846
141	4,352,847
192	4,352,848
213	4,352,849
214	4,352,850
250	4,352,851
290	4,352,852
304.4	4,352,853
318.8	4,352,854
320.4	4,352,855
329	4,352,856
402	4,352,857
423.1	4,352,858
425.9	4,352,859
478.2	4,352,860
511	4,352,861
694	4,352,862

CLASS 429

17	4,352,863
18	4,352,864
41	4,352,865
101	4,352,866
	4,352,867
111	4,352,868
191	4,352,869

CLASS 430

42	4,352,875
58	4,352,876
97	4,352,877
167	4,352,878
209	4,352,879
271	4,352,870
505	4,352,871
523	4,352,872
545	4,352,873
568	4,352,874

CLASS 431

1	4,352,655
72	4,352,656
127	4,352,657
254	4,352,658

CLASS 432

10	4,352,659
14	4,352,660
	4,352,661

CLASS 433

56	4,352,662
73	4,352,663

CLASS 434

14	4,352,664
22	4,352,665

CLASS 435

6	4,352,880
17	4,352,881
101	4,352,882
178	4,352,883
180	4,352,884
189	4,352,885
240	4,352,887
262	4,352,886
287	4,352,888

CLASS 440

53	4,352,666
105	4,352,667

CLASS 455

179	4,353,131
315	4,353,132

CLASS 464

109	4,352,276

CLASS 474

10	Re.31,050

CLASS 493

213	4,352,669
337	4,352,670
424	4,352,671

CLASS 501

15	4,352,889
141	4,352,890

CLASS 521

32	4,352,891
79	4,352,892
	4,352,893
91	4,352,894
99	4,352,895
118	4,352,896

CLASS 523

156	4,352,750
220	4,352,897
414	4,352,898
451	4,352,899
507	4,352,900

CLASS 524

38	4,352,901
40	4,352,902
100	4,352,903
292	4,352,904
359	4,352,905
426	4,352,906
537	4,352,907

CLASS 525

83	4,352,910
98	4,352,908
149	4,352,749
157	4,352,909
211	4,352,911
314	4,352,912
504	4,352,913
	4,352,914

CLASS 526

65	4,352,915
200	4,352,916

CLASS 528

26	4,352,917
89	4,352,918
111	4,352,919
	4,352,920
	4,352,921
232	4,352,922
233	4,352,923
302	4,352,924
309	4,352,925
335	4,352,926
502	4,352,927

CLASS 542

431	4,352,928

CLASS 544

54	4,352,929
205	4,352,930
251	4,352,931
295	4,352,932
320	4,352,933

CLASS 548

217	4,352,934

CLASS 549

72	4,352,935
258	4,352,755
332	4,352,936
497	4,352,756
513	4,352,757
521	4,352,758
546	4,352,937
553	4,352,938

CLASS 560

120	4,352,939

CLASS 562

607	4,352,940

CLASS 564

314	4,352,941

CLASS 568

306	4,352,942
378	4,352,943
766	4,352,944
899	4,352,945
902	4,352,946
	4,352,947

CLASSIFICATION OF DESIGNS

D2—	244	266,370
	320	266,371
		266,372
D3—	37	266,373
	61	266,374
D4—	18	266,375
D6—	45	266,376
	57	266,377
	71	266,378
	86	266,379
	114	266,380
	133	266,381
	137	266,382
	172	266,383
	186	266,384
	191	266,385
	194	266,386
D7—	6	266,387
	13	266,388
	40	266,389
	54	266,390
	70	266,391
	142	266,392
D8—	93	266,393
	336	266,394
	343	266,395
	375	266,396
D9—	325	266,397
	370	266,398
	378	266,399
	383	266,400
	384	266,401
	404	266,402
	438	266,403
D10—	46	266,404
	92	266,405
	114	266,406
	119	266,407
D11—	81	266,408
D12—	114	266,409
		266,410
	147	266,411
	156	266,412
	326	266,413
D13—	21	266,414
	32	266,415
D14—	1	266,416
	5	266,417
	7	266,418
	11	266,419
	37	266,420
	53	266,421
	73	266,422
	83	266,423
	111	266,424
	114	266,425
	115	266,426
D15—	12	266,427
	16	266,428
D16—	11	266,429
	14	266,430
	30	266,431
	38	266,432
		266,433
D19—	35	266,434
	75	266,435
	77	266,436
D20—	27	266,437
D21—	16	266,438
	25	266,439
	87	266,440
	90	266,441
	109	266,442
	192	266,443
	195	266,444
	221	266,445
	224	266,446
	242	266,447
D22—	19	266,448
D23—	7	266,449
	11	266,450
	13	266,451
	32	266,452
	35	266,453
		266,454

CLASSIFICATION OF PLANTS

P.—	28	4,892
	41	4,893

DEFENSIVE PUBLICATIONS APPLICATIONS

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PATENTS

01 :	4,352,377		4,352,722		4,352,823		4,352,669		4,352,562		4,352,789
04 :	Re.31,051		4,352,735		4,352,825		4,352,679		4,352,573		4,352,872
	4,352,260		4,352,750		4,352,838		4,352,682		4,352,634		4,353,013
	4,352,358		4,352,751		4,352,863		4,352,688		4,352,670		4,353,016
	4,352,437		4,352,787		4,352,965		4,352,692		4,352,684		4,353,110
	4,352,848		4,352,791		4,353,049		4,352,745		4,352,728	28 :	4,352,523
	4,352,952		4,352,821		4,353,061		4,352,747		4,352,768	29 :	4,352,213
	4,353,059		4,352,830		4,353,087		4,352,783		4,352,866		4,352,340
	4,353,119		4,352,840	10 :	4,352,744		4,352,843		4,352,871		4,352,661
05 :	4,352,384		4,352,851		4,352,882		4,352,856		4,352,874		4,352,771
	4,353,022		4,352,862		4,352,916		4,352,888		4,352,880		4,352,826
06 :	Re.31,046		4,352,864		4,352,938		4,352,969		4,352,948		4,353,069
	4,352,231		4,352,898		4,352,940		4,353,037		4,352,977		4,353,124
	4,352,239		4,352,945	12 :	4,352,251		4,353,038		4,352,998	30 :	4,352,256
	4,352,242		4,352,951		4,352,316		4,353,064		4,353,012	31 :	4,352,225
	4,352,249		4,352,953		4,352,338		4,353,094		4,353,017		4,352,302
	4,352,273		4,352,966		4,352,349	18 :	4,352,229		4,353,029	32 :	4,352,306
	4,352,274		4,352,976		4,352,409		4,352,299	26 :	Re.31,048		4,352,307
	4,352,280		4,352,982		4,352,536		4,352,305		4,352,230		4,352,348
	4,352,291		4,353,019		4,352,555		4,352,350		4,352,253		4,352,508
	4,352,329		4,353,020		4,352,630		4,352,414		4,352,275		4,352,694
	4,352,336		4,353,025		4,352,776		4,352,516		4,352,296		4,352,867
	4,352,363		4,353,041		4,352,852		4,352,623		4,352,304	33 :	4,352,269
	4,352,364		4,353,048		4,353,114		4,352,964		4,352,308		4,352,534
	4,352,373		4,353,072	13 :	4,352,216		4,352,992		4,352,417		4,352,985
	4,352,386		4,353,074		4,352,263		4,353,014		4,352,433	34 :	4,352,233
	4,352,403		4,353,078		4,352,454		4,353,093		4,352,494		4,352,259
	4,352,447		4,353,089		4,352,697		4,353,131		4,352,518		4,352,310
	4,352,474		4,353,090		4,352,962	19 :	4,352,282		4,352,522		4,352,385
	4,352,481		4,353,099	15 :	4,352,324		4,352,367		4,352,586		4,352,416
	4,352,484		4,353,105	16 :	4,352,290		4,352,434		4,352,597		4,352,517
	4,352,485		4,353,115		4,352,332		4,352,626		4,352,609		4,352,564
	4,352,492		4,353,117		4,352,502	21 :	4,352,578		4,352,638		4,352,613
	4,352,519		4,353,120		4,352,733	22 :	4,352,537		4,352,641		4,352,699
	4,352,530	08 :	4,352,334	17 :	4,352,262		4,352,930		4,352,648		4,352,743
	4,352,554		4,352,395		4,352,266		4,352,990		4,352,732		4,352,757
	4,352,560		4,352,511		4,352,276	23 :	4,352,656		4,352,742		4,352,758
	4,352,563		4,352,957		4,352,318	24 :	4,352,255		4,352,760		4,352,759
	4,352,565		4,352,968		4,352,322		4,352,292		4,352,766		4,352,762
	4,352,566		4,353,003		4,352,355		4,352,479		4,352,767		4,352,784
	4,352,567	09 :	4,352,317		4,352,372		4,352,489		4,352,781		4,352,808
	4,352,570		4,352,410		4,352,381		4,352,497		4,352,795		4,352,809
	4,352,579		4,352,411		4,352,393		4,352,542		4,352,805		4,352,811
	4,352,607		4,352,412		4,352,398		4,352,591		4,352,917		4,352,832
	4,352,614		4,352,453		4,352,427		4,352,723		4,352,929		4,352,858
	4,352,624		4,352,470		4,352,443		4,352,814		4,352,971		4,352,865
	4,352,628		4,352,496		4,352,505		4,352,904		4,353,063		4,352,870
	4,352,633		4,352,629		4,352,524		4,352,991	27 :	4,352,331		4,352,891
	4,352,636		4,352,711		4,352,529		4,353,067		4,352,359		4,352,900
	4,352,639		4,352,741		4,352,583		4,353,071		4,352,360		4,352,908
	4,352,662		4,352,806		4,352,589	25 :	4,352,212		4,352,429		4,352,909
	4,352,668		4,352,807		4,352,645		4,352,337		4,352,469		4,352,934
	4,352,715		4,352,822		4,352,666		4,352,368		4,352,644		4,353,006

	4,353,027		4,352,936		4,352,829		4,352,601		4,352,532		4,352,362
	4,353,036		4,353,031		4,352,854		4,352,610		4,352,588		4,352,400
	4,353,056		4,353,054		4,352,869		4,352,663		4,352,924		4,352,600
	4,353,081		4,353,058		4,352,890		4,352,689		4,352,925		4,352,700
	4,353,128	37 :	4,352,380		4,352,967		4,352,753	48 :	4,352,243	51 :	4,352,370
36 :	Re.31,049		4,352,652		4,353,075		4,352,754		4,352,288		4,352,379
	4,352,311		4,352,827		4,353,083		4,352,774		4,352,323		4,352,425
	4,352,361		4,352,979		4,353,109		4,352,785		4,352,341		4,352,650
	4,352,438	39 :	Re.31,045	40 :	4,352,285		4,352,835		4,352,366		4,352,665
	4,352,445		4,352,219		4,352,371		4,352,836		4,352,396		4,352,797
	4,352,459		4,352,221		4,352,394		4,352,837		4,352,397		4,352,883
	4,352,461		4,352,258		4,352,708		4,352,906		4,352,399		4,352,886
	4,352,475		4,352,261		4,352,911		4,352,933		4,352,460		4,353,026
	4,352,478		4,352,375		4,352,912		4,352,942		4,352,480		4,353,068
	4,352,491		4,352,376		4,352,960		4,352,946		4,352,525	53 :	4,352,339
	4,352,513		4,352,390	41 :	4,352,236		4,352,947		4,352,596		4,352,431
	4,352,552		4,352,463		4,352,464		4,352,949		4,352,599		4,352,509
	4,352,575		4,352,467		4,352,477		4,352,958		4,352,608		4,352,655
	4,352,637		4,352,482		4,353,032		4,353,008		4,352,677		4,352,782
	4,352,681		4,352,487	42 :	4,352,226		4,353,009		4,352,696		4,352,820
	4,352,685		4,352,495		4,352,267		4,353,010		4,352,738	55 :	4,352,325
	4,352,687		4,352,498		4,352,270		4,353,024		4,352,739		4,352,422
	4,352,706		4,352,503		4,352,312		4,353,086		4,352,779		4,352,428
	4,352,707		4,352,535		4,352,313	44 :	4,352,831		4,352,905		4,352,450
	4,352,716		4,352,538		4,352,327	45 :	4,352,471		4,352,918		4,352,456
	4,352,731		4,352,539		4,352,392		4,352,702		4,352,983		4,352,622
	4,352,740		4,352,559		4,352,413		4,352,769		4,352,996		4,352,635
	4,352,770		4,352,585		4,352,426		4,352,844		4,352,997		4,352,727
	4,352,777		4,352,603		4,352,439		4,352,849		4,353,046		4,352,780
	4,352,824		4,352,647		4,352,446		4,352,919		4,353,082		4,352,885
	4,352,833		4,352,686		4,352,449		4,352,920		4,353,103		4,352,901
	4,352,839		4,352,710		4,352,486		4,352,921		4,353,121		4,352,907
	4,352,845		4,352,712		4,352,512	46 :	4,352,515		4,353,122		4,352,993
	4,352,887		4,352,714		4,352,531	47 :	4,352,232	49 :	4,352,234		4,353,077
	4,352,893										

DESIGN PATENTS

04 :	266,400		266,438	17 :	266,387	26 :	266,391		266,377		266,372
	266,429		266,447		266,402		266,412		266,386	42 :	266,399
06 :	266,370		266,451		266,423		266,425		266,389		266,414
	266,374	09 :	266,453		266,434	27 :	266,384		266,390		266,448
	266,380		266,454	18 :	266,398		266,435		266,394	48 :	266,408
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	266,403		266,417		266,427		266,413		266,433	54 :	266,388
	266,420		266,446	21 :	266,395		266,441	37 :	266,383	55 :	266,393
	266,421		266,450	22 :	266,439		266,442		266,436		266,452
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PLANT PATENTS

06 :	4,892		4,893								

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

18 :	T102,303	36 :	T102,302								

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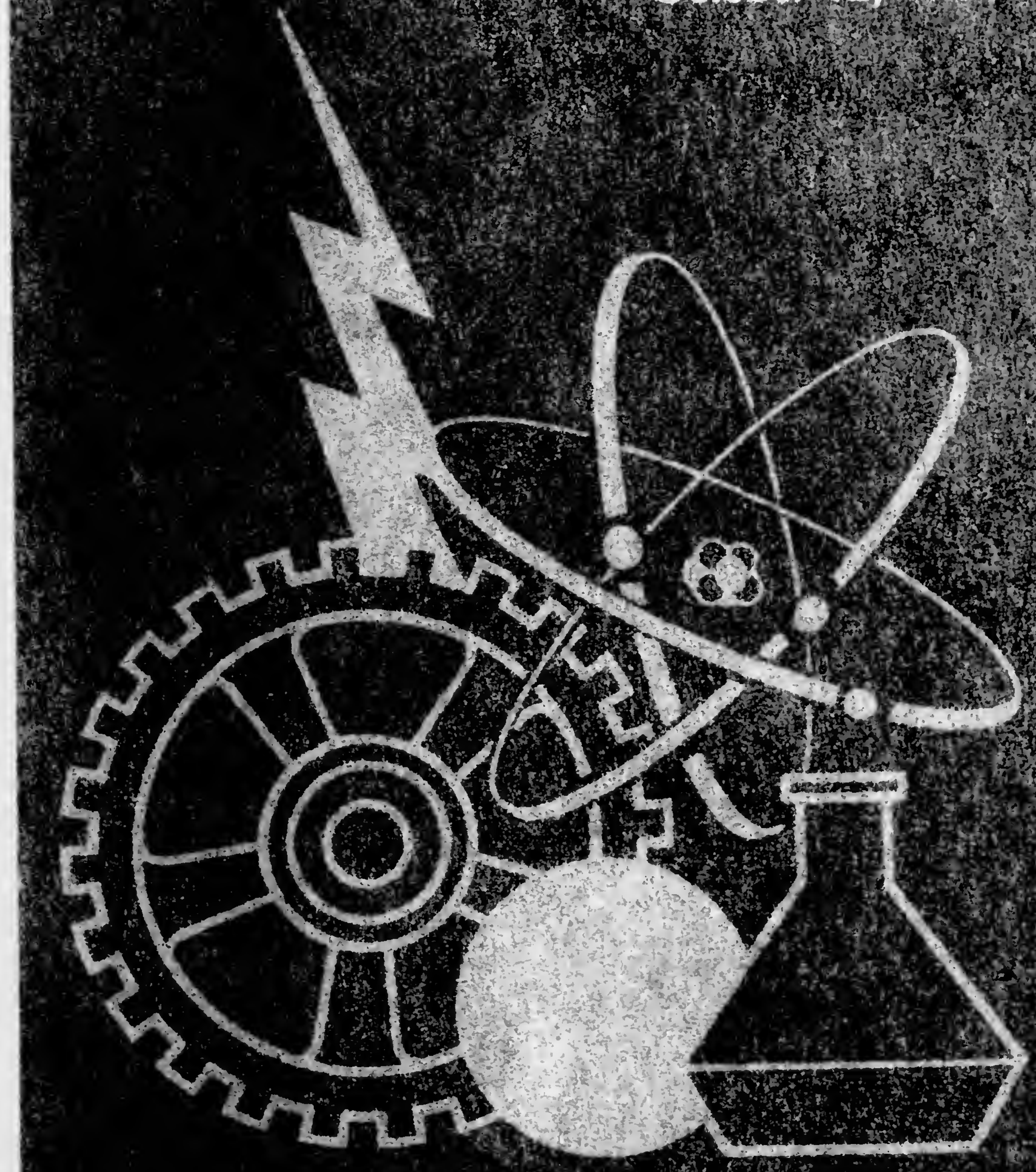
PATENTS

October 12, 1982



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

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DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner of Patents & Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 257,235, Re. S.N. 398,932, Filed July 16, 1982, Cl. D10/15, TRAVEL ALARM CLOCK, Michael Cheung, Owner of Record: *Promotors Ltd., Kowloon, Hong Kong,* Attorney or Agent: Henry L. Brinks, Ex. Gp.: 291

3,553,707, Re. S.N. 401,643, Filed July 26, 1982, Cl. 343/781, WIDE-BEAM HORN FEED FOR PARABOLIC ANTENNAS, Richard F. H. Yang, et al., Owner of Record: *Andrew Corp., du Page County, Ill.,* Attorney or Agent: Stephen G. Rudisill, et al., Ex. Gp.: 254

4,054,901, Re. S.N. 402,213, Filed July 26, 1982, Cl. 357/81, INDEX MOUNTING UNITARY HEAT SINK APPARATUS WITH APERTURED BASE, Steven F. Edwards, et al., Owner of Record: *Inventors,* Attorney or Agent: Jack A. Kanz, Ex. Gp.: 253

4,062,077, Re. S.N. 393,729, Filed June 30, 1982, Cl. 5/451, WATERBED MATTRESS CONSTRUCTION, Robert C. Autrey, et al., Owner of Record: *Morning Surf Corp., Salt Lake City, Utah,* Attorney or Agent: Edward S. Wright, Ex. Gp.: 355

4,078,171, Re. S.N. 405,487, Filed Aug. 5, 1982, Cl. 250/201, DIGITAL AUTO FOCUS, Norman L. Stauffer, Owner of Record: *Honeywell, Inc., Minneapolis, Minn.,* Attorney or Agent: Charles J. Ungemach, et al., Ex. Gp.: 252

4,209,245, Re. S.N. 391,042, Filed June 22, 1982, Cl. 354/51, LONG TIME EXPOSURE PREVENTING DEVICE FOR CAMERA WITH ELECTRONIC FLASH, Mashiro Kawasaki, et al., Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 211

4,216,539, Re. S.N. 403,973, Filed Aug. 2, 1982, Cl. 371/020, IN-CIRCUIT DIGITAL TESTER, Douglas W. Raymond, et al., Owner of Record: *Zehntel, Inc., Concord, Calif.,* Attorney or Agent: Travis Gordon White, et al., Ex. Gp.: 234

4,217,190, Re. S.N. 405,858, Filed Aug. 6, 1982, Cl. 204/129.35, METHOD AND APPARATUS FOR ELECTROCHEMICALLY FINISHING AIRFOIL EDGES, James W. Neal, et al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Charles G. Nessler, Ex. Gp.: 112

4,228,322, Re. S.N. 390,740, Filed June 21, 1982, Cl. 179/15.55T, DECREASING TIME DURATION OF RECORDED SPEECH, Charles Ronald Bringol, et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Andrea P. Bryant, Ex. Gp.: 214

4,232,733, Re. S.N. 406,999, Filed Aug. 10, 1982, Cl. 165/89, THERMAL EXCHANGER, Tadeusz Piotrowski, Owner of Record: *Etablissements Euroburner, Vadenz, Liechtenstein,* Attorney or Agent: Sandler & Greenblum, Ex. Gp.: 346

4,234,585, Re. S.N. 404,169, Filed Aug. 2, 1982, Cl. 424/250, 1,2-DIHYDROQUINOLINE-2ONE DERIVATIVES, Werner Winter, et al., Owner of Record: *Boehringer Mannheim GmbH, Mannheim, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 125

4,236,525, Re. S.N. 409,162, Filed Aug. 18, 1982, Cl. 128/419, MULTIPLE FUNCTION LEAD ASSEMBLY, James E. Sluetz, et al., Owner of Record: *Intermedics, Inc., Freeport, Tex.,* Attorney or Agent: Roy E. Hofer, et al., Ex. Gp.: 335

4,246,081, Re. S.N. 398,748, Filed July 16, 1982, Cl. 204/130, ELECTROCHEMICAL SEPARATION AND CONCENTRATION OF SULFUR CONTAINING GASES FROM GAS MIXTURES, Jack Winnick, Owner of Record: *Inventor,* Attorney or Agent: James E. Denny, Ex. Gp.: 112

4,246,081, Re. S.N. 399,051, Filed July 16, 1982, Cl. 204/130, ELECTROCHEMICAL SEPARATION AND CONCENTRATION OF SULFUR CONTAINING GASES FROM GAS MIXTURES, Jack Winnick, et al., Owner of Record: *Inventors,* Attorney or Agent: James E. Denny, et al., Ex. Gp.: 112

4,256,173, Re. S.N. 406,426, Filed Aug. 9, 1982, Cl. 165/9.3, TWO REGENERATOR-FLUE SYSTEM FOR REGENERATIVE FURNACES, Yih-Wan Tsai, et al., Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 346

4,257,476, Re. S.N. 406,636, Filed Aug. 9, 1982, Cl. 165/9.3, MANIFOLD REGENERATION FLUES FOR REGENERATIVE FURNACES, Yih-Wan Tsai, Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: Dennis G. Millman, Ex. Gp.: 346

4,258,169, Re. S.N. 404,415, Filed Aug. 2, 1982, Cl. 528/72, POLYISOCYANATE COMPOSITIONS CONTAINING IN-SITU FORMED PYROPHOSPHATE MOLD RELEASE AGENT AND PROCESS, Warren J. Rabourn, et al., Owner of Record: *The Upjohn Co., North Haven, Conn.,* Attorney or Agent: Denis A. Firth, et al., Ex. Gp.: 143

4,259,716, Re. S.N. 396,171, Filed July 7, 1982, Cl. 363/97, TRANSFORMER FOR USE IN A STATIC INVERTER, James E. Harris, et al., Owner of Record: *General Electric Co., Syracuse, N.Y.,* Attorney or Agent: Richard V. Lang, et al., Ex. Gp.: 212

4,272,254, Re. S.N. 404,894, Filed Aug. 3, 1982, Cl. 44/70, HYDROCARBON FUEL HAVING IMPROVED COMBUSTION EFFICIENCY, Takashi Minezaki, Owner of Record: *Inventor,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 113

4,287,021, Re. S.N. 403,122, Filed July 29, 1982, Cl. 162/358, EXTENDED NIP PRESS, Edgar J. Justus, et al., Owner of Record: *Beloit Corp., Beloit, Wis.,* Attorney or Agent: James van Santen, et al., Ex. Gp.: 173

4,298,308, Re. S.N. 405,779, Filed Aug. 6, 1982, Cl. 414/730, APPARATUS FOR DETECTING FORCES DIRECTING THE MOVEMENT OF A MANIPULATING INSTRUMENT, Hans Richter, Owner of Record: *Inventor,* Attorney or Agent: Elliott I. Pollock, Ex. Gp.: 314

4,328,727, Re. S.N. 403,291, Filed July 30, 1982, Cl. 83/106, SLITTER-SCORER APPARATUS, Masateru Tokuno, Owner of Record: *Rengo Co., Ltd., Osaka, Japan,* Attorney or Agent: Henry Shur, et al., Ex. Gp.: 323

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

No Publications This Issue

Disciplinary Proceeding No. 82–2

Final Order

Upon consideration of a NOTICE OF PROCEEDING UNDER 35 U.S.C. §32 and the Commissioner's MOTION FOR ENTRY OF FINAL ORDER, it appearing that respondent has failed to timely file an answer to the notice as required by 37 CFR §1.348(c), it is ordered that said motion be and the same is hereby granted and it is further ordered that respondent ALBERT C. HODGSON (Registration No. 20772) is hereby excluded from further practice before the U.S. Patent and Trademark Office. This FINAL ORDER is being entered pursuant to 35 U.S.C. §32.

DONALD J. QUIGG,
May 17, 1982. *Acting Commissioner of Patents and Trademarks.*

Disciplinary Proceeding No. 82–3

Final Order

Upon consideration of a NOTICE OF PROCEEDING UNDER 35 U.S.C. §32, respondent PATTISON'S ANSWER TO PROCEEDING UNDER 35 U.S.C. SEC. 32, the Solicitor's MOTION entered May 27, 1982, the Deputy Commissioner's ORDER entered June 8, 1982, respondent's failure to respond to the Deputy Commissioner's ORDER and the Solicitor's MOTION FOR ENTRY OF FINAL ORDER, it is ordered that said MOTION FOR ENTRY OF FINAL ORDER be and the same is hereby granted and it is further ordered that respondent WILLIAM H. PATTISON, JR. (Registration No. 16070) is hereby excluded from further practice before the U.S. Patent and Trademark Office. This FINAL ORDER is being entered pursuant to 35 U.S.C. §32.

DONALD J. QUIGG,
Aug. 30, 1982. *Deputy Commissioner of Patents and Trademarks.*

Disciplinary Proceeding No. 82–4

Final Order

Upon consideration of the NOTICE OF PROCEEDING UNDER 35 U.S.C. §32, respondent WILLIAM F. FRANK'S RESPONSE TO NOTICE OF PROCEEDING UNDER 35 U.S.C. Sec. 32 and the STIPULATION of the Solicitor and respondent, it is.

ORDERED that respondent WILLIAM F. FRANK is hereby suspended from practice before the Patent and Trademark Office for a period of six (6) months, beginning on the date two (2) weeks after the date of this FINAL ORDER, and it is.

FURTHER ORDERED that after expiration of the period of six (6) months' suspension, as a condition precedent to being reinstated on the Patent and Trademark Office roster, respondent is required to satisfy the Committee on Enrollment [37 CFR 1.341(i)] that he has so arranged his business affairs that it would be unlikely in the future for respondent to neglect a legal matter entrusted to him, DR 6–101(A) (3), and in connection therewith, to permit the Committee on Enrollment or its delegate to inspect the premises in which he does Patent and Trademark Office-related business, and it is.

FURTHER ORDERED that respondent give notice of his suspension immediately, by certified mail, to all clients for whom he is currently handling matters before the Patent and Trademark Office, and make immediate arrangements for the disposition of matters presently in his care in conformity with the wishes of his clients, and it is.

FURTHER ORDERED that as a further condition precedent to being reinstated on the Patent and Trademark Office roster, respondent will file with the Solicitor within two (2) weeks of the date of this FINAL ORDER, an affidavit or declaration affirming that he has given such notice to his clients, and it is.

FURTHER ORDERED that as a further condition precedent to being reinstated on the Patent and Trademark Office roster, respondent will file in writing with the Solicitor within two (2) weeks of the date of this FINAL ORDER, a list of all pending patent applications, including serial number, filing date and inventor(s), in which he has a power of attorney as principal or associate attorney.

DONALD J. QUIGG,
Aug. 30, 1982. *Deputy Commissioner of Patents and Trademarks.*

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

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Please cite the number and title of inventions of interest.

Douglas J. Campion,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce

SN 6-364,290. SUPERCRITICAL CO_2EXTRACTION OF LIPIDS FROM LIPID-CONTAINING MATERIALS. Department of Agriculture.

SN 6-382,903. STABLE EMULSIFIED MEAT PRODUCTS AND METHOD OF MAKING. Department of Agriculture.

SN 6-380,375. ARTIFICIAL HOST EGG FOR REARING TRICHOGRAMMA. Department of Agriculture.

SN 6-391,065. DISEASE CONTROL IN AVIAN SPECIES BY EMBRYONAL VACCINATION. Department of Agriculture.

SN 6-352,661. INVOLUTED DISC SLICER. Department of Agriculture.

SN 6-290,542. VIBRATING SEPARATOR. Department of Agriculture.

SN 6-288,261. METHOD AND COMPOSITION FOR LURING COYOTES. Department of Agriculture.

SN 6-274,087. A RECESSIVE TALL—A FOURTH GENETIC ELEMENT TO FACILITATE HYBRID CEREAL PRODUCTION. Department of Agriculture.

SN 6-288,259. BAIT POST. Department of Agriculture.

SN 6-300,784. HOT-CALLUSING DEVICE FOR TREE GRAFTING. Department of Agriculture.

SN 6-325,076. VASE LIFE EXTENDER FOR CUT FLOWERS. Department of Agriculture.

SN 6-370,019. DIBUTYLORTHOBENZYLMETHOXYBENZENES AND DIBUTYLORTHOCINNAMYLMETHOXYBENZENES AS MOSQUITO LARVAE GROWTH INHIBITORS. Department of Agriculture.

SN 6-326,086. METHOD OF PRESSING RECONSTITUTED LIGNOCELLULOSTIC MATERIALS. Department of Agriculture.

SN 6-351,400. POWERED TREE CHIPPER OR BARK HACK. Department of Agriculture.

SN 6-144,043. (4,344,438) OPTICAL SENSOR OF PLASMA CONSTITUENTS. Department of Health, Education & Welfare.

SN 6-150,550. (4,344,857) ENCAPSULATION BY ENTRAPMENT. Department of Agriculture.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 12, 1982,

Re. 29,697
Re. 30,262
D. 262,748
D. 264,966
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Dedication

4,151,026.—*Jean J. Hospied,* Dottignies, Belgium. APPARATUS FOR MANUFACTURING FABRIC WITH NON-WOVEN PILE. Patent dated Apr. 24, 1979. Dedication filed Apr. 14, 1982, by the assignee, *A. F. Stoddard & Co. Ltd.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedication

Re. 27,947.—*Lawrence N. Mertz,* Lexington, Mass. INTERFERENCE TECHNIQUE AND APPARATUS FOR SPECTRUM ANALYSIS. Patent dated Mar. 26, 1974. Disclaimer and Dedication filed Sept. 8, 1980, by the assignee, *Bio-Rad Laboratories, Inc.*

Hereby disclaims all claims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	*Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics; Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-30-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,204,251 to 3,209,368, inclusive
Plant Patents	Numbers 2,552 to 2,557 inclusive

REISSUES

OCTOBER 12, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,052

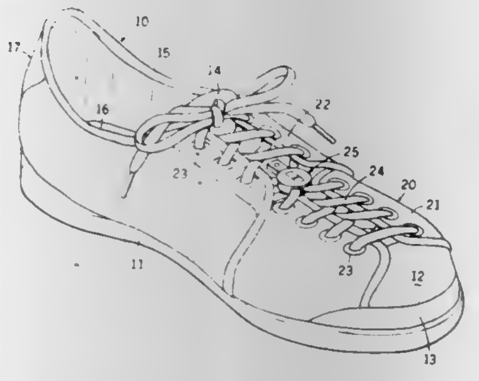
LACING ASSEMBLY FOR A SHOE

Thomas M. Adams, San Antonio, Tex., assignor to Kaepa, Inc., San Antonio, Tex.

Original No. 4,200,998, dated May 6, 1980, Ser. No. 910,774, May 30, 1978. Application for reissue Feb. 9, 1981, Ser. No. 232,854

Int. Cl.³ A43B *11/00;* **F16G** *11/04*

U.S. Cl. 36—50 **4 Claims**



3. In a lacing assembly for a shoe:

(a) a vamp having adjacent vamp sections,

(b) a single, continuous lace having only one pair of ends, the single lace lacing both vamp sections, and having the one pair of lace ends selectively tied at one of the vamp sections, and

(c) a clamp interconnecting the single lace at the other of said vamp sections for selectively fixing or loosening the lace and maintaining the lace at the said other vamp section for the comfort of the wearer independently of the said one vamp section, the said one pair of lace ends being separately, selectively tied at the said one vamp section and adjusting the fit of the said one vamp section for the comfort of the wearer independently of the said other vamp section.

Re. 31,053

APPARATUS AND METHOD FOR HOLDING AND PLANARIZING THIN WORKPIECES

Victor A. Firtion, Secaucus; Donald R. Herriott, Morris Township, Morris County; Martin E. Poulsen, New Providence; Leif Rongved, Convent Station, and Thomas E. Saunders, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 4,213,698, dated Jul. 22, 1980, Ser. No. 965,304, Dec. 1, 1978. Continuation-in-part of Ser. No. 871,477, Jan. 23, 1978, abandoned. Application for reissue May 1, 1981, Ser. No. 259,596

Int. Cl.³ G03B *29/00;* **B25B** *11/00;* **B23Q** *7/00*

U.S. Cl. 355—77 **6 Claims**

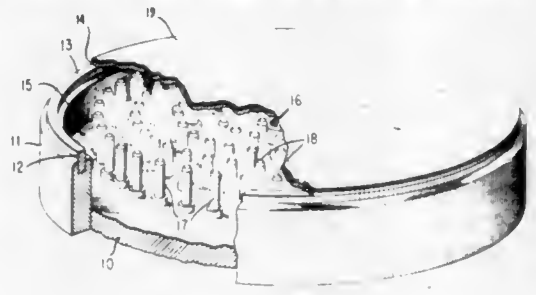
1. A vacuum apparatus for holding and planarizing a thin workpiece on a holding face which minimizes the interposition of dirt particles between said workpiece and said holding face, said apparatus comprising:

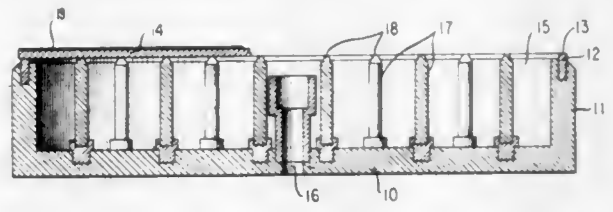
(a) a baseplate having a rigid raised rim which includes a smooth planar edge surface adapted to support a workpiece having front and back surfaces, said edge surface being adapted to contact the periphery of said back surface to make a substantially airtight seal thereto, thus forming an evacuable chamber enclosed by said baseplate, said rim, and said back surface;

(b) a plurality of [regularly] spaced-apart rigid support members disposed within said chamber, each providing a localized pinpoint abutment with said back surface, said abutments together with said edge surface forming a holding face which is substantially planar, each of said abutments having an area sufficiently small to reduce the probability of dirt particles collecting thereon, evacuation of said chamber producing a pressure difference between said front and back workpiece surfaces forcing said back surface to conform to said holding face, the spacing between adjacent ones of said abutments and the spacing between said abutments nearest said rim and said edge-surface being sufficiently small to prevent significant distortion of the unsupported regions of said workpiece.

5. In the fabrication of semiconductive devices, a method for positioning and planarizing a substrate wafer having a front and a back surface, said method comprising the steps of:

loosely positioning said wafer in a general position;





applying substantially uniformly distributed forces along said front surface;

applying a multiplicity of localized forces along said back surface, said back surface forces counterbalancing said front surface forces and being sufficient to planarize said wafer;

applying each of said localized forces to an area of said back surface which area is in the range of 2×10^{-5} to 2×10^{-3} square inches;

initially moving said wafer in a direction transverse to that of said localized forces so as to dislodge any dirt particles in contact with said back surface.

Re. 31,054

DISPLAY PANEL HAVING ROWS AND COLUMNS OF COPLANAR SCAN AND DISPLAY CATHODES AND LARGE-AREA ANODE

Edgar L. Harvey, Jamesburg, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Original No. 3,959,681, dated May 25, 1976, Ser. No. 535,891, Dec. 23, 1974. Application for reissue Aug. 17, 1977, Ser. No. 825,361

Int. Cl.³ H01J *61/067, 6/30, 6/54*

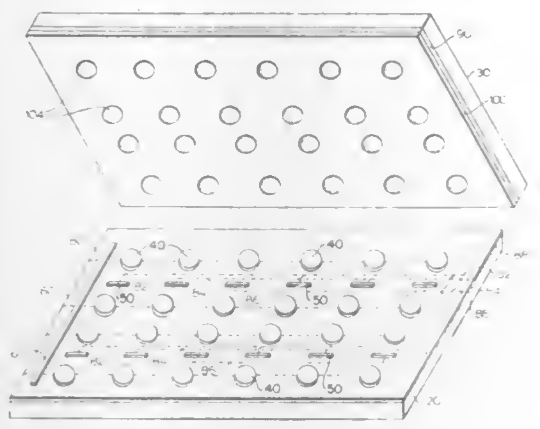
U.S. Cl. 313—188 **21 Claims**

10. A display panel comprising

a gas-filled envelope made up of a base plate and a face plate viewing window hermetically sealed together and including

an array of first display cathode electrodes, adapted for viewing, disposed in rows and columns and including means for energizing all of the display cathodes in each row simultaneously,

an array of second scan cathode electrodes, disposed in rows and columns, with selected first and second cathode electrodes *being disposed in operative relation with each other, and means for energizing all of the scan cathode electrodes in each column simultaneously and for energizing the columns of scan cathodes sequentially, said scan cathode electrodes exhibiting scan cathode glow when energized and generating excited particles,*



the scan cathodes and display cathodes thus being disposed in operative groups such that, as the columns of scan cathodes are energized, the display cathode associated with each scan cathode can be energized and caused to exhibit cathode glow with the aid of excited particles generated by the associated scan cathode, and

anode electrode means in operative glow discharge relationship with said scan and display cathode.

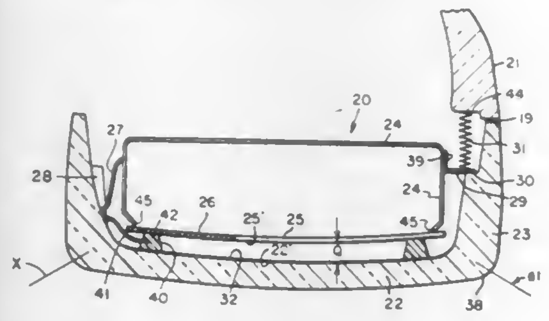
Re. 31,055
APERTURE MASK SUPPORTED BY SPRING LUGS AND SPRING CLIPS

Lawrence B. Hausheer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Original No. 4,209,727, dated Jun. 24, 1980, Ser. No. 954,489, Oct. 25, 1978. Application for reissue Dec. 24, 1980, Ser. No. 219,913

Int. Cl.^{3} H01J *29/07, 31/08, 29/82*

U.S. Cl. 313—404 **8 Claims**



1. In a color television bulb formed with a panel, a peripheral panel skirt integral therewith, a funnel portion adapted to mate with the panel skirt, a frame and aperture mask adapted to be mounted in said frame and secured in spaced relation with the panel; a supporting structure for the aperture mask and frame including: peripherally located outwardly extending spring lugs and peripherally located outwardly extending spring clips secured to the frame and respectively operative for xy orientation and a Q spacing of the mask and frame; the panel skirt being formed with a selected number of V grooves each located so as to receive a corresponding one of the spring lugs; and a ledge face spaced away from an inside surface of the panel to cooperatively engage with and support the spring clips, a forward portion of the funnel adapted to be in spaced relation with the ledge face, spring means engaging each respective spring clip at one end and the forward portion of the funnel at the other when located in said spaced relation for urging each respective spring clip against the ledge face such that xy orientation and Q spacing of the aperture mask and frame are fixed relative to the panel when the funnel and panel skirt are mated.

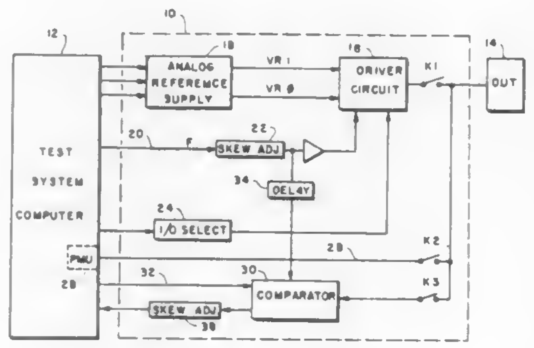
Re. 31,056
COMPUTER CONTROLLED HIGH-SPEED CIRCUIT FOR TESTING ELECTRONIC DEVICES

Yuk B. Chau, Torrance; George Niu, Sunnyvale, and Rudolph Staffelbach, Santa Clara, all of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Original No. 4,092,589, dated May 30, 1978, Ser. No. 780,382, Mar. 23, 1977. Application for reissue May 28, 1980, Ser. No. 154,151

Int. Cl.^{3} G01R *15/12, 31/02*

U.S. Cl. 324—73 R **8 Claims**



10. A high-speed testing circuit for applying first test stimuli input signals to an electronic device and for receiving device output signals from said device generated in response to second test stimuli signals originating from another source, said testing circuit comprising:

voltage reference supply circuit means for supplying a first direct current (D.C.) reference signal at a first voltage reference level and a second D.C. reference signal at a second voltage reference level in response to D.C. input signals at a plurality of input voltage levels;

skew adjustment circuit means for receiving a train of high-frequency pulses and for adjusting the times of occurrences of the leading and trailing edges of the high-frequency pulses to produce a train of skew-adjusted pulses; and

driver circuit means responsive to the D.C. reference signals and to the train of skew-adjusted pulses for switching between the voltage reference levels at a switching rate determined by the frequency of the train of skew-adjusted pulses to generate the first test stimuli signals for application to an input terminal of said device, said driver circuit means comprising

a. a first and a second diode bridge circuit, each diode bridge circuit comprising a first, a second, a third, and a fourth diode and having (1) a first terminal coupled to the anodes of the first and second diodes, (2) a second terminal coupled to the cathodes of the third and fourth diodes, (3) a third terminal coupled between the cathode of the first diode and the anode of the third diode, and (4) a fourth terminal coupled between the cathode of the second diode and the anode of the fourth diode;

b. output circuit means coupled to the fourth terminals for transmitting the first test stimuli signals;

c. current switching means for switching current between said diode bridge circuits at said switching rate, said current switching means coupled between a first voltage supply and the first terminals and coupled between a second voltage supply and the second terminals, said current switching means further coupled through common current-source resistors to form a differential circuit through said diode bridge circuits;

d. reference input circuit means coupled to said voltage reference supply circuit means for applying the first D.C. reference signal to the third terminal of said first diode bridge circuit and the second D.C. reference signal to the third terminal of said second diode bridge circuit; and

e. pulse input circuit means coupled to said skew adjustment circuit means for receiving the train of skew-adjusted pulses and coupled to said current switching means for providing intermediate pulses thereto.

Re. 31,057
CHROMIUM-DOPED BERYLLIUM ALUMINATE LASERS

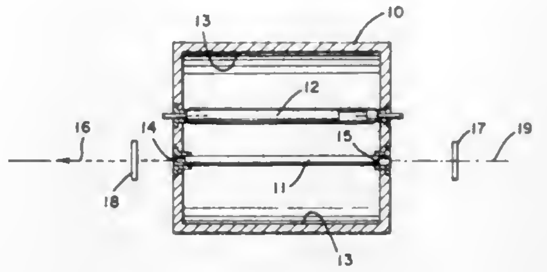
Robert C. Morris, Ledgewood, N.J., and Carl F. Cline, Walnut Creek, Calif., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Original No. 3,997,853, dated Dec. 14, 1976, Ser. No. 528,053, Nov. 29, 1974. Application for reissue Dec. 6, 1978, Ser. No. 967,172

Int. Cl.^{3} H01S *3/16*

U.S. Cl. 372—41 **4 Claims**

1. In a laser capable of operating at room temperature comprising:
  a. a laser host comprising at least one single crystal incorporating a dopant; and
  b. means for exciting atoms of the dopant to emit coherent radiation; the improvement which comprises utilizing as the laser host, a single crystal of beryllium aluminate ($BeAl_2O_4$) doped with trivalent chromium ions, the single crystal being crystallographically oriented substantially along the a–c plane, at least 30° removed from the b-axis, and having a chromium doping concentration ranging from about 0.005 to 1.0 atom percent.



PLANT PATENTS

GRANTED OCTOBER 12, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,894

NECTARINE TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Feb. 9, 1981, Ser. No. 232,725

Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized, in particular, by freestone fruit having general resemblance to the Summer Grand but ripening about a week earlier, and ripening substantially with the Sun Grand and Flavortop.

4,895

LILY NAMED FANCY FREE

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.

Filed Dec. 11, 1980, Ser. No. 215,534

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of oriental hybrid lily plant substantially as herein shown and described, characterized by its large, generally flat, reddish pink and white, outwardly-facing flowers borne on strong, stiff pedicels, by its dark green and glossy foliage, and by the long lasting quality of the blooms whether on the plant or as cut flowers.

PATENTS

GRANTED OCT. 12, 1982

ERRATA

For CLASS	See PATENT NO.
128–689	4,353,152
464–040	4,353,226
524–232	4,353,817
524–458	4,353,818
523–454	4,353,819
524–409	4,353,820
549–229	4,353,831
549–272	4,353,832
378–099	4,354,112

PATENTS

GRANTED OCTOBER 12, 1982

GENERAL AND MECHANICAL

4,353,133

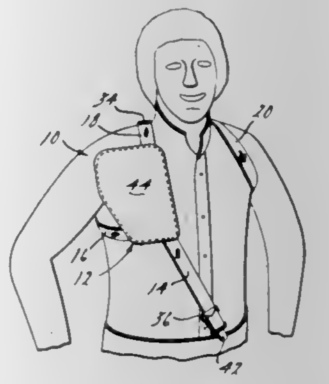
SHOULDER PROTECTION DEVICE

Paul D. Williams, Davison, Mich., assignor to Williams Gun Sight Co., Davison, Mich.

Filed Jan. 21, 1980, Ser. No. 113,464

Int. Cl.^{3} A41D *13/00*

U.S. Cl. 2—2 **2 Claims**



1. A shoulder protection device comprising a lightweight flexible shoulder harness assembly and an energy absorbing flexible shoulder pad which is retained by said shoulder harness assembly adjacent the shoulder area along one side of the upper front chest of the user to protect said shoulder area against forces directed thereto, said shoulder harness assembly including a plurality of strap members which are operatively connected with one another and said shoulder pad to define a strap assembly extending solely about the upper back and around both shoulders of the user, said strap assembly defining a first loop assembly which extends about the upper trunk and around that shoulder of the user which defines said shoulder area, said first loop assembly including said shoulder pad, a first strap member attached to said shoulder pad and extending therefrom underneath the user's arm adjacent said shoulder area to the user's upper middle back area, a second strap member attached to said shoulder pad and extending therefrom over the shoulder defining said shoulder area to the user's upper middle back area, and a first means for connecting said first and second strap members to one another in the user's upper middle back area, said strap assembly further defining a second loop assembly which is connected to said first loop assembly and which extends solely along the uppper back and around the other shoulder of the user with no involvement of the upper front chest of the user opposite said one side, said second loop assembly including a third strap member which is operably connected at one end thereof to said first loop assembly by said first connecting means and which extends therefrom across the upper back, underneath the other arm, and up and across the back of the neck of the user to intersect said second strap member, and a second means for connecting said third strap member to said second strap member at the point where said second and third strap members intersect, with at least one of said strap members being length adjustable to enable the size of said strap assembly to be adjusted to allow the device to be worn by users of different shapes and sizes.

4,353,134

UNDERWATER SWIMMING GOGGLES AND MASKS WITH GRAVITY-OPERATED WIPERS

Thomas C. Macnabb, 4 Maple Apt. 23, Ste-Anne de Bellevue, Quebec H9X 2E4, Canada

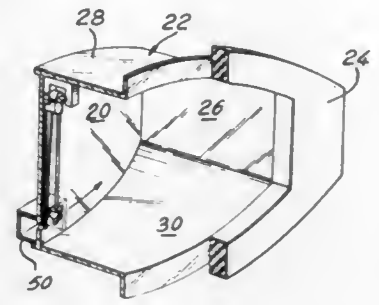
Filed Aug. 14, 1981, Ser. No. 292,956

Int. Cl.^{3} A61F *9/04*

U.S. Cl. 2—428 **15 Claims**

1. In an underwater swimming mask or goggles having a lens with an inner surface, a frame mounting said lens in spaced relationship to a swimmer's eye and a water-excluding face-fitting skirt peripherally extending from said frame, the improvement comprising:

wiper means mounted for sweeping movement across a viewing area of said lens and in wiping contact with said lens inner surface, and



weight means connected to and displaceable with said wiper means for moving same in response to tilting movements of said mask or goggles when worn by the swimmer during swimming, whereby said tilting movements cause said weight means to be displaced by gravity and to thereby move said wiper means therewith so as to dissipate mist or droplets of water collected on said lens inner surface and to clear said viewing area.

4,353,135

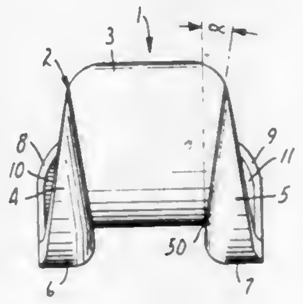
PATELLAR FLANGE AND FEMORAL KNEE-JOINT PROSTHESIS

Mark R. Forte, Pine Brook, N.J., and David A. Sonstegard, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 9, 1980, Ser. No. 148,291

Int. Cl.^{3} A61F *1/03*

U.S. Cl. 3—1.911 **6 Claims**

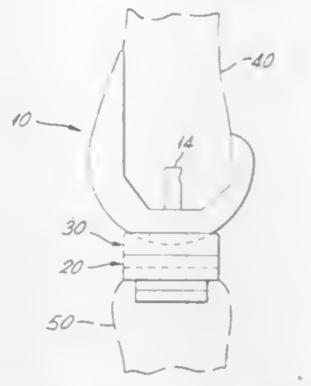


1. A patellar flange for a knee-joint prosthesis comprising (1) a curved base having a radius of curvature substantially the same as the base of the femoral patellar notch of the natural human knee, said base being sufficiently long and wide superiorly to provide a contacting surface for the patella when the knee is in full extension, and (2) a pair of condylar runners, one of said condylar runners being attached to each lateral side of the base and extending outwardly anteriorly from said base, said condylar runners diverging from each other and converging to said base as they proceed superiorly on said base and being of sufficient length to provide a contacting surface for the patella as the knee is flexed.

4,353,136
ENDOPROSTHETIC KNEE JOINT

Apostolos J. Polyzoides, Breakway, School Rd., Hockley Heath, Lapworth, West Midlands, England, and Athanassios Tsakonas, 5 Agiou Serafim St., Salonika 366, Greece
Filed Nov. 5, 1980, Ser. No. 204,269
Int. Cl.^{3} A61F *1/24*

U.S. Cl. 3—1.911 **5 Claims**

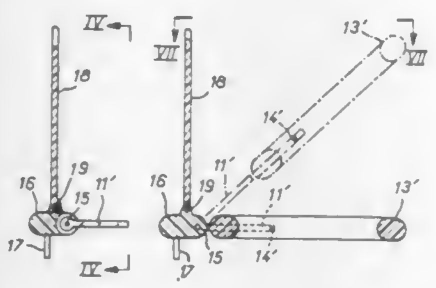


1. An endoprosthetic knee joint device of bicondylar form comprising a femoral component for securement to the femur and having two separate articulatory bearing portions joined together at least at their anterior regions in a side-by-side spaced disposition for respective location in the lateral and medial compartments of the knee, a tibial component for securement to the tibia and having two separate articulatory bearing portions joined together at least at their anterior regions in a side-by-side spaced disposition for respective location in said compartments, and a meniscal component having two separate articulatory bearing portions for respective location in said compartments between said femoral and tibial component portions, each said femoral component portion having a convexly curved articulatory bearing surface portion, each said tibial component portion having a relatively flattened articulatory bearing surface portion, each said meniscal component portion having two articulatory bearing surface portions in opposed disposition and of individual forms substantially complementary to and engaged with the said tibial component having one of a longitudinally arcuate groove and a rib extending in a singular form extending across both of the bearing and joining portions thereof, said meniscal component portions each having a portion of the other of said groove and rib slidably engaged in said one thereof, and each of said engagements being non-captive.

4,353,137
TOILET SEAT

Pierre Jammet, 16 Bd. du Parc, 92200 Neuilly-sur-Seine, France
Filed Oct. 16, 1980, Ser. No. 197,532
Claims priority, application France, Oct. 26, 1979, 79 26587
Int. Cl.^{3} A47K *13/00*

U.S. Cl. 4—237 **5 Claims**

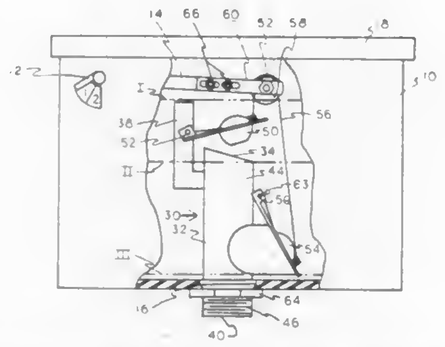


1. A seat for a toilet bowl which has two holes on its rear top area for fitting a flap-seat, the seat comprising a readily changeable annular seat member, a crosspiece having fastening members adapted to be received in the holes in the toilet bowl for securing said crosspiece relative to the toilet bowl, and pegs mounted on the crosspiece for pivotal movement between a raised inoperative position and a lowered operative position, said annular seat member having holes for receiving said pegs to permit said annular seat member to be readily inserted on said pegs or removed therefrom by simple relative displacement thereon.

4,353,138
TWO STAGE FLUSH VALVE ASSEMBLY

Ralph M. Bell, Bradenton, Fla., assignor to Bell and Rodhouse Engineering, Inc., Bradenton, Fla.
Filed Aug. 21, 1981, Ser. No. 295,080
Int. Cl.^{3} E03D *1/34*

U.S. Cl. 4—326 **7 Claims**



5. A two level flush valve assembly for use in a water tank of a toilet, comprising:

(a) an essentially cylindrical, hollow valve body having an upper flush opening, a lower flush opening, an overflow pipe and a discharge opening;
(b) a first valve element pivotedly connected to said valve body for closing said upper flush opening;
(c) a second valve element pivotedly connected to said valve body for closing said lower flush opening;
(d) a pivotal flush handle mounted on said tank, said handle having one end of a lever arm attached thereto;
(e) a pully rotatably mounted on the other end of said lever arm; and
(f) a chain which is entrained over said pulley and interconnects said first valve element and said second valve element such that only said first valve element is pivoted open in response to movement of said flush handle approximately one-half of its total distance of travel and both said first valve element and said second valve element are pivoted open in response to movement of said flush handle its total distance of travel.

4,353,139
PROTECTIVE COVER FOR INDIVIDUAL WATER FIXTURES

Richard M. Wainwright, P.O. Box 541, Dennis, Mass. 02638, and Steven Wilson, 14 Elisha's La., Yarmouthport, Mass. 02675
Filed Jan. 10, 1980, Ser. No. 110,918
Int. Cl.^{3} A47K *17/00*

U.S. Cl. 4—661 **6 Claims**

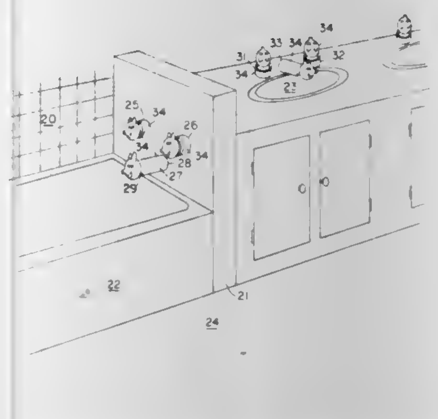
1. A removable protective cover for each individual water control handle or spout projecting from a wall, bathtub, or sink in position to hurt the user by accidental contact, said cover comprising:

an elongated tubular body, entirely of soft, deformable, cushion material, said body having a hollow cylindrical side wall of uniform outside diameter, or uniform inside diameter substantially equal to the outside diameter of a typical spout, and of predetermined length slightly greater than the length of said typical spout;

said body having one end open for slidable sleeving over said spout and having an opposite, closed imperforate end of said cushion material, enlarged to greater dimensions than the outside diameter of said cylindrical side wall to cushion the tip of said spout;

and the hollow cylindrical side wall of said body being longitudinally split along its bottom from said open end to said closed end with a water emission aperture in the bottom of said side wall and forming part of said slit, said aperture being of predetermined dimensions to loosely fit around the downturned tip of said spout;

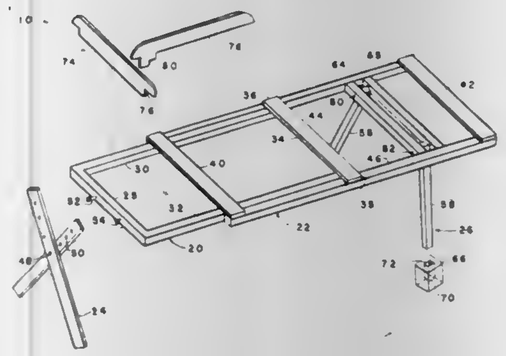
said cover wholly enclosing an individual, projecting, water control, handle or spout, to cushion the same against human impact from any direction.



4,353,140
FRAME FOR ELECTRIC BLANKET SUPPORT

Wolfram G. Graber, 2002 Norbert St., Spring Hill, Fla. 33526
Filed Nov. 14, 1980, Ser. No. 207,005
Int. Cl.^{3} A47C *21/02*

U.S. Cl. 5—505 **1 Claim**

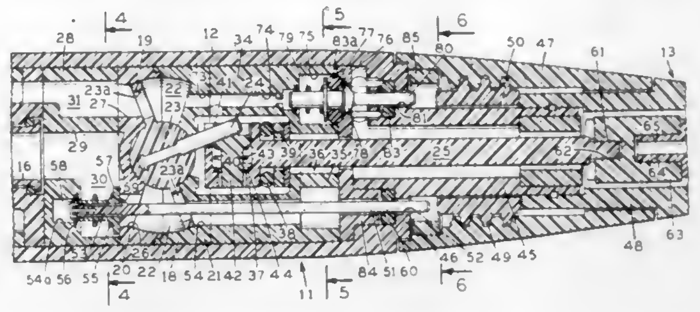


1. A frame deployable for electric blanket support above a bed or the like to provide infrared radiation for a sleeper without any blanket contact with the sleeper, and foldable for storage, including, in combination: a first slide with a headward end and a footward end, a second slide with a headward end and a footward end, tool-free means for slidably deploying the first and second slides for electric blanket supporting comprising: means for clasping together under gravitational force the headward end of the second slide and the footward end of the first slide, including first and second means manually adjustable for respectively supporting the headward end of the first slide and the footward end of the second slide; wherein the means for clasping comprise: the first and second slides being rectangular in form with respective sides, the first slide fitting in-plane between the sides of the second slide and having at the footward end thereof a transverse projection over the sides of the second slide, the headward end of the second slide having a transverse projection over the sides of the first slide; and means permitting ready separation of said first and second slides, comprising the bottom of said first slide being free of constraint by the second slide and the bottom of the second slide being free of constraint by the first slide.

4,353,141
POWER TOOTHBRUSH

W. Dorwin Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, N.Y. 11363
Continuation-in-part of Ser. No. 920,685, Jun. 30, 1978, Pat. No. 4,210,975, which is a division of Ser. No. 848,807, Nov. 7, 1977, Pat. No. 4,175,299. This application Jul. 7, 1980, Ser. No. 166,705
Int. Cl.^{3} A46B *13/06*

U.S. Cl. 15—22 R **10 Claims**



1. A water-powered appliance comprising

(a) a housing,
(b) a working element movably associated with one end of said housing,
(c) orbital output drive means within said housing for driving said working element through a predetermined motion,
(d) said orbital output drive means comprising a fluid-powered, nutating motor having a motor housing,
(e) a saturn disc mounted within said motor housing for universal tilting movement within predetermined limits,
(f) a source of motive fluid for driving said saturn disc through said tilting movement,
(g) said appliance housing being of a size and shape to be held by one hand of an operator with the thumb of the holding hand extending generally toward the forward end of the housing associated with said working element and on one side of said nutating action motor,
(h) a valve operating member mounted by said appliance housing for rotational movement relative to said housing and being mounted in the area of said housing engaged by the thumb of the holding hand,
(i) said valve-operating member being rotatable by thumb motion of the operator,
(j) a valve providing fluid communication between said source of motive fluid and said nutating motor,
(k) said valve being mounted within the housing on the side of the motor opposite the thumb engaging portion of the appliance housing, and
(l) a rod-like valve actuator extending within said appliance housing from the valve-operating member to the valve and passing directly through the saturn disc of the nutating action motor,
(m) said rod-like valve actuator being axially movable by rotation of said valve-operating member to actuate said valve.

4,353,142
MOP CARRIER AND A ROTARY SUPPRESSOR THEREIN

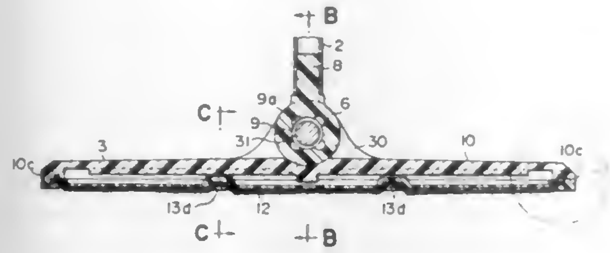
Masanobu Nishiyama, Osaka, and Yasuhiro Kiuchi, Minoo, both of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed Jun. 9, 1980, Ser. No. 157,982
Claims priority, application Japan, Jan. 25, 1980, 55-7711[U]
Int. Cl.^{3} A47L *13/254*

U.S. Cl. 15—144 R **13 Claims**

1. A mop carrier assembly, comprising:

a carrier frame including an upper base frame member, and a lower inner base plate member secured therewith so as to have a bottom surface thereof presented downwardly, said carrier frame including means for mounting the carrier frame to a mop handle;

a layer of a first hook and fleece-type fastener member dis-

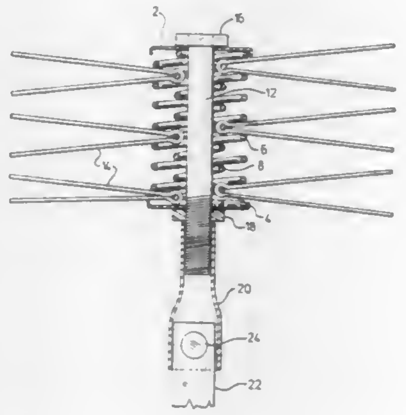


posed upon said bottom surface and presented downwardly; and

a support frame secured to said carrier frame with said first fastener member therebetween, with said first fastener member downwardly being largely exposed.

4,353,143
SWEEPING APPARATUS

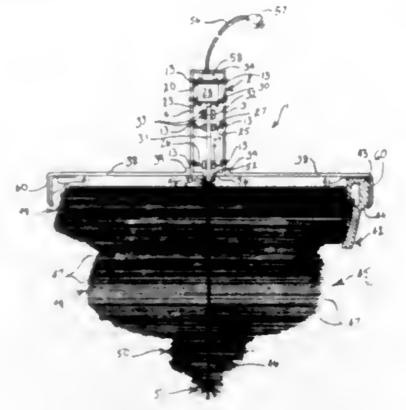
Joseph L. Y. Beaudoin, 1026 Willowdale Ave., Willowdale, Ontario, Canada (M3M 3E1), and Joseph F. Y. Beaudoin, 61 Madawaska Ave., Toronto, Ontario, Canada (M2M 2R2)
Filed Oct. 15, 1980, Ser. No. 197,220
Int. Cl.^{3} A46B *3/18*
U.S. Cl. 15—162 7 Claims



1. A chimney cleaning apparatus having a unitary pushing means, brush attachment means secured to one end thereof, and a tined brush of predetermined planform having a central spindle portion, an inner coil spring and an outer coil spring in mutual radially spaced relation mounted over the spindle portion, the coils of the inner spring being moveable axially within the coils of the outer spring, stiff wire tines each encircling the wire of the inner spring in pivotal relation therewith and extending between adjacent coil portions of the outer spring to permit elastic coning deformation of the brush for insertion of the brush past a restriction, in use, said unitary pushing means having sufficient length to traverse a chimney of predetermined length, and comprising an elastically deformable strap of rectangular section to permit elastic deformation of the strap to relatively short radiused bends, in the plane of the strap, and possessing sufficient stiffness to displace said brush upwardly along a chimney in surface cleaning relation therewith, said central spindle portion having a threaded end portion and threadedly adjustable nut means rotatably mounted thereon for axially pre-loading one said spring relative to the other said spring to apply a predetermined load in biasing relation with said tines to resist coning of the brush on passage thereof past an obstruction.

4,353,144
UTILITY BRUSH

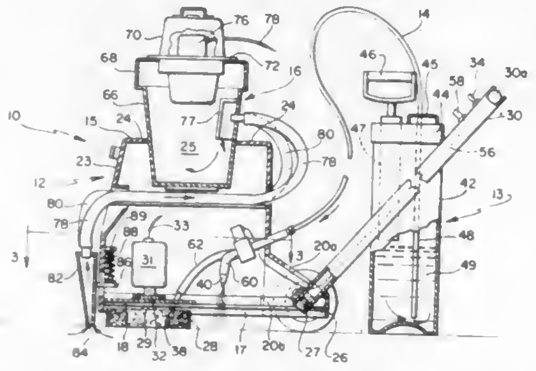
Sherry A. Mayberry, 1911 Pleasant Dr., Bastrop, La. 71220
Filed Apr. 28, 1980, Ser. No. 144,242
Int. Cl.^{3} A46B *13/02*
U.S. Cl. 15—246 8 Claims



1. A utility brush comprising:
(a) a housing and a motor contained in said housing;
(b) shaft means having one end cooperating with said motor in rotatable relationship in said housing;
(c) brush means characterized by a generally cone-shaped brush having multiple bristles arranged in a top bristle cluster having a first selected diameter; a middle bristle cluster having a second selected diameter; a lower bristle cluster having a third selected diameter; and a bottom bristle cluster having a fourth selected diameter, said brush means removably carried by the opposite end of said shaft means and projecting beneath said housing for insertion in a toilet bowl; and
(d) mount bracket means attached to said housing and shaped to removably engage the rim of the toilet bowl and position said brush means rotatably in the toilet bowl.

4,353,145
RUG CLEANING APPARATUS

Frank W. Woodford, 452 W. Shore Rd., Warwick, R.I. 02889
Filed Jan. 29, 1981, Ser. No. 229,639
Int. Cl.^{3} A47L *11/03, 11/202*
U.S. Cl. 15—321 1 Claim

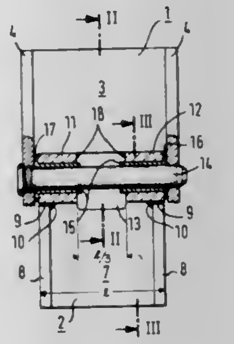


1. An apparatus for the cleaning of rugs and the like comprising:
a. a main housing;
b. means for movably supporting said housing on a carpeted supporting surface;
c. handle means attached to said housing for effecting movement of said apparatus by an operator;
d. means attached to said housing for scrubbing a carpet when said apparatus is positioned thereupon;
e. means for dispensing cleaning solution to said scrubbing means;
f. means for spraying cleaning solution onto a section of carpet in the proximity of said scrubbing means when said apparatus is positioned on a carpet;
g. means for supplying heated, pressurized cleaning solution to said dispenser means and said spray means; and
h. vacuum means attached to said housing for vacuuming a carpet when said apparatus is positioned thereupon;

said vacuum means comprising a vacuum nozzle of elongated section extending transversely across one end of said housing, said scrubbing means being positioned within said housing spaced slightly interiorly of said nozzle, said spraying means being positioned within said housing on the opposite side of said scrubbing means from said nozzle whereby as said apparatus is moved over a carpet, the latter is sequentially spray cleaned, scrubbed and vacuumed.

4,353,146
BUTT HINGE

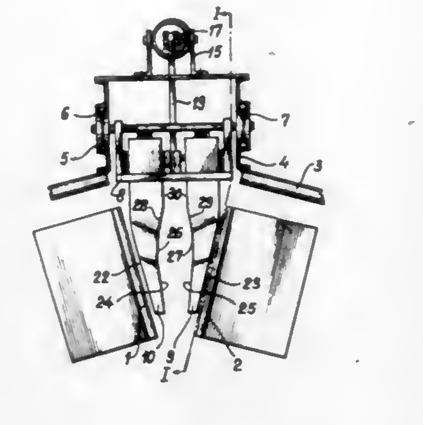
Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to Ed. Scharwachter GmbH & Co. KG, Remscheid, Fed. Rep. of Germany
Filed Nov. 27, 1979, Ser. No. 97,856
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851234; May 28, 1979, 2921521
Int. Cl.^{3} E05D *5/10*
U.S. Cl. 16—387 17 Claims



1. A butt hinge having a hinge axis and comprising a first hinge plate and a pair of axially spaced outer gudgeons extending outwardly from an edge of said first hinge plate extending generally parallel to and spaced laterally from the hinge axis, a second hinge plate and a single inner gudgeon extending outwardly from an edge of said second hinge plate extending generally parallel to and spaced laterally from the hinge axis with said inner gudgeon extending between and axially aligned with said outer gudgeons of said first hinge plate, said inner gudgeon of said second hinge plate being formed by two axially spaced inner gudgeon sections and with the adjacent ends of said inner gudgeon sections in combination with said edge from which said inner gudgeon sections extend defining a recess, said recess and said first plate edge being so dimensioned that when a a hinge pin extends through said pair of outer gudgeons of said first plate said two inner gudgeon sections of said second plate and said recess between said inner gudgeon sections for pivotally connecting said first and second hinge plates to provide the hinge axis only said hinge pin extends through said recess with said first plate edge being outside thereof, said pin being fixed against rotation with said outer gudgeons of said first plate, a bearing bushing within each of said inner gudgeon sections of said second plate for supporting said pin for rotational movement about its axis when said first plate is pivotally moved relative to said second plate about the hinge axis, said bearing bushings each projecting into said recess and located in spaced relation to one another in the axial direction of said hinge axis and said recess between said inner gudgeon sections extends for about one-third of the overall axial length of said inner gudgeon on said second hinge plate.

4,353,147
APPARATUS FOR STUNNING ANIMALS TO BE SLAUGHTERED, SUCH AS PIGS

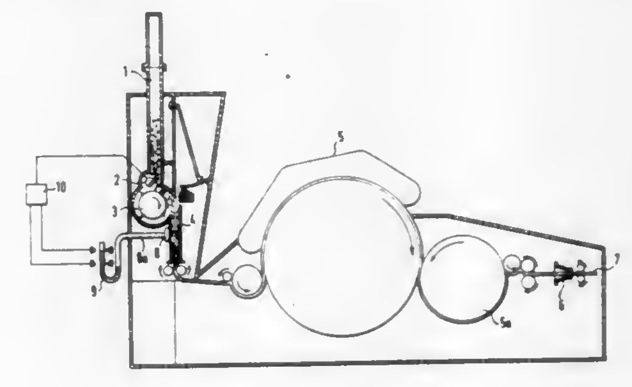
Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G. J. Nijhuis B.V., Netherlands
Filed Jun. 20, 1980, Ser. No. 161,298
Claims priority, application Netherlands, Jun. 25, 1979, 7904935
Int. Cl.^{3} A22B *3/06*
U.S. Cl. 17—1 E 3 Claims



1. An apparatus for electrically stunning animals to be slaughtered, comprising:
two endless conveyors, said conveyors being operable to run parallel to each other and at a synchronized rate and being positioned to form a substantially V-shaped passageway between the operating surfaces thereof;
a pair of electrodes carried by a movable frame, said electrodes being insulated with respect to each other and being adapted to extend into said V-shaped passageway, said electrodes being further adapted to engage the head of the animal to be stunned and to clear said passageway; and
means for moving said movable frame, said means being adaptable to move said movable frame at said synchronized rate, the two electrodes being arranged side by side in said passageway, said electrodes being of such a shape and mounted in such a manner that they are operative to engage the sides of the head of the animal substantially at the same time.

4,353,148
ELECTRIC PRESSURE SWITCH

Wolfgang Beneke, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany
Filed Aug. 8, 1980, Ser. No. 176,561
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932291
Int. Cl.^{3} G01L *9/00;* D01G *15/40*
U.S. Cl. 19—105 11 Claims



1. An electric pressure switch, comprising means defining a pair of communicating vessels each having an upper end portion; a body of liquid in said vessels; means for connecting the

upper end portion of one of said vessels to a source of variable fluid pressure; means for detecting fluctuations in the upper level of liquid in at least one of said vessels which occur in response to variations of said fluid pressure, including at least two liquid level detectors arranged at two different vertically spaced levels; and mounting means supporting said detectors for joined displacement relative to and lengthwise of said one leg; said mounting means comprising a pair of carriages each mounting one of said detectors, and screw spindle means operatively connected with said carriages for jointly displacing the same.

4,353,149
FLAT CLEANING SYSTEM FOR A CARD

Robert Demuth, Wallisellen, and Anton Wüest, Winterthur, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

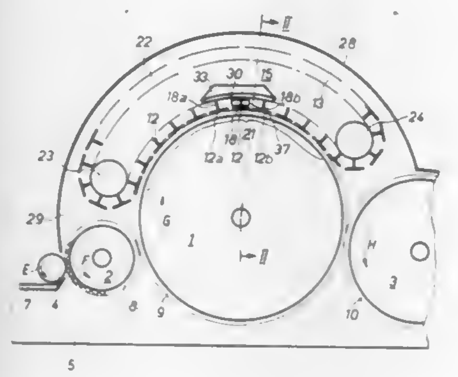
PCT No. PCT/EP79/00081, § 371 Date Jul. 7, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00980, PCT Pub. Date May 15, 1980

PCT Filed Oct. 22, 1979, Ser. No. 205,963

Claims priority, application Switzerland, Nov. 7, 1978, 11429/78

Int. Cl.³ D01G *15/82*

U.S. Cl. 19—107 **11 Claims**



1. A flat cleaning system for cards comprising a set of revolving flats, the individual flats not being in mutual contact, each flat having a T-shaped profile with legs on both sides of a web which extends towards the inside of the flat room formed by the set of flats, the legs supporting a point clothing on their working surface, and the group of flats located at the main drum being guided along the surface of the main drum;

a sealing element adapted to temporarily form an air tight seal between the room formed by the set of revolving flats and the particular neighboring flats the seal is temporarily disposed over;

said sealing element forming at least one duct between the neighboring flats as the set of flats revolve;

said sealing element including a fixed plate which hugs the curvature of the flat path in the direction of the flat movement and along which the free end of the web moves in order to form a sealing point; and

air stream generating means, coordinated to said at least one duct, for cleaning said flats.

4,353,150
ROPE STRETCHING AND TIGHTENING DEVICE

Richard E. Docken, 13910 NE. 14th St., Bldg. 4, Apt. 1, Bellevue, Wash. 98005

Filed Nov. 3, 1980, Ser. No. 203,157

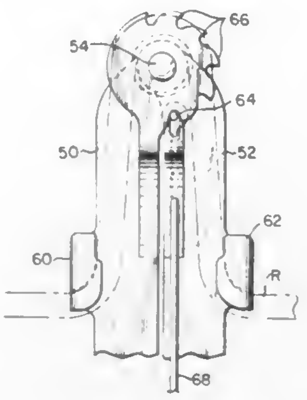
Int. Cl.³ A43C *11/00;* B66F *3/02;* B25B *25/00*

U.S. Cl. 24—71.1 **3 Claims**

1. An apparatus for increasing the tension in a taut rope segment wherein a portion of the segment is adjacent the apparatus, which comprises:

two elongated deflecting members, each deflecting member pivotally connected to the other at one end of each deflecting member such that the deflecting members are aligned longitudinally when in a neutral position and the pivotally connected ends of the deflecting members move upward with respect to the nonconnected ends when a downward force is applied to the nonconnected ends;

means for deflecting the portion of the rope segment adjacent the pivotal connection so that said portion will move upward with respect to the nonconnected ends of the deflecting members in conjunction with the pivotally connected ends of the deflecting members;



means for engaging the rope segment at locations adjacent at least one point on each deflecting member spaced apart from the pivotal connection and restraining motion of the rope segment away from such points so that the rope segment will remain adjacent to the such points on each deflecting member when the connected ends of the deflecting members move upward with respect to the nonconnected ends; and

means for securing the deflecting members at a plurality of angles relative to one another.

4,353,151
BUCKLE FOR A SAFETY BELT FOR VEHICLES

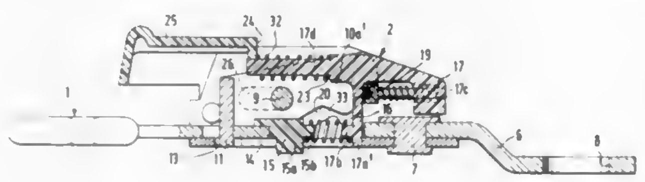
Leif Ennerdal, Glimmergatan 16, 441 00 Alingsas, Sweden

PCT No. PCT/SE79/00171, § 371 Date Apr. 15, 1980, § 102(e) Date Apr. 14, 1980, PCT Pub. No. WO80/00404, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 14, 1979, Ser. No. 193,262

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—230 A **10 Claims**



1. In a buckle for a safety belt for vehicles, which comprises a tongue-shaped insertion part and a sleeve-shaped receiving part forming a primary locking means, which is provided for locking the insertion part when it is in an inserted position in the receiving part, and for permitting its release from such a locked condition, the primary locking means being in the form of an arm, which is pivotable around a shaft which is parallel to the plane of the insertion part and perpendicularly arranged relative to the direction of movement of the insertion part in the receiving housing, the primary locking means being provided with at least one engaging pin serving the purpose in a first pivoting locking position to cooperate with a pin on the insertion part and lock the same to the receiving part, and in a second pivoting position to release the insertion part, the primary locking means being spring loaded in the releasing direction and provided with a stop dog which is in cooperation with a secondary locking means displaceable along the stop dog, arranged to impede the primary locking means from pivoting in the release direction into a displacing and locking position of the secondary locking means, whereas the secondary locking

means permits pivoting of the primary locking means into a second release position of displacement of the secondary locking means, the release of said primary and secondary locking means being actuated by a manually operated device, which is displaced in the direction of insertion of the insertion part, the improvement wherein the primary locking means comprises a double armed lever pivotable and extending on both sides of said shaft, one arm of said lever, which is directed outwardly toward the opening of insertion supporting said stop dog, which cooperates with the insertion part, and the inwardly directed arm of said lever supporting said stop dog cooperating with the secondary locking means, said last mentioned stop dog being formed by a surface which is faced in the same direction as the direction in which the projection supporting the stop dog cooperating with the insertion part is projected, said secondary locking means comprising a pin spring loaded from the inner portion of the insertion part, said pin being substantially parallel to the shaft of the primary locking means and against bias of said spring actuation by force displaceable past said stop dog cooperating with the same by means of an operating device, which is spring loaded in the same direction, the inner ends of the springs being supported by a common yoke located in the interior portion of the receiving part.

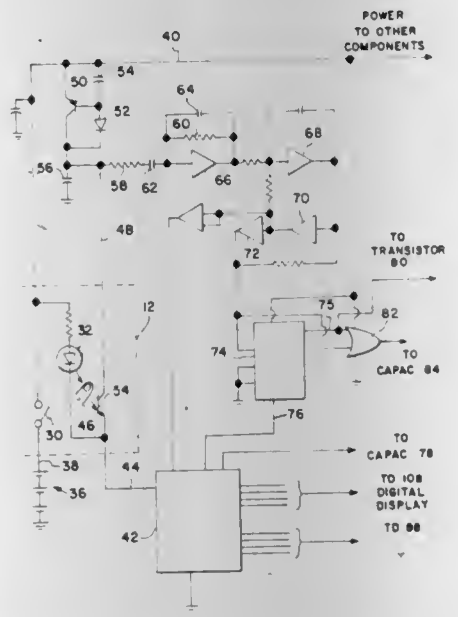
4,353,152
PULSE RATE MONITOR

Arthur H. O'Connor, Lancaster, and Robert A. Rossman, Leola, both of Pa., assignors to Novatec, Inc., Lancaster, Pa.

Filed Feb. 21, 1980, Ser. No. 123,351

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—689 **2 Claims**



1. In a portable heart pulse rate monitor device of the type having a radiation source in proximity to a radiation sensor with the transmission of radiation between the source and sensor modulated by capillary blood flow of a finger placed in proximity to both the radiation source and radiation sensor; an electronic circuit to power the radiation source and radiation sensor and to amplify and process the sensor's output signal; and a display means to furnish the user with a direct reading of the user's pulse rate in beats per minute, the improvement comprising: a phototransistor acting as the radiation sensor and an active load connected to the phototransistor, the active load comprising a transistor with a unidirectional feedback circuit, connected between base and collector of the transistor, which favors signal variations from the quiescent operating level resulting from reductions in radiation received by the phototransistor, as opposed to signals resulting from increase in radiation to the phototransistor.

4,353,153
METHOD OF MAKING CAPACITOR WITH CO-FIRED END TERMINATIONS

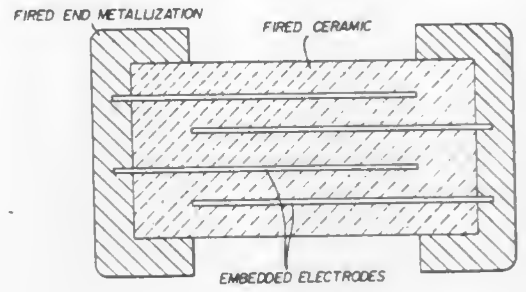
Sri Prakash, Simpsonville, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 961,469, Nov. 16, 1978, Pat. No. 4,246,625. This application Aug. 29, 1980, Ser. No. 182,501

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ H01G *13/00*

U.S. Cl. 29—25.42 **1 Claim**



1. In a method of making a multielectrode ceramic capacitor by providing a green ceramic body containing a plurality of embedded electrodes, coating end portions of the green ceramic body with a paste containing finely divided metal particles and co-firing the green ceramic body and paste coating, the improvement which comprises employing as said paste a paste consisting essentially of a mixture, in an inorganic vehicle, of a finely divided metal selected from nickel and copper; glass frit, said glass being selected from barium borosilicate glass and barium aluminosilicate glass; and MnO_2; the properties by weight of the said metal, glass frit and MnO_2 being from about

80 to 95% metal
3 to 14% glass frit
1.5 to 3% MnO_2.

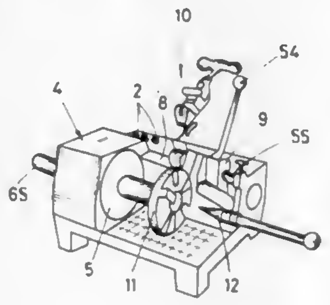
4,353,154
APPARATUS FOR WORKING PIPES

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,696

Int. Cl.³ B27C *9/02;* B23P *23/00*

U.S. Cl. 29—27 A **17 Claims**



1. An apparatus for working pipes, tubes, rods, bars, and the like, in the field of sanitary and heating installations, with electrometer drive, said apparatus comprising a drive machine as a basic machine having a motor including a swivel-head turning mechanism that drives workpieces and working devices rigidly connected therewith selectively for carrying out individually and collectively a plurality of working procedures, including means for thread-cutting, tube-bending, cutting-off, separating, welding, and pipe cleaning, at least one guide rod detachably and fixedly journalled in said drive machining for receiving a tool-carrier provided with at least one continuous bore with which said tool-carrier is mounted to be displaceably journalled on said at least one guide rod, a turning

device in the form of a swivel head including clamping for driving workpieces and devices for rotational working, a rotating drive connectible to said swivel head of said drive machine by a drive tube which includes a stand having at least one bore for displaceably journalling said stand on said at least one guide rod, said stand incliuding a cantilever provided with two rollers arranged in a plane and spaced sequentially from one another, one of said rollers being drivable by means including a belt which connects it with said drive tube, and also including a handle for adjusting the tension of said belt.

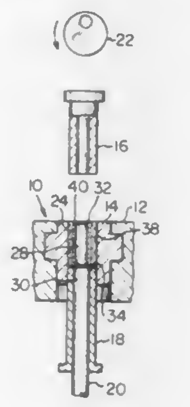
4,353,155
METHOD FOR MANUFACTURING COMPOSITE POWDER METAL PARTS

Arthur N. Hillebrand, 1046 E. Eschback Rd., St. Marys, Pa. 15887, and John D. Sterbank, Laurel La., Kersey, Pa. 15846

Filed Jun. 25, 1980, Ser. No. 162,690

Int. Cl.^{3} B21K *1/04;* B22F *3/24*

U.S. Cl. 29—149.5 DP **3 Claims**



1. A method of making a composite bronze bearing in a press having a die and die wall, a top punch and a bottom punch, both movable into the die, and a core pin having a distal section of a minor diameter and a trailing section of a major diameter, said core pin movable through the bottom punch into the die comprising:

A. positioning the core pin within the die cavity to form a first cavity between said major diameter, the die wall and the bottom punch;
B. filling the first cavity with one of iron or bronze powder;
C. sealing off the die cavity with the top punch;
D. simultaneously moving the die, top punch and core pin downward with respect to the bottom punch to compress the powder into a low density preform;
E. retracting the core pin so as to define a second cavity between its minor diameter and the die wall;
F. filling the second cavity with the other of iron or bronze powder; and
G. compacting the powder and the preform into a bearing.

4,353,156
MACHINE FOR POSITIONING VALVES ON RIMS FOR TUBELESS TIRES

Guy F. Rosaz, Pontarlier, France, assignor to Scovill Inc., Waterbury, Conn.

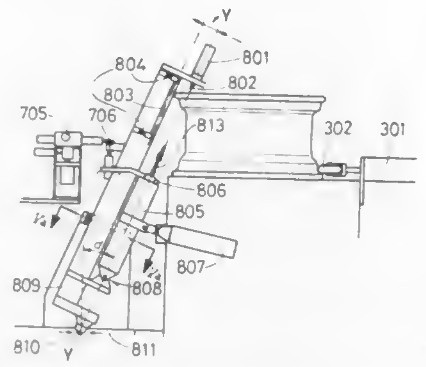
Filed Sep. 5, 1980, Ser. No. 184,385

Int. Cl.^{3} B23P *13/00*

U.S. Cl. 29—221.5 **14 Claims**

1. A machine for positioning and fitting tire valves on series of wheel rims to be provided with tubeless tires, this machine being adapted to take into account the various parameters characterizing the specific rim type concerned, by means of pneumatic, electric and/or electronic control means for logically programming:

conveyor means for feeding a plurality of rims;
means for detaching a single rim from the series and positioning same in a waiting position, an operative position and a discharge position, respectively and successively;
means for exerting a pressure against the detached rim in order to push same in its plane from said operative position to a valve-fitting position for engagement with driving roller means;
means for driving said roller means and consequently said detached rim in said valve-fitting position;
means for detecting the position of the valve hole of said rim in relation to an axis ZZ common to emitting and receiving elements of a photocell;
means for positioning the valve hole along an axis YY common to a centering spindle and to a insertion cylinder provided with a valve to be positioned;
means for selecting a valve for each rim;
means for positioning the selected valve and introducing same into the rim valve hole; and



means for holding the rim during the valve insertion, wherein the rims are caused to travel laterally in a plane parallel to the plane of symmetry of the rims; said detection means and valve hole positioning means differing from each other, the detection means being controlled and possibly corrected by the positioning means; the detection axis ZZ and the axis YY of the cylinder for introducing the valve into the valve hole forming therebetween an acute angle of same value as the angle from the perpendicular to the valve bearing face to the rim axis, the means for positioning each valve being of the floating type, its angular position in relation to the plane of symmetry of each valve varying from the fixed vertex of said acute angle.

4,353,157
CLIP DRIVER

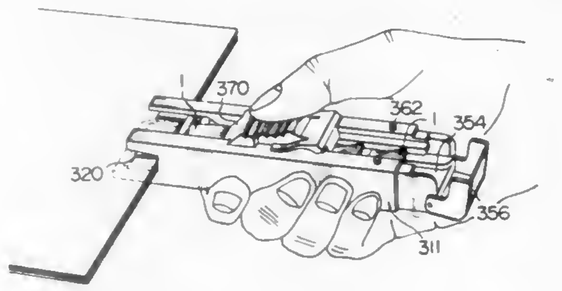
Hisao Sato, 10, Toyotamaminami-3-chome, Nerima-ku, Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,505

Claims priority, application Japan, May 1, 1979, 54-58424[U]; Sep. 5, 1979, 54-121869[U]; Nov. 9, 1979, 54-154806[U]; Dec. 3, 1979, 54-167224[U]

Int. Cl.^{3} B23P *11/00*

U.S. Cl. 29—243.56 **23 Claims**



1. A clip driver for attaching a clip to sheets of paper or the like, said clip having a pair of opposing generally flat holding webs the front ends of which are resiliently pressed against each other to form opposing lips for clamping said sheets therebetween and at least one pair of opposing lugs, each projecting laterally from one of the side edges of each said holding web, said clip driver comprising: a casing; a guide way formed in said casing to extend longitudinally therethrough; an inlet for charging said clip into said guide way in such a manner that said lips of said clip are directed toward the front end of said guide way; an outlet provided in the front end of said guide way for delivering said clip; and clip opening means disposed on at least one side of said guide way near the front end of the latter and having opposite guide surfaces gradually diverging toward said outlet, said pair of lugs of said clip being adapted to make sliding engagement with said guide surfaces, respectively, to open said clip during the forward movement of said clip along said guide way, and wherein said clip opening means consists of a member shaped like a tuning fork having a flat rear portion and two inclined leg portions bifurcated from said flat rear portion, wherein at least said inclined leg portions are made from a resilient member so as to be deflected toward and away from each other and said tuning-fork-like member is fixed to said casing at said flat rear portion.

4,353,158
METHOD FOR CONVERTING A LOCKSTITCH SEWING MACHINE TO A MACHINE FOR DECORATING FABRICS

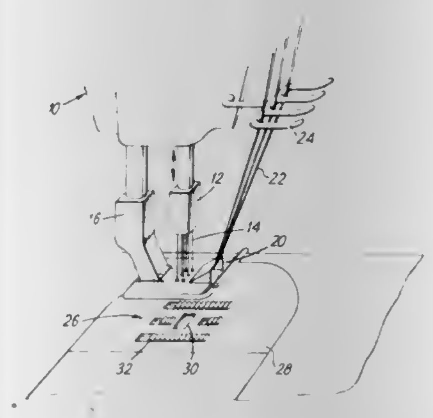
David E. Henshaw, Belmont, Australia, assignor to I.W.S. Nominee Company Limited, Ilkley, England

Continuation of Ser. No. 969,248, Dec. 13, 1978, abandoned. This application Mar. 26, 1981, Ser. No. 247,771

Claims priority, application United Kingdom, Dec. 16, 1977, 52391/77

Int. Cl.^{3} B23P *23/00, 17/04;* B21K *21/16;* D04H *18/00*

U.S. Cl. 29—401.1 **3 Claims**



1. A method for converting a lockstitch sewing machine to a machine for decorating fabrics of keratinous fibers with at least one untwisted strand of keratinous fiber applied in a pattern to the fabric, comprising the steps: (a.) removing the throat plate, feed dog, presser foot, bobbin, bobbin case and the needle bar from the machine; (b.) attaching to the machine a needle block having means for securing a plurality of needle punching needles therein to the needle mounting of a sewing machine; a throat plate apertured to correspond with the plural needles carried by the needle block; a presser foot apertured to correspond with the spacing of the needles in the needle block for passage of the needles therethrough; the presser foot provided with a guide passage for introduction of a fibrous strand between the throat plate and the presser foot; and a feed dog having sufficient clearance for the needles carried by the needle block.

4,353,159
METHOD OF FORMING SELF-ALIGNED CONTACT IN SEMICONDUCTOR DEVICES

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

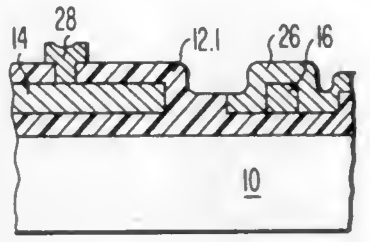
Filed May 11, 1981, Ser. No. 262,620

Int. Cl.^{3} H01L *21/28*

U.S. Cl. 29—571 **8 Claims**

1. In a method of making an MOS device having a first layer of insulating material formed on the surface of a semiconductor body, a conductive gate line disposed over a channel region and at least one conductive interconnecting line disposed on the surface of the insulating material, the improved process for forming buried contacts to the conductive line and to the gate line comprising the steps of:

growing the first layer of insulating material by the thermal oxidation of the semiconductor body;
forming a patterned layer of masking material, to a given thickness, to define contact areas on portions of the interconnecting line and on portions of the gate line;



growing a second layer of insulating material, to the given thickness, over the unmasked portions of the interconnecting line and over the unmasked portions of the gate line;
removing the masking material from the contact areas; and
depositing conductive material in each of the now formed buried contact areas in ohmic contact with the interconnecting line and with the gate line.

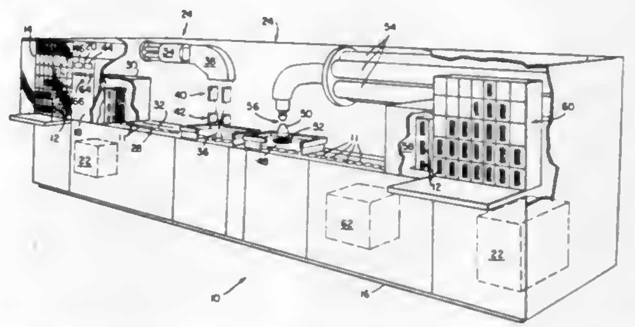
4,353,160
SOLAR CELL JUNCTION PROCESSING SYSTEM

Anthony J. Armini, and Roger G. Little, both of Bedford, Mass., assignors to Spire Corporation, Bedford, Mass.

Filed Nov. 24, 1980, Ser. No. 209,542

Int. Cl.^{3} H01L *31/18*

U.S. Cl. 29—572 **16 Claims**



1. An integrated dry junction processing system for solar cells comprising:

(a) a unitary housing provided with a solar cell input lock and a solar cell output lock;
(b) means for maintaining said housing under vacuum said means including a number of cryogenic pumps;
(c) continuous means including a combination vacuum lock-solar cell transport system and an ion beam implanter and a pulsed electron beam annealer for forming p-n junctions in solar cells within said housing, said pulsed electron beam annealer including a plurality of transmission line capacitors disposed circumferentially about a central horizontal axis;
(d) said housing featuring process controls for said ion beam implanter and said pulsed electron beam annealer and including an ion beam current integrator for implant dose control.

16. A continuous, microprocessor-controlled process for the formation of p-n junctions in solar cells comprising:

(a) providing a plurality of semiconductor wafers integrally formed with one dopant material;
(b) loading a number of said wafers into cassettes;
(c) introducing said wafers with said cassettes via vacuum locks into a vacuum environment;
(d) removing said wafers from said cassettes and ion implant-

ing said wafers within said vacuum environment with a second dopant material;
(e) annealing said ion implanted wafers by pulsing said wafers with an electron beam of an annealer including a plurality of transmission line capacitors;
(f) reloading said annealed wafers into cassettes; and
(g) removing said wafers with said cassettes via
vacuum locks from said vacuum environment.

4,353,161

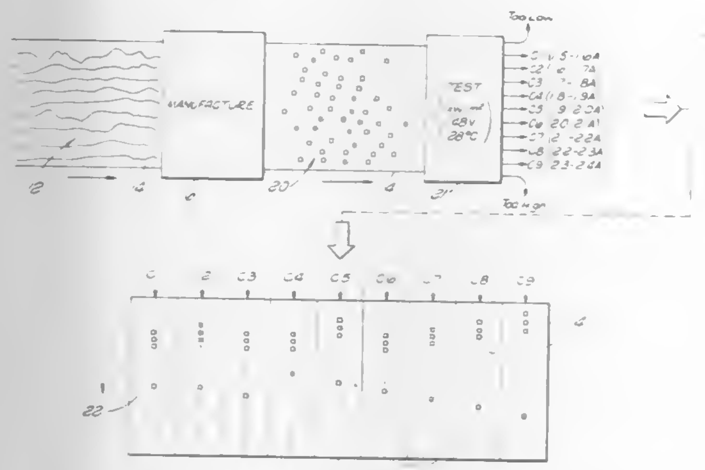
PROCESS FOR FABRICATING SOLAR TO ELECTRICAL ENERGY CONVERSION UNITS

Gary B. Turner, Canoga Park, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 18, 1981, Ser. No. 274,961

Int. Cl.^{3} H01L *31/18*

U.S. Cl. 29—572 **14 Claims**



1. A process for fabricating solar to electrical energy conversion units, comprising the steps of:
providing a group of solar cells having a distribution of cell currents for a set cell voltage, a set level of incident solar cell face radiation and a set temperature, each of said solar cells being capable of classification into one of a number of categories, each of said categories being defined by a range of cell currents at substantially said set cell voltage, level of incident solar cell face radiation and temperature which is different than said range for each other category, and being characterizable by a selected cell current level in said range for said category;
selecting a goal array current range for a number of arrays of solar cells;
for each said array, forming parallel-connected strings of series-connected solar cells from a plurality of said categories, each string in said array consisting of cells from a single category, having the same number of cells as each other string in said array and being characterizable by said selected cell current level for said category, said array having characterizable currents for said parallel-connected strings which sum to a level within said selected goal array current range for said arrays.

4,353,162

APPARATUS AND PROCESS FOR MANUFACTURING FINNED TUBES

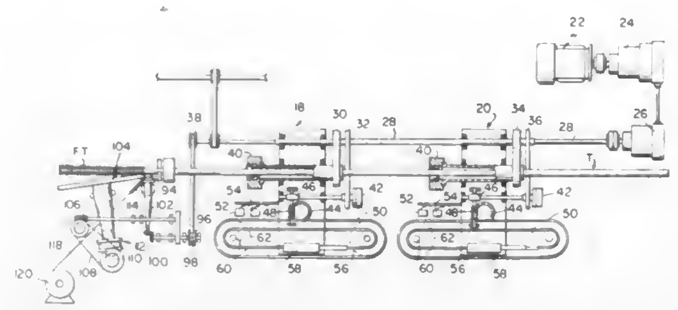
Johannes Van Meteren, Roelofarendsveen, Netherlands, assignor to The Lummus Company, Bloomfield, N.J.

Filed Jan. 26, 1979, Ser. No. 6,738

Int. Cl.^{3} B21C *37/26*

U.S. Cl. 29—727 **26 Claims**

1. An apparatus for forming a finned tube from a bare tube which comprises:
at least two tube feed units, each of said tube feed units having a bare tube clamping means;
means for rotating said bare tube clamping means, said bare tube clamping means being caused to rotate prior to clamping of said bare tube;
sprocket and rack assembly means for linearly moving each of said tube feed units between a tube contact position and a tube release position;
means for returning said tube feed units from said tube release position to said tube contact position, said means for moving and returning said tube feed units being synchronized in a manner to continuously move said bare tube through said apparatus;
means for supplying a strip of a finning material;
means for deforming said strip of finning material into a helical coil;
means for forming said helical coil about said bare tube; and
means for supporting said tube during forming of said fin about said bare tube.



4,353,163

AUTOMATIC OILING SYSTEM FOR CHAIN SAW

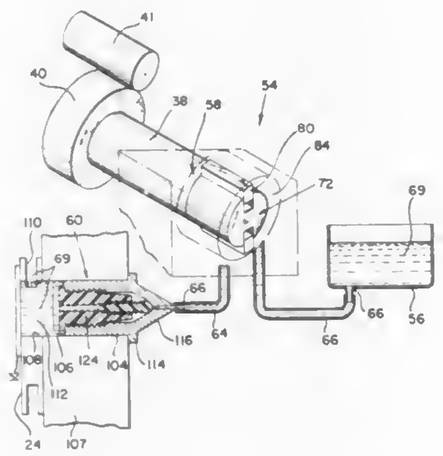
Douglas G. Overbury, and Colin Overy, both of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

PCT No. PCT/US80/01008, § 371 Date Oct. 30, 1980, § 102(e) Date Oct. 30, 1980, PCT Pub. No. WO82/00508, PCT Pub. Date Feb. 18, 1982

PCT Filed Aug. 8, 1980, Ser. No. 201,416

Int. Cl.^{3} B27B *17/12;* F16N *7/14, 13/22*

U.S. Cl. 30—123.4 **6 Claims**



1. A valve assembly for an oil pumping system of a chain saw having a guide bar comprising:
(a) a housing having a passage therethrough in communication between the guide bar and the oil pumping system,
(b) an adjustment member connected in the passage of the housing to regulate the quantity of oil delivered to the guide bar,
(c) said member having a longitudinal opening therein through which the oil is delivered to the guide bar, and
(d) a check valve operatively disposed in the passage of the housing and having an open position permitting oil flow, and a closed position stopping oil flow whenever the oil pumping system is off,
(e) the check valve in the open position to coact with the adjustment member to define a transition section to regulate the flow of oil into the opening of the adjustment member from which the flow exits the valve assembly,
(f) the adjustment member defining a screw threadedly received in the housing,
(g) the screw having a slotted head disposed externally of the housing whereby rotation thereof changes the transition section,
(h) the longitudinal opening extending through the screw to open into and communicate with the slotted head thereof,
(i) the upstream side of the passage having a restriction therein,
(j) the check valve having a head positionable to close the restriction and prevent communication from the passage to the upstream side,
(k) a spring biasing the check valve toward the restriction and yieldable to permit a pre-set opening of the head upon oil being pumped by the pumping system, and
(l) the check valve having a stem extending from the head in the direction of the downstream side.

4,353,164

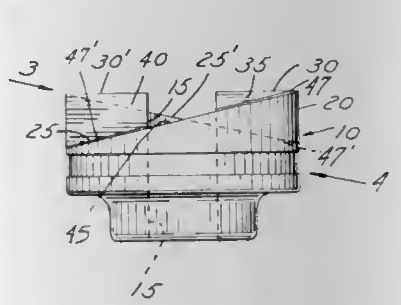
DRAW PUNCH

Wayne Linquist, and Vernon Pearson, both of Rockford, Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 59,869, Jul. 23, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,809

Int. Cl.^{3} B26F *1/00*

U.S. Cl. 30—360 **6 Claims**



1. A male punch member adapted to be used with a cooperating female member to remove a slug in two pieces from a workpiece, comprising a body having an axial bore extending longitudinally therethrough for receiving means for moving said body inwardly and outwardly with respect to the female member, said body having cutting means at one end thereof, said cutting means being comprised a pair of inclined surfaces disposed around said bore and sloping upwardly in opposite directions from one another, said inclined surfaces each having a cutting edge on the entire edge of the outermost portions thereof, each inclined surface terminating at an uppermost end in a rib member extending laterally across said surface from said cutting edge to said bore and upwardly from said surface at said uppermost end, the rib members together forming lateral cutting means extending across said one end of said body except for said bore, whereby the cutting edges of said outermost portions cut the outer slug periphery and the rib members cut across the slug to split it into two pieces when the male member is forced inwardly of the female member with the workpiece therebetween.

4,353,165

SAW

William Albery, 8 Delamere Rd., Gatley, Cheshire, England

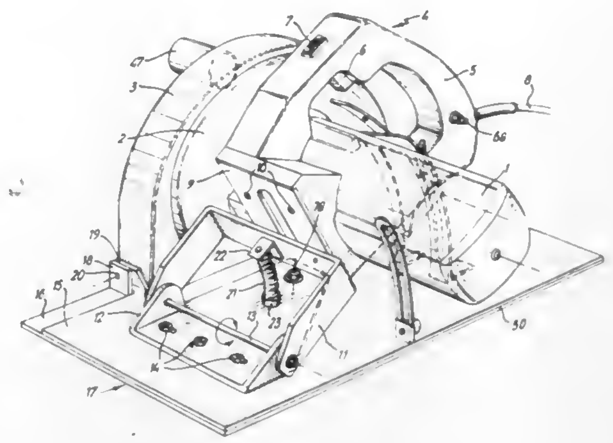
Filed Sep. 18, 1980, Ser. No. 188,405

Claims priority, application United Kingdom, Sep. 19, 1979, 7932486; Apr. 15, 1980, 8012338

Int. Cl.^{3} B27B *9/02*

U.S. Cl. 30—376 **13 Claims**

1. A saw comprising:
a rotatable saw blade,
a base having a guide edge,
means for pivotally mounting the saw blade on the base about an axis perpendicular to the plane of the base, said perpendicular axis being close to the axis of rotation of the blade, and



means for shifting the saw blade about said perpendicular axis between a position in which the plane of the saw blade is parallel to the guide edge of the base and a position in which the plane of the saw blade is slightly angled with respect to the guide edge of the base.

4,353,166

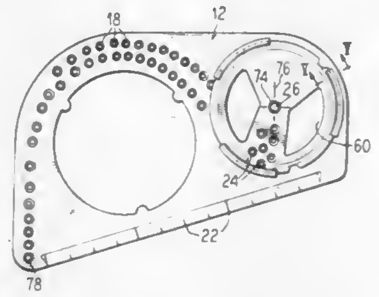
TOY-LIKE INSTRUMENT FOR DRAWING CIRCLES

John S. Kettlestrings, 907 N. President St., Wheaton, Ill. 60187

Filed Oct. 24, 1980, Ser. No. 200,397

Int. Cl.^{3} B43L *9/04*

U.S. Cl. 33—27 C **6 Claims**



1. A device for drawing circles comprising;
a sheet-form member having a planar upper surface and a planar lower surface,
a circular hole formed in said sheet form member and having a given diameter,
alternating upper and lower lips positioned around the circumference of said hole,
  said lower lips projecting radially inwardly and having a bottom wall coplanar with said lower surface of said sheet-form member, a top surface below said upper surface of said sheet form member, and terminating in an inner circumferential wall,
  said upper lips having a lower surface elevated above said upper surface of said sheet form member and a top surface which slopes downwardly and radially inwardly to terminate in an inner circumferential wall,
a circular disk having a diameter less than said diameter of said hole and greater than the diameter of said inner circumferential walls of said upper and lower lips,
  said disk having a flange formed at the circumference of said disk having a top surface coplanar with a top surface of said disk and a bottom surface at an elevation above a bottom surface of said disk
  said disk and said sheet-form member having a series of spaced holes therein to accommodate a marking point and being spaced at selected specific calibrated intervals,
whereby said disk can be inserted into said hole in said sheet-

form member and will be rotatably retained therein by said upper and lower lips.

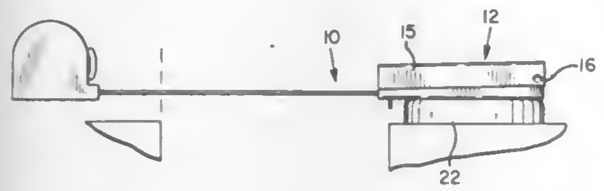
4,353,167
APPARATUS FOR HOLDING AND POSITIONING A MEASURING TAPE

Bruce S. Martin, 9427 N. Calhoun, Portland, Oreg. 97203

Filed Mar. 30, 1981, Ser. No. 248,951

Int. Cl.³ G01B *3/02*

U.S. Cl. 33—137 R **7 Claims**



1. Apparatus for holding and positioning the zero end of a flexible metal measuring tape having a downwardly extending tab at the end thereof comprising:

(a) a base, including means for securing said base releasably to a planar work surface;
(b) clamping means associated with said base for receiving and securing the measuring tape in a manner such that the extremity thereof is located in a defined position;
(c) pivot means for allowing the measuring tape to rotate relative to said base about an axis which is perpendicular to said work surface; and
(d) wherein said clamping means comprises;
  (1) a receptacle having an open top arranged to receive the tape therein said receptacle being rotatably joined to said base,
  (2) a cover for enclosing the top of said receptacle,
  (3) means joining said cover pivotally to said receptacle said cover being movable between a closed position where it covers said receptacle and an open position where it uncovers said receptacle.

4,353,168
INSTRUMENT FOR MEASURING LINEAR MAGNITUDES

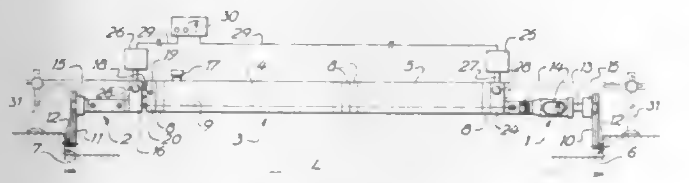
Serge Ginggen, Chavannes, Switzerland, assignor to Tesa S.A., Renens, Switzerland

Filed Mar. 5, 1981, Ser. No. 240,866

Claims priority, application Switzerland, Mar. 11, 1980, 1884/80

Int. Cl.³ G01B *7/02*

U.S. Cl. 33—147 H **7 Claims**



1. An instrument for measuring large linear magnitudes comprising:

(a) a measurement head;
(b) a fixed stop;
(c) a body connecting said measurement head and fixed stop, said body formed of interchangeable extension pieces;
(d) gauge rods aligned and incorporated within said extension pieces, said gauge rods resiliently biased against each other;
(e) a measurement feeler borne by said measurement head, and a measurement feeler borne by said fixed stop, each of said measurement feelers being formed by an arm and said arms being parallel to each other, whereby said arms are contained in a plane;
(f) a contact stop fastened on each of said arms in a position offset with respect to the alignment of said gauge rods;
(g) means for checking the inclination of the two measurement feelers in the plane containing said feelers forming parallel arms; and
(h) means for adjusting the inclination of at least one of said measurement feelers in said plane.

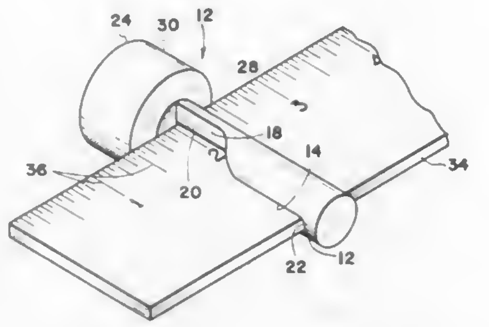
4,353,169
MULTIPLE HOLE GAUGING TOOL

Ernest M. Mitchell, Tulsa, Okla., assignor to Rodney M. Mitchell, Tulsa, Okla.

Filed Jun. 20, 1980, Ser. No. 161,421

Int. Cl.³ G01B *5/14*

U.S. Cl. 33—173 **7 Claims**



1. A multiple hole gauging tool for use with a variety of straight edge members, comprising:

an elongated rod having a transverse slot aperture for slidably receiving a straight edge member therethrough, a threaded stud member at one end of the rod adjacent a first end of said slot aperture,

a cap member having a threaded bore for receiving said stud member, a straight edge engagement surface carried by the cap member and engagable with the straight edge member for locking said rod in place along the straight edge, a smooth cylindrical hole engagement surface carried by the cap member and defining the outer peripheral surface thereof, said rod providing indicating means relating the axis of said cap member cylindrical hole engagement surface with a straight edge received in said rod.

4,353,170
APPARATUS FOR POSITIONING A WORKPIECE

Armin Jordan, Zurich, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Nov. 17, 1980, Ser. No. 207,657

Claims priority, application Switzerland, Dec. 4, 1979, 10764/79

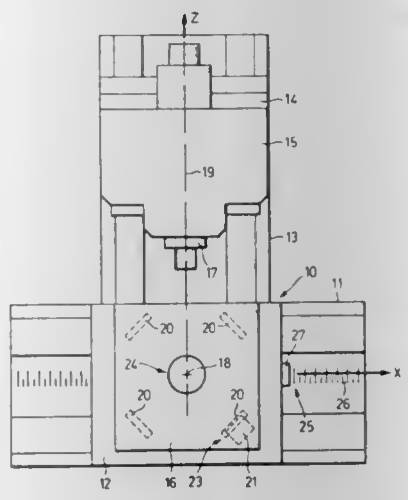
Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 TA **6 Claims**

1. An apparatus for positioning a workpiece which is to be machined upon a machine tool, especially a horizontal drilling machine, in order to produce a continuous bore at the workpiece, wherein part of the bore is machined from one side of the workpiece and the remaining part of the bore from the opposite side of the workpiece and following the machining operation both parts of the bore are in alignment with one another, comprising:

a rotatable table having an axis;
a first slide upon which said rotatable table is displaceable in an X-direction;
a second slide;
a work spindle having an axis;
said work spindle being displaceable upon said second slide in a Y-direction;
said first slide having a starting position at which the axis of the rotatable table intersects with the axis of the work spindle;

a first measuring device for enabling rotating the rotatable table through any desired angle;
a second measuring device for enabling displacing the rotatable table through any desired amount in the X-direction;
a third measuring device for enabling adjusting the individual angles of the rotatable table more exactly than by means of the first measuring device;



a fourth measuring device for measuring the starting position of the first slide in relation to the work spindle; and
said fourth measuring device in conjunction with said second measuring device enabling adjustment of the axis of the rotatable table in relation to the axis of the work spindle at a common intersection point.

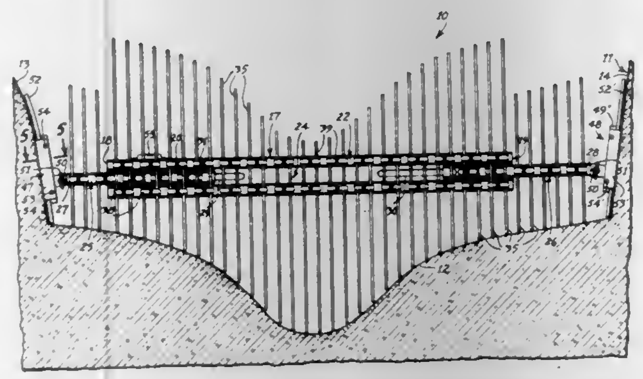
4,353,171
PROFILE PATTERN FOR A WEIR

A. Barry Spears, Lebanon, Tenn., assignor to J. R. Wauford and Company, Consulting Engineers, Inc., Nashville, Tenn.

Filed May 15, 1981, Ser. No. 264,025

Int. Cl.³ G01B *5/00, 5/20*

U.S. Cl. 33—174 G **10 Claims**



1. A weir pattern device for conforming to the profile of a liquid flow channel having a bottom surface and opposite side surfaces, comprising:

(a) an elongated body having opposite first and second end portions,
(b) at least one elongated wing member having a free end portion and an opposite end portion,
(c) means on said body slidably receiving said wing member for relative longitudinal movement so that said free end portion may project beyond said first end portion in an operative position in which said body and said wing member extend transversely of a flow channel,
(d) a plurality of elongated profile rods, each having a bottom end,
(e) retainer means on said body and said wing member for receiving and holding said profile rods in slidably adjusted parallel vertical operative positions, so that when said body and said wing member are disposed in their transverse operative positions, said bottom ends may be positioned to engage the bottom surface of the channel, and
(f) side bearing means mounted relative to said body for engaging the opposite side walls of the channel, in operative position.

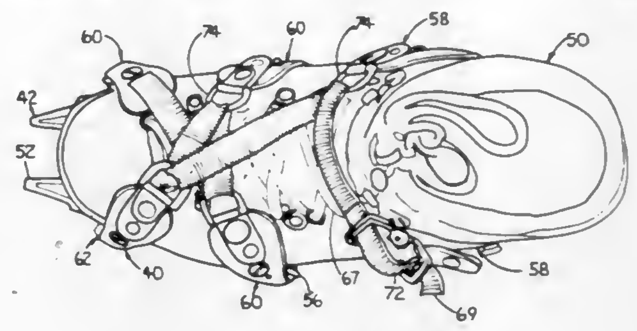
4,353,172
CRAMPON BINDING

Mark K. Bryant, 23709 65th Ave. Ct. East, Graham, Wash. 98338

Filed Nov. 10, 1980, Ser. No. 205,747

Int. Cl.³ A43B *3/10*

U.S. Cl. 36—7.6 **5 Claims**



1. A crampon binding for holding crampons on mountaineers' boots, comprising:

(a) pairs of elongated extensioners adapted to extend from securement locales on crampons which in use become located alongside sides of soles of mountaineers' boots, upwardly to boot lacing locales, each extensioner of all of the paired extensioners increasing in width along the extensioner between each securement locale on a crampon and each boot lacing locale to create a larger area of the extensioner for the transfer of compression binding forces to a mountaineer's boot;
(b) fasteners adapted to attach the elongated extensioners to a crampon at a securement locale;
(c) continuous webbed lacing adapted to removably secure the crampon to a mountaineers's boot by securing this continuous webbed lacing to each of the elongated extensioners at a boot lacing locale; and
(d) fasteners to secure the continuous webbed lacing to each of the elongated extensioners at a boot lacing locale.

4,353,173
INSOLES FOR SKATE BOOTS

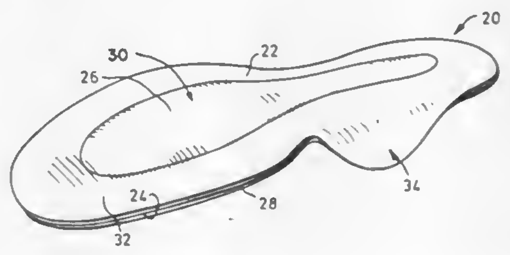
Benoit Paquet, St. Jean, Canada, assignor to Canada Cycle and Motor Company Limited, Weston, Canada

Filed May 31, 1979, Ser. No. 44,276

Claims priority, application Canada, Aug. 8, 1979, 327199

Int. Cl.³ A43B *13/38, 5/16;* **A43C** *13/14*

U.S. Cl. 36—44 **6 Claims**



1. An insole for a skate boot, the insole being of laminated construction and comprising: a base layer moulded in a relatively rigid plastic material and having a profile corresponding generally to the shape of a human foot and of a size appropriate to the required boot size, the base layer having an inner surface smoothly contoured to generally follow the contours of the

sole of a wearer's foot, and an outer surface having a raised central portion which extends longitudinally of said surface and provides a strengthening spine for the insole, said raised central portion having a profile which follows the profile of said base layer and defines a relatively flat peripheral surface portion around said central portion which is of substantially uniform width throughout its extent and onto which the margin of a lasted upper can be secured in constructing a boot, said raised central portion having a thickness corresponding generally to the thickness of said margin and extending over substantially the entire length of the insole except for said margin; and an inner layer of a relatively resilient material secured to and covering the inner surface of said base layer so as to provide a bearing surface for a wearer's foot; the insole further including, in the instep region of the insole, an integral arch support portion which curves laterally from the remainder of the insole in said region and upwardly in a direction away from said outer surface of the base layer, so as to overlie the instep area of the foot of a wearer in use, said arch support portion being formed by parts of said inner layer and base layer and said base layer tapering towards an outer edge of said arch support portion.

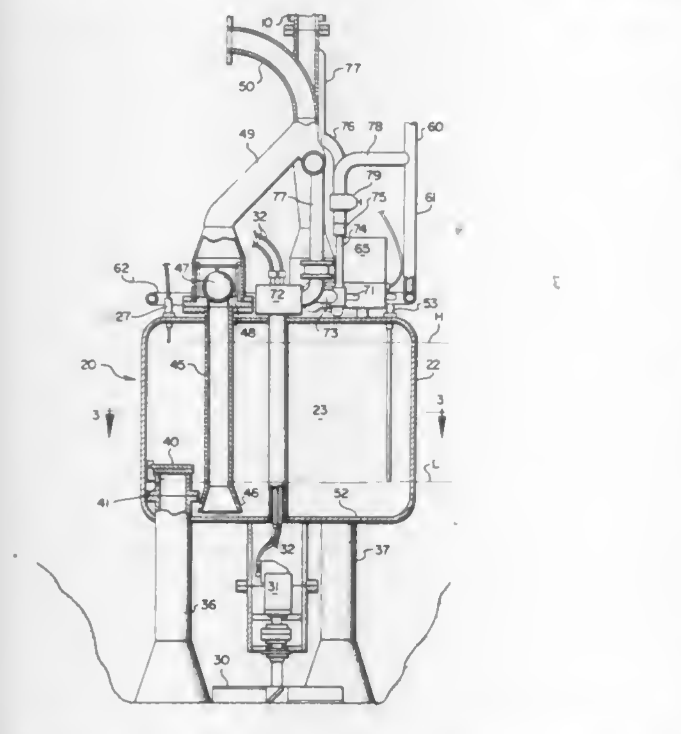
4,353,174
ELECTRONIC CONTROL SYSTEM FOR PNEUMATIC-HYDRAULIC PUMP DREDGE

Richard Maloblocki, Hinsdale, Ill., assignor to Amtec Development Company, Highland Park, Ill.

Filed Aug. 11, 1980, Ser. No. 176,924

Int. Cl.³ E02F *3/88*

U.S. Cl. 37—58 **10 Claims**



1. A control system for a dredging device comprising a plurality of chambers, each chamber including an air port through which air can be delivered to and exhausted from the chamber, a material discharge port, a material suction port, and air port control means for alternately exhausting air from the chamber to admit material to the chamber through the suction port and delivering air to the chamber to discharge material from the chamber through the discharge port, said control system comprising: electrically energizable actuator means coupled with said air port control means and responsive to predetermined electrical control signals for causing actuation of said air port control means to a first position for said exhausting of air from the chamber, to a second position for said delivering of air to the chamber and to a third, intermediate position for effectively closing off the chamber to either air delivery or air exhaust, and electronic control means for providing said predetermined electrical control signals in a preselected cycle for cyclically operating all of said air port control means for admitting material to each chamber and discharging material from each chamber in said preselected cycle comprising the operation of the air port control means of each of said chambers in a time-staggered sequence with respect to that of each of the other chambers, whereby to provide a relatively uniform flow of material from the dredging device, said electronic control means further including controllable timer means for regulating said preselected cycle and operator adjustable control means for selectively varying said controllable timer means during operation of said dredging device so as to regulate said preselected cycle to achieve and maintain optimum efficiency of the dredging device.

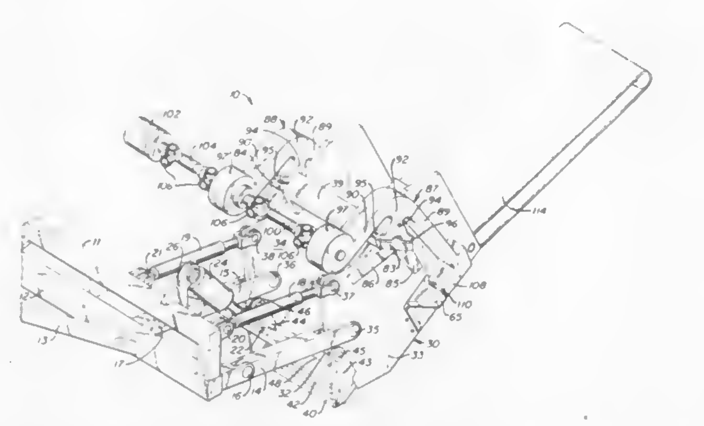
4,353,175
RESONANTLY DRIVEN TRENCHING TOOL

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.

Filed Jun. 2, 1980, Ser. No. 155,739

Int. Cl.³ A01B *35/00;* E02F *5/02*

U.S. Cl. 37—101 **16 Claims**



1. A resonantly driven tool for forming a trench in a base material such as earth, said tool comprising:
- a channel member adapted to be aligned with the path of the trench to be formed and having a floor inclined upwardly toward the rear, oppositely disposed sides projecting upwardly from the floor, and being open at the front and having an opening toward the rear;
- means for vertically adjustably supporting the channel member and advancing said member along the path of the trench to be formed;
- a cutting blade assembly located at the leading end of the floor of the channel member and mounted for reciprocating motion relative to said leading end, said cutting blade assembly engaging the material in which the trench is to be formed as the channel member is advanced;
- a resonant system having an output vibratory in at least near resonance and supported to move with the channel member; and
- an anvil plate reciprocatably mounted between said output of said resonant system and said cutting blade assembly so that said resonant system is able to drive the cutting blade assembly intermittently forwardly to dislodge the material so that the dislodged material is excavated by the channel member.

4,353,176
SNOW REMOVAL DEVICE WITH GAS BURNER HEATING CHAMBER

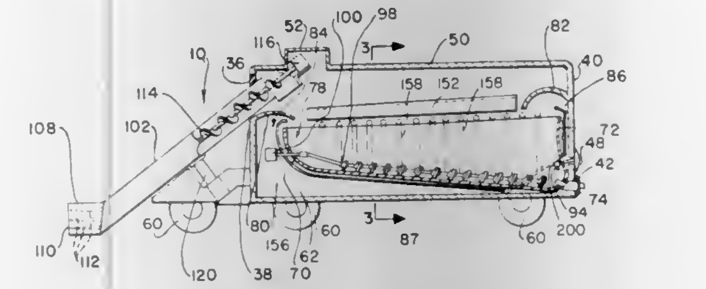
Georgia E. Hess, 910 N. Madison, Benton, Ill. 62812

Filed Feb. 5, 1981, Ser. No. 231,622

Int. Cl.³ E01H *5/10*

U.S. Cl. 37—228 **5 Claims**

1. A snow removal device, which comprises:
- a. a truck unit having a forward cab portion and a rear storage portion;
- b. an elongated V shaped container disposed in said storage unit, said V shaped container having a curved base, a pair of upwardly extending sidewalls, and a pair of upwardly extending end walls, said container being slanted downwardly from a front to a rear of said storage portion;
- c. means for injecting snow and ice into said container;
- d. a gate valve disposed in said rear storage portion;
- e. a connecting pipe joining said container to said gate valve;
- f. means for melting said snow in said container comprising a plurality of pipes disposed on an outer surface of said container, said pipes coupled together at one end thereof, at least one gas burner disposed in said rear storage portion, flames of said burner being disposed in said one end of said pipes for heating a gaseous medium within said pipes, heat deflector shields mounted on interior surfaces of the walls of said rear storage portion, said heat deflector shields extending over said side and said end walls of said V shaped container, said heated gaseous medium being directed from the other ends of said plurality of pipes to impinge into the uppermost regions of said V shaped container; and
- g. means for ejecting a mixture of water formed from said snow and unmelted said snow from said container through said gate valve.



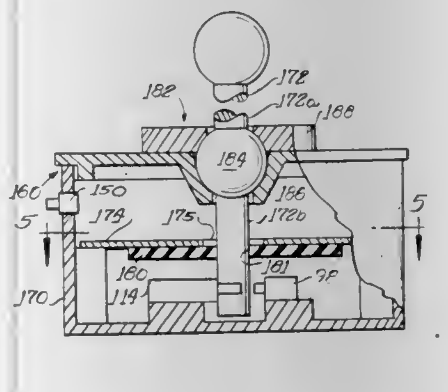
4,353,177
CONTROL FOR SNOWPLOW BLADE

Ralph W. Hoekstra, Stillman Valley, Ill., assignor to Swenson Spreader Company, Lindenwood, Ill.

Filed Sep. 2, 1980, Ser. No. 183,283

Int. Cl.³ E01H *5/04*

U.S. Cl. 37—234 **8 Claims**



1. Control apparatus for a snowplow blade or the like, comprising: a housing, a control shaft, means forming a joint for movably mounting said control shaft to said housing, said control shaft having first and second end portions extending respectively inwardly and outwardly of said housing, a control circuit, means in said housing for mounting said control circuit, switch means electrically coupled with said control circuit and mounted in said housing for selective actuation by said first control shaft end portion and resilient means in engagement with said first control shaft end portion for resiliently returning said control shaft to a predetermined neutral position, wherein said resilient means comprises a sheet of elastomeric material having a through opening grippingly engaging said control shaft and wherein said means for mounting said control circuit comprises a circuit board mounted in said housing intermediate said means forming a joint and said resilient means and having a through opening in registry with said sheet through opening but of substantially greater area so as not to engage said control shaft.

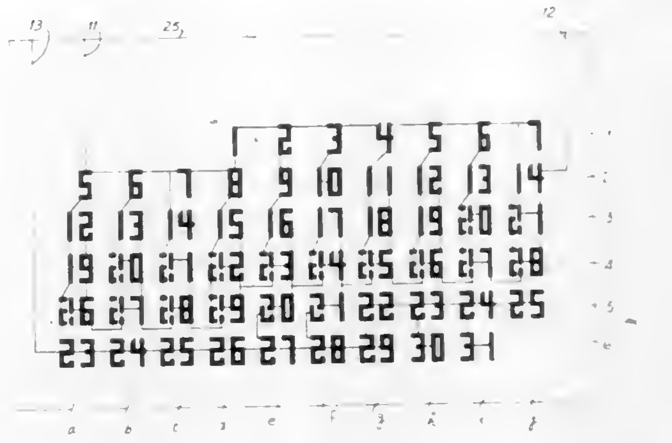
4,353,178
CALENDAR DISPLAY DEVICE

Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 121,068

Int. Cl.³ G09D *3/00;* G04B *19/24*

U.S. Cl. 40—107 **20 Claims**



1. In a calendar display device including first and second spaced and opposed electrode patterns having overlapped portions, and a liquid crystal material sandwiched between said electrode patterns, the improvement there comprising:
- the overlapped portions of said opposed electrode patterns forming six rows and ten columns of numerals, said numerals being consecutive in each said row, so much of said electrode patterns defining a unit or ones digit of each numeral being respectively commonly driven, a portion of the numerals having two digits having a tens digit formed of a plurality of electrodes for display, said plurality of electrodes being adapted for driving in at least two groups, selection among said groups causing said tens digit to be selectively displayed as one of at least two numerals;
- circuit means for selecting and driving said electrodes for display or non-display, said circuit means being adapted to select either the upper five rows or lower five rows of said six rows for driving, and to select consecutive columns for driving to display calendar months, the left-side column of the displayed month being a selected day of the week regardless of which calendar month is displayed.

4,353,179
ROTATABLE SIGN

Hugh F. Jennings, 83 Anstead Crescent, Ajax, Ontario, Canada (L1S 3X4)

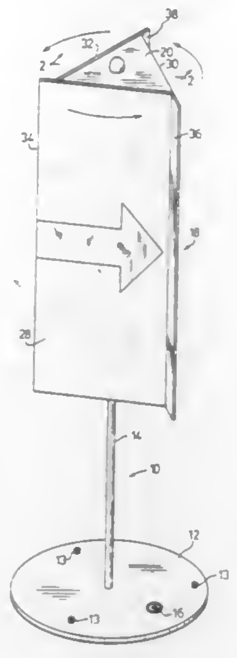
Filed Jun. 9, 1981, Ser. No. 271,904

Int. Cl.³ G09F *15/00*

U.S. Cl. 40—479 **7 Claims**

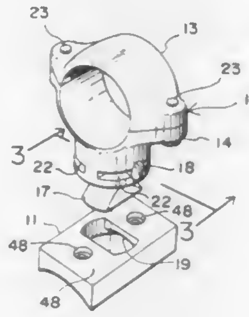
1. A rotatable sign adapted to be driven by air currents comprising support means having a shaft portion adapted to be mounted in an upright position, and a rotor mounted for rotation on said shaft portion, said rotor including spaced-apart equilateral triangular end panels of the same size each having a central opening concentric with the other, three rectangular side panels extending between and secured at each end to a side of said end panels to form a closed box structure, each of said side panels extending laterally beyond a side edge of an adjacent side panel to define a vane at each juncture of the side panels, a pair of removable bearing means each having a bayonet connection mounted in the central openings of the end panels adapted to be quickly interchanged to permit inversion of the rotor, one of said bearing means comprising a sleeve bearing for loosely receiving the shaft portion therein for facile rotation and the other of the said bearing means comprising a dome closure for loosely receiving the end of the shaft portion

therein for vertical support and rotation of the rotor, and indicia formed on at least two of the side panel faces out of axial alignment with each other for presenting said indicia on an alternating level as the sign rotates.



4,353,180
FIT ADJUSTABLE TELESCOPE MOUNT FOR FIREARMS

Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176
Filed Apr. 7, 1980, Ser. No. 138,145
Int. Cl.³ F41G *1/38*
U.S. Cl. 42—1 ST **11 Claims**

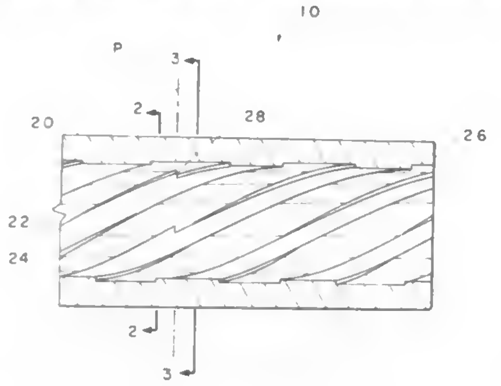


1. A telescope mount for firearms comprising:
holding means for holding a telescope,
lug means mounted on said holding means for attachment to a base,
base means for attachment to a firearm, said base means having a cavity therein for receiving said lug means, said lug means being adaptable for vertical insertion into said cavity and being rotatable to a locked position within said cavity to hold said holding means and said base means closely together in a mated relationship,
movable tensioning means comprising a deflectable wing mounted on said holding means for varying the degree of tightness between said holding means and said base means, said movable tensioning means being movable toward and away from said base means.

4,353,181
ELASTIC REBOUND COMPENSATOR FOR RIFLED GUNBARRELS

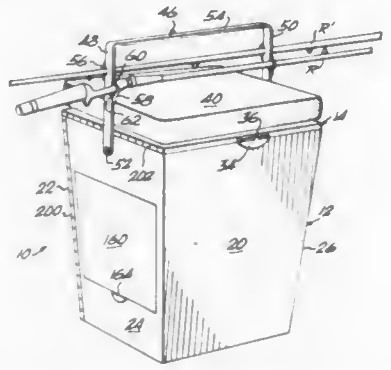
John S. Pedgonay, P.O. Box 127, Aberdeen, Md. 21001
Filed Apr. 27, 1978, Ser. No. 900,484
Int. Cl.³ F41F *17/10*
U.S. Cl. 42—78 **2 Claims**

1. In a barrel with spiral rifling for imparting spin to an elongate projectile with a trailing seal, the spiral rifling including longitudinal lands reduced in width at the muzzle end, the improvement comprising: said reduction in width being on the side of the lands imparting spin to the projectile and extending a distance along the barrel to the muzzle end substantially equal to the length of the projectile ahead of the trailing seal of the projectile, and said reduction in width being substantially a step-reduction substantially uniform in width.



4,353,182
FISHING BOX

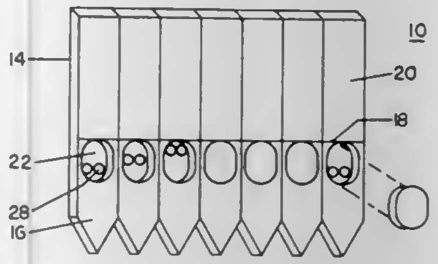
Ronald J. Junkas, 137 Ridge La., Geneva, Ill. 60134, and Robert W. Kyes, P.O. Box 373, Bativia, Ill. 60510
Filed Jan. 19, 1981, Ser. No. 226,400
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—54.5 R **27 Claims**



1. A fishing box comprising a main body portion including a bottom wall, and front, back, and first and second side walls, defining an interior chamber with an open top end; a generally vertical septum dividing said chamber into first and second, generally vertically extending chamber portions, a main lid hinged relative to a top edge of said back wall for pivotal movement betweeen open and closed positions relative to said first and second chamber portions; means to support first and second compartmented fishing tackle trays in respective upper end portions of said first and second chamber portions; a second lid pivotally supported in said first chamber portion, intermediate said first tackle tray and bottom wall, and means to seat said lid in a generally horizontal position in a closing relation to a bottom portion of said first chamber portion, and hand grip means carried atop said second lid to swing same from said closing relation to a full open position, relative to said bottom portion; a generally horizontally extending partition, fixed in a closed spanning relation to said second chamber portion, intermediate said bottom wall and second tackle tray, defining a bottom portion of said second chamber portion; a live bait box defining an interior live bait chamber and including an access lid means to said live bait chamber, said live bait box being sized for sliding passage through an access opening through a bottom end portion of said second side wall into said bottom portion of said second chamber portion; seat cushion means for removable fixed attachment atop said main lid, and handle means for pivotal attachment relative to upper end portions of said first and second side walls.

4,353,183
SEED MARKER TABS

Michael H. Estkowski, 1756 Outer Dr., St. Joseph, Mich. 49085
Filed Sep. 2, 1980, Ser. No. 182,950
Int. Cl.³ A01C *1/04*
U.S. Cl. 47—56 **7 Claims**

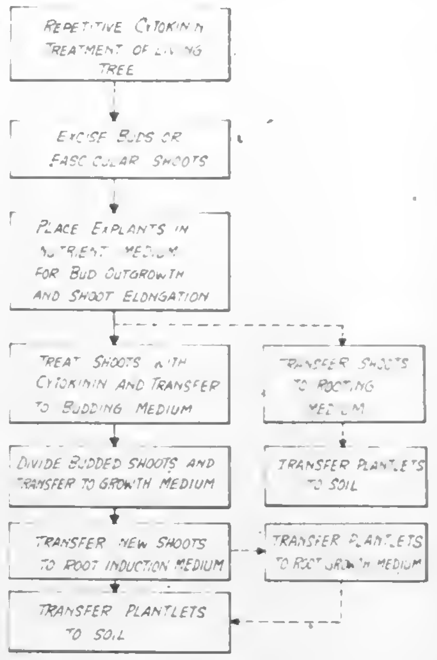


1. An improved seed mark tab comprising:
a vertically elongated rigid tab proportioned to have a first lower end portion thereof driven into soil to a predetermined level with a second upper end portion thereof projecting above the soil,
said tab being formed of biodegradable material sufficiently rigid so as to be self-supporting when inserted into a planting medium,
a planting line dividing said tab into said lower and upper end portions,
a seed placement volume defining means having at least one vertical side, said seed volume defining means provided on the lower end portion of the tab,
backing means provided on the volume defining means to close said one vertical side of the seed placement volume defining means to define an area for receiving seeds,
the backing means having a pattern of at least two seed-locating-and-receiving openings extending therethrough,
such seed-locating openings of selected number and of a size which precludes seed passage to position the type of seed received on each of said openings,
such openings selectively located vertically with respect to the planting line to optimize the planting depth for each selected variety of seed mounted on the seed marker tab,
seed placed on each of said seed-locating-and-receiving openings, and means to cover the seed received in said openings and within said volume defining means to hold each seed in the positions determined by the locations of the openings in the backing means of the seed marker tab.

4,353,184
METHOD FOR ASEXUAL REPRODUCTION OF CONIFEROUS TREES

Mostafa M. Abo El-Nil, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed May 18, 1981, Ser. No. 263,969
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **20 Claims**

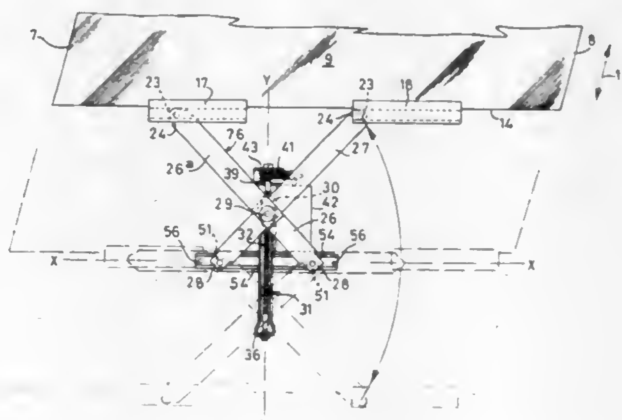
1. A method for asexually reproducing coniferous trees which comprises:
a. repetitively treating living trees with a cytokinin until buds or shoots are induced at locations where vegetative buds do not normally form, the number of treatments and intervals between treatments being selected so as to produce buds giving rise to shoots having predominantly juvenile-type morphology;
b. excising the juvenile-type buds or shoots from the trees; and


REPETITIVE CYTOKININ TREATMENT OF LIVING TREE
EXCISE BUDS OR FASCICULAR SHOOTS
PLACE EXPLANTS IN NUTRIENT MEDIUM FOR BUD OUTGROWTH AND SHOOT ELONGATION
TREAT SHOOTS WITH CYTOKININ AND TRANSFER TO BUDDING MEDIUM
TRANSFER SHOOTS TO ROOTING MEDIUM
DIVIDE BUDDED SHOOTS AND TRANSFER TO GROWTH MEDIUM
TRANSFER PLANTLETS TO SOIL
TRANSFER NEW SHOOTS TO ROOT INDUCTION MEDIUM
TRANSFER PLANTLETS TO ROOT GROWTH MEDIUM
TRANSFER PLANTLETS TO SOIL

c. placing the excised tissue on a growth medium in order to maintain the juvenile condition and elongate shoots suitable for rooting or further multiplication in tissue culture.

4,353,185
WINDOW RAISER

Gerard Saigne, Larche, France, assignor to Paumellerie Electrique, France
Filed Apr. 30, 1980, Ser. No. 145,325
Claims priority, application France, May 4, 1979, 79 11302
Int. Cl.³ E05F *11/44, 11/40, 11/48*
U.S. Cl. 49—351 **16 Claims**



1. A window raiser comprising two crossed arms of equal length which are disposed symmetrically relative to a substantially vertical axis, each arm having at one end of the arm a member mounted thereon, a rectilinear slideway which is rigid with a base of the window being provided for each member and guidingly engaged with the member, a common articulation for the two arms at a crossing point of the arms, a slide carrying the articulation, a slideway having an axis coinciding with the axis of symmetry of the two arms and guidingly engaging the slide, a roller carried by an end of each arm which is remote from the corresponding slideway of the base of the window, and two fixed slideways respectively guidingly engaging the two rollers and having an axis which is perpendicular to the axis of the slide-guiding slideway and defines a centre line on each side of which centre line the two arms are capable of undergoing movements.

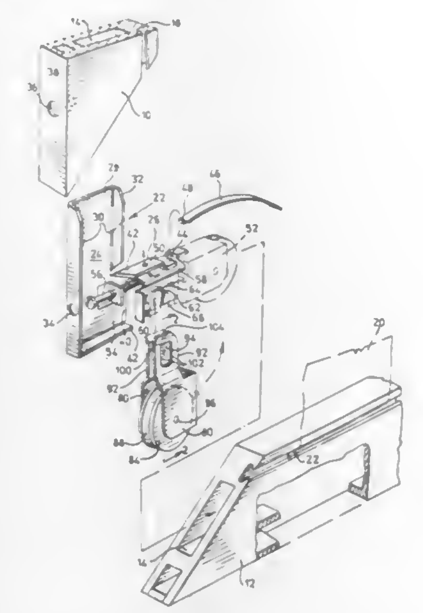
4,353,186
RUNNER WHEEL ASSEMBLY

Hermoff F. Offterdinger, 602 Galway Dr., Burlington, Ontario, Canada

Continuation-in-part of Ser. No. 59,012, Jul. 19, 1979. This application Sep. 26, 1980, Ser. No. 191,120

Int. Cl.^{3} E05D *13/02*

U.S. Cl. 49—420 **9 Claims**



1. In a sliding door comprising a bottom frame element of hollow cross section, having an opening in a bottom surface of said frame element extending to a hollow portion of said section, the provision of a wheel retainer member received within the said hollow portion, a wheel rotatably mounted in a support member, said support member being movably mounted on said retainer member and rotatable between one orientation in which it projects through said opening to support said door in its sliding movement and in which it is retained by said retainer member and another orientation in which it may be removed through said opening and disengaged from said retainer member, said support member being guided in said movement by bearing surfaces formed integrally with the said retainer member and said support member, wherein said support member comprises two opposed flanges between which said wheel is mounted, at least one of said flanges having an upset portion extending towards the other of said flanges and defining one of said bearing surfaces which is a male bearing surface comprising two spaced, coaxial, part-circular surfaces separated by two substantially parallel chordal surfaces and wherein a passage leads to the upper bearing surface which is a female bearing surface of said corner piece said passage being wider than the space in between the chordal surfaces and less wide than the diameter of said circular surfaces whereby in said one orientation said upset may pass through said passage and in said orientation is prevented from passing through said passage.

4,353,187
DOOR REPAIR METHOD AND REPAIR SECTION THEREFOR

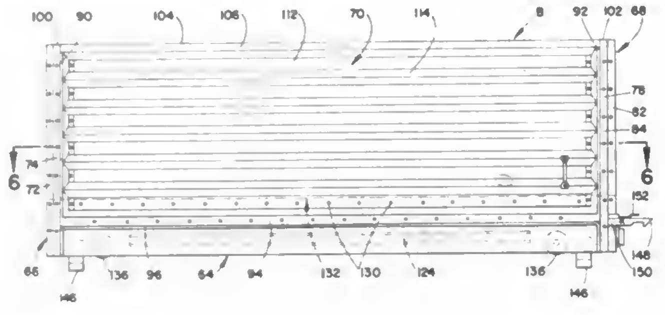
Oliver J. Jenkins, Jr., and Charles W. Mayfield, both of Youngstown, Ohio, assignors to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Nov. 12, 1980, Ser. No. 206,024

Int. Cl.^{3} E06B *3/00*

U.S. Cl. 49—501 **11 Claims**

8. A generally rectangular lower repair section for a metal rail car door comprising: a generally U-shaped frame including upright side frame members and a bottom frame member, said side frame members having upper ends and said frame being covered by a corrugated metal panel, said side frame members having panel mounting flanges including inner surfaces with said panel being secured to said flanges against said inner surfaces and wherein said panel has an upper edge extending across said side frame members adjacent said upper ends thereof, and said panel further having an upper flat portion adjacent said upper edge thereof with said upper flat portion having an outer surface lying substantially in a common plane with said flange inner surfaces.



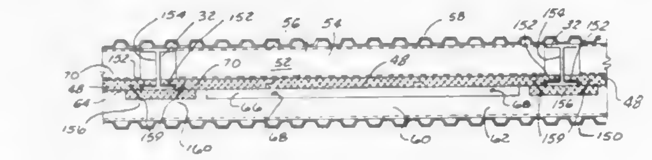
4,353,188
FOOD STORAGE BUILDING

Marvin E. Seago, 1133 NW. Richmond Beach Rd., Seattle, Wash. 98177

Filed Feb. 25, 1977, Ser. No. 772,000

Int. Cl.^{3} E04B *7/02*

U.S. Cl. 52—93 **34 Claims**



1. A wall for a building, said wall comprising:
a. a plurality of upright columns;
b. said columns being spaced apart;
c. a plurality of spaced apart spacers having a positioning means positioned on a first side of said columns;
d. a first wall structure positioned on said spacers;
e. insulation juxtapositioned to said columns;
f. said insulation being sheets of beadboard, a solid expanded plastic;
g. said beadboard being both thermal insulation and a barrier to the flow of moisture;
h. a mastic between adjacent pieces of beadboard to allow said adjacent pieces of beadboard to move relative to each other and to maintain a barrier to the flow of moisture;
i. a clip means connecting said insulation to said positioning means to position said insulation;
j. said first wall structure being in a shielding position to protect said insulation;
k. a second wall structure positioned on a second side of said columns; and,
l. said first wall structure and said second wall structure comprising metal.

4,353,189
EARTHQUAKE-PROOF FOUNDATION FOR COKE OVEN BATTERIES

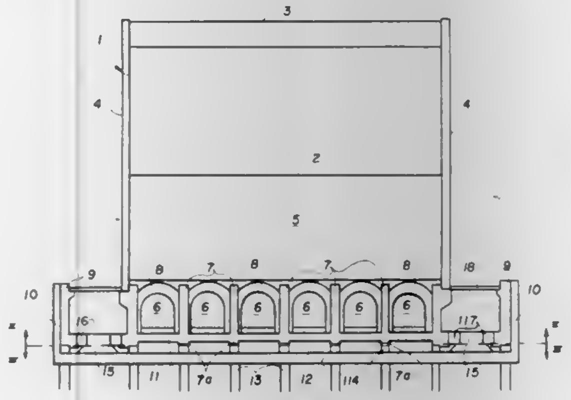
Friedrich Thiersch, and Manfred Strobel, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 933,803, Aug. 15, 1978, abandoned. This application May 23, 1980, Ser. No. 152,539

Int. Cl.^{3} C10B *5/00*

U.S. Cl. 52—167 **14 Claims**

1. A coke oven battery with earthquake resistant foundation comprising:
a coke oven assembly (**1**) having a mounting plate (**11**);
a plurality of longitudinal ribs (*7a*) extending from a bottom of said mounting plate (**11**);
a base plate (**12**) fixedly connected to the ground;
a plurality of sliding elements (**114**) connected at spaced locations between said base plate and said ribs for permitting transverse and lateral movement of said assembly on said base plate;
said mounting plate including a plurality of spaced openings (**16**) therein longitudinally distributed adjacent longitudinal sides of said mounting plate;
a ferroconcrete peg (**15**) extending upwardly from said base plate and into each of said openings; and
a plurality of elastic elements (**117**) connected between each of said pegs and sides of each of said openings to elastically restrain lateral and transverse movement of said mounting plate;



each of said elastic elements comprising an anchor plate connected to a side of said opening, a spring plate connected to said anchor plate, a plurality of buffer springs connected to said spring plate and extending toward said peg, a roller plate connected to said plurality of buffers springs, at least one roller rollable on said roller plate on a side of said roller plate opposite from said plurality of buffer springs, said roller rollable on an axis substantially perpendicular to the transverse and lateral movement of the coke oven assembly, an additional spring plate on which said at least one roller is rollable and an additional anchor plate connected to said peg and to said additional spring plate.

4,353,190
STIFFENED ELONGATE SUPPORT MEMBER

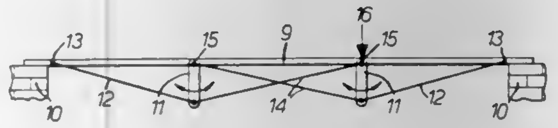
Maurice J. Gleeson, P.O. Box 663, Honeydew 2040, Transvaal, South Africa

Filed May 22, 1980, Ser. No. 152,304

Claims priority, application South Africa, Mar. 2, 1979, 79/0991

Int. Cl.^{3} E04C *3/10*

U.S. Cl. 52—226 **9 Claims**



1. An elongate support member, wherein the support member has pivotally attached thereto at spaced points along its length at least two posts extending in the same general direction and generally transverse to the length of the support member, and wherein tension members or ties are pivotally attached to and extend between a point at or near each end of said member and the free end of the nearer post and from at or near the free end of a post to the pivotal connection of the next adjacent post to the member, whereby the tension members or ties cross each other between adjacent posts.

4,353,191
JOINING CORNERS AND INTERSECTIONS IN A LOG BUILDING CONSTRUCTION

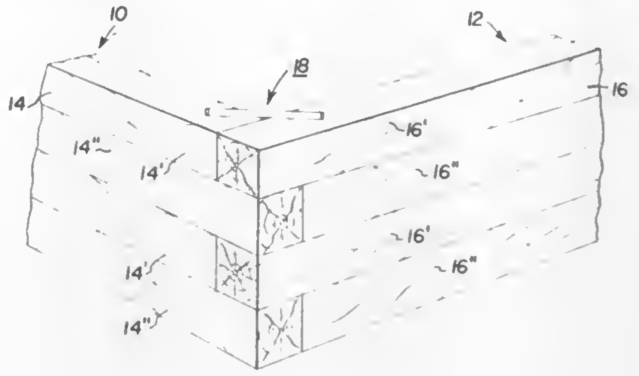
Laird W. Schilbe, R.R. #3,, Bayfield, Ontario, Canada (N0M 1G0)

Filed Feb. 19, 1980, Ser. No. 122,167

Claims priority, application Canada, Mar. 21, 1979, 323943

Int. Cl.^{3} E04B *1/10*

U.S. Cl. 52—233 **11 Claims**



1. A log-type building construction including a pair of walls which are angularly disposed relative to one another, each wall comprising a plurality of logs positioned one on top of the other, the walls being in interlocking relation to one another in a vertically disposed interlock region with the logs of one wall being in interleaved or interlaced relationship with the logs of the other wall along the interlock region, the logs or each wall having a mortise therein adjacent the interlock region, said mortises being disposed obliquely relative to the longitudinal axes of their respective logs, the mortises in the logs of said one wall being substantially parallel to the mortises in the logs of said other wall, locking means disposed in said mortises to secure the logs of said one wall to the logs of said other wall, said mortises comprising slots in said logs, each slot having flat generally parallel side walls, the slots in each wall being horizontally aligned with the slots in the other wall, said locking means comprising generally planar locking sections extending horizontally from within a said slot in one wall into a said slot in the other wall and fitting snugly in said slots to prevent the logs from moving horizontally relative to each other, said planar locking sections in association with the flat side walls in the mortises reducing any tendency of the building to go askew.

4,353,192
FIRE-RESISTANT METAL STUD

Robert J. Pearson, Tonawanda, and Rodney G. Buergin, Snyder, both of N.Y.

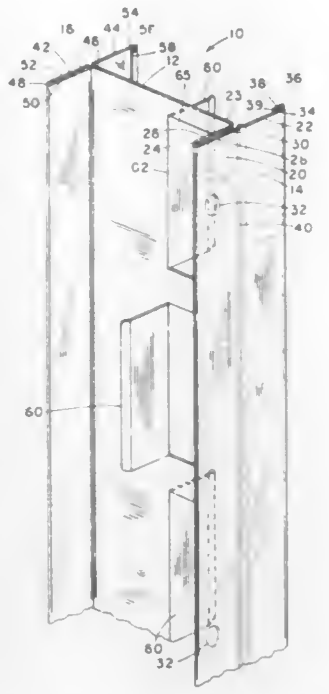
Filed Oct. 8, 1976, Ser. No. 730,994

Int. Cl.^{3} E04B *1/00*

U.S. Cl. 52—281 **10 Claims**

1. A fire-resistant metal stud for supporting a vertical wall comprising an elongate formed sheet metal body having an elongate first side and, opposite thereto, an elongate second side, elongate means central thereof adjoining said first side and said second side, means on said second side for affixing wallboard thereto, a pair of flanges on said first side adapted to have the edges of a pair of wallboards affixed against the inner side thereof, whereby said flanges would be disposed on the surface of a wall formed by said wallboards, said pair of flanges including at least one flange which is formed from an inner layer sheet of metal extending from the inner edge of the flange to the outer edge of the flange whereat the metal is reversely folded and extends back to said inner edge forming an outer

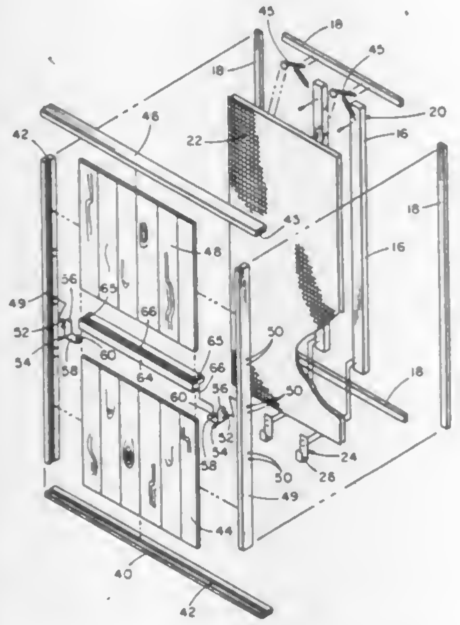
layer, said inner layer and said outer layer being closely spaced apart and parallel, whereby air that becomes heated will tend



to move vertically upward within a gap between said inner layer and said outer layer.

4,353,193
CHANGEABLE WALL PANEL STRUCTURE

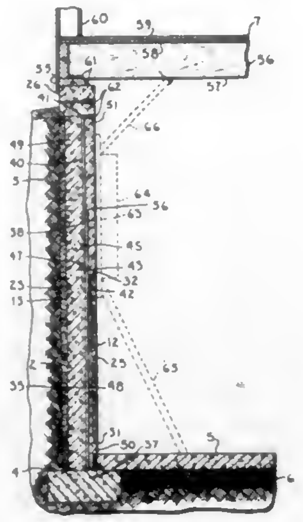
Dewey S. C. Sanderson, 3901 E. 26th Ave., Denver, Colo. 80205
Continuation-in-part of Ser. No. 57,446, Jul. 13, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 175,019
Int. Cl.³ B44F *7/00*
U.S. Cl. 52—311 **7 Claims**



1. A changeable wall structure comprising a support, a frame secured to said support, an inner panel, a first mounting means connected to said support for removably holding said inner panel, at least one outer panel, and a second mounting means connected to said frame for removably holding said outer panel to conceal said inner panel, said inner and outer panels being removably held so that each panel substantially fills the space between the sides of the frame and, upon removal of an outer panel, the inner panel is exposed to view, said second mounting means comprising a brace secured to each side of the frame and a shelf supported at each end by the brace such that the shelf engages the sides of the frame, the shelf having a groove extending along its upper and lower surfaces for receiving the bottom and top edges, respectively, of said outer panels.

4,353,194
METHOD OF STRAIGHTENING AND REINFORCING STRUCTURAL MEMBERS

Willard S. Norton, 5608 NE. Oaktree La., Kansas City, Mo. 64118
Filed Sep. 19, 1980, Ser. No. 188,936
Int. Cl.³ E04G *23/02;* **E04D** *37/00*
U.S. Cl. 52—742 **13 Claims**

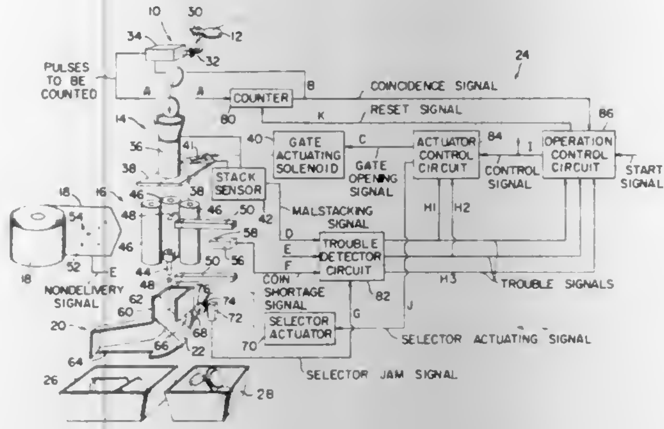


1. A method of reinforcing a structural member including an upper and lower block member, each of said block members having an inner wall in spaced relation to an outer wall with a passage being defined therebetween, said passages of said upper and said lower block members being substantially aligned and each of said first and said second block member inner walls having a face comprising a part of a surface of said structural member, said method comprising the steps of:
(a) removing a section of said inner wall of one of said block members whereby an opening is formed from said structural member surface to said one block member passage;
(b) placing a lower reinforcing member having an upper end through said opening and into said lower block member passage;
(c) placing an upper reinforcing member having a lower end through said opening and into said upper block member passage;
(d) connecting said upper end of said lower reinforcing member and said lower end of said upper reinforcing member; and
(e) securing said upper and said lower reinforcing members to said upper and said lower block members respectively.

4,353,195
COIN PACKAGING APPARATUS CAPABLE OF SEPARATELY DISCHARGING PROPER COIN PACKAGES AND STRAY COINS

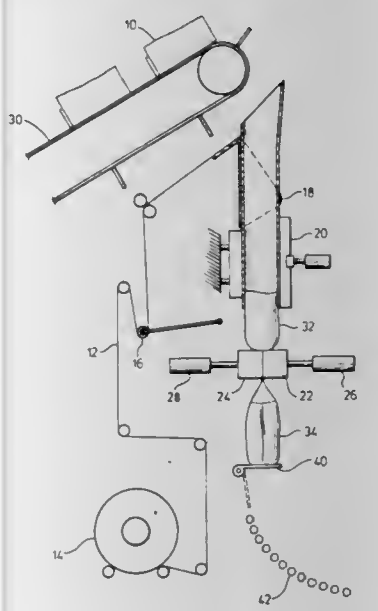
Minoru Nakamura, Himeji, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Japan
Filed May 14, 1980, Ser. No. 149,785
Claims priority, application Japan, May 17, 1979, 54/66646[U]
Int. Cl.³ B65B *57/14, 57/20*
U.S. Cl. 53—54 **6 Claims**

1. Apparatus for packaging a preselected number of coins in a stack comprising:
(a) means for stacking the preselected number of coins in a stack;
(b) means for packaging each stack of coins after stacking thereof by the stacking means;
(c) discharge means for receiving packaged coins, as well as stray coins, from the packaging means;
(d) selector means movable relative to the discharge means between a first working position in which the discharge means discharges to a first discharge position and a second working position in which the discharge means discharges to a second discharge position;
(e) control means normally maintaining the selector means in the second working position and responsive to the successful completion of the packaging of a stack of coins for moving the selector means to the first working position for a predetermined length of time and then returning the selector means to the second working position.



4,353,196
PACKAGE AND AUTOMATIC METHOD OF FORMING SAME

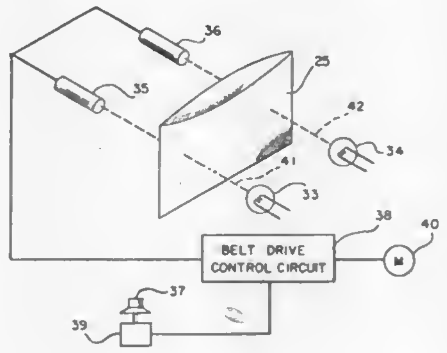
Frederick W. Beer, 270 Timberbank Blvd., Unit 55, Agincourt, Ontario, Canada (M1W 2M1); Robert A. Davis, 24 Eva Rd., Apt. 1605, Etobicoke, Ontario, Canada; Fedor P. Kresak, 31-12 Sentinel Rd., Downsview, Ontario, Canada, and Conio C. Kuev, 620 Lolita Gardens, Apt. 1909, Mississauga, Canada (L5A 3K7)
Continuation-in-part of Ser. No. 945,619, Sep. 25, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 144,986
Claims priority, application Canada, Sep. 12, 1978, 311143
Int. Cl.³ B65B *9/06*
U.S. Cl. 53—451 **8 Claims**



1. A method for automatically repeatedly packaging material in a flexible film package made from a continuous stock of film, said package having a substantially vertical heat seal joining the edges of the film into a tubular portion, a lower lateral heat seal, an upper lateral heat seal and the material being disposed in the so sealed package, comprising:
(1) advancing the film downwardly to form a tubular configuration thereof over a forming means;
(2) heat sealing opposite edges of the film along a substantially vertical seal line to form a sealed tubular portion thereof;
(3) closing sealing jaws transversely to engage thereinbetween the tubular portion disposed downwardly of the forming means;
(4) heat sealing opposite sides of the tubular portion by sealing means disposed with said jaws to form said lower lateral seal line in said tubular portion and said upper lateral seal line in a previous filled package located below said jaws and supported by a support member disposed downwardly from said jaws;
(5) laterally cutting the so sealed tubular portion between the upper and lower seal lines to separate said filled package from said tubular portion;
(6) depositing said material into the tubular portion disposed upwardly of the said jaws, while said jaws are closed, whereby the material is supported above and by said closed jaws;
(7) substantially simultaneously opening said jaws to release said tubular portion disposed upwardly of said jaws and opening said support member to allow said filled package resting upon the support member to fall therefrom, whereby the weight of the material alone disposed in the tubular portion above the jaws advances the tubular portion by gravity through said opened jaws, whereby step (1) is automatically repeated;
(8) closing said support member whereby the material and the tubular portion that passed through said open jaws comes to rest upon the closed support member and the advance of the tubular portion is stopped, and whereby the correct length of tubular portion for forming a package is automatically measured by the distance of the support member from the jaws; and
(9) repeating the steps for repeated packaging of the material, and wherein after step (3) the steps (4) through (6) may be in any order.

4,353,197
CONTENT ACTIVATED ENVELOPE EXTRACTION

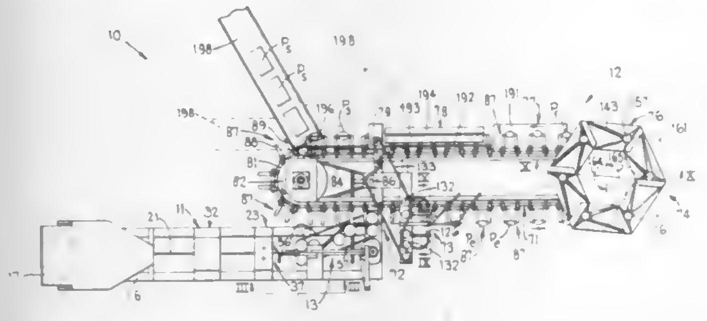
Albert F. Stevens, Moorestown, and Paul E. Haley, Hammontown, both of N.J., assignors to Opex Corporation, Cherry Hill, N.J.
Continuation of Ser. No. 838,625, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 813,810, Jul. 8, 1977, Pat. No. 4,124,968. This application Mar. 3, 1980, Ser. No. 126,369
The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.
Int. Cl.³ B65B *43/30, 57/00*
U.S. Cl. 53—492 **7 Claims**



1. In the method of extracting contents from envelopes by a human operator's hand, utilizing a machine which transports the envelopes substantially unspread in succession to an extraction location at which each envelope is presented with one edge exposed to the operator's hand and spread open along the exposed edge to permit insertion of the hand and withdrawal accompanied by content extraction and from which the envelopes are substantially unspread, the improvement comprising:
sensing a change in said envelope contents form being inside to no longer being inside the spread open envelope at the extraction location as a result of said operator's hand withdrawal accompanied by content extraction, and
initiating the discontinuing of the spreading and the further

transporting away of each envelope in response to said sensing, both said sensing and said initiating being performed automatically and without any action by the operator.

4,353,198
POUCH FORMING AND FILLING APPARATUS
Robert G. Koppe, 4243 Dickman Rd., Apt. 3C, Battle Creek, Mich. 49015
Filed Dec. 21, 1979, Ser. No. 106,124
Int. Cl.³ B65B *43/30, 43/32, 7/06, 1/06*
U.S. Cl. 53—570 **15 Claims**



1. An apparatus for filling and sealing preformed flexible pouches, comprising:

endless carrier means defining a first endless and substantially horizontally oriented path;

means for supporting and unidirectionally driving said endless carrier means at a continuous uniform speed, and including a plurality of annular means supported for rotation about substantially vertical axes and individually disposed in engagement with said endless carrier means over a selected angular extent;

a plurality of pouch-supporting mechanisms mounted on said endless carrier means at uniform intervals therealong for individually suspendingly supporting individual preformed pouches;

said pouch-supporting mechanism including a rigid mounting member associated with said endless carrier means, and a pair of supporting arms individually pivotally supported on said mounting member for swinging movement about substantially vertical pivot axes, said pair of supporting arms being disposed in leading and trailing positions relative to the direction of travel of said endless carrier means, said arms projecting horizontally outwardly from said endless carrier means in a direction away from the interior of said first endless path so that said arms have outer free ends which are displaced sidewardly a substantial distance from said endless carrier means, said pair of supporting arms each having openable jaw means associated therewith adjacent the free end thereof for gripping the opposite sides of an individual pouch adjacent the upper corners thereof for permitting said pouch to be supportingly suspended between said pair of arms in sidewardly spaced relationship from said endless carrier means, each said supporting arm of said pair being individually swingably movable inwardly toward the other arm into a pouch supporting position, and each said arm being individually swingably movable outwardly away from the other arm into a nonsupporting position;

a pouch feeding device for continuously supplying individual preformed pouches one after another in spaced relationship to said endless carrier means at an inlet station which extends along a predetermined portion of said first endless path, said pouch feeding device including endless conveyor means driven continuously at the same uniform speed as said endless conveyor means for transferring individual pouches from a remote location to said inlet station, said endless conveyor means defining a pouch transfer path which at a discharge end thereof has a discharge portion thereof positioned closely adjacent and approximately parallel with said predetermined portion of said first endless path, said endless conveyor means supporting said pouch such that when it is disposed within said discharge portion of said transfer path the pouch is disposed with the upper portion thereof positioned directly between a pair of said supporting arms with the latter being in said nonsupporting position as the arms and pouch are moved substantially synchronously through the inlet station;

first actuator means coacting with said pair of arms for causing swinging movement of said arms (1) away from one another into said nonsupporting position prior to reaching said inlet station and (2) then toward one another back toward said supporting position after reaching said inlet station and after the upper portion of a pouch has been positioned between the pair of arms by said endless conveyor means;

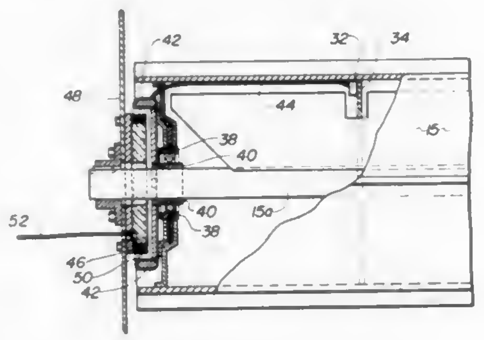
second actuator means for opening said jaw means at a location disposed upstream of the position at which the arms are swingably moved back to said supporting position, said second actuator means also effecting closing of said jaw means at or downstream of the location wherein the arms are swingably moved inwardly into said supporting position for causing said jaw means to grip the upper portion of said pouch adjacent the opposite side edges thereof;

filling means associated with said endless carrier means at a filling station along said first endless path which is downstream of said inlet station, said filling means including at least one filling member supported for movement along a second endless path, at least a part of said second path being positioned substantially directly over that part of said first path as associated with said filling location;

means drivingly connected to said filling means for causing said filling member to be moved through said part of said second path at the same speed and in synchronization with the movement of said pouch supporting mechanism as it is moved through said part of said first path, whereby said filling member permits a selected product to be deposited into the pouch supported on the respective supporting mechanism as it moves through said filling station; and

sealing means associated with said endless carrier means at a third station along said first path which is downstream of said filling station for sealingly closing the mouth of the filled pouch as it is suspended from the respective supporting mechanism.

4,353,199
STONE DETECTOR FOR HARVESTING MACHINES
Mark K. Chow, Leola; Shaun A. Seymour, New Holland, both of Pa., and Cal L. Bryant, Niles, Ill., assignors to Sperry Corporation, New Holland, Pa.
Filed Apr. 15, 1981, Ser. No. 254,319
Int. Cl.³ A01F *12/16*
U.S. Cl. 56—10.2 **6 Claims**



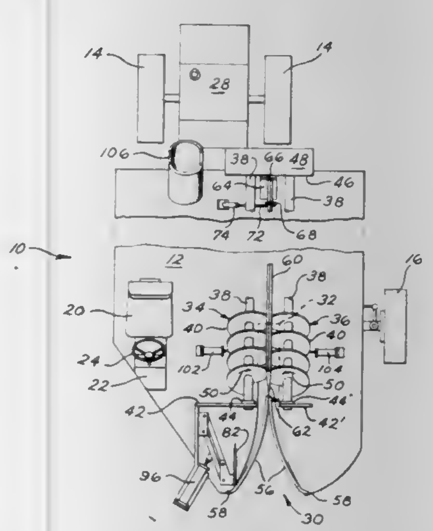
1. A stone detector for use in harvesting machines of the type containing feed rolls operating to move crop material toward a cutting blade comprising:

acoustic sensing means attached within the core of a feed roll for generating electronic signals in response to impacts of hard objects upon the surface of the roll;

means operably connected for transmitting said electronic signals from the acoustic sensing means; and

an electronic signal processing circuit means connected to the transmitting means operative in response to the signal from the acoustic sensing means for initiating a control sequence to protect the cutting blade of the harvesting machine.

4,353,200
TOBACCO HARVESTING MACHINE
Harold W. Taylor, Jr., Rte. 3, Shepherdsville, Ky. 40165
Filed Sep. 10, 1981, Ser. No. 300,778
Int. Cl.³ A01D *45/16*
U.S. Cl. 56—27.5 **7 Claims**



1. In a tobacco harvesting machine for automatically impaling the stalks of standing tobacco plants onto a tobacco stick, said machine comprising in combination:

(a) a wheeled platform supporting a cooperating pair of generally parallel, rotating augers on which a tobacco stick is positioned in a generally horizontal, fixed position adjacent the top center of the augers;

(b) the front end of the said platform being provided with a wide, inwardly-tapered cutout channel that terminates as a narrow, elongated groove underlying the frontmost portion of the tobacco stick, said channel being adapted to be lined up with a standing row of tobacco plants;

(c) and a swinging pair of knife blades supported from the platform between a first inoperative position and a second operative position for piercing the stalk of a standing tobacco plant and forming a wide gap in the said talk in the vicinity of the front tip of the said horizontal tobacco stick so that the stick may be forced through the gap;

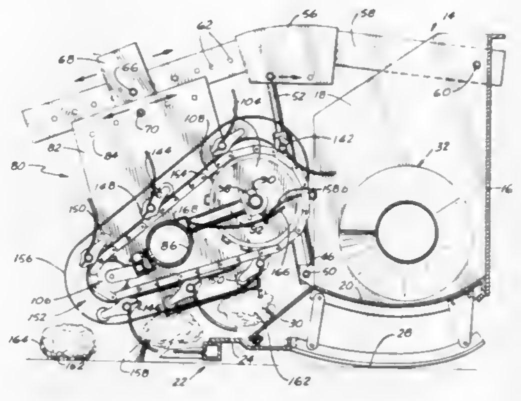
(d) and automatic control means for operating the position of the knife blades depending upon the relative position of the nearest tobacco plant;

(e) the said rotating augers serving to force the stalk of the tobacco plant rearwardly on the tobacco stick;

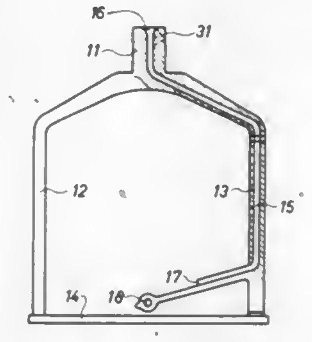
(f) and automatically-controlled cutting means for severing the stalk of the said tobacco plant from the ground after the plant is positioned upon the tobacco stick.

4,353,201
CROP HARVESTING APPARATUS
Michael J. Pierce; Kevin J. Pierce, both of 209 North Ridge Court, Grand Forks, N. Dak. 58201 and Wayne A. Pierce, Euclid, Minn. 56722
Int. Cl.³ A01D *43/02*
U.S. Cl. 56—364 **16 Claims**

1. Crop havesting apparatus comprising a vehicle, a cutter bar carried on the forward end of the vehicle, means supporting said cutter bar at an elevation closely adjacent the surface of the ground over which said cutter bar passes for severing a rooted or standing vine crop, such as pinto beans, close to the ground, means for engaging said vine crop including a plurality of longitudinally spaced rows of laterally spaced curved tines, means mounting said longitudinally spaced rows of tines forwardly of said vehicle so that the tips or free ends of said rows of tines successively engage said rooted or standing vine crop at an elevation also closely adjacent the surface of the ground and slightly in advance of said cutter bar to lift a portion of said vine crop above said cutter bar while still rooted or standing sufficiently high for severance by said cutter bar of a lower portion of said vine crop at an elevation closely adjacent the surface of the ground as said vehicle moves fowardly, and means for moving said tines rearwardly towards said cutter bar and to cause said tips or lower ends of said tines to move rearwardly in a closely adjacent relation to said cutter bar so that said cutter bar severs said vine crop at an elevation generally beneath the beans on said vine crop, said spaced curved tines then transferring said severed crop rearwardly.



4,353,202
MANUAL APPARATUS FOR THREADING-IN TEXTILE APPARATUS
Peter Novak, Winterthur, and Hermann Gasser, Frauenfeld, both of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed Sep. 8, 1980, Ser. No. 185,014
Claims priority, application Switzerland, Sep. 28, 1979, 8767/79
Int. Cl.³ D01H *17/00, 15/00*
U.S. Cl. 57—279 **5 Claims**



1. A manually-operated apparatus for threading-in a textile material into an enclosed duct of a textile processing machine, comprising:

means defining a chamber whose volume can be manually altered;

means defining an air inlet opening for said chamber;

means defining an air outlet opening for said chamber;

a respective valve for controlling each said air inlet opening and said air outlet opening of said chamber;

each of said air inlet opening and air outlet opening defining respective air passage locations;

a connecting element having opposed ends;

one end of said connecting element being connected with the air passage location intended to be operatively coupled with said duct; and the other end of said connecting element being provided with a sealing element.

4,353,203

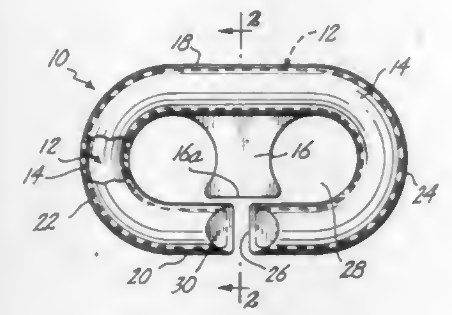
QUICK-COUPLING LINK

John G. D. Lotoski, Victoria, Canada, assignor to Sea Trec Enterprises, Ltd., Seattle, Wash.

Filed Feb. 20, 1981, Ser. No. 236,576

Int. Cl.^{3} F16G *15/04*

U.S. Cl. 59—85 **4 Claims**



1. A quick-coupling link comprising:

a link having longitudinal side portions joined by curved end portions, one of said side portions having a slot in the central region thereof, said slot having a thickness less than the diameter of said link, said slot being positioned generally along a diameter of said link and extending from the inner portion of said link to the outer portion of said link, said slot being joined to the upper and lower surfaces of the link by outwardly diverging V-shaped notches that extend transversely from said slot, and

a flexible tab joined to the other of said longitudinal side portions and extending across the central portion of said link, said tab having a width greater than the width of said slot, said tab terminating adjacent said one longitudinal side portion and being separated from said one side portion by a distance less than a diameter of said link.

4,353,204

METHOD OF WATER LEVEL CONTROL FOR A COMBINED CYCLE POWER PLANT AND CONTROL SYSTEM THEREFOR

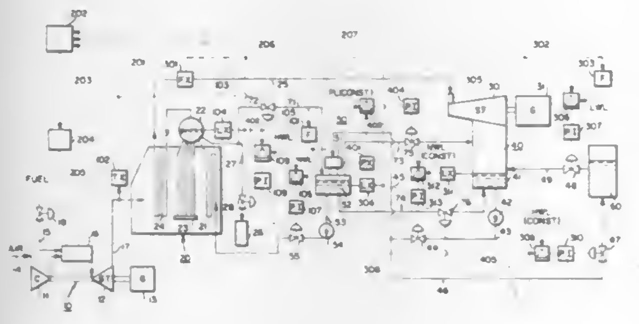
Tadao Arakawa, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,479

Claims priority, application Japan, Feb. 21, 1979, 54-18303

Int. Cl.^{3} F02C *6/18*

U.S. Cl. 60—39.02 **39 Claims**



1. A method of water level control for a combined cycle power plant which includes gas and steam turbines and a steam generator for recovering heat in exhaust gases from the gas turbine and for using the recovered heat to produce and supply steam to the steam turbine, the steam generator including a drum for containing water, preventing excessive water level increase in the steam generator drum resulting from at least the swelling phenomena by controlling the water level in the steam generator drum during a start-up operation of the powder plant such that the water level in the drum is maintained below a predetermined excessive water level, and wherein the step of controlling the water level in the drum includes lowering the water level in the drum prior to the start-up operation and thereafter increasing the water level in the drum substantially in accordance with the increase of the gas turbine load.

4,353,205

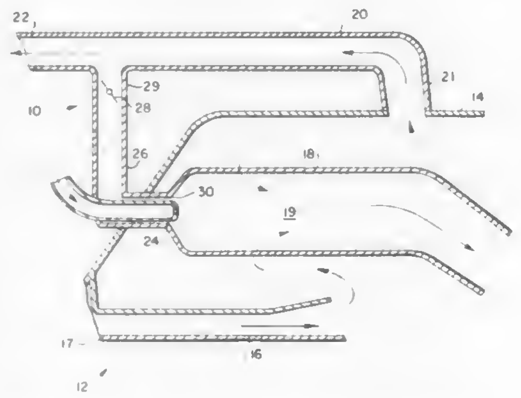
PRIMARY ZONE AIR PROPORTIONER

Edward N. G. Cleary, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 16, 1980, Ser. No. 140,947

Int. Cl.^{3} F02C *3/22*

U.S. Cl. 60—39.12 **9 Claims**



1. A gas turbine capable of burning either liquid hydrocarbon, oil gas or coal gas fuel, said turbine including a housing shell, a perforated combustion basket within the shell which defines a primary combustion zone, an air duct connected to the shell at such location as to allow said air duct to vent to a gasifier air heated by contact with said combustion basket in said shell, fuel injecting means for injecting gasified fuel into said turbine shell, and an air proportioner comprising means for venting air from said air duct for mixing with fuel from said gasifier so as to control the air-fuel mixture in the turbine.

4,353,206

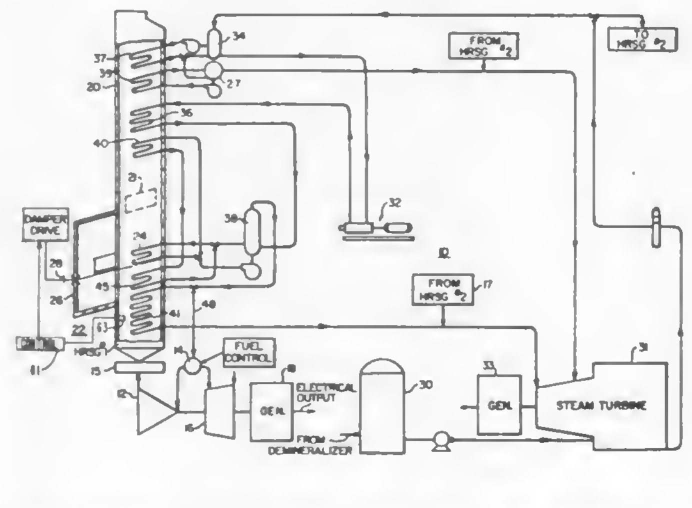
APPARATUS FOR REMOVING NOX AND FOR PROVIDING BETTER PLANT EFFICIENCY IN COMBINED CYCLE PLANTS

Richard M. Lee, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 20, 1980, Ser. No. 179,867

Int. Cl.^{3} F02C *6/18*

U.S. Cl. 60—39.18 B **2 Claims**



1. Apparatus for recovering heat energy and for removing NOx from the exhaust combustion gas in a combined cycle power plant having a turbine exhaust gas duct means, said apparatus comprising NOx removal means disposed in said

duct means for mixing a reductant with the exhaust gas and for generating a catalytic reaction which removes NOx from the exhaust gas within a predetermined gas temperature range, a waste heat recovery system including an economizer coil disposed in said duct means downstream from said NOx removal means and a feedwater supply system for said economizer coil, a steam drum supplied by said economizer coil, a modulating evaporator coil disposed upstream from said NOx removing means and receiving flow from said steam drum, respective evaporator coils disposed downstream and upstream from said NOx removing means and coupled in series to receive flow from said steam drum, said evaporator coils supplying steam to said steam drum, a superheat coil disposed upstream from said evaporator coils, means for sensing exhaust gas temperature upstream from said NOx removing means, a by-pass stack disposed across said modulating evaporator coil, movable damper means for diverting exhaust gas flow from said duct means through said by-pass stack, means for positioning said damper means in response to said gas temperature sensing means to hold the exhaust gas temperature within the desired NOx removal range, means for directing steam from said steam drum to the combustion turbine for combustor injection, and means for directing steam from said steam drum to said superheat coil to generate superheated steam for use in driving a steam turbine in the combined cycle plant.

4,353,207

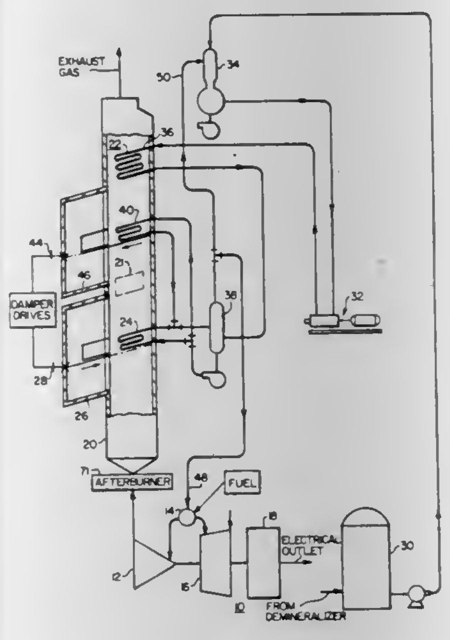
APPARATUS FOR REMOVING NOX AND FOR PROVIDING BETTER PLANT EFFICIENCY IN SIMPLE CYCLE COMBUSTION TURBINE PLANTS

Richard M. Lee, Media, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 20, 1980, Ser. No. 180,052

Int. Cl.^{3} F02C *6/18*

U.S. Cl. 60—39.18 B **7 Claims**



1. Apparatus for recovering heat energy and for removing NOx from the exhaust combustion gas in a single cycle combustion turbine power plant having an exhaust gas duct means, said apparatus comprising NOx removal means for mixing a reductant with the exhaust gas and for generating a catalytic reaction which removes NOx from the exhaust gas within a predetermined gas temperature range, a waste heat recovery system including an economizer coil disposed in said duct means downstream from said NOx removal means and a feedwater supply system for said economizer coil, a steam drum supplied by said economizer coil, a modulating evaporator coil disposed upstream from said NOx removing means and supplied by said steam drum, another evaporator coil disposed downstream from said NOx removing means and supplied by said steam drum, said evaporator coils supplying steam to said steam drum, means for sensing exhaust gas temperature upstream from said NOx removing means, a bypass stack disposed across said modulating evaporator coil, movable damper means for diverting exhaust gas flow from said duct means through said bypass duct, means for positioning said damper means in response to said gas temperature sensing means to hold the exhaust gas temperature within the desired NOx removal range, and means for receiving steam from said steam drum to make production use of the energy therein.

4,353,208

EXHAUST GAS PURIFICATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLES

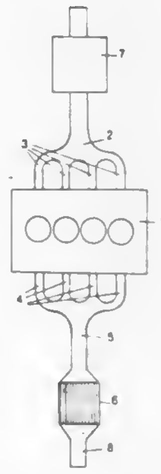
Herbert Völker, Hanau, and Polat Öser, Wolfsburg, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 925,896, Jul. 19, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,393

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734010

Int. Cl.^{3} F01N *3/28*

U.S. Cl. 60—299 **1 Claim**



1. In an exhaust gas purification apparatus for an internal combustion engine including

a catalyst chamber containing a catalyst composition comprising noble metals of the platinum group for the catalytic conversion of harmful substances contained in the exhaust gases of the internal combustion engine deposited on a catalyst carrier therefor,

which chamber is connected to one end of an exhaust pipe, the other end of said exhaust pipe being connected to the internal combustion engine, said exhaust pipe having relatively thin walls,

wherein the catalyst carrier is susceptible to melting and damage at incompatibly high temperatures in said catalyst chamber caused by ignition and combustion of unburned hydrocarbon fuel resulting from improper or incomplete burning in the combustion engine of the fuel-air-mixture produced in the carburetor and the inability of said carrier to sufficiently rapidly conduct away the heat generated as a result of said ignition and combustion.

the improvement which prevents large quantities of non-ignited fuel-air mixtures from reaching the catalyst chamber containing said carrier,

and comprising at least a part of the inside wall of the exhaust pipe connecting the internal combustion engine with the catalyst chamber being coated with a noble metal of the platinum group containing layer

wherein the exterior and interior surfaces of said exhaust pipe do not have any other coating applied thereto,

whereby any fuel-air mixtures leaving the internal combustion engine in a non-ignited or unburned condition will be ignited and burned in said part of the exhaust pipe which is coated with said catalytically active coating,

and the substantial quantities of heat released by the combustion in said exhaust pipe being radiated to a relatively large extent to the atmosphere through the relatively thin walls of the exhaust pipe,

so that the temperature in the catalyst chamber is not raised sufficiently high to fuse or melt the catalyst carrier,

and whereby the catalyst carrier containing the catalyst composition is protected against overheating due to unwanted ignition and burning.

4,353,209

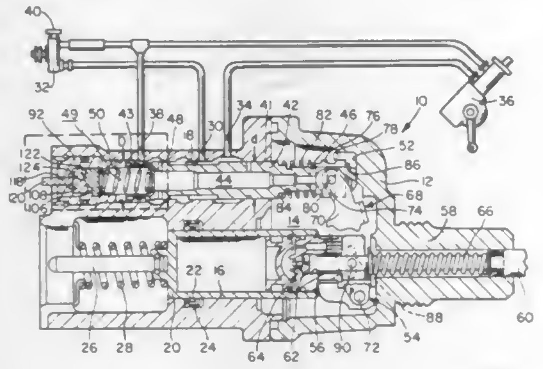
HYDRAULIC BRAKE BOOSTER

James B. Putt, Granger, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 18, 1980, Ser. No. 217,716

Int. Cl.^{3} B60T *13/00*

U.S. Cl. 60—547 B **1 Claim**



1. A hydraulic brake booster comprising a housing defining a pressure chamber therein and a pair of bores communicating with said pressure chamber, a pressure-responsive actuator piston movably received in one of said bores and operably cooperable with a master cylinder; said housing defining an inlet, an outlet and a vent communicating with the other of said pair of bores for communicating pressurized fluid through said housing; a control valve movably received in said other bore, said control valve in a first position communicating said inlet with said outlet and communicating said pressure chamber with said vent, first resilient means received in said other bore for yieldably biasing said control valve to said first position, said housing movably receiving an input assembly engageable with said actuator piston to move said actuator piston to operate said master cylinder, said input assembly moving toward engagement with said actuator piston in response to an operator input and including structure interconnecting said input assembly with said control valve, said interconnecting structure including second resilient means for opposing said first resilient means and urging said control valve to a second position in which said control valve closes communication between said inlet and outlet and between said pressure chamber and vent and communicates pressurized fluid from said inlet to said pressure chamber in response to movement of said inlet assembly toward engagement with said actuator piston, pressurized fluid in said pressure chamber moving said actuator piston to operate said master cylinder, characterized in that said brake booster includes an adjustable assembly received in said other bore and engaging said first resilient means for adjusting the bias applied by said first resilient means to said control valve, said adjustable assembly including a pair of relatively rotatable members and a plug with a bore receiving said members, one of said members being axially movable in said plug bore and engaging said first resilient member, the other of said members being restrained from axial movement in one direction by said plug, each of said members defining an oblique cam surface transecting said plug bore, said members rotatably engaging each other at said oblique cam surfaces whereby relative rotation of said members moves said one member axially in said plug bore, said one member moving said first resilient means to adjust the bias provided thereby, means for relatively rotating said members and means for retaining said other member in a selected relative rotational position, said means for relatively rotating said members including an elongate stem defined by said other member, said stem extending through said plug bore and terminating in an end external to said plug and housing, said end including means for grasping said stem so that said other member may be moved axially and rotatably relative to said plug via said stem, said means for retaining said members in a selected relative rotational position including a multitude of radially-extending lands and grooves defined on said other member and interlocking with a corresponding multitude of radially-extending lands and grooves defined on said plug, said other member being axially movable to disengage said lands and grooves so as to allow rotation of said other member relative to said plug comprising an interlocking fit defined between said one member and said plug.

4,353,210

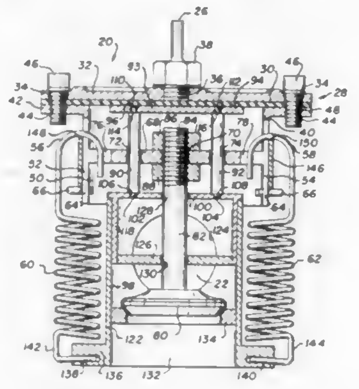
TURBOCHARGER CONTROL VALVE

Richard H. Garrett, 2440 Nelson Ave., West Vancouver, British Columbia, Canada

Division of Ser. No. 86,238, Oct. 18, 1979, abandoned. This application May 18, 1981, Ser. No. 264,757

Int. Cl.^{3} F02B *37/12*

U.S. Cl. 60—602 **14 Claims**



1. The combination comprising a lift valve having a stem and a diaphragm housing having a cover plate peripherally sealed against the diaphragm, the cover plate having a pressure port communicating therethrough for receiving a pressurized fluid, a portion of the diaphragm housing extending away from the cover plate and towards the valve body, the valve stem being connected to said portion;

a reciprocable member contacting a side of the diaphragm opposite the cover plate and being reciprocable towards and away from the cover plate;

a valve body carrying the reciprocable member and having a valve seat and a discharge port therein;

a valve closure member carried by the diaphragm housing;

springs connecting the valve body to said portion of the diaphragm housing and resiliently biasing the valve body towards the diaphragm housing and biasing the valve seat into sealing engagement with the valve closure member, the valve closure member being movable away from the valve seat, to permit a fluid to pass between the closure member and the valve seat and out the discharge port, when the pressure fluid from the pressure port against the diaphragm and the pressure of fluid against the closure member are sufficient to deflect the springs;

means for adjusting the tension of the springs comprising an annular member rotatably connected to the diaphragm housing, the annular member having a circumferentially extending sloping edge for each said spring, one end of each said spring engaging one said sloping surface, the annular member being rotated to adjust the tension; and

an internal combustion engine equipped with a turbocharger, the pressure port being connected to a conduit supplying air from the turbocharger to the intake manifold of the engine, the valve being connected to an exhaust conduit between the engine and the turbocharger so that some exhaust gases from the engine are vented through the discharge port of the valve when the air from the turbocharger increases to a predetermined level.

4,353,211

CONDUIT SYSTEM FOR INTRODUCING INTAKE GASES IN INTERNAL COMBUSTION ENGINES

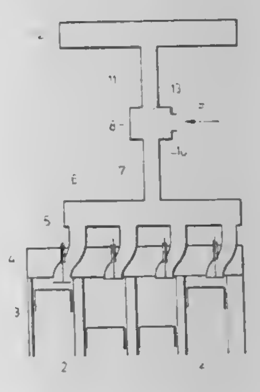
Gyula Cser, Budapest, Hungary, and Fritz Spinnler, Liestal, Switzerland, assignors to Autoipari Kutato Intezet, Budapest, Hungary

Filed Dec. 17, 1979, Ser. No. 104,025

Claims priority, application Hungary, Dec. 21, 1978, AU 415

Int. Cl.^{3} F02B *27/00, 37/00*

U.S. Cl. 60—605 **5 Claims**



1. In an internal combustion engine including engine cylinders with respective pistons reciprocating therein; an intake gas conduit system for supplying each engine cylinder with intake gas through an intake opening thereof; maximum four engine cylinders whose suction cycles are in a substantially non-overlapping relationship with one another forming a cylinder group; the improvement wherein said intake gas conduit system comprises in combination

(a) a dampening vessel having an intake gas inlet opening;

(b) a first oscillating system in which intake gas oscillations are generated by the effect of periodic suction cycles of the cylinders forming the cylinder group; said first oscillating system having a natural frequency and consisting of

(1) a feed resonator vessel communicating with the intake opening of each cylinder of said cylinder group;

(2) a feed resonance tube having first and second ends; said feed resonance tube communicating, with said first end thereof, with said dampening vessel and further communicating, with said second end thereof, with said feed resonator vessel; and

(c) a second oscillating system in which intake gas oscillations are generated by the oscillations taking place in said first oscillating system; said second oscillating system having a natural frequency being at least approximately identical to the natural frequency of said first oscillating system; said second oscillating system consisting of

(1) a closed resonator vessel; and

(2) an equalizing resonance tube having first and second ends; said equalizing resonance tube communicating, with said first end thereof, with said dampening vessel and further communicating, with said second end thereof, with said closed resonator vessel; said first end of said feed resonance tube and said first end of said equalizing resonance tube being spaced from, and being oriented towards, one another across said dampening vessel.

4,353,212

CLOSED FLUID LOOP SOLAR THERMODYNAMIC SYSTEM

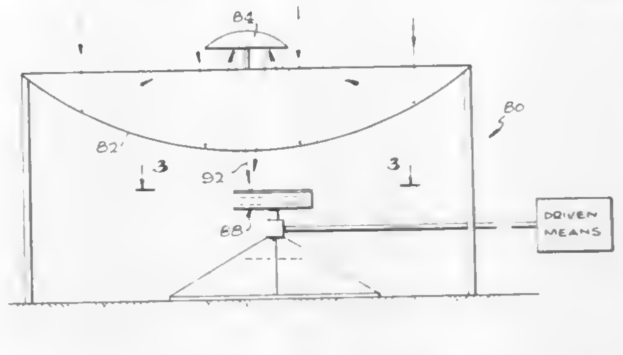
Harold A. Adler, 1457 Eastwind Cir., Westlake Village, Calif. 91361

Continuation-in-part of Ser. No. 32,657, Apr. 23, 1979, Pat. No. 4,229,660. This application Sep. 15, 1980, Ser. No. 186,918

The portion of the term of this patent subsequent to Oct. 21, 1997, has been disclaimed.

Int. Cl.^{3} F03G *7/02, 7/06*

U.S. Cl. 60—622 **13 Claims**



1. A closed thermodynamic system comprising:

a first vessel;

a second vessel;

a thermodynamic engine for converting energy in a thermodynamic fluid flow stream into mechanical energy, said thermodynamic engine having a piston for reciprocation within a cylinder, and valves to control flow to and from said vessels with respect to said cylinder to reciprocate said piston, said first vessel and said second vessel each being connected only to said thermodynamic engine, a thermodynamic fluid in said vessels and in said thermodynamic engine; and

means for first adding heat to said first vessel and removing heat from said second vessel so that the thermodynamic fluid in said first vessel is heated and raised in pressure for delivering thermodynamic fluid in gas phase under pressure through said thermodynamic engine to transfer thermodynamic fluid from said first vessel to said second vessel, and for secondly adding heat to said second vessel and removing heat from said first vessel so that fluid pressure is raised in said second vessel and lowered in said first vessel so that thermodynamic fluid in gas phase is delivered from said second vessel through said thermodynamic engine to said first vessel so that said thermodynamic engine provides output power.

4,353,213

SIDE STREAM TYPE CONDENSING SYSTEM AND METHOD OF OPERATING THE SAME

Toyohiko Masuda; Takeshi Ueno; Yoji Nagai; Hiroshi Tsunematsu, and Shozo Nakamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,072

Claims priority, application Japan, Aug. 21, 1979, 54-105513

Int. Cl.^{3} F01K *19/00*

U.S. Cl. 60—646 **11 Claims**

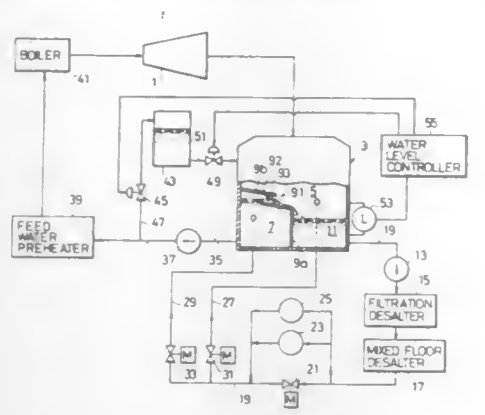
1. A side stream type condensing system comprising:

first hot well means for condensing exhaust steam from a turbine of a power plant into condensed water and for storing the condensed water therein,

second hot well means for storing the condensed water therein in order to prepare for water feed to a main system of the power plant,

weir means disposed in said second hot well means and forming water passage means for causing the condensed water to overflow from said second hot well means to said first hot well means,

purification means for purifying the condensed water from said first hot well means, and pipe means for holding said purification means in communication with said first and second hot well means so as to

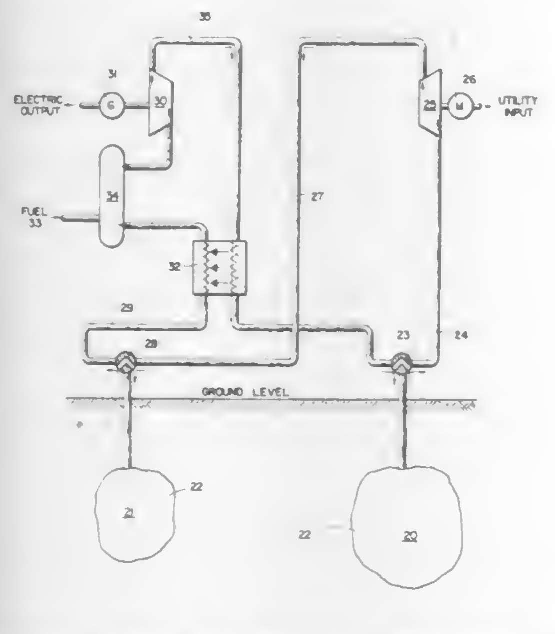


feed the condensed water from said first hot well means to said second hot well means via said purification means.

4,353,214
ENERGY STORAGE SYSTEM FOR ELECTRIC UTILITY PLANT

James H. Gardner, 1616 Arlington Dr., Salt Lake City, Utah 84103

Filed Nov. 24, 1978, Ser. No. 963,374
Int. Cl.^{3} F01K *25/00;* F02C *1/00*
U.S. Cl. 60—652 **22 Claims**



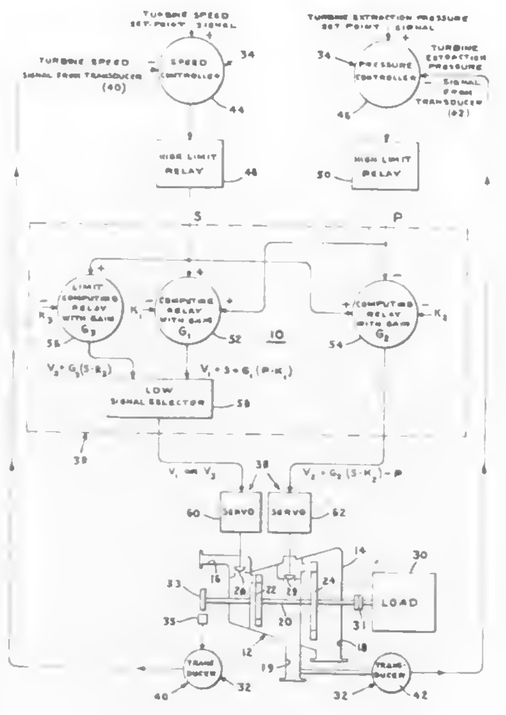
1. A method using a substantially closed fluid system for storing and retrieving excess energy produced during low energy demand periods by an electric utility, comprising the steps of:

a. storing a gaseous primary fluid at low pressure in a low pressure underground storage cavern,
b. compressing said primary fluid to high pressures utilizing energy output produced by said utility during low consumer demand periods,
c. storing said compressed primary fluid in a high pressure underground storage cavern,
d. transferring said compressed fluid during peak power demand from said high pressure storage cavern to a reaction zone,
e. reacting an exothermic fuel constituent within said compressed primary fluid to generate a heated working fluid comprised of said primary fluid and any fuel reactants and products present,
f. expanding said working fluid to produce an electrical output for supplementation of utility capacity, and
g. returning at least the resulting expanded primary fluid to said low pressure cavern.

4,353,215
FLUIDIC CONTROL SYSTEM FOR TURBINES

Lester M. Anderson, Wellsville, N.Y., and John D. Warnock, Richboro, Pa., assignors to Edison International, Inc., Rolling Meadows, Ill.

Filed Jul. 7, 1976, Ser. No. 703,173
Int. Cl.^{3} F01K *13/02*
U.S. Cl. 60—660 **4 Claims**


TURBINE SPEED SET-POINT SIGNAL
TURBINE SPEED SIGNAL FROM TRANSDUCER (40)
SPEED CONTROLLER
34
44
TURBINE EXTRACTION PRESSURE SET POINT SIGNAL
PRESSURE CONTROLLER
TURBINE EXTRACTION PRESSURE SIGNAL FROM TRANSDUCER (42)
46
HIGH LIMIT RELAY
HIGH LIMIT RELAY
S
P
COMPUTING RELAY
LOW SIGNAL SELECTOR
SERVO
SERVO
60
62
LOAD
30
36
38

1. The combination in a pneumatic pressure type fluidic control system for the interrelated control of first and second operating conditions of a steam turbine in accordance with predetermined desired values therefore of,

a. said steam turbine has, a steam inlet valve, a steam extraction conduit for the extraction of steam from an intermediate stage of said steam turbine, and a steam extraction valve in said steam extraction conduit to control the flow of steam extracted from said intermediate stage of the steam turbine,
b. said steam inlet valve to control the speed of the steam turbine as the first operating condition to be interrelated and controlled and said steam extraction valve to control the pressure of the steam extracted from said steam turbine as the second operating condition to be interrelated and controlled relative the steam utilized to maintain the desired speed of the steam turbine,
c. fluidic means responsive to signals of the actual values of said first and said second operating condition and to settings of the predetermined desired values of said conditions to provide first and second fluidic input signals representative of the differences, if any, therebetween,
d. fluidic computing means including,
   1. first and second interconnected fluidic computing relays,
   2. means operatively interrelated in said first and second computing relays to proportionately combine said first and second fluidic input signals to provide first and second fluidic control signals in accordance with the following equations:

$$V_1=S+G_1(P-K_1)$$

$$V_2=G_2(S-K_2)-P$$

wherein

V_1 is the first fluidic control signal which controls, the position of the steam inlet valve,
V_2 is the second fluidic control signal which controls the position of the steam extraction valve,
S is the first fluidic input signal which is substantially proportional to the load on the turbine,

P is the second fluidic input signal which is substantially proportional to steam flow in the steam extraction conduit,
G_1 is the fluidic gain of the first fluidic computing relay,
G_2 is the fluidic gain of the second fluidic computing relay, and
K_1 and K_2 are fluidic biasing signals which are respectively applied to said first and second fluidic computing relays,

e. a fluidic limit relay operatively connected to said means to modify said fluidic input signal S to provide a third fluidic control signal in accordance with the following equation

$$V_3=G_3(S-K_3)$$

wherein

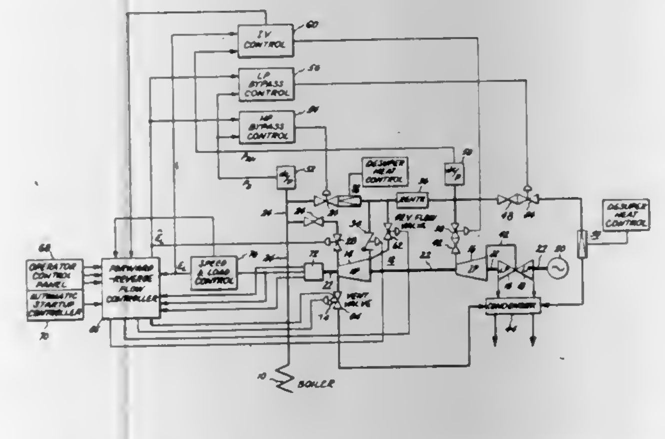
V_3 is the third fluidic input signal,
G_3 is the fluid gain of the fluidic limit computing relay, and
K_3 is a fluidic biasing signal which is applied to said fluidic limit computing relay, and

f. low signal selector means to receive said fluidic control signals V_1 and V_3 and operable to select the lower of said V_1 and V_3 signals and to transmit control signals for control of the position of said steam inlet valve to regulate the steam delivered to the steam inlet valve for said steam turbine.

4,353,216
FORWARD-REVERSE FLOW CONTROL SYSTEM FOR A BYPASS STEAM TURBINE

Royston J. Dickenson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,324
Int. Cl.^{3} F01K *13/02*
U.S. Cl. 60—662 **16 Claims**



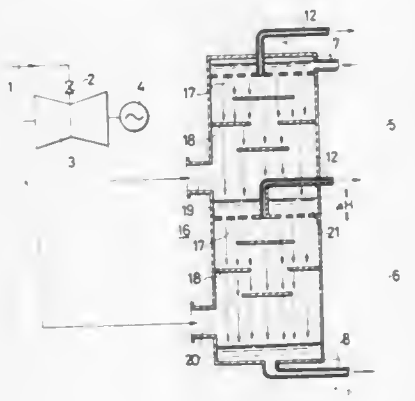
1. In combination with a steam turbine having a high pressure (HP) section, at least one lower pressure (LP) section, a steam conduit interconnecting the HP section of the LP section through a steam reheater, at least one admission control valve, at least one intercept valve, an HP bypass subsystem, an LP bypass subsystem, a reverse flow valve, and a ventilator valve, a control system for controlling said reverse flow valve, said ventilator valve, and said admission control valve to automatically select forward or reverse steam flow through said HP section, said control system comprising:

first automatic means for selecting the control signal according to which said admission control valve is positioned, said first means including first logic means to cause selection of a forward flow control signal whenever a first set of preselected operating conditions is satisfied and to cause selection of a reverse flow control signal forcing said admission control valve closed whenever said first set of preselected operating conditions is not satisfied;
second automatic means for controlling the operation of said reverse flow valve, said second means including second logic means to cause said valve to be opened only whenever a second set of preselected turbine operating condition is satisfied; and
third automatic means for controlling the operation of said ventilator valve, said third means including third logic means to cause said valve to be opened only whenever a third set of preselected turbine operating conditions is satisfied.

4,353,217
DIRECT CONTACT TYPE MULTI-STAGE STEAM CONDENSER SYSTEM

Ryozo Nishioka; Yoshihiro Kizawa, and Hiroshi Shingai, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Feb. 5, 1980, Ser. No. 118,713
Claims priority, application Japan, Feb. 23, 1979, 54-19176
Int. Cl.^{3} F28B *7/00*
U.S. Cl. 60—693 **7 Claims**



1. A direct contact type multiple pressure stage steam condenser system comprising: a direct contact type high vacuum stage steam condenser and a direct contact type low vacuum stage steam condenser coupled to steam discharge outlets of a steam turbine and series-connected with each other, said high vacuum stage steam condenser being disposed above said low vacuum stage steam condenser; means for supplying cooling water into said upper high vacuum stage steam condenser, means for conducting away water discharged from said low vacuum stage steam condenser; and a water sprinkling board and a water supplying tank for said low vacuum stage steam condenser provided in an upper region thereof; said water supplying tank being formed as a water level on an upper surface of said water sprinkling board and being disposed between said high vacuum stage steam condenser and said low vacuum stage steam condenser such that a mixture of condensate formed in said high vacuum stage steam condenser and said cooling water drops into said water supplying tank and is supplied from said water supplying tank into said low vacuum stage steam condenser and that water is pooled in said water supplying tank and serves as sealing means to provide gas-tight separation between said high and low vacuum stage steam condensers.

4,353,218
HEAT PUMP/REFRIGERATOR USING LIQUID WORKING FLUID

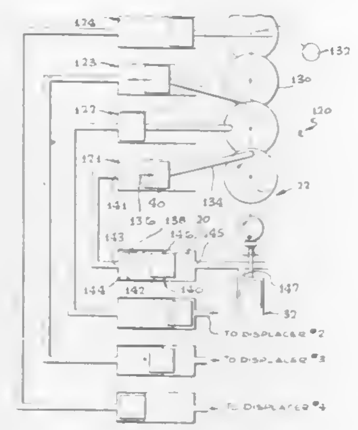
John C. Wheatley; Douglas N. Paulson, both of Del Mar; Paul C. Allen, Solana Beach, all of Calif.; William R. Knight, Corvallis, Oreg., and Paul A. Warkentin, San Diego, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 28, 1980, Ser. No. 154,173
Int. Cl.^{3} F25B *9/00*
U.S. Cl. 62—6 **22 Claims**

8. A heat pump or refrigerator apparatus comprising:

first and second heat exchangers, each having a pair of working fluid-carrying passages interconnected at a first end of the exchanger and unconnected at the other end of the exchanger to form a pair of ports;

a regenerator forming primarily parallel first and second passages which are physically separated but closely thermally coupled at numerous locations along the passages, said regenerator having check valve means allowing flow only in one direction through the other passage, said passages each having first ends coupled respectively to the pair of ports of said first heat exchanger and said passages having second ends that are coupled respectively to the pair of ports of said second heat exchanger;



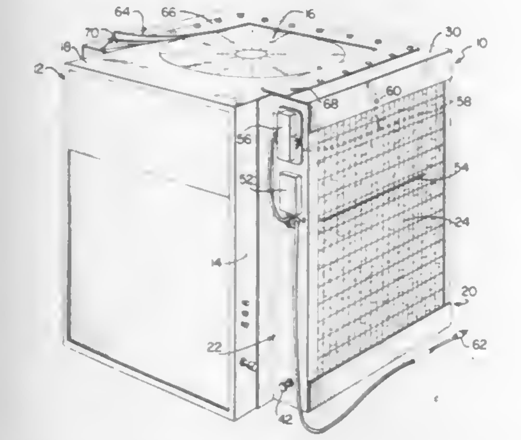
a displacer having a first end connected to the first end of said first heat exchanger, said displacer having a second end connected to the first end of said second heat exchanger, said displacer also having a reservoir at each of its ends and having means for moving fluid at constant volume out of the reservoir at one end while receiving fluid at the reservoir at the other end;

a quantity of working fluid lying in said heat exchangers, regenerator and displacer, said fluid being a liquid; and

compressor means for alternately compressing and expanding said liquid working fluid.

4,353,219
SELF-CONTAINED AMBIENT PRECOOLER ATTACHMENT FOR AIR-COOLED CONDENSING UNITS

Robert L. Patrick, Jr., 508 Concord Ave., Belton, Mo. 64012
Filed May 19, 1980, Ser. No. 140,167
Int. Cl.³ F25B *39/04;* **F28D** *5/00*
U.S. Cl. 62—183 **6 Claims**



1. A substantially self-contained precooler attachment for air-cooled condensing units having ambient air inlets comprising:

a jacket adapted to at least partially envelope the exterior of a selected unit in upstream airflow relationship to said inlets,

said jacket including an upright frame and porous media supported within said frame,

said media being capable of permitting the gravitation therethrough of cooling water and the transverse flow of ambient air so that the latter may be precooled by said media before entering said inlets;

a manifold adjacent the normally upper portion of said media adapted to discharge water into the latter for said gravitation therethrough;

means for supplying water to said manifold;

a control operably associated with said supply means for activating and deactivating the same;

sensing means adapted for detecting the existence and nonexistence of ambient air movement by the associated condensing unit resulting from operation and non-operation of the condensing unit respectively,

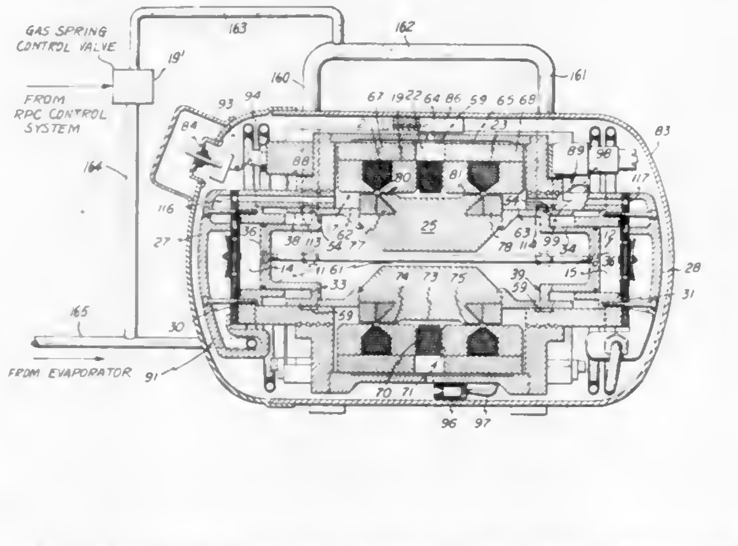
said sensing means being operably associated with said control in a manner to cause activation of said supply means when the condensing unit is in operation and deactivation of the supply means when the condensing unit is in a state of non-operation; and

a reservoir adjacent the normally lower portion of said media for receiving and collecting water gravitating through the media, said supplying means including a pump for recirculating water from said reservoir to said manifold,

said supplying means further including means defining an inlet port for coupling the manifold with an external source of water under pressure, said control including a temperature-responsive valve operating to open said port when the temperature of collected water in said receptacle exceeds a certain predetermined level, said pump being provided with means for maintaining the same deactuated when said port is open as a result of the temperature of the water collected in said receptacle exceeding said predetermined level.

4,353,220
RESONANT PISTON COMPRESSOR HAVING IMPROVED STROKE CONTROL FOR LOAD-FOLLOWING ELECTRIC HEAT PUMPS AND THE LIKE

Peter W. Curwen, Ballston Spa, and Richard A. Dorman, Troy, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.
Filed Jun. 17, 1980, Ser. No. 160,429
Int. Cl.³ F04B *49/06;* **F25B** *41/04*
U.S. Cl. 62—228 **31 Claims**



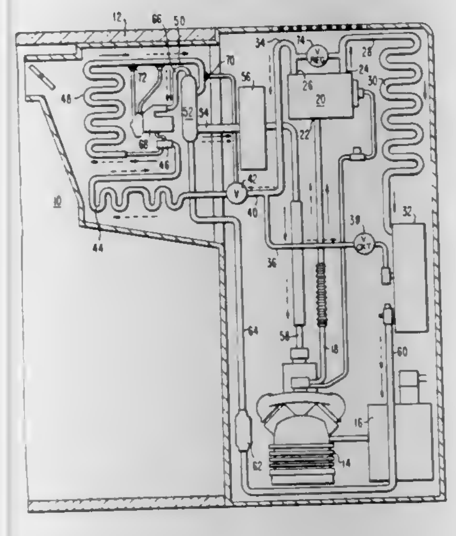
1. In a resonant piston apparatus wherein a movable mass is arranged with gas spring means and an oscillating driving

means to form a dynamic ocillating system, the combination with such apparatus comprising:

dynamically variable gas spring control valve means communicating with said gas spring means for regulating the pressure of the gas in said gas spring means, and control means for dynamically variably controlling the opening and closing of said gas spring control valve means during operation of the oscillating system to thereby maintain the operation of said oscillating system within predetermined stroke limits and to dynamically variably modulate the stroke of the oscillating system to meet load demands.

4,353,221
TRANSPORT REFRIGERATION SYSTEM

David H. Taylor, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed Jan. 21, 1981, Ser. No. 226,952
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **3 Claims**



1. In a transport refrigeration unit of the type adapted to selectively provide either cooling or heating, a refrigeration system including:

a three-way valve having an inlet, and first and second outlets;

a refrigerant compressor having a discharge line connected to supply said three-way valve;

a refrigerant condenser;

a refrigerant evaporator;

first refrigerant line means connecting the first outlet of said three-way valve to said condenser for operation of the system in a cooling mode when said three-way valve is in a first position;

hot gas refrigerant line means connecting the second outlet of said three-way valve for passage of hot gas to said evaporator in operation of the system in a heating or defrost mode when said three-way valve is in said second position;

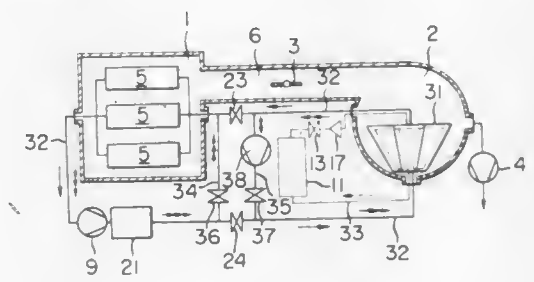
a pressure regulating valve in said hot gas line means to control refrigerant amounts to limit evaporator pressure to a first predetermined value;

a relief valve connected between said first line means and said hot gas line means and operable, when said three-way valve is in said second position, to pass refrigerant to said first line and said condenser when the hot gas pressure exceeds a second predetermined value;

whereby the values of both evaporator pressure and discharge pressure are limited to prevent overloading in heating and defrost operations.

4,353,222
VACUUM APPARATUS

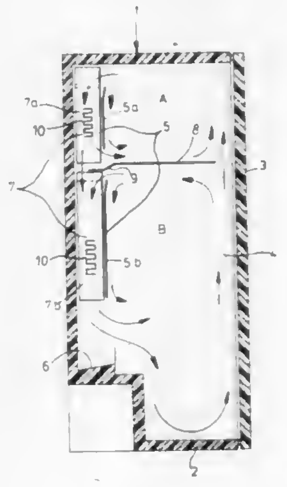
Masakazu Kobayashi, Tokyo, Japan, assignor to Kyowa Vacuum Engineering, Ltd., Tokyo, Japan
Filed Jun. 30, 1980, Ser. No. 164,031
Claims priority, application Japan, Jul. 4, 1979, 54-85262; Feb. 23, 1980, 55-21871
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—268 **8 Claims**



1. A vacuum apparatus comprising a chamber and a vacuum pump connected to the chamber for lowering the pressure in the chamber, a condenser positioned in said chamber, the condenser including a casing defining a space and having a metal outer plate whose exterior surface acts as a condensing surface, a refrigerant flow pipe positioned within a portion of the casing space and adhering to the interior surface of the metal outer plate, and means to pass brine through a remaining portion of said space within the casing.

4,353,223
REFRIGERATOR WITH A LARGE REFRIGERATION CHAMBER COOLED BY NATURAL CONVECTION

Wolfgang Dienemann, Giengen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 3, 1980, Ser. No. 165,549
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928774
Int. Cl.³ F25D *13/02*
U.S. Cl. 62—442 **8 Claims**



1. Refrigerator having a large volume refrigeration chamber cooled by natural convection, comprising a defrostable finned evaporator disposed in upright position in the chamber, said evaporator being subdivided into at least two sections connected together in series in a refrigerant flow path, a view

shield serving as an air baffle disposed in front of each section of said evaporator, and a substantially horizontally disposed partition occupying substantially the entire usable cross sectional area of the chamber thus subdividing said chamber into two chambers, said partition having an edge extended between said sections of said evaporator so as to provide proper air flow between the divided chambers.

4,353,224
EVAPORATOR

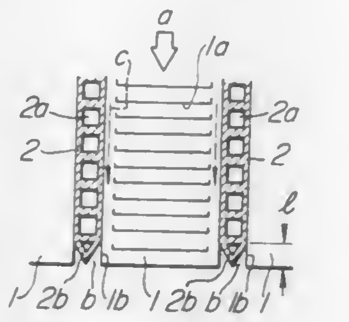
Masayuki Nonogaki, Kariya; Katsuya Ishii, Anjo, and Nobumasa Hirasawa, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 26, 1981, Ser. No. 247,930

Claims priority, application Japan, Oct. 16, 1980, 55/148117[U]

Int. Cl.³ F25B *39/02*

U.S. Cl. 62—515 **4 Claims**



1. A refrigerant evaporator in a refrigerating cycle of the type comprising a flat tube which is provided with a refrigerant passage or passages therein and formed to weave up and down to provide a plurality of upright portions to define horizontal passages of air to be cooled therebetween, and a plurality of corrugated fin units each of which is interposed between the adjacent upright portions of said flat tube in such a way that the fold lines or portions of said corrugated fin unit extend substantially horizontally and are in contact with the upright portions, wherein there is provided between said flat tube and each fold line or portion of said corrugated fin unit a non-contact space extending upstream over a length of about 3 to 10 mm from the downstream edge of said corrugated fin unit relative to the direction of air flow.

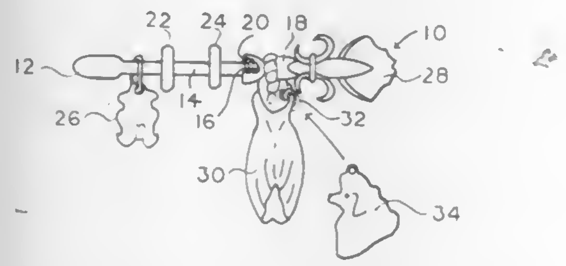
4,353,225
JEWELRY FOR ANIMALS

Wanda S. Rogers, 1210 Luttrell St., Knoxville, Tenn.

Filed Nov. 1, 1979, Ser. No. 90,463

Int. Cl.³ A44C *7/00*

U.S. Cl. 63—13 **10 Claims**



1. An ear decoration suitable for use with pierced ears of a domestic animal and for providing protection against irritation due to scratching and rubbing comprising:

a first member having a decorative portion;

an elongated shaft of a selected diameter having a first and further end, said first end permanently attached to said first member;

an extension member having a diameter substantially the same as said selected diameter and a receiving end and a projection end, said receiving end including a first elongated recess for receiving said further end of said elongated shaft;

a second member having a decorative portion and including a second elongated recess for receiving said projection end of said extension member; and

first and second protective means, each of said protective means defining an aperture having a diameter substantially the same size as said selected diameter, said first protective means for fitting snugly around said elongated shaft and between said decorative portion of said first member and said animal's ear, and said second protective means for fitting snugly around said extension member and between said animal's ear and said decorative portion of said second member such that when said elongated shaft and said extension member are passes through the pierced ear of said animal, said protective means provides protection against irritation of the animal's ear by scratching and rubbing.

4,353,226
ADJUSTABLE TORSION-SPRING SLIPPING CLUTCH

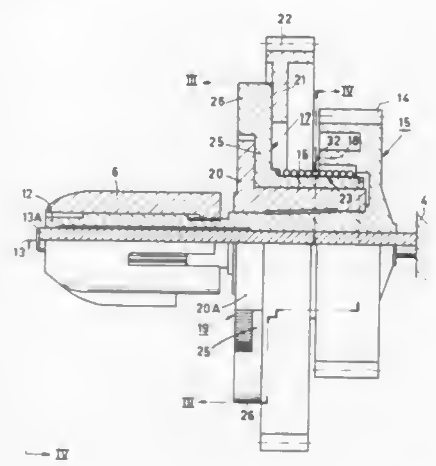
Henricus M. Ruyten, Vienna, Austria, and Johannes F. Hoefnagels, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,942

Claims priority, application Netherlands, Apr. 2, 1979, 792544

Int. Cl.³ F16D *7/02*

U.S. Cl. 464—40 **9 Claims**



1. An adjustable torsion-spring slipping clutch, comprising first and second coaxial clutch sections which are rotatable relative to each other about an axis of rotation, and a coaxially arranged cylindrical helical torsion spring which is connected at one end to the first clutch section, the second clutch section comprising a sleeve which is substantially circular in a cross-section perpendicular to the axis of rotation and around which turns of the spring are wrapped for transmitting torque between said clutch sections by the friction between the spring and sleeve, and means for adjusting the diameter of said turns to determine the torque to be transmitted between the clutch sections,

characterized in that the sleeve of the second clutch section has a substantially circular cylindrical shape and is adjustable in diameter.

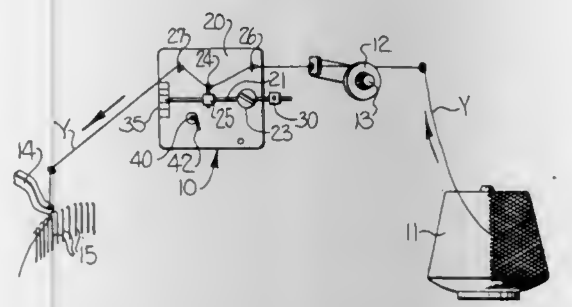
4,353,227
TENSION INDICATOR FOR ELASTOMERIC YARN

Harper Shields, Burlington, and Roscoe M. Farrell, Pittsboro, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 136,891, Apr. 30, 1980, abandoned. This application Nov. 10, 1980, Ser. No. 205,765

Int. Cl.³ D04B *15/46, 35/14*

U.S. Cl. 66—146 **7 Claims**



1. In a circular hosiery knitting machine particularly adapted for incorporating elastomeric yarn into knitted articles being formed thereby and including an elastomeric yarn supply source, a circle of needles, yarn feed finger means for feeding the elastomeric yarn from said supply source to said circle of needles, a manually adjustable tension device positioned between said supply source and said yarn feed finger means and adapted to engage and apply a predetermined amount of tension to the elastomeric yarn, a yarn tension indicator between said tension device and said feed finger means for continuously monitoring the tension of the elastomeric yarn and visually indicating to a machine operator the relative amount of tension in the yarn, and said tension indicator comprising a base plate, the combination therewith of a pointer lever pivotally supported on said base plate in a substantially horizontal position and being movable in first and second opposed directions above and below said horizontal position, movable yarn guide means supported on said pointer lever for longitudinal adjustment along substantially the full length of said pointer lever, fixed yarn guide means on said base plate for guiding the yarn in a substantially horizontal path of travel and passing through said movable yarn guide means on said pointer lever so that the tension in the running elastomeric yarn tends to move said pointer lever in said first direction, weight means supported for longitudinal adjustment along said pointer lever for urging said pointer lever in said second direction, and indicia means carried by said base plate adjacent said pointer lever for providing a constant visual indication to the machine operator of the relative amount of tension in the running elastomeric yarn.

4,353,228
CIRCULAR KNITTING MACHINE WITH LATCH DETECTOR

Harper Shields, Burlington, and Roscoe M. Farrell, Pittsboro, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Continuation-in-part of Ser. No. 143,793, Apr. 25, 1980, Pat. No. 4,282,725. This application Nov. 28, 1980, Ser. No. 211,258

Int. Cl.³ D04B *35/10*

U.S. Cl. 66—157 **6 Claims**

1. In a circular knitting machine including a circle of needles mounted for rotation about a fixed axis, each of said needles including an upper hooked end and a pivoted latch movable between open and closed positions, and yarn feed fingers for feeding yarn to said needles as said needles are raised and lowered to form stitch loops, the combination therewith of latch detector means for detecting a latch improperly positioned in a closed position, said latch detector means comprising

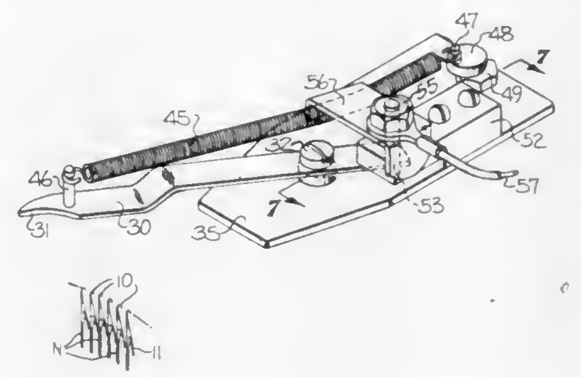
(a) a trigger lever including a free end,

(b) means supporting said trigger lever for pivotal movement intermediate its ends and about an axis parallel to said fixed axis of said circle of needles, said free end being normally positioned in an operative latch detecting position immediately below the path of travel of said upper hooked ends of said needles so that a latch in the proper open position does not engage said free end of said trigger lever and while a latch in an improper closed position will engage and move said free end of said trigger lever to an inoperative position wherein said free end is moved in the direction of movement and outwardly away from the path of travel of said needles,

(c) stop means mounted on said supporting means and adapted to engage one side of said trigger lever for normally maintaining said free end of said trigger lever in said detecting position,

(d) a tension spring fixed at one end adjacent said free end of said trigger lever and at the opposite end to said supporting means and so as to extend generally along and above said trigger lever and the pivotal support thereof for urging said trigger lever into engagement with said stop means with said trigger lever in said detecting position, and for immediately moving said free end of said trigger lever to said inoperative position outwardly and away from the path of travel of said needles upon being laterally deflected from said detecting position by a latch in an improper closed position, and wherein said spring moves laterally during such lateral movement of said trigger lever, and

(e) primary sensor means including an electrically conductive member mounted on said supporting means adjacent said spring and operable by engagement with said tension spring upon lateral movement thereof for signaling when said free end of said trigger lever is engaged by a closed latch and moved outwardly and away from the path of travel of said needles.



4,353,229
WEFT KNITTED FABRIC

William Hutchinson, Leicester, England, and Klaus L. P. Wermelt, Greven, Fed. Rep. of Germany, assignors to Wildt Mellor Bromley Limited, Great Britain

Continuation-in-part of Ser. No. 856,208, Nov. 30, 1977, abandoned. This application Oct. 16, 1979, Ser. No. 85,420

Claims priority, application United Kingdom, Dec. 1, 1976, 50015/76

Int. Cl.³ D04B *9/06*

U.S. Cl. 66—197 **1 Claim**

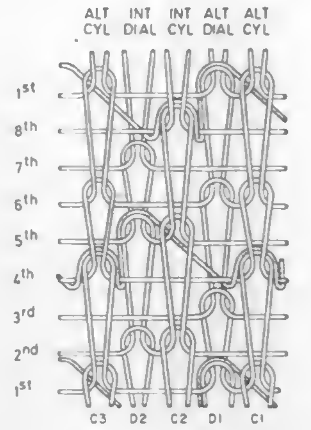
1. Weft double knitted fabric having first and second faces, comprising:

a first yarn drawn into knitted loops at selected wales, the loops of the same course of the said first yarn extending to both faces of the fabric;

a second yarn drawn into knitted loops at selected wales other than those selected for the first yarn, the loops of the same course of the said second yarn extending to both faces of the fabric;

a third yarn drawn into knitted loops at selected wales, the loops of the same course of the said third yarn extending to the first face only of the fabric;

a fourth yarn drawn into knitted loops at selected wales, the loops of the same course of the said fourth yarn extending to the second face only of the fabric; and



a fifth yarn tucked at selected wales in those of the knitted loops of the said first yarn which extend to only one of the said first and second faces of the fabric and in those of the knitted loops of the said second yarn which extend to only the other of said first and second faces of the fabric.

4,353,230

COMBINATION CONTROLLED FLUID PRESSURE ACTUATED DOOR LOCK

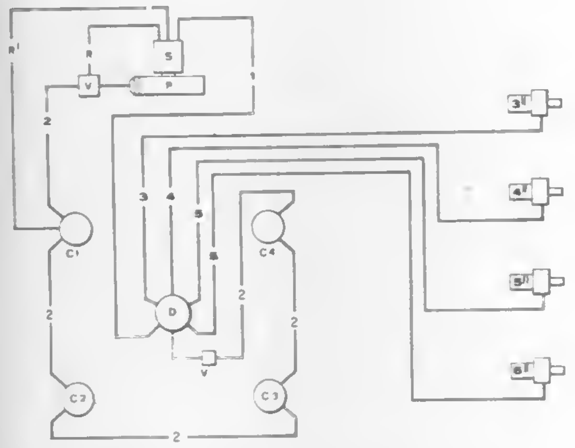
Renato Cacioni, Via Piccolpasso, 121, 06085 Perugia, Italy

Filed Jul. 23, 1979, Ser. No. 59,662

Claims priority, application Italy, Sep. 15, 1978, 43518 A/78; Jun. 22, 1979, 49505 A/79

Int. Cl.^{3} E05B *37/12, 51/02, 63/14*

U.S. Cl. 70—275 **6 Claims**



6. A fluid-actuated lock for locking and unlocking a door, comprising:

a source of fluid;

changeable combination means permitting the selection of a unique predetermined setting for controlling and allowing the passage of fluid from said source of fluid upon the positioning of said combination means to said predetermined setting, and preventing the passage of said fluid when said positioning does not correspond to said predetermined setting;

at least one locking device which keeps the door normally locked, unlocks the door upon application of fluid under pressure, and automatically locks the door upon release of pressure from said fluid;

tube means connecting said source of fluid with said combination means and said combination means to said locking device;

pumping means interposed between said source of fluid and said tube means for pumping fluid under pressure through said tube means to said combination means and from said combination means to said locking device to unlock the door; and

a valved manifold means, connected between said source of fluid, said locking device and said combination means, for transferring fluid from said combination means to said locking device, said manifold means including valve means for controlling, including allowing and preventing, return of said fluid to said source of fluid;

said valved manifold means in conjunction with said combination means permitting the flow of said fluid to said locking device when the positioning of said combination means corresponds to said unique predetermined setting so as to actuate said locking device,

whereby when said valve means is in a closed position and said fluid is pressurized by said pumping means and the setting of said combination means allows passage of the pressurized fluid to said locking device, said locking device unlocks the door, and when said valve means is moved to an open position, the fluid in said locking device is depressurized and said locking device automatically locks the door;

wherein said locking means includes a plurality of said automatic locking devices, and further including a plurality of tube means connected to said plurality of locking devices and to said manifold means, and wherein said manifold means comprises:

a sleeve fixed in said door, said sleeve having a first hole connected to said source of fluid, a second hole connected to said tube means from said combination means, and a plurality of holes connected to said plurality of tube means to said plurality of locking devices;

a body slidingly mounted in said sleeve and having a groove means, said body having a first position wherein said groove is aligned with said first, second, and plurality of holes allowing free passage of fluid between them, and having a second position wherein said groove means is aligned with said second hole and said plurality of holes allowing free passage of fluid between them and wherein said first hole is blocked and fluid passage to said first hole is prevented,

whereby when said body is in the second position and said fluid is pressurized, the pressurized fluid unlocks the locking means and when said body is moved to the first position and the first hole is unblocked, the locking means are depressurized and the automatic locking device operates to lock said locking means.

4,353,231

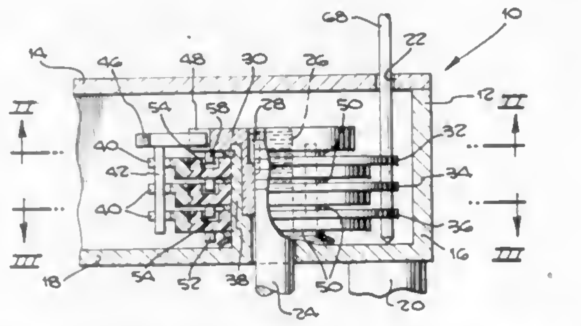
FRICTION DRIVE-SNAP INNER FIT TUMBLER WHEEL CONSTRUCTION

Tim M. Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.

Filed Sep. 11, 1980, Ser. No. 186,288

Int. Cl.^{3} E05B *15/14, 37/00*

U.S. Cl. 70—316 **13 Claims**



1. A tumbler wheel adapted for use in combination lock to control a latch bolt lever comprising:

an outer gate ring having a periphery with a gate formed therein for receiving said latch bolt lever;

an inner drive ring;

means for mounting said gate ring in concentric relation with said drive ring, wherein said gate ring is axially rotatable relative said drive ring;

means for blocking axial rotation of said gate ring; and

friction means for preventing rotation of said drive ring relative said gate ring except upon application of rotation force in excess of a predetermined amount to said drive ring when said gate ring is blocked,

said friction means including an inner annular undulated mating surface rotatably fixed relative said drive ring and an outer annular concentric undulated mating surface fixed rotatably relative said gate ring for mating engagement with said inner undulated mating surface, said friction means further including means for biasing said undulated mating surfaces to mating relationship to prevent relative rotation therebetween except upon application of said rotation force in excess of a predetermined amount to said drive ring when said gate ring is blocked.

4,353,232

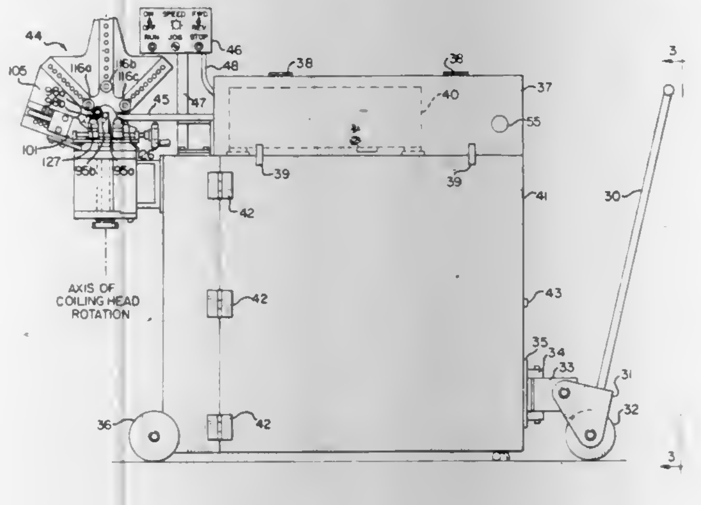
APPARATUS FOR MAKING CORRUGATED TUBING AND METHOD FOR JOINING CORRUGATED TUBING

Elmars H. Viesturs, and Billy J. Bauscher, both of Rockford, Ill., assignors to The Lockformer Company, Lisle, Ill.

Filed Jan. 28, 1980, Ser. No. 116,141

Int. Cl.^{3} B21C *37/12;* **B21D** *11/06*

U.S. Cl. 72—50 **16 Claims**



1. An improved apparatus for forming corrugated tubes of selectable diameter from ductile stip material including a frame, a means attached to said frame for making longitudinal corrugations in said strip material, a motor driving said corrugation making means, a means carried by said frame for forming the side edges of the strip material into inside and outside seam elements, a means carried by said frame for imparting a radius of curvature for the selected diameter of tubing to the strip material after corrugation, a means carried by the frame for imparting a helical angle to the strip material such that the inside seam element engages the outside seam element upon convolution of the strip, means for guiding the periphery of the strip during convolution, and a means for locking the engagement of the inside seam element with the outside seam element, said locking means deforming said engagement; the improvement comprising:

a means for simultaneously adjusting the means for imparting radius of curvature and the means for imparting helical angle so that the radius of curvature and helical angle required for the selected tubing diameter is produced.

4,353,233

DIES FOR MAKING THREAD-FORMING FASTENERS

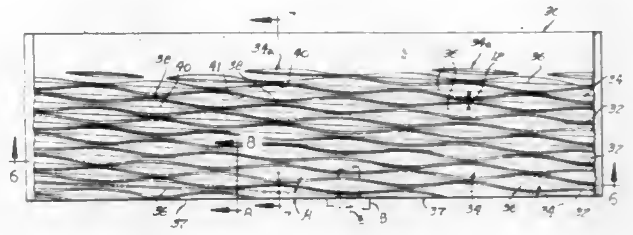
Eugene K. Chapman, South Dartmouth, Mass., assignor to Amca International Corporation, Hanover, N.H.

Filed Jan. 29, 1981, Ser. No. 229,450

Int. Cl.^{3} B21H *3/06*

U.S. Cl. 72—88 **5 Claims**

1. A roll-threading die for roll-threading a lobular screw from a blank of circular cross section comprising a die body having a plurality of longitudinal ridges defining a plurality of grooves, said grooves being of a generally V-shaped cross section and having base portions midway between the ridges, the base portions being parallel and inclined at an angle to the axis of a screw blank rolled between a pair of such dies so as to form a helix angle for the rolled thread, each said groove having repeating successive first and second regions along its length and with the groove varying in depth from a minimum at the first region to a maximum at the second region and such that said base portion traces substantially a sinusoidal path, the distance between an adjacent first and second region being equal to a fraction of the thread pitch multiplied by the cosecant of said helix angle.



4,353,234

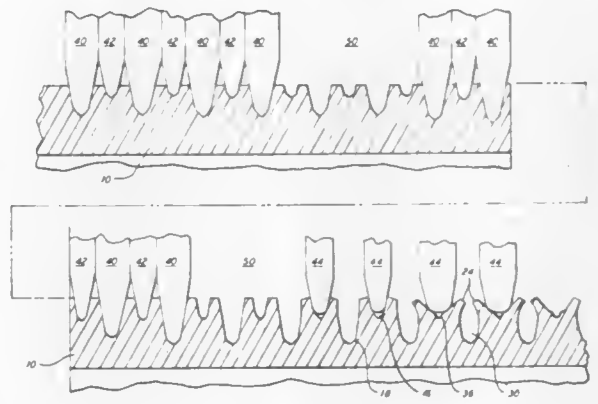
HEAT TRANSFER SURFACE AND METHOD OF MANUFACTURE

Warren S. Brothers, Skaneateles, and Albert J. Kallfelz, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 815,116, Jul. 13, 1977, Pat. No. 4,159,739. This application Dec. 14, 1978, Ser. No. 969,506

Int. Cl.^{3} B21D *53/06;* **B21H** *3/00*

U.S. Cl. 72—98 **24 Claims**



1. A method of forming a heat exchanger tube having integral ridges with fins angled in opposite directions to provide gapped cavities between the ridges comprising the steps of:

providing a tubular blank of substantially circular cross-section;

rolling the tubular blank to form alternating shallow grooves and deep grooves in the external surface thereof, the material between the deep grooves being a ridge having two fins as a part thereof; and

flaring the fins of each ridge in opposite directions so that each fin extends over the deep groove on its respective side of the ridge forming a narrow gap with the flared fin from the adjacent ridge thereby converting the deep groove into a gapped cavity.

4,353,235

EDGE PREFORMING OF METAL PLATE

Calvin C. Williamson, Napa, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

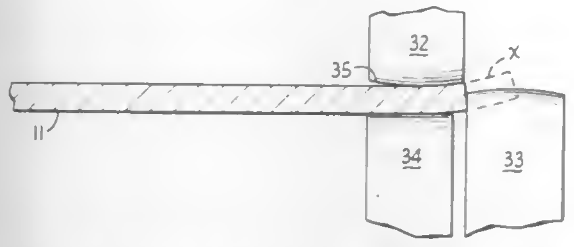
Filed Jun. 17, 1980, Ser. No. 160,390

Int. Cl.^{3} B21B *1/04*

U.S. Cl. 72—130 **9 Claims**

1. The process of preforming longitudinal edges of flat steel

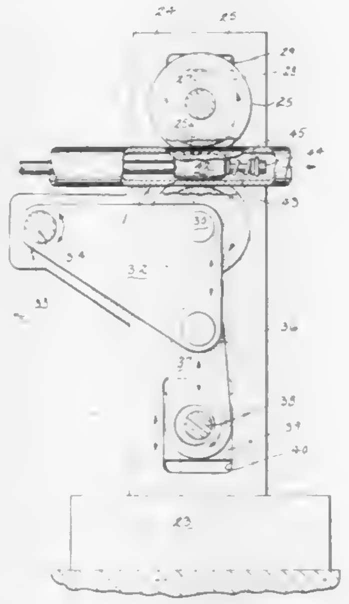
plate into a finished pipe of a specified diameter comprising roll-forming said plate while said plate is of sufficient excess width to provide material to serve as a lever arm during rolling, said roll forming commencing at points spaced from said edges thereof, which points approximate bitter edges of the plate width required for pipe of said specified diameter and



including the step of applying sufficient rolling force and crimping said edges of said plate adjacent said points in a direction toward the center of said pipe to a radius approximating that required for said finished pipe while leaving a central area of said plate between said points essentially flat, and shearing said plate at said points to form said bitter edges.

4,353,236
MACHINE FOR FLATTENING THE INTERNAL BEAD OF WELDED TUBING

Philip G. Byrd, 638 Rivermoor Dr., Waterford, Wis. 53185
Filed Dec. 3, 1980, Ser. No. 212,516
Int. Cl.³ B21C *37/30*
U.S. Cl. 72—193 **5 Claims**

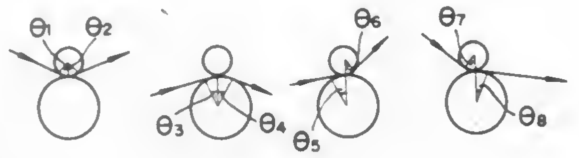


1. An apparatus for removing by flattening the weld bead formed by the longitudinal seam welding of tubing includes:
- (a) a mandrel positioned within the tubing;
- (b) external hammer means positioned to forcibly strike the external surface of the tubing opposite the weld and to force the mandrel which is within the tubing against the weld to flatten it; and
- (c) anvil means for shaping the external surface of the weld.

4,353,237
METHOD OF ROLLING STRIP

Shunji Omori, Aki; Tateo Tanimoto, Saiki; Nobutaka Maeda; Seiji Nishikawa, both of Hiroshima, and Muneo Moriya, Saiki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan
Filed Apr. 3, 1980, Ser. No. 136,985
Claims priority, application Japan, Apr. 17, 1979, 54/47057
Int. Cl.³ B21D *1/05*
U.S. Cl. 72—205 **2 Claims**

1. A method of rolling a strip between two work rolls with small and large diameters respectively, for producing a relatively large amount of plastic deformation in the strip to substantially reduce the width of the strip, while tensioning and bending the strip, comprising: choosing the diameter ratio of said small and large work rolls to be in the range of 1/7 to 1/10; driving at least one of said work rolls or at least one roll in a group backing up said work rolls; rolling the strip as it is forced through said work rolls while bending the strip toward or away from either said small or large work roll at a strip entry-exit angle between 20° and **30°**; and

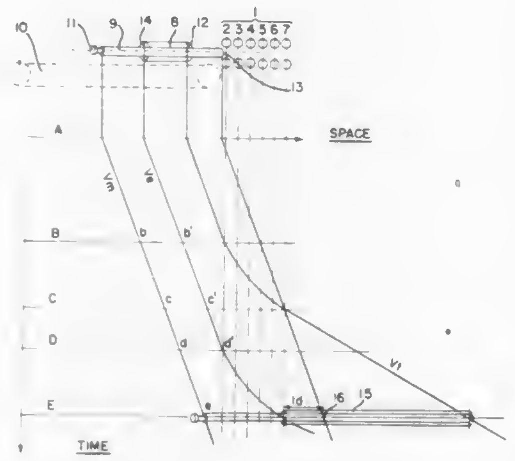


applying a pressure onto the strip using said rolls to squeeze the strip;

the pressure being sufficient to substantially plastically deform the strip by an amount which would require 25% to 50% more pressure if the entry-exit angle were zero and the small and large rolls were of equal diameter.

4,353,238
METHOD FOR MANUFACTURE OF SEAMLESS METAL TUBING BY CONTINUOUS ROLLING

Jean-Jacques Breton, Anzin, and Philippe Malicet, Saint-Saulve, both of France, assignors to Vallourec, Societe Anonyme, Paris, France
Filed May 18, 1981, Ser. No. 264,347
Int. Cl.³ B21B *17/10*
U.S. Cl. 72—209 **5 Claims**

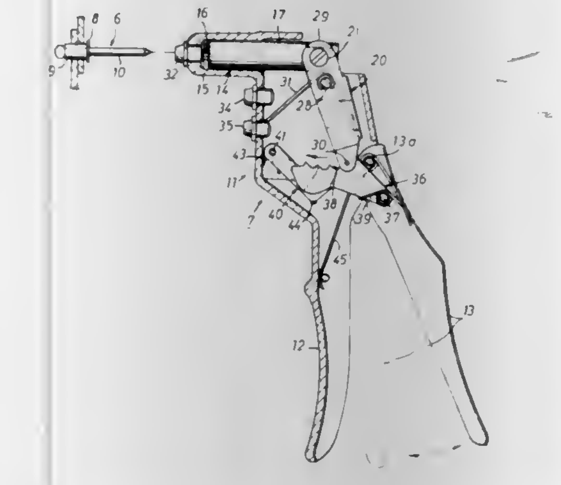


1. In a method for continuous hot rolling of a tubular blank over an inside mandrel in a mill embodying a plurality of successive driven roll stands equipped with grooved roll pairs, said roll stands including an inlet roll stand at a front end of the mill, on outlet roll stand at a rear end of the mill, and at least one intermediate roll stand positioned between said inlet and said outlet roll stands, the respective roll stands providing successive passes with each pass decreasing the outer diameter of the blank and extending the length of the blank, positioning the tubular blank with its inside mandrel outside the mill adjacent said inlet roll stand, inserting the blank and mandrel into the mill in such a way that at the time that the tubular blank enters said inlet roll stand the mandrel forward end is located inside the mill between the inlet roll stand and the outlet roll stand, and driving said roll stands so that in said inlet roll stand the blank is rolled at a constant entry speed V_e, the improvement comprising controlling the mandrel movement during all times that the blank is engaged at any roll stand by moving the mandrel axially in the same direction as the blank at a constant speed, V_m, so that the mandrel is present and controlled at each roll stand, including said outlet roll stand, at the time that the blank leading end reaches each stand, and maintaining said

constant speed of the mandrel until the blank leaves said outlet roll stand, the speed of the mandrel being maintained so that ratio V_m/V_e is approximately between 0.75 and 1.30.

4,353,239
HAND RIVETER

Kaoru Fujimoto, Sakai, Japan, assignor to Nihon Nejimawashi Co., Ltd., Osaka, Japan
Filed Jun. 10, 1981, Ser. No. 272,255
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—391 **7 Claims**

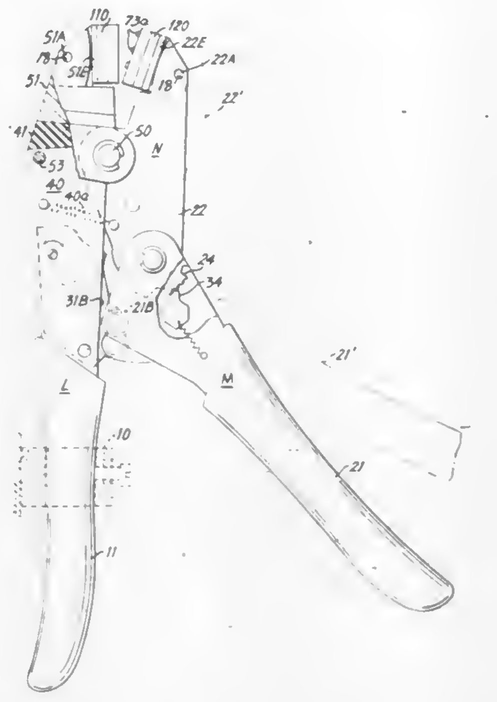


1. A hand riveter the main body of which has a fixed handlebar, a movable handlebar pivotally movable relative to the fixed handlebar, and a chuck for gripping a headed mandrel inserted through a rivet sleeve, the chuck being movable by the pivotal movement of the movable handlebar to pull and snap the mandrel off its head and thereby deform the rivet sleeve for setting the rivet, the hand riveter being characterized in that the riveter comprises an operating bar pivotably supported by the riveter main body and having one end pivoted to the chuck and the other end serving as an engaging portion, a pusher pivoted to the movable handlebar and having a series of grooved portions engageable with the engaging portion, and a bearing member pivoted to the riveter main body and formed with bearing grooves positioned alongside the grooved portions in corresponding relation thereto and engageable with the engaging portion, whereby when the movable handlebar is repeatedly turned, the pusher pushes the engaging portion in engagement with one grooved portion after another to engage the engaging portion correspondingly in one bearing groove after another and move the chuck by the resulting movement of the operating bar for setting the rivet.

4,353,240
CRIMPING TOOL

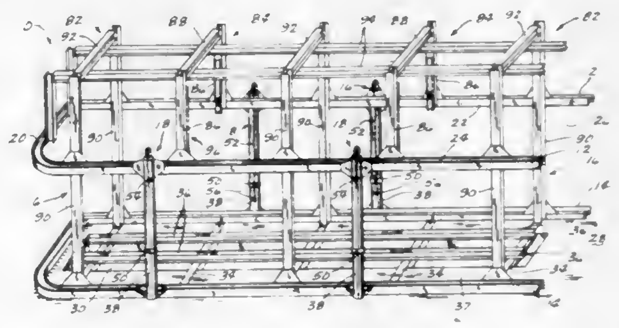
Hans Undin, Akersberga, and Hans Wiener, Täby, both of Sweden, assignors to Toolema AB, Stockholm, Sweden; Hans Weiner
Filed Jan. 15, 1980, Ser. No. 112,192
Int. Cl.³ B21D *37/10*
U.S. Cl. 72—410 **13 Claims**

1. A crimping tool comprising a pair of arm members mounted for relative movement with respect to each other between an open configuration and a closed configuration, drive means responsive to an externally applied driving force for moving said arm members between said open configuration and said closed configuration as said drive means is moved between corresponding open and closed configurations by the driving force, said arm members and said drive means defining a force transmission path extending between a point at which the external force is applied and a corresponding one of said arm members, a pair of working jaws each mounted on one of said arm members, an elongated female die arranged on one of said working jaws and an elongated male die arranged on the other of said working jaws, said female die having a pair of opposed side walls forming an elongated notch wherein said side walls taper toward one another from the elongated end opening of said notch to an elongated closed end wall of said notch, said male die having a base part and an elongated leading face which is spaced from said base part by a distance substantially equal to the depth of said notch, said male die having a shape which can be fully contained within said notch of said female die, locking means for preventing said drive means from returning to its open configuration after closing movement of said drive means is begun and before said drive means is moved to its closed configuration, and at least one resilient member of given hardness and strength located in said force transmission path for enabling said drive means to be moved to its closed configuration when an article to be crimped by said tool is located between said working jaws and so that said drive means can thereafter be returned to its open configuration.



4,353,241
APPARATUS FOR REPAIRING AND STRAIGHTENING VEHICLES

Carl R. Field, 2900 E. 38th, Des Moines, Iowa 50317
Filed Jan. 21, 1980, Ser. No. 113,793
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—457 **4 Claims**



1. Apparatus for repairing and straightening vehicles, comprising,
- upper and lower track means, each track means including a pair of laterally spaced apart and longitudinally extended side members,
- frame means connected to said upper and lower track means for supporting said upper track means in vertically spaced relation above said lower track means,
- a plurality of tower assemblies,
- means for supporting each tower assembly on said upper and lower tracks for longitudinal movement therealong,
- each tower assembly including an upright tower, a lower

pulley means, means for vertically adjustably mounting said lower pullcy means on said tower at selected positions between an uppermost adjusted position adjacent said upper track means and a lowermost adjusted position adjacent said lower track means, a flexible tension member having a free end adapted for securement to a vehicle positioned between said side members and an opposite end portion trained about said plurality means and connected to said tower, and power means for pulling said tension member toward the tower thereby to straighten a vehicle connected to the free end of said tensison member,

said frame means including a superstructure above said upper track means, a plurality of upper pulley means and means for vertically adjustably mounting said upper pulley means on said superstructure at positions above said uppermost adjusted position of said lower pulley means, each tension member being adapted to be trained about one of said upper pulley means for exerting a pulling force on a vehicle from an elevation above said upper track means,

said superstructure including a plurality of inverted generally U-shaped pulley support sections, each including a pair of upper posts secured to opposite side members of said upper track means and extended upwardly therefrom, and a top frame member connected to and extended between said upper posts above said upper track means,

said upper pulley means being adjustably mounted on said upper posts,

said frame means comprising a plurality of inverted generally U-shaped frame sections, each including a pair of laterally spaced apart frame posts secured to said upper and lower tracks and extended upwardly from said upper track and a top frame member connected between said frame posts above said upper track,

said upper posts of said superstructure being arranged in longitudinally spaced relation from said frame posts of said frame means whereby said frame posts are disposed in noninterfering relation with a tension member trained about one of said upper pulley means.

4,353,242

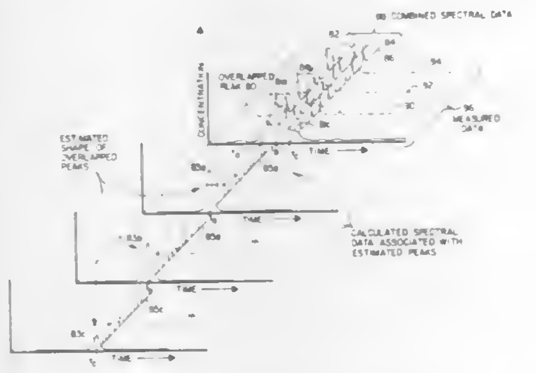
MULTICHANNEL DETECTION AND RESOLUTION OF CHROMATOGRAPHIC PEAKS

Joel M. Harris, and Fritz J. Knorr, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Dec. 16, 1980, Ser. No. 217,283

Int. Cl.³ G01N *31/08*

U.S. Cl. 73—23.1 **25 Claims**



1. A method for resolving overlapped migration data obtained while performing qualitative analysis of a substance whose composition is to be determined, said method comprising the steps of:

(a) subjecting said substance to be analysed to a first apparatus adapted to separate compounds contained in said substance as a function of their respective migration time in a given medium, said first apparatus further adapted to provide a set of migration data indicating the migration behavior of said compounds as a function of time;

(b) subjecting samples of said substance at specified times relative to the initiating of step (a) to a second apparatus, said second apparatus being adapted to measure and provide a unique set of characterizing time-invariant data for each of said samples, said set of characterizing data being a function of all the compounds contained in said sample at said specified times;

(c) identifying regions of peak overlap within said set of migration data, said regions of overlap indicating the presence within said sample of at least two compounds having approximately the same differential migration times;

(d) estimating a data set describing the differential migration time behavior of each of the compounds suspected of being present within each region of overlap identified in step (c), said set of estimated time behavior data describing the estimated shape of the migrational response of each said compounds within said region of overlap;

(e) calculating a set of identifying time-invariant data for each of said compounds suspected of being present within said regions of overlap from said measured sets of characterizing data and said estimated sets of time behavior data;

(f) varifying the goodness of the estimate made in step (d) by:
  (i) combining the calculated sets of identifying data derived in step (e) with the corresponding sets of estimated time behavior data made in step (d),
  (ii) comparing said combination of said estimated and calculated data to said measured set of characterizing data obtained in step (b), and
  (iii) determining an error factor based on said comparison:

(g) modifying the estimated time behavior data made in step (d) as a function of the magnitude of the error factor determined in step (f);

(h) repeating steps (e), (f), and (g) as many times as is necessary in order to reduce the error factor calculated in step (f)(iii) to an acceptable level; and

(i) identifying the compounds present within said region of overlap based upon the last set of calculated identifying data obtained in step (e) as a result of the repetition of step (h).

4,353,243

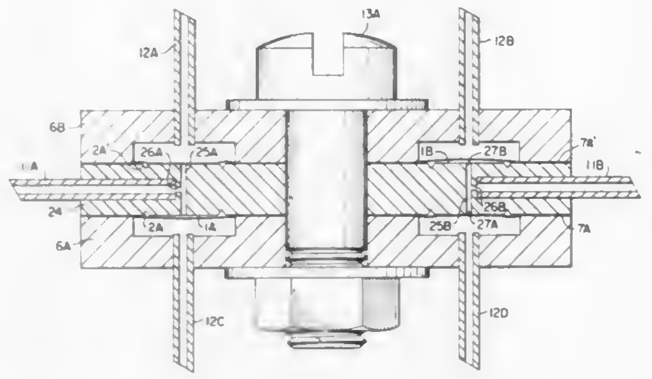
FLEXIBLE DIAPHRAGM CONTROLLED VALVE

Archer J. P. Martin, Lausanne, Switzerland, assignor to Quadrex Corporation, Woodbridge, Conn.

Filed Feb. 2, 1981, Ser. No. 230,817

Int. Cl.³ G01N *31/08*

U.S. Cl. 73—23.1 **7 Claims**



1. An improved fluid pressure controlled diaphragm actuated multiport valve comprising:

(a) a first plate having a multiplicity of control fluid inlet means passing through said first plate each of said control fluid inlet means being connectable to a source of control fluid under pressure, and under independent pressure control;

(b) a second plate assembled adjacent said first plate having a multiplicity of fluid conduct means passing through said second plate, each of said fluid conduit means opening opposite a corresponding control fluid inlet means in said first plate said second plate further having a multiplicity of operatively interconnected, low dead volume fluid channel means on its inner surface peripherally surrounding each of said fluid conduit means;

(c) a flexible diaphragm means disposed between said first plate and said second plate when said plates are assembled adjacent one another, said diaphragm means being so arranged and constructed as to seal any fluid conduit means to fluid flow when said corresponding control fluid inlet means is open to control fluid under pressure, wherein said channel means are in independent operative fluid flow connection with each said fluid conduit means when said diaphragm is not in sealing position with respect to said fluid conduit means and are not in operative fluid flow connection with each said fluid conduit means when said diaphragm is in sealing position, wherein further said channel means are so arranged and constructed to maintain operative fluid flow connection between any of said fluid conduit means which are not sealed; and

(d) means for holding said first plate, said second plate and said diaphragm in assembled adjacent relationship.

4,353,244

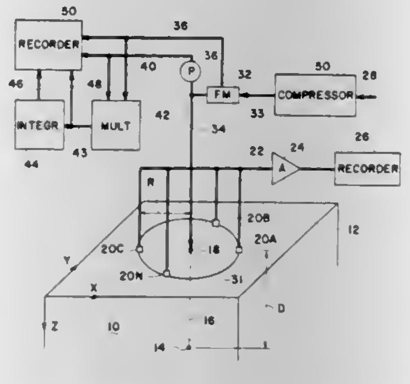
METHOD OF DETERMINING THE AZIMUTH AND LENGTH OF A DEEP VERTICAL FRACTURE IN THE EARTH

Milton D. Wood, Portola Valley, Calif., assignor to Fracture Technology, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 56,065, Jul. 9, 1979, Pat. No. 4,271,696. This application Jun. 30, 1980, Ser. No. 164,562

Int. Cl.³ G01N *19/02, 33/24*

U.S. Cl. 73—37 **22 Claims**



1. The method of determination of the azimuth of a deep substantially vertical hydraulic fracture in the earth resulting from the application of fluid pressure at a selected point, at a selected depth D below the surface of the earth, comprising the steps of:

(a) positioning on the earth, near the surface thereof, a plurality of tiltmeters for determining the change in angle of tilt of the earth at the positions of said tiltmeters, in an array of known positions with respect to said point of application of said fluid pressure:

(b) applying fluid pressure to the earth at said selected point, at a selected pressure P and flow rate F; while

(c) measuring a function of the change in tilt of the earth at said positions of said sensors; and

(d) from the measured changes in said functions of tilt at the positions of said sensors, determining the azimuth of said fracture resulting from said applied flow of fluid.

4,353,245

METHOD AND APPARATUS FOR INDICATING LOSSES OF STORED MATERIALS

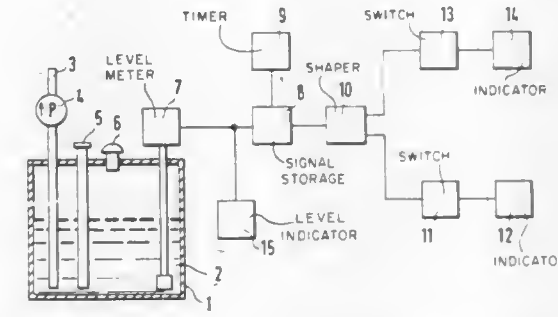
Walter Nicolai, Maria Louisen Strasse 144, D-2000 Hamburg 60, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 168,902

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928936; Oct. 5, 1979, 2940428; Mar. 13, 1980, 3009549; May 17, 1980, 3018949

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—49.2 **17 Claims**



1. A method for automatically indicating abnormal changes in the plurality of liquid stored in a liquid storage tank, including both abnormal increases and abnormal decreases in the quantity of liquid, said method comprising measuring at periodic, equidistant time intervals and the actual value of the change of level of the liquid within the tank since the last such measurement; comparing the measured actual value of change with a preset value representing the maximum value permitted for the change of level during such time interval; and when the measured actual value of change exceeds the preset value, activating an indicator.

4,353,246

BLOOD SEDIMENTATION DEVICE

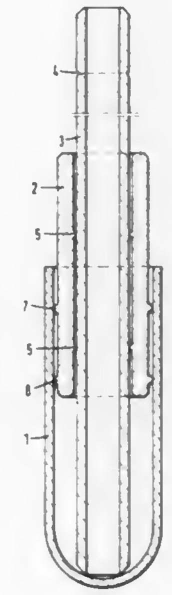
Horst Färber, Nümbrecht; Heinz Fritze, Gummersbach, and Eberhard Seibel, Waldbröl, all of Fed. Rep. of Germany, assignors to Walter Sarstedt Kunststoff-Spritzgusswerk, Nümbrecht, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 178,910

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935371

Int. Cl.³ G01N *15/04*

U.S. Cl. 73—61.4 **5 Claims**



1. A blood sedimentation device, comprising:

a transparent small-diameter sedimentation tube, provided with a calibration mark a short distance below the upper end thereof;

a tubular displacement sleeve disposed on said sedimentation tube, said displacement sleeve being open at both ends so as to permit said sedimentation tube to pass through and extend from both ends thereof, wherein the inner diameter of said displacement sleeve is so dimensioned relative to the outer diameter of said sedimentation tube as to frictionally engage said sedimentation tube while allowing said sleeve to be axially displaceable against the entire length of said sedimentation tube; and

a tubular receptacle, closed at the bottom, having an inner diameter sized relative to the outer diameter of said displacement sleeve such that said displacement sleeve can be inserted in a piston-like manner into said tubular receptacle.

4,353,247

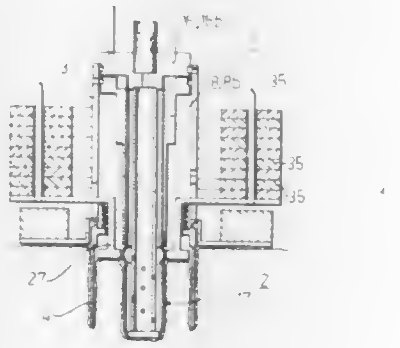
METHOD AND EQUIPMENT FOR THE IN SITU DETERMINATION OF GEOTECHNICAL PARAMETERS OF A SANDY SOIL

Rodolfo De Domenico, 40 Via Tommaso Gulli, Milan, Italy

Filed Jan. 2, 1981, Ser. No. 221,993

Int. Cl.^{3} G01N *3/08*

U.S. Cl. 73—84 **3 Claims**



1. Method for the in situ determination of the load bearing characteristics of a sandy soil comprising the following phases:
circumscribing, in situ, in the sandy soil, a sand sample having a tubular, cylindrical shape, with a predetermined external diameter, a predetermined internal diameter, and predetermined length;
applying to said sample, in correspondence to its internal, cylindrical surface, a radial pressure of predetermined value;
applying to said sample, in correspondence to its upper annular surface, an axial pressure, the value of which is made to increase to a value at which the sample ruptures;
the load bearing characteristics being deduced from said value of axial pressure which causes the rupture, in combination with said values of the radial pressure and of the external and internal diameters of the sample.

4,353,248

WELL LOGGING TO DETERMINE THE NATURE AND EXTENT OF MUD FILTRATE PENETRATION

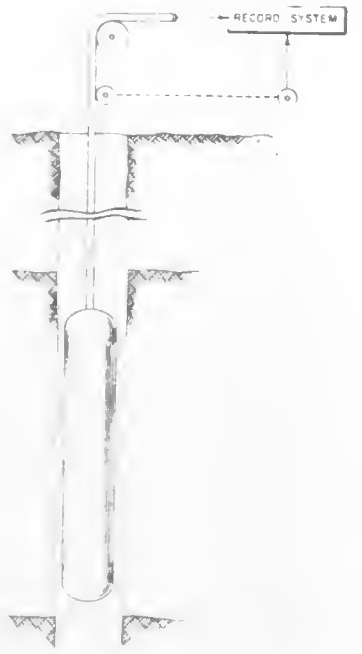
Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,793

Int. Cl.^{3} E21B *47/00*

U.S. Cl. 73—152 **1 Claim**

1. A method for determining the depth of invasion of residual oil-displacing mud filtrate in an uncased portion of a borehole of a well to be evaluated for its secondary or tertiary residual oil recovery potential, comprising the steps of:
(a) logging said borehole with a formation density compensated logging tool for determining the porosity of the formation which is within several inches of the inner surface of said borehole;
(b) logging said borehole with a dielectric constant logging tool to determine the dielectric constant of the formation with a near zone located around said borehole;
(c) subjecting said borehole to an in-hole gravity meter test to determine the bulk density of the formation within a far zone adjacent to said borehole;
(d) using the porosity determination of step (a) above and the dielectric constant value determined from step (b) above to determine a theoretical percentage of residual oil present within said near zone;
(e) using the porosity determination from step (a) above and the gravitometric bulk density of the far zone formation determined from step (c) above to calculate a theoretical percentage of residual oil for said far zone;
(f) establishing a near zone to far zone residual oil ratio to provide a relative mud filtrate invasion index which is proportional to the distance of said mud filtrate invasion, whereby the depth of said invasion decreases as said index approaches unity.



4,353,249

METHOD AND APPARATUS FOR IN SITU DETERMINATION OF PERMEABILITY AND POROSITY

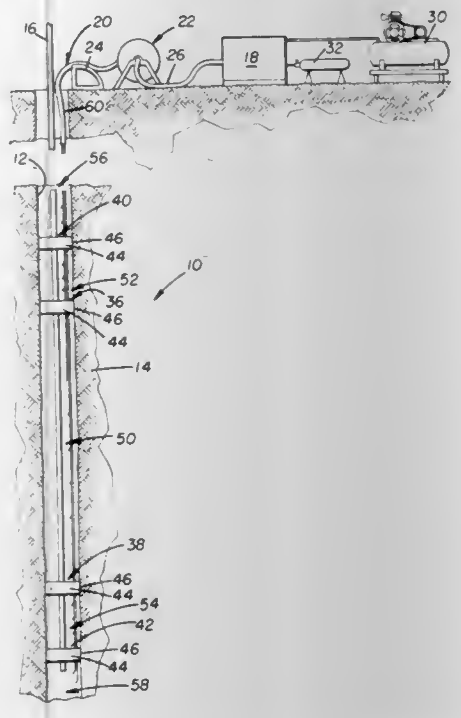
Peter L. Lagus, Olivehain, and Edward W. Peterson, Del Mar, both of Calif., assignors to Systems, Science and Software, San Diego, Calif.

Filed Oct. 30, 1980, Ser. No. 202,076

Int. Cl.^{3} E21B *49/00*

U.S. Cl. 73—155 **41 Claims**

1. In a method for in situ determination of permeability in a borehole extending through an underground formation of interest, the steps comprising
defining an isolated test interval along the borehole between spaced-apart primary packers,
defining additional isolated guard regions respectively at opposite ends of the test interval by means of guard packers respectively spaced-apart from the primary packers,
developing a pressure differential between the test interval and the surrounding formation for inducing fluid flow therebetween, and
simultaneously and separately monitoring selected flow conditions in the test interval and in the separate guard regions in order to permit determination of multidimensional formation characteristics and possible leakage of fluid past the primary packers in an axial direction relative to the borehole.



4,353,250

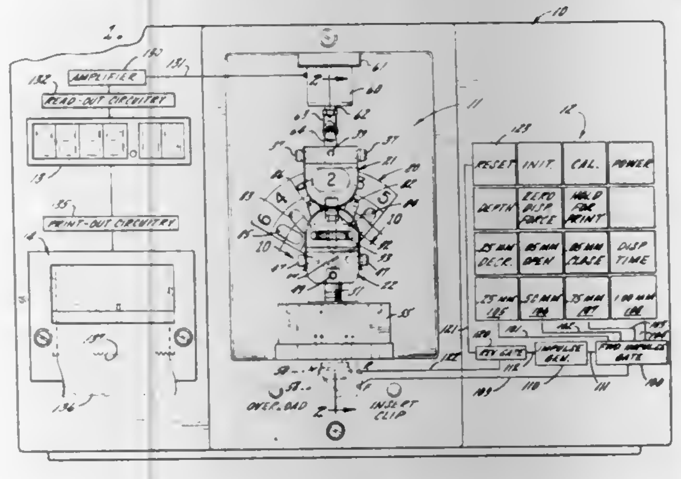
CALIBRATION DEVICE FOR MICROSURGICAL CLIPS

Alfred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.

Filed Jan. 8, 1981, Ser. No. 223,310

Int. Cl.^{3} G01L *5/00*

U.S. Cl. 73—161 **9 Claims**



1. A machine for calibrating surgical clips having a pair of jaws of the duck bill type comprising, in combination, a frame, a first head and a second head in the frame, the heads being arranged in the frame in opposed relation for relative separating movement from a start position in which the heads are bottomed together, the presented adjacent ends of the heads having registering hooks oriented transversely and parallel to one another, the hooks having adjacent clearance openings for receiving respective ones of the jaws, an insertion stop behind the hooks for limiting the degree of insertion of the jaws into the hooks so that the hooks engage the jaws at a reference position about midway along the length of the latter, drive means interposed between at least one of the heads and the frame for separating the heads by a predetermined increment from one another thereby to spread the jaws of an inserted clip a predetermined reference amount approximating the spread of the jaws in engagement with a blood vessel and in any event well within the elastic limit of the clip, a force transducer interposed between at least one of the heads and the frame for producing an electrical signal which depends upon the reaction force of the clip at reference separation, and read-out means responsive to the electrical signal for providing direct indication of the clamping strength of the clip.

4,353,251

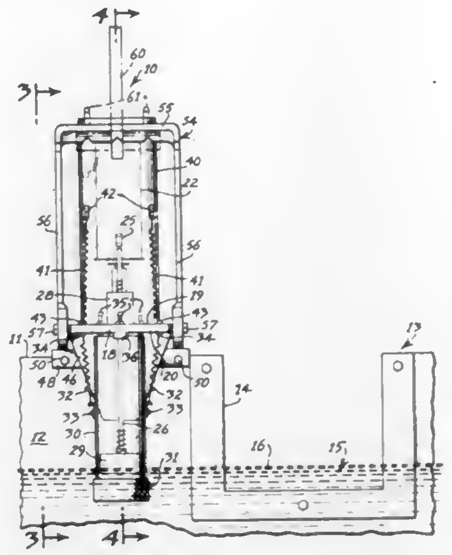
MOUNTING APPARATUS FOR LIQUID FLOW METER

A. Barry Spears, Nashville, Tenn., assignor to J. R. Wauford and Company, Consulting Engineers, Inc., Nashville, Tenn.

Filed Feb. 26, 1981, Ser. No. 238,473

Int. Cl.^{3} G01F *1/20*

U.S. Cl. 73—215 **10 Claims**



1. A mounting apparatus for a liquid flow meter for support upon a weir having a top edge, comprising:
(a) a base plate having a top surface and a bottom surface,
(b) a clock-driven recording drum rotatably supported on the top surface of said base plate,
(c) a stilling well mounted beneath and depending from the bottom surface of said base plate,
(d) a float shaft mounted for free vertical movement through said base plate in said stilling well and above said base plate,
(e) a float on said float shaft for vertical movement in said stilling well in response to the liquid level within said stilling well,
(f) a scribing tool mounted on said float shaft adapted to engage said recording drum for scribing thereon,
(g) a magnetic surface on the top edge of the weir, and
(h) a magnetic member fixed to the bottom surface of said base plate for magnetic engagement with said magnetic surface to hold said base plate stationary upon the top edge of the weir.

4,353,252

LIQUID LEVEL SENSOR

Edward L. Jeans, Ledbury, England, assignor to Cadbury Schweppes PLC, London, England

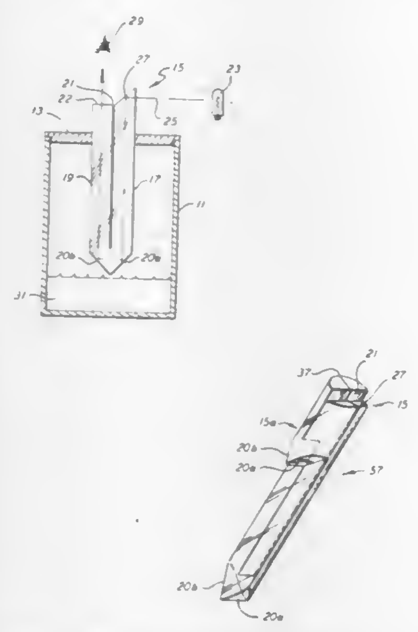
Filed Oct. 23, 1980, Ser. No. 200,021

Int. Cl.^{3} G01F *23/00*

U.S. Cl. 73—293 **12 Claims**

1. In combination with a gas cylinder capable of storing a liquefiable gas, the gas cylinder having a threaded recess disposed at the top of the cylinder, a sensor for sensing upper and lower levels in the gas cylinder comprising:
(a) a sensor assembly including a first level sensor and a second level sensor both of identical design but of different lengths, the lengths of said first and second level sensors being selected to represented an upper level and a lower level, each level sensor comprising:
(i) an input light pipe with an axis having an input surface at one end and terminating in an essentially 45° surface with respect to its axis at the other end;
(ii) an output light pipe with an axis adjacent said input light pipe having an essentially 45° surface with respect

to its axis opposite that of said input light pipe and having an output surface at its other end, an essentially non-refractive light path formed between said 45° surfaces, whereby, when said 45° surfaces of said light pipes are in a material of relatively low index, light at said input surface will be transmitted through said input light pipe, will be reflected at said 45° surfaces from said input light pipe to said output light pipe and will be transmitted to said output surface in said output light pipe, due to total internal reflection, but, when said 45° surfaces are in a material of higher index, light will be refracted at said 45° surfaces of said input light pipe and will not reach said output surface; said first and second level sensors in abutting relationship; and



(iii) a baffle disposed between said first and second level sensors;

(b) a seal disposed in said cylindrical recess;

(c) a transparent cylindrical cap member having an internal bore adapted to accept said sensor assembly with a press fit, having a flange at its bottom sized to fit in said cyindrical recess atop said seal; and

(d) a metal cover including an internal bore sized to tightly surround said transparent cap member and having external threads for screwing into said threaded recess, said metal cover having an input opening in the side thereof overlying the input surfaces of said first and second sensors and first and second output openings in the top thereof overlying the output surfaces of said first and second sensors.

4,353,253

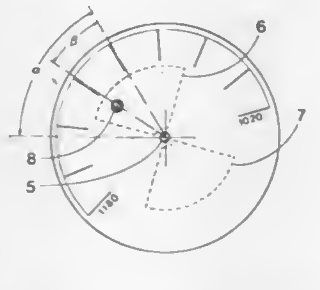
DEVICE FOR MEASURING THE DENSITY OF FLUIDS

George E. Callahan, Feldstrasse 34, 4000 Dusseldorf 30, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 145,890

Int. Cl.^{3} G01N *9/16, 9/20*

U.S. Cl. 73—454 11 Claims



1. A device for measuring the density of a fluid having a density within a predetermined range, comprising a housing for containing the fluid, a first float element pivotal about a normally horizontal axis in said housing, a second float element pivotal about said axis, each of said elements including at least one buoyant volume that has a center of buoyancy displaced from said axis and a density which is less than the fluid density to be measured, and at least one weight volume that has its center of gravity displaced from said axis and a density greater than the fluid density to be measured, each of said elements being formed so that a radial line joining its center of buoyancy and said axis is angularly displaced from and above a radial line joining its center of gravity and said axis, and such that said elements rotate in opposite directions in response to buoyant forces, whereby because of differing buoyancy in fluids of different densities the relative angular positions of said elements about said axis indicate the density of the fluid in which they are immersed and said elements rotate in opposite directions about said axis with changes in the density of the fluids, said first float element comprising means for responding to equal increments of fluid density within said predetermined range with relatively larger angular increments of rotation about said axis in a lower section of said density range, said second float element comprising means for responding to equal increments of fluid density within said predetermined range with relatively larger angular increments of rotation about said axis in a higher section of said density range, so that the relative angular displacement of said elements in said lower section of said density range, is determined to a greater extent by said first element than by said second element and, in said higher section of said density range, to a greater extent by said second element than by said first element.

4,353,254

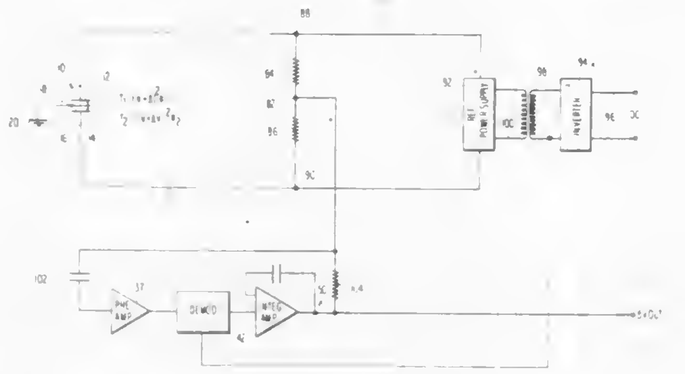
CONTROL CIRCUIT FOR ELECTRO-STATIC ACCELEROMETER

George F. Schroeder, Wayne, and Edward A. Demers, Little Falls, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Dec. 18, 1980, Ser. No. 217,599

Int. Cl.^{3} G01P *15/125, 15/13*

U.S. Cl. 73—517 B 6 Claims



1. A control circuit for an electro-static capacitive accelerometer which includes two fixed plates and a movable intermediary plate, the circuits comprising:

a reference source of DC power;

a plurality of interconnected resistive means connected at their outer terminals across the output of the power source for generating DC voltages thereacross;

phase sensitive demodulator means having a first input connected to a reference AC voltage source and a second input connected in circuit with the accelerometer to detect capacitive imbalances thereof;

integrating means connected to the output of the demodulator means for generating a signal corresponding to the integral of the capacitive imbalance;

feedback means connecting the integral signal to a junction between the resistive means;

means connecting the fixed plates of the accelerometer to outer terminals of the resistive means;

terminal means connected to the output of the integrating means for permitting measurement of the integral signal;

wherein the reference AC voltage is derived from a terminal of a transformer, a secondary winding of the transformer being connected in circuit with fixed plates of the accelerometer, and further wherein means are connected between a center tap of the secondary winding and the second input of the phase sensitive demodulator; and

wherein a resistor is connected at a first terminal thereof to the output of the integrating means and at a second terminal thereof to both the resistive means junction and the second input of the demodulator means.

4,353,255

METHOD FOR DETERMINING SHAPE OF CRACK

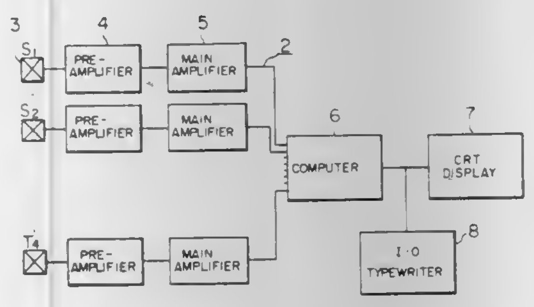
Yoshio Fukuda, Hitachi; Kunio Enomoto, and Tsutomu Masumoto, both of Tokaimura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 2, 1981, Ser. No. 222,141

Claims priority, application Japan, Jan. 7, 1980, 55/127

Int. Cl.^{3} G01N *29/04*

U.S. Cl. 73—587 6 Claims



1. A method for detecting a shape of a crack comprising the steps of detecting acoustic emissions produced due to the crack developed in a test object by a plurality of acoustic emission detecting means mounted on said test object, determining positions of crack source points in said test object based on differences in time points of signals produced by said acoustic emission detecting means, determining a crack source plane based on the positions of said crack source points, and determining the shape of the crack in said crack source plane based on a distribution of said crack source points.

4,353,256

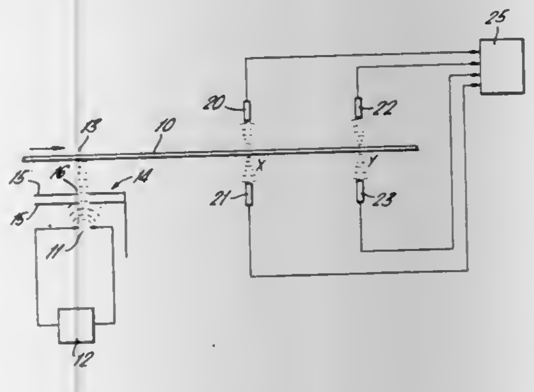
NON-CONTACT MEASUREMENT OF PHYSICAL PROPERTIES OF CONTINUOUSLY MOVING METAL STRIP

Ernest J. Moorey, Chester, England, assignor to The Electricity Council, England

Filed Jan. 19, 1981, Ser. No. 225,926

Int. Cl.^{3} G01K *11/24*

U.S. Cl. 73—597 11 Claims



1. A method of determining a parameter representative of a physical property of continuously moving metal strip comprising the steps of generating an acoustical shock wave, containing ultrasonic frequencies, near one location on the surface of the strip and measuring the time of transmission of the shock wave through the strip between second and third locations to enable the velocity of propagation to be determined, wherein the time of arrival of the acoustic shock wave at each of said second and third locations in the material is determined by using, for each of said second and third locations, two microphones near but not in contact with opposite faces of the strip and determining the difference between the mean arrival times of the acoustic wave at the two microphones at the second and third locations.

4,353,257

NONDESTRUCTIVE SYSTEM FOR TESTING THE THICKNESS OF BOILER TUBES IN BOILERS

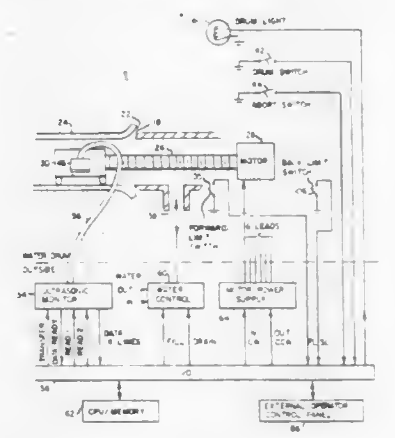
Jiri Vrba, Port Coquitlam; Alistair A. Fife, Coquitlam; Max B. Burbank, Maple Ridge; Vaclav Macura, North Vancouver, and Randy K. Lomnes, Port Coquitlam, all of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Ottawa, Canada

Filed Jan. 6, 1981, Ser. No. 222,937

Claims priority, application Canada, Jan. 11, 1980, 343465

Int. Cl.^{3} G01B *17/02;* G01N *29/04*

U.S. Cl. 73—623 16 Claims



1. A system for the nondestructive testing of the thickness of boiler tubes, comprising:

(a) a probe assembly including mounting means for mounting the assembly in a mud or water drum of a boiler at the location of a boiler tube to be tested, said probe assembly comprising ultrasonic transducer means for transmitting and receiving an ultrasonic signal and motor drive means connected to said transducer means;

(b) a control means including a motor control portion connected to said motor drive means to selectively position said transducer means at a plurality of locations in said boiler tube to be tested and ultrasonic drive means for producing an ultrasonic pulse for driving said transducer means;

(c) water control means connected to said control means, a source of water supply, a drain, and said probe assembly, to selectively fill said boiler tube to be tested in a region of said boiler tube to be tested prior to testing and to drain said boiler tube to be tested after testing;

(d) electronic storage means connected to said transducer via said control means for storing data relating to wall thickness at each of said plurality of locations; and

(e) output means connected to said storage means via said control means for outputting said data.

4,353,258

COMPOUND ANGLE WEDGES FOR COUPLING ULTRASOUND INTO A CURVED SURFACE OBJECT

David O. Hunter, Richland, Wash., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 22, 1980, Ser. No. 189,499

Int. Cl.^{3} G01V *29/04*

U.S. Cl. 73—644 10 Claims

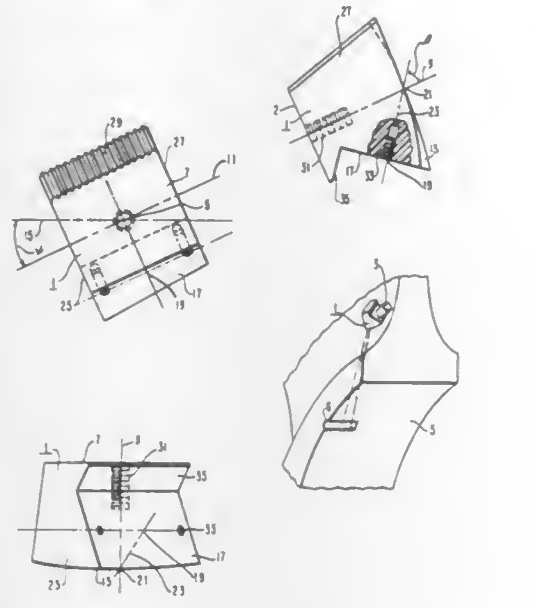
1. A wedge for a transducer utilized to ultrasonically interrogate an internal area within a mass disposed beneath a bell-shaped outer surface, said wedge having:

a cylindrical surface generally fitting a portion of said bell-shaped surface;

a generally planar surface upon which said transducer mounts;

said cylindrical surface and said planar surface generally forming two intersecting sides of said wedge;

a central axis of said wedge being disposed along a radial line extending to said cylindrical surface and intersecting said cylindrical surface at a central point disposed on said cylindrical surface;



a plane including said central axis being disposed to intersect said cylindrical surface so as to form a circular line at the intersection thereof;

said planar surface and said plane being disposed at a compound angle with respect to each other;

said planar surface having a centrally disposed point thereon and a line being disposed between said central point on said planar surface and said point where the central axis intersects the cylindrical surface; and

transducer mounting means so disposed on said planar surface that the central ray produced by said transducer is generally coincident with said line.

4,353,259

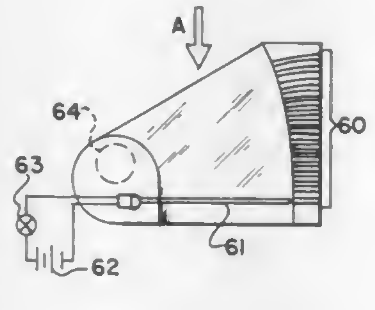
FIBER OPTIC ACCELERATION SENSOR

Clayton J. Schneider, Jr., East Aurora, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Oct. 15, 1980, Ser. No. 197,299

Int. Cl.^{3} G01P *3/36, 15/08*

U.S. Cl. 73—653 **8 Claims**



6. A direct visual reading accelerometer for indicating a plurality of magnitudes of acceleration in a predetermined vectorial direction of said accelerometer comprising,

a. a flexible fiber optic rod having a predetermined cantilever bending characteristic with a support end and a free end;

b. means for cantilever supporting said fiber optic rod in said accelerometer at said support end with the nominal position of said rod, when said accelerometer is at rest, being substantially perpendicular to said vectorial direction, whereby said free end of said rod deflects through a planr arc with a predetermined magnitude of arc responsive to a corresponding magnitude of acceleration in said vectorial direction;

c. means for illuminating said support end of said rod whereby light emanates said free end of said rod; and

d. a plurality of fiber optic rod elements having a first end and a second end, positioned in adjacent stacked relationship in a plane containing said deflection arc, with said first end of each of said rod elements positioned adjacent said deflection arc of said free end of said rod for receiving said light emanating said free end of said rod, and with the corresponding respective said second end of each rod element positioned to provide a direct visual indication of a magnitude of acceleration.

4,353,260

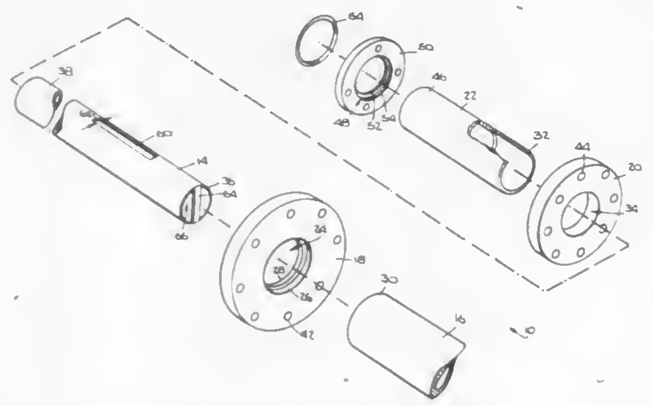
SHIELD FOR GAS SAMPLING PROBE

Robert T. Round, Riverton, Wyo., assignor to Texasgulf Inc., Stamford, Conn.

Filed Sep. 30, 1980, Ser. No. 192,352

Int. Cl.^{3} G01N *1/20*

U.S. Cl. 73—863.41 **21 Claims**



1. A shield for a probe adapted to sample gases comprising an elongated member adapted to receive and substantially enclose the probe, said elongated member having an end facing generally in the direction of elongation of the elongated member, means associated at least in part with the end of the elongated member disposed facing the exterior of the elongated member generally in the direction of elongation of the elongated member for permitting a gas to flow from the exterior of the elongated member to the interior of the elongated member and again to the exterior of the elongated member, the elongated member being adapted to be disposed in use so that gas enters the elongated member through said means transversely of the main gas flow exteriorly of the shield.

4,353,261

MULTI-POSITION AMPLITUDE DEVICE

Chittaranjan Salani, Springfield, Ohio, assignor to The Koehring Company, Brookfield, Wis.

Filed Feb. 24, 1981, Ser. No. 237,595

Int. Cl.^{3} F16H *33/00*

U.S. Cl. 74—87 **9 Claims**

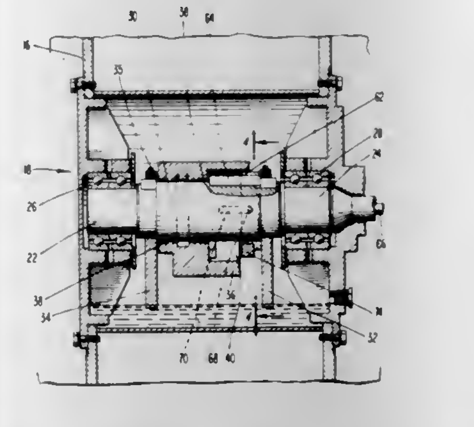
1. In a vibratory mechanism of the type comprising a motor-driven shaft, a first mass carried by the shaft for rotation therewith, and a variable mass supported for rotation relative to said shaft whereby the angular relationship between said first mass and said variable mass can be selectively adjusted to vary the amplitude of vibration, the improvement comprising:

a drive member rotatable with said shaft,

one of said drive member and said variable mass carrying a plurality of longitudinally and circumferentially spaced abutment surfaces, the other of said drive member and said variable mass carrying a contact face,

engagement between said contact face and said abutment surfaces occurring at different angular relationships between said first mass and said variable mass to vary the amplitude of vibration, and

control means producing relative longitudinal movement between said variable mass and said drive member to circumferentially align said contact face with a selected one of said abutment surfaces such that rotation of said drive member produces driving engagement between said selected surface and said contact face to rotate said variable mass with said shaft.



4,353,262

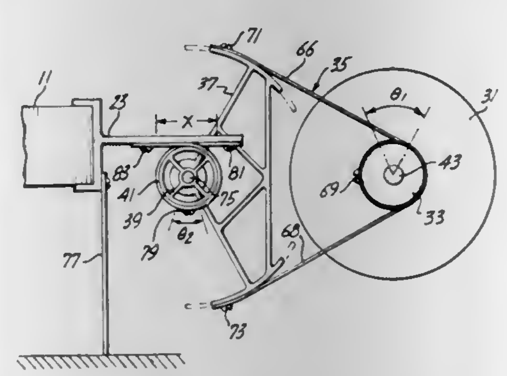
ROTARY/LINEAR SHUTTLE MECHANISM

Kevin J. Talbot, Mercer Island, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Filed Jun. 10, 1981, Ser. No. 272,320

Int. Cl.^{3} F16H *21/44;* B41J *25/28*

U.S. Cl. 74—108 **11 Claims**



1. A rotary/linear shuttle mechanism comprising:

a low inertia motor;

power means for supplying power to said low inertia motor so as to cause the shaft of said low inertia motor to rotationally oscillate;

a first stiff, thin band, the center region of said first band coupled to the shaft of said low inertia motor such that said first band oscillates when said motor shaft rotationally oscillates;

a large diameter pulley mounted for rotation, said large diameter pulley connected to the ends of said first band such that said large diameter pulley rotationally oscillates when said first band oscillates;

a small diameter pulley rotatably mounted, said small diameter pulley coupled to said large diameter pulley such that said small diameter pulley rotationally oscillates when said large diameter pulley rotationally oscillates; and

a second stiff, thin band, said second band being shorter than said first band, the center region of said second band coupled to said small diameter pulley and the ends of said second band connected to an item to be linearly shuttled such that said item to be shuttled linearly oscillates when said small diameter pulley rotationally oscillates.

4,353,263

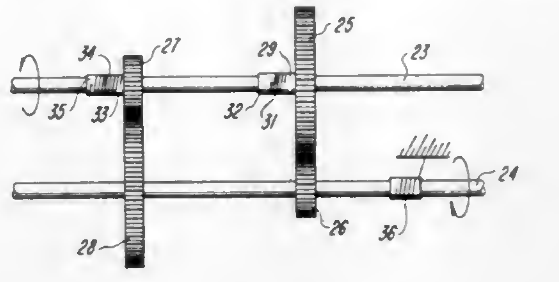
POWER TRANSMISSION MECHANISM

John A. Ciciora, Denver, Colo., assignor to Nelson and Johnson, Boulder, Colo.

Filed Oct. 1, 1979, Ser. No. 80,741

Int. Cl.^{3} F16H *5/52, 1/02;* F16D *11/06*

U.S. Cl. 74—337 **7 Claims**



1. A spring clutch selective drive mechanism for selectively transmitting motion and torque from at least one input shaft to at least one mechanically linked output shaft through a plurality of spring clutches, the drive mechanism comprising:

a first input shaft journaled for rotation;

a plurality of arbors rotatably mounted upon the input shaft;

an individual clutch spring adapted to release in one direction of rotation and to grip in the other direction of rotation operably connected to each arbor at one end thereof and operably connected to the first input shaft at the other end thereof, the spring clutch spring being secured against slippage at one of the arbor and input shaft and wound around the other to slip in the grip direction of rotation upon a torque overload, each of the clutch springs being arranged to grip upon a common direction of rotation of the input shaft and to release during the opposite direction of rotation of the input shaft;

a rotatable output shaft spaced from the input shaft; and

drive linkage means connecting each arbor to the output shaft, each drive linkage means having a different mechanical advantage than at least one other such that the output shaft will be driven through the arbor associated with the lowest mechanical advantage drive linkage means until such time as such spring clutch associated therewith slips in the grip mode, whereupon an arbor with the next highest mechanical advantage drive linkage means will be engaged through the associated spring clutch to drive the output shaft.

4,353,264

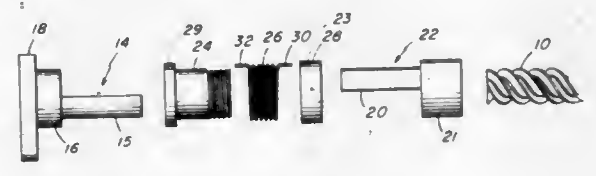
ANTI-BACKLASH NUT ASSEMBLY

Keith W. Erikson, 7 Quarry Circle Dr., Milford, N.H. 03055, and Kenneth W. Erikson, Peasley Rd., Merrimack, N.H. 03054

Filed Sep. 22, 1980, Ser. No. 189,333

Int. Cl.^{3} F16H *57/12;* F16B *39/36*

U.S. Cl. 74—441 **8 Claims**



1. An assembly, comprising in combination:

a. a first nut portion having an internal thread;

b. a second nut portion having an internal thread;

c. retaining means for retaining said first nut portion and said second nut portion in a fixed non-radially rotatable aligned position with respect to each other on a threaded screw; and,

d. spacer means between said first and second nut portions and rotatably mounted on said retaining means; and,

e. biasing means causing the spacer means to react to any slack between opposing nut portions and axially rotate against at least one surface of one nut portion.

4,353,265

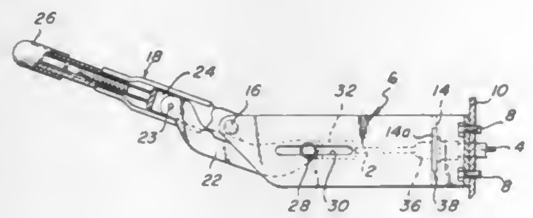
BRAKE CABLE OPERATING APPARATUS INCLUDING ANCHOR PLATE SPACER

Eugene C. Lipshield, Moberly, Mo., assignor to Orscheln Co., Moberly, Mo.

Division of Ser. No. 937,539, Aug. 28, 1978, which is a division of Ser. No. 806,963, Jun. 16, 1977, Pat. No. 4,127,042. This application Jul. 21, 1980, Ser. No. 170,729

Int. Cl.^{3} F16C *1/12*

U.S. Cl. 74—501 R **4 Claims**



1. In combination with a coaxial brake cable assembly including an inner cable member, and a tubular outer sheath member concentrically arranged about said inner cable member; brake cable operating means for axially displacing said inner cable member relative to said outer sheath member, comprising

(a) mounting plate means adapted for connection with a fixed support, said mounting plate means including a pair of spaced parallel mounting plates;

(b) anchor means rigidly connecting one end of said outer sheath member between said mounting plates, thereby to prevent axial displacement of said outer sheath member relative to said mounting plate means, said anchor means including a planar anchor plate connected between and extending normal to said mounting plates, saaid anchor plate containing a through opening in which one end of said outer sheath member is mounted, said inner cable member extending axially beyond said outer sheath member and through said anchor means into the space between said plate, said anchor plate means including at opposite ends projections that extend within corresponding aligned apertures contained in said mounting plates, respectively;

(c) guide means connecting one end of said inner cable member with said mounting plate means for linear axial displacement relative to said outer sheath member, said guide means including a transverse guide pin the opposite ends of which extend within aligned linear guide slots contained in said mounting plates, respectively, said one end of said inner cable member being connected with the center portion of said guide pin;

(d) an operating lever pivotally connected at one end with the other end of said mounting plate means, the pivot axis of said operating lever being normal to said plates; and

(e) a connecting link pivotally connected at opposite ends with an intermediate portion of said lever and with said guide pin, respectively, the pivot axis of said link being parallel with the pivot axis of said operating lever, said operating lever being pivotable between brake released and brake applied positions in which the free end of the inner cable member is displaced toward and away from the said one end of the outer sheath member, respectively.

4,353,266

MOTOR VEHICLE STEERING WHEEL COMPRISING A DEFORMABLE MEMBER

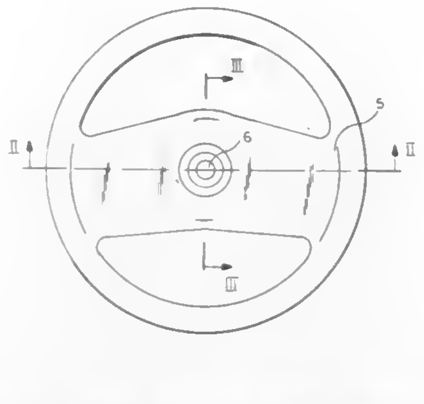
Klaus Grothe, Aschaffenburg, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,524

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1977, 2750235

Int. Cl.^{3} G05G *1/10*

U.S. Cl. 74—552 **4 Claims**



1. In a motor vehicle steering wheel comprising a rim, a recessed steering wheel hub, means forming a bowl diverging upwardly and outwardly from said hub to said rim, spokes connecting said hub to the rim and a deformable member disposed within said bowl and within the confines defined by said rim of the steering wheel over said recessed steering wheel hub, which is connected by said spokes to the rim of the steering wheel, said spokes having upper surfaces and said deformable member occupying part of the bowl and lying on the upper surfaces of the spokes and on an end face of the hub of the steering wheel, the improvement wherein the rim, an outside periphery of the hub of the steering wheel and the spokes of the steering wheel, except for the portions contacted by the deformable member, and the deformable member except for its surface areas in contact with the spokes and the end face of the hub of the steering wheel, are covered with a coherent layer of polyurethane integral skin foam, said member constituting a unitary plastically deformable homogeneous body.

4,353,267

CONTROL ROD OR POWER TRANSMISSION ROD

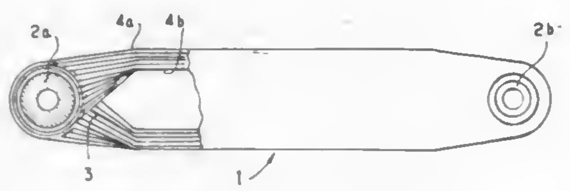
Daniel Robert, Saint Vallier sur Rhone, France, assignor to Societe Anonyme de Recherches de Mecanique Appliquee, Saint Vallier sur Rhone, France

Filed Mar. 24, 1980, Ser. No. 133,397

Claims priority, application France, Mar. 26, 1979, 79 07980

Int. Cl.^{3} G05G *1/00*

U.S. Cl. 74—579 R **5 Claims**



1. An elongated tubular control rod having a bearing at each end, the rod being comprised by at least one continuous resin-coated filament that extends lengthwise along one side of the rod, about the bearing at one end of the rod, crosses over itself and extends along the other side of the rod, about the bearing at the other end of the rod, crosses over itself and extends again along one side of the rod, the regions in which the filament crosses over itself being disposed adjacent said bearings whereby a plane of weakness is avoided.

4,353,268

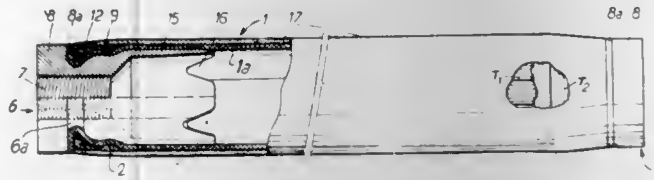
CONNECTING RODS

Claude Picard, Asnieres, and Daniel Daugny, Tournon, both of France, assignors to Avions Marcel Dassault-Breguet Aviation, Vaucresson and Societe Anonyme de Recherches de Mecanique Appliquee-Sarma, St. Vallier sur Rhone, both of, France

Filed Mar. 7, 1977, Ser. No. 775,050

Int. Cl.^{3} G05G *1/00, 3/00*

U.S. Cl. 74—587 **6 Claims**



1. A stiff integral connecting rod adapted to longitudinally and bi-directionally transmit tensile forces as well as compressive forces, said rod having a hollow tubular body (1) in the shape of a generally cylindrical main portion (1*a*) ending with two generally frusto-conical tapering extremities (2) and formed of a plurality of layers (T1, T2) of tapes (T) composed of high-strength parallel fibers (f) bonded together by synthetic resin, at least one (T1) of said layers having its fibers (f) extending longitudinally parallel to the generatrix of said tubular body and at least one other (T2) of said layers being wound helically around said tubular body (1), an end fastening member (6) of hardware fitted onto said tubular body (1) at each tapering extremity (2) thereof, each of said end fastening members (6) having at one end a skirt (9) which extends inside said tubular body (1) in engagement with the inner surface of the corresponding tapering extremity (2) thereof and an end extension (15) engaging an adjacent length of said main portion (1*a*), said extension (15) being axially notched (16) adjacent its free inner end so as to be resiliently yieldable in a radial direction, each of said end fastening members (6) having further a radially projecting collar (8) at its outer end opposite to said skirt with an intermediate section (6*a*) of reduced diameter between said collar (8) and said skirt (9), said layers (T1, T2) of the tubular body (1) being applied and bonded in situ over said tapering extremities (2) to tightly engage the exterior surface of said skirt (9) and said reduced diameter intermediate section (6*a*) of each end fastening member (6), and ringlike means (12) encircling the layers of said tapering extremities over said reduced diameter section (6*a*) of each end fastening member (6) to firmly anchor the ends of said layers (T1, T2) to said end members.

4,353,269

SHIP'S TRANSMISSION WITH CHANGEOVER FROM CRUISING SPEED TO SLOW SPEED

Heinz M. Hiersig, Dusseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 26, 1980, Ser. No. 134,003

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2913375

Int. Cl.^{3} F16H *37/06, 47/04*

U.S. Cl. 74—682 **2 Claims**

1. In a ship's transmission with changeover from cruising speed to slow speed, having a driving shaft (1), a hollow intermediate shaft (6) and a driven shaft (9), and a kinematic connection between said driving and driven shafts, a changeover coupling in said kinematic connection, said coupling including a primary part (4) connected to the driving shaft and a secondary part (5) connected to said intermediate shaft, the improvement comprising:

a first planetary gearing (100), including a rotatable stay (11) connected to said secondary part (5);

a secondary planetary gearing (200) including a rotatable second stay (19) connected to said primary part (4), a controllable variable delivery hydrostatic pump (28) having fluid fittings (29, 30) and a drive shaft (27), a pinion (26) secured upon said drive shaft and connected to said second planetary gearing;

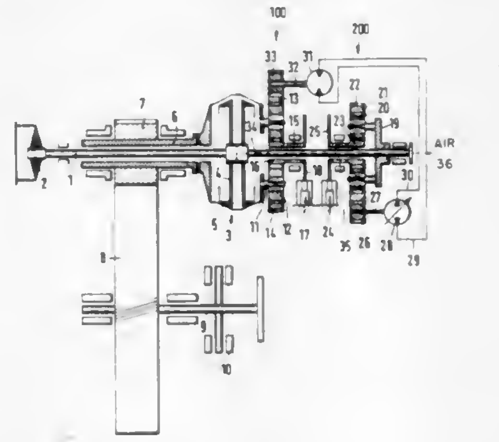
and a hydrostatic motor (31) having fluid fittings (29, 30) connected to said pump fittings, and a motor shaft (32) connected to said first planetary gearing; whereby at normal cruising speeds the primary and secondary parts of said coupling are directly interconnected; and whereby at slower speed, said primary and secondary parts are disconnected;

said primary part (4) through said second and first planetary gearing (200, 100), pump (28) and motor (31) driving said coupling secondary part (5) and connected driven shaft (9) at proportionately reduced speeds;

said first planetary gearing (100), including a sun wheel (16) registerable with a first brake (17), planet wheels (12) journalled upon said stay (11) and in mesh with said sun wheel;

and an internally toothed wheel (13) having outer toothing (14) and surrounding and in mesh with said planet wheels (12);

said second planetary gearing (200) including a second sun wheel (23) registerable with a second brake (24), second planet wheels (20) journalled upon said second stay (19), and in mesh with said secondary sun wheel (23), and a second internally toothed wheel (21) having outer toothing (22) surrounding and in mesh with said second planet wheels (20);



said pinion (26) being in mesh with the external toothing (22) of said second gear wheel (21);

said hydrostatic motor including a gear wheel (33) secured upon said motor shaft (32) and meshing with the external gearing (14) of said first wheel (13);

said kinematic connection including said intermediate shaft (6) journalled over and receiving said drive shaft (1) and connected to said secondary part (5) of said coupling (3);

a large gear wheel (8) secured upon said driven shaft (9), and an intermediate gear wheel (7) secured to said intermediate shaft and in mesh with said large gear wheel (8);

said driving shaft being connected to said coupling primary part (4);

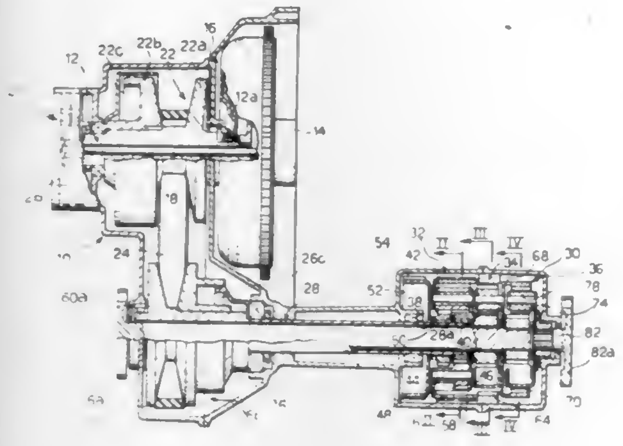
said primary and secondary parts (4, 5) of said coupling being interconnected;

a tubular shaft (34) coaxial to said driving shaft (1) and extending into said coupling (3) and connected at one end to its primary part (4), said sun wheels (16, 23) including a pair of spaced aligned hollow tubes (15, 35) guidably receiving said tubular shaft (34), said tubular shaft being connected to and rotates said second stay (19) of said secondary planetary gearing (200);

and a pair of spaced brake discs (18) between said first and second planetary gears (100, 200) mounted upon said tubes (15, 35) respectively extending into said first and second brakes (17, 24) respectively.

4,353,270
DRIVE TRANSMISSION UNIT INCORPORATING EXPANSIBLE-PULLEY STEPLESS SPEED CHANGER

Gianluigi Falzoni, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy
Filed Feb. 28, 1980, Ser. No. 125,383
Claims priority, application Italy, Apr. 11, 1979, 67764 A/79
Int. Cl.³ F16H *37/00, 37/08*
U.S. Cl. 74—689 7 Claims



1. In a motor vehicle, a drive transmission unit adapted to be operatively interposed between the vehicle's engine and the half shafts of the vehicle's driving wheels, said unit incorporating an expansible-pulley stepless speed changer and comprising:

a support structure,

a primary shaft rotatably mounted in said support structure and connectable at one end to the drive shaft from the engine of said vehicle,

a hollow secondary shaft rotatably mounted in said support structure parallel to said primary shaft,

two expansible pulleys respectively mounted fast for rotation on said primary and secondary shafts, each pulley comprising two facing frusto-conical discs one of which is rigidly connected to its respective mounting shaft and the other of which is axially slidable therealong,

a trapezoidal belt passing around said pulleys at respective radii of engagement dependent on the position of the said slidable disc of the corresponding pulley axially of its mounting shaft,

an hydraulic means operable to control the axial displacement of the said slidable disc of each pulley whereby to vary said radii of engagement and change the transmission ratio between said primary and secondary shafts,

a selectively-operable epicyclic reversing unit coaxial with said secondary shaft and driven from one end thereof, the said reversing unit providing a stage of reduction gearing for the transmission unit,

an epicyclic reduction gear box juxtaposed said reversing unit on one side thereof, the reduction gear box being coaxial with the reversing unit and being drivingly connected thereto,

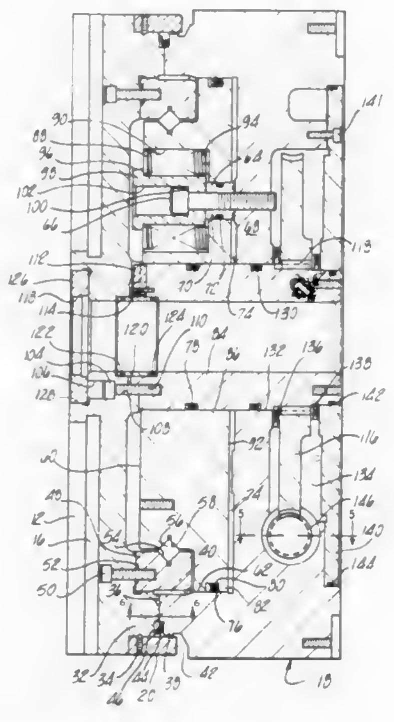
an epicyclic differential unit juxtaposed said reduction gear box on the side thereof away from the reversing unit, the differential unit being coaxial with the reduction gear box and being drivingly connected thereto, said differential unit including first and second rotatable output members,

a first output shaft extending coaxially through said secondary shaft to project from both ends thereof, one projecting end of the first output shafts being connected to said first rotatable output member of the differential unit, and the other projecting end of the first output shaft being adaptable to drive one said half shaft of the vehicle,

and a second output shaft rotatably supported by said support structure in coaxial alignment with said first output shaft, the second output shaft being connected to said second rotatable output member of the differential unit and being adaptable to drive the other said half shaft of the vehicle; said reversing unit being remotely selectively settable into one of three operating states in the first of which said output shafts are arranged to rotate in the same sense as said secondary shaft, in the second of which said output shafts are arranged to rotate in the opposite sense to said secondary shaft, and in the third of which said output shafts are drivingly disengaged from said secondary shaft.

4,353,271
MULTIPLE POSITION ROTARY INDEX TABLE

Daniel J. Pieczulewski, South Lyon, Mich., assignor to A.G. Davis Gage and Engineering Co., Hazel Park, Mich.
Filed May 15, 1980, Ser. No. 149,906
Int. Cl.³ B23Q *17/02*
U.S. Cl. 74—826 15 Claims



1. A rotary indexing table comprising:

a generally circular top plate;

a fixed base structure;

means mounting said top plate for rotation about an axis on said fixed base structure and limited axial movement relative said base;

indexing-locating means for positively locating said table top plate in any of a plurality of rotated positions about said axis of rotation;

means for selectively releasing said top plate from said indexing-locating means to enable rotation of said top plate to respective indexed positions rotated about said axis of rotation;

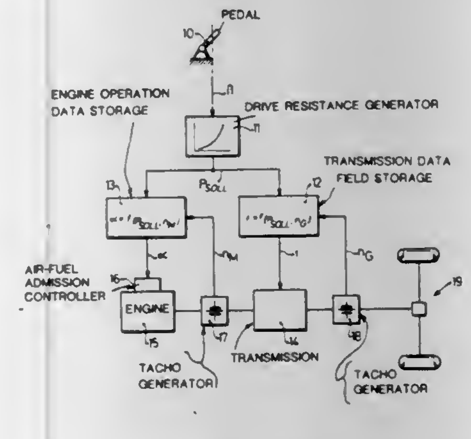
said indexing-locating means including a skirt portion formed on said top plate extending axially about the periphery of said top plate, said skirt portion being formed with a series of serrations extending radially along the axially most remote surface of said skirt portion; further including a corresponding rim portion formed on said fixed base structure and being formed with corresponding serrations to said top plate serrations extending radially outward and in opposition to said top plate serrations, said top plate and fixed base structure serrations being engagable with each other in each of said plurality of indexed positions upon axial movement of said top plate into engagement toward said base structure;

said indexing-locating means further including means applying a locking force acting between said top plate and said fixed base structure forcing said serrations into engagement thereof; and

said indexing-locating means also including a piston having an outside diameter slidably mounted in a bore formed in said fixed base structure, bearing means acting between said outside diameter of said piston and said top plate, said bearing means including an outer raceway carried by said top plate, said bearing means having means absorbing radial and axial loads to establish an axial driving connection between said piston and said top plate causing said piston and said top plate to move together axially while allowing relative rotation therebetween, means for exerting locking and releasing forces on said piston, whereby said piston exerts a locking and releasing force on said top plate through said bearing means.

4,353,272
APPARATUS FOR CONTROLLING THE OPERATION OF THE ENGINE-TRANSMISSION ASSEMBLY OF A MOTOR VEHICLE

Erich Schneider, Kirchheim; Helmut Fleischer, Schwieberdingen; Helmut Rembold, Stuttgart, and Alexander Witte, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/EP78/00026, § 371 Date Nov. 17, 1979, § 102(e) Date Nov. 5, 1979, PCT Pub. No. WO79/00781, PCT Pub. Date Oct. 18, 1979
PCT Filed Dec. 7, 1978, Ser. No. 185,914
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811574
Int. Cl.³ B60K *41/00, 41/06*
U.S. Cl. 74—859 22 Claims


PEDAL
10
11
ENGINE OPERATION DATA STORAGE
DRIVE RESISTANCE GENERATOR
11
TRANSMISSION DATA FIELD STORAGE
13
P_{SOLL}
12
AIR-FUEL ADMISSION CONTROLLER
16
ENGINE
15
17
TRANSMISSION
14
18
19
TACHO GENERATOR
TACHO GENERATOR

1. An apparatus for controlling an engine/transmission unit or drive train of a motor vehicle, including an operating member (10) for defining a power setpoint of the engine and at least one engine operation data storage means (13) containing characteristic power curves of said engine, the engine and the transmission being controlled by means of said at least one engine data storage means in dependence on the power setpoint in such a manner that optimum energy consumption of the engine results, comprising, according to the invention, a transmission data storage means (12) containing a characteristic transmission data field including optimum transmission i as a function of

(a) power setpoint P_{soll}, to provide for power delivery under optimum conditions, and of

(b) the vehicle velocity v_F to provide for optimum vehicle operation at the vehicle speed,

according to the relationship

$i = F(P_{soll}, v_F)$;

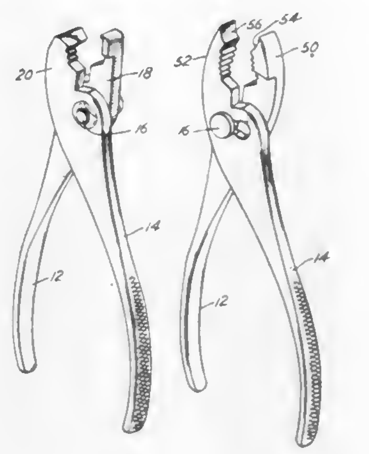
a first control loop connected to set the transmission ratio in accordance with the power setpoint (P_{soll}) on the basis of the transmission data field;

and a second control loop connected to set a fuel control α, wherein the fuel input control α is related to engine operation in dependence on the resulting engine speed (n_M) in accordance with the engine power curves contained in said engine operation data storage means (13) and which defines the engine power P as a function of engine speed (n_M) and of fuel input control position α according to the relationship $P = f(n_M, \alpha)$;

and wherein the control of the transmission ratio i by said first control loop for optimum operation of the drive train has priority over control by said second control loop.

4,353,273
PLIERS FOR PLASTIC RADIATOR TANK REPLACEMENT

Gerald A. Freberg, Omaha, Nebr., assignor to Inland Manufacturing Company, Omaha, Nebr.
Filed Oct. 30, 1980, Ser. No. 202,303
Int. Cl.³ B25B *7/02*
U.S. Cl. 81—425 R 2 Claims



1. In a pliers of the type comprised of first and second generally straight pivotally connected members connected at a pivot axis to define opposed jaws and opposed parallel grips, the improvement of a jaw construction having opposed jaws pivotal about the pivot axis, said pliers adapted to engage and release an L-shaped tab member having an outer tab end and an opposite tab end, said jaws comprising, in combination:

an upper jaw member and a lower jaw member, said upper jaw member including a hook member, said hook member having an arm extending radially from the axis and a tang projecting generally transversely from the arm toward the lower jaw, said arm being substantially colinear with said attached handle grip, said tang being of substantially less thickness than said arm in the plane transverse to the axis, said tang including a generally planar tab engaging land forming an obtuse angle with and also intersecting a radius extending from the axis;

said lower jaw being without a tang and defining a substantially flat fulcrum land generally parallel to and spaced apart from the upper jaw tab engaging land, said fulcrum land spaced from the axis a substantially identical radial distance as the upper jaw tab engaging land and forming a surface parallel with the tab engaging land surface and spaced from the tab engaging land surface; and

said upper jaw comprising means engageable with the outer tab end simultaneous with said lower jaw positioned at the opposite tab end to form a fulcrum point for bending the tab engaged by the hook member of the upper jaw upon a rotation of the pliers about the fulcrum point with the upper jaw moving in an arc about this lower jaw.

4,353,274
ROLL PAPER FEEDING AND CUTTING SYSTEM

Masahiro Shimizu, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 7, 1980, Ser. No. 176,146
Claims priority, application Japan, Aug. 21, 1979, 54-106855
Int. Cl.³ B26D *1/38*
U.S. Cl. 83—156 3 Claims

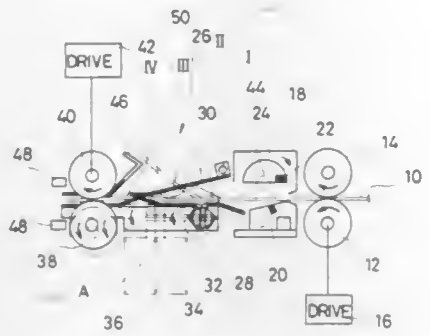
1. A copy paper feeding system comprising in combination;

paper feed means for feeding a copy paper at a predetermined speed;

catching means for holding the leading edge of the copy paper applied through said paper feed means, said catching means comprising a feed roller connected to a drive source, a pinch roller associated with said feed roller, and a shift means for shifting said pinch roller for temporarily forming a gap between said feed roller and said pinch roller, thereby allowing the leading edge of the copy paper to be introduced between said feed roller and said pinch roller;

means for sensing the leading edge of said copy paper as it passes between said temporarily formed gap, said sensing means thus reversing said shift means, thereby returning the pinch roller to an initial closed position, thus tightly catching said leading edge of the copy paper therebetween; and

a paper holding section disposed between said paper feed means and said catching means, said paper holding section



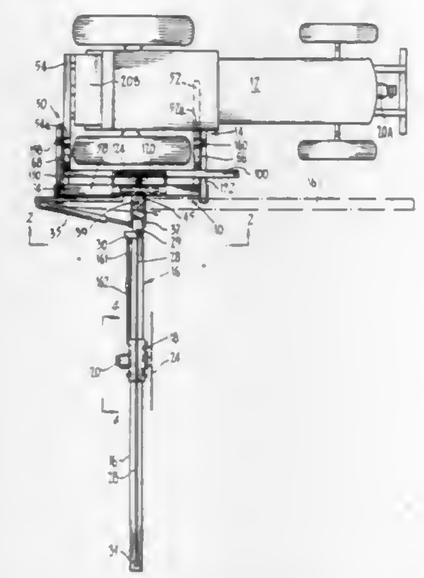
including a paper guide means and a paper depressing plate rotatably supported by a shaft for applying a depression force to said copy paper as the copy paper is introduced into said paper holding section, depressing the leading edge of said copy paper so as to direct said leading edge into the gap formed between said feed roller and said pinch roller of said catching means, said depressing plate further functioning to continue to apply a depression force to said copy paper during the curling of said paper when the leading edge thereof is held by said catching means in said closed position as said paper feed means continuously supplies the copy paper.

4,353,275
SAWING APPARATUS

Hume W. Colville, Murray St., Barham, New South Wales, Australia

Filed Sep. 23, 1980, Ser. No. 189,985
Claims priority, application Australia, Sep. 27, 1980, PE0671
Int. Cl.^{3} B27B *5/10*

U.S. Cl. 83—488 **18 Claims**



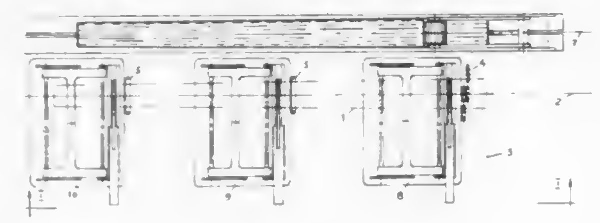
1. A sawing apparatus comprising a boom carrying a carriage movable lengthwise along the boom and at least adapted to carry a saw device, support structure adapted to be secured to a vehicle and carrying said boom, said boom being pivotal relative to said support structure so as to be positionable, by pivotal movement, at least at a first position at which, in use of the sawing apparatus with said support structure attached said vehicle and said carriage carrying said saw device, the boom extends sidewardly of the vehicle for use of the sawing apparatus by operating said saw device and moving it lengthwise of said boom, and at a second position at which, in use of the sawing apparatus with the support structure secured to said vehicle and said carriage carrying said saw device, the boom extends generally parallel to the driving direction of the vehicle for transport of the saw device, said support structure further including a first sub-frame, to which said boom is pivotally secured for said pivotal movement thereof, said first sub-frame being carried by a second sub-frame such that the first sub-frame, is movable, in use of the apparatus, generally lengthwise of said driving direction and generally vertically relative to said second sub-frame.

4,353,276
ARRANGEMENT IN MACHINES FOR PROCESSING LOGS, BLOCKS AND LIKE WORKPIECES

Bo I. Ackerfeldt, Ahusvägen 44, 260 90 Bastad, Sweden

Filed May 20, 1980, Ser. No. 151,641
Claims priority, application Sweden, May 29, 1979, 7904678
Int. Cl.^{3} B27B *31/04*

U.S. Cl. 83—708 **15 Claims**



1. An arrangement in a sawing machine or a like processing machine for feeding elongate workpieces, such as logs in particular, up to and through the sawing machine, said arrangement comprising a stationary support table for supporting the workpieces over their entire length, said table extending on the infeed side of the sawing machine parallel to the desired feed line for the workpieces and at least up to the sawing machine; and conveyor means for engaging workpieces resting on said support table and feeding said workpieces along said table in direction parallel to said feed line up to and into the sawing machine, said conveyor means including at least two endless conveyor chains provided with individual driving means and located beneath said support table to run in vertical planes which are parallel and located close to the vertical plane through said feed line, each of said conveyor chains being provided with at least one dog member permanently attached to the conveyor chain in such a manner that it projects in vertical direction outwards from the conveyor chain and having a narrow lateral dimension, said dog members on said individually driven conveyor chains being attached to their respective conveyor chains in a manner such that all dog members move in a common vertical plane substantially coinciding with the vertical plane through said feed line and having such a vertical extension that they, when located on the upper flight of their respective conveyor chains, project above the surface of said support table so as to be able to engage and act against the rear end surfaces of workpieces resting on said support table for feeding the workpieces up to and in to the sawing machine, and said support table being provided with a common guide slot for said dog members extending in the vertical plane through said feed line.

4,353,277
SAW CHAIN

Kay Silvon, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed May 12, 1980, Ser. No. 148,810
Int. Cl.^{3} B27B *33/14*

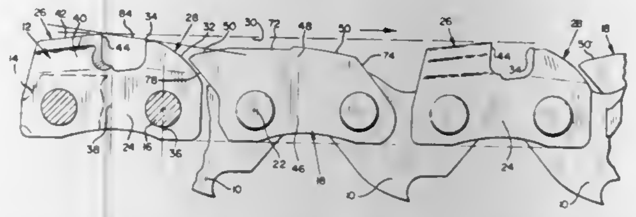
U.S. Cl. 83—833 **18 Claims**

1. A saw chain adapted to be driven around a path with a curved forward end portion, said saw chain comprising:

a plurality of cutter links alternating with guard links for preceding said cutter links,

a said cutter link having an upstanding cutter tooth and an upstanding depth gauge located forwardly of said cutter tooth, said depth gauge having a height less than that of the cutter tooth, the top of said cutter tooth, during chain movement, defining the outer periphery of said path of said saw chain,

a said guard link including an upstanding body portion having a top edge extending adjacent said outer periphery of said path of the saw chain, a rearward edge inclined upwardly and rearwardly toward said top edge substantially adjacent the depth gauge of said cutter link, and a forward edge rising comparatively steeply toward said top edge in obtuse angular relation to said top edge disposing said top edge in generally parallel relation with said outer periphery of said path and in close proximity to said outer periphery of said path over the major part of the length of said guard link wherein said guard link has a profile filling the majority of the space between the cutter tooth on a preceding cutter link and the depth gauge on a succeeding cutter link.

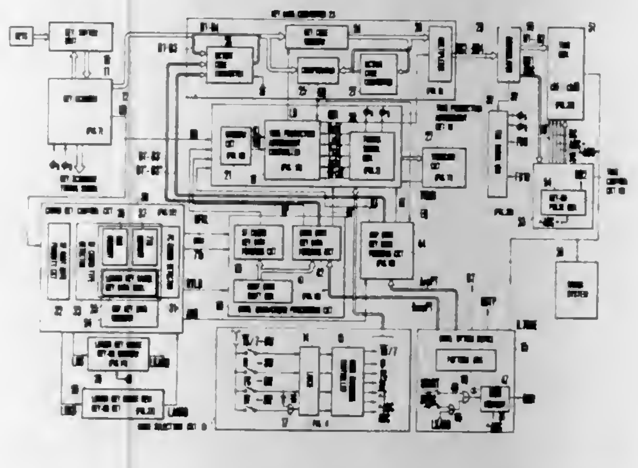


4,353,278
CHORD GENERATING APPARATUS OF ELECTRONIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu; Hideo Suzuki, Kamimura, and Makoto Kaneko, Hamakita, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,885
Int. Cl.^{3} G10H *1/38, 5/00, 7/00*

U.S. Cl. 84—1.01 **16 Claims**



1. In an electronic musical instrument, an automatic chord performance system controllable by depression of keys in a certain range of a single keyboard, comprising:

first priority circuit means for ascertaining in said certain range a depressed key of highest or lowest priority, and for providing a signal identifying said key for use as the root note of said chord,

second priority circuit means for ascertaining in said certain range the depressed key or keys of next highest or lowest priority, and for providing signals identifying such key or keys to designate a chord type, and

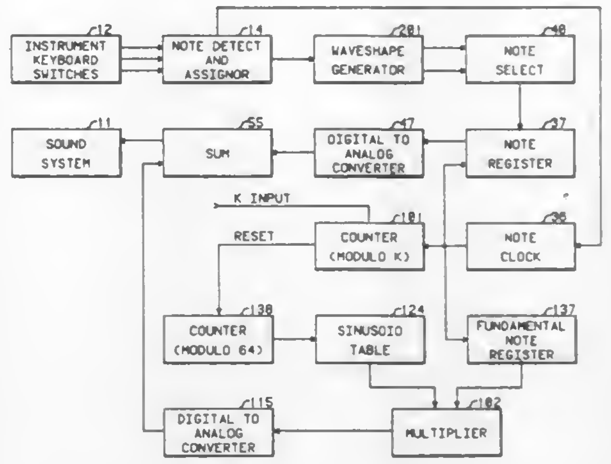
tone generation means for producing musical tones corresponding to the chord having the root note identified by the signal provided by said first priority circuit means and a chord type identified by the signals provided by said second priority circuit means.

4,353,279
APPARATUS FOR PRODUCING ENSEMBLE TONE IN AN ELECTRIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Feb. 2, 1981, Ser. No. 230,242
Int. Cl.^{3} G10H *1/02, 7/00*

U.S. Cl. 84—1.24 **13 Claims**



1. In combination with a musical instrument having a waveshape memory storing a plurality of waveshape data words corresponding to the amplitudes of evenly spaced points defining a period of a musical signal and in which said waveshape data words are sequentially and repetitively read out of the waveshape memory and transferred to a wavehsape digital-to-analog converter to be converted into musical signals at a rate corresponding to the pitch of the generated musical tone, apparatus for producing an ensemble effect comprising;

computing means for computing said plurality of waveshape data words stored in said waveshape memory,

a sinusoid table storing a plurality of trigonometric sinusoid values,

a clock providing timing signals at a rate corresponding to the pitch of said generated musical tone,

a first addressing means responsive to said timing signals for reading out waveshape data words stored in said waveshape memory,

a first converting means comprising said waveshape digital-to-analog converter for converting waveshape data words read out of said waveshape memory into a first analog signal,

a second addressing means responsive to said timing signals for reading out trigonometric sinusoid values from said sinusoid table,

signal combination means responsive to trigonometric sinusoid values read out from said sinusoid table wherein a second analog signal is generated, and

a summing means for adding said first analog signal and said second analog signal to produce a musical tone having said ensemble effect.

4,353,280
TUNING DEVICE

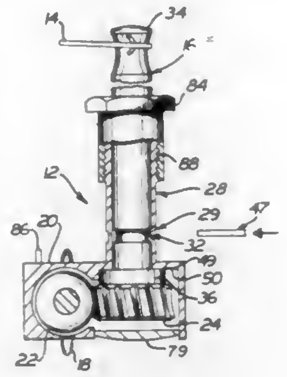
Robert J. Spercel, 3214 W. 139, Cleveland, Ohio 44111

Filed Jan. 5, 1978, Ser. No. 867,133
Int. Cl.^{3} G10D *3/14*

U.S. Cl. 84—306 **25 Claims**

1. A method of assembling a stringed instrument tuning device, said method comprising the steps of providing a housing having a main portion adapted to at least partially enclose a gear and a tubular portion integrally formed with and extending outwardly from the main portion, providing a shaft having an annular groove disposed intermediate opposite ends of the shaft, positioning the shaft in the tubular portion of the housing, and plastically deforming the tubular portion of the housing inwardly into engagement with the shaft to hold the shaft

against axial movement relative to the housing, said step of plastically deforming the tubular portion of the housing including the steps of applying a force against an outer side surface of the tubular portion of the housing at a location radially outwardly from the annular groove and moving a portion of the housing into the annular groove in the shaft under the influence of the force applied against the outer side surface of the tubular portion of the housing.



4,353,281

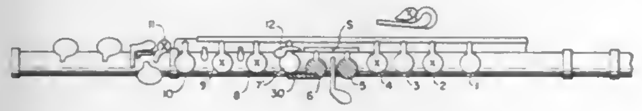
SPLIT E FLUTE AND SPLIT E MECHANISM THEREFOR

Emerson L. DeFord, Elkhart, Ind., assignor to Emerson Musical Instruments Inc., Elkhart, Ind.

Filed Jan. 29, 1981, Ser. No. 229,757

Int. Cl.^{3} G10D *7/02, 9/04*

U.S. Cl. 84—384 **3 Claims**



1. In a flute of the type having a split G key mechanism and a split E mechanism, the improvement wherein said split E mechanism comprises a short arm attached to the F-sharp key and extending therefrom in a manner so as to overlie an adjacent G-A combination key of the split G key mechanism for facilitating the playing of the E above the staff note by causing said G-A key to be closed during normal fingering of said note.

4,353,282

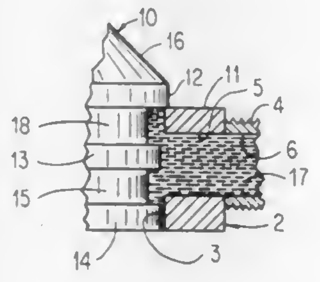
METHOD AND DEVICE FOR PROJECTILE LUBRICATION

Herbert H. Holt, Star Rte., Alpine, Tenn. 38543

Filed Nov. 28, 1980, Ser. No. 211,406

Int. Cl.^{3} F42B *31/02*

U.S. Cl. 86—19 **6 Claims**



1. A device for placing lubricant in a plurality of annular grooves of a projectile comprising:

a. a structure containing an opening dimensioned to hold said projectile;

b. a passage in said structure extending through an exterior wall of said structure creating an interior opening and an exterior opening, said passage positioned to enter said structure so that said interior opening of said passage is positioned at the depth of said structure where said plurality of annular grooves of said projectile are held;

c. a connector secured to said structure at said exterior opening of said passage;

d. a connector passage within said connector and aligned with said exterior opening of said passage, and

e. said projectile comprising a nose section with a bearing portion dimensioned larger than the diameter of said opening in said structure whereby when said projectile is held in said structure, said bearing portion will rest on an external bearing surface of said structure sealing the top of said opening in said structure,

whereby said lubricant may pass through said connector passage to said passage and into said plurality of annular grooves of said projectile.

4,353,283

FIRING TURRET FOR A VEHICLE, AND VEHICLE INCLUDING SUCH A TURRET

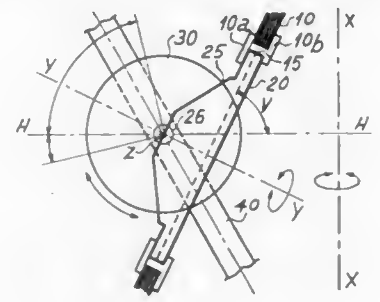
Roger Crepin, 173, bl. Haussmann, 75008 Paris, France

PCT No. PCT/FR78/00009, § 371 Date Aug. 10, 1979, § 102(e) Date Aug. 10, 1979, PCT Pub. No. WO79/00852, PCT Pub. Date Nov. 1, 1979

PCT Filed Jul. 12, 1978, Ser. No. 143,998

Int. Cl.^{3} F41F *21/06*

U.S. Cl. 89—37 G **15 Claims**



1. A 360° orientable firing turret for assembly on a mobile platform, said turret comprising a cupola which includes a roof, and a circular opening in one side of said cupola from which a gun barrel extends, a gun barrel cradle for mounting said gun barrel in said cupola and trunnions for supporting said gun barrel cradle and means operative relative to said trunnions for correcting any tilt angle of said trunnions relative to a site wherein the means for correcting the tilt angle of said trunnions comprise:

a disc having a central opening, said barrel cradle being encased in said central opening in said disc.

a ring concentrically disposed in said circular opening provided in said cupola, said disc including a track rotatably mounted in said ring, a toothed sector disposed on said disc, a servo-motor for rotating said disc according to a vertical disposition of said site and a mechanism related to said gun barrel cradle for pivoting said gun barrel cradle in elevation,

a sighting device mounted within said cupola on a side wall of said cupola, said sighting device being mechanically coupled to said servo-motor and said sighting device includes an optic input which crosses through an opening provided in said roof of said cupola.

4,353,284

CARRIED WEAPON SYSTEM WITH A HIGH ORIENTATION MOBILITY

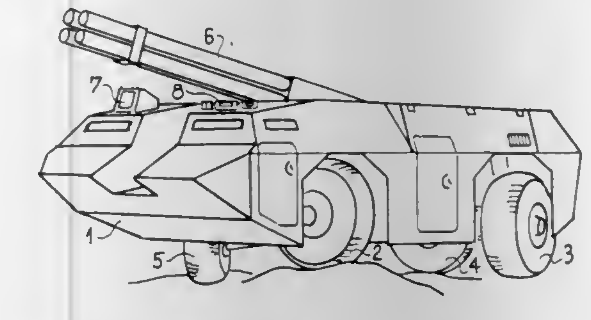
Henri Billottet; Henri Augy, and Andre Quoy, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 2, 1980, Ser. No. 146,332

Claims priority, application France, May 8, 1979, 79 11628

Int. Cl.^{3} F41F *23/10*

U.S. Cl. 89—40 B **6 Claims**



1. A turretless weapon system comprising:

a low-profile vehicle including:

a vehicle body having a longitudinal axis and formed with a channel extending along said axis and opening upwardly, downwardly and toward a front end of the vehicle,

a chassis supporting said body,

a plurality of driving and guide wheels supporting said chassis on the ground and spaced apart from one another,

means for independently driving said wheels, and

means for pivoting said wheels so that said vehicle is rotatable about a point at the center of a circle to which said wheels are tangent;

a cradle disposed in said channel and swingable about an elevation axis perpendicular to said longitudinal axis; and

a weapon having at least one tube for launching a projectile mounted in said cradle for elevation from and lowering into said channel through an elevation range of about −15° to +90° whereby bearing of said weapon upon a target through a range of about 360° is effected by autorotation of the vehicle about said center.

4,353,285

RECOIL FORCE CORRECTION FOR ELEVATION IN AUTOMATIC WEAPONS EMPLOYING SOFT RECOIL

Roland A. Magnuson, Seattle, Wash., assignor to PACCAR Inc., Bellevue, Wash.

Filed Nov. 26, 1979, Ser. No. 97,556

Int. Cl.^{3} F41F *19/02*

U.S. Cl. 89—42 B **1 Claim**

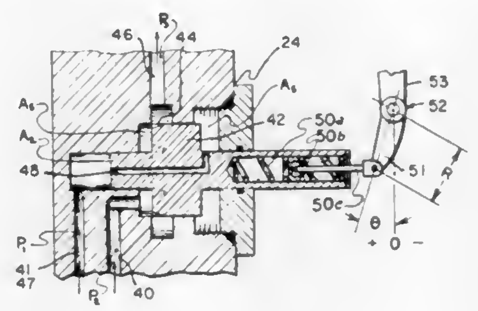
1. Apparatus for providing a relatively constant recoil travel length for a soft recoil weapon of the type having a carriage pivotally mounted for varying elevational position, a gun barrel capable of recoiling and counter-recoiling in said carriage between a rearward loading station and a forward firing station, comprising:

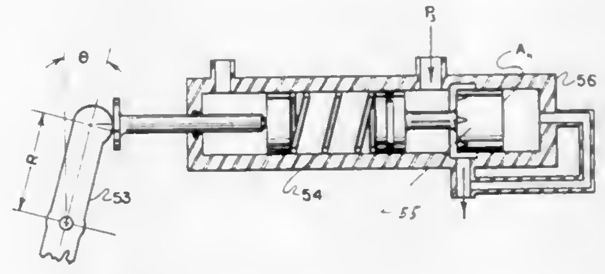
fluid cushioning means having actuator means coupled to the gun barrel for movement therewith and moving fluid through a variable orifice in response to said movement for arresting the recoil movement of the gun barrel in a controlled manner, including variable throttling means for decreasing or increasing the resistance to flow from the actuator means in response to the amount of the pressure differential of the fluid across the variable orifice,

pressure storing means for storing pressurized fluid from the cushioning means for providing counter-recoil pressure to said actuator means,

means for sensing the elevational angle of the gun barrel, and gravity compensation means including first control means responsive to the angle sensing means for varying the throttling means to change the resistance to flow in response to elevation or depressing angle changes in the gun barrel for compensating the fluid cushioning means from gravity effects due to such angle changes, said gravity compensation means including second control means responsive to said angle sensing means for adjusting the fluid pressure from said recuperative pressurized fluid storing means to said actuator means for adjusting the counter-recoil force on the gun barrel to compensate for the gravity effects of such angle changes of the gun barrel,

said variable orifice including a parabolic variable orifice flow control valve having a pressure differential during recoil equal to a predetermined constant percentage of the pressure necessary to bring the gun barrel to rest with a constant force in the remaining distance of recoil, said variable throttling means including a valve spool having first and second axially spaced opposed equal cross-sectional areas, a small, axially spaced, third cross-sectional area which is a predetermined percentage of each of the first and second areas and on the same side of the spool as said first area, and a spring-loaded stem for adjusting the force balance on the spool, said first control means including means for moving the stem in response to angle adjustments of the gun barrel, means for connecting the pressure differential from across the parabolic flow control valve to said first and second areas respectively with the higher pressure acting on the second area and means for connecting the pressure from upstream of the parabolic flow control valve also to said small third cross-sectional area whereby the constant pressure differential acting on the first and second areas plus the pressure acting on said third area attempts to keep said spool balanced while said stem moving means responsive to angle adjustments of the gun barrel overcomes said balance.





4,353,286

HYDRAULIC CONTROL SYSTEM WITH A PIPELINE ANTIBURST SAFETY DEVICE FOR A DOUBLE ACTING DRIVE CYLINDER

Jacob Wetter, Düsseldorf, Fed. Rep. of Germany, assignor to MDS Mannesmann Demag Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,451

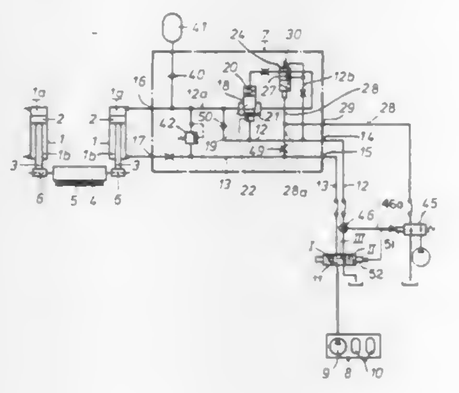
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928737

Int. Cl.^{3} F15B *13/042*

U.S. Cl. 91—5 **5 Claims**

1. A hydraulic control system with a pipeline antiburst safety device for a double acting drive cylinder for adjusting and securing the position of a machine part, comprising:

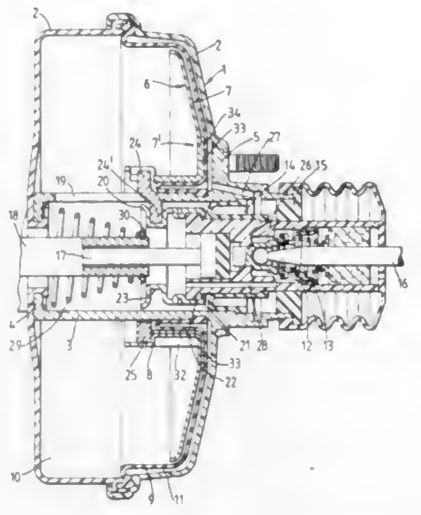
a high pressure source for providing a working pressure,
first and second main control ducts extending to said drive cylinder, said first main control duct normally carrying working pressure which acts opposite to an operationally conditioned reaction force that is normally applied to the piston of said cylinder,
a main control valve connected in said first and second main control ducts, said main control valve having two control positions for alternatively controlling the ducts for providing working pressure and return flow, and a control position for relieving said main control ducts in the event of a pipeline burst,
a leak-proof stop valve situated close to the drive cylinder and disposed within the first main control duct, said stop valve having a compression spring and a valve spool with three control surfaces, namely (a) a largest control surface which is spring-biased by said compression spring in the closing direction, (b) an annular surface within an annular chamber having an outlet communicating through an extension of the first main control duct with a corresponding working pressure chamber in the drive cylinder and (c) an end surface disposed within a pressure chamber into which said first main control duct extends, and which constantly carries operating pressure, wherein the largest control surface opposes and is equal in area to the sum of areas of the two other surfaces, so that the valve spool closes and is maintained closed exclusively by pressure from said compression spring which acts on the largest control surface when all surfaces are biased by the same hydraulic pressure,



a non-return valve, arranged parallel with the stop valve and biased closed by means in the same sense as said stop valve between said extension of said first main control duct and the first main control duct,
a leak-proof pilot valve situated close to the stop valve and having a spool which is biased in one control direction via a pilot duct by a normally applied pilot pressure and is spring-biased in the other control direction by a spring in a pressure chamber communicating with the first control duct, said pilot valve spool being operative to release working pressure from the first main control duct into a duct which extends into the spring-biased pressure chamber of the stop valve when pilot pressure is applied and to close the connection of the spring-biased pressure chamber with the first main control duct and connect the duct which extends to the spring-biased pressure chamber of the stop valve to a duct which extends to the annular chamber of the stop valve with the annular surface when pilot pressure is removed,
a means for applying pilot pressure to said pilot duct when no pipe burst is present and removing pilot pressure from said pilot duct when a pipe burst is present,
a pressure maintaining accumulator connected via a non-return valve to the extension of the first main control duct, and
a pressure limiting valve between the extension from the outlet of the stop valve and the second main control duct for limiting maximum pressure.

4,353,287
BRAKE BOOSTER

Rolf Weiler, Frankfurt-Sindlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Apr. 28, 1980, Ser. No. 143,976
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918910
Int. Cl.³ F15B *9/10;* **F01B** *19/00;* **F16J** *3/02*
U.S. Cl. 91—369 A **10 Claims**

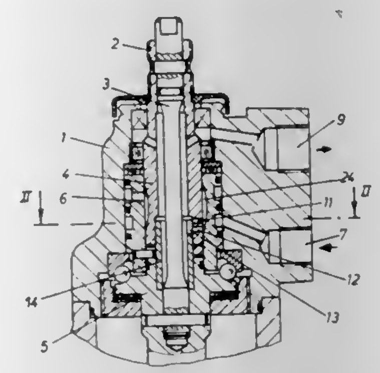


1. A mechanically controlled vacuum brake booster comprising:
a vacuum housing having a longitudinal axis;
a tube disposed in said vacuum housing coaxial of said axis connected to both end walls of said vacuum housing, said tube having at least two longitudinal slots therein;
at least one movable wall disposed in said vacuum housing coaxial of said axis dividing said vacuum housing into a vacuum chamber and a work chamber, said movable wall having a hub disposed coaxial of said axis, said movable wall being sealed and displaceable relative to said tube;
a pressure control valve having a control casing disposed in said housing coaxial of said axis and extending into said tube; and
at least two semicircular segments each having at least one projection extending radially inwardly, said two semicircular segments being rigidly fastened to said hub adjacent the end thereof in said vacuum chamber and said projections extending through said slots and coupled to the adjacent end of said control casing by a coupling means, said two projections acting via said control casing on a push rod disposed coaxial of said axis to actuate a master brake cylinder piston.

4,353,288
ROTARY SLIDE STEERING VALVE FOR AUXILIARY POWER STEERINGS

Heinrich Holub, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany
Filed Dec. 11, 1979, Ser. No. 102,327
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856606
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—375 A **8 Claims**

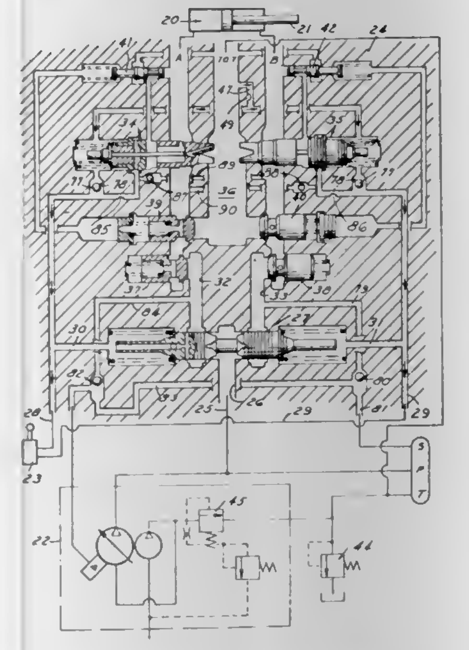
5. A rotary valve for a booster steering system of the kind having a rotary valve plug encompassed by a valve sleeve within a housing and including respective high and low pressure coacting grooves and bores and inlet and return passage means in said housing whereby rotation of said rotary valve plug controls pressure flow to a servomotor and return flow therefrom during a steering operation; the improvement which comprises:
a member (14) having passage means (13) and said rotary valve plug having passage means (11, 12); wherein the respective passage means are comprised in said return flow means and overlap when said rotary valve plug is in neutral position to permit unrestricted return flow through said return passage means from a servomotor, and



means affording relative motion between said member and said rotary valve plug responsive to a steering operation to reduce said overlap for effecting a throttled return flow.

4,353,289
POWER TRANSMISSION

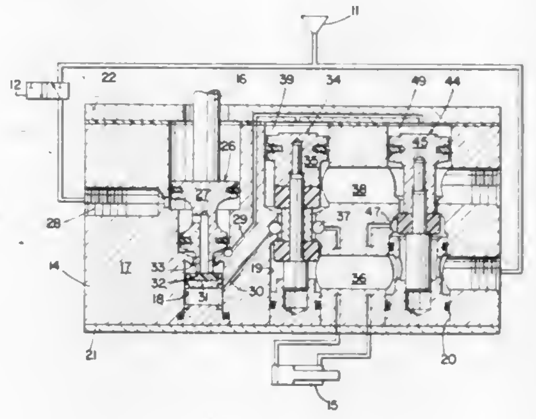
Kurt R. Lonnemo, Bloomfield Hills, Mich., assignor to Sperry Corporation, Troy, Mich.
Filed May 29, 1980, Ser. No. 154,473
Int. Cl.³ F15B *11/04*
U.S. Cl. 91—420 **12 Claims**



1. A hydraulic control system comprising
a hydraulic actuator having opposed openings adapted to alternately function as inlets and outlets for moving the element of the actuator in opposite directions,
a pump for supplying fluid to said actuator,
meter-in valve means to which the fluid from the pump is supplied,
said meter-in valve means being pilot controlled by alternately supplying fluid at pilot pressure to said meter-in valve means for controlling the direction of movement of the actuator,
a pair of lines extending from said meter-in valve means to said respective openings of said actuator,
meter-out valve means associated with each opening of the actuator for controlling the flow out of said actuator,
said meter-out valve means being pilot operated by the pilot pressure,
and means for sensing a predetermined drop in pressure in the line supplying fluid to one opening of said actuator caused by a runaway load in one direction and operating said meter-out valve means to meter flow out of the other opening of said actuator,
said last-mentioned sensing and operating means comprising a restriction in the pilot line actuating the meter-out valve means for controlling flow out of the other opening of said actuator, a sensing line extending from said pilot line to said line supplying pump pressure to said one opening of said actuator and a check valve in said sensing line.

4,353,290
PNEUMATIC CONTROL VALVE AND CIRCUIT

Robert K. Hoffman, and Mark A. Kavanaugh, both of Plainwell, Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Nov. 26, 1979, Ser. No. 97,261
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—461 **11 Claims**



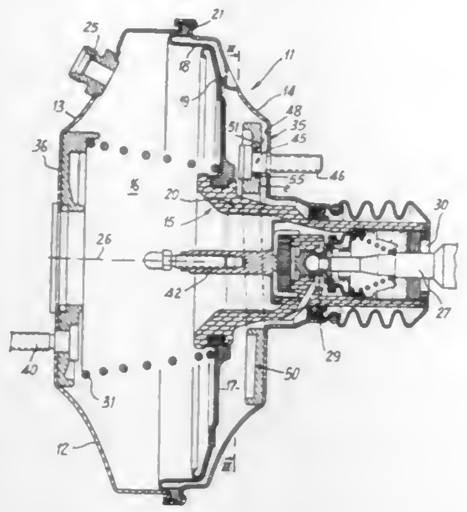
1. A control valve comprising a main valve and a pilot interlock valve; said main valve including a main inlet port, an exhaust port, a cylinder port, main valve means opening and closing communication between said cylinder port and said main inlet and exhaust ports, said main valve means including a signal chamber and a main spool having an area exposed to pressure in said signal chamber; said pilot interlock valve including a pilot inlet port, an interlock port communicating with said cylinder port, a signal port communicating with said signal chamber, pilot valve means controlling communication between said signal port and said pilot inlet and interlock ports, said pilot valve means including a pilot spool movable between an interlock position and an actuating position, and said pilot valve means closing communication between said pilot inlet port and said signal port and opening communication between said interlock port and said signal port when said pilot spool is in said in said interlock position.

4,353,291
BRAKING BOOSTER SERVO UNIT HAVING A FIXING BRACING MEMBER

Jean J. Hauduc, Tremblay-les-Gonesse, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Mar. 30, 1981, Ser. No. 249,287
Claims priority, application France, Apr. 25, 1980, 80 09346
Int. Cl.³ F01B *19/00;* **F16J** *3/02*
U.S. Cl. 92—99 **4 Claims**

1. A braking booster servo unit of vacuum type comprising a casing having an axis of symmetry along which an actuating force is transmitted by means of axial actuating rod connected to the brake pedal, said casing having two substantially parallel first and second end walls, said first wall being attached to a fixed part of a vehicle, said second wall holding a brake actuating master cylinder in axial alignment with said actuating rod for receiving said actuating force at its input, said first end wall having an inside face, said servo unit being designed to be attached to said fixed part by means of two screws, each of said screws having threaded portions which project perpendicularly outwardly of said first wall substantially parallel to said axis of summetry and on respective sides thereof, said screws being in contact with the inside face of said first wall by way

of an annular bracing member, wherein the improvement consists in that said bracing member is elastic and has a face with a curved surface, said curved surface having diametrically opposed first and second areas and angularly offset diametrically opposed third and fourth areas, said first and second



areas engaging said inside face of said first end wall, said third area being connected to one of said two screws and said fourth area being connected to the other of said two screws, said two screws on attachment to said fixed part transmitting a variable prestress force into said first end wall through said first and second areas of said bearing member.

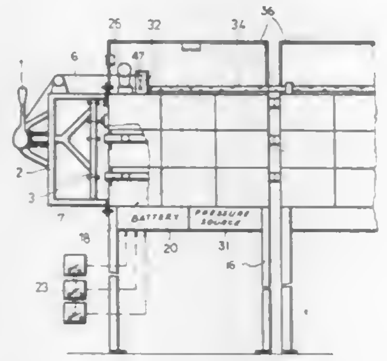
4,353,292
ASSEMBLY FOR STORING AND FACILITATING APPLICATION OF BREATHING DEVICES

Istvan Almasi; Ferenc Kassai, and Attila Erdelyi, all of Budapest, Hungary, assignors to Banyaszati Aknamelyito Vallalat, Budapest, Hungary

Filed Sep. 3, 1980, Ser. No. 183,926

Int. Cl.^{3} E21F *11/00*

U.S. Cl. 98—50 **11 Claims**



1. An assembly installable in a work area for storing breathing devices and for facilitating the application thereof by personnel endangered by contaminated air at said work area, said assembly comprising:
a frame;
a plurality of compartments arranged in rows on said frame, said compartments serving as receptacles for respective breathing devices;
cover means including at least one spring-loaded door for closing said compartments at a common side thereof, said door having a hook projecting inwardly in a closed state of said door, said cover means including a pivotably mounted latch engageable with said hook for coacting therewith to close said door;
actuator means on said frame for opening said door, said actuator means including a push rod engageable with said latch to pivot same, a spring-loaded release member reciprocatably mounted on said frame and engageable with said rod to shift same, and a lever cammingly engaging said release member to move same upon a pivoting of said lever;
signal-generating means on said frame for emitting a signal indicating to said personnel the location of said assembly at said work area;
air-circulating means on said frame for furnishing a supply of oxygen to a portion of said work area upon a pivoting of said lever and an opening of said door; and
activating means operatively connected to said signal-generating means and to said air-circulating means for actuating same at least upon an opening of said door.

4,353,293
COFFEE MACHINE

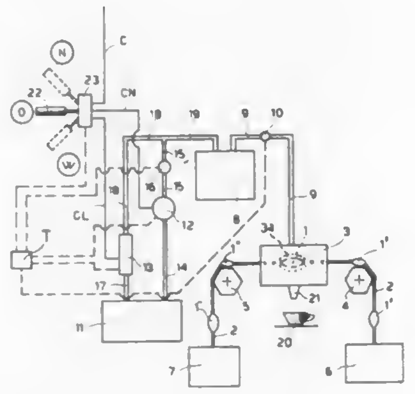
Ernesto Illy, 8, Via Locchi, Trieste, Italy

Filed May 7, 1981, Ser. No. 261,681

Claims priority, application Italy, Jun. 10, 1980, 22675 A/80

Int. Cl.^{3} A47J *31/24*

U.S. Cl. 99—283 **7 Claims**



1. In a coffee machine, a combination comprising
means defining a brewing chamber having an outlet for brewed coffee and being adapted to receive pods of coffee;
a water reservoir;
means for heating water operatively connected with said brewing chamber;
first pump means connected with said reservoir and heating means for forwarding, when energized, a first quantity of water from said reservoir to said heating means and a corresponding quantity of heated water from said heating means to said brewing chamber;
second pump means also connected with said reservoir and heating means for forwarding, when energized, a second larger quantity of water from said reservoir to said heating means and a corresponding quantity of heated water from said heating means to said brewing chamber; and
control means for selectively energizing one of said first and second pump means.

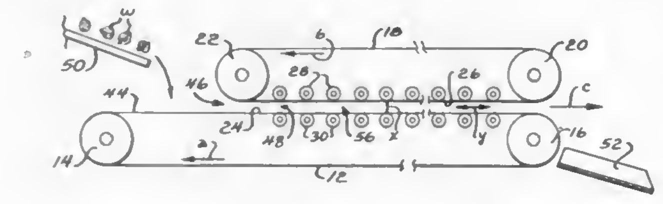
4,353,294
NUT CRACKING APPARATUS

Robert G. Dudley, P.O. Box 1731, Monterey, Calif. 93940

Filed Aug. 27, 1979, Ser. No. 70,157

Int. Cl.^{3} A23N *5/00*

U.S. Cl. 99—575 **10 Claims**



1. Apparatus for cracking or shelling an encapsulated produce such as nuts and seeds in order to recover their meats largely intact comprising,
upper and lower belts having generally horizontal facing runs which are aligned one over the other and continuously move in the same direction toward the discharge end of the apparatus, the facing run of the upper belt moving at a faster rate than that of the lower belt;
a set of parallel-spaced, transversely-extending, rotatably-journalled rollers—plural in number—behind each said belts and over which the facing runs of said belts engagingly pass;
the rollers of one set being paired with and vertically aligned over the rollers of the other set; and
the axes of said paired rollers being stationary and fixed at a distance apart such that the facing runs of the moving belts as they pass between the paired rollers define a succession of transversely extending pressure gates separated by intervening pressure relief areas, each said gates having an unchanging fixed height which is only slightly less than the largest diameter (cross-sectional dimension) of the nuts or other encapsulated produce fed by the belts through the gates; and
the pressure relief areas disposed between the pressure gates having an extent which in the direction of belt movement is greater than said height of the gates and several times the diameter of the rollers;
the belts being so tensioned that the faster moving facing run of the upper of said belts in the relief areas engages the encapsulated produce as they are carried by the facing run of the lower belt toward the pressure gates, so as to exert an orienting force on the nuts which urges the nuts into a posture where their largest diameter is presented vertically as the nuts are carried by the facing run of the lower of said belts into the pressure gates defined by said paired rollers whereby cracking pressure is enforced solely on the peripheral portions of the nuts at their said largest diameter when the nuts are so postured, said orienting and cracking pressures being regularly relieved and reinstituted.

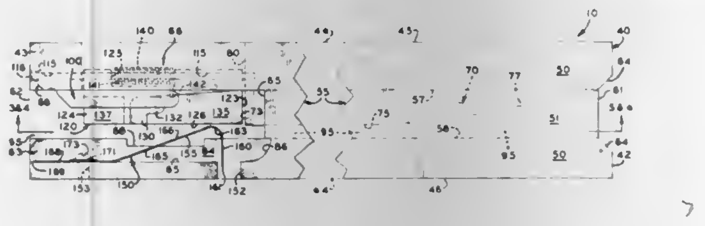
4,353,295
WIRE TYING FIXTURE

Ernest Kandarian, Clovis, Calif., assignor to Fresno Bag Co., Inc., Fresno, Calif., a part interest

Filed Jul. 10, 1980, Ser. No. 167,237

Int. Cl.^{3} A01F *15/14;* **B65B** *13/24*

U.S. Cl. 100—8 **6 Claims**



1. A wire tying fixture comprising:
A. an elongated guide having a longitudinal channel providing open opposite ends and a slot coextensive with the channel, said channel having a tying station therein and being adapted to receive wires thrust from the opposite ends into overlapping relation at the tying station, said wires being preformed to interlace when engaged and overlapped to a predetermined extent and to tie when subsequently tensioned;
B. a false bottom pivotally mounted in the slot at the tying station for movement about an axis disposed longitudinally of the channel at one side thereof for movement between a closed position extended across the channel to support the wires in the channel and a retracted position pivoted out of the channel to release the wires after they are tied, the false bottom having a notch adapted to receive and to hold one of the wires to facilitate thrusting of the other wire into overlapping relation therewith;
C. resilient means urging the false bottom into a closed position; and
D. a leaf spring mounted at the tying station at the side of the channel opposite to said one side presenting a resilient camming surface convergent with said one side in the direction said other wire is thrust into the channel to urge said wires towards said one side into interlacing engagement over the false bottom.

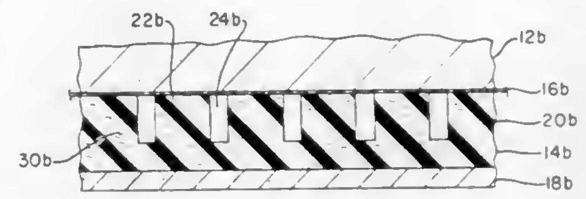
4,353,296
USE OF ANISOTROPIC RUBBER FOR VENTA-NIP ROLLS

Albert W. Beucker, Factoryville, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 23, 1981, Ser. No. 246,659

Int. Cl.^{3} B30B *9/20*

U.S. Cl. 100—121 **9 Claims**



1. A roll of the type used in conjunction with a backing means to form a nip through which a web passes, said roll comprising:
a resilient outer elastomeric cover having a plurality of alternating circumferentially extending ribs and grooves,
said cover being characterized by having anistropic properties including a modulus of elasticity as measured in directions transverse to the rotational direction of the roll which is substantially greater than the modulus of elasticity measured in directions circumferentially of the roll.

4,353,297
NUMBER PRINTING MACHINE FOR OFFSET PRESS

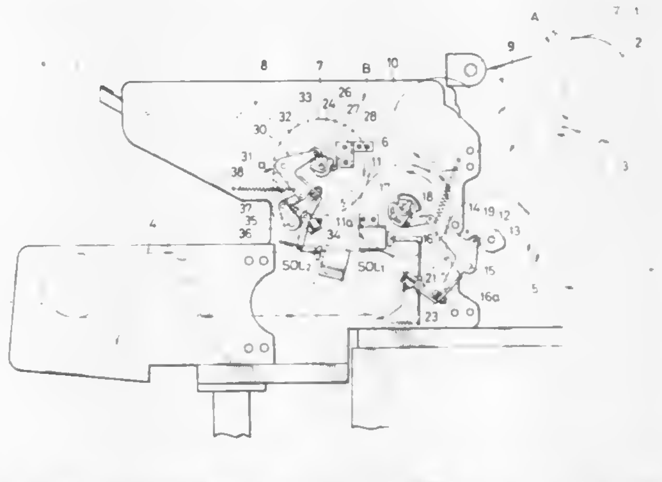
Nobuhiko Fujisawa, Fukuyama, and Yoshinori Honkawa, Fuchu, both of Japan, assignors to Ryobi, Limited, Hiroshima, Japan

Filed Apr. 2, 1981, Ser. No. 250,377

Claims priority, application Japan, Apr. 7, 1980, 55-47489[U]

Int. Cl.^{3} B41L *49/02;* **B41F** *7/06, 13/28*

U.S. Cl. 101—77 **5 Claims**



1. A number printing machine for an offset press comprising: a transfer drum rotatably mounted on a shaft, a number printing impression cylinder and a numbering-device mounting drum mounted on a shaft disposed between an impression cylinder and a sheet delivery section in the stated order; said numbering machine comprising: a photoelectric device disposed at a predetermined position with respect to said transfer drum, said photoelectric device being adapted to detect the presence of a printing sheet; a first solenoid; a first switch coupled to be operated by said photoelectric device thereby to

energize said first solenoid; an impression cylinder actuation mechanism and a first cam adapted to rock said impression cylinder actuation mechanism fixedly secured to said shaft of said transfer drum, said first solenoid being adapted to latch said actuation mechanism upon actuation of said first solenoid to cause said number printing impression cylinder to approach said numbering-device mounting drum; a counter having a timing input cam; a second switch operated by said first switch and said timing input cam of a counter, said timing input cam being secured to said shaft of said numbering device mounting drum, said counter being adapted to count a count signal applied thereto through said second switch; a second cam secured to said shaft of said numbering-device mounting drum; a timing mechanism disposed to be rocked by said second cam, said second cam and said timing input cam being fixedly secured to said shaft of said numbering-device mounting drum; a numbering cam operated in association with said timing mechanism; a second solenoid; a numbering device having an input cam follower; a counter output contact which, when a count value of said counter coincides with a value set on a dial unit, is closed to energize said second solenoid, whereby said timing mechanism is latched to cause said numbering cam to be positioned such that said numbering cam is in contact with said cam follower of said numbering device so that a present number is replaced by a next succeeding number, wherein a successive number printing operation and a same number printing operation are selectively carried out by changing a value set on said dial unit.

4,353,298

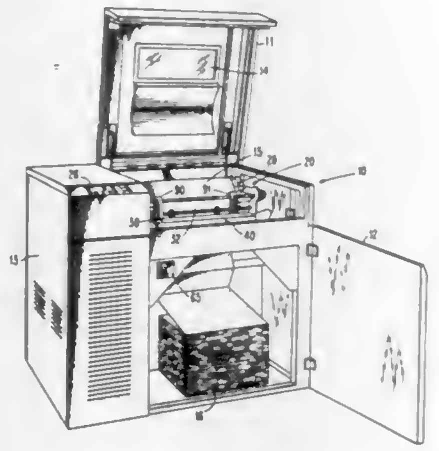
PARTIAL LINE TURNAROUND FOR PRINTERS

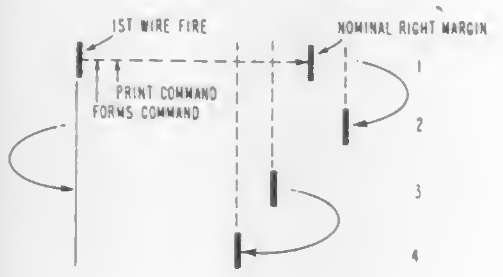
Gregory N. Baker; Willard B. Greene, both of Boca Raton; Ludwig R. Siegl, Highland Beach; Delbert C. Thomas, Jr., Boca Raton; Charles J. Weber, Boca Raton, and Lee T. Zimmerman, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,494

Int. Cl.^{3} B41J *3/12*

U.S. Cl. 101—93.05 **16 Claims**





1. A line turnaround arrangement for a printer, comprising:
a printer unit, said printer unit incorporating forms feed assembly means for moving a form for printing at a print line, and said printer unit further having a ribbon drive assembly;
a wire matrix print assembly in said printer unit, said print assembly incorporating print wires and print wire actuators arranged in print heads spaced at regular predetermined intervals, said print assembly being mounted for reciprocated printing movement along said print line;
wire image means for providing signals on a selective basis to said printer unit to activate said print wire actuators to produce character by means of dots on said forms during printing operations, said signals being supplied to said print assembly as said print assembly moves along said print line;
control means for producing turnaround input signals indicative of the number of print heads in said print assembly, the character density, the print head spacing, and the starting point of the last print head in said print assembly;
said control means utilizing said turnaround input signals to produce stopping and turnaround control signals indicative of printing operations of said print assembly requiring (1) a nominal line of printing defined as the number of print positions a print head can print times the number of print heads in said print assembly, (2) less than a nominal line of printing, and (3) an extended line of printing involving printing of characters beyond a nominal line of printing up to a predetermined maximum line length, said stopping and turnaround control signals being indicative of selected stopping and turnaround points for said print assembly in individual lines to be printed;
means responsive to Print Commands to move said print assembly along said print line in order to print characters in individual lines of printing;
emitter means operable during movement of said print assembly along said print line to provide emitter signals indicative of the positional location of said print assembly and for defining successive stopping and turnaround points in a line of printing in said printer unit during printing operations; and
said control means further being responsive to said stopping and turnaround control signals and emitter signals from said emitter means to control stopping, turnaround and movement of said print assembly for printing of (1) a nominal line of printing, (2) less than a nominal line of printing, and (3) an extended line of printing.

4,353,299

AUTOMATIC CONTROL SYSTEM FOR OFFSET PRINTING MACHINE

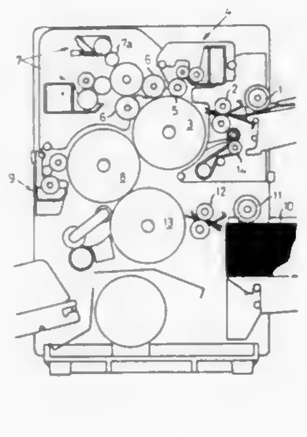
Kazuo Murai; Kenji Hashimoto; Kiyoshi Fukushima, all of Tokyo, and Sumio Suzuki, Yamagata, all of Japan, assignors to Ricoh Co., Ltd., Japan

Continuation-in-part of Ser. No. 952,536, Oct. 18, 1978, abandoned. This application Jan. 16, 1981, Ser. No. 225,606

Claims priority, application Japan, Oct. 22, 1977, 52-139559; Oct. 27, 1977, 52-128137; Nov. 30, 1977, 52-142585

Int. Cl.^{3} B41F *7/06, 7/36, 7/40, 31/30*

U.S. Cl. 101—144 **13 Claims**



1. An improved automatically controllable offset printing machine having eight discrete states of operation in each cycle, the machine comprising a drive motor arranged to be energized during each but the first of the eight states of operation, an ink kneading device operatable during the second of said states of operation, a rotatable cylinder for supporting a removable master plate, a master plate feeder operable only during the third of said states to feed a master plate to said master cylinder, an etching device operable only during the third of said states and including a roller for applying an ink-repellent etching solution to a master plate when mounted on said master cylinder, an ink device operable only during the fourth of said states for applying ink to a master plate, a rotatable blanket cylinder operable only during the fifth of said states and arranged to engage said master cylinder to receive an ink image from a master when on said master cylinder, a sheet feeder operable during the sixth and eighth of said states for feeding copy sheets to said blanket cylinder, an impression cylinder for urging copy sheets against said blanket cylinder, cleaning means operable only during the seventh of said states for cleaning said blanket cylinder, master plate ejection means operable only during the seventh of said states for ejecting a used master plate from said master cylinder, a control shaft mechanism including a control shaft arranged to be located in a first position during the second, third, seventh and eighth states to create a mechanical condition such that at least the inking device is disengaged from a master plate when on said master cylinder, and arranged to be located in a second position during the fourth, fifth and sixth states to create a mechanical condition such that at least the inking device is in engagement with a master plate when on said master cylinder, a cam and linkage mechanism operable to switch the control shaft between the first and second positions, and drive means operable to actuate said cam and linkage mechanism to cause the control shaft to switch between the first and second positions, the improvement comprising (a) shaft position detecting means for detecting the actual position of the control shaft, (b) an instruction decoder having eight output terminals to decode a stop signal for said drive motor, an ink knead signal for controlling the operation of said ink kneading device, an etch signal for controlling the rotation of the roller in said etching device, an ink form signal for controlling the operation of said ink forming device, a transfer signal for effecting engagement of said master and said blanket cylinders, a print signal for controlling the operation of said sheet feeder, a clean signal for said cleaning means, and a final signal, (c) a shaft position judging circuit connected to the instruction decoder and the shaft position detecting means, said shaft position judging circuit including first gate means to designate a desired position for the control shaft in each of said states, second gate means responsive to the desired position and actual position of the control shaft to energize the drive means of the control shaft mechanism when the designated and actual positions are not the same, and third gate means to provide either a first position agreement signal or a second position agreement signal respectively when the control shaft is in the desired first or second position, (d) a synchronizing unit for generating a synchronizing pulse each time said master cylinder makes one complete revolution, (e) a binary counter arranged to be enabled by a respective one of etch, ink form, transfer and clean signals to count the synchronizing pulses, (f) a sequence counter arranged to be enabled by the etch and clean signals to count the synchronizing pulses, said sequence counter also producing a signal for making the master plate feeding operation and the master ejection operation effective during a period of corresponding to one complete revolution of the master cylinder during the presence of the etch signal, and subsequently, producing an end signal when the master cylinder has rotated through a predetermined number of revolutions, (g) a presettable copy number counter arranged to count the number copy sheets passing through the machine during the printing operation and to produce an output signal when the counted value coincides with the preset value, (h) operation duration setting means including four independent rotary switches each presettable to a value indicative of the desired period respectively for etching, ink forming, transferring and cleaning operations, and a coder responsive to the setting of each said rotary switch to produce a binary output signal corresponding thereto, (i) a coincidence circuit for comparing the instantaneous count of the binary counter with each output of said coder and to provide a coincidence signal when coincidence is detected, (j-1) signal conversion means having a diode matrix, (j-2) jump gate means having a first AND gate which permits the passage of the ink knead signal so as to produce an etching instruction of four-bit code in the diode matrix when the first position agreement signal is produced, a second AND gate which permits the passage of the etch signal to produce an inking instruction of four-bit code in the diode matrix when the coincidence signal is produced, a third AND gate which permits the passage of the ink form signal to produce a transfer instruction of four-bit code in the diode matrix when the coincidence signal is produced, a fourth AND gate which permits the passage of the transfer signal to produce a printing instruction of four-bit code in the diode matrix when the coincidence signal is produced, a fifth AND gate which permits the passage of the print signal to produce a cleaning instruction of four-bit code in the diode matrix when the output signal from the copy number counter is received, a sixth AND gate which permits the passage of the clean signal to produce a final instruction of four-bit code in the diode matrix when the coincidence signal is produced, and a seventh AND gate which permits the passage of the final signal from the instruction decoder to produce a stop instruction of four-bit code in the diode matrix when the end signal is produced at the sequence counter while a single mode signal is produced for single mode operation, and (j-3) a first detector to detect the presence of a signal at any one of the AND gates in the jump gate means, (k) a single pulse generator connected to the first detector to generate a clocked clock pulse synchronized with the synchronizing pulses from an oscillator in response to an output signal from the first detector, (1) a register arranged to store an instruction code from the diode matrix in response to the clocked clock pulses and arranged to apply the stored instruction to the instruction decoder for conversion of the instruction into a said signal corresponding to the code stored by the register, (m) an auto start switch and (n) start gate means responsive to actuation of the auto start switch when a stop signal is produced by the instruction decoder, to supply a signal indicative of the ink kneading state to the register, to supply a signal for generating a clocked clock pulse to the single pulse generator, and to produce a motor start signal, the binary counter and said sequence counter being reset by the clocked clock pule from the single pulse generator.

4,353,300

INKING SYSTEM FOR ROTARY OFFSET PRINTING MACHINE

Georg Schuster, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach-am-Main, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,132

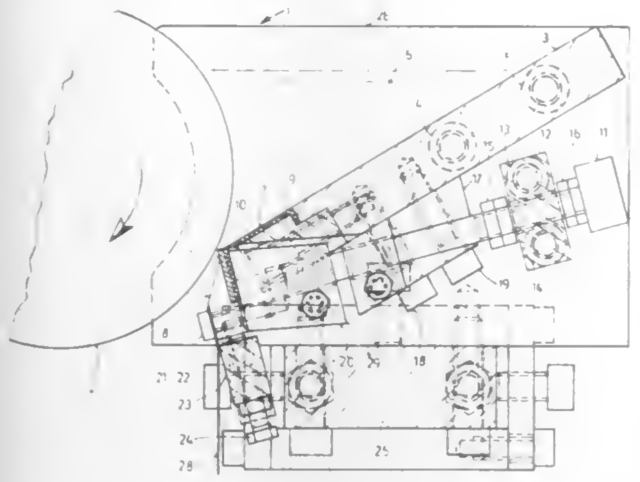
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950163

Int. Cl.^{3} B41F *31/02*

U.S. Cl. 101—365 **12 Claims**

1. Inking system for a printing machine having
an ink trough (1) including a bottom plate (3);
a duct roller (2) positioned adjacent the bottom plate while leaving a gap with respect to the bottom plate;
a doctor blade (8) extending parallel to the duct roller in said gap to control the thickness of the ink film picked up by the duct roller;
and a plurality of control screws (11) secured to the trough (1), located beneath the bottom plate (3) and transferring adjusting force to the doctor blade to adjust and select the position thereof with respect to the duct roller at selected axial zones of the duct roller by moving the doctor blade in said gap toward and away from the duct roller,
and comprising,
an elongated elastic bridging element (7) for bridging said gap having respectively mutually angled plate portions, of

which one plate portion is clamped to the bottom plate and the other plate portion is clamped to the doctor blade at the side thereof remote from the duct roller (2), said



bridging element preventing escape of ink from above the bottom plate through a gap between the doctor blade and the bottom plate and to the region of the control screws.

4,353,301
SMOKE GRENADE

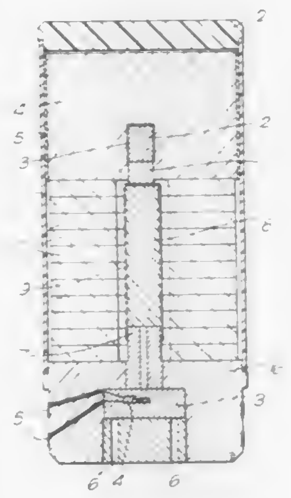
Kjell O. Jacobsen, Raufoss, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Continuation of Ser. No. 16,375, Mar. 1, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,005

Claims priority, application Norway, Mar. 8, 1978, 780818

Int. Cl.³ F42B *113/44*

U.S. Cl. 102—334 2 Claims



1. A smoke grenade for producing smoke for screening purposes, comprising: a casing containing a discharge composition for propelling the casing, a primer positioned to ignite the discharge composition, a first delay means, an ignition/-bursting composition contained in a disruptable tube and positioned to be ignited via said first delay means, after a predetermined delay, by said discharge composition, and a set of easily ignitable annular disc shaped smoke charges surrounding the ignition/bursting change and positioned to be ignited and immediately broken up and thrown outwardly laterally, by said ignition/bursting composition for rapid wide spread smoke production, a further smoke charge which is compact and hence burns more slowly than the first said smoke charges and which is positioned ahead of the first said smoke charges taken in the direction of travel of the grenade, and further ignition means positioned to ignite the further smoke charge, a further delay means, said further ignition means being ignitable by said ignition/bursting composition via said further delay means, after a pre-determined delay, for igniting said further smoke charge.

4,353,302
ARRANGEMENT IN OR RELATING TO A PROJECTILE

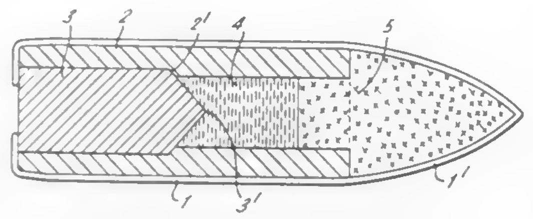
Kaare R. Strandli, and Arne M. Östlie, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Continuation of Ser. No. 957,851, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 779,994, Mar. 22, 1977, abandoned. This application May 6, 1980, Ser. No. 147,051

Claims priority, application Norway, Jul. 1, 1976, 762297

Int. Cl.³ F42B *11/24, 13/14*

U.S. Cl. 102—364 12 Claims



1. A multi-capability projectile providing substantially splinter, fragmentation and incendiary effect after penetration of a target wall of a predetermined thickness in combination with substantial armor piercing properties, comprising a primary penetration element and a secondary penetration element, said primary penetration element being located toward the rear of the projectile and surrounded over its full length by said secondary penetration element such that said primary penetration element is disposed completely inside said secondary penetration element, the secondary penetration element being substantially longer than said primary penetration element and extending substantially beyond said primary penetration element toward the front of the projectile so as to define a cavity in the secondary penetration element forward of the primary penetration element, the secondary penetration element terminating at its forward end rearward of the front end of the projectile, bursting charge means located in said cavity no farther forward than the front end of the secondary penetration element, means defining a nose at the forward end of the projectile, forward of the secondary penetration element, an incendiary charge located in said nose for igniting upon deformation of the nose upon impacting a target, and hence for igniting said bursting charge, said nose being substantially completely filled with said incendiary charge, and hence being devoid of mechanical fuses or firing pins, said incendiary charge being constructed to burn at at rate which will delay detonation of the bursting charge until the bursting charge and its surrounding portion of the secondary penetration element have essentially passed through said wall, whereby detonation of the bursting charge, and hence splintering and fragmentation of the secondary penetration element occurs past said wall, and retaining means located forward of the rear end of the secondary penetration element for retaining said primary penetration element substantially immobile relative to said secondary penetration element prior to impact of the projectile with a target, said retaining means including a projecting surface which projects inwardly from said secondary penetration element to securely engage the primary penetration element.

4,353,303
PROJECTILE FOR DISPENSING GASEOUS MATERIAL

Frank H. Bell, Brigham City, Utah, assignor to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 888,120, Mar. 20, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,359

Int. Cl.³ F42B *13/46*

U.S. Cl. 102—367 3 Claims

1. A projectile for dispensing gaseous material to the external environment, comprising:

a closed, hollow, cylindrical housing having an opening in its forward end;

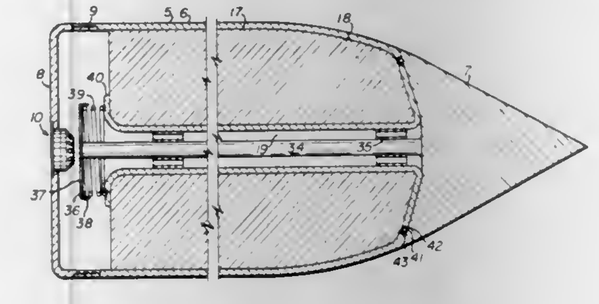
a central venturi tube inside the housing, fastened to the forward end thereof to encompass said opening and extending aftwardly therefrom, the aft end of said tube being in communication with the interior of the housing;

a nose cone forming at lease a portion of an aerodynamic, forward surface for the projectile but being separable from the forward end of the housing, against which it is normally seated;

a long rod centrally fixed at one end to the nose cone and extending centrally through the venturi tube;

spider supports in the venturi tube to support the rod for sliding motion therein;

a perforated disk centrally fixed to the aft end of the rod and having a short, forwardly extending, peripheral flange;



a compression spring confined between the aft end of the venturi tube and the perforated disk, being seated in a groove in the former and being retained by the peripheral flange on the latter, whereby the nose cone can function as a valving member against the venturi tube for controlled discharge of gaseous material when sufficient pressure occurs therein;

gaseous material to be dispensed to the external environment, stored in the space surrounding the venturi tube;

means for retaining the gaseous material in said space; and

means for releasing the gaseous material.

4,353,304
PROPELLANT CHARGE IGNITER

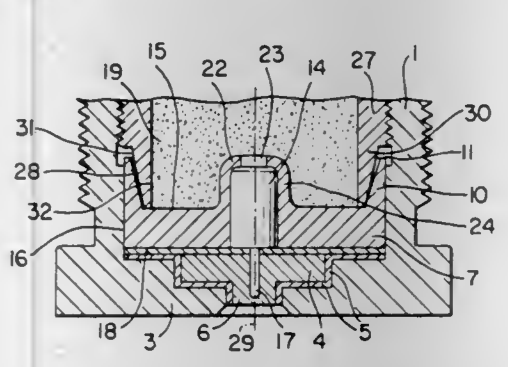
Günter Hübsch, Kalchreuth, and Rudolf Stahlmann, Fürth, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,618

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832879

Int. Cl.³ F42B *5/26, 9/26*

U.S. Cl. 102—470 12 Claims



1. A propellant charge igniter having a casing and positioned therein, in succession, a central contact member, an igniter element, and a powder charge, said igniter further comprising a sealing element surrounding the igniter element, said sealing element having, on a side contacting the powder charge, an annular collar in sealing contact with an inner wall of the casing and a holddown member arranged in the casing, said holddown member having an annular extension contacting the inner surface of the collar, the inner surface of the collar and an outer surface of the extension being inclined with respect to each other, at least in their contact zone, whereby axial pressure of the holddown member against the sealing element, the collar can be pressed radially against the inner wall of the casing; said holddown member being provided with a central bore in which the powder charge is retained in contact with said sealing element.

4,353,305
KINETIC-ENERGY PROJECTILE

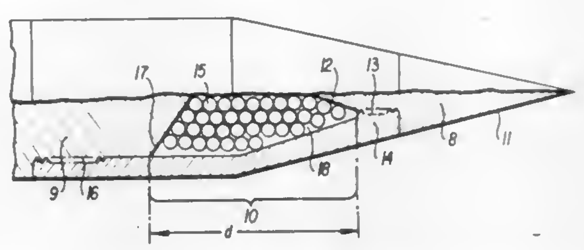
Pierre A. Moreau, Bourges, and Jean C. Sauvestre, Saint-Doulchard, both of France, assignors to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Nov. 23, 1979, Ser. No. 96,676

Claims priority, application France, Nov. 23, 1978, 78 33034

Int. Cl.³ F42B *11/12*

U.S. Cl. 102—519 5 Claims



1. A piercing kinetic-energy projectile, particularly of the arrow type applicable to light or heavy targets, comprising:

a heat penetrator;

a main penetrator;

a spacing means, said head and main penetrators being connected to said spacing means which retains a distance between the head and main penetrators and constitutes an envelope, said spacing means acting as a shock absorber to absorb the shock wave reflected by the target upon impact of said head penetrator, the ends of the main and head penetrators fastened in the envelope having a conical shape; and

a plurality of dense material sub-projectiles located in a space bounded by said spacing means and the ends of the main and head penetrators.

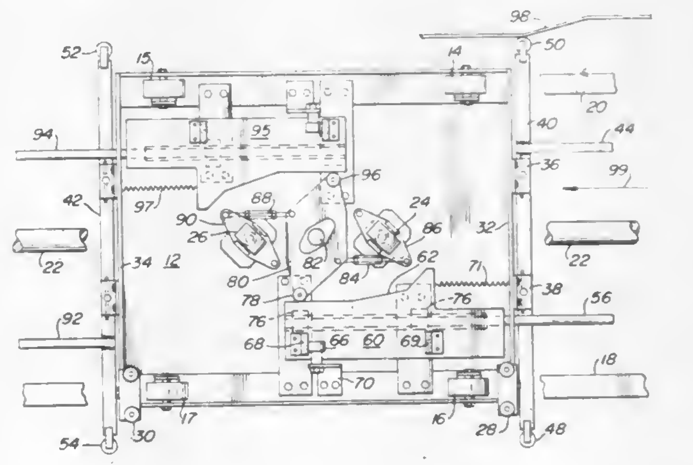
4,353,306
DRIVERLESS VEHICLE WITH TWO WAY ACCUMULATION

Peter H. Rohrbach, Bethlehem, and Robert A. Hale, Easton, both of Pa., assignors to Si Handling Systems, Inc., Easton, Pa.

Filed Jun. 19, 1980, Ser. No. 160,802

Int. Cl.³ B61B *13/12*

U.S. Cl. 104—166 11 Claims



1. A driverless vehicle capable of being driven in opposite directions comprising:

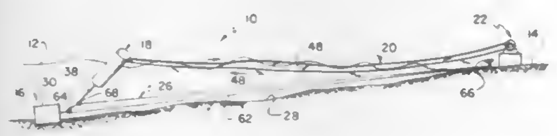
(a) a frame having front and rear ends and at least one drive wheel movable from a drive position to an accumulation position;

(b) first and second accumulators for moving said drive

wheel to said accumulation position, each actuator being adjacent one of the front and rear ends of the frame; and
(c) means for enabling said vehicle to be propelled in opposite directions with only one of the actuators being operable at any given time and so that said actuators are alternately movable between an operative and inoperative position depending upon the direction of movement of the vehicle wherein one of the actuators is operable to cause accumulation upon contact with an obstacle.

4,353,307
TOWING DEVICE FOR USE IN THE SURF

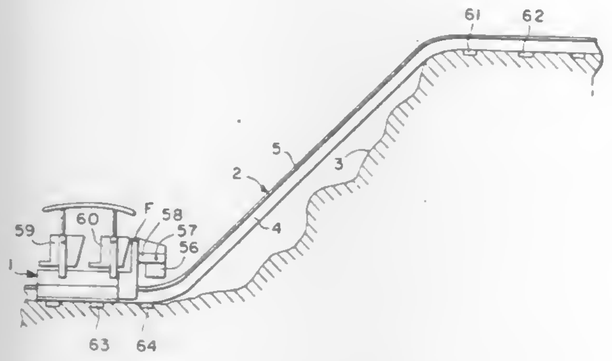
Bruce H. Munson, 334 Emerson Cir., Corpus Christi, Tex. 78415
Filed Mar. 28, 1980, Ser. No. 135,106
Int. Cl.^{3} B61B *11/00;* B66D *1/36*
U.S. Cl. 104—183 **7 Claims**



1. Apparatus for towing individuals from adjacent a shore out into an adjacent body of water, comprising
an anchor in the body of water;
a buoyant member connected to the anchor having a pulley thereon adjacent the surface of the water;
an endless flexible line reeved about the pulley and having two runs extending from the buoyant member to a location adjacent the shore;
means for endlessly moving the flexible line to drive one of the runs in a direction away from the location; and
means operable from adjacent the shore for moving the buoyant member, pulley and flexible line from adjacent the anchor to adjacent the shore, the buoyant member moving means comprising first means carried by the anchor, a second endless line extending from adjacent the shore and reeved in the first means, and means adjacent the shore for anchoring the second line.

4,353,308
COG WHEEL RAILWAY

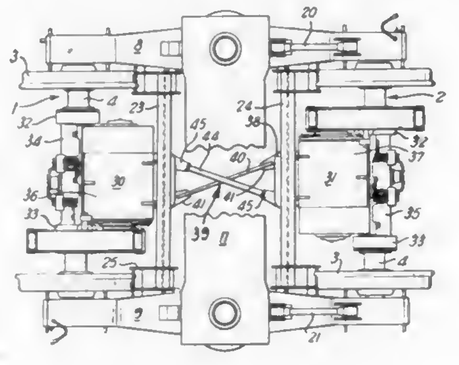
Kenneth G. Brown, Wickham Ave., Mattituck, N.Y. 11952
Filed Jul. 14, 1980, Ser. No. 167,929
Int. Cl.^{3} B61B *13/02, 13/06;* B61C *11/04;* B61H *7/00*
U.S. Cl. 105—29 R **10 Claims**



1. Cog wheel vehicle means comprising:
a track consisting of a square beam forming a tread and a pair of exterior flanges connected to the beam extending the tread laterally,
a row of holes in each flange,
a vehicle adapted to ride on said track, an axle, a pair of cogs on a wheel on said axle, the cogs engaging the holes in the flange,
means connected to said axle to drive the cog wheel,
an engine pivotally mounted on the vehicle, the engine being connected to the axle to drive the cog wheel driving means.
9. Cog wheel vehicle means comprising:
a track consisting of a square beam and a pair of flanges connected to the beam,
a row of holes in each flange,
a vehicle adapted to ride on said track, at least one cog wheel on the vehicle, the cog wheel engaging the holes in the flange,
a directional hydraulic motor connected to drive the cog wheel,
a hydraulic pump connected to drive the motor,
an engine pivotally mounted on the vehicle, the engine being connected to drive the pump,
disc brakes connected to the hydraulic pump so that the disc brakes are normally held open when pressure is applied to the hydraulic motors,
speed actuated emergency stopping means, the emergency stopping means comprising
a shock absorber mounted on the vehicle,
a lever connected to the shock absorber,
a pin mounted on the lever,
the pin being adapted to engage the holes in the flanges,
a latch mounted on the vehicle and connected to hold the lever,
a centrifugally operated member mounted on a wheel shaft of the vehicle connected to trip the latch at a pre-determined speed.
10. Cog wheel vehicle means comprising:
a track consisting of a square beam and a pair of flanges connected to the beam,
a row of holes in each flange,
a vehicle adapted to ride on said track, at least one cog wheel on the vehicle, the cog wheel engaging the holes in the flange, hand operated brake means on the vehicle comprising:
a C clamp frame slidably mounted on the vehicle for transverse motion, the jaws of the C clamp frame extending into gripping proximity to the sides of the square beam,
a first brake shoe fixed to the C clamp frame,
a second brake shoe mounted on the C clamp frame,
a second brake shoe mounted on a threaded shaft, the said shaft being threadedly mounted in the hub of the C clamp on the frame,
and a handwheel connected to rotate the threaded shaft to tighten the brake shoes against the sides of the square beam.

4,353,309
MOTORIZED RAILWAY VEHICLE TRUCK

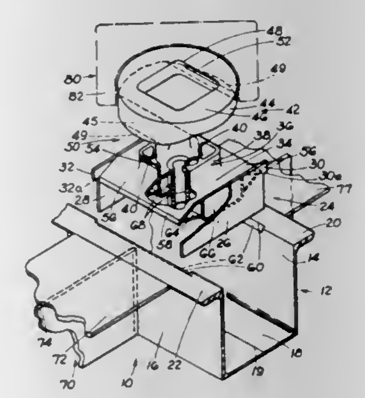
Maurice G. Pollard, Mickleover, and Robert Illingworth, Allestree, both of England, assignors to British Railways Board, London, England
Filed Aug. 8, 1980, Ser. No. 176,361
Claims priority, application United Kingdom, Sep. 6, 1979, 7930895
Int. Cl.^{3} B61C *9/50*
U.S. Cl. 105—136 **4 Claims**



1. A railway vehicle truck comprising:
a pair of side frames;
at least two wheel sets each having a live axle mounted in a respective pair of axle bearings;
a traction motor for each wheel set comprising a motor casing mounted for rotation on said associated live axle via a mounting means which otherwise maintains the motor casing rigid with and substantially parallel to said associated live axle;
means for securing each motor casing to prevent rotation of said motor casing about its said associated live axle;
and bracing means comprising at least one link member connected between said motor casings on the respective wheel sets and being pivotably resiliently mounted for rotation about at least one vertical axis positioned directly between said casings, said bracing means providing a stiffness through said motor casings to restrain parallel shear movement of one of said wheel sets relative to the other in a substantially horizontal plane.

4,353,310
CUSHIONED RAILWAY CAR CENTER PLATE ASSEMBLY

Steven L. Jantzen, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 22, 1980, Ser. No. 199,145
Int. Cl.^{3} B61F *3/00*
U.S. Cl. 105—199 C **15 Claims**

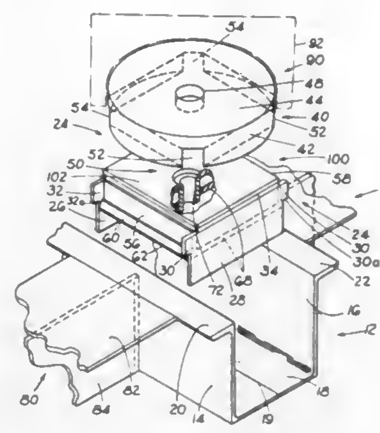


1. A railway car center plate assembly comprising: a center filler assembly adopted to be inserted into a railway car center sill and permanently attached to the center sill; said center filler including a pair of longitudinally spaced vertical plates which extend between vertical walls of the center sill and which are welded thereto; spacer extensions located below said vertical plates which extend beyond the walls of the center sill and abut the bottom surface of outwardly extending horizontal center sill flanges; a mounting plate extending longitudinally of the center sill between said center filler vertical plates; a mounting extension portion extending downwardly from said mounting plate having a non-round contour adopted to engaged a cooperating non-round opening located in a wear member to be located in the truck bowl; and interengaging means provided on said mounting extension and on said wear member to removably lock the wear member in engagement with said mounting plate and said mounting plate extension.

4,353,311
RAILWAY CAR CENTER PLATE ASSEMBLY

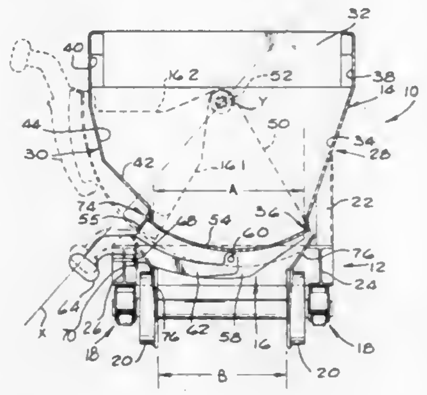
Steven L. Jantzen, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 22, 1980, Ser. No. 199,146
Int. Cl.^{3} B61F *3/00*
U.S. Cl. 105—199 C **12 Claims**

1. A railway car center plate assembly comprising: a center filler assembly adopted to be inserted into a railway car center sill and permanently attached to the center sill; said center filler assembly including longitudinally spaced vertical plates which extend between the walls of the center sill; spacer extensions located below said vertical plates which extend beyond the walls of the center sill and abut the bottom surface of the center sill flanges; a mounting plate extending longitudinally of the car between said vertical plates; a wear member adopted to be located in the truck bowl; and interengaging means to removably lock said wear member in engagement with said mounting plate.



4,353,312
BOTTOM DISCHARGE HOPPER RAIL CAR

Cornelis Brouwer, Potchefstroom, South Africa, assignor to Rotaque (Proprietary) Limited, Transvaal Province, South Africa
Filed Feb. 22, 1980, Ser. No. 123,588
Int. Cl.^{3} B65G *67/24*
U.S. Cl. 105—241.2 **14 Claims**



1. A bottom discharge hopper structure comprising:
a chassis which is supported on flanged wheels having rail-engaging surfaces for resting on spaced rails,
a hopper body mounted on the chassis and having a longitudinal central vertical plane, the hopper body comprising two longitudinally extending side walls and two transverse end walls, each side wall comprising at least a sloping wall which slopes inwardly towards the longitudinal central plane of the hopper body,
one of said sloping wall being at a lesser angle to the vertical than the other of said sloping walls, and said sloping walls having lower edges bordering a bottom opening which has a width greater than the distance between said wheels,
a single door mounted for swinging movement between a position in which it closes said opening and a position in which it is offset with respect to said opening to permit discharge from the hopper body, and
chute plates converging downwardly away from said opening, the chute plates each extending from a position which is located outwardly of a lower edge of a respective side wall to a position which is located inwardly of the rail-engaging surfaces of the wheels for guiding material being discharged from said hopper body between rails on which the wheels rest.

4,353,313

BODY FOR A RAILWAY CARRIAGE

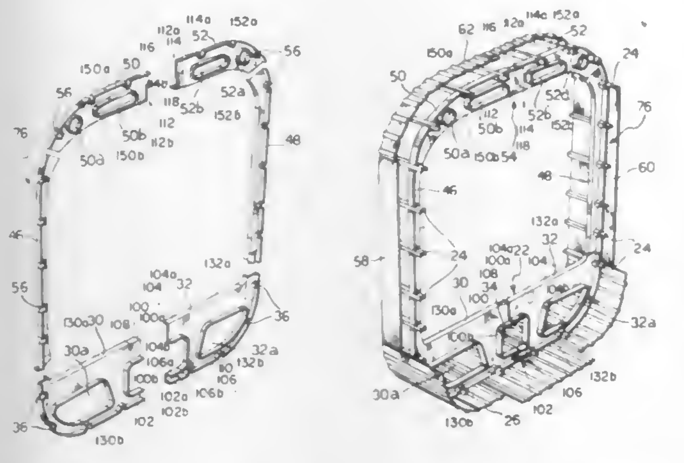
Romano Panagin, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 25, 1980, Ser. No. 143,686

Claims priority, application Italy, May 24, 1979, 68111 A/79

Int. Cl.^{3} B61D *17/00*

U.S. Cl. 105—397 **1 Claim**



1. A railway carriage body comprising a shell structure formed from the following structural sub-assemblies;

a base sub-assembly comprising a series of transverse lower frame elements spaced longitudinally of said body and each constituted by a respective pair of sheet-metal frame parts welded together, girders interconnecting the said lower frame elements, an outer sheet-metal covering fixed to said girders and to the lateral and lower edges of the said lower frame elements, and a flooring fixed to the upper edges of the said lower frame elements,

a pair of side-and-roof sub-assemblies each forming one side and part of the roof of the said body and comprising a series of vertically-extending lateral frame elements connected at their lower ends to the said lower frame elements, and a series of upper transverse frame parts connected to the upper ends of respective ones of said vertical frame elements, corresponding said frame parts of the two side-and-roof sub-assemblies being welded together in the assembled body to form a series of upper transverse frame elements together with the said lateral and lower frame elements form a series of frames of rectangular shape, each side-and-roof subassembly further comprising a plurality of girders extending longitudinally of said body and serving to interconnect the said frame elements of the sub-assembly, and an outer sheet-metal covering affixed to said frame elements and girders and provided with strengthening frames defining window and door openings,

a pair of end-wall units affixed to opposite ends of the said sub-assemblies, the said frame parts making up each upper and each lower frame element having their inner end portions, considered laterally of the body, telescoped one within the other to permit adjustment of the width of said carriage body during assembly prior to being permanently joined together, and

means for permanently joining together the said frame parts making up each upper and each lower frame element.

4,353,314

BOX CAR CORNER POST ARRANGEMENT

Roy W. Miller, Highland, Ind., and Bhaskara R. Mutyala, Birmingham, Ala., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 22, 1980, Ser. No. 180,262

Int. Cl.^{3} B61D *17/06*

U.S. Cl. 105—410 **4 Claims**

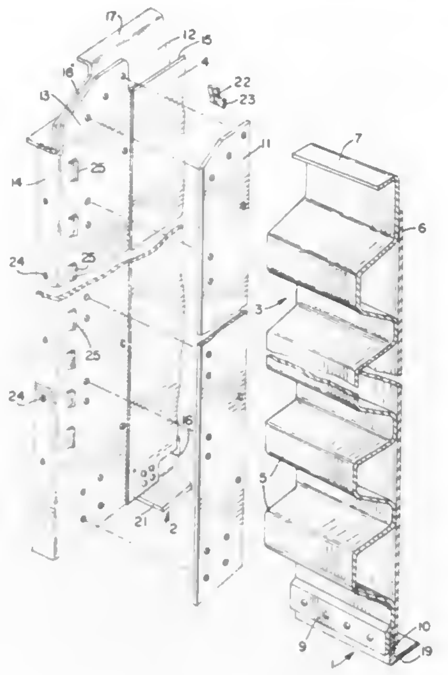
1. In a railway car having an end wall having a finite thickness and a side wall, a car corner construction comprising:

a corner post with means attached to an forming a continuation of said side wall;

a flat, vertically disposed reinforcing plate extending across the thickness of the end wall and sandwiched and affixed between the end wall and said corner post, and, said reinforcing plate having a first vertical edge;

means securely attaching the reinforcing plate to both the corner post and the end wall to provide a secure connection;

a side plate connected to the upper position of the side wall



and further having end means connected to said reinforcing plate to thereby rigidly interconnect the side plate with the end wall;

said corner post having integrally formed means for alignment of the reinforcing plate and said integrally formed means being disposed adjacent said first vertical edge of the reinforcing plate to provide stop means to limit outward movement of said end wall.

4,353,315

STEP GRATE FOR MECHANICAL STOKER WITH FLEXIBLE FIRE GRATE

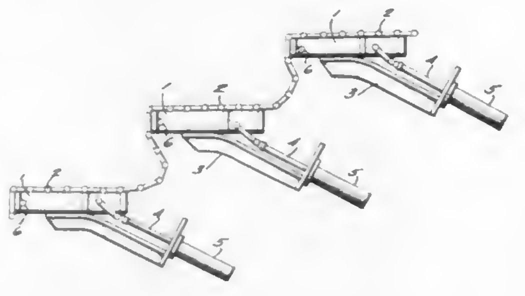
Katsurou Hayashi, Fujisawashi, Japan, assignor to Akihiko Hiroe, Fujisawa, Japan

Filed Jun. 12, 1980, Ser. No. 158,774

Claims priority, application Japan, Jun. 14, 1979, 54-075162

Int. Cl.^{3} F23H *7/08*

U.S. Cl. 110—281 **11 Claims**



1. A step grate mechanical stoker, comprising:

a flexible reticulate grate having an entrance margin and an exit margin, said grate being generally laid out so that material may be loaded onto the grate at the entrance margin and migrated across the grate to the exit margin;

a plurality of generally upright support structures arranged in at least one series;

said grate being draped upon said support structures so that said series is aligned with the entrance margin to exist margin dimension of said grate and said grate being constituted between adjacent twos of said support structures by a respective plurality of flexibly interconnected elements so that said grate hangs in respective cantenaries in respective intervals between pairs of neighboring said support structures in said series.

each support structure including a grate contact member, a fixed portion, and an extensible/retractible portion between the contact member and fixed portion thereof;

means for extending and retracting each extensible/retractible portion.

4,353,316

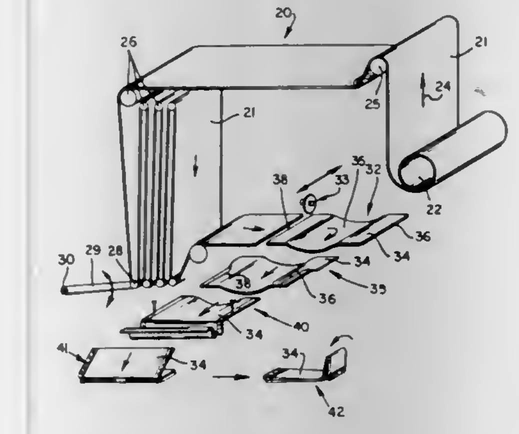
SHEET PRODUCTION SYSTEM WITH HEM EXPANDER

Charles E. Brocklehurst, Fountain Inn, S.C., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 956,792, Nov. 1, 1978, Pat. No. 4,269,130. This application May 27, 1980, Ser. No. 153,084

Int. Cl.^{3} D05B *97/00, 35/02, 21/00*

U.S. Cl. 112—262.3 **19 Claims**



1. A method of forming a hem in sheet material comprising the steps of folding an edge portion of the sheet material into overlying relationship with the body of the sheet material, holding the edge portion from movement in a direction across its length, positively moving the body of the sheet material toward the fold in the sheet material, directing a flow of fluid toward the fold between the layer of the folded edge portion and the layer of the body of the sheet material to expand the folded portion of the sheet material, and sewing through the folded portion and the body portion of the sheet material to form a hem.

15. A method of forming a hem in the edge of a segment of sheet material comprising moving the segment along a path with the edge portion to be hemmed extending along the path, folding the edge portion upwardly into overlying relationship with the body portion of the segment, simultaneously moving the folded over portion with an upper belt member toward a sewing machine and moving the body portion of the segment beneath the folded over portion with a lower belt member toward the sewing machine, and in response to detection of an on-coming edge of the segment approaching the sewing machine shifting the phase of one of the belt members to change the position of the on-coming edge of the body portion of the segment beneath the folded over portion with the on-coming edge of the folded over portion, and sewing through the overlying folded over portion and the body portion of the segment beneath the folded over portion.

4,353,317

METHOD AND APPARATUS FOR TUFTING HIGH AND LOW PILE IN THE SAME ROW OF STITCHING

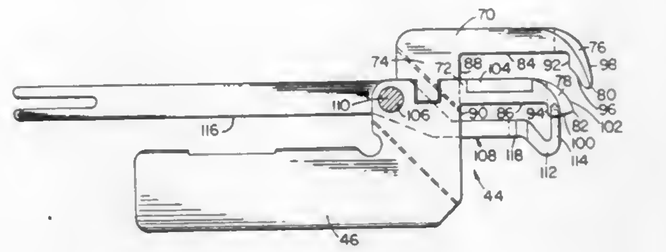
Robert T. Crumbliss, Chattanooga, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Feb. 4, 1982, Ser. No. 345,929

Int. Cl.^{3} D05C *15/00*

U.S. Cl. 112—266.2 **9 Claims**

6. A method of tufting cut pile having different pile heights in the same row of stitching comprising, supporting and feeding a backing material in one direction, stitching a yarn continuously through said backing material as the material moves to form a row of successive yarn loops on one side of said material, supporting on said one side of said material an oscillating hook having first and second free ends pointing in the direction opposite the backing material feed and having a respective first and second blade portion adjacent each free end, said second free end being below the first free end at a level for entering and seizing said loops in succession, closing said second free



end with a moveable gate to prevent entry of a selected loop onto the second blade portion, shedding said selected loop from the second free end, seizing said selected loop by the first free end, moving the gate away from the second free end to permit entry of another selected loop onto the second blade portion and severing the loops on the first and second blade portions to produce cut pile.

4,353,318

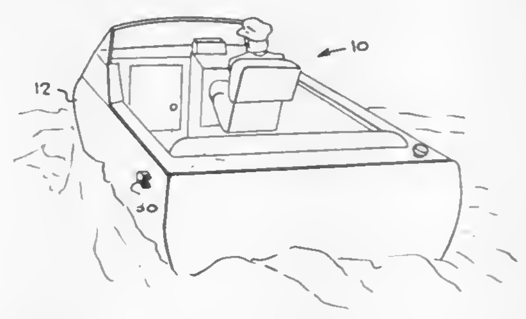
SPRAY GUARD

Milton J. Williams, Richmond, Va., assignor to Spray Guard Corporation, Richmond, Va.

Filed Oct. 16, 1980, Ser. No. 197,684

Int. Cl.^{3} B63J *2/00*

U.S. Cl. 114—211 **10 Claims**



1. A spray guard for preventing the entry of spray into the vent head on the end of a fuel vent line of a boat comprising a unitary member having a forward end and a rearward end and including an inner wall having a planar hull engaging surface and a rear edge, an outer wall spaced from the inner wall and transverse wall means extending between and connecting the inner wall to the outer wall to define a chamber of sufficient size to receive and enclose a vent head on the end of a vent line, a rearwardly facing opening in said chamber, a mounting slot having linear side edges extending inwardly from the rear edge of the inner wall and of sufficient width to permit the vent line to extend therethrough but being of less width than the vent head to permit the vent head to clampingly engage the inner wall between the vent head and the hull of a boat so that the planar hull engaging surface is clamped against the hull to hold the spray guard in position permitting venting through the rearwardly facing opening while precluding contact of spray resultant from operation of the boat with the vent head so as to prevent the entry of such spray into the vent head and vent line.

4,353,319
MARINE BOLLARD MADE OF LAYERED PLASTICS RESIN AND GLASS REINFORCEMENT

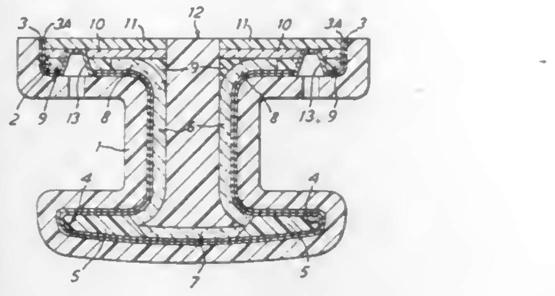
William J. M. Ash, The Croft, 10 Greville Park Rd., Ashtead, Surrey, England

Filed Aug. 6, 1980, Ser. No. 175,805

Claims priority, application United Kingdom, Feb. 26, 1980, 8006358

Int. Cl.^{3} B63B *21/06*

U.S. Cl. 114—218 **6 Claims**



1. A marine bollard for use by shipping, comprising a base supporting a column neck which carries a head with overlying portions projecting laterally outwardly above the neck, the outer surface thereof being formed from a coat of thermosetting plastics resin, said coat overlying lamination formed of glass reinforcement and thermosetting plastics material, the glass reinforcement of the laminations defining the overlying head portions being formed from bi-directional rovings, the glass reinforcement of the laminations defining the remainder of the head and the column neck being linear rovings arranged for curvilinear transitions from the column-neck to both the head and the base, the base having a base filler formed of laminar material, the overlying portions of the bollard head being filled with a cured combination of thermoplastics resin and a compatible filler, the remaining area of the head and the neck walls of the bollard being formed of a cured combination of linear roving and chopped strand mat glass reinforcement and thermo-setting plastics resin, said walls defining a column cavity in the neck, the base being formed by a cured combination of glass reinforcement and thermosetting resin together with said base filler.

4,353,320
UTILITY DISTRIBUTION SYSTEM FOR MARINE FLOATS

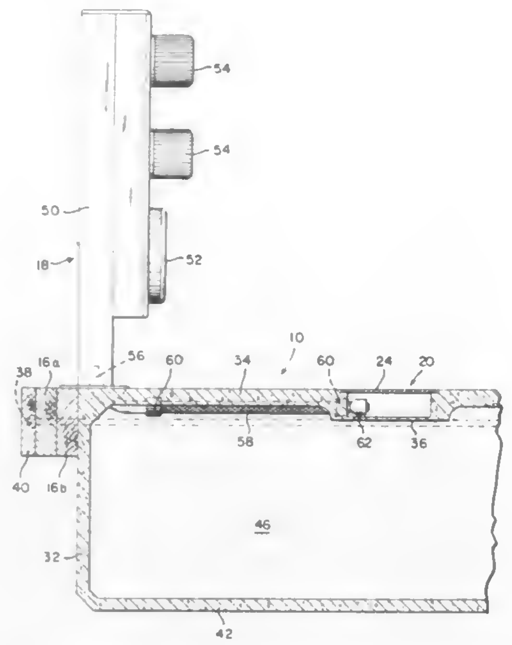
Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Apr. 7, 1980, Ser. No. 137,594

Int. Cl.^{3} B63B *35/38*

U.S. Cl. 114—267 **12 Claims**

1. A marine float, comprising a concrete casing surrounding a buoyant core, said casing having a bottom, two opposed end walls, two opposed side walls connecting opposite edges of said end walls and a generally planar deck extending between the upper edges of said end and side walls, said deck having formed therein a longitudinal utility trench having a bottom connecting the lower edges of two trench walls, said trench extending between said end walls to facilitate the routing of utility conduits along said float, said deck also having formed therein a transverse utility passage extending generally perpendicularly from said longitudinal utility trench and opening upwardly in said deck adjacent one side thereof to facilitate the routing of utility conduits to utility outlets mounted adjacent the side walls of the casing, said casing further including a plurality of spaced-apart, generally parallel tie rods extending between said side walls beneath the bottom of said trench, and respective fasteners secured to the ends of said tie rods to tension said tie rods, thereby forcing the side walls of said casing toward each other to compressively load said casing.



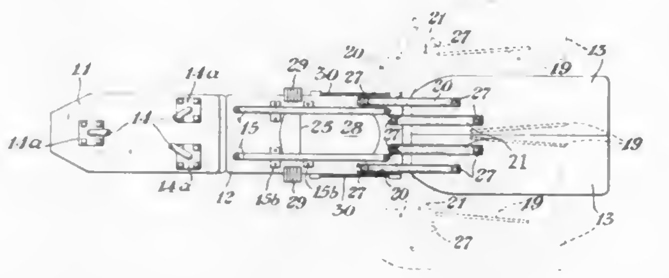
4,353,321
WATERBIKE

Gordon Y. T. Liu, 12336 Parkwood Ave., Baton Rouge, La. 70815

Filed Jun. 9, 1980, Ser. No. 157,508

Int. Cl.^{3} B63B *1/20*

U.S. Cl. 114—283 **3 Claims**



1. A waterbike, comprising: a first floatation member, including steering means; a second floatation member, including support means for a rider, said support means rigidly connected to the second floatation member in a fixed relationship, said second floatation member located aft along the horizontal axis of the waterbike and connected to the first floatation member; a third and a fourth flotation member means for varying the horizontal position of the third and fourth floatation members relative to one another and perpendicular to the horizontal axis of the waterbike, said position-varying means including a cable assembly, whereby the third and fourth floatation members are in a closed juxtaposed position when the waterbike is traveling at a relatively high speed and are disposed away from each other in a stabilizing position substantially perpendicular to the horizontal axis of the waterbike to provide vertical stability when the waterbike is stationary or traveling at a relatively low speed, said third and fourth floatation members further including vertically-positioned fins fixed to the bottoms thereof, said fins extending in a biased position along the bottom of the third and fourth floatation members relative to the horizontal axis of the waterbike, whereby the third and fourth floatation members are forced by the water pressure into a juxtaposed position as the speed of the waterbike is increased.

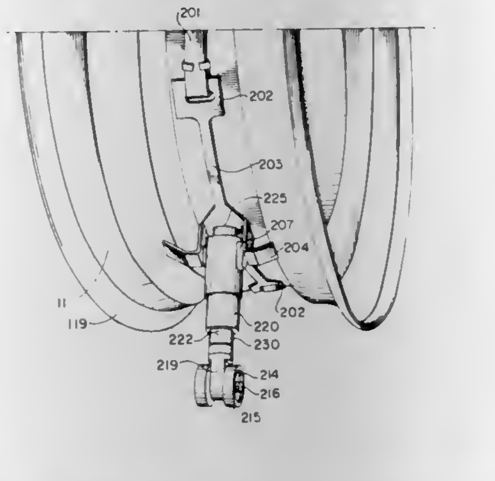
4,353,322
LOW INFLATION WARNING DEVICE FOR PNEUMATIC TIRES

Walter Weglin, Bellevue, and James M. Daly, Kirkland, both of Wash., assignors to Rockcor, Inc., Redmond, Wash.

Continuation of Ser. No. 59,720, Jul. 23, 1979, abandoned. This application May 4, 1981, Ser. No. 260,478

Int. Cl.^{3} B60C *23/06*

U.S. Cl. 116—34 B **6 Claims**



1. A low tire inflation warning device for attachment to a wheel of an inflatable tired vehicle comprising:

tire contacting means comprising at least one wheel which is free to rotate for contacting the interior of a tire;

means connected to said tire contacting means for permitting movement of the tire contacting means toward said wheel of said vehicle in response to contact between said tire contacting means and the inner surface of the tire, said means for permitting movement comprising energy storage means operatively associated with said tire contacting means for storing a portion of the energy generated by movement of said tire contacting means toward said wheel of said vehicle;

sound generating means including striker means connected to said energy storage means for converting the energy stored therein into sound, thereby generating an audible signal in response to movement of said tire contacting means toward said wheel of said vehicle; and

mounting means for mounting said sound generating means to said wheel of said vehicle.

4,353,323
APPARATUS FOR THE TREATING OF ARTICLES

Heinz Koblenzer, Filderstadt, Fed. Rep. of Germany, assignor to Langbein-Pfanhauser Werke AG, Neuss, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,600

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015524

Int. Cl.^{3} B05C *11/10*

U.S. Cl. 118—61 **6 Claims**

1. An apparatus for treating articles with a solvent comprising:

an upwardly open vessel having a bottom and adapted to receive liquid solvent therein;

a heater at said bottom for heating solvent in said vessel to vaporize same, said vessel having an upper wall portion above said solvent;

a condenser formed along said upper wall portion for condensing vapor of said solvent;

a heat pump having a circulating heat carrier and formed with a hot branch including a heat exchanger and a cold branch, said cold branch being connected to said condenser;

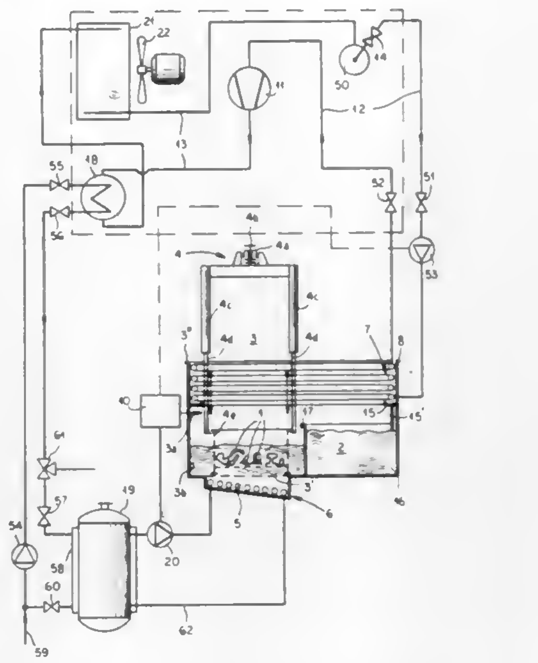
a water-containing heat storage tank and boiler adapted to be heated by said hot branch;

means for circulating a fluid for heating water for said tank through said heat exchanger;

means for feeding water from said tank to said heater;

means for lowering articles into said vessel and raising articles in said vessel for treatment of said articles with said solvent in said vessel; and

control means connected to said feeding means for controlling same in response to the raising and lowering of articles in said vessel and including means, effective upon raising of said articles in said vessel to operate said feeding means in an idling mode enabling convective movement of water through said heater from said tank.



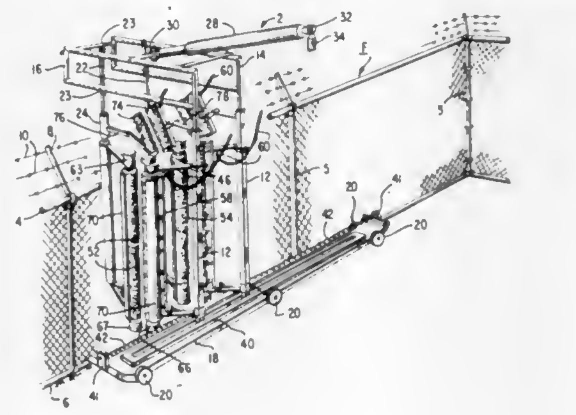
4,353,324
FENCE PAINTING APPARATUS

George Schnittker, 900 E. Roosevelt Rd., Lombard, Ill. 60148

Filed Jul. 25, 1980, Ser. No. 172,455

Int. Cl.^{3} B05C *1/08*

U.S. Cl. 118—207 **14 Claims**



1. Apparatus for applying a liquid coating to a substantially vertical surface comprising:

(a) a substantially U-shaped yoke inverted to straddle a fence or wall;

(b) means supporting said yoke on at least one side thereof for propelled movement adjacent a fence line;

(c) opposing liquid applicator means within sides of said yoke and adapted to act upon the respective opposite sides of said fence or wall; and

(d) means mounting said liquid applicator means within said yoke for free floating lateral movement to adjust for deviations in relation to the vertical surface.

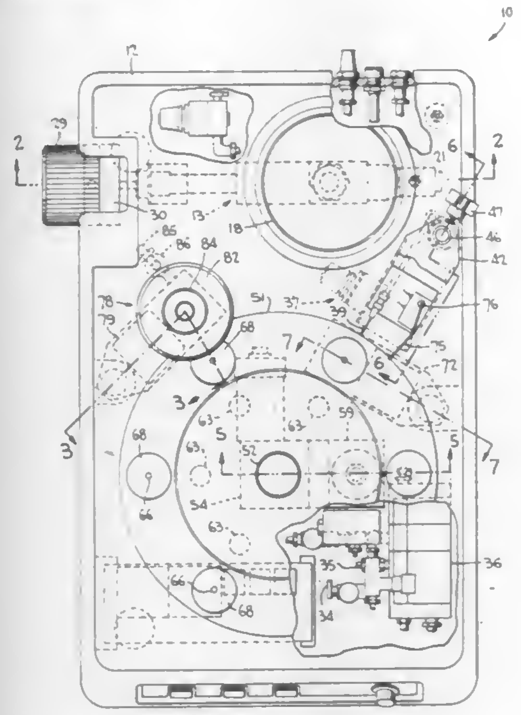
4,353,325
SEALANT APPLYING APPARATUS

Dennis J. Argazzi, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Sep. 28, 1981, Ser. No. 306,351

Int. Cl.³ B05B *13/02*

U.S. Cl. 118—683 **10 Claims**



1. An apparatus for applying sealant to the threads of article such as fasteners, pipes, plugs, valves, etc. comprising:
- rotatable means for moving a plurality of threaded fasteners along an arcuate path;
- nozzle means adjacent said path for dispensing a coating of sealant on to threads of articles moved along said path;
- said rotatable means comprising an indexable worktable having a plurality of fastener spindle assemblies radially spaced a predetermined distance apart and located adjacent the periphery thereof, said worktable being capable of intermittent stoppage of each of said assemblies at said nozzle mean;
- means rotating each said spindle assembly about the central axis thereof when stopped at said nozzle means;
- wiper means, positioned to wipe the article threads, comprising a wiper wheel adjacent said path and spaced from said nozzle means at said predetermined distance, a wiper pad positioned along the peripheral edge of said wheel; and
- means rotating said wiper wheel to effect rotation of each said spindle about said central axis thereof when stopped at said wiper means;
- whereby the coated threads are wiped and smoothened as sealant is pressed into the thread roots.

4,353,326
APPARATUS FOR THE STRIPPING OF THE INSIDE SEAM OF A CAN BODY MOVING AT A HIGH SPEED

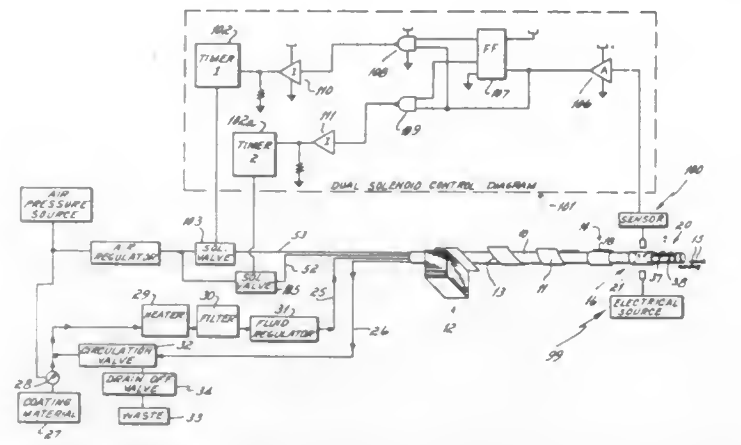
James A. Kolibas, Cleveland, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 20, 1981, Ser. No. 245,939

Int. Cl.³ B05B *12/04, 12/02;* B05D *7/22, 1/02*

U.S. Cl. 118—696 **13 Claims**

1. An apparatus for applying a coating material to the inside of can bodies moving along a can forming apparatus comprising:
- a first pneumatically activated spray coating means; and
- a second pneumatically activated spray coating means; and
- means to alternately activate and deactivate said first and second spray coating means so that neither spray coating



means applies a coating material onto two consecutive can bodies.

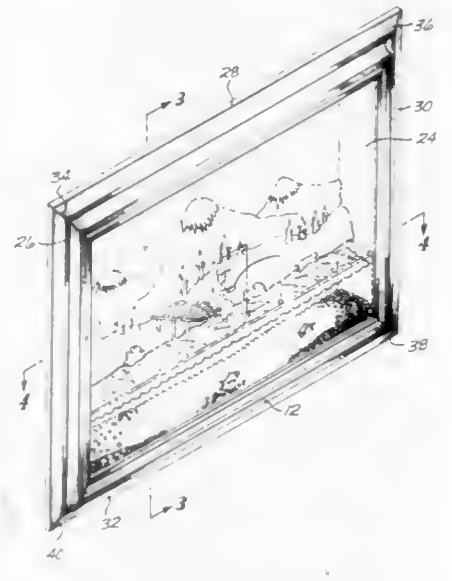
4,353,327
AQUARIUM/PICTURE COMBINATION

Ronald G. Shroyer, 16608 6th SW., Seattle, Wash. 98166

Filed Jun. 19, 1981, Ser. No. 275,381

Int. Cl.³ A01K *63/00*

U.S. Cl. 119—5 **2 Claims**



1. A picture presentation, comprising:
- a three dimensional housing including a bottom wall, a top wall, a pair of end walls, and a rear wall, all together defining an interior, and an openable front for said housing including a transparent front wall through which the interior of the housing can be viewed;
- means within said housing interior presenting a pictorial presentation, including a three dimensional portion which projects forwardly from the rear wall and includes a lower boundary that is spaced vertically above the bottom wall of the housing, so that a space is defined vertically between the bottom wall and the lower boundary of the three dimensional portion of the pictorial presentation, and horizontally between the two end walls, said space being of rectangular form;
- an aquarium tank of rectangular form sized to fit snugly within said space, said aquarium tank being slidable into and outfrom said space from the front of the housing, said aquarium tank having a transparent vertical front wall which is closely adjacent the transparent front wall of the front closure when the aquarium is housed within said space, and said three dimensional portion overhanging said aquarium tank;
- said pictorial presentation being of an above water scene;
- said aquarium tank presenting a below water level pictorial presentation; and
- said three dimensional portion of the pictorial presentation

including a representation of a person in an act having an association with the below water pictorial presentation presented by the aquarium tank.

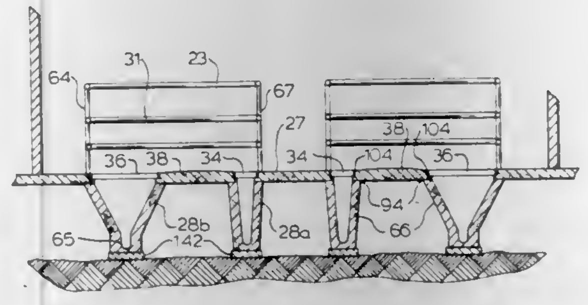
4,353,328
METHOD AND APPARATUS FOR CONSTRUCTING A SYSTEM OF GUTTERS FOR A SWINE BUILDING

Ronald L. Steidinger, Forrest, Ill., assignor to Forrest Redi-Mix Co., Forrest, Ill.

Filed Jun. 6, 1980, Ser. No. 157,198

Int. Cl.³ A01K *1/01*

U.S. Cl. 119—20 **7 Claims**



7. In a system of flush gutters for a swine building having an outer foundation wall, the combination comprising:
- a plurality of concrete footings traversing said building forming rows and being sloped toward at least one side of said building,
- a plurality of precast concrete gutter sections,
  - each of said sections comprising two longitudinal outwardly sloping side walls having two top walls spaced laterally apart and forming a trough therebetween,
  - said outwardly sloping walls having an inner surface forming said trough which is essentially free from surface roughness and is of a uniform smoothness,
- said sections being abutted end to end forming rows and having a bottom surface resting on the top surface of said footings,
- a low end of said gutter section row having a selectively operable drain therein,
- a plurality of precast concrete walkway sections abutted end to end and attached to said top walls of two gutter sections of adjacent gutter section rows, whereby waste material from swine in said swine building will fall into said gutters and will accumulate until said drain is opened causing said waste material to automatically flush from said gutter section rows.

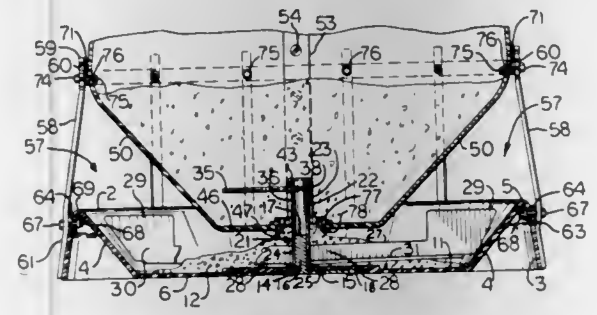
4,353,329
ROTARY SELF-FEEDER

Ronald M. Thibault, Osborne, Kans., assignor to Osborne Industries, Inc., Osborne, Kans.

Filed Jul. 17, 1980, Ser. No. 169,797

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—52 A **12 Claims**



1. A self feeder mechanism for distributing feed to livestock comprising:
- (a) a base member having a surface adapted to receive feed and a generally circular wall extending upward from said surface;
- (b) a feed wheel being rotatable with respect to said base member surface and being adapted for engagement and movement by an animal; and
- (c) said feed wheel including a radially extending spoke thereon; said spoke having a radially outward portion and a radially inward portion; said spoke outward portion having an upper surface extending above the entire length of the upper surface of said inner portion thereof; said spoke outward portion having a distal end being relatively closely spaced with respect to said circular wall;
- (d) whereby when the feed is positioned on said surface, the feed will be urged outwardly by rotation of said feed wheel until the feed reaches a sufficient level to spill over said spoke whereupon said feed will selectively spill over said spoke inner portion as opposed to said outer portion thereby urging such spilling feed radially inward.

4,353,330
POCKET BREECHES FOR USE BY A DOMESTIC ANIMAL SUCH AS A DOG

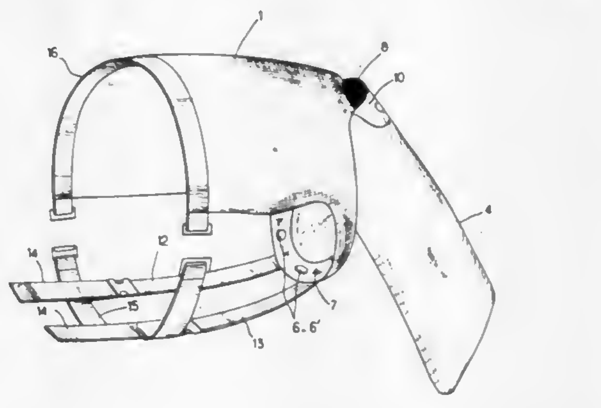
Andree G. Baumgartner, 66, rue de la Barre, 95880 Enghien Les Bains, France

Filed Aug. 15, 1980, Ser. No. 178,304

Claims priority, application France, Aug. 21, 1979, 79 21109; Apr. 16, 1980, 80 09478

Int. Cl.³ A01K *23/00*

U.S. Cl. 119—95 **6 Claims**



1. Breeches for use by a domestic animal such as a dog comprising, a back portion (1) covering at least partially the hindquarters and the upper part of the buttocks of the animal and, a rear part (2) coming back over the posterior of the animal and having a circular opening (3) from which extends a pocket (4) into which is introduced a plastic bag (5) which is removably fixed to the periphery of said opening (3), an aperture (8) being furthermore provided for passing the tail of the animal therethrough at the level of the connection between said back portion (1) and said rear part (2); and a belly element connected to the rear part (2) coming under the belly of the animal and which is connected by its free end to the front part of the back portion (1) by means of straps, characterized in that it comprises further in the peripheral edge surrounding said opening (3) of the rear part (2), fixing elements (6) cooperating with complementary fixing elements (6′) mounted on a removable piece (7) provided with an opening of a size substantially equal to that of the opening (3) of said rear part (2), so that the free edge of the bag (5) introduced into the pocket (4) is sandwiched between said rear part (2) and said removable piece (7) and is nipped during mutual engagement of said fixing elements (6,6′); said plastic-material bag (5) comprising a cut-out (9) for passing the tail of the animal therethrough and in that, there is provided for improving the securing of the bag a yoke (10) fixed to the pocket (4) in the vicinity of the opening (8) intended for passing the tail therethrough, this yoke (10) being provided with at least one element (11) for removably fixing to the pocket (4), in the closed position, the edge of the bag (5)

adjacent the cut-out (9) provided for passing the tail therethrough.

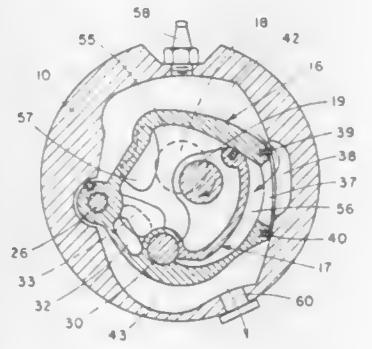
4,353,331
DUAL-EXPANSION INTERNAL COMBUSTION ENGINE UTILIZING AN OSCILLATING PISTON INSIDE AN OSCILLATING PISTON

Frederick L. Erickson, 2610 Bosworth Dr., Fort Wayne, Ind. 46805

Continuation of Ser. No. 28,713, Apr. 9, 1979, abandoned, Continuation of Ser. No. 180,135, Aug. 21, 1980, Pat. No. 4,325,331, each is a continuation-in-part of Ser. No. 959,795, Nov. 13, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,134

Int. Cl.^{3} F02B *53/00*

U.S. Cl. 123—18 R **22 Claims**



16. An internal combustion engine comprising in combination
- (a) engine block housing means defining a fluid-tight engine volume;
- (b) first outer oscillating piston means formed as a base section with two oppositely disposed arms joined at their ends through a moving fluid passage and defining a cavity between said arms;
- (c) pivot bearing means mounted in said engine block housing means providing pivotal attachment of said first piston means to said housing means to permit said first piston means to undergo oscillatory motion thereby to define within said engine volume two opposed outer fluid chambers of complementary variable volumes;
- (d) second inner oscillating piston means within said cavity of said first piston means;
- (e) pivot connecting means providing pivotal attachment of said second piston means to said first piston means to permit said second piston means to undergo oscillatory motion thereby to define within said cavity two opposed inner fluid chambers of complementary variable volumes;
- (f) ignition means associated with a first of said chambers serving as a primary combustion/expansion chamber;
- (g) first fluid porting means providing controlled fluid communication between said first of said chambers and a second of said chambers serving as a secondary expansion chamber;
- (h) exhaust port means associated with a third of said chambers;
- (i) second fluid porting means providing controlled fluid communication between said second and third chambers;
- (j) combustible fluid supply means associated with a fourth of said chambers;
- (k) third fluid porting means providing controlled fluid communication between said fourth and first chambers;
- (l) power transfer shaft means rotatably supported in said housing means; and
- (m) eccentric shaft means coupled to said power transfer shaft means for rotating with respect thereto and to said second piston means to coordinate movement of said first and second piston means.

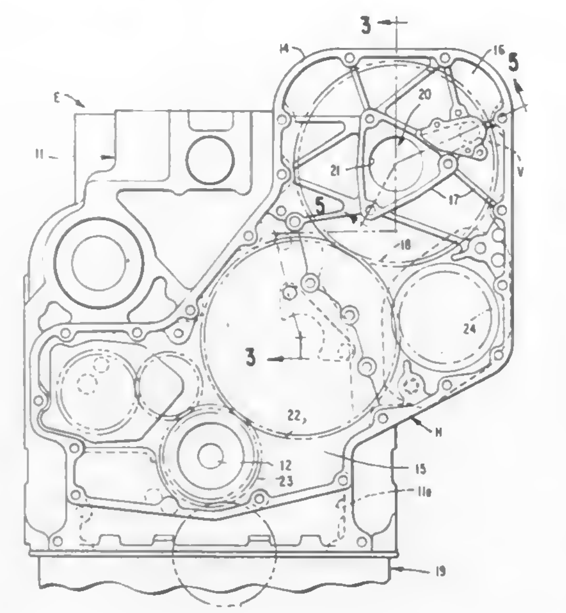
4,353,332
CRANKCASE VENTILATING SYSTEM

Roger D. Sweetland, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1980, Ser. No. 221,766

Int. Cl.^{3} F01M *13/02*

U.S. Cl. 123—41.86 **7 Claims**



1. A crankcase ventilating system for a multi-piston internal combustion engine, comprising an engine block provided with a plurality of piston cylinders, a crankcase and an upright housing disposed at one end of said block and spaced from the cylinders, said housing having a lower section communicating with the crankcase, an upper section provided with a vent to the exterior of the engine, and cover means removably mounted on said block end and overlying said upper and lower sections; a crankshaft mounted for rotation within said crankcase; drive means connected to said crankshaft and disposed within said housing lower section; and a vaned pressure-generating means rotatably mounted within said housing upper section and adjacent said vent, said vaned means being rotatably driven by said drive means and effecting a predetermined pressure buildup within said housing greater than the exterior pressure.

4,353,333
TWO CYCLE ENGINE WITH AUGMENTED INTAKE PORTS

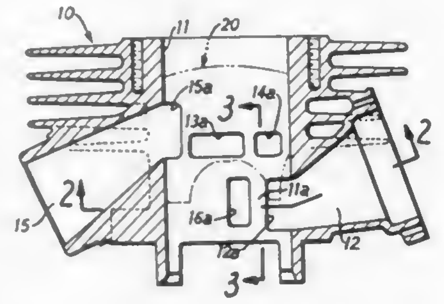
Toshimitsu Iio, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 30, 1980, Ser. No. 164,850

Claims priority, application Japan, Jul. 3, 1979, 54-84075

Int. Cl.^{3} F02B *33/04*

U.S. Cl. 123—73 R **4 Claims**



1. In a two-cycle engine having a cylinder bounded by a piston sliding wall, an intake passage, an exhaust passage, a scavenging passage, said passages opening into said cylinder through said piston sliding wall whereby to form a main intake port, an exhaust port, and a scavenging port, the improvement comprising: an auxiliary intake port opening through said piston sliding wall and communicating with said intake passage, said auxiliary intake port being circumferentially spaced from said main intake port and said main intake port having a substantially greater circumferential extent than said auxiliary intake port, and said intake passage and said scavenging passage being independent from one another and non-communicating with one another, each opening into independent respective main and auxiliary intake ports and scavenging port.

4,353,334
METHOD OF AND APPARATUS FOR STARTING AN AIR-COMPRESSING FOUR-STROKE CYCLE INTERNAL COMBUSTION ENGINE

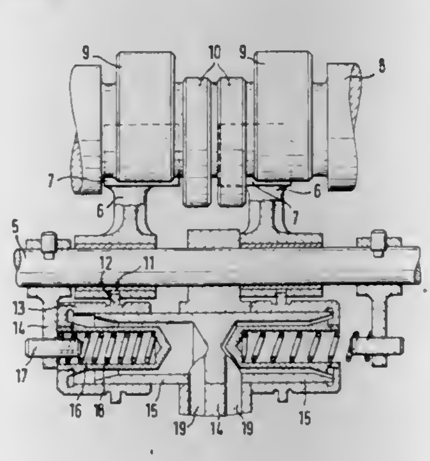
Alfred Neitz, Röthenbach, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 943,530, Aug. 17, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,791

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737601

Int. Cl.^{3} F02N *17/00*

U.S. Cl. 123—179 H **4 Claims**



1. In an internal combustion engine having a crank shaft and an axially stationary cam shaft having cams thereon, the cam shaft being rotated by the crank shaft at one-half the speed of the crank shaft, and the engine further having spring-biased, normal-closed intake and exhaust valves opened periodically by rocker arms displaced periodically by the cams on the cam shaft, the improvement characterized by:
- the cams being grouped in pairs on the cam shaft with the cams in each pair being axially juxtaposed with respect to one another and having single lobes which are circumferentially displaced from one another;
- a single rocker arm positioned between each pair of cams and each of the valves, the single rocker arm having a cam follower surface of a sufficient width to engage simultaneously both cams in the pair;
- means for rotatably mounting the rocker arm, wherein the rocker arm pivots to open the valve against the bias of the valve spring as the lobes engage the cam follower, said mounting means further including means allowing the rocker arm to slide in an axial direction with respect to the cam shaft;
- means for limiting sliding motion of the rocker arm between a first position in which the cam follower abuts both cams of the pair and a second position in which the cam follower abuts only one of the cams;
- means for biasing the rocker arm to the first position wherein the cam follower engages both cams and the engine functions initially as an air pump during starting of the engine, and
- means for overcoming the biasing means to urge the rocker arm to the second position in which the cam follower engages only one cam wherein the engine runs as a four-cycle engine, said means for overcoming the biasing means operating automatically upon self-sustaining operation of the engine.

4,353,335
HAND STARTING MECHANISM FOR AN INTERNAL COMBUSTION ENGINE

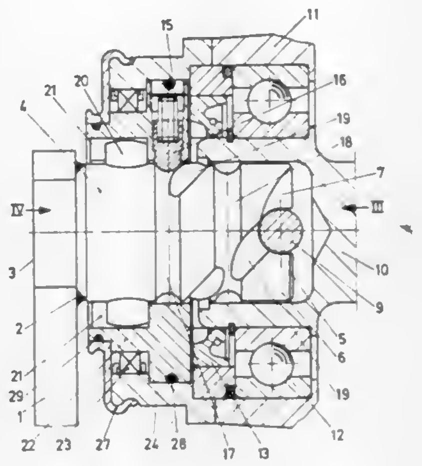
Willi Griesheimer, and Eduard Kukulak, both of Lampertheim, Fed. Rep. of Germany, assignors to Farymann Diesel GmbH, Lampertheim, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,462

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010727

Int. Cl.^{3} F02N *1/00*

U.S. Cl. 123—185 P **5 Claims**



1. Hand-starting mechanism for internal combustion engines with an axially displaceable starting shaft, with a starting handle fastened to the outer side of said starting shaft, with an one way dog coupling arranged at the inner frontal face of said starting shaft which couples the starting shaft and the shaft to be cranked during the starting procedure but separates these shafts when the internal combustion engine starts running, characterized in that, the starting shaft (4) is provided with an outer entrainment pin (20) which engages during the starting procedure one or more claw-like frontal recesses (21) on the inner rotary part (22) of a freewheel device (22,23,24) carrying with it in the inner rotary part relative to the outer stationary ring (24) of the freewheel device, whereas during kickback of the internal combustion engine the outer entrainment pin slides over one or more frontal ramps (25,26) of the recesses (21) of the then stationary inner rotary part (22) moving the starting shaft (4) in outward direction so that the one way dog coupling becomes disengaged.

4,353,336
FUEL PUMPING APPARATUS

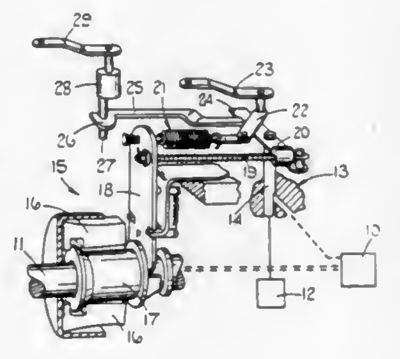
Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 24, 1980, Ser. No. 209,602

Claims priority, application United Kingdom, Jan. 10, 1980, 8000846

Int. Cl.^{3} F02B *77/00;* **B60R** *25/04*

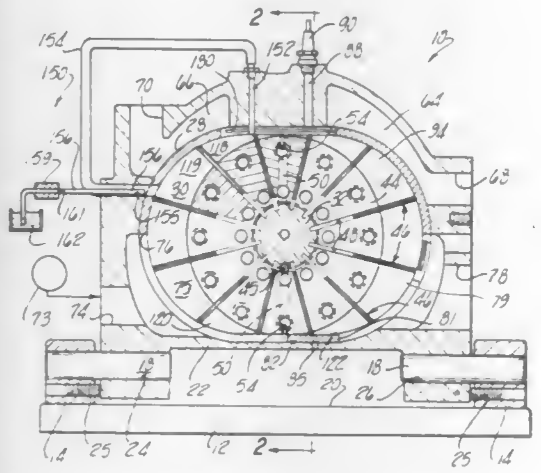
U.S. Cl. 123—198 B **4 Claims**



1. A fuel pumping apparatus for supplying fuel to a compression ignition internal combustion engine and comprising an

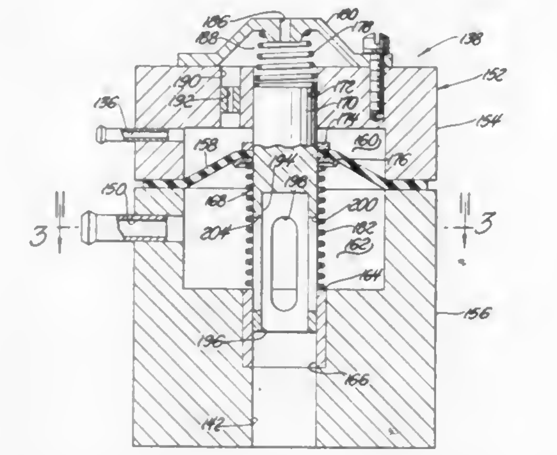
injection pump operable in use, in timed relationship with an associated engine, an angularly adjustable throttle member mounted in a housing of the appratus, the angular setting of said throttle member determining the amount of fuel supplied to the injection pump during a filling stroke thereof, a governor mechanism coupled to said throttle member, said governor mechanism including a manually movable member operable in use to vary the speed of the associated engine, a radial arm on said throttle member, a slide member movable into engagement with said radial arm to move the throttle member angularly to a closed position at which no fuel is supplied to the injection pump, a manually operable member engageable with said slide member to effect movement of the throttle member to the closed position, and a cover mounting said manually operable and manually movable members, said cover defining with the housing a space in which is located said slide member, a lock mechanism mounted on said cover, a radial arm projecting from said lock mechanism and movable angularly when the lock mechanism is operated and a projection on said slide member for engagement by said radial arm whereby the movement of the lock mechanism to the locking position will move and/or retain said slide member in the position in which the throttle member is in the closed position.

4,353,337
ROTARY ENGINE
Oscar E. Rosaen, 51 Roslyn Rd., Grosse Pointe, Mich. 48236
Continuation-in-part of Ser. No. 828,299, Aug. 29, 1977, Pat. No. 4,202,313. This application May 2, 1980, Ser. No. 146,037
Int. Cl.^{3} F02B *53/00*
U.S. Cl. 123—243 13 Claims



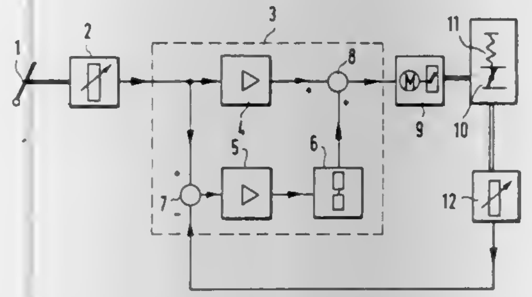
1. An internal combustion engine comprising:
a base,
a housing;
means for mounting said housing to said base,
a wall portion in said housing which forms an elliptical chamber;
a drive shaft and means for rotatably mounting said drive shaft to said base and transversely through said chamber;
a substantially cylindrical rotor disposed within said chamber and secured to said shaft, said rotor having a plurality of circumferentially equidistantly spaced vane members radially slidably disposed in said rotor;
means for urging said vane members radially outwardly so that said vane members sealingly engage selected sections of said wall portion whereby said rotor forms a plurality of arcuate chambers between said rotor, said vane members and said wall portion;
fuel supply means for supplying fuel to said chamber;
means for exhausting gases from said chamber;
fuel ignition means for igniting said fuel in one arcuate chamber at a predetermined position on said wall portion wherein at least one rotational position of said rotor, at least two vane members separate said last mentioned arcuate chamber from said fuel supply means and from said exhaust means;
wherein said housing mounting means further comprises means for slidably mounting said housing to said base along a predetermined linear path of travel, said path of travel being in a radial direction with respect to the axis of said drive shaft, and
wherein said housing mounting means comprises a pair of cylindrical support members secured to said base, the axes of said support members being parallel to each other and perpendicular to the axis of said drive shaft, and said housing having a pair of parallel and axially spaced bores, said cylindrical support members being slidably and pivotally positioned in said housing spaced bores.

4,353,338
ENGINE IDLE AIR VALVE MEANS AND SYSTEM
Russell J. Wakeman, Novi, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.
Filed Nov. 13, 1979, Ser. No. 93,502
Int. Cl.^{3} F02D *11/10*
U.S. Cl. 123—339 9 Claims



1. In combination with a combustion engine having induction passage means for the induction into said engine of motive fluid, fuel metering means for supplying metered rates of fuel flow to said induction passage means, throttle valve means for variably restricting the rate of flow of air through said induction passage means, and additional air valve means, said additional air valve means being effective to bypass said throttle valve means and supply a bypass-flow of air to said induction passage means downstream of said throttle valve means, said additional air valve means being pressure responsive, wherein engine vacuum within said induction passage means is transmitted to said additional air valve means for actuation thereof, said additional air valve means comprising first and second distinct but variable chambers, pressure responsive movable wall means situated generally between and separating said first and second chambers, movable valve means carried by said movable wall means for movement therewith, aperture means openable and closeable by movement of said movable valve means, first passage means operatively interconnecting said first chamber with said induction passage means as to thereby convey said engine vacuum from said induction passage means to said first chamber, second passage means operatively interconnecting said second chamber with a source of ambient air, and third passage means operatively interconnecting said aperture means with said induction passage means as to thereby convey as said bypass-flow such air as is obtained from said source of ambient air to said induction passage means, said movable valve means comprising first and second axially oppositely disposed ends, wherein the projected surface area of said first end is exposed to a source of ambient atmospheric pressure, and wherein the projected surface area of said second end is exposed to the pressure of said engine vacuum.

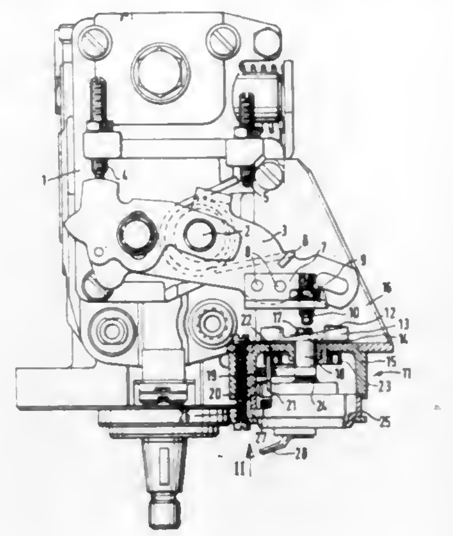
4,353,339
CONTROL OF THE TRAVELING SPEED OF A MOTOR VEHICLE
Harald Collonia, Glashütten, Fed. Rep. of Germany, assignor to VDO Adolf Schindling A.G., Frankfurt am Main, Fed. Rep. of Germany
Filed Nov. 26, 1979, Ser. No. 97,267
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852211
Int. Cl.^{3} F02D *11/16, 11/02*
U.S. Cl. 123—350 7 Claims



1. In a device for the control of the traveling speed of a motor vehicle with a control member actuatable by the vehicle driver, particularly a gas pedal, which is coupled with a first position encoder, an electric controller for the transmission of the adjustment movement of the control member to an element, which element influences a fuel-air mixture, by means of a regulating unit including an electric motor, the electric motor being in operative connection with the element and acting against the force of a return spring, which electric motor is supplied with a motor current which current is formed in the controller, a second position encoder, which second position encoder is coupled with the element, the second position encoder being arranged in a feedback circuit with inclusion of the controller, the improvement wherein
the feedback circuit constitutes means for varying the motor current and has a construction and sizing such that the motor current variation formed by the feedback circuit is limited to a value sufficient for correcting the greatest possible position error of the regulating unit,
the sizing of the feedback circuit is such that the motor current variation which is caused by the second position encoder amounts to about 10 to 20% of the motor current controlled by the first position encoder.

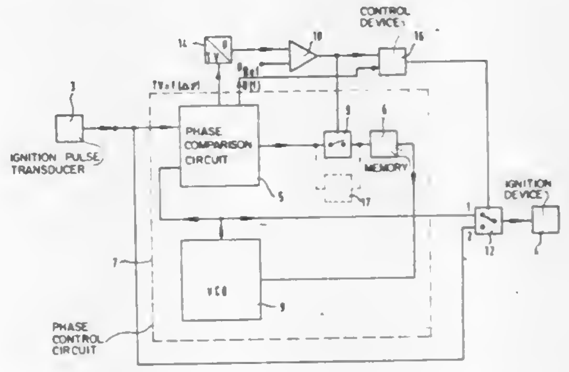
4,353,340
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Max Straubel, Stuttgart; Karl Konrath, Ludwigsburg, and Gerhard Brink, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 19, 1980, Ser. No. 188,788
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942493
Int. Cl.^{3} F02D *31/00*
U.S. Cl. 123—365 3 Claims

1. A fuel injection pump for internal combustion engines, including a housing and having an arbitrarily actuatable lever for adjusting injection quantity moving through a lever path and an adjustable stop associated with said lever for determining the minimum injection quantity characterized in that said stop includes a rotatable cam disc displayed perpendicularly relative to the plane of said lever path and a bimetallic spiral for rotational adjustment of said cam disc relative to said stop, wherein



said stop further includes a spiral spring which serves to return said cam disc to a restoring position.

4,353,341
METHOD AND APPARATUS FOR VARYING THE SPACING OF IGNITION CONTROL PULSES EMITTED BY AN IGNITION PULSE TRANSDUCER
Manfred Henning, Kaarst, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 8, 1980, Ser. No. 214,068
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949311
Int. Cl.^{3} F02D *5/04*
U.S. Cl. 123—414 10 Claims



1. A method for varying the spacings of sequential ignition control pulses of an actual ignition control pulse train emitted by an ignition pulse transducer, for controlling, along with a voltage-controlled oscillator, an ignition device, comprising the steps of:
generating an actual ignition control pulse train by the ignition pulse transducer;
generating a corrected ignition control pulse train of average frequency from the generated actual ignition control pulse train;
establishing a given phase difference between the corrected ignition control pulse train and the actual ignition control pulse train;
comparing the phase difference between the corrected ignition control pulse train and the actual ignition control pulse train; and
maintaining the most recent output of the voltage controlled oscillator when the given phase difference is not attained.

4,353,342

FUEL INJECTION CONTROL SYSTEM

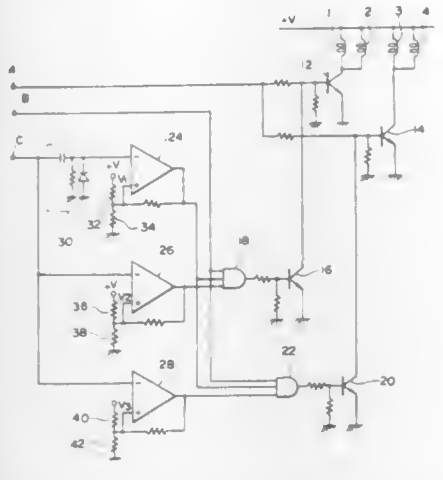
Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 14, 1980, Ser. No. 196,334

Claims priority, application Japan, Dec. 10, 1979, 54-131539

Int. Cl.^{3} F02D *31/00*

U.S. Cl. 123—493 **3 Claims**



1. A fuel injection control system for use with an internal combustion engine having fuel injectors, comprising:

(a) means for providing a fuel injection pulse signal (A) corresponding to the rate of air flow to said engine, thereby operating said fuel injectors;

(b) a signal generator for providing a first signal when the engine speed is above a first predetermined value and for providing a second signal when the engine speed is above a second predetermined value higher than said first predetermined value;

(c) fuel-cut means operable for cutting off the flow of the fuel injection pulse signal to some of said fuel injectors in response to said first signal during engine deceleration and for cutting off the flow of the fuel injection pulse signal to the remaining fuel injectors in response to said second signal during engine deceleration.

(d) control means for rendering said fuel-cut means inoperative when rapid engine deceleration occurs, thereby permitting application of the fuel injection pulse signal to all of said fuel injectors regardless of the engine speed.

4,353,343

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

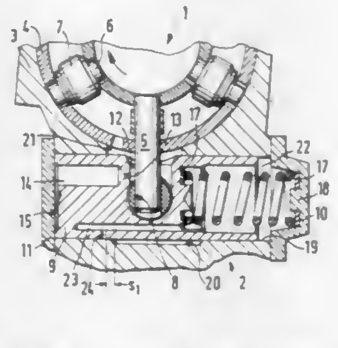
Dietrich Trachte, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 137,034

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918867

Int. Cl.^{3} F02M *59/20*

U.S. Cl. 123—502 **8 Claims**



1. A fuel injection pump for internal combustion engines having a suction chamber and a control device for varying the onset of fuel supply counter to a restoring force by means of an adjusting piston displaceable in a work cylinder by means of fluid pressure, wherein said fluid pressure is controllable by a pressure control valve at least in accordance with rpm and by means of a throttled bore in said adjusting piston permitting a throttled discharge of a partial fuel quantity, characterized in that said adjusting piston and said working cylinder each are provided with annular wall surfaces, said adjusting piston is further provided with a first control location in the annular wall surface thereof, said first control location cooperates with a second control location in the annular wall surface of said working cylinder, one of said control locations is constantly exposed to a pressure relief chamber, the other of said control locations is constantly exposed to said fluid pressure, said second control location comprises a clearance of uniform cross section extending axially of the adjusting piston, whereby communication between the two control locations and thus the throttled discharge of said partial fuel quantity can be controlled by displacing said adjusting piston.

4,353,344

CONTROL DEVICE FOR CONTROLLING A RECYCLING OF EXHAUST GAS OF AN INTERNAL COMBUSTION ENGINE

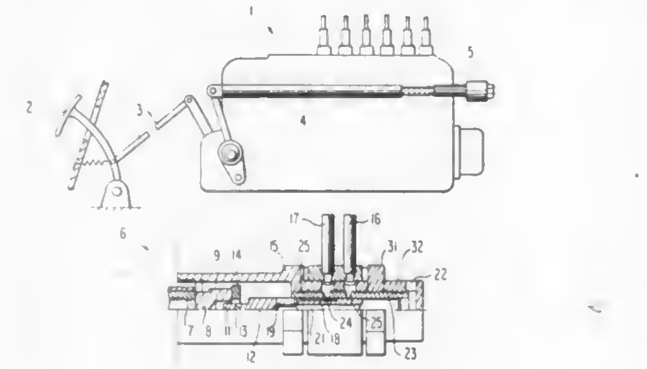
Horst Bergmann, Esslingen, and Jörg Reddemann, Kernen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,801

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003885

Int. Cl.^{3} F02M *25/06*

U.S. Cl. 123—569 **20 Claims**



1. A control device for controlling a recycling of exhaust gases into an intake system of a self-igniting internal combustion engine provided with a fuel injection pump means and a control rod means for controlling the fuel injection pump means, characterized in that the control device includes a signal generator means responsive to instantaneous conditions of the engine as a function of rotational speed and load on the engine as determined by a position of the control rod means, the signal generator means includes a control piston means for providing a pneumatic control signal to an adjusting member for each load condition of the engine associated with exactly defined positions of the control rod means so as to enable a regulation of an amount of exhaust gases recycled into the intake system of the engine in accordancewith an applied pressure of the control signal acting on the adjusting member.

4,353,345

CARBURETOR

Sakae Ebihara, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Nov. 21, 1980, Ser. No. 209,188

Claims priority, application Japan, Nov. 22, 1979, 54-161095[U]

Int. Cl.^{3} F02B *7/00*

U.S. Cl. 123—575 **7 Claims**

1. A carburetor for selectively mixing a first fuel and a second fuel with air, comprising:

an induction passage;

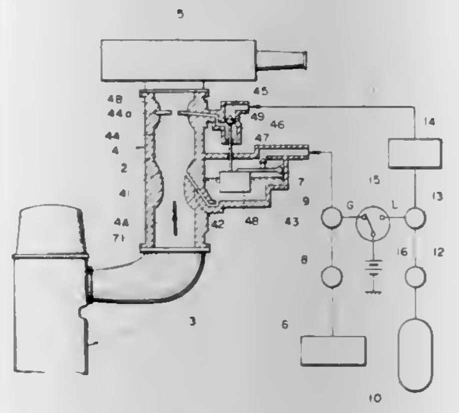
first means for mixing the first fuel with air within the induction passage;

second means for mixing the second fuel with air within the induction passage;

a first passage for feeding the first fuel to the first mixing means;

a second passage for feeding the second fuel to the second mixing means;

a float chamber in which the first fuel is held before the first fuel is fed from the first passage into the first mixing means;



a float which floats on the first fuel within the float chamber;

means for detecting the volume of the first fuel within the float chamber; and

valve means for closing the second passage when the detecting means detects that the volume of the first fuel within the float chamber is above a predetermined value and for opening the second passage when the detecting means detects that the volume of the first fuel within the float chamber is below the predetermined value.

4,353,346

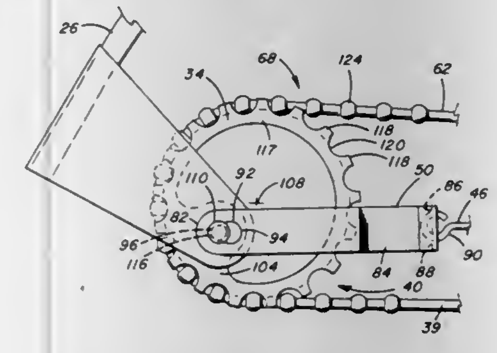
COMPOUND BOW

Alex J. Barna, 1216 Crawford St., Dunquesne, Pa. 15110

Continuation of Ser. No. 921,314, Jul. 3, 1978, Pat. No. 4,202,316. This application May 9, 1980, Ser. No. 148,208

Int. Cl.^{3} E41B *5/00*

U.S. Cl. 124—24 R **22 Claims**



10. A compound bow for propelling an arrow comprising,

handle means for gripping the bow,

a first flexible limb and a second flexible limb connected to opposite ends of said handle means, said first and second limbs each having a free end portion,

a first pulley and a second pulley,

said first and second pulleys each including sprockets on the periphery thereof,

mounting means for rotatably positioning said first and second pulleys on said free end portions of said first and second limbs respectively,

cable means extending between said limbs free end portions for flexing said pair of limbs to place said limbs in tension,

said cable means having a pair of end portions attached to said mounting means respectively and having portions reeved about said first and second pulleys to extend said cable between first and second pulleys and apply a preselected draw tension on said cable,

a plurality of engaging devices secured to said cable means and positioned in spaced relation on said portions of said cable means reeved about said first and second pulleys,

selected ones of said engaging devices being engageable with said sprockets of said first and second pulleys to position said free end portions of said limbs a preselected distance apart, and

said cable means having a preselected length extending between said first and second pulleys as determined by the distance between said free end portions of said limbs to apply a preselected draw tension to said cable means.

4,353,347

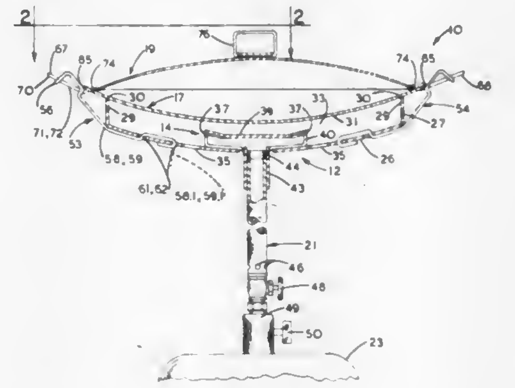
PORTABLE COOKER

Kenneth J. Seed, Vancouver, Canada, assignor to Barba Grill Inc., Vancouver, Canada

Filed May 15, 1979, Ser. No. 39,103

Int. Cl.^{3} A47J *37/00, 27/00*

U.S. Cl. 126—41 R **11 Claims**



1. A demountable cooker adapted to be connected to a pressurized combustible gas supply, the cooker having:

(a) a ventilated support having a base portion and a peripherally extending support rim disposed above the base portion,

(b) a burner fitted adjacent and generally centrally of the base portion, the burner having a gas delivery means for connection to the gas supply,

(c) a cooking pan adapted to be supported on the support rim and having a periphery which extends beyond the periphery of the rim when supported thereon, the pan being shaped so that, when the cooker is dismantled for storage the pan can be reversed on the support to form an enclosure with the support, the pan having a pair of pan handles disposed on diametrically opposite sides of the pan, the handles being adapted to extend outwardly for lifting the pan, and to be folded inwardly for storage,

(d) latch means adapted to cooperate with the pan and the support to latch the pan and the support together when dismantled, the latch means including a pair of support handles extending from the support to engage the periphery of the pan when the pan is reversed on the support, and to serve as handles when the cooker is disassembled for storage, the support handles also being adapted to cooperate with the pan handles to reduce movement between the pan and the support when the pan is supported on the support,

the support handles and pan handles being further characterized by:

(e) one of the pairs of handles is generally U-shaped,

(f) the remaining pair of handles is formed to fit within the U-shape of the first pair of handles so as to prevent relative rotation between the pan and the support when the cooker is assembled.

4,353,348

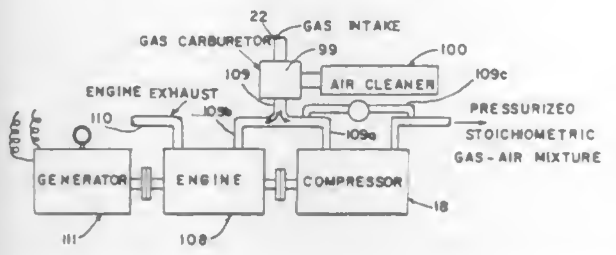
ENERGY CONVERSION SYSTEM

Robert B. Black, Corpus Christi, Tex.

Division of Ser. No. 813,667, Jul. 7, 1977, Pat. No. 4,197,831, which is a continuation of Ser. No. 620,327, Oct. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,094, Apr. 18, 1974, Pat. No. 4,025,291, which is a division of Ser. No. 192,262, Oct. 26, 1971, Pat. No. 3,844,270, said Ser. No. 620,327, is a continuation-in-part of Ser. No. 568,700, Apr. 16, 1975, abandoned, which is a continuation of Ser. No. 369,084, Jun. 11, 1973, abandoned. This application Dec. 19, 1979, Ser. No. 105,277

Int. Cl.^{3} F24C *3/00*

U.S. Cl. 126—91 R 1 Claim



1. Equipment for use in heating solid, liquid or gaseous materials, comprising an enclosed burner element having a combustion chamber with inlet and discharge ports, a carburetor for supplying a mixture of gaseous fuel and air, means for pressurizing said mixture including a pressurizer, a gas burning prime mover for driving the pressurizer, a manifold for connecting said carburetor to both said prime mover and said pressurizer, a supply line for delivering the pressurized mixture from the pressurizer to the inlet port of the burner element, and an adjustable valve in the supply line, and further including a by-pass extended from said supply line to said manifold.

4,353,349

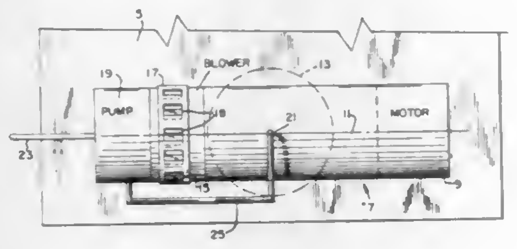
RETROFITTABLE ENERGY CONSERVING DAMPER

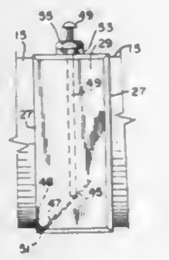
John Bormida, Jr., 610 Sussex Ave., Spring Lake Heights, N.J. 07762

Filed Dec. 16, 1980, Ser. No. 216,795

Int. Cl.^{3} F24H *3/00;* **F23L** *3/00*

U.S. Cl. 126—112 1 Claim





1. An energy conservation damper adapted for easy attachment to an oil burning furnace equipped with a combustion air blower which includes an air intake comprising an array of holes around a cylindrical frame, said damper comprising a sheet metal chamber of rectangular cross section, the broad sidewalls thereof having semicircular recesses therein and the narrow sidewalls having extended portions bent in a complimentary semicircle to form a circular recess adapted to be clamped over said array of holes so that said blower must obtain its supply of air through said chamber, the lower narrow sidewall of said chamber comprising a trap door type valve adapted to automatically open in response to the suction from operation of said blower and to automatically close upon de-energization of said blower, due to the force of gravity.

4,353,350

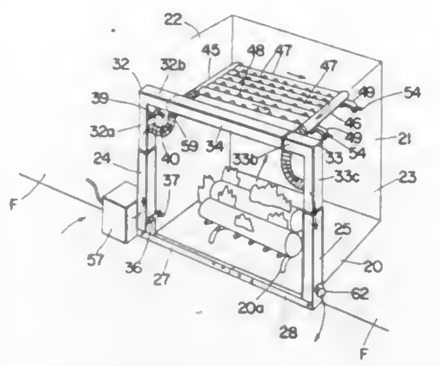
FIREPLACE HEAT EXCHANGER

Helmut Albrecht, 4954 Nettleton Rd., Medina, Ohio 44256

Filed Mar. 11, 1981, Ser. No. 242,464

Int. Cl.^{3} F24B *7/00*

U.S. Cl. 126—121 10 Claims



1. In a fireplace heat exchanger of the character described, a spacer frame assembly adapted to provide a frame for surrounding the open front of a fireplace opening and a heat exchanger assembly in communication with said side frame assembly, said heat exchanger assembly comprising a pair of laterally-spaced horizontal manifold tubes, and a plurality of horizontally-extending parallel heat exchanger or convection tubes interconnecting said manifold tubes, said convection tubes having opposite sides thereof indented, with the indentations of each tube facing the indentations of adjacent tubes to thereby form substantially circular flues for the escape of smoke vertically therethrough.

4,353,351

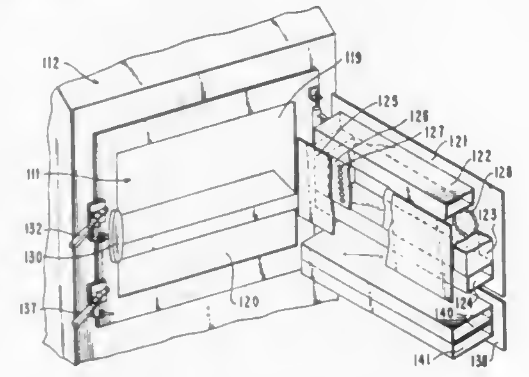
SOLID FUEL FURNACE

Bunyan B. Cagle, 1700 Towson Ave., Fort Smith, Ark. 72901

Division of Ser. No. 18,669, Mar. 8, 1979, Pat. No. 4,269,349, which is a continuation-in-part of Ser. No. 813,962, Jul. 8, 1977, Pat. No. 4,149,671. This application Feb. 17, 1981, Ser. No. 235,238

Int. Cl.^{3} F24C *15/02*

U.S. Cl. 126—193 4 Claims



1. A solid fuel furnace having a combustion chamber and a combustion door therefor,
a blow-back prevention device on the combustion door, said device including
a chamber within the door,
an outer facing for the chamber,
at least one aperture in said outer facing,
an inner facing for the chamber,
at least one aperture in the inner facing,
said apertures being not in alignment with each other,
a draft cover for the outer aperture,
said draft cover including a cover plate and a clamp,
said draft cover arranged so that the cover plate will move away from the aperture in the outer facing permitting air to pass through the apertures into the combustion chamber through the door chamber when the door is closed, and
wherein said clamp is an articulated toggle with a handle which moves the cover plate against the aperture and which locks the combustion door in closed position.

4,353,352

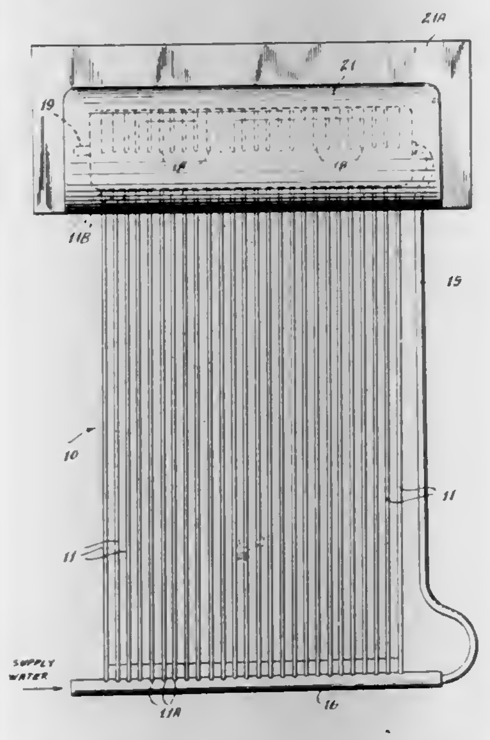
SOLAR THERMOSYPHON WATER HEATER

Michael F. Zinn, Ellenville, N.Y., assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.

Filed Oct. 23, 1980, Ser. No. 200,262

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—426 6 Claims



1. A solar thermosyphon water heater assembly adapted to be rolled up upon itself prior to installation comprising

- (a) an inlet manifold into which supply water can be introduced;
- (b) a solar absorber comprising at least one extended flexible elastomeric tube strip comprising a plurality of tubes alternating with interconnecting separable webs, all of the absorber tubes being connectable in parallel to the inlet manifold;
- (c) a storage tank serving as an outlet manifold of substantially larger volume than the inlet manifold from which heated water can be withdrawn, all of the absorber tubes being connected in parallel directly to said storage tank; and
- (d) a return pipe for connecting the storage tank and inlet manifold to form a closed-loop therebetween through the absorber.

4,353,353

LOW TEMPERATURE SOLAR FURNACE AND METHOD

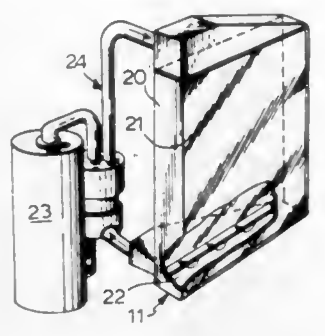
Robert R. Keller, Bedford, N.H., assignor to Keller Companies, Inc., Manchester, N.H.

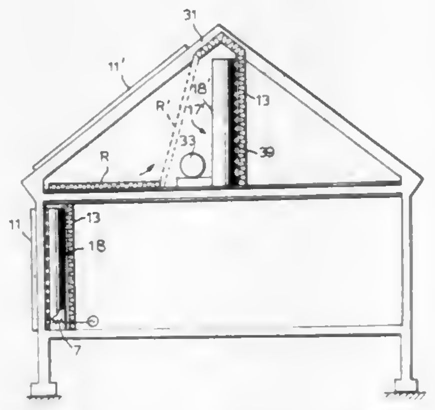
Division of Ser. No. 49,736, Jun. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 949,267, Oct. 6, 1978, abandoned, which is a continuation of Ser. No. 579,560, May 21, 1975, abandoned. This application Jul. 8, 1980, Ser. No. 166,792

Int. Cl.^{3} F24J *3/02;* **F28F** *13/00*

U.S. Cl. 126—429 14 Claims

1. A method of substantially passive solar heating, that comprises providing an insulated enclosure operatively associated with a building, at least one side of the enclosure having a solar transmitting surface forming part of an outer wall of the building and the enclosure extending into the building a distance substantially in excess of the thickness of said outer wall, situating a heat sink within the enclosure spaced inwardly from the transmitting surface, the heat sink comprising a heat-absorbing medium occupying a significant volume of the enclosure, absorbing the heat of the solar energy entering the enclosure through said transmitting surface within said medium disposed within said insulated enclosure; simultaneously storing the absorbed heat in said medium; flowing air into said enclosure to contact and exchange heat with said medium and to exit the heated air into the building to distribute heat therein, and controlling from within said enclosure the heat transfer characteristics between said enclosure and the outer environment through said transmitting surface, so as to increase the heat insulative properties of the enclosure at times when stored heat energy tends to flow from within the enclosure to the outer environment.





4,353,354

SOLAR ENERGY TRANSFER MEMBER FOR INTRODUCTION INTO AN ENVELOPE OF A SOLAR COLLECTOR

Louis Scoarnec, and Patrick Herbert, both of Paris, France, assignors to Compagnie des Lampes, France

Filed Dec. 4, 1979, Ser. No. 100,131

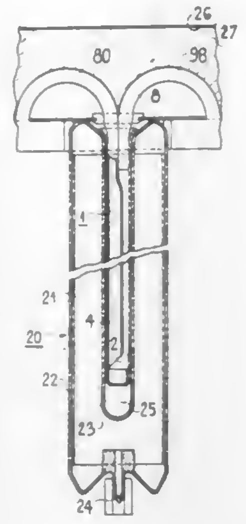
Claims priority, application France, Dec. 12, 1978, 78 34878

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—443 2 Claims

1. A member for the transfer of solar energy by a heat transfer fluid, which is to be introduced into the hollow part of a solar collector envelope having a cross-section (SV) and which is to be connected upstream and downstream of said envelope to a general heat transfer fluid circuit, wherein it comprises a first tube of cross-section (S1) placed within the hollow portion and on the one hand a second tube of cross-section (S2) connected upstream to the general heat transfer fluid circuit and which itself penetrates the interior of said first tube, a hollow connecting plug sealing the end of the first tube and permitting the circulation of the heat transfer fluid between the inside of the second tube and the free cross-section (S1–S2) and on the other hand a third tube for ensuring the circulation of the fluid downstream of the member from said free section (S1–S2) to a general fluid circulation circuit, the second and

third tubes having in each case a flattened section over a given length 1_1 such that when said two tubes are introduced into the first tube the flattened sections are engaged and rendered integral with one another and with said first tube.



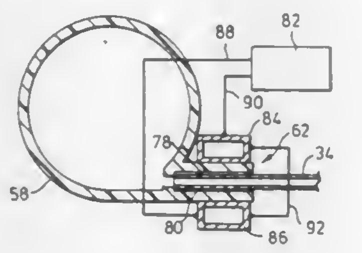
4,353,355
SOLAR ENERGY COLLECTORS

John M. Stewart, River Drive Park, Canada, assignor to Sunglo Solar Ltd., Downsview, Canada

Filed Nov. 13, 1979, Ser. No. 93,478

Int. Cl.^{3} F24J *3/02;* **B29C** *19/02;* **B23K** *13/02*

U.S. Cl. 126—445 7 Claims



1. A method of making a solar energy collector comprising the steps of:

forming a generally rectangular panel of a thermoplastic material, the panel having a plurality of fluid flow passageways extending longitudinally thereof;

forming a pair of elongate headers of a thermoplastic material, each header being of a length at least equal to the transverse dimension of the panel and including a main fluid flow passageway extending longitudinally of the header, and an elongate slot which also extends longitudinally of the header and which communicates with said fluid flow passageway, the slot being dimensioned to closely receive an end portion of the panel and having inner faces arranged for co-operation with opposed faces of said panel end portion;

providing on one of each of said opposed inner faces of the header slot and the panel a sealing strip which extends over at least substantially the entire length of the relevant face and which comprises a thermoplastic material capable of fusing with the material of said headers and panel, and having magnetically excitible particles dispersed therein;

assembling said panel and headers with said portions of the panel received in the slots in the headers;

subjecting said sealing strips to the effect of a high frequency magnetic field having characteristics selected to excite said particles in the sealing strips to an extent sufficient to cause said strips to fuse with said opposed faces on the panel and headers; and

attaching suitable end fitments to the ends of each header.

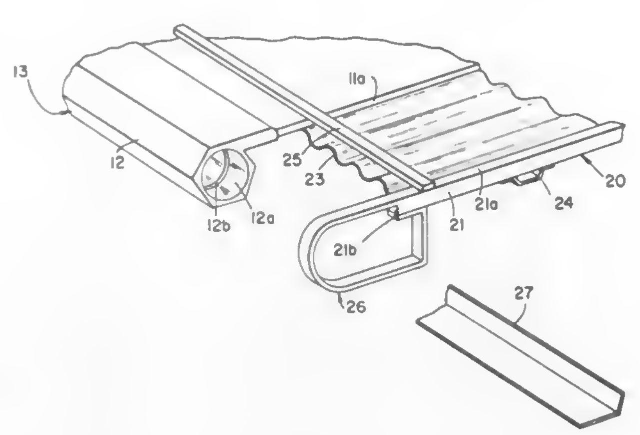
4,353,356
SOLAR COLLECTOR UNITS WITH MOUNTING FRAME

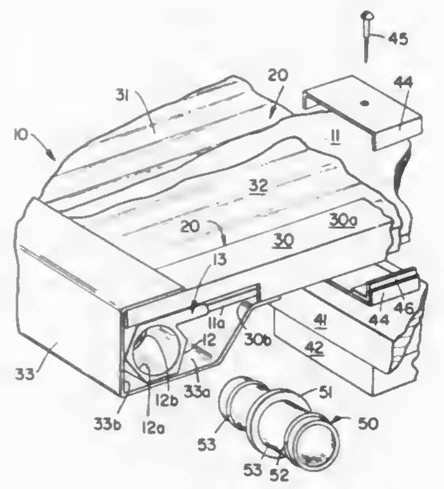
Benjamin E. Vandenbossche, Hillsborough, Calif., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed Jul. 3, 1979, Ser. No. 54,642

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—450 15 Claims





1. In combination, a solar collector, which includes a pair of lateral edges and a pair of longitudinal edges, and a mounting frame for said solar collector, said mounting frame including receiving means for resiliently receiving said longitudinal edges of said collector such that said collector is free to expand and contract laterally and longitudinally, supporting means underlying said collector for slideably supporting said collector intermediate said lateral edges and said longitudinal edges thereof, clamping means formed integrally with said receiving means for clamping one of said lateral edges of said collector such that said one lateral edge is fixed relative to said mounting frame while the other lateral edge is movable relative to said mounting frame, whereby any movement of said collector as a result of the longitudinal expansion or contraction thereof will occur at said other lateral edge.

14. A solar collector system, comprising a plurality of adjacent collector units, each collector unit including a collector, said collector having a pair of lateral edges and a pair of longitudinal edges, each of said lateral edges being delimited by a corresponding header, and mounting means for mounting said collector, said mounting means including receiving means for resiliently receiving said longitudinal edges of said collector such that said collector is free to expand and contract laterally and longitudinally, supporting means underlying said collector for slideably supporting said collector intermediate said lateral edges and said longitudinal edges thereof, clamping means formed integrally with said receiving means for clamping one of said lateral edges of said collector such that said one lateral edge is fixed relative to said mounting means while the other lateral edge is movable relative to said mounting means, whereby any movement of said collector as a result of the longitudinal expansion or contraction thereof will occur at said other lateral edge; and permitting means for permitting fluid communication between said headers of adjacent collector units without inhibiting relative movement between said collector units.

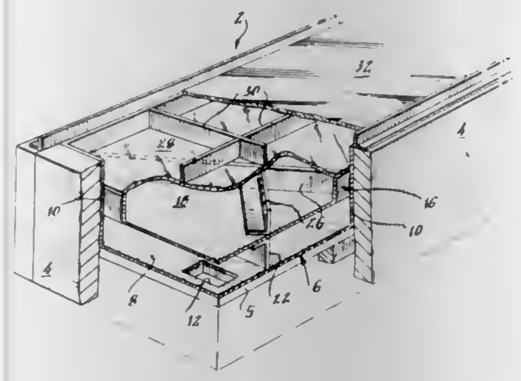
4,353,357
SOLAR COLLECTOR

H. Lee Nelson, 150 Clarence Rd., Scarsdale, N.Y. 10583

Filed Nov. 3, 1980, Ser. No. 203,435

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—450 12 Claims



1. In a solar collector module of the type adapted to absorb solar energy and transfer heat energy to a fluid medium flowing therethrough, the improvement comprising:

a first pan-shaped solar energy absorber,

a second pan-shaped solar energy absorber received on the top surface of said first pan-shaped absorber,

a first plurality of downwardly-extending heat exchanger fins mounted to the bottom surface of said second pan-shaped absorber and arranged thereon to define a sinuous fluid flow path between the top surface of said first pan-shaped absorber and the bottom surface of said second pan-shaped absorber, one portion of said fluid flow path communicating with a fluid inlet and another portion of said fluid flow path communicating with a fluid outlet,

a second plurality of upwardly-extending heat exchanger fins mounted to the top surface of said second pan-shaped absorber, and

a first light-transmissive cover mounted above and supported thereon by said second plurality of upwardly-extending fins to define a first insulative dead air space between the top surface of said second pan-shaped absorber and said first cover, said second plurality of upwardly-extending fins being located within said first insulative dead air space,

whereby said first and second pan-shaped absorbers and said first and second plurality of fins provide increased absorber area, and said second plurality of fins in said first insulative dead air space impede air movement and turbulence to enhance the insulative effect of said first insulative dead air space.

4,353,358
SIGMOIDOSCOPE

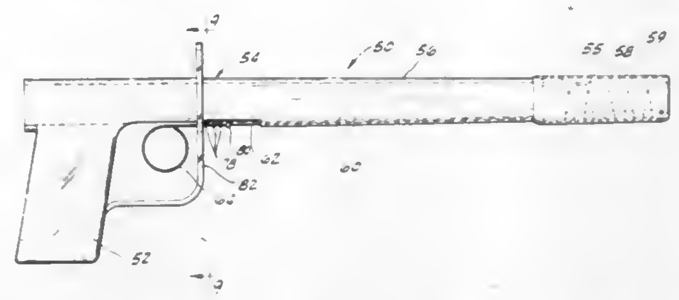
Reynolds L. Emerson, 116 Jefferson Rd., Webster Groves, Mo. 63119

Filed Aug. 28, 1980, Ser. No. 182,126

Int. Cl.^{3} A61B *1/00*

U.S. Cl. 128—4 35 Claims

1. A proctoscope comprising an elongated open ended tubular member of unitary construction having opposite first and second ends with adjacent end portions and a passageway extending between said first and second ends through the device, one of said end portions being constructed to be bendable primarily in one direction, a relatively stiff cord member having a first end connected to the tubular member adjacent to said first tube end, the cord member extending along the tubular member on the side thereof in which said one end portion is bendable to adjacent the second tube end, and operator means connected to the cord member adjacent to the second tube end, said operator means being movable between an inoperative position in which said one bendable tube end portion is substantially in alignment with the rest of the tubular member and an operative position whereby the cord member is pulled toward the second tube end and is moved longitudinally relative to the tubular member to pull on and deflect said one bendable end portion sidewardly in said one direction relative to the tubular member, said operator means and said tubular member including means that are engageable during longitudinal movement of the cord member to limit deflection of the bendable end portion such that visual examination can be made completely through said tubular member in all positions of the operator member.



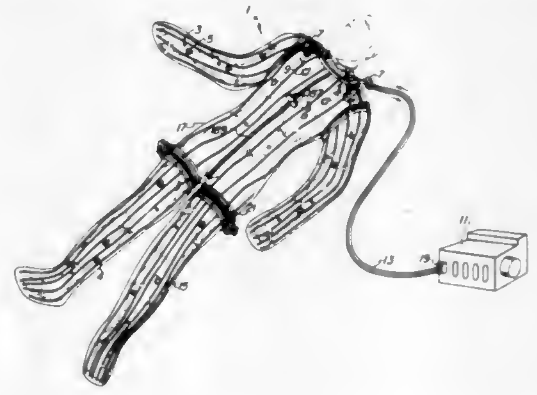
4,353,359
PORTABLE JACKET FOR TREATMENT AND PROTECTION OF INJURED BODY MEMBERS

Nathaniel A. Milbauer, 177 Frederick Pl., Bergenfield, N.J. 07621

Filed Jul. 16, 1979, Ser. No. 57,952

Int. Cl.^{3} A61H *33/00*

U.S. Cl. 128—66 18 Claims

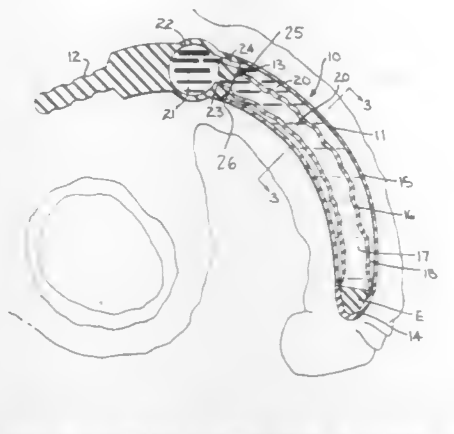


1. In the treatment of injured body members, a protective garment segment made of a flexible, water-resistant, plastic material which is skin compatible; said protective garment segment defining an elongated hollow cavity adapted to surround a body member inserted therein; said garment segment comprising a closed end and a limb-receiving sleeve end through which a body member can be inserted; said sleeve end comprising a garment-to-body sealing ring to permit a water-/air-tight seal between the garment segment and the body member inserted therein, flexible elastic plastic to permit accomodation of the sleeve to different-sized body members, and means for disconnecting said sealing ring and said elastic plastic from said sleeve end, thereby exposing a garment-to-garment sealing ring, designed to permit water/air-tight joinder of said garment segment to a second garment segment brought into contact therewith.

4,353,360
PENILE ERECTILE SYSTEM

Roy P. Finney, Tampa, Fla., and Henry W. Lynch, Racine, Wis., assignors to Medical Engineering Corporation, Milwaukee, Wis.

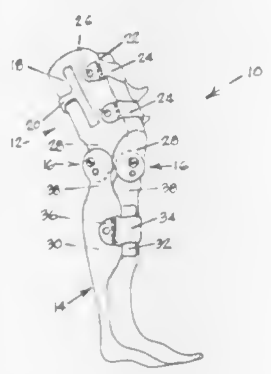
Filed Oct. 31, 1980, Ser. No. 202,591
Int. Cl.^{3} A61F *5/00*
U.S. Cl. 128—79 **10 Claims**



1. A penile erectile system comprising a penile implant including an inner chamber and a radially disposed outer chamber, the inner chamber being non-distensible so that when pressurized and filled with fluid it becomes rigid and the outer chamber having sufficient volume to accommodate enough fluid to fill and pressurize the inner chamber; a passage providing communication between said inner and outer chambers and means for retaining the transferred fluid from the outer chamber in the inner chamber to pressurize it and make it rigid.

4,353,361
ORTHOTIC/PROSTHETIC JOINT

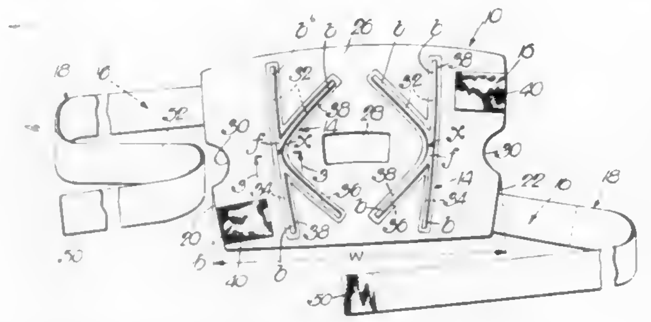
Robert W. Foster, 16B Dayton Ct., Newington, Conn. 06111
Filed Aug. 25, 1980, Ser. No. 181,119
Int. Cl.^{3} A61F *5/00*
U.S. Cl. 128—80 C **14 Claims**



1. An orthotic/prosthetic joint assembly comprising longitudinally elongated first and second support members having generally overlapping laterally spaced apart end portions, an intermediate member disposed in the space between said end portions, first connecting means securing the end portion of said first support member to said intermediate member for pivotal movement relative to said intermediate member about a first axis in one direction from a first position of said first support member relative to said intermediate member, second connecting means securing the end portion of said second support member to said intermediate member for pivotal movement relative to said intermediate member about a second axis parallel to said first axis and in a direction opposite said one direction from a first position of said second support member relative to said intermediate member, said joint assembly having a position of normal extension wherein said first and second support members are generally longitudinally aligned with each other and said first and second axes are generally transversely spaced apart, first stop means disposed in said space between said end portion of said support members for preventing pivotal movement of said first support member in said opposite direction from its said first position, and second stop means disposed in said space between said end portions of said support members for preventing pivotal movement of said second support member in said one direction from its said first position, said first and second stop means being disposed between and substantially covered by said first and second end portions in all angular positions of said first and second support members relative to each other.

4,353,362
KNEE BRACES

Alexander H. DeMarco, 85 Maple Ave., Shelton, Conn. 06484
Filed May 4, 1981, Ser. No. 260,021
Int. Cl.^{3} A61F *3/00*
U.S. Cl. 128—80 C **1 Claim**



1. A knee brace of unfolding type, providing a resilient pad having front and back faces and opposite sides and being of a width for partial envelopment of knees of different circumferences when applied thereto, and being of a given length for extension above and below a knee, two tapes extending from said pad and being of sufficient length for winding a plurality of times around said pad when in enveloping relation with a knee, said tapes have free ends and extend from lengthwise spaced parts of the opposite sides, respectively, two Velcro fasteners each having first and second companion parts on said front face of said pad along one side thereof and on an associated tape extending from the other associated pad side, respectively, with said companion fastener parts releasably interlocking when engaged with each othe, and each of said second fastener parts extending on the associated tape from the associated pad side outwardly sufficiently to be engageable with its companion fastener part on bridging the gap between the sides of the applied pad on a knee on wind-on of the tape for a fraction of one turn and said first fastener parts are arranged along said pad sides, respectively, and are aligned, widthwise of said pad, with the lengthwise spaced parts of the pad sides from which extend the tapes that carry the respective companion fastener parts so as to indicate wind-on of the tapes on the applied pad in opposite directions, and a further Velcro fastener on each tape having companion parts at, and so spaced from, the end of the tape to be engageable with each other on the last turn of the wind-on of the tape.

4,353,363
INTRAUTERINE SPERMICIDE

Angel Sopena Quesada, C/Chapineria, 6, Madrid 35, Spain
Continuation of Ser. No. 20,234, Mar. 13, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,670
Claims priority, application Spain, Nov. 23, 1978, 239.677
Int. Cl.^{3} A61F *5/46*
U.S. Cl. 128—130 **2 Claims**

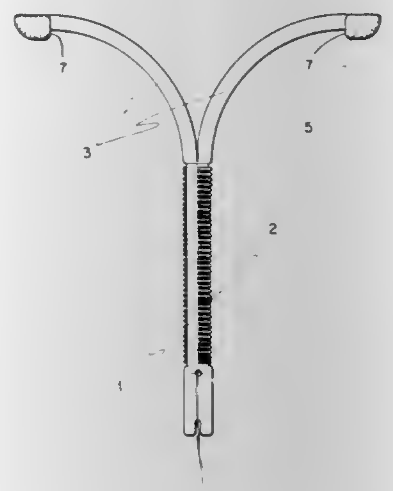
1. An intrauterine spermicide comprising:

an elongated cylindrical support body adapted to be positioned within a uterine cavity;

said support body having extending from an end thereof two arms adapted, when said support body is positioned in the uterine cavity, to extend in the directions of the oviducts, each said arm having a semi-cylindrical cross-sectional configuration;

each said arm extending away from said support body in a curved manner to form a configuration approximately corresponding to a quarter of the circumference of a circle, such that said two arms together form a curved V-shaped configuration extending away from said support body and adaptable without being rejected to a fallen uterus;

said support body having a reduced diameter portion forming an annular recess;



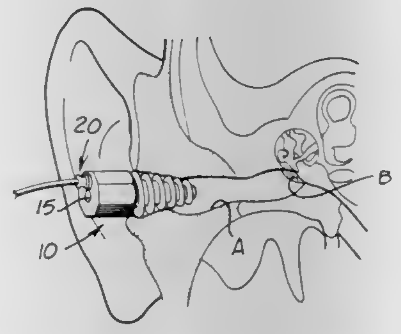
a copper wire wound as a spiral around said reduced diameter portion and acting as a spermicide;

the depth of said recess substantially corresponding to the thickness of said copper wire; and

each said arm having at the free end thereof a copper mass forming a spermicide for spermatozoa which have bypassed said copper wire.

4,353,364
EAR ACOUSTICAL ATTENUATING DEVICE

Thomas J. Woods, 14124 Dickens St., Sherman Oaks, Calif. 91423
Continuation of Ser. No. 870,443, Jan. 18, 1979, abandoned. This application Apr. 10, 1980, Ser. No. 138,936
Int. Cl.^{3} A61F *11/02*
U.S. Cl. 128—152 **17 Claims**



1. An ear hearing protective device comprising:

an elastomer body means having a first aperture and a second aperture, said first and second apertures being laterally spaced apart and a connecting tubular means extending from said first and second apertures, said tubular means being tapered and adapted to be received in the ear canal of the human ear in a sound-sealing relationship;

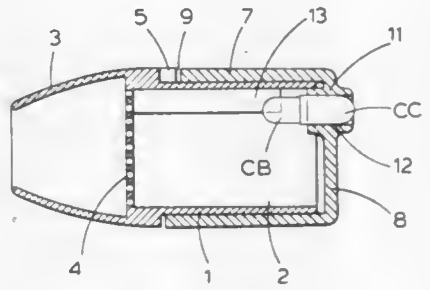
an auditory channel for passing sound waves therethrough extending through said body means from said first aperture therein and through said tubular means to an opening at its distal end;

a sound attenuating means located in said channel operable to attenuate sound waves, said sound attenuating means having an opening of a lesser diameter than the said channel; and

a removable plug means selectively inserted in said first aperture communicating with said auditory channel in said body means or in said second aperture therein to provide the wearer with selective total sound occlusion and partial sound attenuating depending upon the position of said plug means in said apertures.

4,353,365
DEVICE FOR DISPENSING MEDICAMENTS

Gerald W. Hallworth, Ware, and David Clough, Bishop Stortford, both of England, assignors to Glaxo Group Limited, London, England
Filed Dec. 5, 1980, Ser. No. 213,309
Claims priority, application United Kingdom, Dec. 6, 1979, 7942208
The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.
Int. Cl.^{3} A61M *15/00*
U.S. Cl. 128—203.15 **5 Claims**



1. An inhalation device by which powdered medicaments can be orally or nasally administered to a patient comprising a body shell defining a portion of a chamber which has a nozzle at a forward end and which is open at the rear end, a sleeve fitted on the outside of the body shell and rotatable with respect to it and having a rear wall closing the open rear end of the chamber, a capsule retaining means extending through the said rear wall of the sleeve into the chamber and having an external entry opening for a capsule at the rear of the sleeve, said capsule retaining means being sized to retain a capsule inserted therein with a portion of the capsule extending into said chamber, an abutment fixed inside the chamber in such a position with respect to the capsule retaining means that the capsule retained in the retaining means and projecting from it into the chamber will engage the abutment when the sleeve is rotated with respect to the body shell thereby to separate the projecting portion of the capsule from the remainder of the capsule, a guard for preventing the separated portion of the capsule from passing through the nozzle, and an air inlet opening extending through the said rear wall of the sleeve into the chamber.

4,353,366
CARBON DIOXIDE ABSORBER

Allan M. Bickford, 1581 Hubbard Rd., East Aurora, N.Y. 14052
Filed Jul. 23, 1980, Ser. No. 171,330
Int. Cl.^{3} A61M *16/00*
U.S. Cl. 128—205.12 **14 Claims**

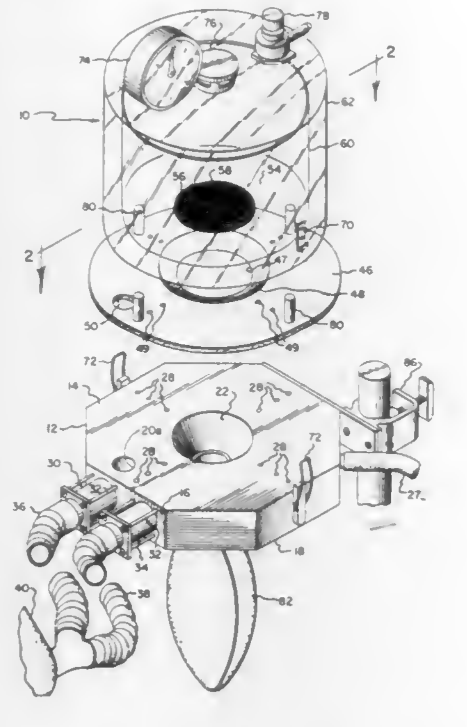
10. A carbon dioxide absorbing apparatus of the type adapted to be placed in flow communication with a patient face mask or the like through a pair of breathing tubes, said apparatus comprising:

a base having an upper surface;

a pair of passage means extending within the base and having first and second ends, one of said second ends opening centrally through said upper surface and the other of said second ends opening through said upper surface in an offset relationship to said one of said second ends;

a cup-shaped cannister for retaining a charge of carbon dioxide absorbing material, said cannister having a side wall bounding an open upper end of said cannister and a bottom wall formed with a centrally located opening for permitting flow of gas through said cannister in contact with said material, said bottom wall having screen means for constraining passage of said material downwardly through said centrally located opening thereof;

a gasket formed of resiliently deformable material mounted on said upper surface, said gasket having a centrally located opening arranged for alignment with said one of said second ends and an offset opening arranged for alignment with said other of said second ends, said gasket including an annular raised portion surrounding said centrally located opening thereof, said cannister being removably supported in fluid sealing engagement on said gasket with said bottom wall spaced outwardly of said upper surface and said annular raised portion sealingly engaging said bottom wall about said centrally located opening of said cannister;



a cover;

means for removably attaching said cover to said base in fluid sealed engagement with said gasket and in a spaced surrounding relationship to said cannister thereby enclosing said cannister, said cover and said cannister cooperating to define a fluid flow passage therebetween, said offset opening being in flow communication with said passage and thereby with said open upper end of said cannister; and

a pair of check valve means for placing said first ends of each of said pair of passage means in flow communication with each of said breathing tubes and for providing one way flow of gas through said apparatus between said breathing tubes.

4,353,367

CONTAINER FOR STERILIZING A FLEXIBLE TUBE

Elisa Hunter, Cypress, and Susan Gandy, Houston, both of Tex., assignors to The Clinipad Corporation, Guilford, Conn.

Filed Nov. 14, 1980, Ser. No. 206,851

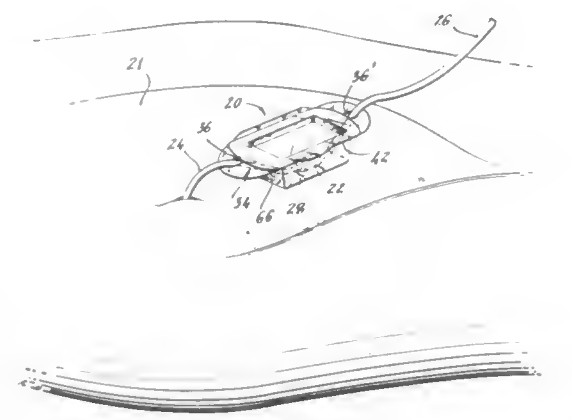
Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—213 A **23 Claims**

1. A disposable device for liquid treatment in a medical procedure of a portion of a flexible tube comprising

a lightweight self-supporting disposable plastic molded container having a liquid retaining basin formed by a peripheral wall and a bottom wall, said container having an upper surface which intersects the peripheral wall to form an upper opening for the basin, through which opening the portion of the flexible tube is received, said basin, being sized to retain a limited amount of liquid to a depth sufficient to submerge a portion of the flexible tube to be treated;

said container being further provided with at least one projection which is attached to the container and is sized and located to releasably maintain, in cooperation with a wall of the container, said tube portion in the vicinity of the bottom wall of the basin.



4,353,368

DEVICE FOR HEMODIALYSIS

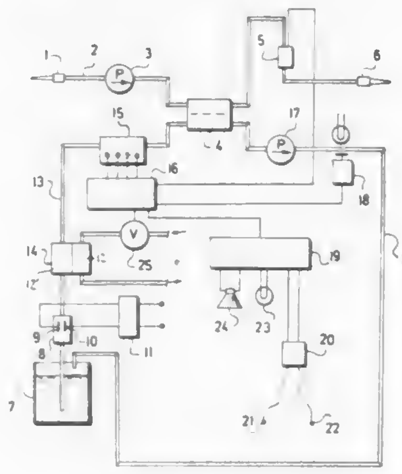
Petr Slovak; Hana Becvarova; Milan Ruml, and Jiri Kracik, all of Prague, Czechoslovakia, assignors to Ceske vysoke uceni technicke, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 973,026, Dec. 26, 1978, abandoned. This application Aug. 19, 1980, Ser. No. 179,467

Claims priority, application Czechoslovakia, Dec. 23, 1977, 8781-77

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—214 R **5 Claims**



1. A device for hemodialysis comprising a first, arterial blood conducting circuit means comprising an arterial needle adapted to be inserted into an artery of a patient, a first, blood pump means for forwarding blood from the arterial needle, a hemodialyzer having a first chamber receiving arterial blood from the blood pump, a bubble trap receiving arterial blood from the first chamber of the hemodialyzer, and a venous needle receiving arterial blood from the bubble trap, a second, dialyzing solution conducting circuit means comprising a container holding a dialyzing solution, a solution conducting unit containing sensors, a second chamber of the hemodialyzer, a second dialyzing solution pump means for moving the dialyzing solution from the dialyzing solution container through the unit containing sensors into the second chamber of the hemodialyzer, a hemoglobin detector connected to an outlet of said second pump means, an electronic unit provided with acoustic and optical alarms indicating malfunctions of the hemodialysis device, said electronic unit comprising at least two electrodes in the dialyzing solution, and an A.C. power source means connected to said electrodes for providing a sufficient electrical output to said electrodes which is variable in both frequency and amplitude to inhibit the growth of bacteria in the dialyzing solution.

4,353,369

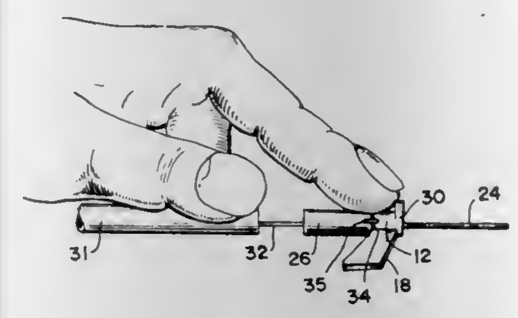
VENIPUNCTURE DEVICE

Andrew J. Muetterties, Gages Lake; Joseph N. Genese, Waukegan, and Charles H. Seberg, Libertyville, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 112,970

Int. Cl.^{3} A61M *5/00*

U.S. Cl. 128—214.4 **6 Claims**



1. An improved venipuncture device comprising:

a needle portion including needle hub means at its proximal end and a sharpened tip at its distal end,

a catheter portion having a catheter hub means at its proximal end with a reseal member fixedly attached thereto, said needle portion extending coaxially through said catheter portion;

a modular wing assembly defining a wing hub member having an axial cylindrical bore therethrough adapted for telescopic reception of and attachment to said catheter hub portion;

said catheter hub means having a tubular portion at its distal end adapted for telescopic insertion and attachment to said modular wing assembly, and means for mechanically removably locking said modular wing assembly to said tubular portion whereby said tubular portion may be removably locked onto and thereby fixedly attached to said modular wing assembly; and

a pair of oppositely extending flexible wing sections flexibly attached to said wing hub member, said flexible wing sections having an area of reduced thickness on each of said flexible wing sections along a portion of the width thereof, substantially adjacent to said wing hub member, said area of reduced thickness being effective to facilitate the folding of said flexible wing sections together so as to be easily held thereby facilitating insertion of said device into the patient's vein.

4,353,370

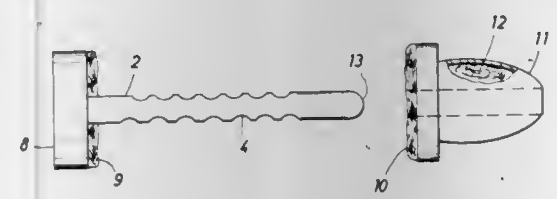
MEDICATED EAR RODS AND EARRING CONSTRUCTION

Aida L. Evans, 5706 Irish Hill Dr., Houston, Tex. 77053

Continuation of Ser. No. 13,454, Feb. 21, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,464

Int. Cl.^{3} A61M *35/00*

U.S. Cl. 128—269 **1 Claim**



1. A medicated earring comprising:

a substantially rigid elongate plastic member having a filled interior for insertion through a pierced earlobe;

an enlarged pole piece attached to one end of said elongate member for abutting and covering one side of said pierced earlobe;

stopper means adapted to be removably secured to the other end of said elongate member for retaining said plastic member within said pierced earlobe; and

an absorbent material carried by said stopper means and adapted for engagement with a portion of said plastic member and for receiving a cleaning agent, wherein a portion of said elongate member has a substantially reduced diameter, and additional absorbent material is located adjacent said reduced diameter portion.

4,353,371

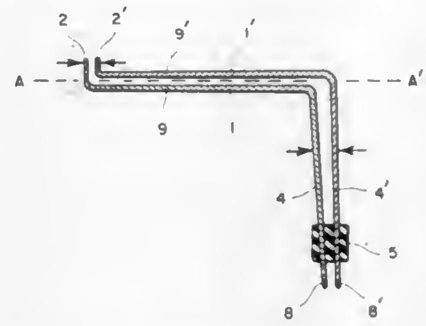
LONGITUDINALLY, SIDE-BITING, BIPOLAR COAGULATING, SURGICAL INSTRUMENT

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Filed Sep. 24, 1980, Ser. No. 190,301

Int. Cl.^{3} A61B *17/39*

U.S. Cl. 128—303.17 **5 Claims**



1. A bipolar coagulating surgical instrument adapted for closing upon and coagulating tissue in a direction parallel to its distal axis, comprising:

a proximal portion having a proximal end and a distal portion having a distal end, the proximal portion being so adapted to be held when in use, the distal portion being so adapted to be directed toward the tissue to be coagulated when in use, and said distal portion being of elongated shape so that it can be directed into a deep surgical hole in the living body in order to reach a portion of tissue deep within the surgical hole and so that said distal portion defines approximately a distal axis of said surgical instrument, a first conductive element and a second conductive element which both extend from said proximal end to said distal end, means for electrically insulating at least a portion of said conductive elements with the tips of said conductive elements at said distal end being at least in part uninsulated and being the bipolar coagulating portion of said instrument, and the proximal ends of said conductive elements being adapted to be connected across a coagulating electric potential source when said instrument is in use, actuation means located at said proximal portion being so adapted and so cooperatively coupled to said two conductive elements that when said actuation means is pressed then said tips of said conductive elements will move relative to each other along a direction approximately parallel to the distal axis of said instrument, and said tips being so shaped that at least part of their uninsulated portions will close toward each other in such a way that said uninsulated tip portions can close upon each other and upon a plane which is oriented approximately perpendicular to said distal axis of said instrument, said conductive elements being so adapted to be electrically insulated from each other whenever said uninsulated portions of said tips of said conductive elements are not in contact with each other; whereby, when in use, said distal portion of said instrument can be inserted in to a deep surgical hole in the living body so that said distal axis of said instrument can be approximately aligned with the axis of said deep surgical hole, and, by pressing said actuation means, said uninsulated portions of said tips can be made to close upon a portion of membrane of tissue which hangs from the side walls of said deep surgical hole at a deep location in said surgical hole, said membrane being oriented in a plane that is perpendicular to said distal axis of said instrument, said uninsulated portions of said tips closing upon said portion of hanging membrane in a direction approximately parallel to said distal axis of said instrument; whereupon, when a coagulating electric potential is applied to said conductive elements, said membrane may be coagulated between said uninsulated portions of said tips.

4,353,372

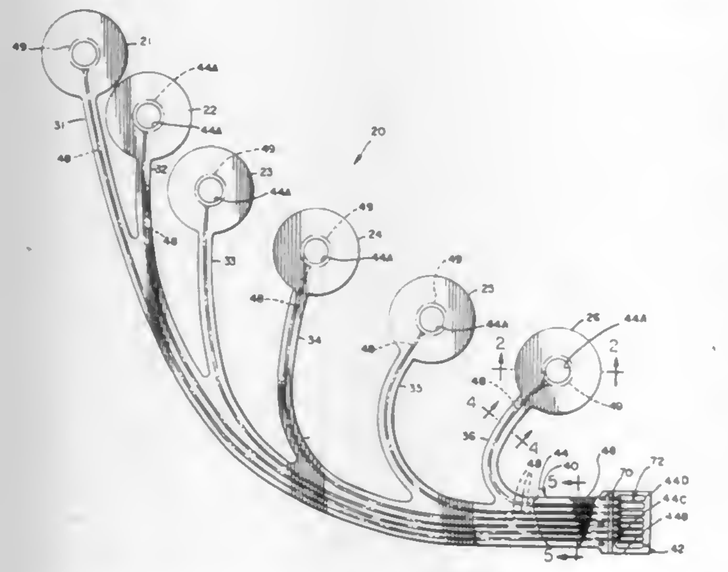
MEDICAL CABLE SET AND ELECTRODE THEREFOR

George E. Ayer, Naperville, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 11, 1980, Ser. No. 120,421

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—640 **18 Claims**



1. A unitary medical cable set for electrical connection to a plurality of body locations, comprising:

connector means for electrical connection to complementary connector means coupled to medical monitoring equipment, or the like, and having a plurality of electrical contacts;

a plurality of electrical lead means each connected at one end to a respective one of said contacts; and

support means secured to said connector means and supporting said plurality of lead means;

said support means having a plurality of branches supporting respective ones of said lead means;

said support means comprising a trunk portion secured to said connector means and supporting said plurality of lead means at a location proximate to said connector means, said trunk portion dividing to form said branches, at different spaced locations away from said connector means so as to prevent entanglement thereof, and said lead means diverging with said branches.

4,353,373

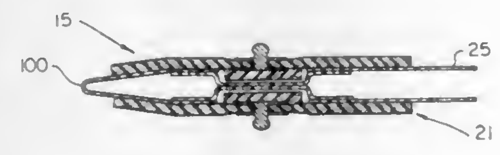
EKG ELECTRODE AND PACKAGE

Robert W. Sessions, Burr Ridge; Jerome Jeslis, Chicago, and Richard A. Rodzen, Bolingbrook, all of Ill., assignors to Ferris Manufacturing Corp., Burr Ridge, Ill.

Filed Apr. 17, 1980, Ser. No. 141,057

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—641 **3 Claims**



1. An EKG electrode and package therefor comprising:

a rectangularly shaped foam body member with an adhesive layer affixed to a first side thereof;

a metal contact which extends through said foam body member, is substantially centered with respect thereto and is attached only to said foam body member;

a gel impregnated circular disk attached to said adhesive layer on said first side of said foam body member centered with respect to said metal contact;

a selected piece of plastic sheet material with a hole therein sealingly bonded at a first side to said first side of said foam body member with said gel impregnated disk extending through said hole;

a formed plastic cap member sealingly attached to the other side of said plastic sheet material covering said gel impregnated disk;

a layer of selected adhesive, said layer of adhesive is located on said other side of said plastic sheet material and extends at least from a first edge of said rectangularly shaped foam body member to a second edge thereof and surrounds said hole in said plastic sheet material, and wherein

said formed plastic cap member includes planar sealing regions, parts of said planar regions extend substantially to said first and second edges of said rectangularly shaped foam body member, said planar regions are in sealing contact with adjacent regions of said layer of adhesive,

whereby said cap member is bonded to said other side of said plastic sheet member by said selected adhesive such that a moisture resistent seal is formed therebetween which completely surrounds a part of said disk, and

whereby said gel impregnated circular disk is sealed within a moisture retaining region bounded by a part of said first side of said foam body member, a portion of said metal contact, a surface of said plastic sheet material which surrounds a part of said disk, a surface of said plastic cap member adjacent to said gel impregnated circular disk, and said moisture resistant seal.

4,353,374

BLOOD PRESSURE CUFF

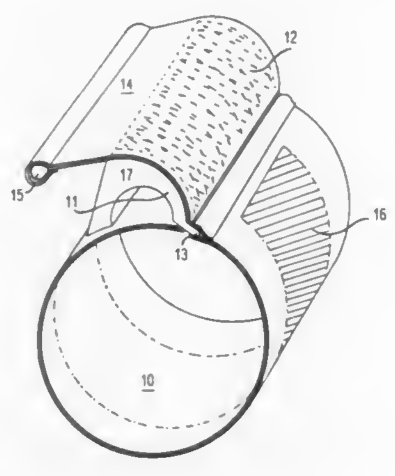
Klaus Rebbe, and Klaus Welimann, both of Mannheim, Fed. Rep. of Germany, assignors to Clinicon International GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,733

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843643

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—686 **8 Claims**



1. A blood-pressure cuff comprising a hose-like band; a buckle having a first crossbar and a second crossbar, one end of the band being attached to said first crossbar, and the other, free end of the band being passed between the crossbars to form a loop; and manually releasable fastening means for the temporary strapping of the loop, comprising first means disposed on the band of the cuff, and second means disposed on the second crossbar which is releasably fixable to the first means, wherein the first and second means are coverings which when placed in contact with each other form a releasable fastening.

4,353,375

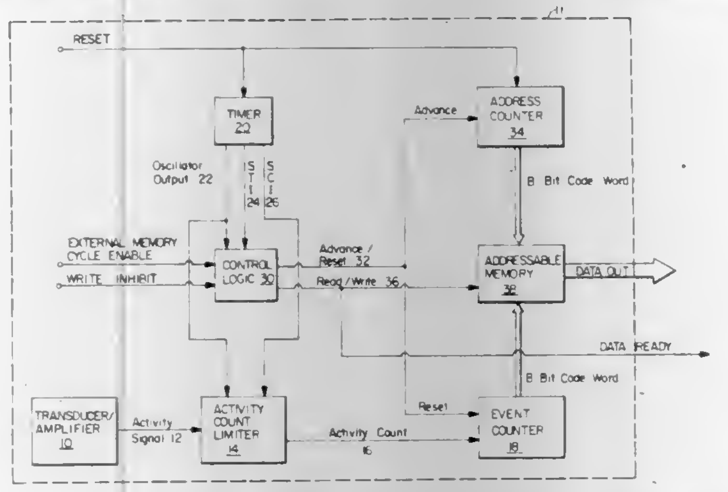
ACTIVITY MONITOR FOR AMBULATORY SUBJECTS

Theodore R. Colburn, Rockville, and Bruce M. Smith, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

Filed Apr. 26, 1977, Ser. No. 790,988

Int. Cl.^{3} A61B *5/10*

U.S. Cl. 128—782 **20 Claims**



1. A self-contained single unit physiological monitoring system for monitoring physiological responses, said system comprising:

transducer means for converting each physiological response to an electrical pulse output;

timer/control means for providing standard timing interval signals;

memory means electrically connected to said timer/control means and said transducer means, for recording a number of said pulse outputs over a standard timing interval and for storing said number of pulse outputs over more than one standard timing interval; and

case means, mountable on a subject, for mounting said transducer means, said timer/control means, and said memory means.

4,353,376

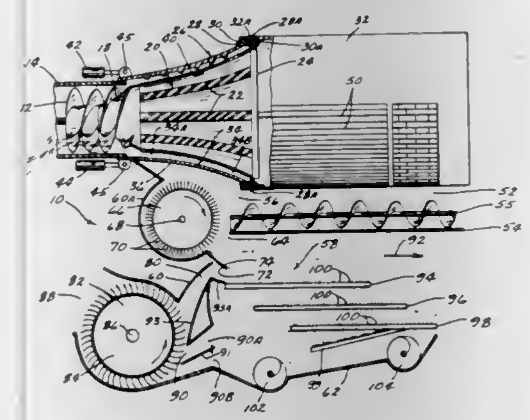
COMBINE HAVING SEPARATING AND CLEANING APPARATUS

Murry W. Schuler, Box 66, Rte. #2, Griswold, Iowa 51535

Filed Mar. 12, 1981, Ser. No. 243,122

Int. Cl.^{3} A01F *7/06*

U.S. Cl. 130—27 T **9 Claims**



1. A combine comprising:

a longitudinally extending auger having forward and rearward ends;

means for rotating said auger;

a first auger casing surrounding said auger in spaced relation thereto, said first auger casing having forward and rearward ends positioned adjacent said forward and rearward ends of said auger;

a longitudinally extending threshing rotor having a forward end connected to said rearward end of said auger for rotation therewith, and having a rearward end;

a longitudinally extending concave surrounding said threshing rotor in spaced relation therewith to define a threshing space therebetween;

said concave including grate means located below said rotor for permitting threshed grain and chaff to fall downwardly and out of said threshing space;

a housing forming a cleaning chamber below said concave, said cleaning chamber having an inlet opening in communication with said grate means of said concave;

sieve means within said chamber below said inlet opening;

chaffer means within said chamber for directing a stream of air over said sieve means to separate the chaff from the threshed grain;

conveyor means below said sieve means for carrying grain outside said housing after said grain falls through said sieve means; and

impeller means located within said housing adjacent said inlet opening for engaging the grain and chaff falling from said grate into said inlet opening and propelling said grain and chaff downwardly toward said sieve means;

wherein said impeller means comprising a drum rotatably mounted to said housing for rotation about a horizontal axis, said drum having a plurality of radially extending blades for engaging said grain and chaff falling from said grate means into said inlet opening.

4,353,377

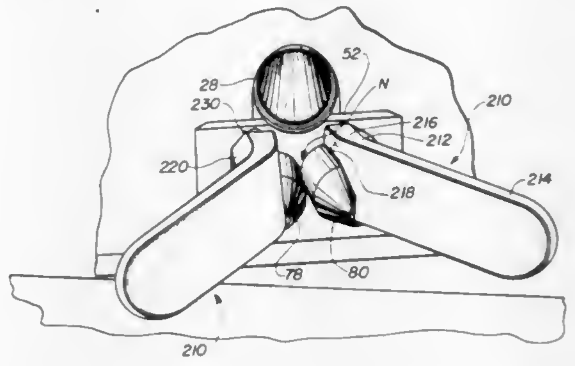
GUIDE FOR LEAF STRIPPING APPARATUS

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Jun. 8, 1981, Ser. No. 271,318

Int. Cl.^{3} A01D *1/00, 45/16*

U.S. Cl. 130—30 R **9 Claims**



1. Apparatus for stripping leaves from a stalk comprising:

(a) means for supporting the stalk, said means having front and rear ends;

(b) means operably connected for rotating the stalk supporting means;

(c) means operably connected for gripping the stalk and for urging the stalk to move through the stalk supporting means;

(d) means adjacent the rear end for chopping the stalk adjacent the rear end of the supporting means;

(e) means adjacent the front end for stripping leaves from the stalk, said means including a pair of rollers operably connected for counter-rotating in side-by-side relationship for forming a nip, each roller having a free end including a conical tip remote from the apparatus;

(f) means for guiding the leaves to the nip and, in response to some leaves sticking to the rollers, for stripping the sticking leaves from the rollers; and

(g) the guiding and stripping means including a bent member adjacent each roller attached to the apparatus adjacent the front end of the support means, each of said bent members having a stripping portion extending axially along the adjacent roller and in proximity therewith and substantially parallel with said nip, and a guiding portion bent for extending divergently outwardly from said nip.

4,353,378

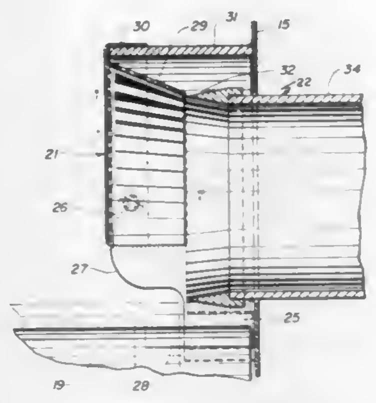
TOBACCO STALK GUIDE ASSIST

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 17, 1980, Ser. No. 187,876

Int. Cl.³ A01D *45/16*

U.S. Cl. 130—31 R **5 Claims**



1. In a tobacco leaf stripping machine having at least a pair of counter-rotating leaf stripping rolls forming a nip to gently grip the tobacco leaves, a rotatable infeed tube with an infeed end positioned immediately above the nip into which is inserted the tobacco stalk and knife means attachable to the infeed end of the infeed tube, the improvement comprising:

a stalk guide assist attachable to the machine adjacent and substantially surrounding a portion of the knife means effective to guide the tobacco stalk with its leaves thereon into the knife means and the infeed tube to insure the leaves are stripped from the stalk; and

the stalk guide assist being generally semi-circular in shape having an open end located above the stripping rolls thereby leaving the knife means exposed immediately above the nip for cutting leaves from the stalk.

4,353,379

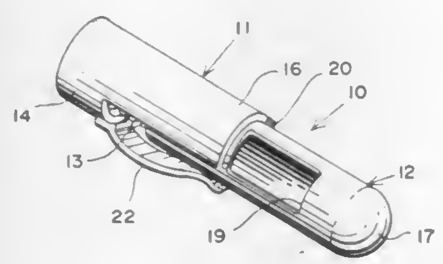
PORTABLE PERSONAL ASH RECEIVER

Rafael Castellanos, 117 E. 11th St., Hialeah, Fla. 33010

Filed Mar. 6, 1981, Ser. No. 241,432

Int. Cl.³ A24F *19/00;* **B65D** *73/00*

U.S. Cl. 131—231 **2 Claims**



1. A portable personal ash receiver, comprising, in combination, a tubular body member closed at one end, a tubular ash receiver member slidingly received within the other end of said tubular body member in telescoping fashion, an enclosure wall at the outer end of said tubular ash receiver member, a through access opening in the peripheral side-wall of said tubular ash receiver member, said tubular body member having an extended peripheral side-wall portion normally in covering relation with respect to said access opening when said tubular ash receiver member is fully received within said tubular body member, and yieldable means constraining said ash receiver member to be fully received in said tubular body member, whereby, upon manual withdrawal of said tubular ash receiver member with respect to said tubular body member against the urging of said yieldable means, said access opening will be exposed for the receiption of cigarette ashes and butts into said tubular ash receiver member, abutment means operative to selectively maintain said tubular ash receiver member in the withdrawn position with respect to said tubular body member, said abutment means comprising an abutment pin extending outwardly of the peripheral side-wall of said tubular body member and operative to be abuttingly retained in a recess in the outer end of said extended peripheral side-wall portion of said tubular body member upon the relative rotation of said body member and ash receiver member when in their relatively withdrawn positions, said yieldable constraining means comprising a tension spring acting between the closed end of said tubular body member and the inner end of said tubular ash receiver member, said tubular ash receiver member being provided with a transverse bottom plate secured in spaced relation with respect to the inner end of said tubular receiver member, one end of said tension spring being secured to said transverse bottom plate and the other end being secured to said closed end of said tubular body member.

4,353,380

HAIR CURLER

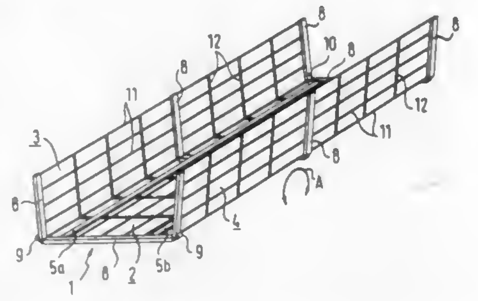
Ingeborg Kolkmann, Hofaue 53a, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,723

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 8011582[U]; Jun. 20, 1980, 8016346[U]

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **14 Claims**



1. A hair curler, comprising: a flexible winding member (**1**) having openings therein, a tensionable spring (**5**, **5***a*, **5***b*) associated with the winding member for rolling it into a coil when released, the winding member including a flat main element (**2**) and at least one flat lateral wing element (**3**, **4**) hinged thereto and foldable thereon and thereover, the spring being mounted on the main element in a tensioned condition, and a longitudinal blocking strip (**6**) mounted on the wing element (**3**) and capable of being rolled up in only one direction for preventing the main element from rolling up under the influence of the spring when the wing element is folded out ot an open position substantially co-planar with the main element.

4,353,381

FLUID CLEANER APPARATUS

Stephen G. Winters, 6443 S. Broadway, Wichita, Kans. 67214

Filed Feb. 27, 1981, Ser. No. 239,120

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—111 **15 Claims**

1. A fluid cleaner apparatus adapted to clean automotive parts and the like, comprising:

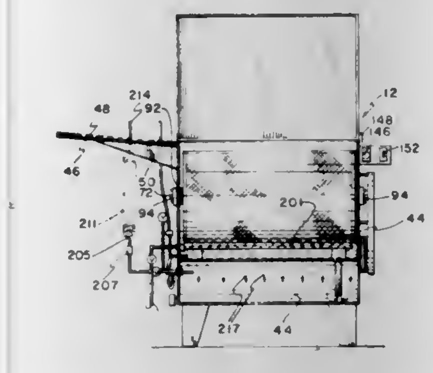
(a) a support housing assembly having a basic container member with a parts section mounted on a fluid reservoir section, each of said parts and fluid reservoir sections operable to have a cleaning fluid therein;

(b) a parts support drum assembly having a parts support member mounted in said parts section whereby the parts to be cleaned can be mounted on said parts section;

(c) a fluid actuator assembly having a fluid level assembly connected to said basic container member; and

(d) said fluid level assembly includes fluid supply line connected to said fluid reservoir section to supply pressure fluid thereto and a filter assembly mounted between said fluid reservoir section and said parts section whereby movement of the cleaning fluid from said fluid reservoir section is restricted to movement through said filter assembly;

whereby pressure fluid is supplied through said fluid supply line to force the cleaning fluid into said parts section through said filter assembly for cleaning parts therein; and on release of said pressure fluid from said fluid reservoir section, the cleaning fluid returns to said fluid reservoir section and is concurrently cleaned while passing through said filter assembly.



4,353,382

DEVICE FOR REMOVING THE LACQUER FROM WAVEGUIDES

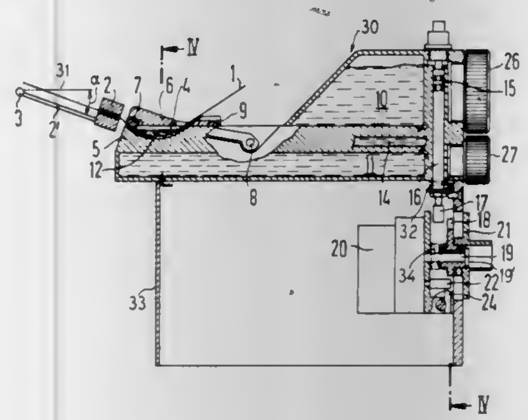
Dieter Krause, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,882

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010594

Int. Cl.³ B08B *3/08*

U.S. Cl. 134—113 **11 Claims**



1. A device for removing lacquer from a portion of at least one light waveguide and in particular the end of a light waveguide which is clamped in a holding device, said device for removing lacquer comprising a housing containing a tub for receiving a bath of a lacquer removing substance, said tub having a dimension corresponding to the desired length of the segment to be de-lacquered, and a pivotable arm being mounted in said housing and being movable to a position for holding a portion of the light waveguide, which was disposed above the bath in said tub.

4,353,383

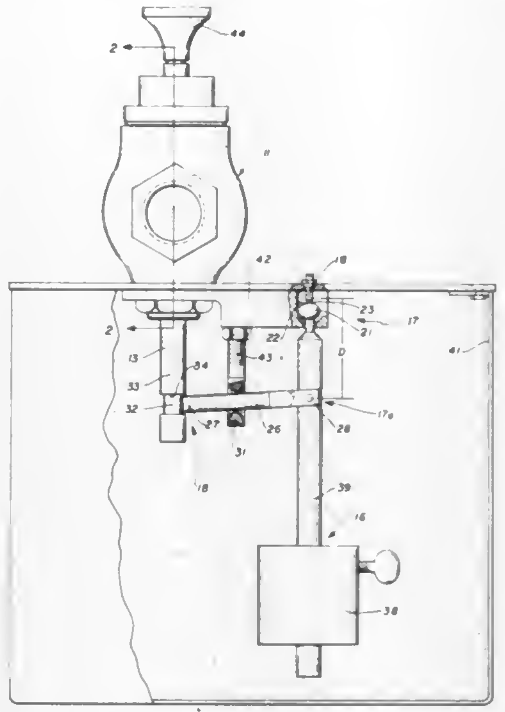
SEISMICALLY ACTUATED VALVE RELEASE STRUCTURE

Donald F. Kiesel, 6801 Amador Valley Blvd., Dublin, Calif. 94566

Filed Oct. 22, 1980, Ser. No. 199,471

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—45 **11 Claims**



1. A vibrationally actuated release structure for use with a valve or the like having a closure member movable between a first position and a second position for controlling fluid flow therethrough, said release structure including a pendulum, mounting means formed for swinging support of said pendulum, a movable member connected to said closure member and mounted to move said closure member between said first position and said second position, biasing means mounted to urge said closure member and said movable member from said first position to said second position, and latch means coupling said pendulum to said movable member and formed to retain said movable member in said first position and to release said movable member for movement to said second position in response to said biasing means upon vibrationally induced swinging movement of said pendulum, wherein the improvement in said release structure comprises:

said mounting means being formed with stop means positioned above said pendulum and formed for pivotal contact with an upper end of said pendulum, said stop means and said upper end having a geometrical configuration of relatively small contact area; and

said mounting means being further formed to urge said upper end into said contact with said stop means to provide low-friction universal unencumbered pivotal support of said pendulum.

4,353,384

HIGH PRESSURE TUBULAR REACTOR APPARATUS

Harold F. Gardner, Odessa, Tex., assignor to El Paso Polyolefins Company, Paramus, N.J.

Division of Ser. No. 974,287, Dec. 29, 1978, Pat. No. 4,255,387. This application Oct. 22, 1980, Ser. No. 199,412

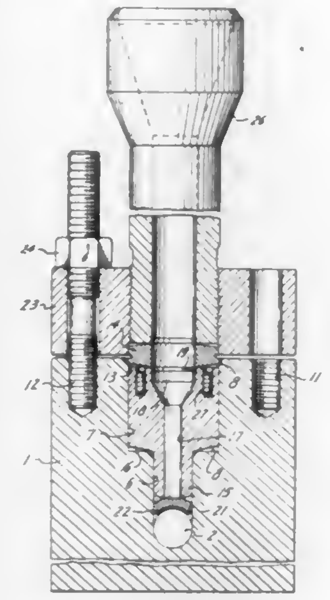
Int. Cl.³ F16K *13/04*

U.S. Cl. 137—68 R **7 Claims**

1. A rupture disc-connection block assembly comprising:

a rectangular block having an upper surface, a bottom surface and two pairs of opposing side surfaces, said block being provided with a longitudinal bore extending from one side surface to its opposing surface, and a centrally positioned lateral bore extending from said longitudinal bore upwards through the upper surface of the block, the diameter of the lower portion of the lateral bore being about equal to that of the longitudinal bore and the diameter of the upper portion of the vertical bore being substantially larger than that of the longitudinal bore, thereby providing a seat having a ring shape cross sectional area within the block;

supported by said seat and closely fitting within said lateral bore a removable necked rupture disc holder having a larger diameter upper portion and a smaller diameter lower portion, said upper portion of said holder extending upwards from said seat to near the upper surface of the block, thereby providing a recess in the upper surface of the block, said lower portion of the holder extending downwardly from said seat into the lower portion of the lateral bore of the block, said holder being provided with a lateral bore having a relatively small diameter in the lower portion of the holder and a relatively large diameter in the topmost portion of the holder;



a support ring affixed to the lower portion of the holder and having about the same cross sectional dimensions as those of said lower portion of the holder;

a rupture disc affixed at its periphery to the support ring and positioned at the junction of the lateral bore of the block and the uppermost portion of the longitudinal bore;

means for providing sealing contact between the rupture disc holder and the seat within the block.

4,353,385
DIAPHRAGM PRESSURE REGULATOR

Wolfgang Maisch, Schwieberdingen; Klaus-Jürgen Peters, Affalterbach; Michael Wissmann, Gerlingen, and Karl Gmelin, Ingelfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

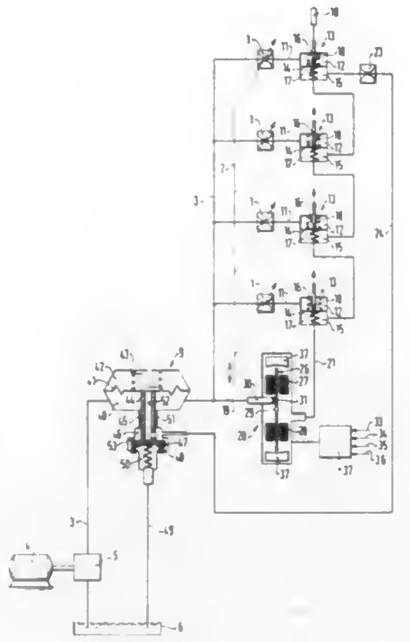
Filed Feb. 20, 1981, Ser. No. 236,385

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006587

Int. Cl.^{3} F02M *37/00*

U.S. Cl. 137—115 **5 Claims**

1. A diaphragm pressure regulator for regulating the fuel pressure in a fuel injection system, having a movable valve element embodied as a valve diaphragm and a valve seat arranged to cooperate with said valve diaphragm, characterized in that said valve diaphragm separates a spring chamber from a system pressure chamber, said system pressure chamber arranged to communicate with the fluid to be regulated, and said valve diaphragm further arranged to be urged by a system pressure spring disposed in said spring chamber in the direction of said valve seat which protrudes axially and displaceably into said system pressure chamber, said valve seat being supported in an axial bearing point, said valve seat further having an end remote from said valve diaphragm which comprises a valve plate which protrudes into a collection chamber and arranged to open a sealing seat to a greater or lesser extent toward a return flow line, a closing pressure spring positioned beneath said valve plate to urge said valve seat in the direction of said valve diaphragm and against a stop remote from said sealing seat, so that when said valve diaphragm is lifted up from said valve seat fluid can flow out via a conduit into said collection chamber and further wherein a throttle gap is provided between said system pressure chamber and said collection chamber.



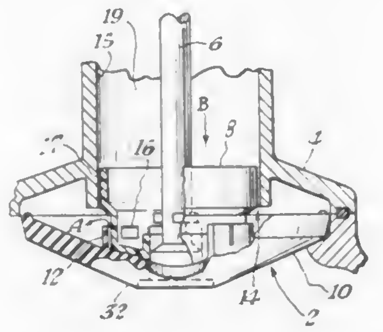
4,353,386
SEQUENCING VALVE

Roger D. Slagel, 641 NW. 74th Ave., Plantation, Fla. 33317

Filed Aug. 17, 1981, Ser. No. 293,362

Int. Cl.^{3} G05D *11/03*

U.S. Cl. 137—119 **3 Claims**



1. A fluid sequencing valve including a sequencing disc assembly with a sequencing disc means, a stem, and biasing means, operably connected in a fluid sequencing valve whose housing includes a check valve bore, a fluid inlet and at least two fluid outlets, said sequencing valve also including a means for rotatably positioning said sequencing disc assembly by movably cooperating with said stem connected to said sequencing disc assembly, and said biasing means which lifts said sequencing disc means away from said fluid outlet when fluid flow stops, said sequencing disc means comprising:

a generally cup-shaped check valve means operably connected in said housing for movement relative to inlet fluid flow and inlet fluid pressure and having cup-shaped body with a generally cylindrical wall;

said cup-shaped valve means being continuously engaged within the check valve bore adjacent said fluid inlet in said housing during all positions of said sequencing disc;

a means for allowing fluid to drain from said cup-shaped valve at a predetermined flow rate; and

said sequencing disc connected to said cup-shaped check valve means;

said sequencing disc including an aperture disposed therethrough operably positioned on said disc for allowing outflow of fluid through at least one of said fluid outlets in said housing, said sequencing disc reciprocating into engagement with said fluid outlets each time fluid pressure above a predetermined minimum pressure is applied to said inlet, said means for rotatably positioning operating to rotatably position said aperture into alignment with the next successive outlet with at least one successive reciprocation, fluid being conveyed first from said inlet into said check valve bore, then into and through said check valve means and finally through said drainage means before passing through said disc aperture said check valve means including:

at least one fluid exit port operably positioned in said cylinder wall to allow fluid to drain from said cup-shaped valve;

at least one resilient one way valve means connected to said exit port on the outside of said cylinder wall and overlying said exit port;

said one way valve means allowing fluid to drain from said cup-shaped body at a predetermined fluid flow rate lower than the minimum operational fluid flow rate of said sequencing valve to allow said housing to empty of fluid when flow ceases;

said one way valve means positioned relative to said exit port such that said sequencing disc seats against each said fluid outlet for all fluid flow rates;

said one way valve means positioned relative to said exit port such that reverse fluid flow into said fluid outlets is substantially restricted.

4,353,387
DRAINAGE DEVICE

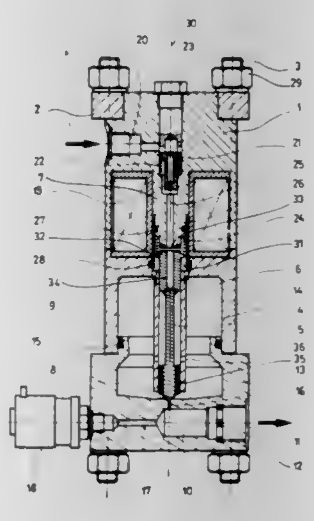
Pierre A. Bouygues, Decines, and Jean-Marie Delcoustal, Bron, both of France, assignors to Delle-Alsthom, Villeurbanne, France

Filed May 15, 1980, Ser. No. 150,121

Claims priority, application France, May 25, 1979, 79 13324

Int. Cl.^{3} F16T *1/00*

U.S. Cl. 137—203 **5 Claims**



1. A drainage device for removing liquid contained in a compressed gas tank, said device including:

a drainage chamber, means for communicating said drainage chamber with the lower portion of the tank, said drainage chamber being provided with an outlet orifice which opens to a pressure which is less than the tank pressure;

first means for closing the outlet orifice;

second means for opening the orifice after it has been closed by the first means; and

third means for partially cutting off communication between the tank and the drainage chamber when the gas pressure in the drainage chamber is lower than the gas pressure in the tank.

4,353,388
BUTTERFLY VALVE

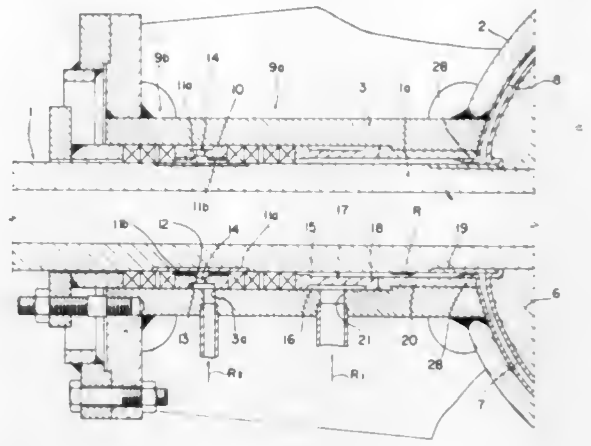
Mitsunori Isoyama, Hirakata; Susumu Takeda, Amagasaki, and Masatoshi Nakai, Hirakata all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jul. 9, 1980, Ser. No. 167,021

Claims priority, application Japan, Jul. 12, 1979, 54-88847; Jul. 17, 1979, 54-91080

Int. Cl.^{3} F16K *49/00*

U.S. Cl. 137—240 **7 Claims**



1. A butterfly valve comprising:

a valve housing (2) having first and second tubular portions (3,3);

a valve stem (1) extending in said tubular portions (3,3) and carrying a valve closure member (6) rotatable in said valve housing (2);

first and second gland packing portions (9,9) provided between said stem (1) and said first and second tubular portions (3,3) to prevent fluid leakage;

first and second bearing portions (4,4) for said valve stem (1) provided outwardly of said gland packing portions (9,9) respectively, wherein each of said first and second gland packing portions (9,9) is divided axially of said valve stem (1) into two sections (*9a,9b*), and including a bearing member (10) is fitted between said valve stem (1) and said tubular portion (3) at a position intermediate between said two sections (*9a,9b*); and

an inlet duct (R1) penetrating each of said tubular portions (3,3) and a passage (R) provided between said valve stem (1) and each of said first and second tubular portions (3,3) to introduce purge fluid into said valve housing (2), said passage (R) being defined at least at a position adjacent to an inwardly opening end (28) of each of said tubular portions (3,3) by a collar (19) surrounding said valve stem (1) and a bush (20) fitted against an interior wall of said tubular portion (3);

said inlet duct (R1) including at least one perforation (21) defined in at least one of said tubular portions (3,3), and a purge ring (18) fitted in each of said tubular portions (3,3), said purge ring (18) having a peripheral groove (16) and a plurality of pores (17) defined circumferentially thereof to communicate with said peripheral groove (16) and said passage (R), said perforation (21) and said peripheral groove (16) being in communication and said pores (17) being staggered with said perforation (21).

4,353,389
HOT GAS VALVE

Ernst Engl, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm G.m.b.H., Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,120

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943891

Int. Cl.^{3} F16K *31/44*

U.S. Cl. 137—375 **9 Claims**

1. A valve arrangement for varying the cross-sectional flow area of a passage for conducting hot gases, particularly fuel

rich gases flowing into the combustion chamber of a ramjet engine, comprising:

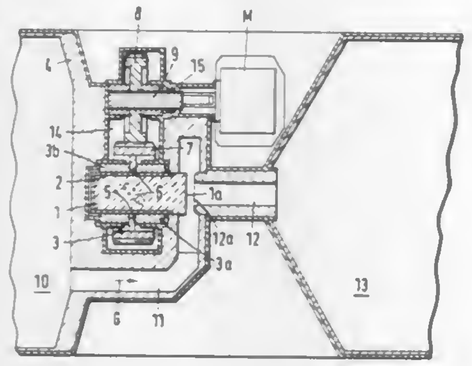
a housing defining said passage;

a nozzle having an open end communicating with said passage forming a valve seat for receiving the hot gas;

means in said housing defining a hot gaseous supply conduit for supplying hot gases to said passage;

a high temperature resistant and insulating bearing in said housing having a plurality of helically extending grooves circumferentially spaced and extending through said bearing;

a valve body made of high temperature resistant material slidably and rotatably mounted in said bearing, said valve body having a closed face moveable toward and away from said nozzle open end for varying the cross-sectional flow area of said passage;



a spoke extending through each of said bearing grooves and connected to said valve body;

a spur gear fixed to an outer end of each of said spokes and circumferentially disposed around said bearing outside said valve body, said spur gear connected to said valve body only through said spoke; and

drive means engaged with said spur gear for rotating said spur gear to rotate said valve body through said spokes;

said bearing being fixed with respect to said valve body and spur gear so that rotation of said spur gear causes movement of said spokes in said bearing grooves to axially move said valve body closed face toward and away from said nozzle open end said spur gear moving axially relative to said drive means.

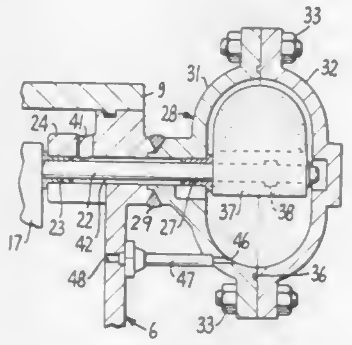
4,353,390
SWING CHECK VALVE WITH INTERNALLY BALANCED DISC

Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor/Darling Valve Company, San Mateo, Calif.

Continuation-in-part of Ser. No. 100,721, Dec. 6, 1979, abandoned. This application Mar. 16, 1981, Ser. No. 244,330

Int. Cl.³ F16K *15/18, 31/44, 15/00*

U.S. Cl. 137—527.8 **6 Claims**



1. A check valve comprising:

a valve body having an inlet and an outlet;

a valve seat in said body and disposed at a first angle with respect to vertical to be upwardly inclined toward said inlet;

a shaft rotatably mounted in said body adjacent said valve seat, said shaft having one end thereof extending out of said valve body;

a valve disc fixedly mounted on another end of said shaft for rotation therewith, said valve disc being located in said valve body to seat on said valve seat to interrupt fluid flow between said inlet and said outlet;

a housing mounted on said valve body and receiving therein said shaft one end;

fluid passage means fluidly connecting the interior of said valve body with the interior of said housing for draining condensate into said valve body, said fluid passage means including a conduit in which said shaft is located; and

a counterweight fixedly mounted on said shaft one end for rotation therewith and located in said housing, said counterweight being mounted on said shaft one end off center of said counterweight by a second angle which is less than said first angle so that when said valve disc is seated against said valve seat said counterweight is in advance of vertical with respect to flow direction through said valve body to provide a closing bias on said valve disc.

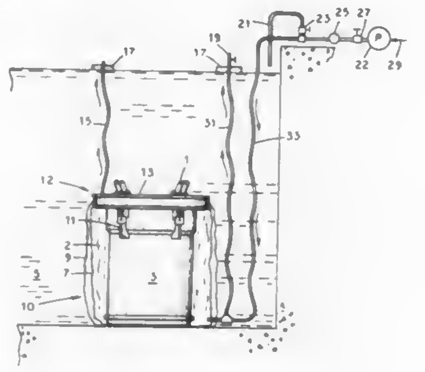
4,353,391
RADIOACTIVE MATERIALS SHIPPING CASK ANTICONTAMINATION ENCLOSURE

Mark S. Belmonte, Irwin; James H. Davis, and David A. Williams, both of Pittsburgh, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 18, 1981, Ser. No. 293,911

Int. Cl.³ F16K *23/00, 24/00*

U.S. Cl. 137—565 **9 Claims**



1. An anticontamination device comprising:

(a) a seal plate assembly,

(b) a double layered plastic bag supported by, and connected to, said seal plate assembly, and

(c) a means for water management connected to said bag and assembly;

said seal plate assembly comprising an upper plate provided with a means for venting water and at least one means for attaching said upper plate to a lifting means capable of removing said upper plate from said bag; said double layered plastic bag comprising an inner plastic bag and an outer plastic bag including a reinforced plastic material, said inner bag being provided with a means for connecting said bag to said water management means; said means for water management including connecting means to connect a supply of clean water to said double layered bag, means for measuring the flow of clean water from said clean water supply to said bag, means for controlling the rate of flow of clean water to said bag, and means to supply said clean water to said bag.

4,353,392
SAFETY VALVE ASSEMBLY

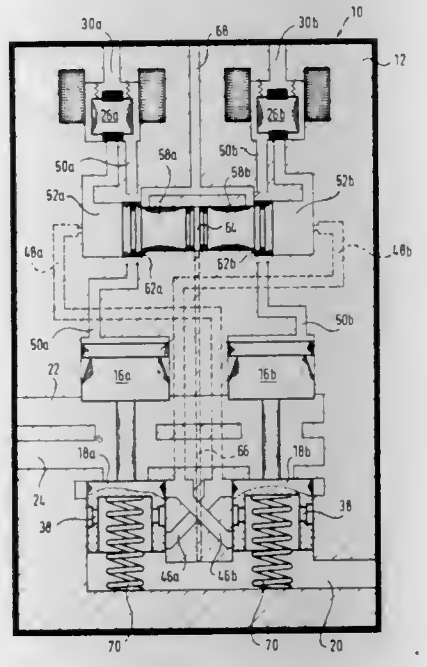
Erich Ruchser, Kernen, and Helmut Ott, Stuttgart, both of Fed. Rep. of Germany, assignors to Technomatic AG, Aesch, Switzerland

Continuation-in-part of Ser. No. 969,482, Dec. 14, 1978, Pat. No. 4,269,225. This application Feb. 6, 1981, Ser. No. 232,242

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005547

Int. Cl.³ F15B *13/043, 20/00*

U.S. Cl. 137—596.16 **7 Claims**



1. A safety valve assembly for pressure medium operated consumer devices, comprising a housing containing an inlet port, a consumer port and a return port; a pair of parallel-connected directional control valves arranged for controlling the communication between respective ports, said directional control valves including working spaces, working pistons movable in said working spaces, valve members coupled to respective working pistons, a pair of separate bores arranged between said inlet port and said consumer port for guiding said valve members, and a pair of passages crossing each other and interconnecting said separate bores; a pair of preliminary control valves each having a valve seat communicating with the working space of the assigned directional control valve; a pair of preliminary control channels interconnecting respectively a valve seat with one of the crossing passages to enclose an amount of pressure medium sufficient for switching over said working pistons and said valve members when said preliminary control valves are simultaneously operated; and means for biasing said valve members into a closing position in which said preliminary control channels are shut off from said inlet port.

4,353,393
SELECTIVE SHUTOFF FOR REPETITIVELY OPERATED VALVE

Jorg Schniter, Glenview, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Mar. 19, 1981, Ser. No. 245,531

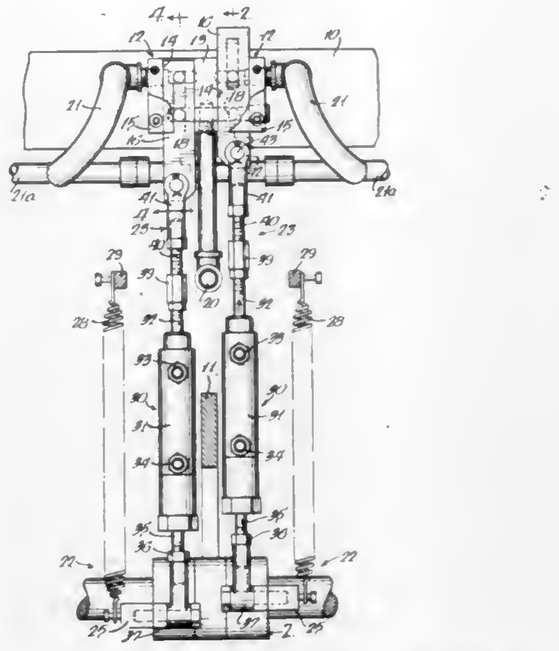
Int. Cl.³ F16K *31/524*

U.S. Cl. 137—624.2 **7 Claims**

1. In a fluid system for operating a member which must be actuated at regular intervals and which must be selectively disabled and enabled, said system including a valve with a body having a fluid inlet port and a fluid outlet port, and a valve element in said body which is movable between an open position permitting fluid to flow from the outlet port through the inlet port and a closed position blocking the flow of fluid between said ports, and a continuously operating mechanical valve actuator means including a link operatively connected to the valve element for regularly moving said element between said open and closed positions, means for selectively disabling and enabling said valve element, said means comprising, in combination:

a member in said link having first and second relatively movable parts for changing the length of the link between a first length in which the valve element is moved between open position and a normal closed position and a second length in which said valve element is moved between said normal closed position and a second closed position;

and means for selectively moving said parts relative to one another to change the length of said link while the system is in operation.



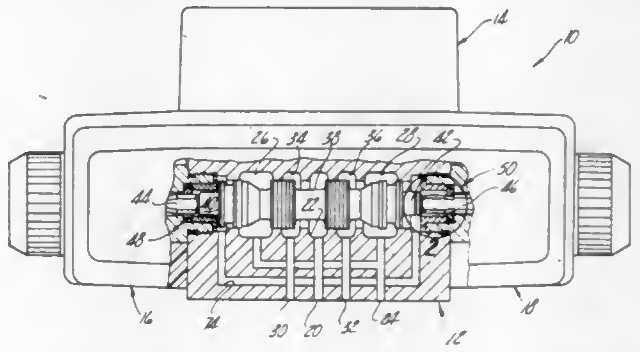
4,353,394
SOLENOID OPERATED DIRECTIONAL VALVE WITH DETENT MECHANISM

Ronald L. Loup, Clarkston, Mich., assignor to Double A Products Co., Manchester, Mich.

Filed Feb. 27, 1981, Ser. No. 239,056

Int. Cl.³ F15B *13/044*

U.S. Cl. 137—625.65 **9 Claims**



5. A directional valve having a valve body provided with passageways for directing flow of hydraulic fluid, a spool member mounted for movement in said valve body and operatively associated with said passageways and movable to selected positions for controlling flow of hydraulic fluid through the passageways, means mounted on said valve body in alignment with said spool member, and a pin member responsive to said means for movement axially to shift said spool member to a selected position, a detent means mounted so as to be confined in a fixed axial position relative to said valve body and positioned on one of said spool and said pin members for retaining said one member against axial movement when said means has moved said members to said selected position of the spool member, said one member having a groove extending around

its circumference shaped to provide a ramp that is inclined axially and extends to an adjacent outer circumference to said one member, said detent means including split detent sleeves of similar shape having inner surfaces shaped to allow axial sliding movement against the surfaces of the ramp and the adjacent outer circumference of said one member, and spring means urging said sleeves radially together, characterized in that said spring means is a wrap-around coil-spring seated on the radially outer surfaces of said split detent sleeves, said wrap-around coil-spring having more than one convolution wrapped around said sleeves.

4,353,395

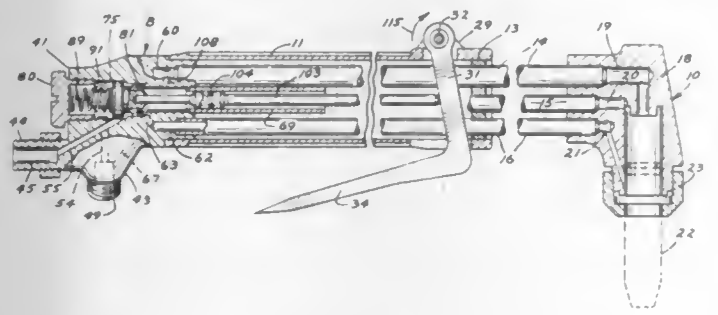
CUTTING AND WELDING TORCH VALVE APPARATUS

Craig E. Nelson, St. Paul, and Frank T. Kawamoto, Minneapolis, both of Minn., assignors to Tescom Corporation, Minneapolis, Minn.

Filed Jul. 14, 1980, Ser. No. 168,511

Int. Cl.³ F17D *3/01*

U.S. Cl. 137—861 **6 Claims**



1. Torch apparatus having a torch head, a torch tip mounted in said torch head, said torch head having at least two fluid passages formed therein to open into the torch tip, a torch butt having at least two fluid channels formed therein, a fluid conduit portion for each fluid channel interconnecting a fluid channel with a fluid passage, one of said fluid channels including an inlet passage, an outlet passage opening to one of the fluid conduit portions, and a valve bore opening to the inlet and outlet passages, the valve bore and one of the inlet and outlet passages being of a size and shape to cooperatively form a valve seat at its opening to the valve bore, and a valve stem subassembly that is mounted on the torch butt to extend into the valve bore and operative between an open position spaced from the valve seat to permit fluid flow through the valve bore between the inlet and outlet passages and a closed position abutting against the valve seat to block fluid flow through the valve bore between the inlet and outlet passages, the subassembly including an axially elongated valve stem having a terminal annular edge adjacent the valve seat, a first bore potion opening through the terminal edge toward the valve seat, a second bore portion opening to the first bore portion axially opposite the first bore portion from the terminal edge, a first ball rotatably mounted by the valve stem to extend within the first bore portion and have a minor portion thereof extending away from the terminal edge toward the valve seat that will block fluid flow through the valve seat when the subassembly is in its closed position with the first ball abutting against the valve seat, and a second ball rotatably mounted in the second bore portion and extending into abutting relationship with the first ball to block axial movement of the first ball relative the valve stem in a direction away from the valve seat while permitting rotation of the first ball relative thereto and relative the valve stem, the first and second bore portions being of diameters to block any significant transverse movement of the first and second balls respectively.

4,353,396

DEVICE FOR FORMING A SELVEDGE IN A LOOM

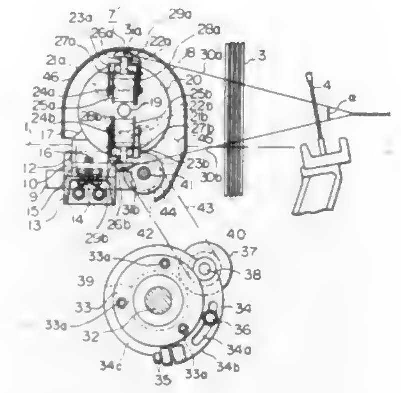
Hajime Suzuki, Anjo, and Yoshimi Iwano, Oobu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 5, 1979, Ser. No. 100,286

Claims priority, application Japan, Dec. 11, 1978, 53-170490[U]; Dec. 29, 1978, 53-182596[U]

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—54 **7 Claims**



1. A loom comprising:
a machine frame;
heald frames for supporting ground heddles of warps; and
a device adjustably disposed relative to said machine frame for forming a selvedge which is disposed behind said heald frames and which includes:
a power transmitting mechanism;
a rotatable member which is rotated by said power transmitting mechanism;
a pair of selvedge yarn guides which are attached to said rotable member and which are utilized to withdraw selvedge yarns, whereby said selvedge yarns are opened and closed in synchronism with the shedding motion of said warps and are formed into a selvedge by being twisted together at every weaving,
said device being displaceable along the warp running direction normal to the heald frames of said machine frame and capable of being fixedly secured at a certain position;
a pair of dovetailed guide rails fixedly disposed at the inside of said machine frame so as to face each other and extending in the warp running direction of said machine frame; and
a pair of slide beams slidably disposed on said guide rails, and capable of being fixedly secured thereto,
said device for forming a selvedge being mounted on said slide beams.

4,353,397

APPARATUS FOR INSERTING A WEFT ON AN AIR JET LOOM

Takumi Tera; Hidetaro Omote, both of Kanazawa, and Satoru Kitamura, Matsuto, all of Japan, assignors to Ishikawa Seisakusho Ltd., Japan

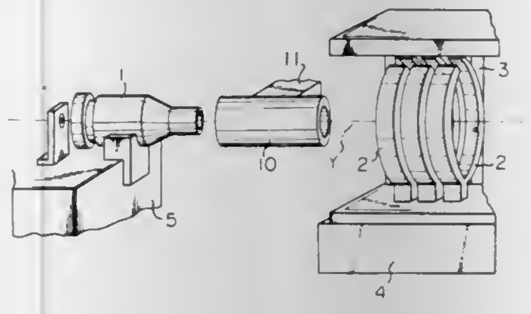
Filed May 12, 1980, Ser. No. 148,819

Claims priority, application Japan, Jun. 1, 1979, 54-69071

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **15 Claims**

1. Apparatus for inserting a weft through a warp shed of an air jet loom, comprising:
a main jet nozzle through which a weft is propelled under the force of a jet of air;
yarn guides located in said shed;
an accelerator tube located between said main jet nozzle and said yarn guides but outside of said shed, said accelerator tube having an opening extending in the direction of travel of said weft as it travels from said main jet nozzle to said shed, the length of said opening extending from an inlet end to an outlet end of said tube, said inlet end of said tube being closer to said main jet nozzle than said outlet end and being spaced from said main jet nozzle by a gap, the distance of said gap as measured along said direction of travel and the inner diameter of said accelerator tube inlet opening being such that a negative pressure is created in the vicinity of said gap and ambient air is sucked into said accelerator tube through said first end thereof with the resultant effect that increased weft transportation energy is applied to said weft and said weft travels toward said shed at a velocity which is greater than that which would be achieved if said accelerator tube were not employed.



4,353,398

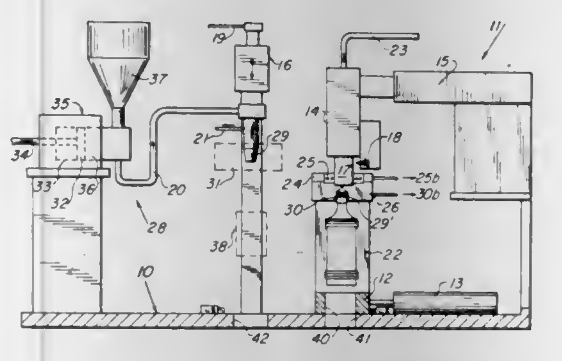
STERILIZING APPARATUS FOR AN ENCAPSULATING MACHINE

Gerhard H. Weiler, South Barrington; Paul A. Anderson, Arlington Heights, and Louis T. Pagels, Hanover Park, all of Ill., assignors to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Jan. 5, 1981, Ser. No. 222,358

Int. Cl.³ B65B *3/04;* F16K *51/00*

U.S. Cl. 141—91 **17 Claims**



1. Apparatus for the sterilization of a machine used in the formation, filling and sealing of containers formed from thermoplastic material, which machine includes a liquid metering device having a variable volume dosing chamber defined by a shifting piston having a dosing chamber side and a piston rod side and being controlled by an inlet valve and an outlet valve, and a filling device connected to said outlet valve and having a gas feed line that is adapted to communicate with a formed plastic container, said filling device cooperating from time to time with a molding arrangement used in the formation of the container, the apparatus comprising:

(a) a source of fluid sterilization agent, with a first and a second fluid passageway providing communication from said source to said metering device, said first passageway communicating with the dosing chamber side of said shifting piston and the second passageway communicating with the piston rod side of said shifting piston, said first passageway being connected to said metering device through said inlet valve for said dosing chamber; and a third fluid passageway providing communication from said source to said gas feed line,
whereby sterilizing agent from said source is passed to said metering device on each side of said shifting piston, from said dosing chamber to and through said filling device, and from said source to said gas feed line and through said filling device, the sterilizing agent thereby being passed through said filling device in two paths;
(b) microorganism filter means, in at least one of said second and third fluid passageways, for filtering the fluid passing therethrough; and
(c) gas supply and test means, disposed in a series flow relationship with said filter means, for supplying gas under pressure through said filter means, for bypassing flow around said filter means, and for measuring the pressure of the gas applied to said filter means,
whereby by measuring the pressure change over time in an isolated portion of that passageway open to said filter means the integrity of said filter means after sterilization is determinable without breaking the integrity of the passageway having said filter means and without having to re-sterilize said passageway.

4,353,399

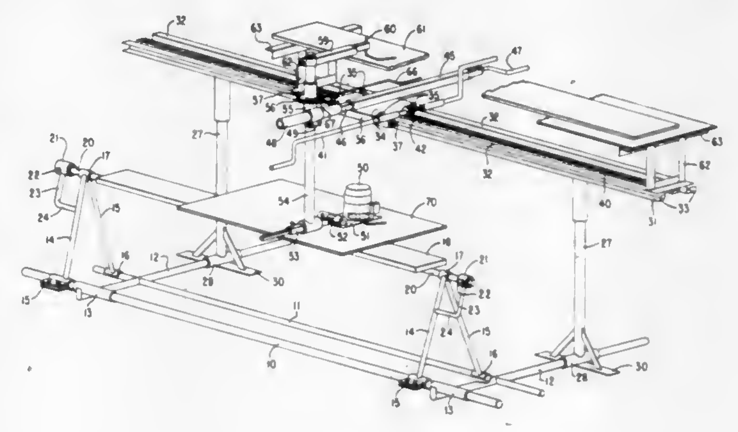
MULTIPURPOSE TOOL

Richard L. Harris, 301 First St. East, Stewartville, Minn. 55976, assignor to Richard L. Harris, Stewartville and Ralph W. Blader, Richfield, both of, Minn.

Filed Feb. 1, 1980, Ser. No. 117,633

Int. Cl.³ B27B *17/00*

U.S. Cl. 144—2 R **8 Claims**



1. A tool device comprising:
a base having transverse members and longitudinal members,
work holding stand means engaged with said base, said work holding stand means including means for holding a workpiece,
tool holding stand means also attached to said base, said tool holding stand means being adjustably spaced apart from and independent from said work holding stand means,
tool holding means movably disposed on said tool holding stand means for transverse and longitudinal movement,
whereby said work holding stand means with said work holding means and said tool holding stand means with said tool holding means may be manipulated independent from each other yet at a location adjacent each other to allow working interaction.

4,353,400

CONTROLLED CHIP CUTTERHEAD FOR PLANERS AND JOINTERS

Richard J. Flanigan, and Charles L. Boles, both of McMinnville, Tenn., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

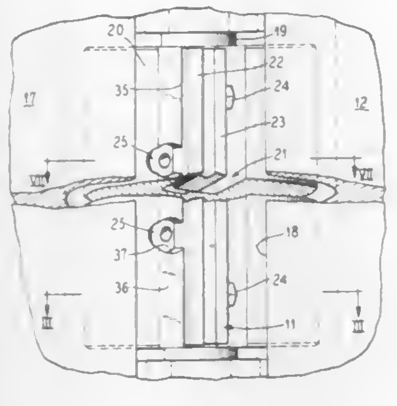
Filed Oct. 23, 1980, Ser. No. 199,951

Int. Cl.³ B27C *1/14*

U.S. Cl. 144—117 R **13 Claims**

7. In a wood planing machine having an in-feed table and an out-feed table with a gap between the tables and means to adjust the level of the in-feed table to control the depth of cut of the wood, the improvement of a cutter head assembly having a cylindrical body of a diameter sufficiently large to project the periphery of the body into the gap between the tables at a

level substantially flush with the out-feed table, said body having a plurality of longitudinal slots in the periphery thereof, each slot having leading and trailing sidewalls, a knife in each slot abutting the trailing sidewall thereof, adjusting nuts bottomed in the slots engaging the bottoms of the knives to project the knives a controlled distance beyond the periphery of the body, a gib in each slot bottomed on each knife, locking bolts threaded in each gib bottomed on the leading edge of the slot to wedge lock the gib and knife in the slot, each gib having a chip breaker pocket in the outer end thereof immediately in front of the knife with a trailing edge down from the knife edge not more than about twice the projection distance of the knife from the periphery of the body and a leading edge substantially flush with the knife edge positioned in advance of the knife edge to clear the wood just before the planing cut.



4,353,401

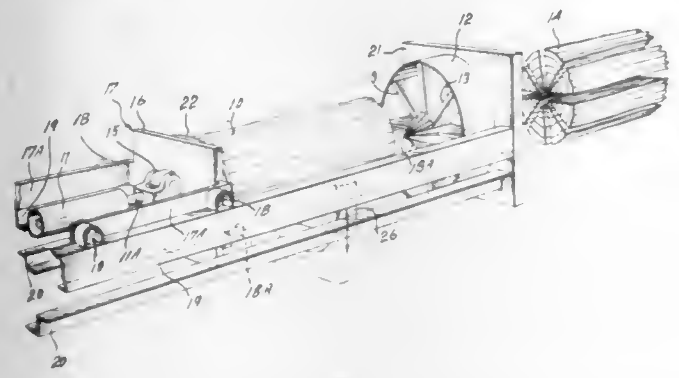
ROTATABLE SPLITTER

Walter W. Schilling, Delta, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Oct. 21, 1980, Ser. No. 199,188

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 A **19 Claims**



1. An apparatus for splitting a log substantially along the grain into a plurality of sector-shaped segments comprising:

at least one sector splitter ring having a plurality of blades,

support for locating said splitter ring in a log movement path,

pressure means for pushing the log axially along the log movement path,

a rotating backplate for supporting one end of the log being pushed axially along the log movement path,

said backplate adapted to tilt and allow the one end of the log to rotate while the log is pushed through the splitter ring, and

guide means adapted to retain the floating backplate in the log movement path while the log is pushed through the splitter ring.

4,353,402

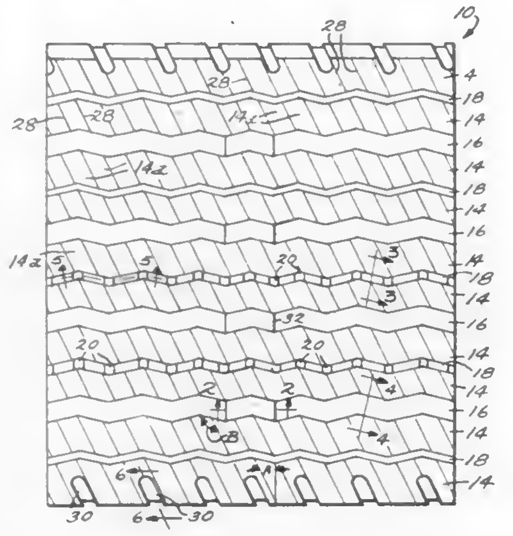
SLITTED TIRE TREAD

Ioan A. Burche, and Edwin T. Brodie, both of Muscatine, Iowa, assignors to Bandag Incorporated, Muscatine, Iowa

Continuation of Ser. No. 916,108, Jun. 16, 1978, abandoned, which is a continuation of Ser. No. 836,739, Sep. 26, 1977, abandoned, which is a continuation of Ser. No. 441,815, Feb. 12, 1974, abandoned. This application Aug. 23, 1979, Ser. No. 69,187

Int. Cl.³ B60C *11/06, 11/12*

U.S. Cl. 152—209 R **3 Claims**



1. A prevulcanized tire tread strip having:

a plurality of parallel projecting tread ribs separated by tread grooves, thereby having a tread rib area and a void area,

said ribs extending completely across the tread strip and being disposed in groups of at least two ribs per group,

said groups being spaced apart by major tread grooves of zig-zag or serpentine shape and the ribs of each group being spaced apart by minor zig-zag or serpentine tread grooves of lesser width than said major grooves,

said tread ribs having therein a plurality of closely spaced parallel uniformly-spaced slits which penetrate the ribs down to approximately 55% to 95% of the height of the ribs and which are spaced apart such that there are one to eight slits per inch,

said slits extending completely across the tread strip and from one adjacent tread groove to another adjacent tread groove so as to divide each rib into a plurality of tread elements,

said slits extending at an angle of 25° plus or minus 15° with respect to the transverse dimension of the tread strip and intersecting the tread rib edges at between about 45° and about 135°,

the ratio of tread rib area to void area being in the range of about 1.5:1 to 8:1, and

a plurality of tie bars having ends connecting tread elements on one side of a minor groove with tread elements on the other side of the same minor groove,

said tie bars having longitudinal dimensions between said ends sufficient to substantially prevent severance of said tie bars between their respective ends by said slits, said tie bars extending across their respective grooves and being integral with their respective tread elements,

said major grooves being set free of tie bars.

4,353,403

PNEUMATIC TIRE HAVING AIR ESCAPE MEANS

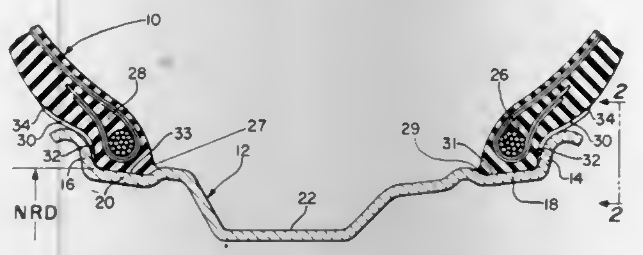
Terrence M. Ruip, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 853,685, Nov. 21, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 219,393

Int. Cl.³ B60C *15/02, 5/16*

U.S. Cl. 152—353 R **3 Claims**

1. A tubeless pneumatic tire comprising a pair of bead portions, means on each bead portion providing airtight sealing relation with a bead seat of a first rim having a first rim diameter on which the tire is designed to be mounted and inflated for use, said means comprising a bead toe surface on each bead portion which when in the mold in which the tire is cured forms an angle with a line parallel to the rotational axis of the tire, and additional means on at least one bead portion for preventing inflating of said tire when it is mounted on a second rim having a second rim diameter which is about one-quarter to three-quarters of an inch less than the first rim diameter of the first rim, said additional means comprising projections on the exterior surface of said one bead portion forming an air escape between said one bead portion and a flange of the second rim, said projections being spaced apart circumferentially about the tire rotational axis and starting from a point spaced radially outward of the nominal rim diameter of said tire, the exterior surface of the tire in between said projections being free of any projections extending circumferentially of the tire.



4,353,404

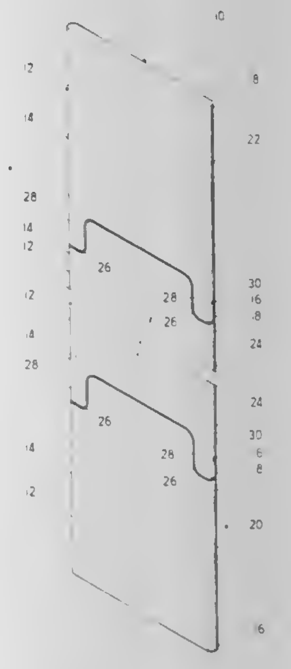
JOINTED VERTICAL SLAT FOR WINDOW BLIND

Mark D. Trantow, Wausau, Wis., assignor to Wausau Metals Corp., Wausau, Wis.

Filed Feb. 2, 1981, Ser. No. 230,693

Int. Cl.³ E06B *3/12*

U.S. Cl. 160—236 **3 Claims**



1. In a window blind including a plurality of vertical wooden window blind slats (**10**), each window blind slat (**10**) having a vertical longitudinal axis, the improvement of each window blind slat comprising:

(a) a plurality of substantially flat, rigid, vertically extending slat sections (**12**), including at least a top slat section (**22**) and a bottom slat section (**20**), each slat section (**12**) having a vertical, substantially planar face (**14**) and an upper end (**18**) and a lower end (**16**); and

(b) means for joining the slat sections (**12**) end-to-end in a hinged joint, with the faces (**14**) of the joined slat sections (**12**) in substantially the same plane, the lower end (**16**) of each slat section (**12**) being joined to the upper end (**18**) of any slat section (**12**) immediately beneath it, the hinged joint allowing pivotal movement between adjacent slat sections (**12**) only about a horizontal axis lying in the plane of the slat sections (**12**) so that each slat section (**12**) can independently hang vertically, so that the entire slat (**10**) appears vertical regardless of warping and bowing in any of the slat sections (**12**).

4,353,405

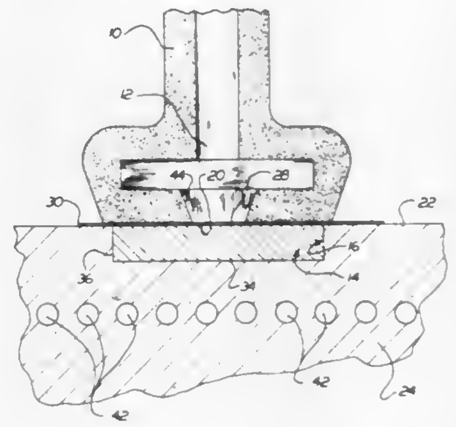
CASTING METHOD

Thomas A. Kolakowski, Moreland Hills, and Constantine Vishnevsky, Solon, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 18, 1980, Ser. No. 141,312

Int. Cl.³ B22D *25/06*

U.S. Cl. 164—122.2 **15 Claims**



1. A method of casting articles having desired crystallographic characteristics, said method comprising the steps of providing a starter element having crystallographic characteristics corresponding to the desired crystallographic characteristics of the cast articles, positioning the starter element and a mold relative to each other with the starter element in a predetermined position in a mold cavity, cooling the starter element, flowing a body of molten metal into the mold cavity, maintaining the starter element at a temperature below its solidus temperature throughout the extent of the starter element until engagement of the molten metal with the starter element, solidifying the body of molten metal in the mold cavity, said step of solidifying the body of molten metal including the step of initiating solidification of the molten metal at the starter element while performing said step of flowing molten metal into the mold cavity, providing a physical discontinuity between the cast article and the starter element during solidification of the molten metal such that to form a cast article having crystallographic characteristics determined by the crystallographic characteristics of the starter element without significant bonding between the solidified body of metal and the starter element, separating the solidified body of metal from the starter element at the physical discontinuity, and subsequently using the starter element to initiate the solidification of a second body of molten metal during the casting of another article.

4,353,406

METAL CASTING MACHINE

Roberto Gaddi, Turin, Italy, assignor to Fataluminium S.p.A., Rivoli, Italy

Filed Sep. 5, 1980, Ser. No. 184,444

Claims priority, application Italy, Sep. 17, 1979, 68824 A/79

Int. Cl.³ B22D *41/06*

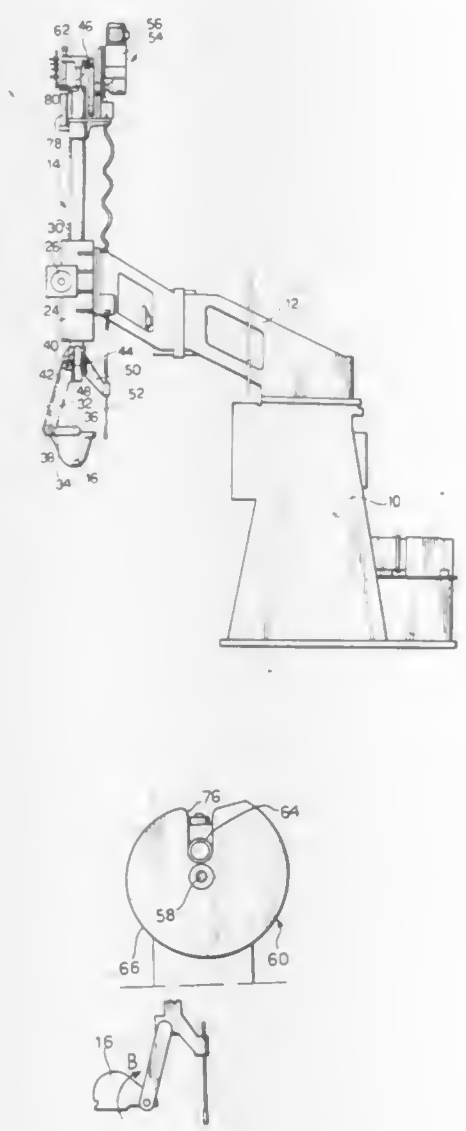
U.S. Cl. 164—336 **11 Claims**

1. A metal-casting machine of the type comprising:

a casting ladle having a casting spout,

a movable support member on which the ladle is mounted for rotation about a horizontal axis passing substantially through the casting spout,

means for displacing said support member to convey the ladle between a filling station where the ladle is filled with a charge of molten metal and at least one casting station, and control means carried by the support member and including a motor-driven rotary disc cam and a cam-follower cooperating with said cam and connected to the ladle to transform the displacements of the cam-follower into rotations of the ladle, said cam having a peripheral profile which includes, in succession in the normal sense of rotation of the cam, a larger sector and a smaller sector, the larger cam sector having a radius which increases progressively to cause the ladle to rotate, at the or each casting station, from an upright position containing the molten metal to an inclined position, at the end of the casting, in which the spout is lowermost, and the smaller cam sector being of decreasing radius to cause a return rotation of the ladle, in an opposite sense, to the upright position after casting,



wherein the improvements comprise, in combination:

the means for displacing said ladle support member being effective to convey the ladle additionally to at least one cleaning station,

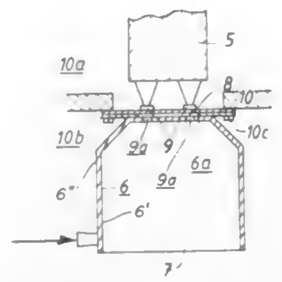
said cam having, between said smaller sector and said larger sector, a re-entrant portion extending towards the axis of rotation of the cam, said cam-follower being engageable in said re-entrant portion to cause a rapid rotation of the ladle, in the said opposite sense, from the upright position to an inverted position in which the cam-follower engages the bottom of said re-entrant portion, and

actuator means acting on the cam-follower to prevent its entry into the re-entrant portion at least when the ladle is at the casting station and to disengage the cam-follower from said re-entrant portion of the cam after inversion of the ladle at the cleaning station.

4,353,407

CONTINUOUS CASTING MACHINE

Jan Bostedt, Iduns väg 17, S-723 55 Vasteras, Sweden
Filed Aug. 21, 1979, Ser. No. 68,428
Claims priority, application Sweden, Aug. 22, 1978, 7808830
Int. Cl.³ B22D *11/10, 27/02*
U.S. Cl. 164—468 1 Claim



1. A continuous metal casting machine comprising a continuous casting mold adapted to cast a downwardly traveling hot cast strand containing molten metal, means for guiding said strand along a fixed traveling path, an electromagnetic stirrer positioned below said mold beside said path on the outside of said strand so as to stir said molten metal and so as to be exposed to heat from the strand, said stirrer being protected from said head by being encased in a shell including a hollow front wall spaced from and facing said strand, and means associated with said shell for feeding pressurized cooling water to an internal cavity defined by walls of said hollow front wall, an outer wall of said hollow front wall to defining openings pointing towards said strand so as to permit said water to discharge towards said path of travel of the strand; wherein the improvement comprises a flat frame fixed to the outer wall of said hollow front wall so as to surround said openings, a face plate removably fastened to an outer surface of said frame and having nozzle openings defined therethrough and pointing towards said strand, said face plate being spaced from said front wall by said frame so as to form a manifold adapted to receive said water discharged from said openings and distribute the water to said nozzle openings so the latter discharge the water towards said strand, and releasable fastening means associated with said frame and face plate for fastening said face plate to said frame so as to permit removal of the face plate, the nozzle openings in said face plate forming a pattern conforming to the shape of said strand, removal of said face plate permitting its replacement by a corresponding face plate having nozzle openings forming a different pattern when the strand has a different shape.

4,353,408

ELECTROMAGNETIC THIN STRIP CASTING APPARATUS

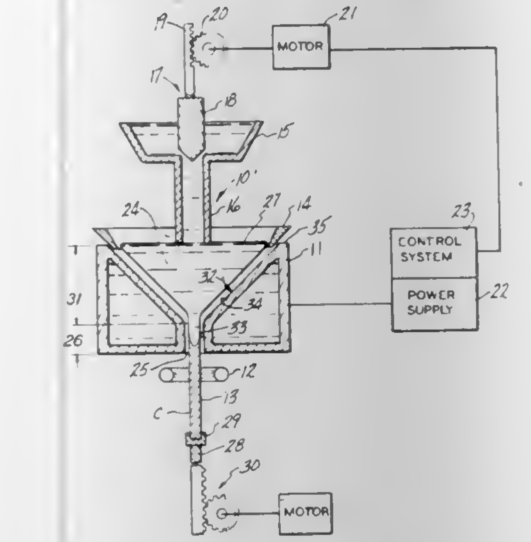
Michael J. Pryor, Woodbridge, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Apr. 11, 1980, Ser. No. 139,617
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—503 **14 Claims**

1. In an apparatus for casting a material into a desired thin strip shape, said apparatus comprising:

means for electromagnetically containing and forming said material in molten form into a desired shape; the improvement wherein:

said electromagnetic forming and containing means comprises:

at least one single turn inductor having a first portion for shaping said molten material into said desired thin strip shape and a second portion upstream of and communicating with said first portion for containing solely by an electromagnetic field a sump of said molten material, said second portion of said inductor defining a containment zone air space at a top surface thereof having a cross-sectional area at least five times greater than a cross-sectional area of a containment zone air space defined by said first portion of said inductor;

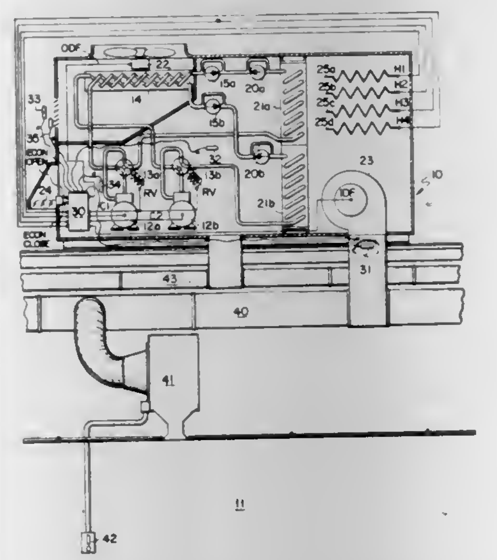


whereby the cross-sectional area at a top surface of said sump of molten material is substantially greater than the cross-sectional area of said desired thin strip shape.

4,353,409

APPARATUS AND METHOD FOR CONTROLLING A VARIABLE AIR VOLUME TEMPERATURE CONDITIONING SYSTEM

James F. Saunders, Onalaska, and Robert E. Krocker, Stoddard, both of Wis., assignors to The Trane Company, La Crosse, Wis.
Filed Dec. 26, 1979, Ser. No. 106,977
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—2 **36 Claims**



1. A method for controlling a temperature conditioning system having a plurality of stages which may be selectively energized to meet a temperature conditioning demand in a comfort zone, comprising the steps of

controlling the temperature in the comfort zone approximately at a setpoint by adjusting the flow of temperature conditioned air supplied to the comfort zone;

sensing the temperature of return air;

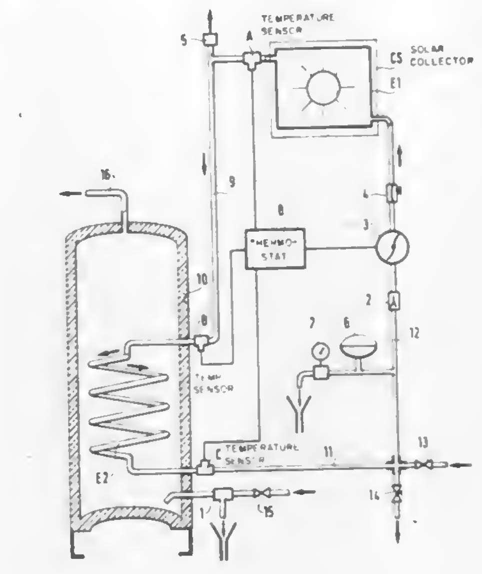
sensing the temperature of temperature conditioned supply air;

controlling selected apparatus of the temperature conditioning system in response to the differential temperature of the return air and the temperature conditioned supply air, to meet the temperature conditioning demand in the comfort zone.

4,353,410

METHOD OF CONTROLLING THE HEATING OF A CHAMBER AND A CONTROLLED CHAMBER-HEATING INSTALLATION

Pierre Godard, Tremblay les Gonnesse, and Michel Billot, Drancy, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Nov. 5, 1979, Ser. No. 91,099
Claims priority, application France, Nov. 16, 1978, 78 32373
Int. Cl.³ F24J *3/02*
U.S. Cl. 165—18 12 Claims



1. A method for controlling the heating of at least one heat storage chamber by means of a heat-conveying fluid, the method comprising:

providing a fluid circuit which includes a heat source, a heat storage chamber and controllable means for ensuring the circulation of a heat-conveying fluid from the heat source and through the heat storage chamber;

sensing the temperature t_A of the heat-conveying fluid at its outlet from the heat source, the temperature t_B of the heat-conveying fluid at its inlet to the heat storage chamber, and the temperature t_C of the heat-conveying fluid at its outlet from the heat storage chamber; and

controlling said controllable means to ensure that the heat-conveying fluid circulates from the heat source and through the heat storage chamber whenever t_A exceeds t_B and t_B exceeds t_C, and to stop circulation of said heat-conveying fluid, at least through the heat storage chamber, if the temperature t_A becomes lower than the temperature t_B, or the temperature t_B becomes lower than or equal to the temperature t_C.

4,353,411

ARCHITECTURAL SUPPORT AND SERVICE ASSEMBLY

James L. Harter, 3131 Diamond Ave., Allentown, Pa. 18103, and Joseph E. Biro, Crescendo, Wittman, Md. 21676
Filed Feb. 4, 1980, Ser. No. 118,440
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—48 R **2 Claims**

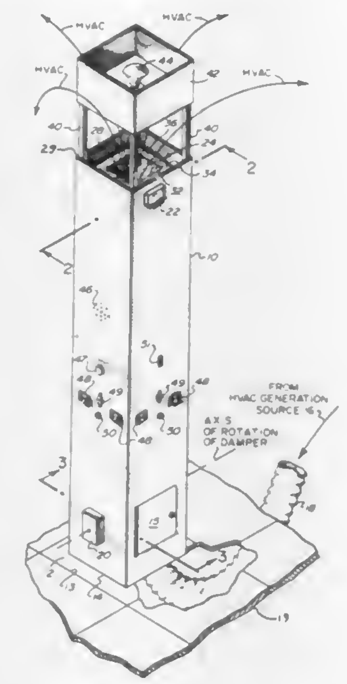
1. A dual-purpose, modular service assembly for use in a room having a moveable, accessible subsurface HVAC supply system, which assembly provides support to modular partition structures erected in said room and also provides discretely-controlled HVAC fluid service to the area adjacent to said structures in response to varying, local conditions and demands, said assembly comprising:

(a) a hollow, portable modular support and HVAC service column having an interior channel extending longitudinally therethrough and adapted to carry HVAC fluid introduced into said channel through an inlet port at its base, said inlet port being releasably connected to said HVAC supply system;

(b) an exhaust port integral to said channel and communicating with the exterior of said column for venting the HVAC fluid from said channel to area adjacent to the exterior of said column;

(c) deflector means integral with said channel and column and in a relatively close spatial relation with said exhaust port so that it opposes the HVAC exiting from said channel and directs it radially outward from a central point in the channel;

(d) a fluid control means, integral with said channel and positioned between said inlet port and exhaust port for discretely controlling the rate at which HVAC flows through said channel by opening and closing access therethrough, thereby controlling the rate at which HVAC fluid is exhausted from said column;



(e) fastening means integral with said column for releasably mounting the base thereof to a floor of said room at any one of a plurality of access points at which the moveable, accessible subsurface HVAC supply system can be located, so that the column will stand in fixed, rigid, semipermanent connection to said floor and the inlet port of the channel is positioned for releasable attachment to the HVAC supply system beneath the floor;

(f) second fastening means for releasably connecting said inlet port to said HVAC supply system so that HVAC fluid can be carried from said supply system to the inlet port of said channel; and

(g) supplementary conditioning means, integral with said column, for locally adjusting the temperature and humidity of said HVAC fluid after it has been supplied to the inlet port of said column.

4,353,412
HEATING AND COOLING SYSTEM

Mark U. Krumhansl, 1811 Bent Twig, Tustin, Calif. 92680
Filed Feb. 19, 1980, Ser. No. 122,117
Int. Cl.^{3} F24F *13/02*
U.S. Cl. 165—59 **9 Claims**

1. For transferring heat to and from a given place, in combination:

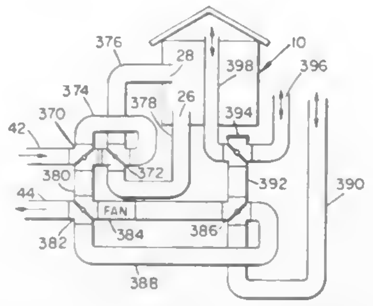
a heat pump of the kind that transfers heat to and from liquid at the source side and that transfers heat from and to air at the output side, each of the source side and output side including a flow inlet and a flow outlet;

means for connecting said heat pump to a liquid heat sump at its source side; and

an air flow control system connected to said heat pump at its output side;

said air flow control system comprising a four-port air flow control valve and a primary flow path extending from the flow outlet at the output side of said heat pump through said valve to the flow inlet at the output side of said heat pump;

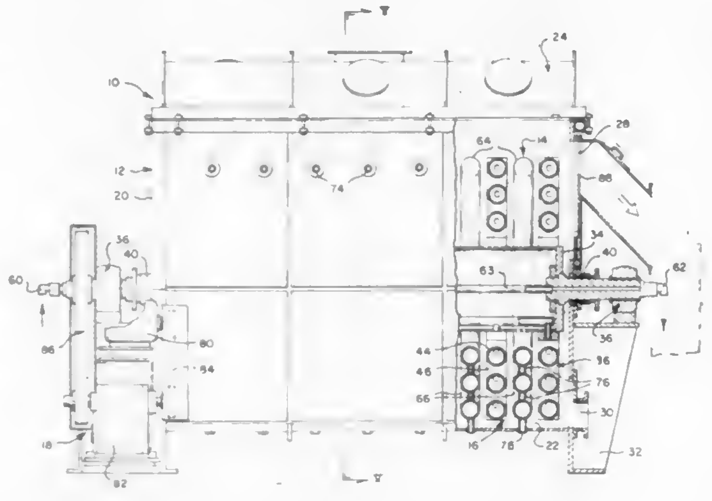
said air flow control system further comprising a secondary flow path in the form of first and second flow conduits each connected to a respectively associated port of said valve and each including means in the form of a flow opening for delivering air to said given place;



said valve including a flow diverter and being effective as a consequence of change in position of the diverter to selectively isolate the primary flow path from the secondary flow path or to include the secondary flow path in series with said primary flow path.

4,353,413
RENDERING DRYER

William M. Allen, and Gordon C. Trabue, both of Louisville, Ky., assignors to Chemetron Process Equipment, Inc., Louisville, Ky.
Filed Sep. 8, 1980, Ser. No. 184,710
Int. Cl.^{3} F28D *11/04*
U.S. Cl. 165—92 **11 Claims**



1. A dryer for processing hydrous animal material in slurry form, said dryer comprising:

a hollow elongate vessel having an inlet and an outlet, and presenting an enclosed, material-receiving chamber;

a heat transfer rotor in said chamber, said rotor including a shaft rotatably mounted on said vessel for rotation about an axis extending generally longitudinally of the vessel and an axially extending series of spaced, annular heat exchange vanes secured to the shaft for rotation therewith;

a heat transfer stator secured to said vessel within said chamber in cooperable relation to said rotor,

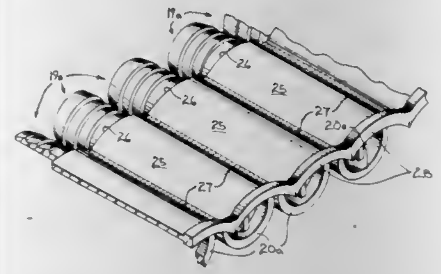
said stator including a series of spaced, stationary heat exchange banks interleaved with said series of heat exchange vanes on said rotor;

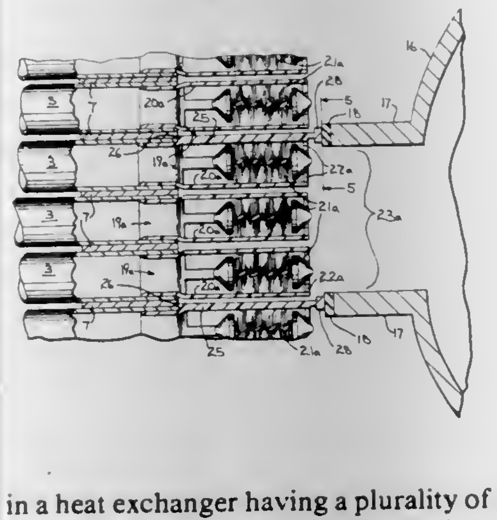
means for circulating heat transfer fluid through said vanes and said banks; and

a drive for rotating said rotor whereby relative movement between said vanes and said banks is effected for enhanced heat transfer to material in the chamber.

4,353,414
HEAT EXCHANGER TUBE CLEANING

Gordon F. Leitner, Elm Grove, Wis., assignor to Water Services of America, Inc., Milwaukee, Wis.
Filed Aug. 21, 1980, Ser. No. 178,131
Int. Cl.^{3} F28G *15/02*
U.S. Cl. 165—95 **9 Claims**





1. For use in a heat exchanger having a plurality of fluid flow tubes arranged with exposed open ends and wherein a fluid counter-flow arm is disposed adjacent and facing said open ends for movement thereacross, a tube cleaning element comprising:

(a) a generally cylindrical cage-like basket forming a chamber holding a cleaning member adapted to pass through a tube during counter-flow of fluid therethrough,

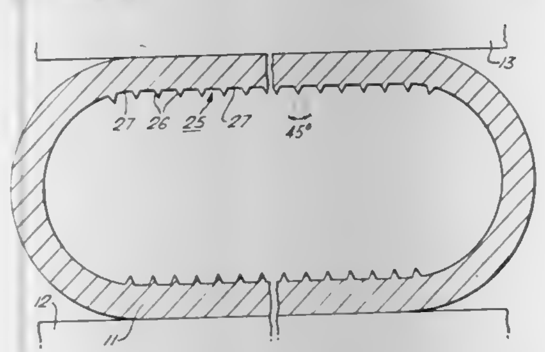
(b) means on said basket for placing said basket in fluid communication with the interior of a said tube,

(c) and means on said basket for cooperating with similar last-named means on adjacent baskets for forming a boundary in said plurality of tubes for use in compartmentalizing the latter,

(d) the construction being such that said boundary-forming means is adapted to register with the said arm as the latter moves across the tubes.

4,353,415
HEAT PIPES AND THERMAL SIPHONS

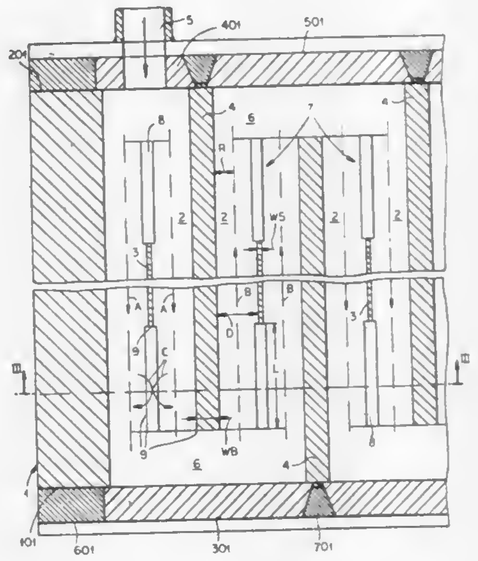
John T. Klaschka, Fleet, and Michael J. Davies, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Jul. 24, 1980, Ser. No. 171,791
Claims priority, application United Kingdom, Jul. 30, 1979, 7926436
Int. Cl.^{3} F23D *15/00*
U.S. Cl. 165—104.21 **12 Claims**



1. A heat conductive device in the form of a thermal siphon comprising, a chamber having an evaporation portion thereof where heat is to be applied to the chamber and a condensation portion thereof where heat is to be extracted from the chamber, and a vaporizable liquid in the chamber, the evaporation portion of the chamber having a surface provided with a plurality of grooves of a shape and dimensions such as to promote thin film evaporation therefrom of condensate of the liquid without effecting capillary flow of the condensate along the grooves.

4,353,416
PRESS PLATE FOR PLATEN PRESSES

Herbert R. Buschfeld, Kaarst, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany
Filed Feb. 27, 1981, Ser. No. 238,666
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007493
Int. Cl.^{3} B30B *15/06;* **F28F** *3/12*
U.S. Cl. 165—168 **6 Claims**



1. A heating press plate for a platen press comprising:

a plate body formed with a plurality of pairs of bores in mutually parallel spaced-apart relationship with the bores of each pair separated by respective thin walls and the adjoining pairs of bores separated by thick walls;

means for feeding a heating fluid to a first pair of bores;

means forming connecting chambers between adjoining pairs of bores alternately on opposite sides of said plate whereby said fluid flows in succession through the bores of successive pairs and codirectionally through the bores of each pair but in opposite directions through the bores of adjoining pairs; and

means forming mixing zones enabling communication between the bores of each pair upstream and downwstream of each of said chambers.

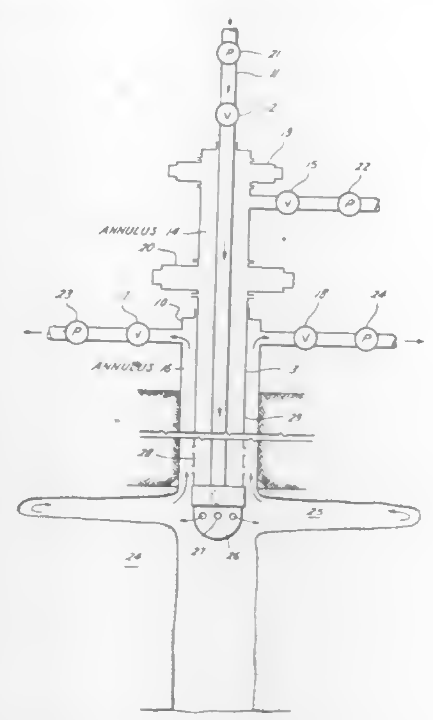
4,353,417
METHOD FOR PRODUCING A WELL IN AN UNCONSOLIDATED FORMATION

Richard H. Widmyer, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Nov. 28, 1980, Ser. No. 210,875
Int. Cl.^{3} E21B *43/04*
U.S. Cl. 166—250 **19 Claims**

12. A method for producing a well in an unconsolidated formation while preventing cave-in and sloughing during working in the well wherein the well has a tube supported screen extending down to the bottom thereof with a wash tube centered in the screen extending from a source of high pressure drilling fluid to a horizontal nozzle at the bottom of the screen for washing out an enlarged cavity wherein an inner annulus is formed between the wash pipe and the screen and an outer annulus is formed between the screen and the well walls and

there being valves for controlling fluid flow through both annuli and the wash pipe comprising the step of,

(a) controlling the valves in both annuli for controlling the exhaust spent fluids and removed formation material from the outer annulus as it flows up from the cavity for maintaining a high fluid pressure against the walls of the cavity higher than the overburden pressure in the walls for preventing cave-in and sloughing of the unconsolidated formation well walls.



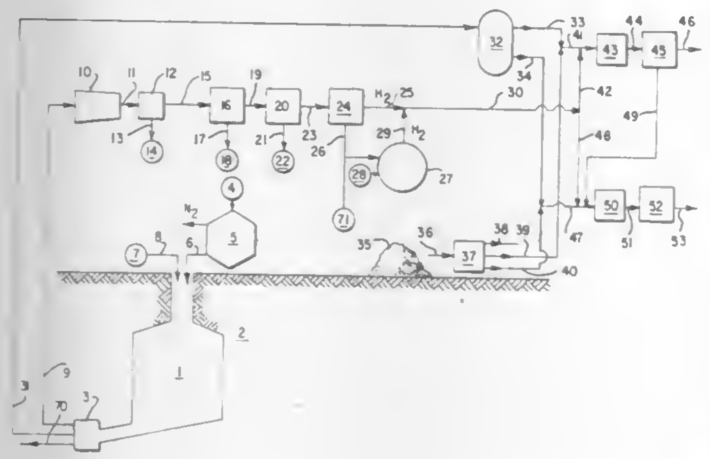
4,353,418
IN SITU RETORTING OF OIL SHALE

Gerald B. Hoekstra, South Holland, and David R. Christian, Lisle, both of Ill., assignors to Standard Oil Company (Indiana) and Gulf Oil Corporation, both of Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 198,850

Int. Cl.^{3} E21B *43/247, 43/34, 43/38*

U.S. Cl. 166—259 **9 Claims**



1. A method for processing oil shale, comprising the steps of:

establishing an underground in situ retort containing a mass of rubblized matter comprising oil shale;

establishing a flame front within said mass of oil shale to liberate water and shale oil containing arsenic, nitrogen and sulfur from said oil shale and form combustion off-gases containing hydrogen, sulfur, carbon dioxide and shale oil;

passing a gaseous mixture of oxygen and a diluent selected from the group consisting of steam, carbon dioxide and combustion off-gases into said underground retort to support said flame front;

withdrawing said shale oil, water and combustion off-gases from said underground retort;

substantially separating said withdrawn shale oil, water and combustion off-gases in an underground separation zone;

deoiling said combustion off-gases in a deoiling zone to remove a substantial amount of said shale oil from said combustion off-gases;

desulfurizing said combustion off-gases to remove a substantial amount of said sulfur from said combustion off-gases;

removing a substantial amount of said carbon dioxide from said combustion off-gases;

recovering a substantially purified gas stream of hydrogen from said combustion off-gases;

separating said shale oil from said underground retort into fractions including a fraction of light shale oil and a fraction of heavy shale oil;

injecting a portion of said purified gas stream of hydrogen into said fraction of light shale oil;

injecting another portion of said purified gas stream of hydrogen into said fraction of heavy oil;

removing a substantial amount of said arsenic from said fraction of light shale oil in a first reactor;

removing a substantial amount of said arsenic from said fraction of heavy shale oil in a second reactor;

hydrotreating said fraction of light shale oil and removing a substantial amount of said nitrogen and said sulfur from said fraction of light shale oil in a hydrotreating zone; and

hydrocracking said fraction of heavy shale oil and removing a substantial amount of said nitrogen and said sulfur from said fraction of heavy shale oil in a hydrocracking zone.

6. A method for processing oil shale, comprising the steps of:

establishing a flame front in an underground retort containing a rubblized mass of oil shale;

liberating shale oil and water from said oil shale with heat generated from said flame front;

emitting combustion off-gases from said flame front;

feeding an oxygen containing gas consisting essentially of 90% by weight oxygen into said retort to support said flame front;

stopping feeding of said oxygen containing gas;

injecting steam into said retort after said feeding is stopped for minimizing burning of said shale oil; and

withdrawing said shale oil, water and combustion off-gases from said retort.

4,353,419
METHOD FOR MANUFACTURING A WELL PRODUCTION AND SAND SCREEN ASSEMBLY

Richard H. Widmyer, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,876

Int. Cl.^{3} E21B *34/02, 43/04, 43/10*

U.S. Cl. 166—379 **9 Claims**

1. A method for manufacturing a screen assembly in a well in unconsolidated sand formation while preventing cave-in and sloughing in the well comprising,

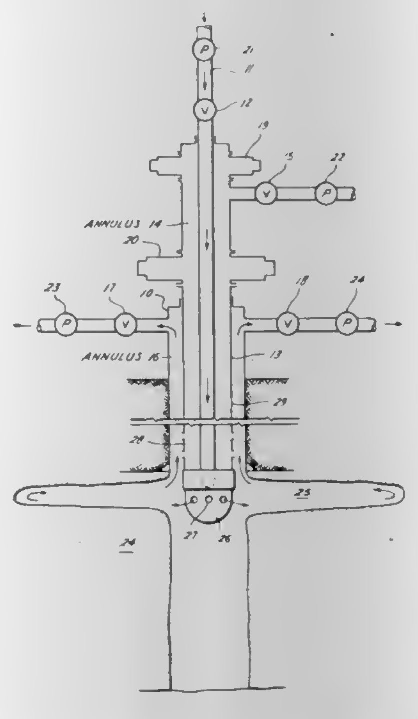
(a) supporting a screen on a tubing for lowering into the well wherein the tubing forms an outer annulus between the tubing and the walls of the well,

(b) lowering a wash pipe centrally of the screen and its supporting tubing for forming an inner annulus between the wash pipe and the screen,

(c) connecting a high pressure fluid source means at the surface to each of the wash pipe, inner annulus, and outer annulus, and

(d) interconnecting valve means to each of said wash pipe, inner annulus, and outer annulus in fluid communication with the high pressure fluid source means for controlling the ingress and egress of the high pressure fluid for maintaining a constant high fluid pressure against the walls of

the well greater than the overburden pressure therein during work therein for preventing the cave-in and sloughing of the unconsolidated formation well walls until a sand pack is formed between the screen and the walls.



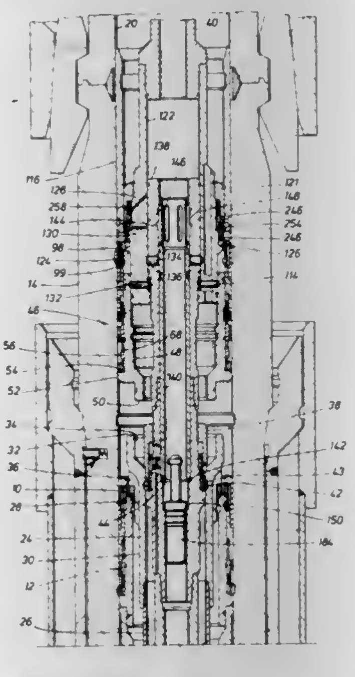
4,353,420
WELLHEAD APPARATUS AND METHOD OF RUNNING SAME

Henry W. Miller, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 31, 1980, Ser. No. 202,594

Int. Cl.^{3} E21B *23/02, 23/06, 33/03*

U.S. Cl. 166—382 **15 Claims**



1. A well apparatus comprising

a hanger body having a downwardly facing external shoulder adapted to land on a well housing landing seat, an external flow passage for the flow of fluids past the landing shoulder and around the exterior of the hanger body and a seal surface above said shoulder,

a packer assembly having a mandrel with a lower sealing means adapted to engage and seal against said seal surface on said hanger body, a packing ring, means supporting said packing ring on said mandrel, an actuating sleeve surrounding said mandrel and adapted to move said packing ring into sealing engagement between said mandrel and the interior of the well housing, means for releasably holding said sleeve from movement, and means for securing said mandrel in set position to the interior of said housing,

a running tool having means for releasably engaging said hanger body and for releasably engaging said packer assembly whereby, as said tool is run into the well housing and said hanger seats on the housing landing seat, the packer assembly is moved into sealing engagement with said hanger body and with said housing and said tool may be recovered with said hanger body and packer assembly remaining the well housing,

said running tool is disengaged from said hanger body prior to the movement to set said packer assembly,

said running tool is disengaged from said packer assembly with setting movement of said running tool, and

means on said running tool for re-engaging said packer assembly for the recovery of said packer assembly on said running tool in the event said packer assembly does not seal satisfactorily within said well housing.

4,353,421
SOIL PREPARING DEVICE FOR PREPARING FOREST SOIL

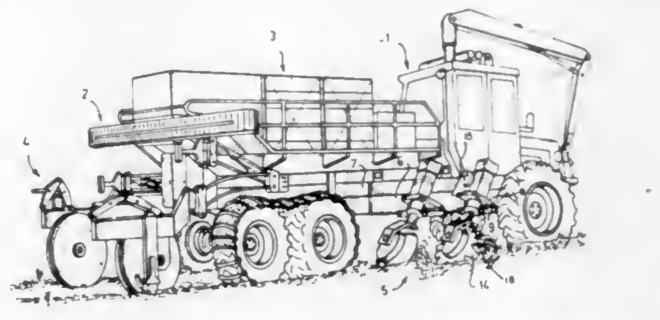
Lasse Lahti, Mänttä, Finland, assignor to G. A. Serlachius Oy, Mantta, Finland

Filed Jan. 16, 1980, Ser. No. 112,615

Claims priority, application Finland, Jan. 18, 1979, 790162

Int. Cl.^{3} A01B *33/00, 61/00*

U.S. Cl. 172—5 **5 Claims**



1. A soil preparing device for preparing forest soil to a planting bed, said device comprising a soil-engageable preparing element, a frame, at least one support arm mounted on said frame for pivotal movement around a horizontal pivot as the preparing element moves along the ground during a preparing operation; a slide supporting the preparing element and mounted on said support arm for vertical adjustment in relation to said arm, characterized in that said slide is fastened to a displacing means supported by said support arm, for rectilinear vertical adjustment of said preparing element with respect to said support arm in a direction perpendicular to said arm during the soil preparation, said displacing means being arranged to push said slide downward and to pull the slide upward, respectively, as said support arm pivots downward and upward, respectively, as a result of forces applied to said preparing element by an obstacle in the ground as the device is moved along the ground.

4,353,422
HAND HELD POWER MACHINE WITH OSCILLATING TOOL

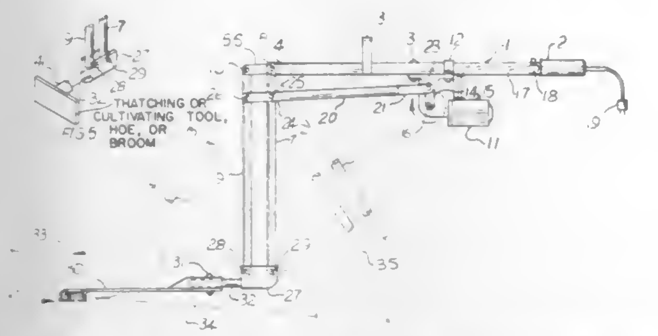
James H. Bennett, Jr., 1013 Cowpens Rd., Towson, Md. 21204

Filed Mar. 26, 1980, Ser. No. 134,076

Int. Cl.^{3} A01B *1/22*

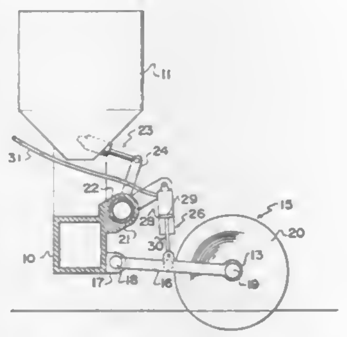
U.S. Cl. 172—41 **9 Claims**

1. A hand-held power machine for aiding an operator in performing work, said machine comprising a main support member, said main support member being provided with handle means to facilitate the holding of said machine by the operator thereof, power means attached to said main support member, a connecting means connected to said power means, said connecting means comprising crank means operated by



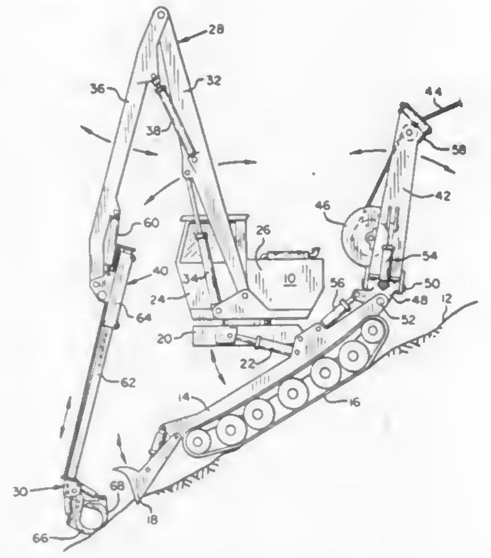
said power means, a push-pull rod attached to said crank means, said rod extending generally parallel to said main support means and being moved back and forth relative to said main support means by said crank means as said crank means is operated by said power means, a first link pivotally mounted on one end thereof to one end of said main support member, a second link pivotally mounted on one end thereof to said one end of said first link and said one end of said main support member, a third link pivotally mounted on one end thereof to the opposite end of said first link, said second link and said third link being pivotally connected to said push-pull rod at longitudinally spaced locations along said rod, said locations being spaced sufficiently such that along with the spacing of said second link and said third link by said first link, said second link and said third link are maintained generally parallel to each other, the other end of said second link and the other end of said third link being pivotally connected to a tool holding link at spaced locations on said tool holding link, a tool attached to said tool holding link, whereby as said push-pull bar is moved back and forth by said power means, said tool is caused to move in a cyclical oscillatory motion.

4,353,423
HYDRAULIC RESET FOR TILLAGE AND SEEDING EQUIPMENT
Erhard Poggemiller, Luseland, and Ralph Sweet, Forgan, both of Canada, assignors to Kep Enterprises, Luseland, Canada
Continuation-in-part of Ser. No. 835,049, Sep. 21, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,399
Int. Cl.^{3} A01B *61/04, 63/32*
U.S. Cl. 172—260.5 **4 Claims**



1. In an agricultural implement which includes a frame, and a ground engaging tool assembly pivotally supported upon said frame, an hydraulic system including a variable displacement pump, a high pressure line extending from said pump, a main hydraulic ram operatively connected to said high pressure line and to said ground engaging tool assembly for controlling and presetting the depth of penetration of said ground engaging tool assembly; the improvement comprising in combination a resetting ram assembly for said ground engaging tool assembly, operatively extending between said ground engaging tool assembly and said frame, means operatively connecting said resetting ram assembly to the hydraulic system and means to adjust the hydraulic pressure within said resetting ram assembly below pump pressure whereby said resetting ram assembly is normally fully extended until a predetermined pressure upon said ground engaging tool assembly is exceeded, said last mentioned means comprising a pressure reducing valve assembly operatively connected between said high pressure line and said resetting ram assembly to control and sense the pressure downstream of said valve assembly, said ground engaging tool assembly including at least one disc gang mounted for pivotal action to said frame, a rock shaft assembly mounted on said frame and operatively connected to said main hydraulic ram, said resetting ram assembly being operatively connected between said rock shaft and said disc gang.

4,353,424
SLASH GATHERING VEHICLE
Ray B. Schenck, Box 94, Grays River, Wash. 98621, and Wilhelm Schmidt, 47502 288th Ave. SE., Enumclaw, Wash. 98022
Filed May 27, 1980, Ser. No. 153,412
Int. Cl.^{3} A01B *49/04*
U.S. Cl. 172—438 **5 Claims**

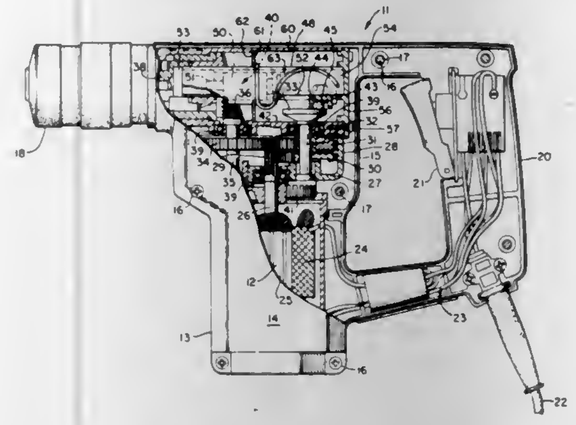


1. A slash gathering vehicle comprising:
a chassis;
traction means supporting the chassis for movement along a steep logging slope;
an elongated boom having an upper arm pivotally carried by the chassis and a forearm pivotally secured to the remote end of the upper arm;
a slide mechanism disposed at the remote end of the forearm, the slide mechanism being selectively extendable to increase or decrease the length of the boom; and
an articulating tail boom for stabilizing the vehicle by applying a lateral force to a cable under tension anchored to an uphill point on the slope to enable the boom to reach to one side with the slide mechanism at full extension for gathering slash without overturning the vehicle.

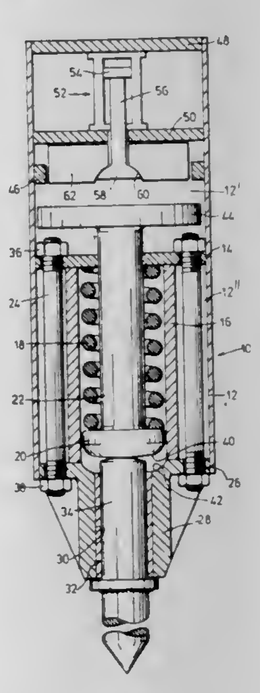
4,353,425
GUIDE TUBE SUPPORT FOR ROTARY IMPACT HAMMER
Frank F. Simpson, Staines, England, assignor to Black & Decker Inc., Newark, Del.
Filed Aug. 27, 1980, Ser. No. 181,819
Claims priority, application United Kingdom, Aug. 31, 1979, 7930272
Int. Cl.^{3} B25D *11/06, 17/24*
U.S. Cl. 173—109 **14 Claims**

1. In a combination rotary and percussive portable tool driven by prime motive means wherein the percussive means includes a reciprocating cylinder in a housing having embodied therein a reciprocatable piston striker which imparts percussive shocks, the cylinder being adapted and constructed to be reciprocated in a guide tube by crank means operatively positioned alongside the cylinder, the guide tube being mounted in the housing and having a cutaway section from one end portion for a distance to thereby avoid the eccentric crank means when said cylinder is operated, the housing being in surrounding spaced relationship to the guide tube, the improvement comprising:

an annular wall secured internally of said housing and concentrically around said guide tube at a point beyond said cutaway section; a spring positioned between said annular wall and affixed to one end portion of said guide tube, said housing having an end opening whereby the guide tube and spring may be removably inserted therein; and a removable cap mountable over said opening, the inwardly facing portion of said cap being adapted to be an abutment for said end portion of said guide tube.

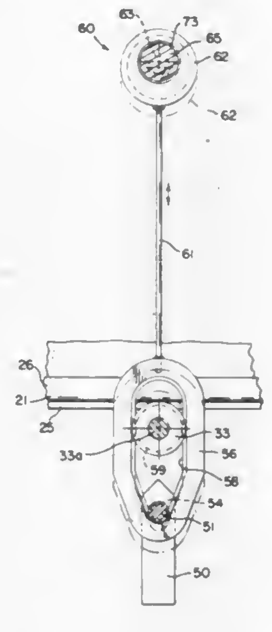


4,353,426
PERCUSSIVE TOOLS
Richard Ward, Worsley, England, assignor to Dobson Park Industries Limited, England
Filed Aug. 15, 1980, Ser. No. 178,280
Claims priority, application United Kingdom, Aug. 17, 1979, 7928787
Int. Cl.^{3} B25D *9/04*
U.S. Cl. 173—119 **15 Claims**



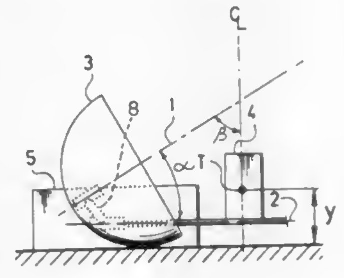
1. A percussive tool comprising:
(i) a tool body
(ii) an impacting mass reciprocable with respect to said tool body in first and second opposed directions
(iii) spring means positioned to act between said body and said mass to drive said mass in said second direction for delivering impact to a tool,
(iv) retractor means positioned to act between said body and said mass, to drive said mass in said first direction,
(v) magnetic coupling means for coupling said retractor means to said mass during movement in said first direction until a predetermined loading of said spring means is attained whereupon said coupling is released, said magnetic coupling means including a first part on said retractor means and a second part on said mass, at least one of said parts including a permanent magnet, and a magnetic flux diverter into operative proximity with which said permanent magnet is moved upon attainment of said predetermined loading.

4,353,427
WEIGHT-SENSOR CALIBRATION FOR GRAVIMETRIC COAL FEEDER
Arthur J. Stock, Lakewood, and Donald S. Christopher, Willowick, both of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio
Filed Sep. 26, 1980, Ser. No. 190,963
Int. Cl.^{3} G01G *19/52, 11/14;* G01L *25/00*
U.S. Cl. 177—50 **8 Claims**



1. A device for selectively applying a test load to a weight-sensing mechanism that includes means for continuously sensing the weight of a variable operating load and means for generating a signal representative of the weight sensed by said means, said device comprising:
a calibrating weight;
a control shaft located above said weight sensing mechanism,
at least one vertical support rod operatively connected to said control shaft at its upper end and connected to said calibrating weight at its lower end, and
means for rotating said shaft about its axis between a first position wherein said calibrating weight is supported by said vertical rod and a second position wherein the weight of said calibrating weight is transferred to said weight sensing mechanism.

4,353,428
SUSPENSION OF VEHICLES FOR RUGGED TERRAIN
Josef Kovar, and Milos Suchy, both of Praha, Czechoslovakia, assignors to Ustav pro vyzkum motorvych vozidel, Praha, Czechoslovakia
Filed Mar. 11, 1980, Ser. No. 129,220
Int. Cl.^{3} B62D *57/00*
U.S. Cl. 180—7 R **4 Claims**

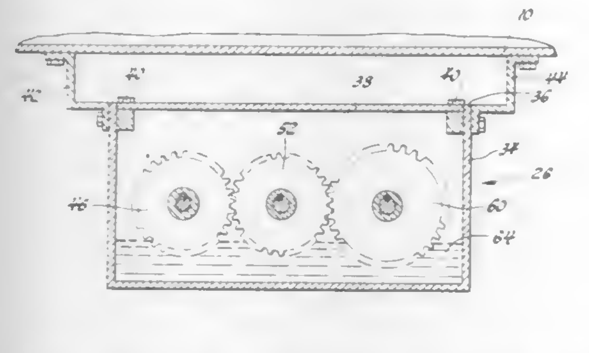


1. In a suspension of a travel gear for vehicles adapted to

travel over rough terrain, the travel gear having the shape of a body of revolution and being supported on a primary axle and mounted for idle revolution about a secondary axle connected to a vehicle frame, the improvement wherein the angle α between the primary and secondary axles is less than 90°, and including a reference plane τ perpendicular to a horizontal support plane for said vehicle passing through the longitudinal axis thereof, at least one of said primary and secondary axles making an angle β of less than 90° with said reference plane τ.

4,353,429
OVERDRIVE UNIT FOR AUTOMOTIVE VEHICLE

Lonnie L. Herron, 1517 Berkshire, Westland, Mich. 48185
Filed May 19, 1980, Ser. No. 150,720
Int. Cl.^{3} B60K *17/00;* **F16H** *57/02*
U.S. Cl. 180—70 MS **1 Claim**

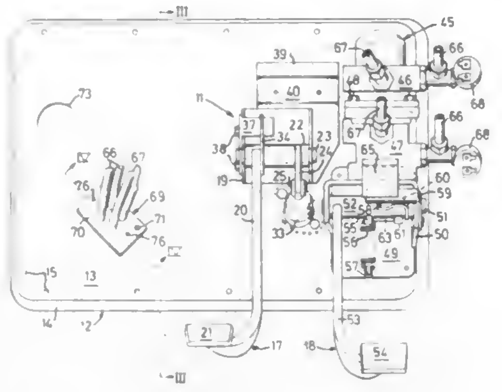


1. In combination with an automotive vehicle having a transmission having an output shaft, and a differential having an input shaft, overdrive means comprising:
- a housing and means mounting said housing on said vehicle between said transmission and said differential, the housing having an open top, and including a cover mounted on the top in a position between the housing and the bottom of the vehicle, and bracket means supporting the housing in a position sufficiently beneath the vehicle bottom to permit removal of the cover;
- a first spur gear mounted in the housing and connected to the transmission output shaft to rotate therewith;
- a second spur gear mounted in the housing and meshed with the first spur gear so as to rotate therewith, but in the opposite direction;
- a third spur gear mounted in the housing and meshed with the second spur gear to rotate therewith in the same direction as the first spur gear, and means connecting said third spur gear to the input shaft of the differential;
- the first spur gear, the second spur gear, and the third spur gear being supported on parallel axes of rotation beneath the body of the vehicle, said axes being substantially an equal distance beneath said vehicle body.

4,353,430
ARRANGEMENT FOR FITTING A PEDAL ARRANGEMENT IN A VEHICLE

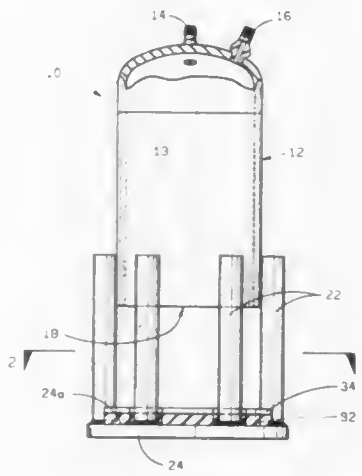
Carl D. I. Sjöqvist, Järna, and Tage E. Söderberg, Stockholm, both of Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden
Filed Jan. 11, 1980, Ser. No. 111,294
Claims priority, application Sweden, Jan. 16, 1979, 7900373
Int. Cl.^{3} B62D *25/20;* **B60K** *37/04*
U.S. Cl. 180—90 **3 Claims**

1. A foot control panel for a vehicle comprising a base plate for connection over an opening in a cowl panel, a brake cylinder mounted on one side of the base plate, the cylinder including a valve assembly having a pressure fluid inlet and a pressure fluid outlet; at least one movable brake pedal mounted on the base plate and operatively associated with the cylinder; a pressure fluid connection block comprising two block halves mounted on opposite sides of the base plate; first and second conduits connecting the inlet and the outlet of the brake cylinder with the block half which is mounted on the same side of the base plate as the brake cylinder; and third and fourth conduits connected to the other block half, said third conduit being adapted for connection to the vehicle wheel brakes and said fourth conduit being adapted for connection to a source of fluid pressure, said two block halves placing said fourth conduit in communication with said first conduit and placing said third conduit in communication with said second conduit.



4,353,431
RECOIL REDUCING SYSTEM FOR GAS GUNS

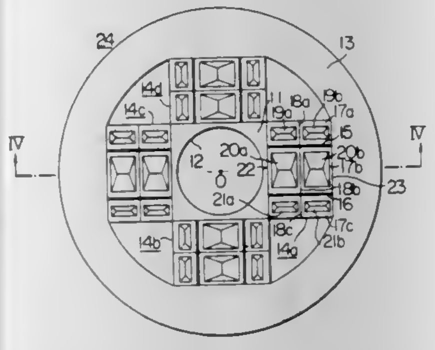
Robert A. Kirby, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Filed Jun. 30, 1980, Ser. No. 164,631
Int. Cl.^{3} G01V *1/02*
U.S. Cl. 181—118 **10 Claims**



1. An apparatus for reducing recoil of gas gun for generating pulses in a liquid medium, said gas gun including a barrel which holds gas and which has an outlet, said gas gun further including means for abruptly increasing the pressure of the gas in the barrel so that at least some of the gas escapes through the outlet into the liquid medium to create a pulse therein, said apparatus comprising:
- a reaction plate having a face;
- means for connecting the reaction plate to the barrel in such a manner that the reaction plate is disposed outside the barrel and adjacent to and spaced from the outlet, so that at least some of the gas escaping through the outlet impinges upon said face of the reaction plate to reduce recoil of the barrel caused by the escaping gas;
- a layer of shock absorbent material interposed between said face and the outlet to absorb some of the energy of the impinging gas, so that the amounts of bending of the reaction plate and of the connecting means caused by the impinging gas are reduced; and
- a protection plate interposed between said shock absorbing layer and the outlet, so that at least a part of said layer is protected from direct impact by the impinging gas.

4,353,432
ELECTRO-DYNAMIC SPEAKER

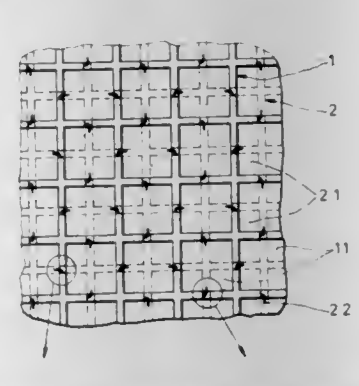
Mitsuhiro Hasegawa, Nishinomiya; Hiroyuki Takewa, Kaizuka, and Hiroshi Yamamoto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Aug. 7, 1981, Ser. No. 291,115
Claims priority, application Japan, Aug. 9, 1980, 55-109408; Aug. 9, 1980, 55-109409; Sep. 17, 1980, 55-132757; Oct. 20, 1980, 55-150022; Feb. 5, 1981, 56-15876
Int. Cl.^{3} G10K *13/00*
U.S. Cl. 181—166 **7 Claims**



1. An electro-dynamic speaker comprising a damper which includes a polygonal central supporting portion having an aperture for fixedly receiving a coil bobbin, a plurality of flexural tubes each having a quadrilateral cross-sectional shape and connected to each side of said central supporting portion through a bend, and an outer peripheral supporting portion connected to the outer ends of said flexural tubes through respective bends.

4,353,433
DAMPING COVERING

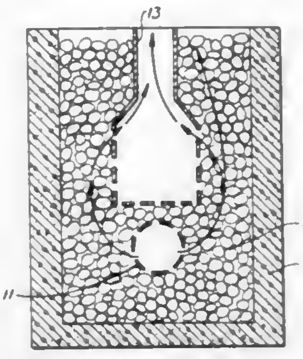
Michael Mohrenstein-Ertel, Deisenhofen, and Helmut Albrecht, Miesbach, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany
Filed Apr. 7, 1981, Ser. No. 251,741
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013861
Int. Cl.^{3} F16F *7/00*
U.S. Cl. 181—207 **8 Claims**



1. A sound damping covering for solid, permanent or temporary attachment to surfaces of a body to be damped, comprising platelet elements of a high elasticity, which are arranged substantially next to each other and are staggered in two or more layers, a material for the conversion of shear stresses into heat located between the layers, wherein at least the platelet elements of both outer layers, as well as within one layer and also at least partially between the layers, are connected with each other, and wherein a play clearance is provided at least between certain platelet elements within the covering.

4,353,434
FLUID BLOW-OFF MUFFLER

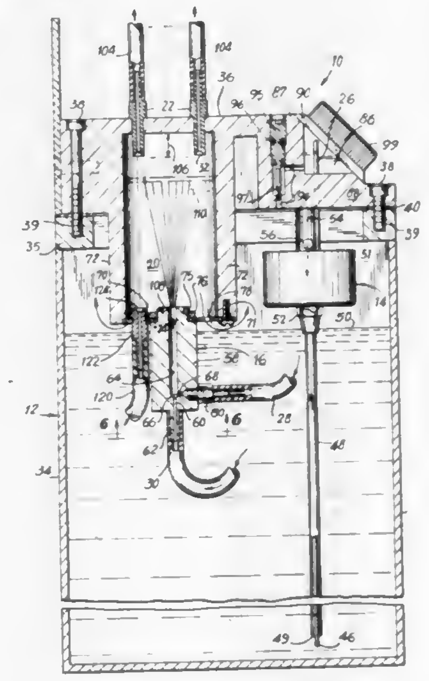
Thomas R. Norris, 15 Patricia Rd., Orinda, Calif. 94563
Filed Mar. 30, 1981, Ser. No. 249,218
Int. Cl.^{3} F01N *1/24*
U.S. Cl. 181—258 **10 Claims**



1. In a particle-fill, blow-off muffler for use in passing a stream of pressurized fluid into the atmosphere, the improvement comprising:
- a housing having sufficient height to accommodate, under the influence of said stream, a non-surging particle-fill; and a void volume having a volume in the range of from about 3 to 49 percent of the volume surrounded by said housing and being defined by a shell containing holes or openings communicating with said fill, said void volume being adapted to pass to the atmosphere at least one-third of said stream after passage through but a portion of said fill.

4,353,435
WIDE FLOW-RANGE LUBRICANT DISTRIBUTOR

Abraham Abrams, Roslyn Heights, and John J. Baumann, Medford, both of N.Y., assignors to Uniwave, Inc., Farmingdale, N.Y.
Continuation-in-part of Ser. No. 60,423, Jul. 25, 1979, abandoned. This application Jun. 16, 1980, Ser. No. 157,601
Int. Cl.^{3} F01M *1/16*
U.S. Cl. 184—6.26 **41 Claims**



18. A distributor for feeding a lubricant comprising:
- lubricant supply means having an outlet;
- lubricant transmission means having at least two inlets spaced from said outlet by a gap, said lubricant supply means being positioned and adapted to project a pressurized lubricant stream from said outlet in an upward direction across said gap; and

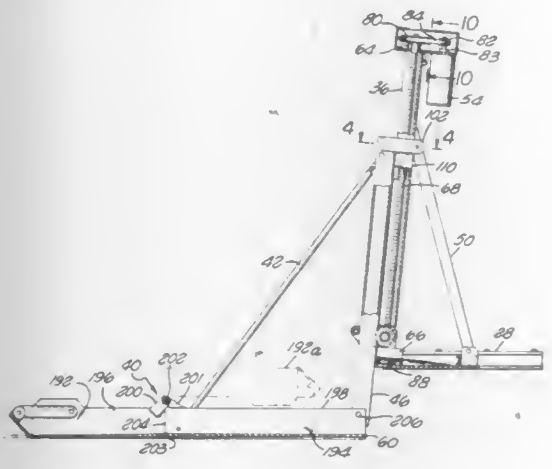
means supporting said at least two lubricant transmission means inlets so that each of said transmission means inlets face and are at least in part in the path of at least a portion of the lubricant stream, and so that said lubricant transmission means inlets face downwardly.

4,353,436

MANUAL WHEELCHAIR LIFT

Leonard L. Rice, Los Angeles; Marlin J. Freel, San Dimas; Gregory J. Paquin, Northridge, and Howard E. Burkett, Culver City, all of Calif., assignors to Ricon Corp., Sun Valley, Calif.

Filed Apr. 16, 1980, Ser. No. 140,928
Int. Cl.³ B60P *1/46*
U.S. Cl. 187—9 R **21 Claims**



1. A lift apparatus for being mounted to a first support surface adjacent the threshold of an access opening thereof for being selectively located at a storage position and an operating position, the lift apparatus operable for moving an object such as a wheelchair between a raised position generally horizontal with the first support surface, and a lowered position below the first support surface and adjacent a second support surface when the lift apparatus is in the operating position, the lift apparatus comprising:

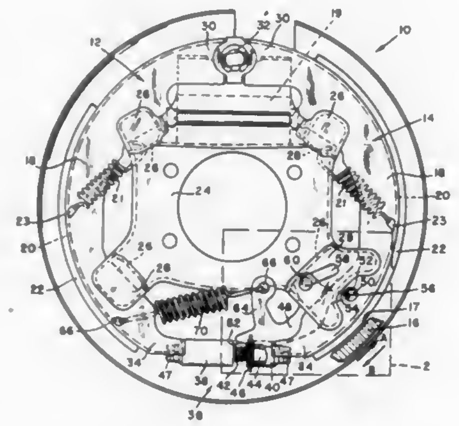
- a movable support assembly comprising:
  - a base plate assembly;
  - a pair of upstanding support members defining a passageway therebetween, one of the support members mounted to the base plate assembly on one side thereof and the other of the support members mounted to the base plate assembly on the other side thereof;
  - a pair of lead screws, each rotatably mounted between the ends of the one of the support members;
- a platform assembly having a first edge;
  - a pair of coupling posts, each coupling post having a first end coupled to the platform assembly at spaced locations along the first edge thereof for permitting passageway therebetween, the coupling posts each having a second end movably attached to one of the lead screws for raising and lowering the coupling posts to move the platform assembly relative to the support members between the raised and lowered positions as the lead screws rotate;
- means for movably mounting the support assembly to the first support surface, the support assembly being movable in a plane substantially parallel to the plane of the support surface between the storage position and the operating position whereby the platform assembly extends over the threshold of the access opening with the first edge of the platform assembly being parallel to the threshold of the access opening when the support assembly is in the operating position and the platform assembly is in the raised position; and
- means for selectively, simultaneously, rotating the lead screws for raising and lowering the platform assembly between the raised and lowered positions when the support assembly is in the operating position.

4,353,437

ADJUSTER FOR DRUM BRAKES

James K. Roberts, and Donald D. Johannesen, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 22, 1980, Ser. No. 180,533
Int. Cl.³ F16D *65/46*
U.S. Cl. 188—79.5 GE **2 Claims**



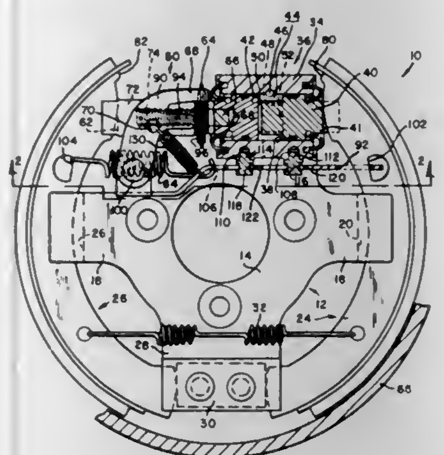
1. A drum brake comprising a brake drum and a pair of brake shoes engageable with the drum to retard rotation of said drum, a backing plate carrying said pair of brake shoes and including an anchor means for receiving braking torque from said pair of brake shoes, an extendible member which spaces apart said pair of brake shoes to maintain a running clearance between the brake shoes and the brake drum in the non-braking condition, each of said brake shoes pivotally engaging said anchor means, a lever pivotally connected to one of said brake shoes and engaging said extendible member to elongate said member, resilient means extending between said lever and the other of said pair of brake shoes for urging said pair of brake shoes into engagement with said extendible member, said resilient means yieldably pivoting said lever so as to elongate said extendible member, characterized in that said backing plate and said lever include cooperating means for pivoting said lever relative to said extendible member upon radial and circumferential movement of said one brake shoe relative to said backing plate, whereby a brake actuation with the brake drum rotating in a direction causing said one brake shoe to pivot relative to said anchor means and to transmit braking torque thereto causes said lever to remain substantially stationary relative to said one brake shoe and said extendible member, a brake application with the brake drum rotating in the reverse direction causing said one brake shoe to move radially outwardly and circumferentially in the direction of brake drum rotation, said cooperating means pivoting said lever relative to said extendible member to elongate said extendible member if said running clearance is greater than a predetermined value, said cooperating means including a slot defined by one of said backing plate and lever, said cooperating means further including a pin carried by the other of said backing plate and lever, said pin being slidably received in said slot, and said slot being curved, the curvature of said slot coinciding with an arc centered at the point of pivotal engagement of said one brake shoe with said anchor means.

4,353,438

ACTUATOR ASSEMBLY FOR A DRUM BRAKE HAVING AN EXTENDIBLE ASSEMBLY

James J. Colpaert, Granger, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1980, Ser. No. 193,224
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—79.5 GC **8 Claims**



1. In a drum brake assembly having a pair of brake shoes movable by a wheel cylinder from a non-braking position to a braking position in engagement with a rotatable member, an extendible assembly disposed between and cooperating with the wheel cylinder and the pair of brake shoes to substantially maintain a predetermined clearance between the pair of brake shoes and the rotatable member and an actuator assembly cooperating with the extendible assembly to extend the latter in response to the clearance between the pair of brake shoes and the rotatable member being greater than the predetermined amount, characterized by said actuator assembly comprising an adjusting pawl in engagement with the extendible assembly and a connecting member in engagement with one of the pair of brake shoes to move in unison therewith and connected to a retraction spring to bias said pair of brake shoes to the non-braking position, said connecting member pivotally mounting said adjusting pawl at one end of said connecting member so as to space said adjusting pawl in relation to said wheel cylinder and said pair of brake shoes, and said connecting member being movably engaged with said wheel cylinder to guide the movement of said connecting member as the latter moves with one of said pair of brake shoes during a brake application.

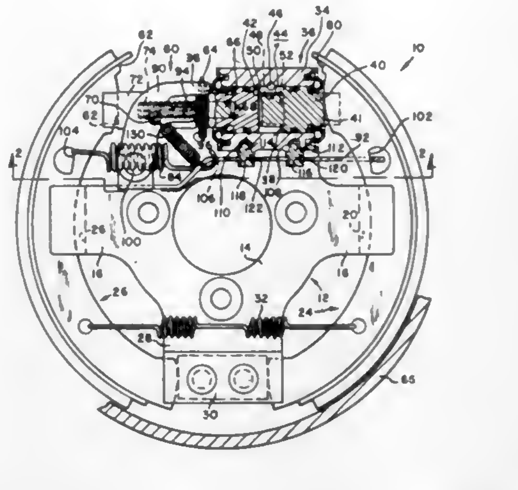
4,353,439

DRUM BRAKE WITH COMBINED ADJUSTER AND WHEEL CYLINDER

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1980, Ser. No. 193,238
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—79.5 GE **1 Claim**

1. In a drum brake assembly having a pair of brake shoes engageable with a rotatable member to be braked, a wheel cylinder cooperating with the pair of brake shoes to move the latter into engagement with the rotatable member during a brake application, the wheel cylinder defining a bore for movably receiving a pair of pistons, and an extendible assembly cooperating with the pair of brake shoes to substantially maintain a predetermined clearance with the member to be braked, the wheel cylinder, the extendible assembly being disposed within a space between adjoining ends of said pair of brake shoes and including a star wheel rotatably disposed within the space, one of said pistons engaging one of said pair of brake shoes, the other of said pistons engaging said extendible assembly, said extendible assembly being disposed between said other piston and said other brake shoe, and said extendible assembly being operable to increase the space between said adjoining ends of said pair of brake shoes by moving said pair of pistons within said wheel cylinder away from said other brake shoe, characterized by said other piston including a portion extending outwardly of the wheel cylinder and including a blind bore receiving a portion of said star wheel in order to rotatably support the latter adjacent the wheel cylinder, said one piston including a recess receiving a portion of said other piston to prevent rotation therebetween, and said one piston including a portion extending outwardly of the wheel cylinder to define a slot for receiving said one brake shoe.

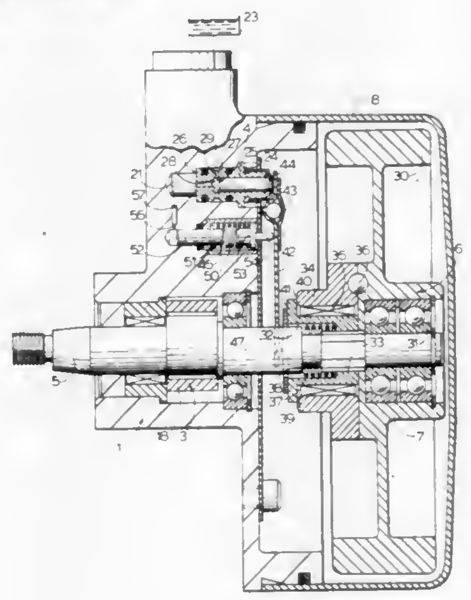


4,353,440

SKID SENSING MEANS FOR HYDRAULIC ANTI-SKID BRAKING SYSTEMS

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 67,938, Aug. 20, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,105
Claims priority, application United Kingdom, Aug. 18, 1978, 33788/78
Int. Cl.³ B60T *8/16*
U.S. Cl. 188—181 A **11 Claims**



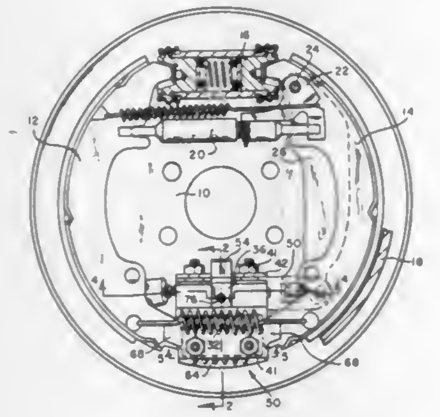
1. Skid sensing means for a vehicle antiskid braking system of the type comprising a brake, a supply of fluid under pressure for applying said brake, a brake pressure modulator for modulating the supply of fluid from said supply to said brake, and a brake-line through which said fluid is supplied to said brake from said modulator, said skid sensing means comprising a rotatable shaft a flywheel mechanism rotatable with said shaft, said flywheel mechanism comprising a flywheel member, a thrust member, and means responsive to relative angular movement between said members to cause one of said members to move axially relative to the other between a first position in which said members are in a predetermined angular alignment

and a second position in which the said one member engages said actuating means to actuate said modulator, said flywheel mechanism also including biassing means for producing a biassing force to urge the said one member towards said first position to determine a threshold setting of said flywheel mechanism, and wherein said biassing means incorporates means responsive at all times to a control pressure dependent upon pressure in said brake-line to vary said threshold setting in accordance with said control pressure.

4,353,441

DUAL MODE DRUM BRAKE

James K. Roberts, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Sep. 19, 1980, Ser. No. 188,808
Int. Cl.^{3} F16D *51/20*
U.S. Cl. 188—328 **8 Claims**



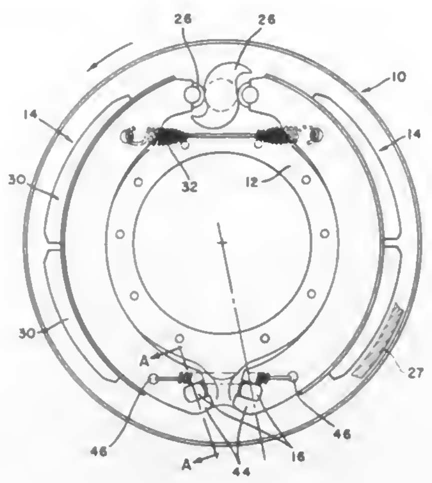
1. In a drum brake assembly comprising a pair of brake shoes carried by a backing plate and engageable with a rotatable member to effect a service brake application, a parking lever cooperating with the pair of brake shoes to engage the latter with the rotatable member to effect a parking brake application, an anchor assembly carried by said backing plate between confronting ends of said brake shoes, said anchor assembly including a circumferentially-movable connector and a latch means engaging said connector to substantially prevent circumferential movement of said connector during a service brake application, one of said brake shoes pivotally engaging said connector so as to transfer braking torque to said backing plate via said connector and latch means during a service brake application, characterized by said latch means including a cam-defining member connected to said parking brake lever and movable upon a parking brake application to release said connector for circumferential movement, and means for transferring braking torque between said confronting brake shoe ends during a parking brake application.

4,353,442

BRAKE SHOE AND BRAKE ASSEMBLY FOR AUTOMOTIVE VEHICLES

Flavio D. Correa, Campinas, Brazil, assignor to Bendix do Brasil Equipamentos Para Autoveiculos LTDA., Campinas, Brazil
Filed Oct. 15, 1979, Ser. No. 85,086
Int. Cl.^{3} F16D *65/09*
U.S. Cl. 188—330 **8 Claims**

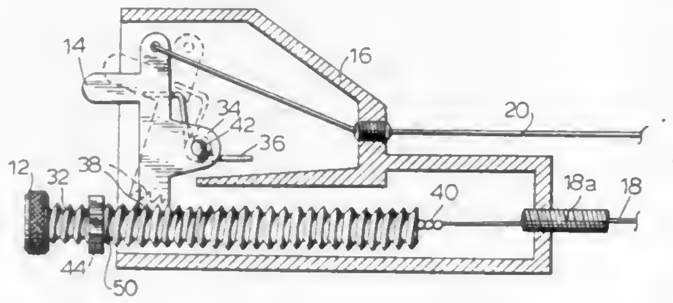
1. In a brake, a drum mounted for rotation about an axis with a member to be braked, a support member mounted adjacent said drum, a pair of friction members carried by said support member in end-to-end relationship to present opposite pairs of contiguous ends, said friction members being movable relative to the support member to engage said drum when a brake application is effected, camming means carried by said support member and disposed between one pair of said contiguous ends of said friction members for urging said one pair of contiguous ends apart when a brake application is effected, said support member defining a pair of bores, each of said bores corresponding to a corresponding one of the other pair of contiguous ends of said friction members, a pair of cylindrical anchor pins, one of said anchor pins being rotatably mounted in each of said bores for rotation relative to the support member when a brake application is effected, and coupling means carried by said anchor pins and the other pair of said contiguous ends of said friction member for providing a coupling between said anchor pins and the corresponding one of said other pair of contiguous ends preventing relative rotation between the friction members and the anchor pins wherein said pins are rotated relative to said support member when the friction members are urged into engagement with said drum.



4,353,443

VEHICLE THROTTLE CONTROL

Richard S. R. Lombardo, 4425 20th St. W., Bradenton, Fla. 33507
Filed Apr. 21, 1980, Ser. No. 142,115
Int. Cl.^{3} B60K *41/20*
U.S. Cl. 192—3 T **2 Claims**



1. A device for setting the throttle linkage of a vehicle, the vehicle including a throttle, throttle linkage, an accelerator pedal, and a brake pedal, said device being useful for positioning the throttle linkage at a particular position for achieving cruise control of the vehicle such that the driver need not continuously depress the accelerator pedal, said device allowing for manual or brake pedal override of said throttle control, comprising:

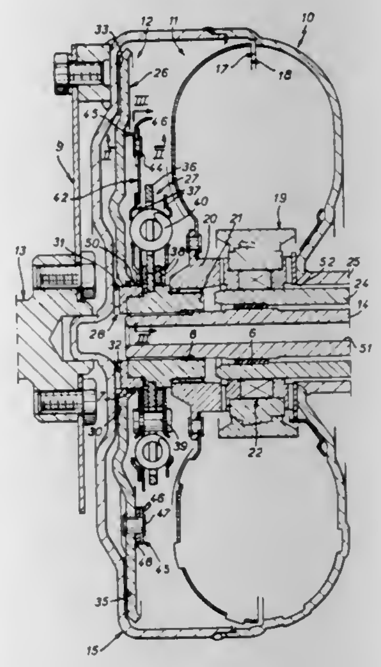
- a housing mountable to a portion of the vehicle at a location that is manually accessible by the driver of said vehicle, said housing including a hollow passage disposed between the front of said housing and the rear of said housing;
- a rigid, threaded shaft mounted within the freely longitudinally and rotatably movable within said hollow passage of said housing;
- a swiveling means connected to one end of said threaded shaft;
- a cable connected at one end to said swiveling means and at the opposite end to said throttle linkage of said vehicle;
- a manual grasping means disposed at the end of said threaded shaft opposite said swivel means and positioned outside of said housing, said manual grasping means being

  accessible and manually actuable by the driver of said vehicle;
- a lever arm pivotally connected within said housing, said lever arm having a first portion having a toothed surface with at least one tooth that is engagable with said threaded shaft for locking said shaft at a predetermined position within said housing, said lever arm including a portion protruding from the front of said housing manually accessible by said driver, said lever arm being movable by manual actuation for disengaging said toothed surface from said threaded shaft, said threaded shaft being rotatable when engaged with said lever arm toothed surface for minute longitudinal adjustment of said throttle linkage cable; and
- a second cable, connected at one end to said lever arm and to said brake pedal at the opposite end of said second cable, said second cable being held in tension and its connection at one end to the lever arm at such a position on the lever arm such that depressing the brake pedal will cause the lever arm to be moved pivotally relative to said housing such that the toothed surface of said lever arm disengages said threaded shaft, unlocking said threaded shaft whereby the accelerator pedal and throttle linkage will thus be released from the tensioning of said threaded shaft.

4,353,444

TRANSMISSION WITH HYDRAULIC COUPLING DEVICE AND LOCKING CLUTCH SUITABLE FOR A MOTOR VEHICLE

Jean E. Bionaz, Fontenay-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France
Filed Mar. 31, 1980, Ser. No. 135,923
Claims priority, application France, Apr. 2, 1979, 79 08192
Int. Cl.^{3} F16H *45/02;* F16D *3/12*
U.S. Cl. 192—3.29 **14 Claims**

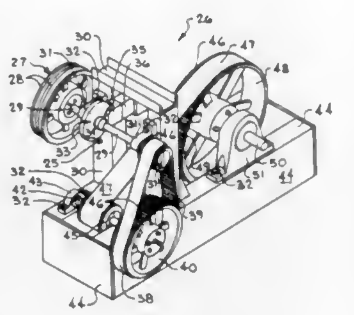


1. A hydraulic coupling device and a lock-up clutch unit for a motor vehicle, said unit comprising a hydraulic coupling device disposed in parallel between an input element for rotation with a driving shaft and an output element for rotation with a driven shaft, said hydraulic coupling device comprising an impeller fixed for rotation with said input element and a turbine fixed for rotation with said output element; a lock-up clutch comprising an axially displaceable coupling element fixed for rotation with said output element and frictionally couplable for rotation with said input element; torque transmitting means operatively connecting said coupling element and said output element, said torque transmitting means including a tab connection comprised of a plurality of leaf spring tabs disposed tangentially relative to a circumference of said unit, said tab connection defining a rotational connection while permitting limited axial displacement, whereby all the torque transmitted from said coupling element to said output element in the engaged position of said lock-up clutch passes through said tab connection.

4,353,445

TOOTHED BELT DRIVE TRANSMISSION FOR PUMPING UNITS

Robert J. Moss, 6319 S. Inwood Rd., Shreveport, La. 71119
Filed Jun. 30, 1980, Ser. No. 164,780
Int. Cl.^{3} B60K *41/20*
U.S. Cl. 192—4 R **10 Claims**



1. A toothed belt drive transmission for oil field pumping units comprising:
(a) a frame;
(b) a first shaft journalled for rotation in said frame;
(c) a drive pulley carried by said first shaft in fixed relationship and cooperating with a drive means for rotating said first shaft at a selected speed;
(d) first sprocket means carried by said first shaft in spaced relationship from said drive pulley;
(e) a second shaft journalled for rotation in said frame and positioned beneath said first shaft and essentially parallel to said first shaft;
(f) second sprocket means carried by said second shaft in fixed relationship and in alignment with said first sprocket means, and a first endless sprocket belt cooperating with said first sprocket means and said second sprocket means to effect rotation of said second sprocket means responsive to rotation of said drive means;
(g) third sprocket means carried by said second shaft in spaced relationship from said second sprocket means;
(h) a third shaft journalled for rotation in said frame in essentially parallel relationship to said first shaft and said second shaft; and
(i) fourth sprocket means carried by said third shaft in fixed relationship and in alignment with said third sprocket means, and a second endless sprocket belt cooperating with said third sprocket means and said fourth sprocket means to effect rotation of said fourth sprocket means and said third shaft responsive to rotation of said drive pulley.

4,353,446

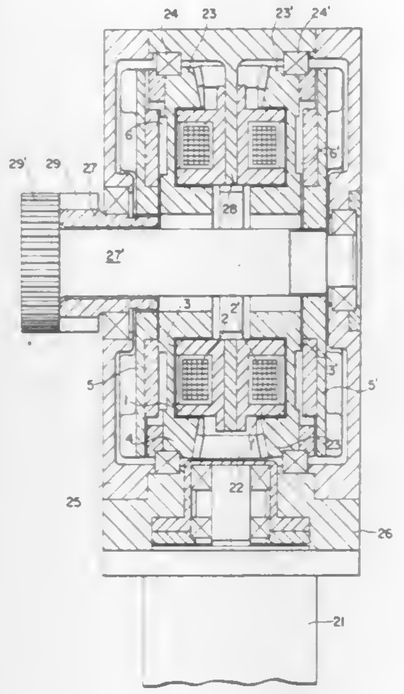
DEVICE FOR POSITIONING AND ATTITUDE-STABILIZING A SLEWABLE INERT/MASS/SUPPORTER ON ONE BASE

Joachim H. Wilken; Bernhard Stehlin, both of Ettlingen; Volker Pathe, Karlsruhe; Manfred Wamser, Karlsruhe, and Ludwig Pietzsch, Karlsruhe, all of Fed. Rep. of Germany, assignors to Ludwig Pietzsch, Ettlingen, Fed. Rep. of Germany
Filed Nov. 1, 1977, Ser. No. 849,380
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727582
Int. Cl.^{3} G05D *3/00;* F41G *5/16*
U.S. Cl. 192—21 **46 Claims**

1. Device for positioning and attitude-stabilizing a slewable inert mass supported on a base, said device having at least two oppositely-directed rotatable driving parts supported on one of the base and the inert mass by means of at least one control device regulated in friction contact with compressible driven

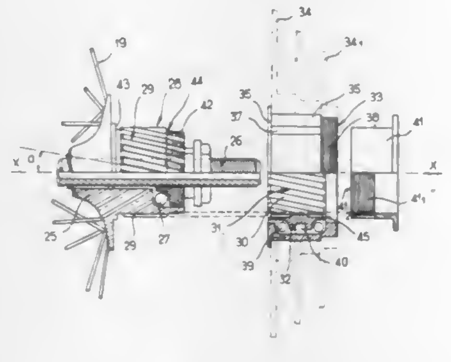
parts, said driven parts being supported on the other of the mass and base, said control device having at least one electromagnetic clutch or brake in which the magnetic field is controlled by hyperexcitation of the exciting coil through feedback and intensification of the measured magnetic field strength.

24. Device for positioning and attitude stabilizing a slewable inert mass supported on a base, said device having at least two oppositely-directed rotatable driving parts supported on one of the base and the inert mass by means of at least one control device regulated in friction contact with compressible driven parts, said driven parts being supported on the other of the mass or base, said control device having at least one controllable electromagnetic clutch or brake in which the magnetic field is controlled by hyperexcitation of the exciting coil through feedback and intensification of the measured controlling torque.



4,353,447
CYCLE FREEWHEEL ASSEMBLY AND CYCLE WHEEL THEREFOR

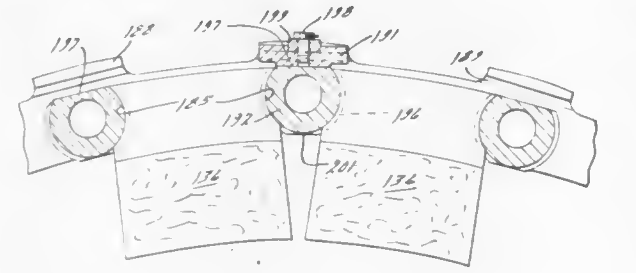
Francis Bes, 36, rue Sere de Rivieres, Albi (Tarn), France
Filed Oct. 17, 1979, Ser. No. 85,805
Claims priority, application France, Oct. 3, 1979, 79 24649
Int. Cl.^{3} F16D *41/30*
U.S. Cl. 192—64 6 Claims



1. A cycle wheel engaged to an integral freewheel assembly, said assembly comprising a hub member with an axial opening therein, a gear means rotatably supported and secured to said hub member, a pawl arrangement operatively disposed between said gear means and said hub member, a spline means in said axial opening, said spline means extending the width of said hub member, said cycle wheel adapted to receive said freewheel assembly, said cycle wheel comprising a rim, a hub, means connecting said rim and said hub, and a spindle on which said hub is rotatably supported, said wheel hub having an external generally cylindrical portion provided with a spline means having a length sufficient to extend across a substantial portion of said axial opening and engage said axial opening spline means whereby said cylindrical portion and cylindrical portion spline means provides uniform support and a rotatable drive for said freewheel assembly, and means for axially securing said freewheel assembly to said hub member whereby disengagement of said securing means permits manual disengagement of said integral freewheel assembly as a unit from said hub member.

4,353,448
CLUTCH UNIT

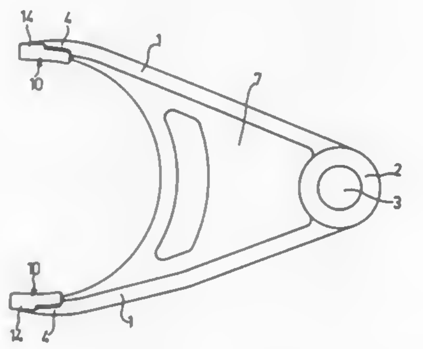
Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Sommer Co., Warren, Mich.
Division of Ser. No. 849,858, Nov. 9, 1977, Pat. No. 4,223,774. This application Jun. 23, 1980, Ser. No. 161,893
Int. Cl.^{3} F16D *13/68*
U.S. Cl. 192—70.13 5 Claims



1. A clutch unit comprising an input shaft, an output shaft, a plurality of clutch discs connected to one of said shafts, a plurality of clutch plates interleaved with said discs and connected to the other shaft, said clutch discs extending outwardly from said clutch plates, each of said clutch discs comprising a plurality of arcuate segments in a circumferential arrangement, longitudinally extending supporting means for said clutch disc segments, co-acting portions on said supporting means and the edges of said clutch disc segments for holding the segments in position, and means for fastening said supporting means to said one of said shafts with which said plurality of clutch discs is connected, said fastening means being removable to permit one or more segments to be separately removed from said clutch unit without distrubing the other segments.

4,353,449
CONTROL FORK FOR A GEAR BOX SLIDING BLOCK

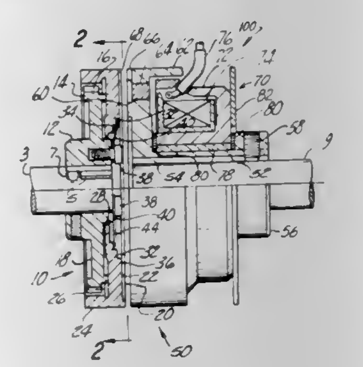
Jean M. Lamy, Paris, and Jacques Egret, Les Clayes-sous-Bois, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France
Filed Sep. 9, 1980, Ser. No. 185,591
Claims priority, application France, Sep. 20, 1979, 79 23443
Int. Cl.^{3} G05G *3/00, 9/12;* F16D *13/58*
U.S. Cl. 192—82 R 5 Claims



1. A synchronization and clutch control fork for a gear box, the fork having outer lateral surfaces with notches therein and comprising two friction shoes mounted on the two arms of the fork and intended to come into contact with the periphery of a driving gear, characterized in that each shoe comprises inside its lateral flanks two lugs which are snap-fit into the two notches in the outer lateral surfaces of the arms of the fork, the notches extending over the entire height of the arms of the fork, each shoe further comprising edges flanged onto the outer peripheral surface of the arm of the fork.

4,353,450
TWO STAGE DISENGAGEMENT SPRING FOR ELECTROMAGNETIC TOOTH CLUTCHES

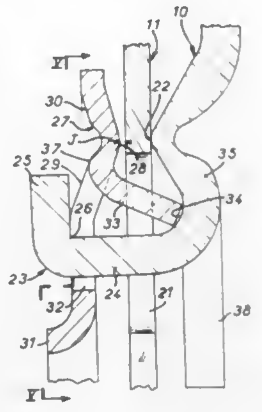
Jack C. Wakefield, 2779 Miller St., Big Flats, N.Y. 14814
Filed Dec. 17, 1979, Ser. No. 104,350
Int. Cl.^{3} F16D *27/10*
U.S. Cl. 192—84 C 9 Claims



1. An electromagnetic clutch comprising:
a driven clutch member;
a driving clutch member mounted adjacent to said driven clutch member for communication with said driven clutch member;
electromagnetic actuating means mounted to said driven and driving clutch members for providing a driving engagement between said driven and driving clutch members when the electromagnet actuating means is energized, said electromagnet actuating means further comprising:
  an electromagnetic armature member; a hub member mounted adjacent to said electromagnetic armature for communication therewith and a spline connecting said electromagnetic armature to said hub member for providing relative movement between said hub member and said electromagnetic armature, said electromagnetic armature further comprising:
    a face portion;
    a first indentation in said face portion; and
    a second indentation in said face portion adjacent said first indentation;
a pair of magnetic poles mounted adjacent said electromagnetic armature member for drivably engaging said armature member;
mutually engagable driving teeth mounted to said armature member and one of said pair of magnetic poles for engagement of said armature member to said one of said pair of magnetic poles when said electromagnet actuating means is energized; and
biasing means, mounted between said driven and driving clutch members for disconnecting said driving engagement of said electromagnet actuating means when said electromagnet actuating means is deenergized, said biasing means further cooperating with said first indentation to provide an initial breakaway force to separate said armature member from said pair of magnetic poles and cooperating with said second indentation to provide a smaller force than said initial breakaway force to further separate said armature member from said pair of magnetic poles.

4,353,451
DIAPHRAGM CLUTCH MECHANISM

Michel Bacher, Garges-les-Gonesse, France, assignor to Valeo, Paris, France
Filed Jun. 18, 1980, Ser. No. 160,461
Claims priority, application France, Jun. 25, 1979, 79 16225
Int. Cl.^{3} F16D *13/44*
U.S. Cl. 192—89 B 10 Claims



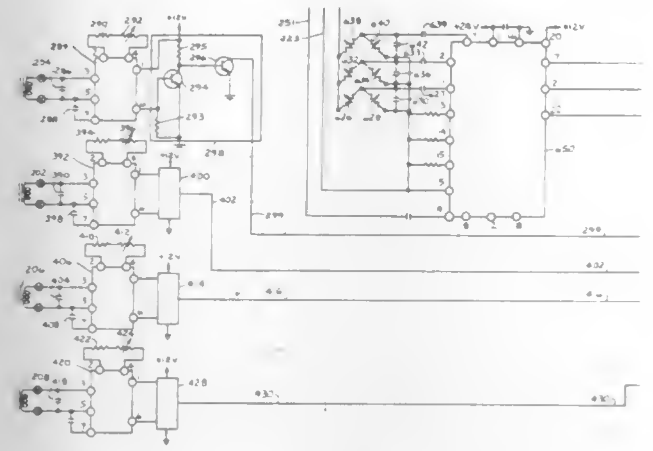
1. In a diaphragm clutch mechanism for a motor vehicle, of the kind comprising a generally annular cover member adapted to be peripherally attached to a reaction member, and intended to be rotationally fast with a pressure plate; a diaphragm comprising a peripheral portion forming a Belleville spring for acting on the pressure plate and a central portion divided into radial fingers for cooperation with a clutch release bearing; and connection means pivotally fastening the diaphragm to the cover for rocking movement with respect thereto, said connection means comprising fastening members extending from the cover each having an axial portion and a radial portion, which portions define between them a wedging bend, and a diaphragm support ring located by said bend, the cover and the support ring defining for the diaphragm a primary fulcrum support and a secondary fulcrum support respectively, these fulcrum supports being disposed substantially opposite one another; the improvement in which the primary and secondary supports are spaced apart a distance greater than the thickness of the diaphragm, whereby a clearance is provided between the supports and the diaphragm, and the support ring is wedged in position on the cover between said bend and a wedging zone spaced from said bend and from said primary and secondary supports, a prestressing force greater than the clutch release force being developed on the support ring between the wedging bend and the aforesaid wedging zone.

4,353,452
COIN-HANDLING DEVICE

Hasmukh R. Shah, and Michael S. Ross, both of Hot Springs, Ark., assignors to U.M.C. Industries, Inc., Stamford, Conn.
Filed Apr. 4, 1980, Ser. No. 137,434
Int. Cl.^{3} G07F *3/02*
U.S. Cl. 194—100 A 17 Claims

12. An electronic slug rejector which has an authenticity-determining coil that is intended to effect the rejection of substantially all slugs and that is intended to effect the acceptance of substantially all authentic coins, a detecting coil which is positioned beyond said authenticity-determining coil, whereby coins and slugs move past said authenticity-determining coil and then move past said detecting coil, an oscillator which causes said detecting coil to develop a magnetic field having a frequency high enough so said magnetic field is damped to a lesser extent by a copper slug than it can be damped by a non-cupreous coin, an accept-reject gate which is disposed beyond said detecting coil and which is disposable in accept position to effect the acceptance of authentic coins and which is disposable in reject position to effect the rejection of slugs, means to effect movement of said accept/reject gate between accept and reject positions, and a circuit which can

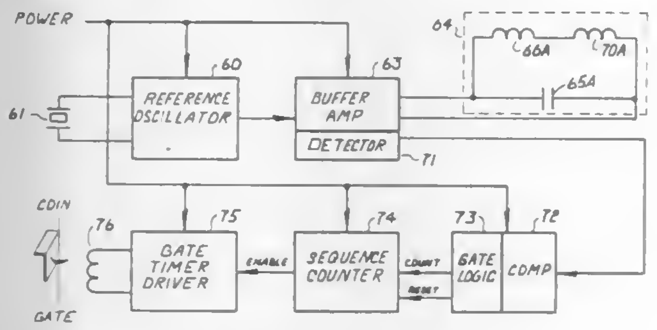
cause said means to dispose said accept/reject gate in accept position only if said authenticity-determining coil provides a signal indicating that an authentic coin has moved past it and if said detecting coil provides a signal indicating that a non-cupreous coin has moved past it, said circuit causing said



means to leave said accept/reject gate in reject position in the event said circuit does not receive a signal from both said authenticity-determining coil and said detecting coil, and said detecting coil not providing a signal when a copper slug moves past it and thereby effecting the rejection of said copper slug by said accept/reject gate.

4,353,453
VALID COIN ACCEPTOR FOR COIN ACTUATED APPARATUS

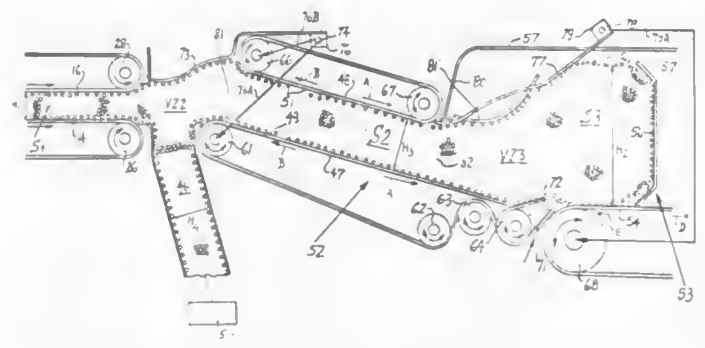
Norman D. Partin, Henderson, Nev., and Charles L. Watson, Phoenix, Ariz., assignors to ATN Research & Development Corporation, Henderson, Nev.
Filed Apr. 10, 1980, Ser. No. 138,996
Int. Cl.^{3} G07F *3/02*
U.S. Cl. 194—100 A **19 Claims**



1. A coin acceptor comprising
a frame assembly defining a package of size and shape interchangeable with electromechanical coin acceptors for coin actuated machines;
said frame assembly further defining a coin passage entrance and exit through said package;
a pair of spaced generally planar members for defining a continuous coin passage therebetween;
said generally planar members each mounting a series of conductive turns for establishing an electromagnetic field in the region of said coin passage;
said series of conductive turns including at least one generally straight length of turns having a straight length at least equal to the major transverse dimension of a coin to be accepted and separated from the remaining portion of said series of turns by a region free from turns;
means coupling electric current to said series of turns;
means for detecting changes in the current in said field as a function of the passage of coins through said passage;
logic means for detecting at least one maximum and one minimum level of current during the passage of a coin through said passage;
means for comparing the maximum and minimum current levels with a predetermined maximum and minimum value; and
means for applying enabling input to said machine responsive to the output of said comparator means.

4,353,454
APPARATUS FOR TRANSPORT AND TEMPORARY STORAGE OF CIGARETTES OR THE LIKE BETWEEN PRODUCING AND PROCESSING MACHINES

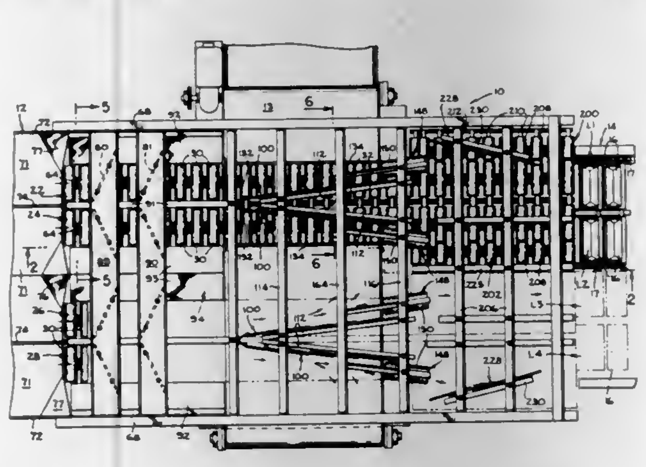
Gerhard Tolasch, and Hans J. Grasse, both of Wentorf, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany
Division of Ser. No. 878,615, Feb. 16, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,736
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758863
Int. Cl.^{3} B65G *1/00*
U.S. Cl. 198—347 **6 Claims**



1. Apparatus for transporting cigarettes or analogous rod-shaped articles which constitute or form part of smokers' products from at least one varible-capacity producing machine to at least one variable-capacity consuming machine, comprising means for transporting a multi-layer stream of articles from the producing machine along a first path having a discharge end and a first height; a conveying device including a channel having a receiving end at said discharge end and defining a second path for delivery of articles of said multi-layer stream to the consuming machine, the cross-sectional area of said channel being such that the articles therein form a multi-layer stream; at least one variable-volume surge bin having a second height exceeding said first height and further having a first inlet-outlet opening for admission of articles into and for evacuation of articles from its interior, said surge bin comprising an end wall movable toward and away from said first opening to thereby respectively reduce and increase the volume of said surge bin; means for monitoring the upper level of the article layer in the region of said first opening; means for moving said end wall away from and toward said first opening when the monitored level respectively rises and falls; sensor means adjacent to said discharge end and movable between a plurality of positions each indicative of a different ratio of the rate of transport of articles along said first path to the rate of delivery of articles along said second path; a reservoir communicating with said first opening and having a second inlet-outlet opening adjacent to said first path, said reservoir having in the region of said first opening a third height which is less than said second height but exceeds said first height and said reservoir including means for conveying articles from said surge bin to said first path for introduction into said receiving end when the requirements of the consuming machine exceed the output of the producing machine and for conveying articles from said first path into said surge bin when the output of the producing machine exceeds the requirements of the consuming machine, said second opening being in communication with said discharge end and with said receiving end to admit articles from said discharge end into said reservoir when the output of the producing machine exceeds the requirements of the consuming machine and to admit articles from said reservoir into said receiving end when the requirements of the consuming machine exceed the output of the producing machine; means for facilitating the merger of articles delivered by said conveying means into the stack of articles in said surge bin, including a hump disposed in the region of said first opening so that articles entering or leaving said surge bin advance over said hump, said hump causing the articles to shift vertically and to thereby facilitate the transition between different layer heights; and drive means for operating said conveying means in dependency on the position of said sensor means so as to advance articles from said surge bin to said first path when said ratio decreases and to advance articles from said first path into said surge bin when said ratio increases.

4,353,455
ARTICLE HANDLING APPARATUS

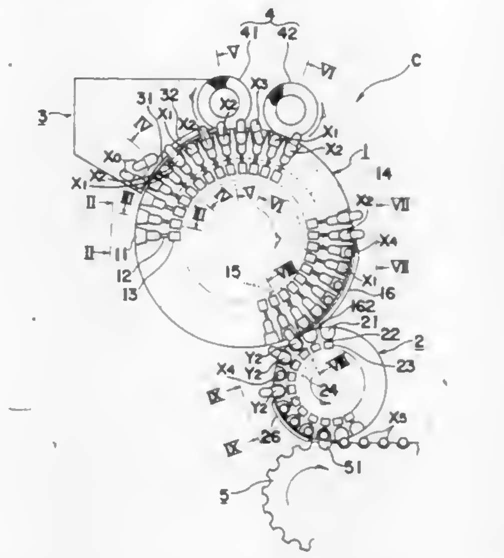
Harold J. Mumma, and Michael E. Reed, both of Riverside, Calif., assignors to FMC Corporation, Chicago, Ill.
Filed Aug. 18, 1977, Ser. No. 825,617
Int. Cl.^{3} B65G *47/24*
U.S. Cl. 198—384 **6 Claims**



1. An apparatus for receiving randomly oriented, elongate, ellipsoidal articles of varying lengths, such as potatoes, and discharging the articles in a single file in timed relationship, said apparatus comprising: a roller conveyor including an endless series of uniformly spaced parallel rollers having elongate spaces therebetween, means for supporting said rollers to form a horizontal upper reach, means for driving said series of rollers to move along a path of travel, means for causing said rollers to rotate as they are moved through a portion of said upper reach along said path of travel, said rollers having substantially unobstructed lateral edges along one side thereof through said upper reach portion, and means for laterally transferring articles carried upon said upper reach as they move through said upper reach portion including a frame, at least two discs rotatably mounted to said frame above said horizontal upper reach portion in closely spaced, generally vertical relationship, each of said discs having recesses formed in the periphery thereof for complemental engagement against said rollers in said upper reach and with projections formed between said recesses for extension into the spaces between said rollers, said discs being mounted to extend diagonally across said conveyor in overlapping relationship with the downstream end of the upstream one of said discs covering the upstream end of the downstream one of said discs in the path of travel of the articles, said discs being spaced in the direction of movement of the conveyor such that as a space between the rollers comes into registry under the axis of said upstream one of said discs, said space will be penetrated by a projection of said upstream disc, and as said space thereafter moves downstream, it will be penetrated concurrently by said projection of said upstream disc and by a projection of the adjacent downstream disc, and as said space moves further downstream, it will be penetrated only by said projection of said downstream disc, whereby said articles are pushed and transferred laterally in said elongate spaces by said discs without being caught between said discs and said rollers, said downstream disc being spaced a selected distance from said one side edge of said rollers such that only a single file of articles will be permitted to pass by said discs and remain on said conveyor, whereby said one open edge of the rollers permits excess articles to be pushed thereover to leave said single file thereof.

4,353,456
CAPSULE ORIENTATION CONTROL METHOD AND APPARATUS

Taizo Yamamoto, Osaka, Japan, assignor to Nippon Elanco Kabushiki Kaisha, Osaka, Japan
Filed Apr. 23, 1980, Ser. No. 143,020
Claims priority, application Japan, Apr. 27, 1979, 54-53033; Jun. 28, 1979, 54-82843
Int. Cl.^{3} B65G *47/24*
U.S. Cl. 198—397 **25 Claims**



1. A method of controlling orientation of a plurality of capsules accommodated in any arbitrary posture in a supply hopper having its bottom portion opened, and each composed of a substantially cylindrical body and a substantially cylindrical cap which is mounted on the body so as to overlap one end portion of said body to define a capsule chamber, by causing said capsules to be individually and successfully received in a plurality of radially inwardly extending stepped capsule accommodating pockets which are formed in a rotary drum supported substantially below said bottom portion of said supply hopper for rotation in one direction and which are spaced from each other at equal intervals around the periphery of said rotary drum so as to transport the capsules accommodated in said capsule accommodating pockets through rotation of the rotary drum in a circumferential direction of said rotary drum for directing the capsules in a predetermined posture during the transportation thereof, said method comprising the steps of:
receiving and holding the capsules from said supply hopper in such a manner that the axes of the capsules are aligned with the radial direction of said rotary drum such that it can be spatially identified that the capsules are stably held in said capsule accommodating pockets with the caps thereof selectively radially outwardly orientated in an erect posture or radially inwardly orientated in an inverted posture through action of rotary brush means rotatably provided in a position adjacent to a portion of said rotary drum where the capsules are received onto said rotary drum from said supply hopper, wherein part of the bodies of said capsules in the inverted posture extend substantially outwardly from the periphery of said rotary drum due to the stepped nature of said pockets for discrimination of the capsules in the inverted posture from the capsules in the erect posture which are housed entirely within the respective capsule accommodating pockets and
causing the capsules in said inverted posture to collide with a first attitude altering stopper plate means so as to fall down within said capsule accommodating pockets in a predetermined direction.

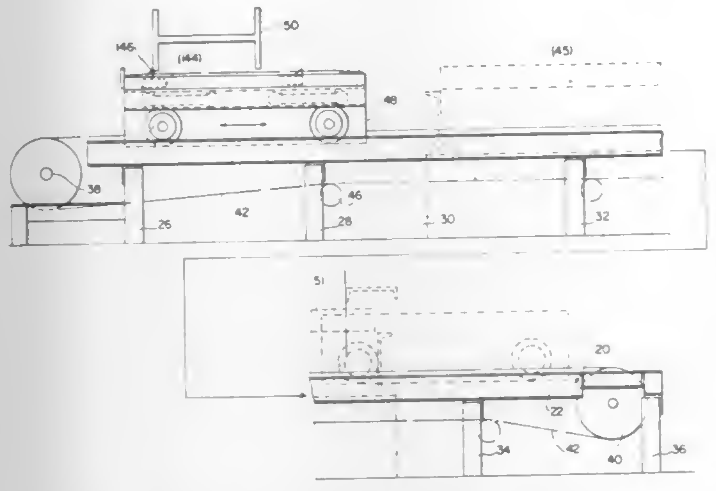
4,353,457
AIRLIFT

Ernest K. Haley, Louisville, Ky., assignor to Lerco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 32,833, Apr. 24, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,641

Int. Cl.³ B65G *25/00, 37/00, 19/02*

U.S. Cl. 198—774 7 Claims



1. A roller carriage and I-beam transfer table operable for storage and lateral transfer of I-beams and the like onto an axial conveyance which has a line of travel 90° to the transfer table, including the combination of:

A. A table having:
  (i) a plurality of pairs of longitudinally extending I-beam stationary supports, and
  (ii) a pair of roller carriage tracks supported between each pair of I-beam supports; and
B. A roller carriage reciprocably supported upon said roller carriage tracks intermediate ech pair of I-beam supports and further including:
  (i) a wheeled base including two pairs of wheels engaging said roller carriage tracks and mounted upon transverse axes;
  (ii) a vertically expansible mid-section including an inflatable bladder; and
  (iii) a roller top supported upon said expansible mid-section and having a plurality of roller trains mounted upon axes parallel to the axes of said pairs of wheels adapted to engage an I-beam flange, each said train extending in a longitudinal direction and each roller train further comprising a first roller mounted upon a first transverse axis and a second roller mounted upon a second transverse axis which is transversely and longitudinally spaced from said first transverse axis wherein each roller train is positioned, so that the first and second transverse axes of each roller train are staggered with respect to the corresponding first and second transverse axis of adjacent roller trains, whereby a plurality of rollers per linear inch are provided in said longitudinal direction upon said supports;
  (iv) a conveyor drive means extending longitudinally between each pair of longitudinal I-beam supports, said conveyor drive means being rotatably mounted fore and aft with respect to said roller trains, such that said conveyor drive means extends longitudinally intermediate said roller carriage tracks; and
  (v) a dog supported upon said conveyor drive means operable to engage the transversely and vertically extending flanges on an I-beam and the like in order to laterally transport said I-beam upon said roller trains at a right angle, with respect to said transverse axes, and longitudinally, with respect to said longitudinal extending supports; and
C. Means expanding said expansible mid-section, so as to raise said roller tops above said longitudinally extending supports, and an I-beam supported thereon, for lateral transfer of the I-beam from said transfer table to an adjacent conveyance line.

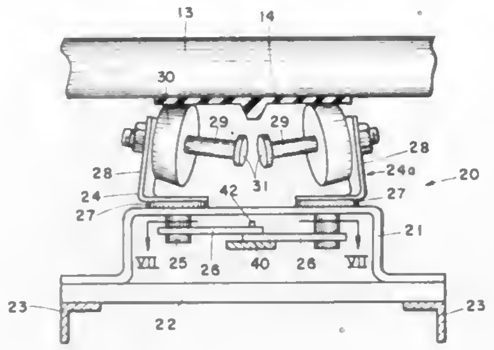
4,353,458
BELT SUPPORTS FOR ACCUMULATORS

Charles W. Saur, Sparta, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed May 9, 1980, Ser. No. 148,546

Int. Cl.³ B65G *13/06*

U.S. Cl. 198—781 **17 Claims**



1. Support means for the flat drive belt of a conveyor for moving articles along the conveyor, said support means having a pair of rollers contacting the lower surface of said belt, said rollers being laterally spaced and rotatably independent of each other, said support means characterized in that said rollers are each mounted on a separate shaft, each of said rollers being tapered and having a belt contacting surface of greater diameter at one end than at the other, means mounting said shafts to be inclined in a horizontal plane in opposite directions to each other and vertically inclined to the plane of the surface of said belt, the angle of vertical inclination being substantially equal to the taper of said rollers, said shafts being longer than said rollers and said rollers being axially movable along said shafts while the belt contacting surfaces of said rollers remain in a common horizontal plane parallel to the plane of the bottom surface of said belt.

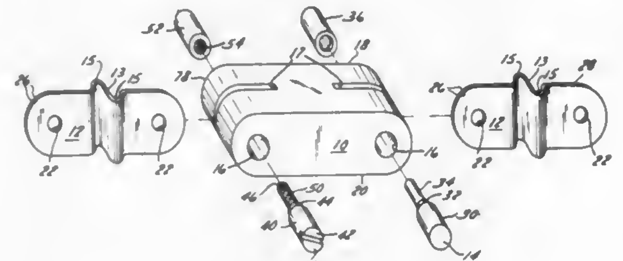
4,353,459
CONVEYOR CHAIN

Victor D. Petershack, Elm Grove, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Feb. 28, 1980, Ser. No. 125,593

Int. Cl.³ B65G *17/06, 17/38*

U.S. Cl. 198—852 **9 Claims**



1. A conveyor chain comprising:

(a) A plurality of block links having a transverse hole near each lengthwise end, connected together in end-to-end relation;

(b) A plurality of flexible links, each flexible link comprising a thin longitudinal mamber having a transverse hole near each lengthwise end, each thin longitudinal member being positioned between and forming the primary connection between successive block links, each flexible link hole being aligned with a block link hole in successive block links; said flexible links having an undulated shape at their central portion so as to promote lateral flexing of the chain in the central portions of said flexible links and away from said block links; and

(c) Attachment means engaging said block link holes and said flexible link holes for joining said block links to said flexible links.

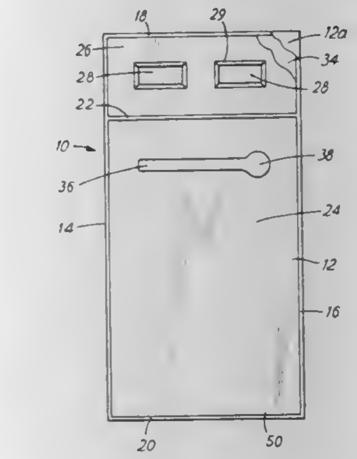
4,353,460
POUCH FOR ARMS AND AMMUNITION

Richard D. Kahn, Johannesburg, South Africa, assignor to Kahn & Kahn Plastics (Proprietary) Limited, Edenvale, South Africa

Filed Aug. 18, 1980, Ser. No. 179,221

Int. Cl.³ B65D *77/38, 33/08;* **F42B** *37/00, 39/00*

U.S. Cl. 206—3 **16 Claims**



1. A pouch for arms and ammunition comprising

a sealed plastic sheet means forming a water impervious chamber,
a plastic strip member bonded on to said plastic sheet means,
a tag member at one end of the strip member which is unattached to the plastic sheet means,
a pair of spaced parallel lines of weakness in the plastic sheet means immediately below and running along the length of the strip member,
a weakness in the plastic sheet means between the lines of weakness and near the strip adjacent the tag member, and
handle means to facilitate carrying the pouch,
the arrangement being such that when a pull or tug is applied to the tag member, the plastic sheet means thereunder will tear at the said weakness and along the said lines of weakness leaving a slot through which the contents of said pouch can be reached.

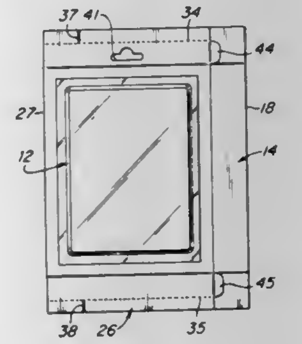
4,353,461
MERCHANDISE PACKAGING SYSTEM

Wang-Tao Liang, A2, 3rd Fl. Mount Trio Ct., Waterloo Road Hill, Kowloon, Hong Kong

Filed Oct. 7, 1980, Ser. No. 194,822

Int. Cl.³ B65D *5/54, 65/06, 65/12*

U.S. Cl. 206—45.34 **9 Claims**



1. A display package for displaying merchandise and for subsequently boxing said merchandise, comprising

a card foldable back on itself to provide a generally planar multilayer display card and the other face of said card is folded directly on itself wherein one face of said card provides the front and back exposed surfaces of said display card,
means secured to said one face on the front of said display card for holding merchandise against said one face, and
said card being provided with a plurality of fold lines and slits to permit said card to be folded along said lines to form a polygonal box wherein said one face of said card constitutes the interior surface of said box and said other face of said card constitutes the exterior surface of said box and said merchandise held against said one face is enclosed by said box.

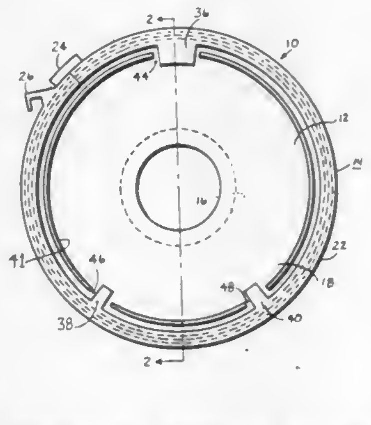
4,353,462
KEYED COMPUTER REEL AND SEALING RING ASSEMBLY

Aloysius J. Polaneczky, 7 Red Oak Rd., Oreland, Pa. 19075

Filed Nov. 3, 1980, Ser. No. 203,501

Int. Cl.³ B65D *45/32, 85/67;* **B65H** *75/02;* **B65D** *55/02*

U.S. Cl. 206—53 **5 Claims**



1. A reel and sealing ring assembly for computer tape and the like, wherein said reel comprises a central spool and pair of spaced flanges, and wherein said sealing ring comprises a flexible strap for sealingly encircling the reel, and the improvement to ensure that a corresponding reel and strap are assembled, comprising:

(a) a first formation on one edge of said strap;
(b) a second formation, complimentary to said first formation on one of said flanges; and
(c) a third formation complimentary to the other edge of said strap and uncomplimentary to said first formation.

4,353,463
RESIN-CONTAINING CARTRIDGES AND PROCESS FOR SEALING SOLID STRUCTURES OR FOR ANCHORING BOLTS AND RODS THEREIN

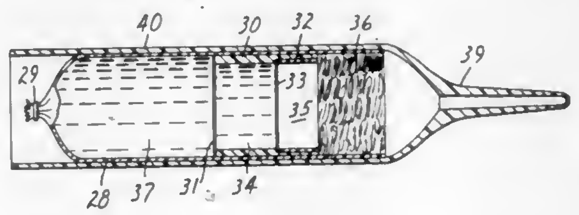
Ronald W. Seemann, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 67,044, Aug. 16, 1979, Pat. No. 4,253,566. This application Jan. 19, 1981, Ser. No. 226,386

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—220 **3 Claims**



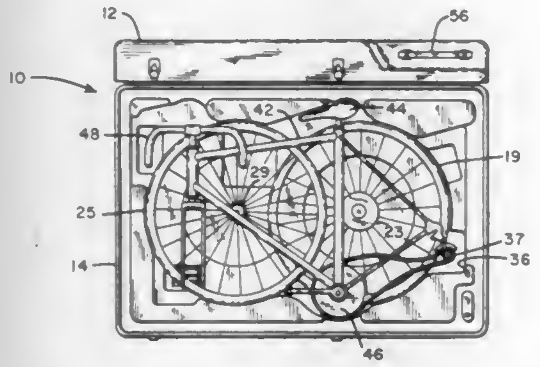
1. A cartridge assembly which comprises:

(a) a cartridge containing at least two segregated components of a multi-component curable resin system, which cartridge comprises

(1) a generally cylindrical, rupturable container containing at least one component of said multi-component curable resin system;
(2) integral therewith, at one end of and in axial alignment with said generally cylindrical, rupturable container, a mixer having an inlet and an outlet and comprising a liquid permeable, three-dimensional matrix having a plurality of continuous flowpaths therethrough, essentially all of these flowpaths being non-linear; and
(3) means for selectively rupturing said rupturable container at the end thereof adjacent the inlet of said mixer assembly; and

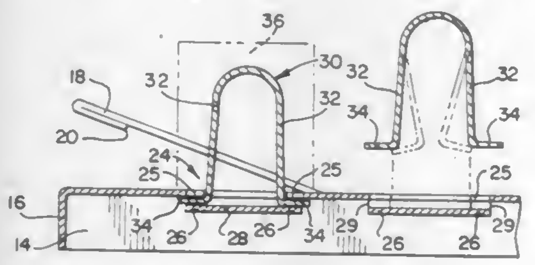
(b) nozzle means at the outlet of said mixer assembly to dispense the curable resin system.

4,353,464
BICYCLE STORAGE AND TRAVEL CASE
James S. Bentler, 105 E. Toledo St., Duluth, Minn. 55811
Filed Apr. 27, 1981, Ser. No. 257,513
Int. Cl.³ B65D ***85/68***
U.S. Cl. 206—335 15 Claims



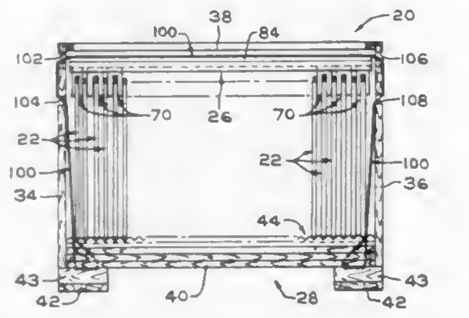
1. A container for the storage and transport of a disassembled bicycle, comprising:
(a) a first container section having an outer cover, an intermediate plastic foam filler and an inner formed surface contour, said surface contour having a lower level circular recess adapted for seating a first bicycle wheel and a higher level circular recess adapted for seating a second bicycle wheel in partial overlapping of said first wheel, and a plurality of further recesses for accepting further bicycle assemblies; and
(b) a second container section having an outer cover, an intermediate plastic foam filler and an inner formed surface, whereby said second section may be closed over said first section.

4,353,465
PORTABLE TRAY FOR MECHANICS SOCKETS
Robert J. Rado, 5330 W. Fletcher, Chicago, Ill. 60641
Filed Jun. 11, 1981, Ser. No. 272,510
Int. Cl.³ B65D ***85/20, 1/34***
U.S. Cl. 206—378 7 Claims



1. A tool storage device for retaining sockets used in ratchet wrenches, the improvement comprising:
a tray having a top and supporting means to dispose the top in a position spaced above a supporting surface;
opening means located in the top and providing a plurality of seat means with a base located below said top and having means connecting with the top and forming a continuation thereof and also providing spaced slits;
resilient retaining fingers having upstanding sides and having leg means extending outwardly and spaced apart a distance greater than the distance between the spaced slits whereby when the leg means are located in the slits a retaining biasing force is provided to hold the fingers securely in position.

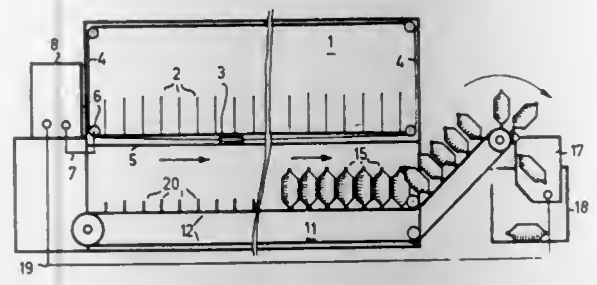
4,353,466
SLOTTED SUPPORT LOGS FOR SHEET SHIPPING CONTAINERS
Walter E. Pater, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sep. 17, 1980, Ser. No. 187,879
Int. Cl.³ B65D ***85/48***
U.S. Cl. 206—453 15 Claims



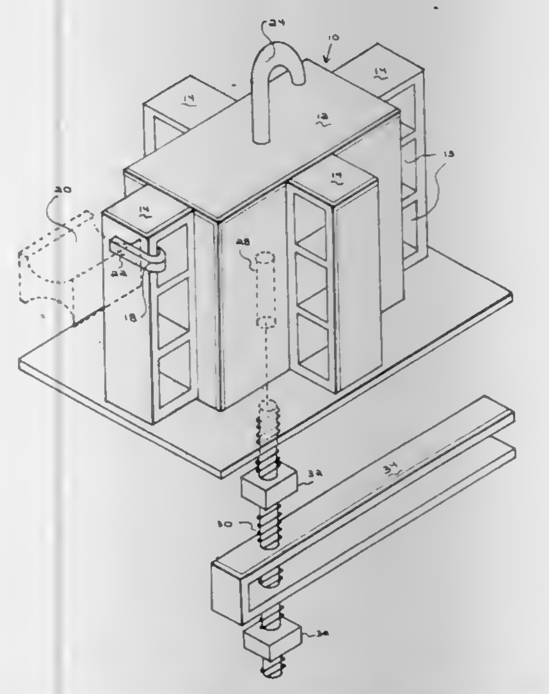
1. A shipping container, comprising:
a base;
a plurality of glass sheets having a bottom edge portion and an opposite upper edge portion;
means mounted on said base for supporting bottom edge portion of said sheets, said supporting means includes a pair of sheet supporting and retaining logs, at least one of said logs comprising an elongated member having a longitudinally extending sheet edge supporting surface having an adhesive surface and at least one row of spaced uprights forming sheet edge receiving recesses therebetween, said recesses generally transverse to the longitudinal axis of said member, wherein said sheets have bottom edge portions mounted in selected ones of the sheet edge receiving recesses to space adjacent sheets; and
means mounting said upper edge of said sheets for biasing said sheets against said adhesive surface to minimize motion of said sheets along a path transverse to the longitudinal axis of said member.

4,353,467
SORTING OF SPINNING BODIES
Isidor Harzenmoser, Wallisellen, Switzerland, assignor to Zellweger Uster A.G., Uster, Switzerland
Filed Sep. 22, 1980, Ser. No. 189,706
Claims priority, application Switzerland, Oct. 29, 1979, 9659/79
Int. Cl.³ B65G ***47/24;*** **B07C** ***5/00***
U.S. Cl. 209—559 14 Claims

1. A method of sorting spinning bodies on spinning machines having plural spinning stations comprising the steps of detecting a qualitative feature of each of the spinning bodies at said spinning stations in the spinning machine during spinning; simultaneously removing all of said spinning bodies at said spinning stations; transporting said bodies to an ejection point in the machine; sorting said bodies downstream of said ejection point in accordance with the detected qualitative feature into at least two categories; and dispensing said sorted bodies into respective containers.

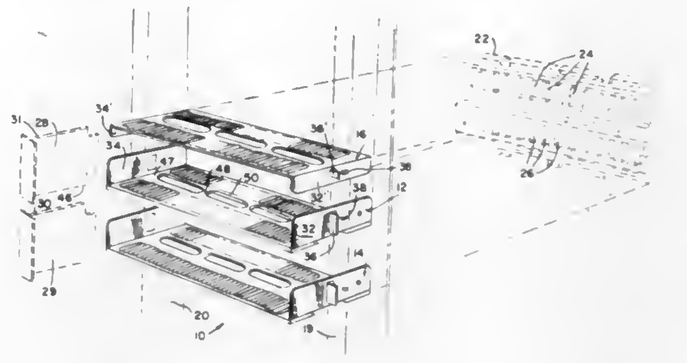


4,353,468
PORTABLE HAND STAMP STORAGE AND DISPLAY DEVICE
Lon C. Klingamon, 1725 Fox Plaza, San Francisco, Calif. 94102
Filed Feb. 6, 1980, Ser. No. 119,039
Int. Cl.³ A47F ***5/02***
U.S. Cl. 211—39 8 Claims



2. A portable storage and display device for at least one hand stamp comprising:
(a) a support member provided with a bore extending into a lower surface thereof;
(b) at least one elongated lattice member provided with a plurality of spaced apart apertures, said lattice member being attached to said support member such that said apertures are substantially unobstructed;
(c) clip means removably engagable with said lattice member, whereby at least a portion of said clip means extends within one of said apertures;
(d) means for attaching a hand stamp to said clip means; and
(e) base means including a U-shaped jaw piece, an elongated rod coupled to said jaw piece and having an upper end removably engaging said bore provided in said support member, and means urging the jaws of said jaw piece together to clamp to a support surface.

4,353,469
SUPPORT SHELF FOR PRINTED CIRCUIT BOARDS
John O. Etchison, Jr., Clemmons, and Robert H. W. Jones, Jr., Greensboro, both of N.C., assignors to Western Electric Co., Inc. and Bell Telephone Laboratories, Inc., both of New York, N.Y.
Filed Apr. 4, 1980, Ser. No. 137,330
Int. Cl.³ H05K ***7/18***
U.S. Cl. 211—41 7 Claims



1. A support shelf which comprises:
a first planar sheet-like support section having a plurality of elongated parallel guide channels defined by opposed parallel ribs projecting out of the plane of said support section;
at least one planar sheet-like guide section extending parallel to said first planar support section and having a plurality of elongated parallel guide channels defined by opposed parallel ribs projecting out of the plane of said guide section, the opposed parallel ribs of said first support section projecting in a first direction away from said guide section and the opposed parallel ribs of said guide section projecting in second direction away from said first support section;
a wall interconnecting said first planar support section and said planar guide section;
a second planar sheet-like support section arranged in the plane of and spaced from said first support section to define an opening therebetween, said second planar support section having a plurality of elongated parallel guide channels defined by opposed ribs projecting out of the plane of said second support section in the same direction as the ribs of said first support section, and the elongated guide channels of said second support section being longitudinally aligned with respective ones of the elongated guide channels of said first support section; and
rigid means extending between said first and second support sections for interconnecting said first and second support sections.

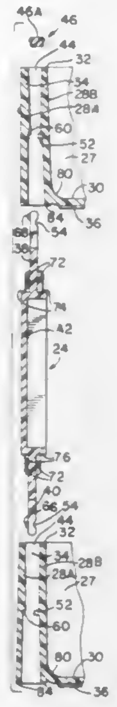
4,353,470
VERTICALLY STACKABLE TRAY SET
Marlan H. Polhemus, Chicago, and Peter L. Ferrante, Evanston, both of Ill., assignors to Tenex Corporation, Elk Grove Village, Ill.
Filed Feb. 28, 1980, Ser. No. 125,345
Int. Cl.³ A47F ***3/14***
U.S. Cl. 211—126 6 Claims

1. In a vertically stackable tray set of the type adapted to sit upon a horizontal surface and including at least one tray having upstanding wall means, at least one tray connector, at least one bayonet on said connector, and at least one space in the interior of said wall means for receiving said bayonet; the improvement comprising:
a first upright surface within said interior space and a first side of said bayonet having thereon respective means adapted to interfit;
and a second upright surface within said interior space, confronting said first upright surface, and a second side of said bayonet, facing oppositely to said first side thereof,

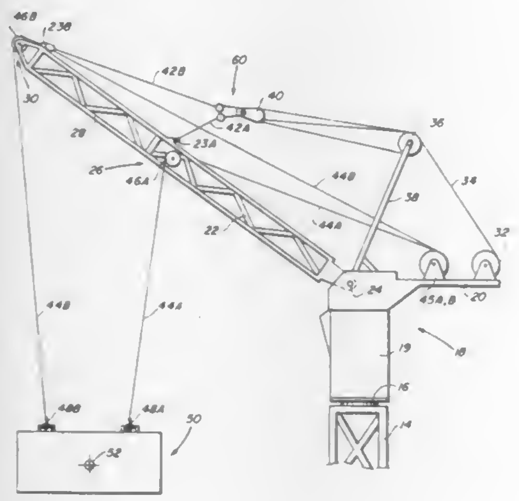
having respective means thereon adapted to interengage for crowding said interfitting means into engagement with each other;

said interengaging means comprising respectively a projection extending horizontally into said interior space from said second upright surface thereof and a projection extending horizontally toward said second upright surface from said second side of said bayonet and adapted to impinge upon said projection of said second upright surface;

said projection on said second upright surface being in the form of a step having a horizontally facing tread surface and a vertically facing riser surface, and said projection on said second side of said bayonet being adapted to ride past said tread surface of said step and at least partly across said riser surface thereof.



4,353,471
APPARATUS FOR AND METHOD FOR LIFTING LARGE OBJECTS
Dalvin S. Palmer, 5466 W. Cambridge, Phoenix, Ariz. 85035
Filed Mar. 31, 1980, Ser. No. 136,168
Int. Cl.³ B66C *23/06*
U.S. Cl. 212—259 6 Claims



1. A crane apparatus especially useful for lifting bulky loads, comprising:

boom means for attaching to said load at spaced-apart portions thereof;

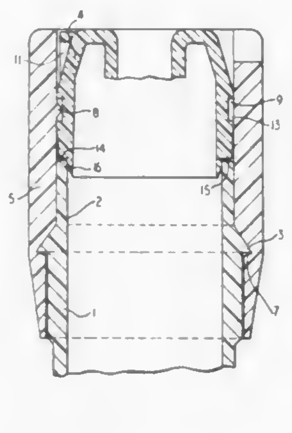
boom support means coupled to said boom means for providing a plurality of boom supports;

said boom means comprising a jib base; a boom apparatus pivotally attached to said jib base, said boom apparatus having a plurality of load sheaves provided with at least a first distance from said jib base to a first load sheave and a second distance from said jib base to a second load sheave, said boom apparatus provided with a plurality of boom line anchor members, said boom line anchor members having at least a first distance from said jib base to a first boom line anchor member and a second distance from said jib base to a second boom line anchor member; a plurality of load lines coupled to said load and in communication with said plurality of load sheaves; said plurality of load lines including at least a first load line in communication with said first sheave and a second load line in communication with said second sheave; and at least one load hoist coupled to each of said load lines and supported by said sheave base;

said first distance to said first load sheave comprising approximately the same as said first distance to said first anchor member and said second distance to said second load sheave comprising approximately the same distance as said second distance to said second anchor member; and

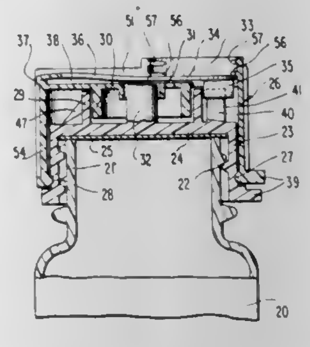
said boom support means comprising a boom hoist coupled to said jib base, a boom hoist line column supported by said jib base, a boom hoist line in communication with said boom hoist line sheave and anchored to said boom hoist, and said boom support means further comprising boom load distributor means for connecting said plurality of anchor members to said boom hoist line.

4,353,472
CLOSURES FOR CONTAINERS
George W. Burton, London, and Eugene F. Davis, Ilford, both of England, assignors to Johnsen & Jorgensen (Plastics) Limited, London, England
Filed Feb. 2, 1981, Ser. No. 230,416
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—211 6 Claims



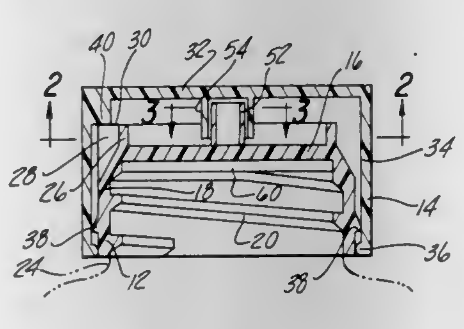
1. A closure cap for closing the mouth of a container comprising an inner member including a plug and an outer member including a depending skirt, characterized in that when the cap is in operative position on the container the inner member is coaxially disposed within the upper part of the outer member, the plug being seated so as to close the mouth of the container with the top of the inner member flush with or below the top of the outer member, the upper part of the outer member being positioned above the mouth of the container, and the skirt of the outer member being positioned so as to embrace and engage with the outer surface of the container around the mouth.

4,353,473
PUSH BUTTON SAFETY CAP FOR CONTAINERS
Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415
Continuation-in-part of Ser. No. 169,840, Jul. 17, 1980, Pat. No. 4,285,437. This application May 29, 1981, Ser. No. 268,278
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—220 14 Claims



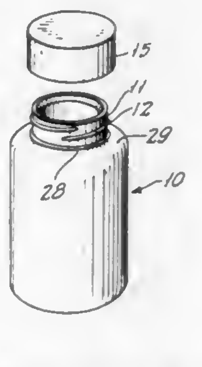
11. A safety cap for threaded containers of harmful substances comprising rotationally connected inner and outer cap components, the inner cap component being threaded for engagement with the threads of a container, a push button element on the end wall of the outer cap component having an attached depending drive lug, a plurality of circumferentially spaced fixed lugs on the opposing end wall of the inner cap component and lying on a substantially common radius and having inclined ramp surfaces engageable with said drive lug of the push button element to raise the push button element during relative rotation of the two cap components, one of said fixed lugs of the inner cap component having a positive drive surface substantially normal to the end wall of the inner cap component and being engageable by the drive lug of the push button element when the latter is in a depressed driving position to cause release of the safety cap from a container, a spring ramp element rising from the end wall of the inner cap component and lying between a pair of said fixed lugs of the inner cap component and having a free end extending above the tops of said fixed lugs, and a driving element on the outer cap component separate from and spaced circumferentially from the depending drive lug of the push button element and being engageable with the free end of said spring ramp element during the screwing down of the safety cap on a container to drive the inner cap component to a fully tightened position.

4,353,474
LOAD BEARING CLOSURE
Charles E. Luker, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Jun. 10, 1981, Ser. No. 272,294
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—220 11 Claims



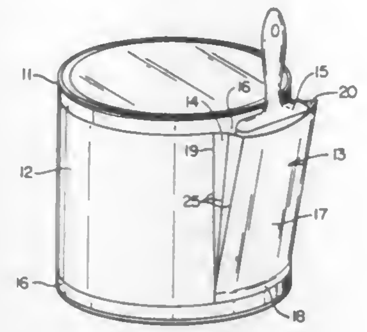
1. A screw-type closure comprising: a relatively flexible outer cap and a relatively rigid inner cap nested together and forming an annular zone between said caps, a plurality of ribs disposed on one of said caps in uniformly spaced relationship in said annular zone, a plurality of lug elements formed on the other of said caps and corresponding in number to the number of said ribs, each of said lug elements having a first drive surface engageable with a rib to turn said caps as a unit to a closing position on a container and a second drive surface normally spaced axially of said ribs to prevent engagement therewith upon rotation of said outer cap in an opening direction relative to said inner cap, said second drive surfaces being engageable with said ribs upon axial deflection of said outer cap and simultaneous rotation relative to said inner cap to turn said caps as a unit in an opening direction for removing said closure from a container, said ribs and lug elements having complementary load bearing surfaces engageable with each other upon rotation of said inner and outer caps to a predetermined position to prevent axial displacement of said outer cap relative to said inner cap and absorb axial loads on said closure.

4,353,475
SAFETY CLOSURE DEVICE
Nicholas W. Kachur, Clark, and Anthony F. Tomburo, Cranford, both of N.J., assignors to Gibson Associates Inc., Cranford, N.J.
Filed Jun. 11, 1981, Ser. No. 273,100
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—223 6 Claims



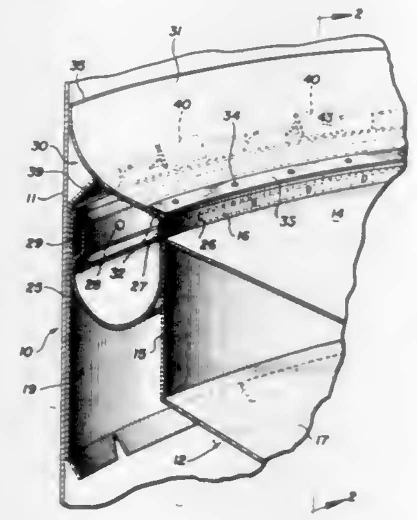
1. In combination, safety-closure structure comprising a bottle or the like container having a cylindrical neck member with an external thread of at least substantially one turn, a cup-shaped closure-cap member with a cylindrical bore wall having an internal thread of at least substantially one turn and removably engageable with said external thread, the effective width of each of said threads in the axial direction being less than half the helically advancing pitch of said threads, resilient circumferentially extending continuous seal means within said cap member and coacting with said neck member throughout at least a substantial fraction of the threaded engageability of said cap and neck members, said fraction being to and including an angular cap-to-neck relation wherein cap-member closure of said neck member is complete, whereby said seal means continuously loads the cap threads into axially upward engagement with the axial underside of the neck threads at least in on-threading approach to said angular relation of completed cap-member closure of said neck member, a radially inward locking lug integral with the bore wall of said cap member and axially offset from said internal thread, and a radially outward locking lug integral with said neck member and axially offset below said external thread, said lugs having cammed transiently deforming interaction upon approach to said completed-closure relation and escaping into a locking interaction upon achievement of said completed closure position, said neck lug and cap lug being of such limited axial extent that, when in the completed-closure relation, said cap member may be axially downwardly displaced in further compression of said seal means to angularly clear the engagement of said lugs thereby to permit otherwise-free unthreading manipulation of said cap member.

4,353,476
PAINT APPLICATOR HOLDER
Charles F. Cowgill, 387 Amity Rd., Galloway, Ohio 43119
Filed Jul. 7, 1980, Ser. No. 166,584
Int. Cl.^{3} B65D *25/20*
U.S. Cl. 220—85 D **5 Claims**



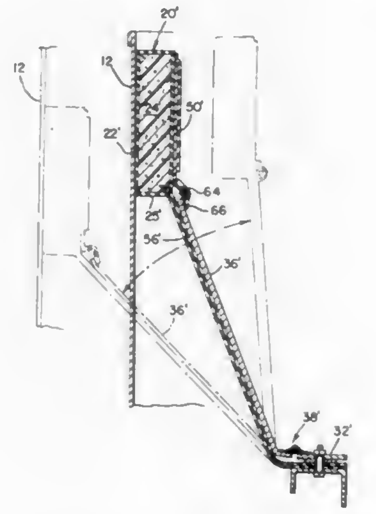
1. A receptacle for a paint applicator, constructed to be adhered to the side of a paint container, comprising:
- a. an attachment wall surface formed to meet two sets of edge members, the edge members of each set being formed in a folded bellows construction;
- b. an outer wall having a top, sides, and bottom, and being attached to one of said sets of members at each of said sides;
- c. an adhesive composition disposed upon the attachment wall surface, and the bottom of the outer wall, the composition being formulated for adherence to the outer surface of the paint container, the attachment wall surface, and the bottom of the outer wall; and
- d. the receptacle being formed from a sheet which in its developed form before assembly on the paint container comprises, at least one attachment wall portion beside a portion having at least one crease, beside a portion comprising the outer wall, beside another portion having at least one crease, beside an attachment wall portion, the creases being means to form the bellows in the assembled position on the paint container.

4,353,477
FLOATING ROOF METALLIC SHOE SECONDARY SEAL
Robert A. Bruening, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.
Filed Sep. 30, 1977, Ser. No. 838,051
Int. Cl.^{3} B65D *88/46*
U.S. Cl. 220—224 **2 Claims**



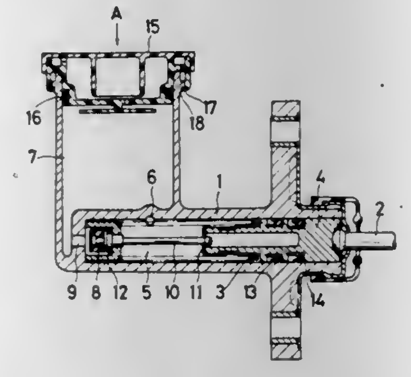
1. In a liquid storage tank having a floating roof, a plurality of shoes adapted to slidably contact the inner side wall of the tank, and means supported by the roof for pressing the shoes against the inner side wall, and a fabric vapor barrier extending from the roof to the shoes, the improvement comprising:
- an elastomeric strip, impermeable to vapor, in the form of an annulus connected at its bottom edge portion by an essentially vapor tight joint to the top circumference of the roof and with its top edge portion in movable sealing contact with the tank inner wall above the top of the shoes,
- said strip being arced upwardly from the roof and supported intermediate its bottom and top edges by support means, mounted on the upper portion of the shoes, in contact with the lower surface of the elastomeric strip,
- the support means and lower surface of the elastomeric strip being in slidable contact with each other, and
- the support means is a T-shaped clip attachment having two legs which receive a shoe top edge therebetween.

4,353,478
VAPOR SEAL FOR FLOATING ROOF TANK
William F. Clark, Rte. #1, Box 208-A, Glasgow, Va. 24555
Continuation of Ser. No. 68,457, Aug. 21, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,227
Int. Cl.^{3} B65D *88/46, 88/50*
U.S. Cl. 220—224 **10 Claims**



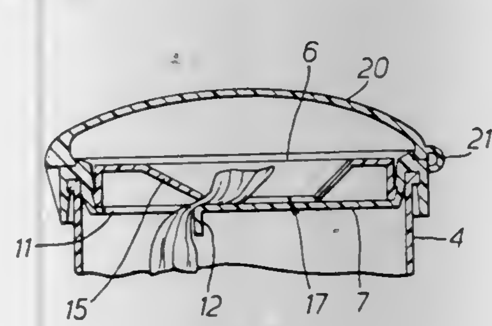
1. In a storage tank for liquids such as petroleum liquids and the like, comprising a generally upstanding cylindrical tank wall and disposed within said wall a generally circular roof therefor adapted to float horizontally upon the contents of the tank in vertically movable relation according to a variation in the volume of such contents, a clearance space being defined between the inner wall surface of said tank and the outer peripheral rim of said floating roof, in combination, an improved vapor seal for said clearance space comprising a resilient pad extending annularly around the inner wall surface of the tank in vertically spaced relation above the roof rim, said pad being elongated in vertical cross section with a height substantially greater than its thickness and having two oppositely facing tall faces extending between upper and lower ends, said pad being arranged with its height direction extending generally vertically so that one of said tall faces faces generally radially outwardly and the opposite tall face faces generally radially inwardly; a casing constituted of durable material resistant to attack by the liquid being stored tightly enveloping said pad in generally tubular fashion and having sections thereof generally coextensive with the tall pad faces, at least one of which sections is adhered to the corresponding pad face; a plurality of supports for the annular pad arranged around said roof rim in peripherally spaced apart relation, each of said supports comprising a base affixed to the roof rim, a substantially rigid arm hingedly connected at its lower end to said base and extending generally upwardly therefrom, a separate extension at the upper end of said arm, a hinged connection between the upper end of said rigid arm and the lower end of said extension, and means for biasing said extension generally radially outwardly of said arm about said hinged connection; means anchoring said extension to the casing section corresponding to the inwardly facing tall pad face over more than half the tall dimension thereof; means for biasing said arm outwardly from said base to urge the outer face of the pad toward said tank inner wall; and a skirt of flexible impervious material extending from the casing to the tank rim to close the space therebetween.

4,353,479
MASTER CYLINDER RESERVOIR AND COVER FASTENING MEANS
Kaoru Nakamura, Anjo, and Akira Funabashi, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jun. 3, 1981, Ser. No. 270,000
Claims priority, application Japan, Jun. 12, 1980, 55-81044[U]
Int. Cl.^{3} B65D *41/06, 41/36*
U.S. Cl. 220—301 **5 Claims**



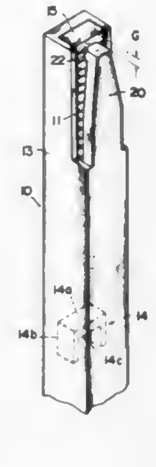
1. A master cylinder reservoir including a reservoir cap fixed in an open portion of said reservoir, said reservoir comprising:
- a cam means formed on the periphery of said reservoir in the direction meeting at right angles with the axial center of said reservoir, said cam means being of a circular arc configuration so as to gradually increase its radius;
- a nail means formed on said reservoir cap and having tip end bended inside, said nail means being displaced outwardly during engaging with said cam means;
- a guide means formed on the upper end of said cam means wherein the lower end of said guide means may be formed so as to agree with at least the upper end of said cam means;
- a gloove-hole means formed between the end portion of said cam means defined by the maximum radius portion of said cam means and a stop means formed on said reservoir.

4,353,480
CLOSURE FOR A DISPENSER CONTAINER
Robert C. McFadyen, North Ryde, Australia, assignor to Lever Brothers Company, New York, N.Y.
Continuation of Ser. No. 47,428, Jun. 11, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,832
Int. Cl.^{3} A47K *10/38*
U.S. Cl. 221—63 **3 Claims**



1. A dispenser-container for a perforated web of tissues comprising an open top tub-like container for storing a web of tissues and a closure formed by an inner and an outer diaphragm each having an opening therethrough, the openings being adjacent to and completely out of register with each other, at least one of the diaphragms being resilient to urge the diaphragms together and resiliently seal one of the openings, the tissue web being threaded in turn through the opening in the inner diaphragm and the opening in the outer diaphragm.

4,353,481
MAGAZINE FOR STORING AND SUPPLYING CIRCUIT ELEMENTS
Shuichi Tando, Tokyo, Japan, assignor to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Japan
Filed Oct. 17, 1980, Ser. No. 198,232
Claims priority, application Japan, Oct. 23, 1979, 54-145893[U]; Oct. 23, 1979, 54-145894[U]
Int. Cl.^{3} G07F *11/16;* **B65D** *85/62, 83/00*
U.S. Cl. 221—251 **5 Claims**



1. In a magazine for storing and supplying circuit elements having a tube which stores the plurality of circuit elements in a stacked state within a bore thereof, the tube having an open upper discharge end, the bore being adapted to receive a plug member so as to be movably disposed within the bore for supporting the stacked circuit elements, the improvement comprising:
- an elastic member provided at one side of a region of the upper discharge end of said tube, said elastic member having a free end, and a keeper pawl formed at the free end of said elastic member extending inwardly into the bore for holding under pressure a leading one of the circuit elements within said bore, said keeper pawl having a free end which is located lower than the discharge end of said tube;
- said bore being defined by inner surfaces of said tube, at least one of said inner surfaces having at least one inwardly protruding rib which extends continuously in a longitudinal direction; and
- a plug member including a platform portion adapted to support the circuit elements from below in a stacked state and engaging portions integral with said platform portion, said engaging portions elastically engaging the inner surfaces of said tube so that said plug member is prevented from falling within said tube under its own weight;
- whereby the circuit elements can be discharged from the upper discharge end in an axial direction.

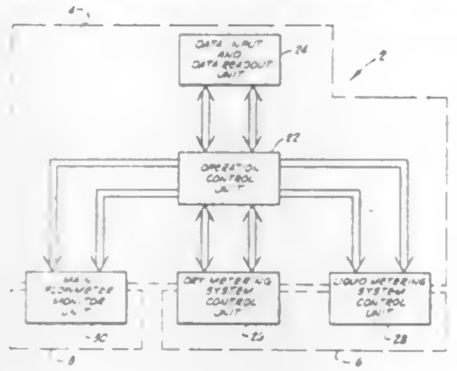
4,353,482
ADDITIVE METERING CONTROL SYSTEM
Harvard L. Tomlinson, and Stephen F. Crain, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Jan. 23, 1980, Ser. No. 114,615
Int. Cl.^{3} B67B *7/00;* **G05D** *11/02*
U.S. Cl. 222—1 **37 Claims**

1. An additive metering control system comprising:
- means for determining the amount of an additive being discharged from an additive container;
- means for sensing the amount of a primary substance being discharged from a primary substance container;
- means, responsive to said additive determining means and said primary substance sensing means, for controlling the

amount of the additive being discharged from the additive substance container; and

said primary substance sensing means including:

means for generating a first electrical signal proportional to the flow rate of the sensed primary substance;


4
DATA INPUT AND DATA READOUT UNIT
24
2
22
OPERATION CONTROL UNIT
MAIN FLOWMETER MONITOR UNIT
DRY METERING SYSTEM CONTROL UNIT
LIQUID METERING SYSTEM CONTROL UNIT
30
26
28
8
6

means for simulating a flow rate of the primary substance and for generating a second electrical signal proportional to the simulated flow rate; and

means for switchably communicating said first electrical signal generating means and said simulating and generating means with said controlling means.

4,353,483

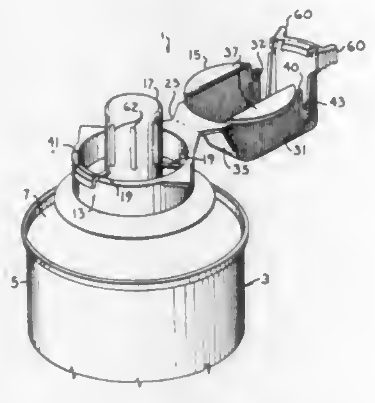
CONTAINER CAP HAVING SAFETY LOCKING MEANS

Harold T. Pehr, 253 Merihil Office Center, 6900 W. 80th St., Overland Park, Kans. 66204

Filed Nov. 24, 1980, Ser. No. 209,671

Int. Cl.^{3} B65D *47/08*

U.S. Cl. 222—153 **14 Claims**



1. A closure cap for use with a material dispensing container having a material dispensing nozzle; said cap comprising:

(a) a ring portion adapted to securely engage an aerosol can;

(b) a closure member hingedly connected to said ring portion;

(c) securing means to selectively secure said closure member in covering relationship with said nozzle such that said closure member is manipulative between a covering and a noncovering position thereof with respect to said nozzle; and

(d) a tamper guard member removably connected to said ring portion in covering relation with respect to said nozzle and adapted to prohibit manipulation of said nozzle prior to removal of said guard member from said ring by a user of said can.

4,353,484

COFFEE FILTER WITH FLOW DIVERTER

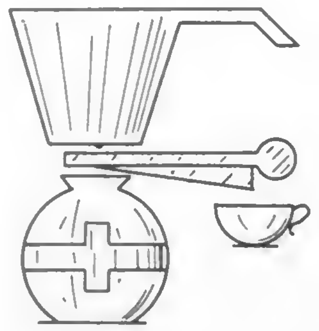
Russell C. Crawford, III, 6991 Juana Dr., Millington, Tenn. 38053

Filed Mar. 11, 1980, Ser. No. 129,670

Int. Cl.^{3} B67C *11/00*

U.S. Cl. 222—189 **1 Claim**

1. I claim a coffee filter and flow diverter having a coffee filter for attachment to a drip coffee maker; an outlet in the bottom of the filter; a pivot on the bottom surface of the filter offset from said outlet; a pivoted valve attached to said pivot on said filter; said pivoted valve comprising an elongated upwardly open trough; said trough sloping downwardly from a point near said pivot to the side opposite said pivot and having a trough outlet located at the lowest point of the trough; wherever the trough is pivotable to a position under said filter outlet to divert flow from said filter outlet to a point below the trough outlet.



4,353,485

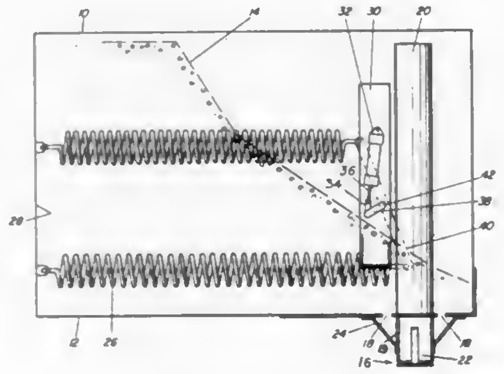
APPARATUS FOR CONVEYING PARTICULATE MATERIAL BY SPRING EXPANSION AND CONTRACTION

Robert J. Chilko, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 12,323, Feb. 15, 1979, abandoned. This application Jun. 4, 1979, Ser. No. 45,190

Int. Cl.^{3} G01F *11/18*

U.S. Cl. 222—243 **6 Claims**



1. Apparatus for moving particulate material substantially horizontally comprising a container having an inlet, an outlet and an unperforated bottom except for said outlet adjacent an end of said bottom, at least one coil spring disposed substantially horizontally in the container with one end of said spring anchored to the container distal from said outlet and the other end of the spring adjacent said outlet attached to means for cyclically extending and contracting at least a portion of said spring to move particulate material in the container toward said outlet for gravity discharge therefrom, said spring in its contracted state having gaps between adjacent coils and at least a major portion of said spring overlying said unperforated bottom.

4,353,486

Patent Not Issued For This Number

4,353,487

DOSIFYING CONTAINERS FOR GRANULATED PRODUCTS, PULVERULENT PRODUCTS, ETC.

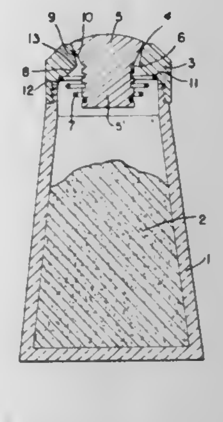
Jose Ferrante, Gran Canaria 329, 1868 Quilmes Pcia. de Buenos Aires, Argentina

Filed Jan. 11, 1977, Ser. No. 758,502

Claims priority, application Argentina, Jan. 16, 1976, 261949

Int. Cl.^{3} A47G *19/24;* **B65D** *47/00*

U.S. Cl. 222—500 **8 Claims**



1. A container for dispensing granular or powdery products including a receptacle for containing the product, a cap having a bottom portion assembled on said receptacle and having a top portion provided with an aperture for the egress of the product, said cap aperture including a circular periphery having a reduced diameter portion disposed axially inwardly from the outer endmost portion of said cap aperture periphery, a plug disposed within said aperture and having an uppermost enlarged portion sealingly engageable with said periphery of said cap aperture at a point outwardly beyond the innermost portion of said reduced diameter portion, said plug including a lower body extending downwardly from said uppermost enlarged portion into the interior of said container, said plug lower body having an axially extending cylindrical periphery provided with a diameter less than the diameter of the adjacent said plug uppermost enlarged portion and of said cap aperture reduced diameter portion, a spring having one end secured to said plug lower body, said spring radially extending from said plug lower body and having its other end secured relative the inner wall of said container, said plug lower body cylindrical periphery provided with a plurality of shallow grooves thereon, said grooves angularly offset relative the vertical longitudinal axis of said plug to provide grooves running other than parallel to said plug longitudinal axis, said spring normally biasing said plug uppermost enlarged portion downwardly into sealing engagement with said aperture, said grooves on said plug lower body displaceable upon axial reciprocation of said container to axially displace said plug against the force of said spring and project at least a portion of said grooves through said cap aperture whereby, upon inversion of said container the product gravitates to the juncture of said plug and cap and sudden axial reciprocation of said container alternately displaces said plug against and with the force of said spring to reciprocate said plug lower body axially of said cap aperture as said grooves thereon engage, capture and propel the product from the interior of said container through said cap aperture.

4,353,488

FLEXIBLE CONTAINER WITH DISPLACEABLE FITTING AND PROBE COUPLER APPARATUS

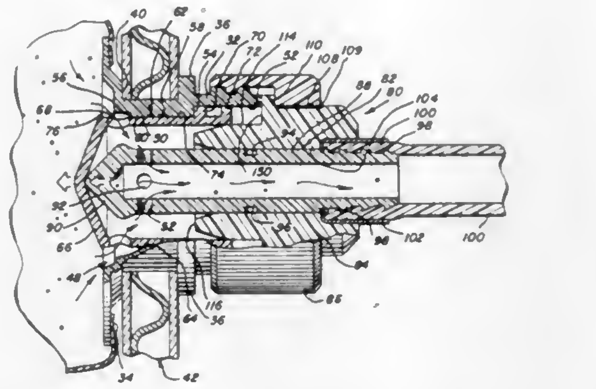
John W. Schneiter, Arlington Heights, and Lawrence R. Hogan, Lake Villa, both of Ill., assignors to Container Technologies, Inc., Barrington, Ill.

Continuation of Ser. No. 142,154, Apr. 21, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 285,937

Int. Cl.^{3} B65D *47/28*

U.S. Cl. 222—501 **11 Claims**

1. In combination a fitment for a flexible food container, a displaceable seal plug, and a probe connector therefor, said fitment comprising a base flange portion capable of being joined to a wall of the flexible container and a hollow cylindrical spout portion extending therefrom, said spout portion having a passageway communicating with the container's interior, said spout portion further including detent means and lock means formed on the interior thereof; said displaceable seal plug comprising a tubular body portion characterized as having first drain means, said tubular body portion having blade means formed on the outer periphery thereof and terminating in an end cap portion, said seal plug capable of being slidably received within said passageway of said spout portion and characterized as being detachably retained within said passageway when said blade means engages said detent means and further characterized as being lockably retained within said passageway when said blade means engages said lock means; said probe connector comprising probe adapter means, push probe means slidably supported within said probe adapter means, and means for detachably securing said probe adapter means and supported push probe means to said fitment, said push probe means having second drain means, said push probe means characterized when secured to said fitment as operable upon the sliding displacement thereof to engage said end cap portion of said seal plug and to slidably displace said seal plug farther into said fitment thereby effecting communication between the interior of the flexible container, said first drain means, and said second drain means.



4,353,489

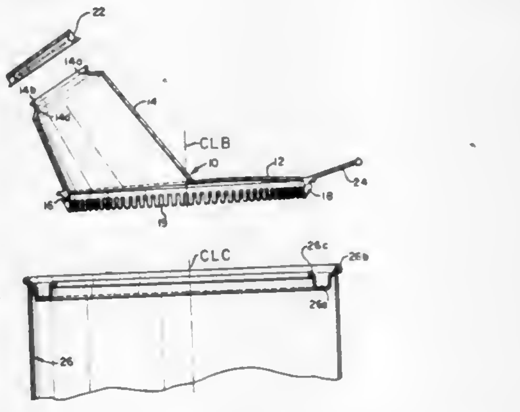
COMBINED LID AND POURING SPOUT FOR A CONTAINER HAVING A U-SHAPED SEALING CHANNEL

Everett L. Arnold, 459 Juniper St., and James M. Moore, 1144 Northfield Cir., both of Warminster, Pa. 18974

Filed Sep. 22, 1980, Ser. No. 189,632

Int. Cl.^{3} B65D *25/48*

U.S. Cl. 222—570 **2 Claims**



1. A lid, for a container having a U-shaped sealing channel the walls of which terminate in inner and outer ring beads, comprising:

a disc-shaped base of flexible material having an upwardly cambered surface and an integral annular skirt depending from said base, said skirt having inner and outer surfaces, said outer surface having an integral annular sealing groove for closely engaging said inner ring bead, said outer surface being axially longer than said inner surface and spaced inwardly from the periphery of said base;

a plurality of integral flexible wedge shaped tangs regularly spaced about the circumference of said skirt and pendent therefrom, each of said tangs having an inner face radially coextensive with the inner surface of said skirt and substantially parallel to the center line of said base and having an outer face extending downwardly and inwardly from a radius intermediate the periphery of the base and the outer surface of said skirt; and

an integral, conically tapering, radially offset spout projecting upwardly at an inclined attitude from said base and terminating in a flared sharp-edged lip projecting beyond and above the periphery of said base, said spout having a neck formed below said lid with an interior diameter smaller than the remainder of said spout.

4,353,490

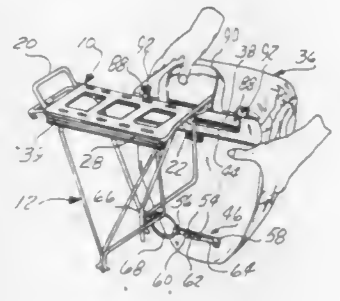
PANNIER MOUNTING SYSTEM FOR CYCLES

W. Shaun Jackson, 809 Sycamore, Ann Arbor, Mich. 48104, and Leslie E. Bohm, 29560 Rutherland, N., Southfield, Mich. 48076

Continuation-in-part of Ser. No. 84,400, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 768,467, Feb. 14, 1977, Pat. No. 4,174,795. This application Oct. 14, 1980, Ser. No. 196,426

Int. Cl.³ B62J *9/00*

U.S. Cl. 224—32 A **16 Claims**



1. A pannier mounting system for mounting panniers on a cycle vehicle having a longitudinal axis frame and a rear wheel, comprising:

rack means including a platform and means adapting said platform to be horizontally mounted on said cycle frame over said rear wheel of said cycle vehicle;

means for mounting a pannier on said platform by guided sliding longitudinal interengagement therebetween;

a member relatively stiff in a longitudinal direction and secured to said pannier extending downwardly from the platform; and

means for releasably securing said pannier against longitudinal relative movement with respect to said platform, the securing means including a locator element mounted to the lower region of said member and adapted to engage relatively stationary structure carried by said cycle vehicle thereby precluding disengagement of said pannier and said platform by relative longitudinal movement therebetween after installation thereof, the locator element being generally elongate and including a plurality of recesses therein adapted to engage the stationary structure, said securing means further including means for retaining said locator element in engagement with said stationary structure.

4,353,491

METHOD FOR SHAPING AND PARTITIONING A FIBROUS BATT

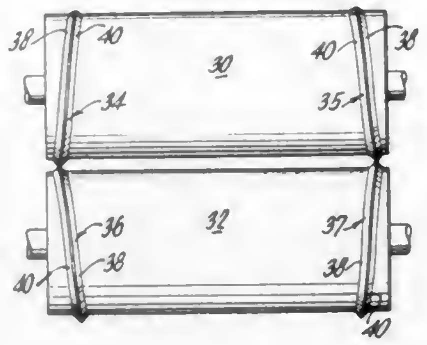
Anthony Passafiume, Burbank, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 51,562, Jun. 25, 1979, Pat. No. 4,279,369. This application Nov. 17, 1980, Ser. No. 207,108

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—3 **5 Claims**



1. A method for shaping a batt of loosely compacted short fibers comprising: conveying a batt of loosely compacted short fibers in a direction, gripping the batt along a first path with a resilient means engaging a first surface of the batt and non-resilient means engaging a second surface of the batt, said path being a substantially sinuous line disposed adjacent a longitudinal edge of the batt, substantially simultaneously gripping the batt along a second path immediately adjacent said first path with a non-resilient means engaging said first surface of the batt and resilient means engaging said second surface of the batt, substantially immediately thereafter displacing said first and second paths with respect to each other from the plane of the batt and on opposite sides of said plane, and releasing the batt to provide a shaped batt.

4,353,492

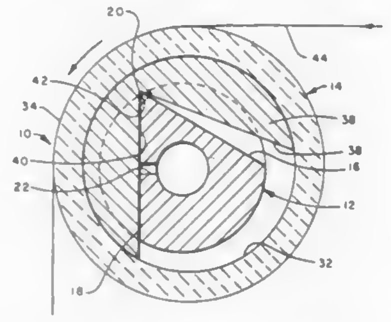
ENDS-DOWN SENSOR DEVICE

Albert E. Spaller, Jr., Johnson City; Bruce W. Stockbridge, and Thomas D. Meredith, Jr., both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 17, 1981, Ser. No. 284,024

Int. Cl.³ B65H *63/02*

U.S. Cl. 226—11 **6 Claims**



1. An ends-down sensor device adapted to detect the breakage or absence of a cabinet end of filamentary yarn normally in frictional engagement with said sensor device and to activate a suitable signal device upon detecting such breakage or absence, said sensor device comprising:

a fixed center post adapted to be positioned so that its axis lies in a horizontal plane and having two flat surfaces extending along the length thereof and intersecting at a first predetermined angle to form an exterior vertex, said center post defining in the face of one of said flat surfaces an orifice from which air is adapted to flow, and defining therewithin a conduit passageway connected at one end to said orifice and at the other end to a source of air supply for said air flow and to said suitable signal device, and;

a cylindrical roller having an outer cylindrical surface and interiorly two flat surfaces extending along the length of the axis thereof and intersecting at a second predetermined angle greater than said first predetermined angle to form an interior vertex, said cylindrical roller being positioned upon said fixed center post with the interior vertex of said cylindrical roller being seated for pivotal movement upon the exterior vertex of said fixed center post in such manner that one of the flat surfaces of said cylindrical roller is normally in abutment with one of the flat surfaces of said fixed center post while the other of said cylindrical roller flat surfaces is normally spaced away from the other of said center post flat surfaces having said orifice;

said cylindrical roller, upon frictional engagement of a cabinet end with the outer surface of said cylindrical roller, being rotated about the exterior vertex of said center post until said other of said cylindrical roller flat surfaces is moved into abutment against said other of said center post flat surfaces, thereby closing off said orifice and stopping any significant air flow therefrom.

4,353,493

ADVANCE MECHANISM

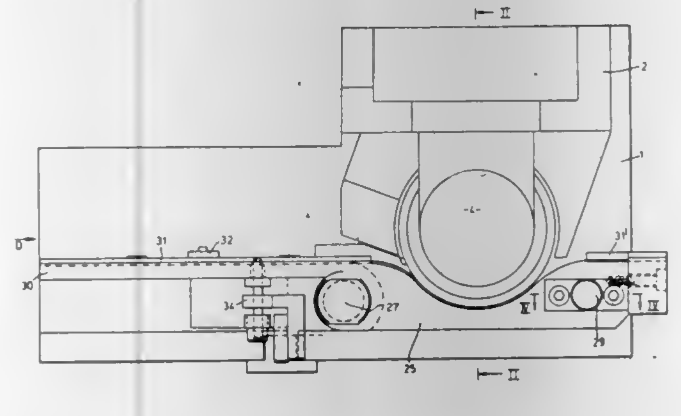
Zoran Perisic, Gwynfenton, White Well, St. Teath, Cornwall, England

Filed Apr. 23, 1980, Ser. No. 142,961

Claims priority, application United Kingdom, Apr. 25, 1979, 7914477

Int. Cl.³ B65H *17/36*

U.S. Cl. 226—158 **11 Claims**



5. A film advance mechanism comprising:

a film track along which film is arranged to be advanced;

a film advance member;

means supporting said film advance member adjacent the film track for unidirectional rotation about an axis;

means for moving the film advance member into engagement with the film so as to advance the film during a part of each revolution of the film advance member;

and means for moving the film advance member to disengage it from the film during the rest of each revolution, whereby the film is intermittently advanced by a predetermined increment during each revolution.

4,353,494

PROCESS AND APPARATUS FOR THE MANUFACTURE OF ANNULAR WORK PIECES FOR SUBSEQUENT CONVERSION INTO FINISHED PRODUCTS

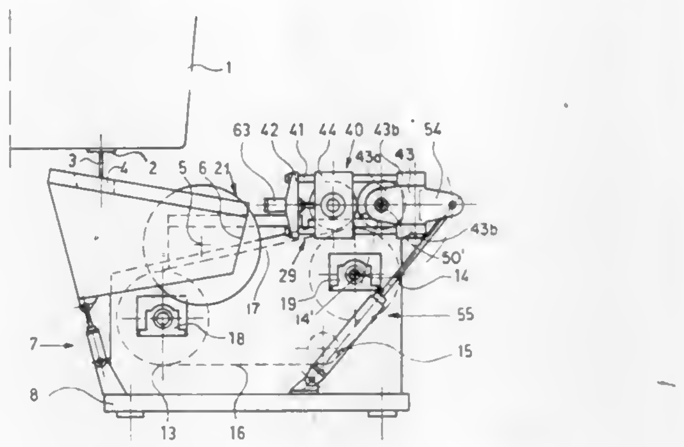
Erik A. Olsson, Rotfluhstrasse 15, CH-8702 Zollikon/ZH, Switzerland

Continuation of Ser. No. 912,479, Jun. 5, 1978, abandoned. This application Aug. 12, 1980, Ser. No. 177,437

Claims priority, application Switzerland, Jun. 7, 1977, 6997/77

Int. Cl.³ B23K *28/02*

U.S. Cl. 228—143 **20 Claims**



15. The process for manufacturing a semi-finished workpiece in the form of an annulus and primarily useful for subsequent manufacture by rolling, foregoing or extrusion operations into seamless products in the form of tubes, rings and hoops comprising:

a. winding a continuous length of strip metal into a coreless annulus between inner and outer parallel rollers forming between them a roll-pass, the inner one of which rollers is smaller in diameter than the center opening of the annulus being formed and with its axis of rotation eccentric to the axis about which said annulus rotates, feeding said metal strip heated to a pressure welding temperature to the roll pass at the same rate that the strip moves through the roll pass to avoid stretching or buckling of the heated strip, and driving the annular body being so wound and simultaneously pressure welded at a uniform peripheral speed notwithstanding its progressive increase in diameter from start to finish.

4,353,495

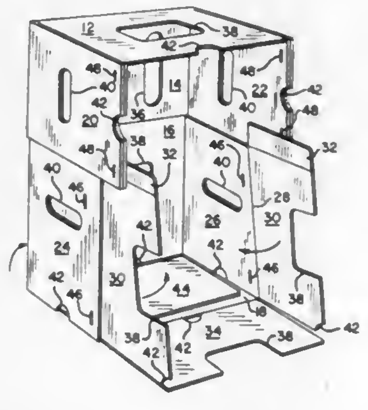
ASPARAGUS CARTON

Otto J. Jes, Long Beach, Calif., assignor to Willamette Industries, Inc., Portland, Oreg.

Filed May 18, 1981, Ser. No. 264,762

Int. Cl.³ B65D *5/00, 5/56, 25/00*

U.S. Cl. 229—16 R **8 Claims**



1. A substantially rectangular asparagus carton made from a single sheet of carton stock and comprising:

(a) a bottom, four sidewalls and a top;

(b) an inner sidewall having a trapezoidal configuration and including an edge slanted from the bottom corner of the carton to the top thereof at a point spaced apart from the adjoining sidewall; and

(c) an inner partition hinged to the slanted edge of the trapezoidal sidewall and reaching substantially from the bottom corner to the top of the carton, the partition sloping inwardly to provide an enlarged bottom area designed to accommodate the base portion of the asparagus stalks, and a restricted top area designed to support and protect the fragile top portion thereof.

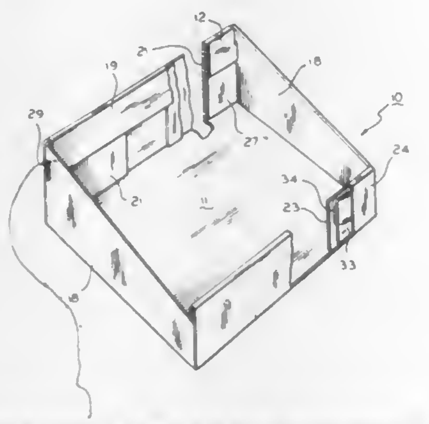
4,353,496
STACKABLE TRAY

Bennie C. Nelson, Jr., Romeoville, and Jeffrey M. Gardner, Wheaton, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 22, 1981, Ser. No. 227,544

Int. Cl.³ B65D *5/22*

U.S. Cl. 229—34 R **2 Claims**



1. A tray particularly adapted for arrangement in a stack so that the tray can be placed atop another similar tray, each tray being formed from a cut and scored blank of paperboard and comprising:

a rectangular center panel;

opposed end walls foldably connected to opposed ends of said central panel, one end wall being taller than the other end wall, each of said opposed end walls having inner and outer wall elements folded into facing relationship, said inner wall element of said one end wall having locking tabs;

opposed side walls foldably connected to said center panel;

said side walls tapering from a height at one end thereof corresponding to the height of one of said end walls to a height at the other end of said tapered side wall which is less than the height of the other end wall;

a flap joined to an end of said side walls adjacent said one end wall and being interposed between said inner and outer wall elements thereof, said flap having a slot formed therein for receipt of said locking tabs;

a first flap portion joined to an end of said side walls adjacent said other end wall, a second flap portion joined to said first flap portion and being folded into facing relationship, said first and second flap portions being interposed between said inner and outer wall elements thereof; and

said other end wall having an abutment along upper margins thereof for restraining movement of a superimposed tray out of a stacking arrangement.

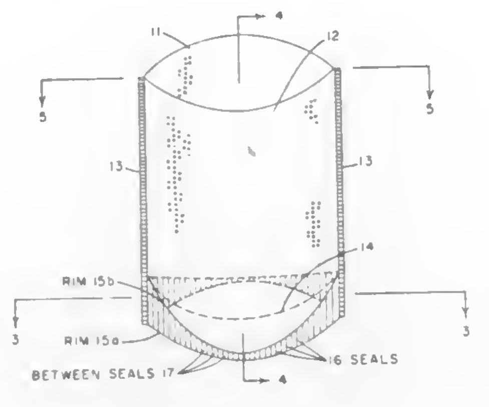
4,353,497
FREE-STANDING THERMOPLASTIC BAG CONSTRUCTION

Franz Bustin, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 85,183, Oct. 15, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,227

Int. Cl.³ B65D *33/02*

U.S. Cl. 229—55 **6 Claims**



1. A bag structure of thin thermoplastic material adapted to remain in an upright position when opened comprising front and rear bag walls, an open mouth at the upper edge of said walls, heat seal seams joining said bag walls together along longitudinal edges, and at least one bottom gusset fold forming a bag bottom wall said gusset fold having front and rear gusset walls which are sealed to the adjacent bag walls utilizing a plurality of spaced apart vertical heat seals which extend upwardly from bottom edges of the bag walls and respective gusset walls in a predetermined pattern wherein said vertical seals are arranged in order of descending height from each of said longitudinal bag wall edges toward the central portion of said gusset fold, whereby when the bag is open the bag is self supporting as a result of the stiffening effect of the vertical heat seals.

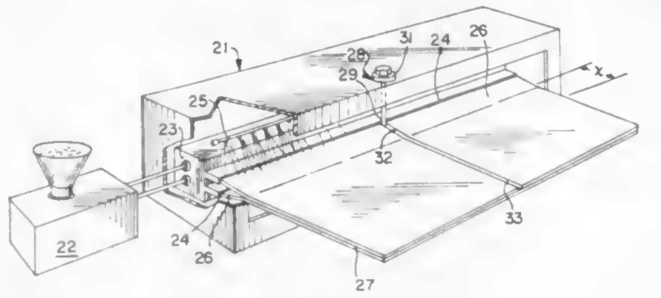
4,353,498
MULTIPLE PLY COEXTRUSION

Walter P. Scarberry, St. Charles, and Charles K. Vollman, Elgin, both of Ill., assignors to Health-Ex Corporation, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,749

Int. Cl.³ B29F *3/00;* **B65D** *65/28, 27/10*

U.S. Cl. 229—69 **27 Claims**



1. A multiple ply coextrusion film having a tear path, comprising:

coextruded multiple plys, at least one of said plys having a tear path therein;

said tear path being an extrusion interrupted elongated void within at least one of a plurality of molten extrudates, each said molten extrudate corresponding to one of said multiple plys of the film, said extrusion interrupted elongated void having been formed while the extrudate was in a molten state and prior to combining same into a mulitple ply coextruded film;

said tear path having an overall thickness that is less than the total thickness of the multiple ply coextruded film; and said extrusion interrupted elongated void is completely through the extrudate.

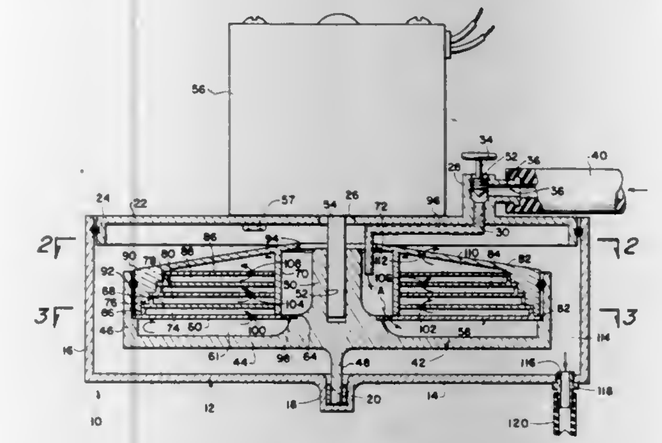
4,353,499
CENTRIFUGAL SEPARATOR

Edward Simonds, 1505 E. Kenosha, Broken Arrow, Okla. 74012

Filed Apr. 27, 1981, Ser. No. 257,732

Int. Cl.³ B04B *1/04*

U.S. Cl. 233—27 **7 Claims**



1. A centrifugal separator for a fluid stream and comprising stationary housing means, power means, drive drum assembly mens rotatably disposed within said housing means and operably connected with the power means for rotation thereby, inlet port means in communication with the interior of the drive drum assembly means for directing the fluid stream thereto, multiple fluid compartments provided in said drive drum assembly in successive downstream communication for successively receiving the fluid stream therein and centrifuging the fluid stream in each compartment during rotation of the drive drum assembly means, discharge port means provided in the drive drum assembly means in communication between the interior thereof and the interior of the housing means for delivery of separated fluid into the housing means, and discharge port means provided in the housing means for directing the separated fluid therefrom.

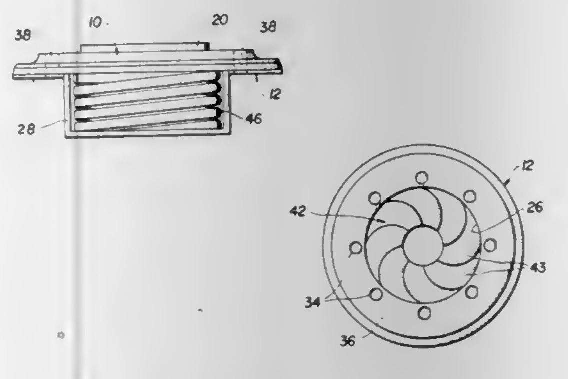
4,353,500
THERMOSTAT

George Brown, 317 S. Harbor Dr., Venice, Fla. 33595

Filed Feb. 26, 1981, Ser. No. 238,373

Int. Cl.³ F01P *7/02*

U.S. Cl. 236—34.5 **3 Claims**



1. A thermostat, comprising:

a cap member having a first flow opening therethrough;

a seat member secured to said cap member and having a second flow opening therethrough;

a gate member mounted in said second flow opening and having a plurality of gate sections movable between open and closed positions to control the flow of cooling liquid through said gate member; and

a bimetallic helical actuating member secured to said gate member and to said seat member and being rotatable to move said gate sections in response to predetermined engine temperatures to insure efficient engine operation and fuel savings;

said cap member being provided with a plurality of third flow openings that are smaller than said first flow opening, and said seat member being provided with a plurality of fourth flow openings that are smaller than said second flow opening, said third and fourth flow openings being of substantially the same size and in adjacent axially aligned relation, and fusible plugs disposed in said third and fourth flow openings, said fusible plugs being fusible at different engine temperatures to more closely control engine temperature and effect fuel savings.

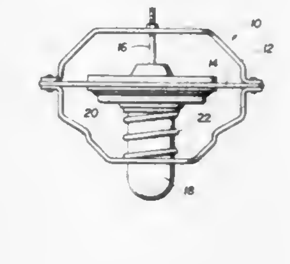
4,353,501
FUSIBLE AQUATIC DEVICE THAT WILL OVERRIDE THE FAILURE OF A DEFECTIVE THERMOSTAT OR THE LIKE WITHIN A MOTOR

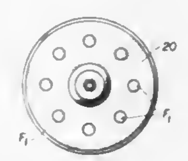
George Brown, 317 S. Harbor Dr., Venice, Fla. 33595

Continuation-in-part of Ser. No. 94,079, Nov. 14, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 245,181

Int. Cl.³ F01P *7/02*

U.S. Cl. 236—34.5 **5 Claims**





1. A thermostat for a liquid cooling system, comprising:

a seat member having a flow opening therethrough,

a closure member movable between an open position spaced from said seat member and a closed position in engagement with said seat member wherein it closes said flow opening, said closure member having a plurality of apertures therethrough,

means for biasing said closure member to the closed position,

temperature responsive means for moving said closure member to said open position against the force of said biasing means, and

fusible means in said apertures adapted to melt at different predetermined temperatures to closely control the temperature of the cooling liquid and to allow flow of cooling liquid past said closure member when it is in a closed position.

4,353,502
REMOTE CONTROLLING

Garrett R. Myers, Brighton, Mass., assignor to Marian B. Myers, Horseheads, N.Y.

Filed Mar. 19, 1980, Ser. No. 131,621

Int. Cl.³ H04M *11/00*

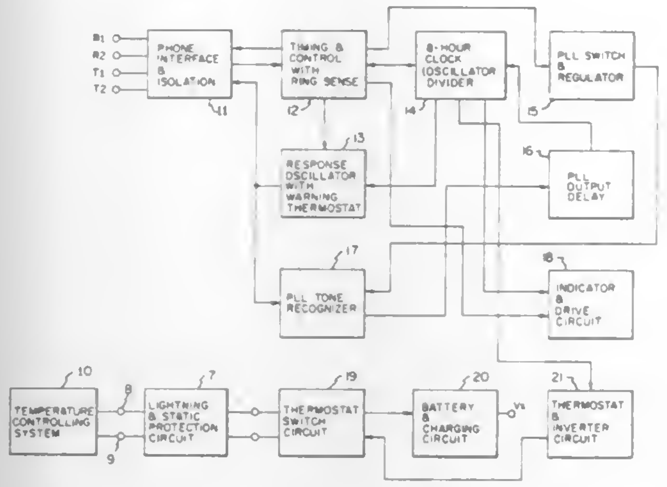
U.S. Cl. 236—47 **18 Claims**

1. Remote controlling apparatus comprising,

terminal means for connection to terminals of a system to be controlled normally controlled by first control means,

second control means for controlling said system,

means responsive to a remote control signal for selectively connecting said second control means to said terminal means to exercise control over said system, and timing means responsive to the occurrence of said remote control signal for enabling said second control


R1
R2
T1
T2
PHONE INTERFACE & ISOLATION
11
TIMING & CONTROL WITH RING SENSE
12
8-HOUR CLOCK (OSCILLATOR DIVIDER
14
PLL SWITCH & REGULATOR
15
13
RESPONSE OSCILLATOR WITH WARNING THERMOSTAT
16
PLL OUTPUT DELAY
17
PLL TONE RECOGNIZER
18
INDICATOR & DRIVE CIRCUIT
10
TEMPERATURE CONTROLLING SYSTEM
8
9
7
LIGHTNING & STATIC PROTECTION CIRCUIT
19
THERMOSTAT SWITCH CIRCUIT
20
BATTERY & CHARGING CIRCUIT
Vs
21
THERMOSTAT & INVERTER CIRCUIT

means to control said system only for a predetermined time interval.

4,353,503

RESILIENT MOUNTING FOR A RAIL ON ITS SUPPORT

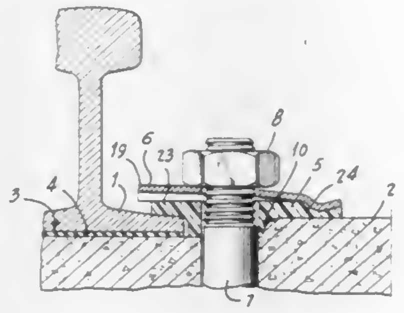
Michel Duchemin, Lambres Les Douai, France, assignor to Societe: Ressorts Industrie, Paris, France

Continuation-in-part of Ser. No. 914,086, Sep. 9, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 145,498

Claims priority, application France, Dec. 16, 1977, 77 38124

Int. Cl.³ E01B *9/30*

U.S. Cl. 238—349 **10 Claims**



1. A resilient mounting for a rail having a base flange resting on a support, said mounting comprising flexible liner means interposed between said base flange and said support and first and second rail clamp means respectively mounted on said support and engaging opposite sides of the base flange and each of said rail clamp means comprising:

(a) flexible rail restrainer means formed of material having essentially the same physical characteristics as nylon and having an upper surface and a lower surface with the lower surface engaging the upper surface of the base flange of a rail;

(b) a spring plate having upper and lower surfaces overlapping said flexible rail restrainer means and having a longitudinal edge overhanging inwardly beyond the portion of the rail restrainer engaging the base flange of the rail;

(c) clamping means extending through said flexible rail restrainer means and the spring plate for providing a downward clamping force to said spring plate; said longitudinal edge of said spring plate being parallel to and spaced above said rail and including an outer edge remotely positioned transversely from said base flange, wherein said longitudinal edge, in the unclamped state of the plate, is bowed in a plane parallel to the longitudinal axis of the rail but assumes a planar orientation upon actuation of said clamping means so that its lower surface flatly contacts the upper surface of the portion of the flexible rail restrainer means engaging the base flange so that the flexible rail restrainer forcefully engages the base flange to provide enhanced resistance to longitudinal movement of the rail.

4,353,504

HIGH PRESSURE SNOW GUN

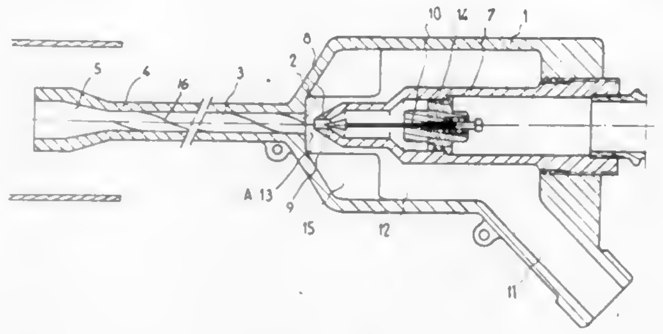
Pierre Girardin, St Herblain, and Max Duplan, Champagne au Mont d'Or, both of France, assignors to Le Froid Industriel York S.A., Paris, France

Filed Apr. 18, 1980, Ser. No. 141,425

Claims priority, application France, Apr. 20, 1979, 7910437

Int. Cl.³ F25C *3/04*

U.S. Cl. 239—14 **10 Claims**



1. A snow gun for making artificial snow by atomizing a mixture of air and water, said snow gun comprising a hollow body, a compressed air supply conduit or passageway terminated by an air injection nozzle, said injection nozzle being accommodated inside said hollow body and opening at an end into said hollow body, a pressurized water supply conduit or passageway opening into a space between said hollow body and said air supply conduit or passageway, a mixing chamber for mixing air and water communicating with the interior of said hollow body through an inlet port, said inlet port being located facing a discharge orifice of said injection nozzle, adjustment means for adjusting air flow and water flow passage into said mixing chamber, said mixing chamber being constituted by an elongated bore of a main nozzle extending in the continuation of said injection nozzle, and a divergent nozzle extending from the discharge end of said bore opening into the surrounding air.

4,353,505

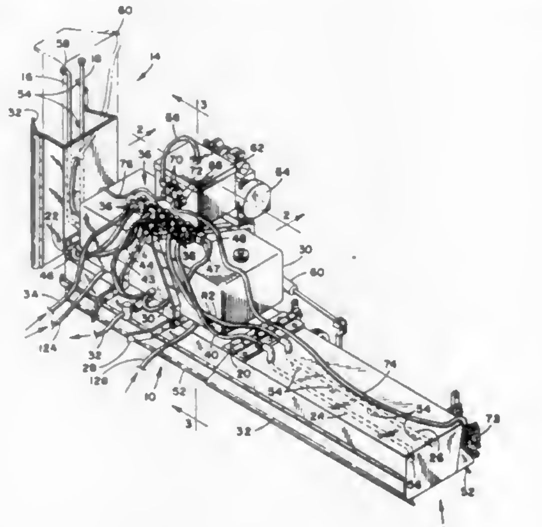
SPRAYING APPARATUS

Leon Kinder, P.O. Box AE, Denton, Tex. 76201

Filed Aug. 4, 1980, Ser. No. 174,953

Int. Cl.³ B05G *1/16*

U.S. Cl. 239—167 **9 Claims**



1. An improved drift free spraying apparatus adapted for movement in connection with a vehicle having a spray bar mounted within a bottomless, rectangular, box-type housing in communication with a fluid pump and reservoir assembly and adapted for emitting fluid in a mist configuration upon the surface to be sprayed through nozzles provided on said spray bar, said improvement comprising:

(a) an elongated, bottomless, rectangular, box-type housing having first and second outer sections hingedly attached to a center section, each of said housings having means for passing in close proximity to non-planar areas of said surface for confining spray within said housing,

(b) an individual spray bar mounted within each section,

(c) means coupled to each spray bar for individual control of the emitting fluid to said bar,

(d) means coupled to said first and second outer sections for selectively raising and lowering each section,

(e) a second spray bar in each of said first and second outer sections,

(f) at least one nozzle on the outer end of said second spray bar, and

(g) means coupled to each of said second spray bars for individual control of the emitting fluid thereto whereby raising of either one of said first and second outer sections enables selective spraying from said second spray bar nozzle to allow spraying around fence posts, hedges, ditches, and the like at increased distances and heights from and above said spraying apparatus.

4,353,506

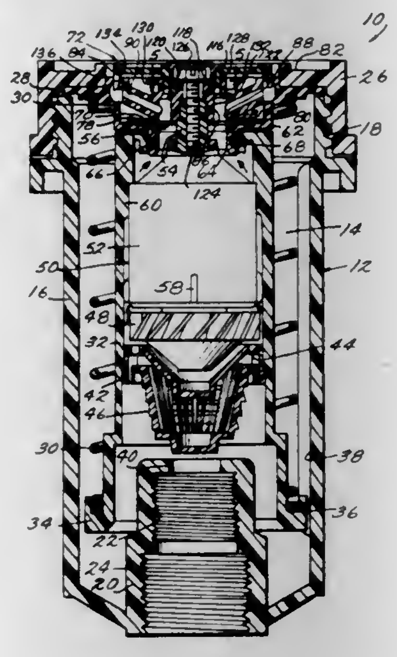
POP-UP SPRINKLER

Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.

Filed Sep. 15, 1980, Ser. No. 187,445

Int. Cl.³ B05B *3/04, 3/08*

U.S. Cl. 239—206 **22 Claims**



1. In a pop-up sprinkler assembly of the type including

a housing adapted to be installed in the ground for communication with a source of water under pressure and a sprinkler head structure mounted for movement from an inoperative position within said housing into an elevated operative position in response to the communication of a source of water with said housing, said sprinkler head structure including

rotary head means mounted for rotational movement about an upright axis, said rotary head means defining at least four passages disposed in annularly spaced relation about said axis, each of said passages having an inlet end for communication with water under pressure and an outlet end defining an upwardly and outwardly extending stream of water when the associated inlet end is communicated with water under pressure,

pattern defining plate means fixed in cooperating relation with respect to the inlet ends of said passages, and

means operable in response to the flow of water under pressure from said housing through said pattern defining plate means and into the inlet end of at least one of said passages for rotating said head means about its axis of rotation so that the stream of water issuing from the outlet end of each passage into which water flows is moved so as to fall throughout a ground pattern area determined by said pattern defining plate means, the improvement which comprises

manually operable means for adjusting the fixed cooperating relation of said pattern defining plate means with respect to said rotary head means so that the orientation of the ground pattern area within which the water streams fall can be easily determined with respect to said housing where the configuration of the pattern area provided requires such orientation.

4,353,507

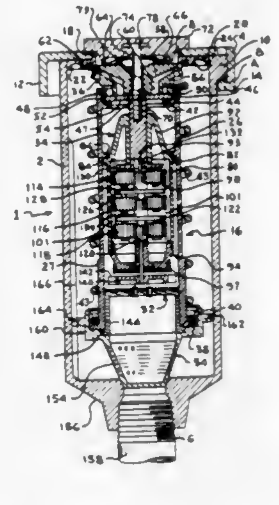
SPRINKLER HEAD

Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla. 33408

Division of Ser. No. 69,965, Aug. 27, 1979, Pat. No. 4,272,024. This application Apr. 6, 1981, Ser. No. 251,681

Int. Cl.³ B05B *3/16*

U.S. Cl. 239—240 **6 Claims**



1. A sprinkler head having nozzle means for directing fluid therefrom, drive means for rotating said nozzle means in response to fluid passing through said sprinkler head, said drive means including a gear reduction drive, said gear reduction drive being mounted in a housing, a fluid passageway extending around said housing, a pressure balance vent having an extended length being placed in said housing between the interior and the exterior thereof; wherein the bottom of said housing has a first flat surface thereon, a passage extending from the interior of said housing to said first flat surface, a cover having a second flat surface engaging said first flat surface, said cover being connected at the bottom of said housing, a long spiral groove formed in one of said flat surfaces, the inner end of said groove being connected to said passage, the outer end of said groove being connected to a passageway in said cover to the exterior of said housing.

4,353,508

NOZZLE WITH PRE-ORIFICE METERING RESTRICTION

Ted Butterfield, Naperville; Lyle J. Emory, Darien, and Daniel Filicicchia, Aurora, all of Ill., assignors to Spraying Systems Company, Wheaton, Ill.

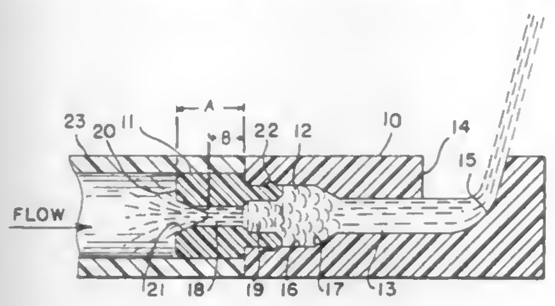
Filed Nov. 10, 1980, Ser. No. 205,276

Int. Cl.³ B05B *1/02*

U.S. Cl. 239—590.3 **11 Claims**

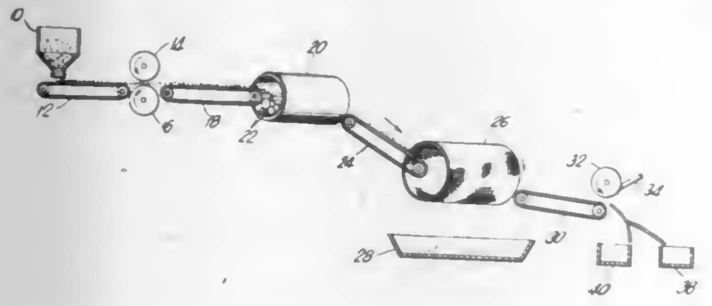
1. A spray nozzle and pre-metering orifice insert made of a plastic material from the group including nylon comprising a nozzle having a turbulence chamber therein and a discharge orifice, a separate pre-metering orifice member of non-uniform length secured in the nozzle and discharging directly into said

turbulence chamber, said orifice member having an opening and a central passage therethrough, and means intersecting the opening to said passage at the upstream side of the orifice member, comprising a formed slot of fixed size and shape on the upstream side of the orifice member disposed transversely of the member.



4,353,509
METHOD OF PREPARATION OF FIBERS AND FIBERS OBTAINED THEREFROM

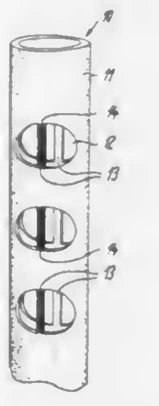
Clarence L. Bostian, Jr., 153 W. 44th St., New York, N.Y. 10036
Filed Apr. 28, 1981, Ser. No. 258,439
Int. Cl.³ B02C *19/12, 23/08*
U.S. Cl. 241—24 **9 Claims**



1. A method for reclaiming fibers from peanut shells comprising:
   (a) flattening the shells;
   (b) milling the flattened shells to produce a fiber fraction, and a residue fraction containing dirt, dust and shell particles; and
   (c) separating the fiber fraction from the residue fraction.

4,353,510
SPOOL BODY FOR HOLDING A PLASTER BANDAGE

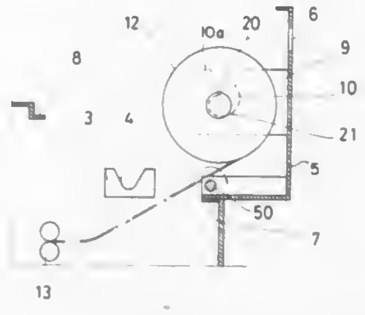
Otto Damke, Neuwied, and Hubert F. Reutter, St. Augustin, both of Fed. Rep. of Germany, assignors to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany
Filed Oct. 24, 1980, Ser. No. 200,485
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 7930408[U]
Int. Cl.³ B65H *75/10, 75/12*
U.S. Cl. 242—118.32 **6 Claims**



4. A cylindrical spool or reel body made of plastics material for receiving a plaster of Paris bandage in roll form and having apertures passing through said spool body, the improvement in combination therewith comprising: an outwardly facing surface of said spool body made uniformly rough, a web which spans each of said apertures and extending in the longitudinal direction of said spool body, longitudinally extending ridges provided on each of said webs, each of said ridges being in alignment with said outwardly facing uniformly rough surface of said spool body, and two rows of said apertures being provided diametrically opposite one another.

4,353,511
ROLL-PAPER SETTING MECHANISM

Masahiro Shimizu, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 31, 1980, Ser. No. 173,882
Claims priority, application Japan, Aug. 21, 1979, 54-115457[U]
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.53 **4 Claims**

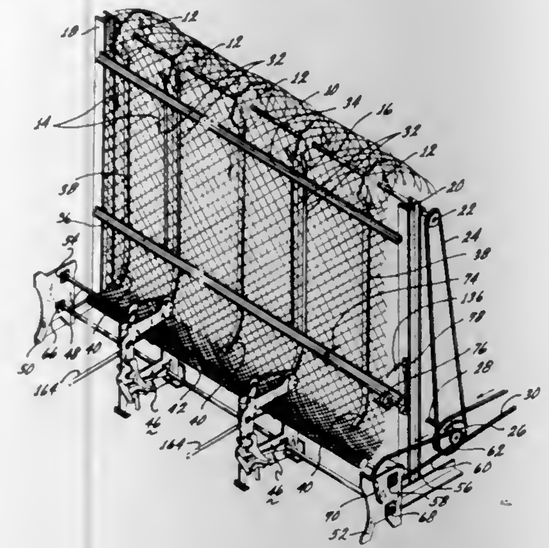


1. A roll-paper setting mechanism for setting a roll-paper in the paper feeding section of a housing having a pair of side walls of an associated apparatus which comprises:
- a first supporting means fixed to said housing of said paper feeding section comprising a first bearing portion having an open upper end formed in said first supporting means for rotatably supporting a roll-paper shaft;
- a cover means rotatably secured to said housing above said paper feeding section;
- a second supporting means fixed to said cover means at a position corresponding to said first supporting means, said second supporting means comprising a second bearing portion formed therein for preliminarily supporting said roll-paper shaft when said cover means is in an open or raised position and which transfers said roll-paper shaft, preliminarily supported by said second bearing portion, to said first bearing portion when said cover means is in a down or closed position, such that when said cover means is in said closed position the second bearing portion is located below the first bearing portion.

4,353,512
APPARATUS FOR ROLLING CHAIN LINK FENCE

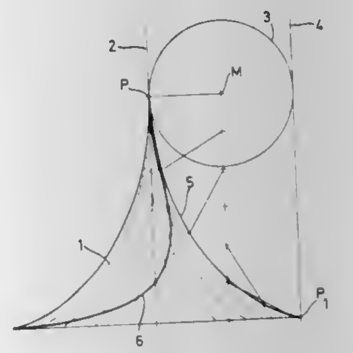
Herbert E. Rohrbacher, 8695 Via Santa Cruz, Whittier, Calif. 90605
Filed Jan. 14, 1981, Ser. No. 224,952
Int. Cl.³ B65H *75/00;* **B65B** *63/04*
U.S. Cl. 242—54 R **28 Claims**

1. An apparatus for rolling chain link fence including
- an endless belt including a free loop portion,
- means supporting the endless belt and for providing movement of the endless belt in a particular direction and with the movement of the endless belt producing rotative motion in the free loop portion,
- means adjacent the free loop portion of the endless belt for feeding progressive portions of the chain link fence into the free loop portion,
- the free loop portion of the endless belt and the means adjacent the free loop portion supporting the progressive portions of the chain link fence to have the individual links of the chain link fence collapse against each other to provide for a tight configuration of the chain link fence within the free loop portion, and
- the rotative motion of the free loop portion of the endless belt producing a rolling of the progressive portions of the chain link fence with the individual links collapsed against each other to form a roll of chain link fence with a tight configuration and a small diameter.



4,353,513
WINDING APPARATUS

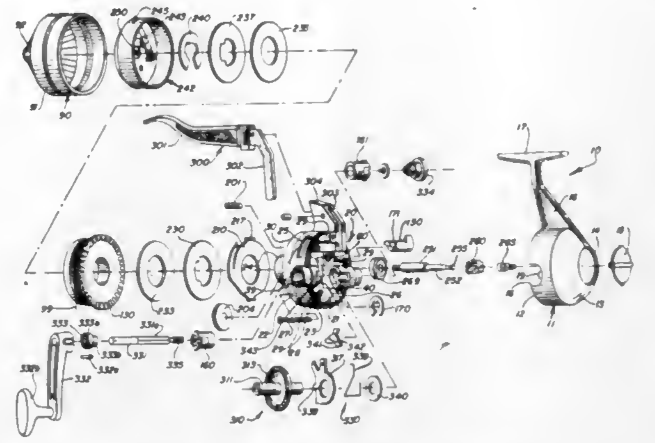
Helmut Holthoff, Düsseldorf, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Company, Hilden, Fed. Rep. of Germany
Filed Nov. 21, 1980, Ser. No. 209,278
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3002026
Int. Cl.³ B21C *47/00*
U.S. Cl. 242—82 **25 Claims**



1. In a winding apparatus for the layering of thin elongated material, especially hot-rolled wire, in loop-like windings, in which a doubly or spatially curved laying tube whose longitudinal axis forms a cone-shaped rotation body and whose peripheral speed at the outlet opening matches the entrance speed of the material rotates around a rotation axis, in which case the laying tube is also curved in the peripheral direction of the superficies of the rotation body, the improvement comprising the superficies of the rotation body being curved in an essentially concave manner in accordance with a cycloid beginning at the entrance opening of the laying tube with its vertex, the length of the cycloid resulting from a half-rotation of a rolling circle generated from top to bottom of said rotation body, and that the curvature of the laying tube in the peripheral direction of the superficies is specified by a simultaneously occurring substantially half-rotation of said rotation body around its rotation axis.

4,353,514
BACK SUPPORT HOUSING AND REEL BODY ASSEMBLY

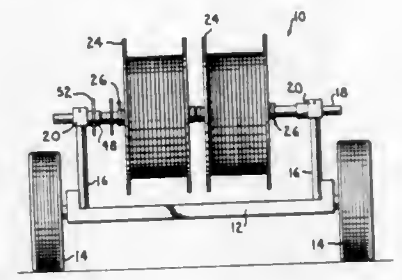
Henry L. Neufeld, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.
Filed Dec. 22, 1980, Ser. No. 218,924
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 A **2 Claims**



1. A spin casting style fishing reel comprising:
- a support housing having a stem extending therefrom for mounting to a fishing rod, said housing having an open end and a facing edge around said end;
- a reel body having a deck plate and including a portion facing said housing, said portion having an offset ledge around the edge facing said housing;
- three spaced apart bosses on the housing side of said deck plate and including aligned apertures through said bosses and said deck plate;
- three spaced apart bosses on said housing and aligned with said reel body bosses;
- fastening means extending through said apertures and into said housing bosses to hold said reel body bosses and housing bosses in abutting relation; and
- said bosses when held together in abutting relation holding said housing facing edge in spaced apart relation from said reel body facing edge and offset ledge.

4,353,515
SPOOL MOUNTING ASSEMBLY AND BRAKE

David A. Weaver, N. Highway 59, and Gordon G. Bledsoe, 601 Mill St., both of Mound City, Mo. 64470
Filed Dec. 29, 1980, Ser. No. 221,026
Int. Cl.³ B65H *75/30, 75/40*
U.S. Cl. 242—86.7 **3 Claims**



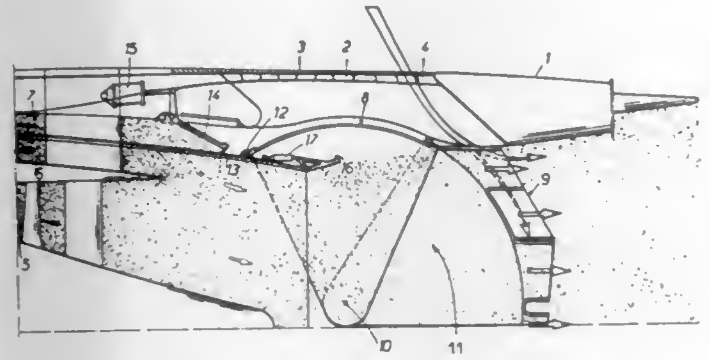
1. Mechanism for mounting a spool on a shaft, said spool having an opening through its center larger than the shaft diameter, said mechanism comprising:
- first and second bearing means each having a frusto-conical annular surface adapted to be positioned at least partially within said spool opening,
- one of said bearing means being disposed on each side of said spool with said frusto-conical surfaces in facing relationship;
- sleeve means adapted to be positioned over said shaft and in abutting relationship to one of said bearing means,
- said sleeve means comprising first and second threaded components and means for rotating said components rela-

tive to each other whereby relative rotation of said components in one direction will cause said first and second bearing means to grip said spool and hold the latter against rotation.

4,353,516
THRUST REVERSER AND SILENCER ASSEMBLY OF TURBOJET ENGINES

Marcel R. Soligny, Chevilly Larue; Jean-Pierre D. J. Duponchel, Dammarie les Lys, and Rene G. Hoch, La Rochette, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Jul. 15, 1980, Ser. No. 169,151
Claims priority, application France, Jul. 24, 1979, 79 19020
Int. Cl.^{3} B64D *33/04;* F02K *1/54*
U.S. Cl. 244—110 B **3 Claims**



1. A thrust reverser and silencer assembly for turbojet engines located within a nacelle and combined with a dilution jet pipe which receives gases in three streams, designated the primary, the secondary and the tertiary flows, with said assembly comprising:

a thrust reverser, consisting of two half shells in the form of portions of a spherical cap,

a multitube silencer, itself composed of two half shells, placed downstream of the thrust reverser with respect to the jet flow, and concentrically to them,

two axes parallel to the same diametrical plane of the jet pipe, around which each group of half shells, one belonging to the thrust reverser and the other to the silencer, is movable,

a first series of movable flaps controlled by first cylinders, which may be moved to close the tertiary flow, when the silencer or the thrust reverser are deployed,

mechanical stops placed on a wall separating the conduits of the secondary flow and the tertiary flow, which limit the path of the half shells of the reverser and the silencer,

a second series of movable flaps, controlled by means of second cylinders, which control the principal jet flow formed by the combination of the primary flow and the secondary flow at the inlet of said assembly,

the nacelle having a screen capable of being closed by a sliding door and each group of half shells of the thrust reverser and the silencer being located, in the retracted position, in the space between the nacelle and the tertiary flow, the wall of the half shell of the thrust reverser constituting a portion of the profile of the jet pipe.

4,353,517
FLAP ASSEMBLY FOR AIRCRAFT WING

Peter K. C. Rudolph, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 7, 1980, Ser. No. 194,768
Int. Cl.^{3} B64C *3/48*
U.S. Cl. 244—216 **34 Claims**

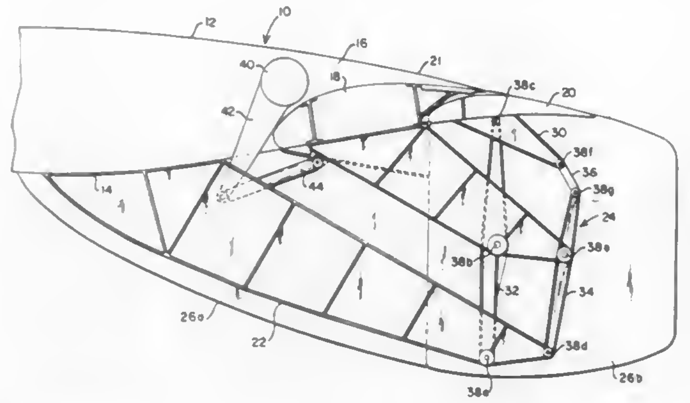
1. A flap assembly for an airfoil, said airfoil having upper and lower surfaces, a forward end and a rear end, a longitudinal axis and a transverse axis, said flap assembly comprising:

a. a mounting structure located at a first lower location at the rear end of the airfoil,

b. a fore flap having a stowed first position above the mounting structure at the rear end of the airfoil, and movable rearwardly to an extended second position,

c. an aft flap having a stowed third position above said mounting structure at the rear end of said airfoil, and movable rearwardly to an extended fourth position,

d. a common first link having a first lower portion pivotally connected to said mounting structure at a first pivot location, an intermediate portion pivotally connected to said fore flap at a second pivot location, and an upper portion pivotally connected to said aft flap at a third pivot location,



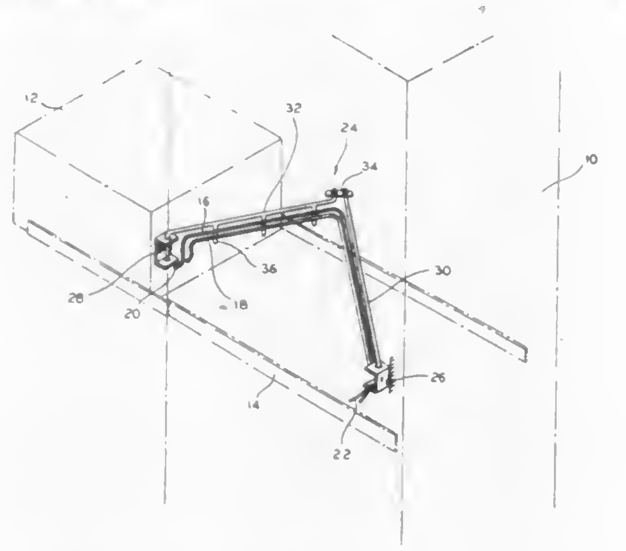
e. a second link having a first lower portion pivotally connected to said mounting structure at a fourth pivot location spaced longitudinally from said first pivot location, and a second upper portion pivotally connected to said fore flap at a fifth pivot location spaced longitudinally from said second pivot location,

f. a third link having a first end portion pivotally connected top said aft flap at a sixth pivot location spaced longitudinally from said third pivot location, and a second end having an operative pivot connection at a seventh pivot location to said fore flap.

4,353,518
CABLE RETRACTOR

William R. Taylor, and Richard J. Gonia, both of New Berlin, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,053
Int. Cl.^{3} F16L *3/00*
U.S. Cl. 248—60 **4 Claims**



1. In a cable retractor comprising:

a first end bracket for attachment to a rack;

a second end bracket for attachment to a chassis which is slidable with respect to said rack;

at least first and second cable supporting arms, said first arm having one end pivoted to said first end bracket, said second arm having one end pivoted to said second end bracket, and the other ends of said first and second arms attached to a common pivotal linkage; and

means to attach a slack portion of a cable to said first and second arms;

the improvements wherein:

said first and second arms lie substantially in a first plane throughout their entire range of motion;

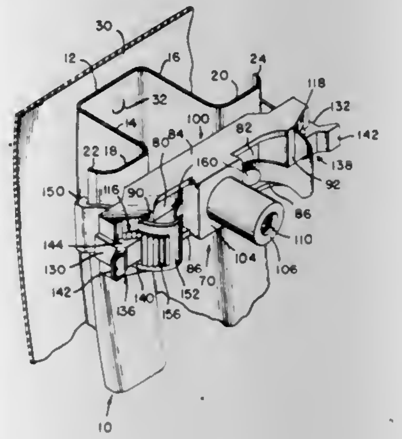
said common pivotal linkage comprises a single plate disposed in a second plane parallel to and nearly adjacent said first plane, said plate rotatably supporting spaced first and second pivot pins to which the respective ends of said first and second arms are fixed; and

said means to attach said slack portion of said cable to said arm comprises at least two standoffs attached at spaced intervals along each arm to support said slack portion in a third plane spaced from, but parallel to, said first and second planes.

4,353,519
SUPPORT ATTACHMENT FOR STRUCTURAL STRINGERS

Patrick M. Bogart, Everett, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1980, Ser. No. 218,632
Int. Cl.^{3} F16L *3/24*
U.S. Cl. 248—72 **1 Claim**



1. A support attachment for structural stringers comprising:

an elongated body having a first side for extending transversely across a stringer;

a second side of said body opposite said first side;

spaced generally parallel elongated wall members extending between said first and second sides and forming respective surfaces of said opposite sides;

supporting means for securing attaching devices to said body, said supporting means being centrally positioned with respect to the elongated direction on said body and adapted to be centrally positioned transversely with respect to said stringer;

said supporting means being secured to said second side and extending between said elongated wall members for securing attaching devices to said body;

transverse end walls at each end of said body and joining said elongated wall members;

a transverse wall adjacent each respective end wall and slot means formed between each end wall and the adjacent wall;

said slot means extending through each end of said body transverse to the elongated direction and extending from said first side to said second side;

a flexible strap slidably extending through each of said slot means;

each strap having a hook at one end thereof for connecting said body to respective transverse ends of said stringer;

a latching means connected to each respective end wall adjacent said second side of said body and adjacent each respective slot means; and

a series of ratchet teeth on each of said straps for engaging said latching means to lock said straps in respective slot means when said one ends of said straps are connected on said stringer and pulled through said slot means;

said latching means each having a pawl on an inner end extending inwardly adjacent a respective slot means;

said latching means each having a lever on an outer end;

said pawl and lever being connected by an intermediate portion;

each intermediate portion forming a part of a respective end wall extending toward said first side and being flexible so as to be pivotal on said body;

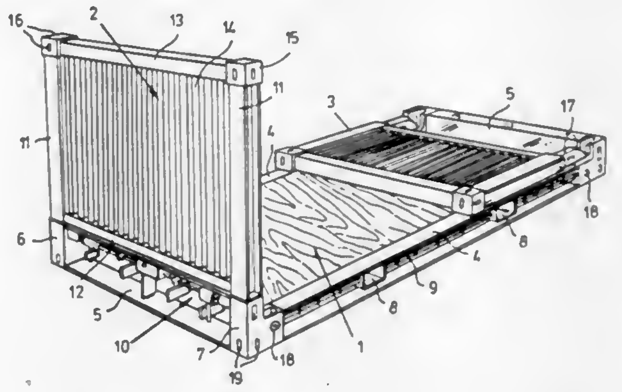
each slot means having an inner transversely directed portion longer than and inwardly of an outer transversely directed portion;

each strap having a long cross section adapted to slide in said inner slot portion and having said ratchet teeth extending from said long cross section into said outer slot portion;

said pawl and lever being flexibly and pivotally held by said intermediate portion so that when said lever is pivoted thereon, said pawl is adapted to engage a respective ratchet to prevent movement of the strap toward said first side.

4,353,520
LARGE OPEN CARRIER WITH A FOLDABLE CARGO SUPPORTING WALL

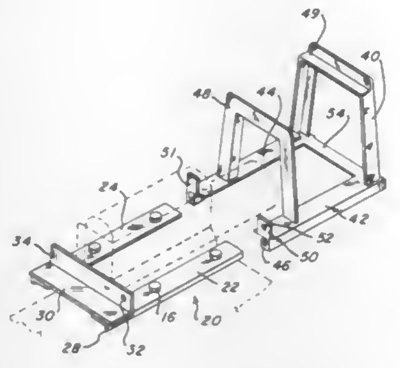
Hadar J. E. Jansson, Wachtmeistersv 27, Helsingborg, Sweden
PCT No. PCT/SE79/00111, § 371 Date Jan. 18, 1980, § 102(e) Date Jan. 18, 1980, PCT Pub. No. WO79/01117, PCT Pub. Date Dec. 27, 1979
PCT Filed May 18, 1979, Ser. No. 189,952
Claims priority, application Sweden, May 25, 1978, 7806041; May 25, 1978, 7806042; May 25, 1978, 7806043
Int. Cl.^{3} B65D *19/12*
U.S. Cl. 248—346 **11 Claims**



1. An apparatus comprising a loading plane and at least one wall unit, said wall unit being fixedly disposed in the loading plane for pivotal switching from a rest position, wherein said wall unit is located parallel to the loading plane, and a working position, wherein said wall unit makes substantially a right angle with the loading plane, wherein said wall unit is anchored in the loading plane by a hinge means at each of two corners, each of said hinge means comprising a shaft connected in a non-rotary manner with an end of a torsion bar, the other end of each torsion bar being disposed in a non-rotary manner in said loading plane close to said shaft of the other hinge means, such that said torsion bars cross each other and are positioned, relative to a pivotal shaft, to allow pivoting of said wall unit on said pivotal shaft, and wherein said torsion bars are tension-free when said wall unit is at a position between said rest position and said working position.

4,353,521
ANTI-THEFT DEVICE

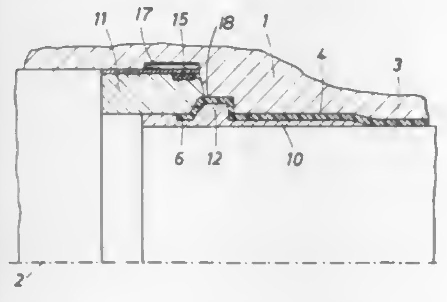
Audivee Webb, P.O. Box 143, Fort Morgan, Colo. 80701
Filed Oct. 20, 1980, Ser. No. 198,301
Int. Cl.^{3} E05B *73/00;* **F16B** *41/00;* **F16M** *7/00, 13/00*
U.S. Cl. 248—552 5 Claims



1. An anti-theft device for preventing removal of a flanged object mounted on an adjacent surface by attachment means, said device comprising:
- a securing assembly including at least two securing bars overlying the flanged portion on each side of said object and attached to said adjacent surface by the same attachment means used for the flanged object;
- a cover assembly comprising at least two cover bars overlying said securing bars and preventing access to said attachment means, said cover bars are joined by at least one retaining loop fitting over said flanged object, said securing and cover assemblies having means to make them slideably engageable wherein said securing bars further are connected by a slide obstructor bar to prevent sliding of said cover assembly past said flanged object; and
- locking means by which said securing assembly is locked to said cover assembly.

4,353,522
INJECTION MOLD FOR MAKING A SYNTHETIC THERMOPLASTIC ARTICLE HAVING A TUBULAR END PORTION

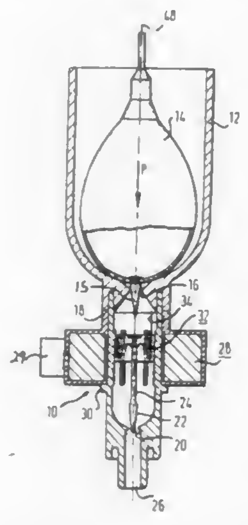
Anton Anger, Linz, Austria, assignor to Oesterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg, Linz, Austria
Filed Oct. 2, 1980, Ser. No. 193,149
Claims priority, application Austria, Oct. 11, 1979, 6616/79
Int. Cl.^{3} B79C *7/00*
U.S. Cl. 249—144 3 Claims



1. An injection mold for making a synthetic thermoplastic resin article having a tubular end portion with a free end and an annular section of a diameter exceeding that of the remainder of the tubular end portion axially spaced inwardly from the free end, the free end and the annular section defining an internal peripheral annular groove, the injection mold comprising an outer mold structure comprised of at least two mold members and defining an abutment surface; and a core axially slidable in the outer mold structure between a molding position and a second position, the core defining a mold cavity with the outer mold structure in the molding position to mold the tubular end portion therein, the core including an annular rib axially immovable relative thereto and defining the peripheral groove of the tubular end portion in the mold cavity, the core having an end and a mold sleeve connected to, and surrounding, the core end, the mold sleeve being axially immovable relative to the core and having an end face facing and conforming to the abutment surface, the mold sleeve end face being forced against the abutment surface upon axial sliding of the core into the molding position, the mold sleeve and core end having converging confronting surfaces defining an annular gap tapering toward the end of the core, the annular gap defining the free end of the tubular end portion in the mold cavity extending outwardly from the annular section thereof, and the core and mold sleeve axially immovably connected thereto being jointly axially slidable into the second position to permit the free end of the tubular end portion to be removed from the annular gap with elastic deformation.

4,353,523
FLOW REGULATOR

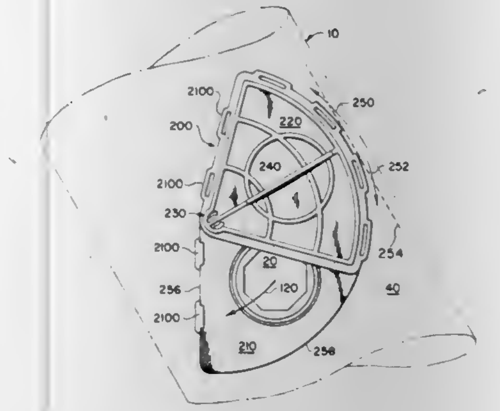
Yoram Palti, 49 Ruth St., Haifa, Israel
Filed Sep. 11, 1979, Ser. No. 74,301
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839774
Int. Cl.^{3} F16K *31/08*
U.S. Cl. 251—65 10 Claims



1. A device for regulating the flow area of a valve for fluids comprising:
- a valve housing having a fluid inlet and outlet and a valve opening;
- a valve plug for opening and closing said valve opening;
- an outer magnet rotatably mounted on the outside of said valve housing, said outer magnet comprising a plurality of alternately poled, circumferentially distributed magnet segments;
- an inner magnet comprising one or more magnet segments fixedly mounted on said valve plug within said valve housing, said inner magnet segments being mounted for rotatable and axial movement to move the valve plug in an axial direction when said outer magnet is moved, all of said inner magnet segments having the same pole confronting said outer magnet and being distributed for simultaneous alignment with the oppositely poled outer magnet segments to prevent the loss of magnetic flux to neighboring inner and outer magnet segments whereby the magnetic attraction between said inner and outer magnets is enhanced.

4,353,524
FLUID CONTROL GATE

Harry C. Spendlow, Sr., Erie, and William E. Houghton, Littleton, both of Colo., assignors to Agri-Flex, Inc., Wheat Ridge, Colo.
Filed Dec. 13, 1979, Ser. No. 103,290
Int. Cl.^{3} F16K *3/10*
U.S. Cl. 251—145 8 Claims

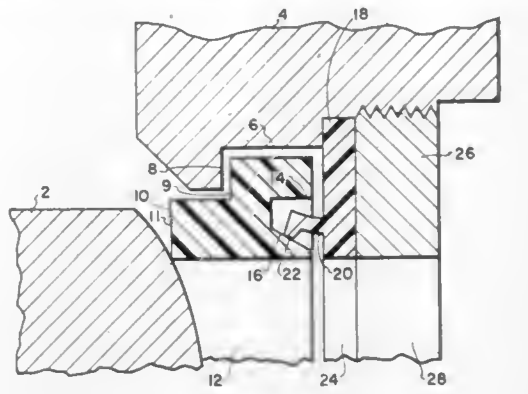


1. An improved fluid control gate for selective insertion through a flexible wall, said wall having a first side in contact with a fluid and a second opposing side in contact with an environment of lower pressure than the pressure of said fluid, said gate having means extending through said wall, said extending means having a formed opening therethrough, means for firmly mating into said formed opening on the fluid side of said extending means, said mating means when fully inserted into said opening being capable of causing the periphery of said wall near said formed opening to firmly abut between said extending means and said mating means to form a fluid seal, said mating means having a formed passageway therethrough, and means cooperative with said extending means for selectively reducing the flow of said fluid through said passageway from a predetermined maximum rate to no flow, the improvement to said reducing means comprising:
- a first substantially flat triangular plate outwardly extending around the periphery of the end of said opening of said extending means near said second side of said wall, said first plate having a hole formed therethrough corresponding in size and aligned with said opening, said first plate being oriented substantially parallel to said wall,
- a second substantially flat triangular plate corresponding in configuration to said first plate, said second plate being pivotally connected to said first plate at aligning apex corners of said plates, the peripheral edges of said first and second plates opposite said apex being formed in the shape of an arc having its radius determined in a linear line from said apex,
- a fluid seal disposed around the periphery of said hole on said first plate, and
- means cooperative with said arcuate peripheral edges for firmly holding said second plate in pivotal engagement against said fluid seal on said first plate.

4,353,525
ROTARY VALVE SEAL

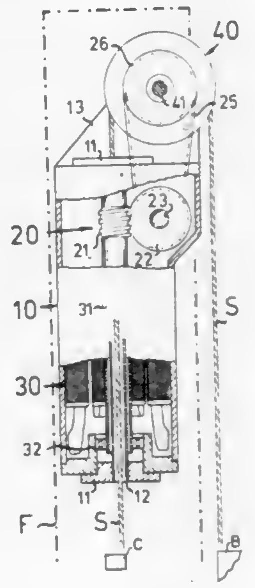
Robert A. DiDomizio, Jr., Lansdale, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 29, 1981, Ser. No. 288,436
Int. Cl.^{3} F16K *1/28*
U.S. Cl. 251—174 10 Claims

1. A valve seal for a rotary valve comprising
- a valve body having a fluid passage therethrough,
- a valve closure member selectively positionable in said fluid passage between a valve open state and a valve closed state and having a peripheral edge adjacent to a wall of said passage in the valve closed state,
- a valve seal ring loosely captured within an annular recess in the wall of said passage and having a first side face in contact with said peripheral edge in the valve closed state and a second side face with an annular coaxial recess having a tapered side wall, and
- a valve seat fixedly captured in said valve body adjacent to said seal ring and spaced therefrom and having an outwardly projecting annular coaxial ridge having a tapered face on a free end of said ridge, said ridge extending substantially perpendicularly from the fixedly captured portion of said valve seat, said tapered face contacting said tapered side wall to provide a fluid-tight seal therebetween, the relationship between said valve seal ring and said annular recess allowing movement of said valve seal ring both axially and radially of said fluid passage, said movement limited by (1) the dimensions of said annular recess and (2) the degree of resiliency of said tapered face.



4,353,526
ELECTRICAL DRIVE APPARATUS FOR A VERTICALLY DISPLACEABLE BLACKBOARD

Ulrich Weidmann, Industriestrasse 13, CH-8152 Glattbrugg, Switzerland
PCT No. PCT/CH79/00101, § 371 Date Apr. 10, 1980, § 102(e) Date Apr. 9, 1980, PCT Pub. No. WO80/00299, PCT Pub. Date Mar. 6, 1980
PCT Filed Jul. 16, 1979, Ser. No. 199,513
Claims priority, application Switzerland, Aug. 10, 1978, 8518/78
Int. Cl.^{3} B66D *1/12, 1/20*
U.S. Cl. 254—292 8 Claims



1. An electrical drive for a vertically displaceable board, said drive comprising:
- a pair of upright hollow beams flanking said board;
- an electric motor in each of said beams having an upright hollow shaft;
- a sheave rotatable on each of said beams about a horizontal axis;
- a counterweight in each of said beams;

transmission means in each of said beams between the respective motor and sheave and including
a worm gear fixed on the respective hollow shaft,
another gear meshing with the respective worm gear, and
a slip coupling connected between the respective other gear and the respective sheave for rotation of same by the respective motor so long as the torque with which the respective sheave resists rotation by the respective motor does not exceed a predetermined limit established by said slip coupling; and
respective cables spanned over said sheaves, passing vertically through the respective shafts and worm gears, and each having one end connected to said board and another end connected to the respective counterweight.

4,353,527

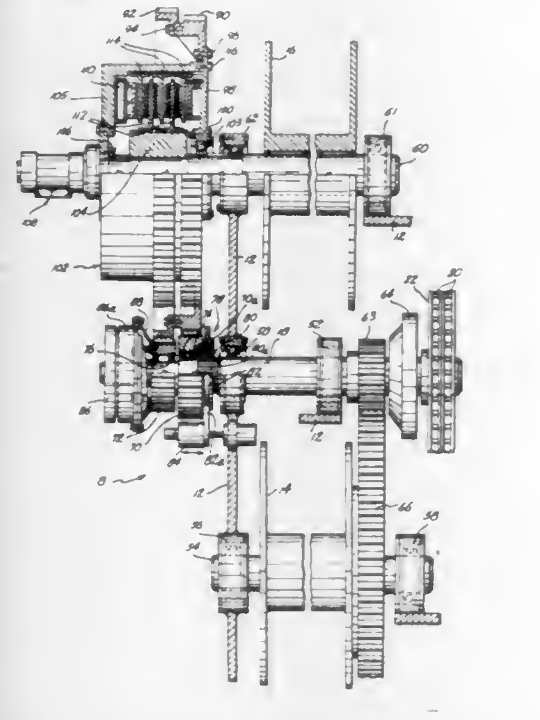
SYSTEM FOR INHAULING AND OUTHAULING LINES

Frederic E. Langford, Redmond, Wash., assignor to Washington Logging Equipment, Inc., Auburn, Wash.

Division of Ser. No. 961,224, Nov. 16, 1978, Pat. No. 4,295,636. This application Jul. 20, 1981, Ser. No. 285,154

Int. Cl.³ B66D *1/26*

U.S. Cl. 254—304 5 Claims



1. In a system for inhauling and outhauling lines including
a drive shaft, a prime mover operably coupled to rotatively drive said drive shaft, and a reversible transmission means operably interposed between said prime mover and said drive shaft for selectively reversing the rotational direction of said drive shaft,
a haulback drum mounted on a haulback shaft and a line wrapped on said haulback drum, and
a main drum mounted on a main shaft and a line wrapped on said main drum, the improvement comprising:
a first gear mounted on and arranged in driven relationship with said drive shaft and a second gear arranged in driven relationship with said first gear mounted on and arranged in driving relationship with one of said main shaft and said haulback shaft, and clutch means operatively associated with said first and second gears for selectively coupling said drive shaft to said one shaft in driving relationship to rotate the corresponding one of the main drum and haulback drum mounted on said one shaft to take in and pay out line at a first line speed,
a third gear mounted for rotation on said drive shaft and a fourth gear arranged in driven relationship with said third gear and mounted for rotation on the other of said main shaft and said haulback shaft, and clutch means operatively associated with one of said third gear and said fourth gear for selectively coupling said one gear in driving relationship with the shaft on which it is mounted, said third and fourth gears being constructed to rotate the corresponding one of said main drum and said haulback drum to take in and pay out line at an effective line speed less than said first line speed,
a fifth gear mounted for rotation on said drive shaft and a sixth gear arranged in driven relationship with said fifth gear mounted for rotation on the other of said main shaft and said haulback shaft, and clutch means operatively associated with one of said fifth gear and said sixth gear for selectively coupling said one gear in driving relationship with the shaft on which it is mounted, said fifth and sixth gears being constructed to rotate the corresponding one of said main drum and said haulback drum to take in and pay out line at an effective line speed greater than said first line speed, the other of said third and fourth gears and the other of said fifth and sixth gears being coupled together in a set for simultaneous rotation, and
energy-dissipating, slipping clutch means for selectively engaging said set of gears in driving relationship with the shaft on which said set of gears are mounted and for selectively allowing relative, restrained, rotational movement between said set of gears and the shaft on which said set of gears is mounted so that the line speed to and from the haulback drum can be substantially equalized with the line speed respectively from and to the main drum.

4,353,528

RESTRAINING DEVICE

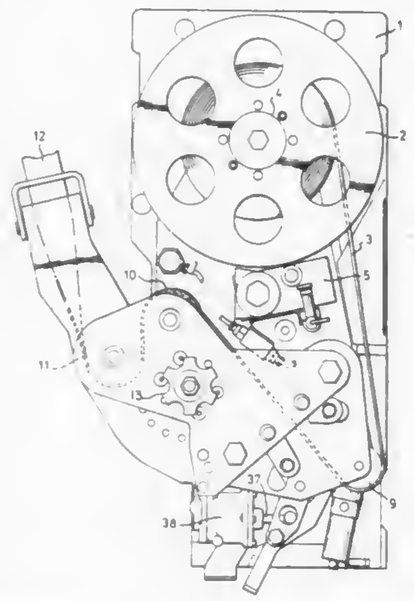
Vernon A. Benning, Maidenhead, England, assignor to M.L. Aviation Company Limited, Berkshire, England

Filed Jun. 11, 1980, Ser. No. 158,396

Claims priority, application United Kingdom, Jun. 22, 1979, 7921830

Int. Cl.³ B66D *1/08*

U.S. Cl. 254—360 8 Claims



1. A restraining device for controlling the movement of a loaded strop, said device comprising a reel means for said strop, power means for turning said reel means, and means defining a path for said strop from said reel, said path including a pair of clamping jaws for gripping said strop, spring means loading said jaws into an operative position to grip said strop, interconnecting means for interconnecting said jaws for movement together towards and away from each other, and a toggle means for producing relative movement of the jaws to clamp and release the strop, the toggle means comprising first and second toggle links pivoted together at a first pivot connection, the first link having a second pivot connection operatively engaged with one of the clamping jaws, and the second toggle link having a third pivot connection, the two toggle links being arranged with the three said pivot connections aligned to assist the spring means to clamp the jaws, and said toggle links being movable to move the first pivot connection out of line with the second and third pivot connections to release the jaws.

4,353,529

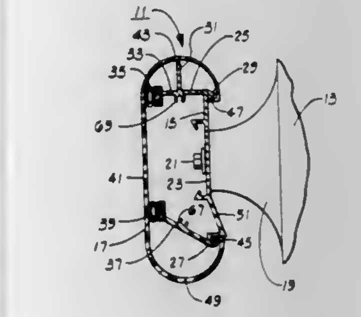
IMPACT ABSORBING HANDRAIL AND END CAP

Russell L. Brown, 1620 Kingsbury La., Oklahoma City, Okla. 73116

Filed Nov. 13, 1979, Ser. No. 93,832

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—59 19 Claims



1. A handrail comprising:
an elongated, substantially rigid retainer of substantially uniform transverse cross section and having, in cross section:
a medial portion;
a retainer flange portion at one end of the medial portion;
a T-shaped handgrip portion disposed at the other end of the medial portion, said handgrip portion having:
a substantially monoplanar first support member; and
a substantially monoplanar second support member extending substantially normal to said first support member; and
an elongated trim piece mounted on the retainer and made of impact-resistant resilient material adapted to flex toward the retainer upon impact, said trim piece having a substantially uniform cross section along its length, and further including, in transverse cross section:
a trim piece medial portion spaced from the medial portion of the retainer and including first and second ends;
a handgrip portion at one end of the trim piece medial portion; and
a flange portion at the other end of the trim piece medial portion engaging the retainer flange portion of the retainer; and
said first support member providing substantially rigid support of the trim piece with respect to a vertically downwardly directed force by contact with the handgrip portion of the trim piece along a line extending the length of the handrail when the handrail is in use and mounted upon a wall.

4,353,530

METHOD AND APPARATUS FOR AUTOMATICALLY PUNCHING THE TUYERES OF A CONVERTER

Yukio Iyama; Masao Fujita, and Nobuhiro Higashiiriki, all of Saganoseki, Japan, assignors to Nippon Mining Company Limited, Tokyo, Japan

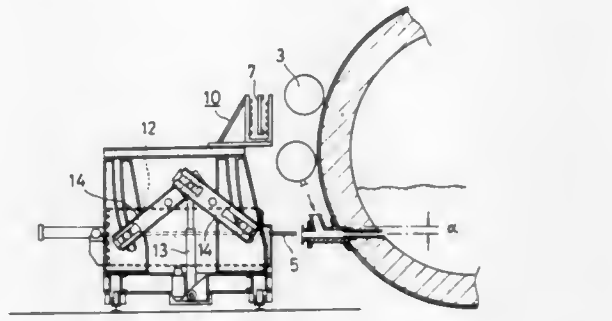
Filed Jul. 17, 1980, Ser. No. 169,690

Claims priority, application Japan, Jul. 23, 1979, 54-92665

Int. Cl.³ F27B *7/20;* C21C *5/46*

U.S. Cl. 266—45 5 Claims

1. A method for punching the tuyeres of a converter having a longitudinal axis with the punching rods of a mechanical puncher mounted on a carriage running on rails including detectable elements provided respectively for said tuyeres of said converter and provided adjacent said tuyeres of said converter, and non-contacting type detector means mounted on said carriage comprising the steps of:
(a) setting a vertical position and orientation of said punching rods of said mechanical puncher so as to render said punching rods parallel to the axes of said tuyeres;
(b) providing a signal to move said carriage on said rails in a direction parallel to said axis of said converter;
(c) processing output signals from said non-contacting type position detector means by control means to determine a position of said carriage wherein the punching rods of said mechanical puncher are aligned with respective aimed tuyeres;
(d) providing a signal to stop said carriage in the said position;
(e) providing an instruction signal to said mechanical puncher to punch said aimed tuyeres, and
(f) acknowledging termination of said punching operation to move said carriage so as to shift said punching rods into alignment with next aimed tuyeres, whereby said tuyeres are selectively and successively punched,
wherein said detectable elements comprise light intercepting plates each of which has at least one light transmission hole representative of the number of a corresponding tuyere, at least one light transmission hole for controlling the running speed of said carriage on the rails, and at least one light transmission hole for finely adjusting the position of said carriage, and wherein said non-contacting type detector means comprises a photoelectric tube device comprising light emitting units and light receiving units arranged to be positioned opposite one another on opposite sides of said light intercepting plates.



5. A device for controlling the position of a carriage of a mechanical puncher running on rails for punching the tuyeres of a converter comprising: a plurality of light intercepting plates, one of said light intercepting plates being provided for each of said tuyeres at a position adjacent the corresponding tuyere, each of said light intercepting plates having at least one light transmission hole representative of the number of the corresponding tuyere, at least one light transmission hole for controlling the running speed of the carriage, and at least one light transmission hole for finely adjusting the position of said carriage; a plurality of light emitting elements coupled to be moved with said carriage, said light emitting elements directing light towards said light intercepting plates; and a plurality of photoelectric detector means movable with said carriage and disposed upon a side of said light intercepting plates opposite said light emitting means.

4,353,531

PROCESS AND INSTALLATION FOR THE HANDLING AND HEAT TREATMENT OF CAST IRON OR STEEL PIPES AND TUBES

Michel Pierrel, Pont A Mousson, and Guy Mertzweiller, Blenod les Pont a Mousson, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Jul. 24, 1980, Ser. No. 172,038

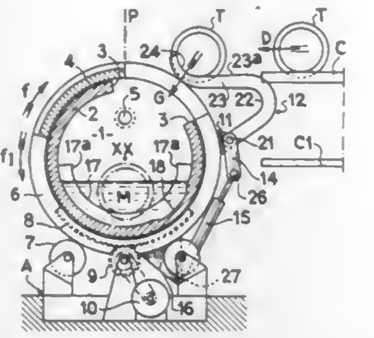
Claims priority, application France, Aug. 3, 1979, 79 19940

Int. Cl.³ C21D *1/46*

U.S. Cl. 266—120 12 Claims

1. An installation including a furnace of a generally cylindrical shape, containing a treatment bath of molten metal, means for heating the treatment bath, rollers for rotatably supporting the furnace wherein the furnace is rotatable around a longitudi-

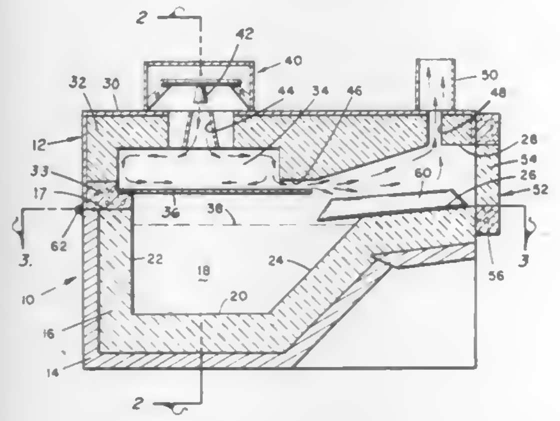
nal axis of said furnace, handling means for introducing and removing pipes through an opening in the furnace, and means for imparting an angular movement to the furnace around its longitudinal axis, characterised in that, on the internal wall of the furnace, rolling surfaces are provided which are directed laterally and are of concave profile, for supporting a pipe resting thereon, and wherein the handling means comprise means for retaining and transferring a pipe, the retaining and transferring means being articulated on an external wall of the furnace in such a manner that they can penetrate within the furnace in order to place a pipe to be treated on rolling surfaces of the furnace and can be moved out of the furnace in order to remove a treated pipe from the bath.



4,353,532

ALUMINUM MELTING FURNACE

Dudley W. Jay, 1051 Edgemont St., La Habra, Calif. 90631
Filed Jun. 29, 1981, Ser. No. 278,831
Int. Cl.^{3} F27B *3/20*
U.S. Cl. 266—242 **12 Claims**



1. In a furnace apparatus, the combination comprising:
- a bottom housing having a melting chamber and an inclined hearth portion above the molten bath level of said melting chamber;
- a top cover assembly hingedly coupled to said bottom housing, said top cover assembly including:
  - (a) a combustion chamber having an open bottom formed therein, said open bottom having an area parallel to the melting chamber of generally the same dimension,
  - (b) burner means mounted on said top cover assembly for providing flame to the interior of said combustion chamber,
  - (c) silicon carbide means substantially closing said bottom opening of said combustion chamber, said silicon carbide means being in spaced generally parallel relation to the molten bath level with said top cover assembly closed, and
  - (d) aperture means within said combustion chamber oriented toward said hearth portion for directing flue gases thereat for preheating ingots of metal positioned thereon.

4,353,533

BOTTOM TUYERES IN AN OXYGEN TOP-BLOWN CONVERTER

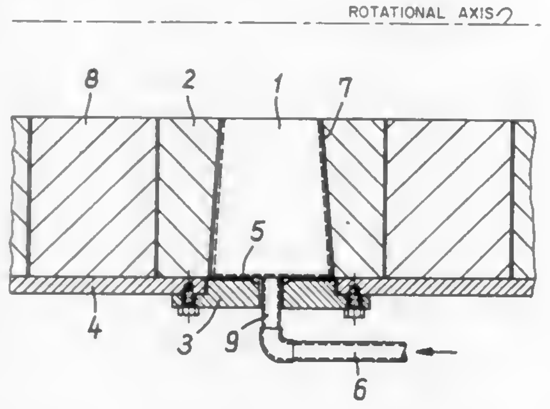
Tatsukichi Chino; Takuo Imai; Masaaki Tsukamoto; Ryuichi Asaho; Nagayasu Bessho, and Kyoji Nakanishi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed Feb. 17, 1981, Ser. No. 234,919
Claims priority, application Japan, Feb. 18, 1980, 55-18188[U]
Int. Cl.^{3} C21C *5/58*
U.S. Cl. 266—265 **5 Claims**

1. In a bottom tuyere usable for blowing an agitating gas into molten steel in an oxygen top-blown converter, the improvement wherein said tuyere has a ratio of blow sectional area S (cm^2) to inner peripheral length L (cm) of not more than 0.17.

4,353,534

APPARATUS FOR SUPPLYING GAS TO A REVOLVING CYLINDRICAL FURNACE

Wilhelm Janssen, Mülheim, and Henri F. Seelig, Essen, both of Fed. Rep. of Germany, assignors to Fried. KRUPP Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany
Filed Nov. 13, 1980, Ser. No. 206,535
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952275
Int. Cl.^{3} C21B *7/16*
U.S. Cl. 266—270 **6 Claims**

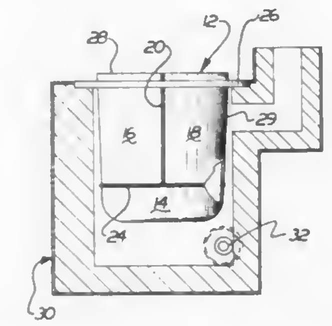


1. A device for supplying gas to a revolving cylindrical furnace having an axis of rotation and a furnace mantle with a fireproof lining, said device comprising in combination therewith gas-permeable bricks provided over the length of said rotary axis in the region of said fireproof lining.

4,353,535

CRUCIBLES FOR MOLTEN MAGNESIUM AND METHOD OF FORMING

Kenneth J. Humberstone, Pepper Pike, Ohio, assignor to The American Tank & Fabricating Company, Cleveland, Ohio
Filed Dec. 29, 1980, Ser. No. 220,741
Int. Cl.^{3} C21B *3/00;* **C22B** *7/00*
U.S. Cl. 266—275 **9 Claims**

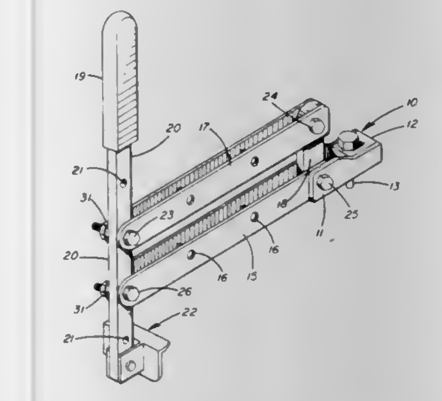


1. A crucible for containing molten magnesium comprising a side wall and a bottom wall defining a container like structure with an inside surface and an outside surface; said side wall and said bottom wall being formed of ferritic stainless steel having the thickness of steel plate; the side wall and the bottom wall being joined to each other by weld material which extends completely through the crucible from the inside surface to the outside surface; and weld material being compatible with the ferritic stainless steel forming the side wall and said bottom wall, at least the portion of the weld material at the inside surface being substantially free of materials that would contaminate molten magnesium, and the weld material being essentially free of cracks.

4,353,536

MITER CLAMP

Peter Mazzotta, 424 Union Ave., Kittanning, Pa. 16201
Filed Feb. 4, 1981, Ser. No. 231,491
Int. Cl.^{3} B23Q *3/02*
U.S. Cl. 269—94 **5 Claims**



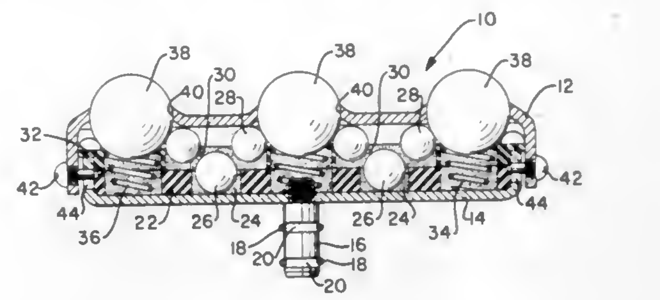
1. A clamp for a miter square of a table saw or the like for engaging the leading edge of a workpiece comprising,
- a base having a downwardly extending plug for rotatably securing the base to the miter square, said base having two upstanding flanges with bores therein for receiving a pin perpendicular to said flanges,
- a first spanning arm having a plurality of spaced bores along the length thereof with a base end bore near the one end of the first spanning arm, said spanning arm rotatably secured by a pin through said base bore and the bores in the base flanges,
- a short riser arm having openings near each end thereof, said short riser arm rotatably held to the base by the same pin that holds the first spanning arm rotatably thereto,
- a second spanning arm substantially identical to the first, said second spanning arm rotatably secured to the end of the short riser arm away from the base by a pin passing through bores in the ends of each,
- an elongate upstanding gripper arm having a handle at one end and a shoe at the other with a plurality of bores therebetween, said gripper arm rotatably secured to the first and second spanning arm by a pair of removable pins placed in a selectable pair of bores on the gripper arm and in selectable bores in each spanning arm whereby pressing the handle in a direction along the spanning arms and away from the base advances the miter square while forcing the shoe against the workpiece thus clamping the workpiece against the miter square.

4,353,537

SECURING AND CLAMPING DEVICE

James Koufos, 22188 Harrisburg Westville Rd., Alliance, Ohio 44601
Filed Mar. 30, 1981, Ser. No. 248,875
Int. Cl.^{3} B25B *1/24*
U.S. Cl. 269—266 **10 Claims**

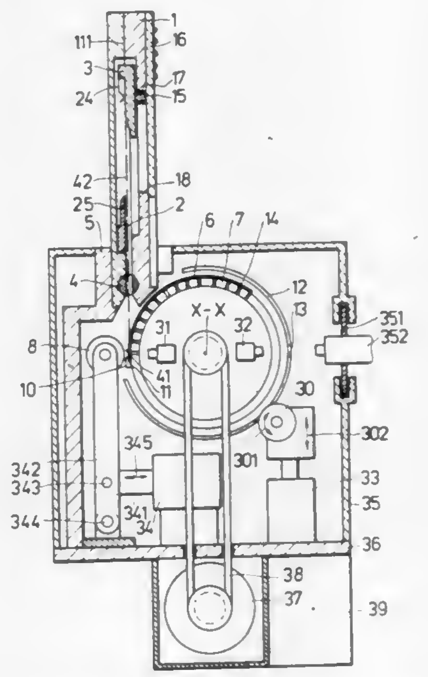
1. A clamping device, comprising:
- a hollow casing having top and bottom portions;
- a plurality of balls maintained within said casing in restricted movable engagement with each other, said balls being maintained within said casing in layers, a first layer in contact with said top portion and a second layer in contact with said bottom portion, and an intermediate layer therebetween; and
- means associated with the balls of each of said layers for restricting lateral movement of said balls within their respective layers, said means comprising first and second mats having holes therein for respectively receiving said second and intermediate layers of balls.



4,353,538

INPUT-OUTPUT DEVICE FOR PHOTOGRAPHIC FILM MATERIALS

Christhard Deter, 27, Brehmstrasse; Wolfgang Schaller, 7/5 Lobensteiner Str., both of Gera; Rudolf Schönfeld, 10, Goethestrasse, Münchenbernsdorf, District of Gera, and Klaus Haak, 24, Am Stadion, Hermsdorf, District of Gera, all of German Democratic Rep.
Filed Feb. 5, 1981, Ser. No. 231,723
Claims priority, application German Democratic Rep., Feb. 1, 1980, 218794
Int. Cl.^{3} B65H *5/22*
U.S. Cl. 271—3 **4 Claims**

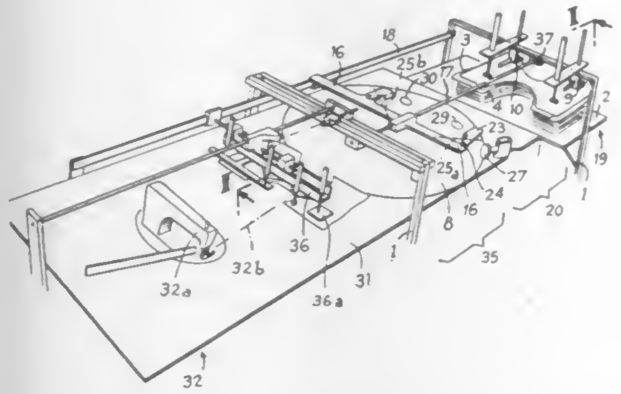


1. An input/output device for photographic film material, comprising
- a cartridge,
- a film material being a photographic sensitive sheet,
- a film support being displaceably arranged in the interior of said cartridge between two end positions,
- an operation member externally arranged on said cartridge and being connected to said film support,
- a clamping means being provided on said film support for clamping said film material to said film support,
- a slot shaped opening being provided in said cartridge for film input/output,
- a light-stop for closing said slot-shaped opening,
- a release means in said cartridge in the vicinity of said light stop,

said release means being for at least partially releasing said clamping means,
a light-tight housing,
an opening being provided in said housing,
said opening being for receiving said portion of said cartridge being provided with said slot-shaped opening,
a drum being rotatably seated in said housing,
an extension-line of said slot-shaped opening being the tangent to said drum,
an arrest and clamping means being connected to said drum for a defined holding of one end portion of said film to said drum,
a roll for pressing said film to said drum,
said roll being displaceable at right angles to the surface of said drum,
a first means for holding said film to and releasing said film from said drum, and
a second means for definedly rotating said drum in said housing.

4,353,539
PROCESS FOR POSITIONING A SUPPLE PIECE IN SHEET FORM ON A SUPPORT SURFACE AND HANDLING INSTALLATION APPLYING SAID PROCESS

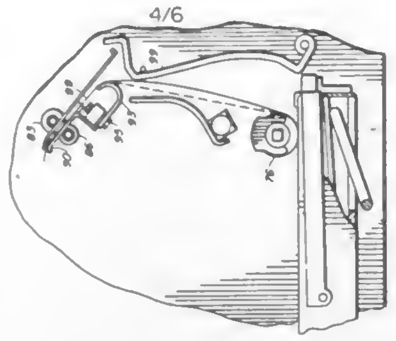
Joël Doyen, Ste Savine, and Jean P. Raisin, Troyes, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France
Filed May 9, 1980, Ser. No. 148,508
Claims priority, application France, May 18, 1979, 79 12802
Int. Cl.³ B65H *5/10, 9/20, 5/13*
U.S. Cl. 271—10 **11 Claims**



2. A handling apparatus for positioning a sheet of material on a receiving station comprising;
a frame having a storage area for storing unaligned sheets of material, the receiving station being mounted on the frame and spaced apart from the storage area, and transfer means on the frame for transporting the sheet of material from the storage area to the receiving station, the improvement comprising the provision of:
the transfer means comprising at least two, spaced-apart gripping means for gripping the sheet and for releasing the sheet independently of each other and transport means for moving the gripping means to move the sheet of material from the storage area to the receiving station when the gripping means is gripping a sheet;
at least two detecting means on the frame at the receiving station for detecting the passage of a particular portion of the sheet over each detecting means each detecting means being operatively associated with a corresponding one of the gripping means,
control means between the gripping means and the detecting means for causing each of the gripping means independently to release the sheet when the corresponding detecting means detects the passage of the predetermined portion of the sheet.

4,353,540
SHEET FEEDER WITH PIVOTABLE BAFFLE

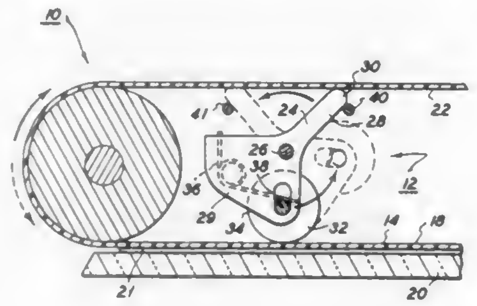
Jack Beery, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 29, 1980, Ser. No. 183,690
Int. Cl.³ B65H *9/06, 9/00*
U.S. Cl. 271—10 **11 Claims**



1. A sheet feeding apparatus comprising
a forward feed means to feed a sheet from a sheet supply in a forward direction;
a sheet registration means for registering a sheet being fed, the distance from the forward feed means to the registration means being less than the feeding dimension of the sheet being fed;
means to activate the forward feed means to feed said sheet in a forward direction toward said registration means and to form a buckle in said sheet between said forward feed means and said sheet registration means,
sheet guide means mounted between said forward feed means and said registration means, said guide means comprising a baffle pivotally mounted to be articulated within the path of the sheet being fed such that when it is contacted by the short side edge of the sheet buckle and initiates the placement of tension on that edge of the sheet it articulates simultaneously reducing the tension on that edge of the sheet buckle and advancing toward contact and the initiation of tension with the other side edge of the sheet buckle to thereby tend to equalize tension on both edges of the sheet.

4,353,541
SELF ENERGIZING COPIER DOCUMENT PRESSURE ROLL

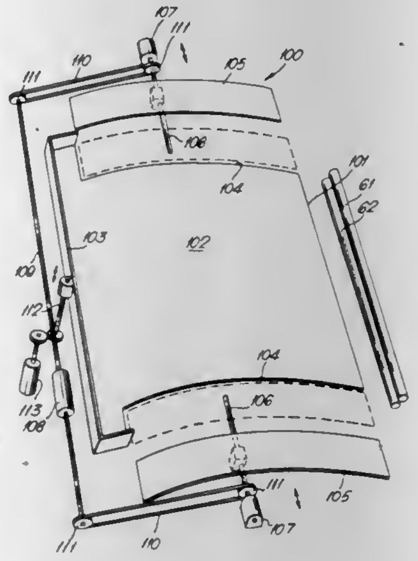
William J. Parzygnat, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 24, 1980, Ser. No. 190,113
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—275 **12 Claims**



1. In a copier document handling apparatus for feeding original document sheets to and from a registration position at an imaging station of a copier with a reversible direction of motion document feeding belt means having one flight of said belt means closely overlying the imaging station for document feeding and a second flight of said same belt means spaced from said first belt flight, and pressure means for applying pressure to an area of the back of said first belt flight, which pressure is changed for one direction of motion of said belt means, the improvement comprising:
actuating means positioned to frictionally engage and be moved by said second belt flight, and
lever means connecting said actuating means to said pressure means so as to automatically pivot said pressure means into said first belt flight solely by said movement of said actuating means by motion of said second belt flight in one direction so that said pressure means is self energized automatically in response to the reversal of direction of said second belt flight to apply substantial pressure to said first belt flight only in said one direction of motion of said second belt flight.

4,353,542
SHEET COLLECTION APPARATUS AND SORTERS INCORPORATING SAME

Clifford Knight, Newnham; William Gilmour, Gloucester; Bernard F. Page, Coleford, and John Bilton, Stroud, all of England, assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 25, 1980, Ser. No. 172,497
Claims priority, application United Kingdom, Jul. 27, 1979, 7926266
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—294 **5 Claims**

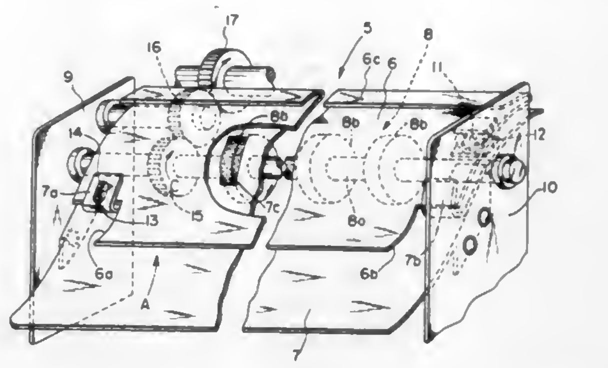


1. In a sorter comprising a generally-vertically arranged array of bins, a feed throat for delivering sheets to the bins, and means for vertically indexing the bins past the feed throat to receive sheets in turn, the improvement comprising retractable support means at the throat for supporting any sheets in a said bin opposite the throat during delivery of a sheet thereto whereby the sheet enters the bin below the support means.

4,353,543
SORTER CONNECTION APPARATUS

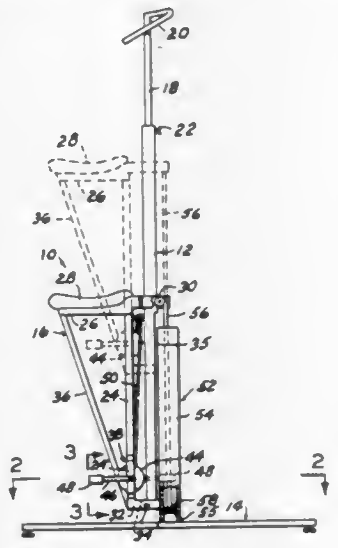
Sunao Ikeda, Yokohama; Tamaki Kaneko, Fujisawa; Kunio Hibi, Yokohama; Tugio Okuzawa, Tokyo; Yohtaro Kakitani, and Hideo Kikuchi, both of Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Japan
Filed Sep. 19, 1980, Ser. No. 188,945
Claims priority, application Japan, Sep. 28, 1979, 54-134392
Int. Cl.³ B65H *29/54*
U.S. Cl. 271—306 **4 Claims**

1. In a sorter connection apparatus disposed between a copying machine and a sorter for individually feeding copy sheets discharged from the copying machine into the sorter, the improvement comprising a lower guide plate connected to a sheet discharge outlet of said copying machine at its inlet side and to an inlet portion of said sorter at its outlet side, an upper guide plate located above said lower guide plate and detachably mounted to said lower guide plate through a hook member fixed to a top side of said lower guide plate near an upstream end of said upper guide plate along the copy sheet transport direction and engage-disengage means fixed to said lower guide plate top side near a downstream end of said upper guide plate, a sheet transportation roller made of an elastic foam material provided around at least its peripheral surface and abutted against said upper guide plate with some amount of deformation that is enough to feed the copy sheet with rotation of said roller during normal operation, but to cause said roller to slip with respect to the copy sheet without advancing or crumpling the sheet when the copy sheet is subjected to braking action at the forward downstream end thereof while said roller rotates for feeding the copy sheets and drive means for rotating said roller.



4,353,544
POLE SUPPORTED BICYCLE-TYPE EXERCISER

W. Don Wiley, P.O. Box 66, Foster, Okla. 73039
Filed Nov. 13, 1980, Ser. No. 206,585
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—73 **2 Claims**

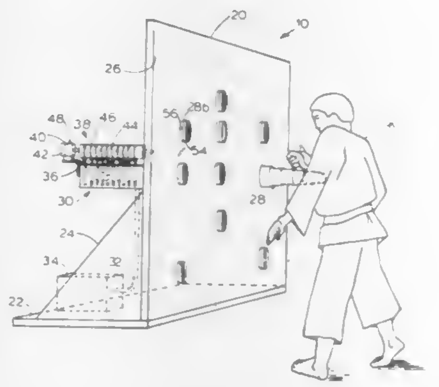


1. A leg and arm muscle exerciser, comprising:
an upright pole having handle bars at its upper end;
frame means mounted on said pole for vertical sliding movement relative to said pole,
said frame means including an upright frame having top and bottom members respectively surrounding an intermediate portion of said pole, and,
first and second rollers respectively journaled by said frame top and bottom members on diametrically opposite sides of said pole;
a seat mounted on said frame means;
a reel having an axle projecting laterally of opposing sides of and journaled by said frame for angular rotation about a horizontal axis;
an elongated flexible member secured at one end to said reel and secured at its other end to an intermediate portion of said pole spaced above said reel;
foot pedal means secured to said reel for angularly rotating said reel in a winding up and paying out action of said flexible member on said reel,

said foot pedal means including a crank arm secured at one end portion to each end of said reel axle forming a cooperating pair of crank arms projecting in opposing directions, and,
a foot pedal secured to the other end portion of each said crank arm; and,
brake means for retarding downward movement of said frame means relative to said pole,
said brake means comprising,
an elongated upwardly open brake tube having an orifice in its depending end portion disposed adjacent said pole opposite said frame means,
a piston slidable in said brake tube, and,
a piston rod extending between and secured to said piston and said frame top member, respectively.

4,353,545
ATHLETIC REFLEX MACHINE

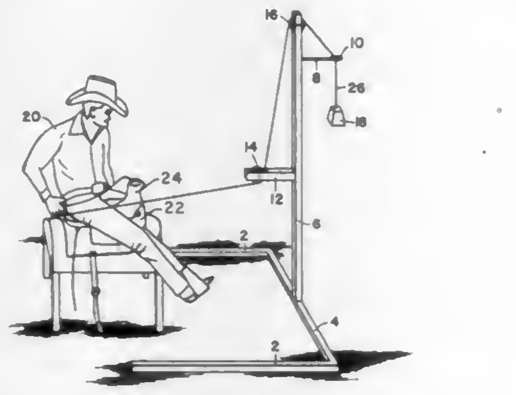
Tyrone D. Anderson, 903 N. Kenwood Ave., Baltimore, Md. 21205
Filed Mar. 3, 1981, Ser. No. 239,904
Int. Cl.^{3} A63B *69/34*
U.S. Cl. 272—76 4 Claims



1. A system for athletic practice to sharpen the skills of a user in avoiding and parrying blows as in Karate and the like, comprising: means for lashing out at the user with a succession of blows from a plurality of levels and directions, means for programming said lashing out, including a plurality of valving means, the means for lashing out including a plurality of strikers, means for connecting each of said strikers for response to a respective valving means, each of said strikers including a bellows inflatable through a respective said valving means and a respective said means for connecting.

4,353,546
DALLY PRACTICE APPARATUS

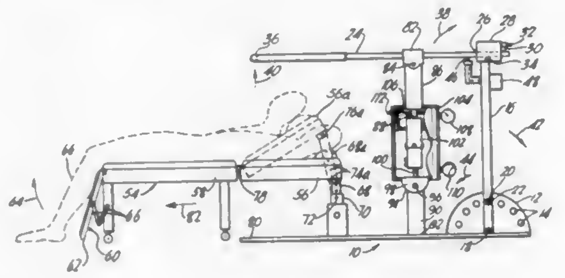
James J. Rhoades, 7147 W. Country Gables, Peoria, Ariz. 85345
Filed May 21, 1979, Ser. No. 40,711
Int. Cl.^{3} A63B *21/06*
U.S. Cl. 272—117 3 Claims



1. A dally practice apparatus, comprising: an immovable saddle supported above an apparatus support surface and having a saddle horn for permitting a person to assume the posture of a horse rider;
a rope having one portion accessible to said person in said saddle and a
load means including a weight connected to said rope for loading said rope at a portion thereof spaced from said one portion so that said person in said saddle can practice a dally with said rope being maintained in tension;
a first roller coupled to said rope intermediate said portions and further having a fixed location with respect to said saddle;
said rope having a portion located between said first roller and said saddle at a location below the upper limit of said saddle horn.

4,353,547
EXERCISING APPARATUS

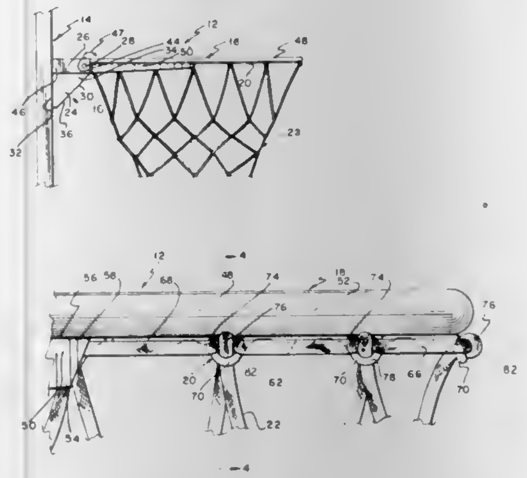
Charles Jenkinson, 150 Farley Ave., Fanwood, N.J. 07023
Filed Aug. 25, 1980, Ser. No, 181,021
Int. Cl.^{3} A01B *21/00*
U.S. Cl. 272—130 10 Claims



1. An exercising apparatus comprising an arm, a post, means to pivotably secure one end of said arm to one end of said post, a base, means to secure the other end of said post to said base, a hydraulic cylinder, means to secure one end of said hydraulic cylinder to said base, means to pivotably secure the piston of said hydraulic cylnder to said arm, said hydraulic cylinder having a single port therein, said single port communicating with a first oil containing chamber within said cylinder, a pipe, said pipe communicating with said port, an oil receiving tank, said pipe communicating with said oil receiving tank, a second oil receiving chamber disposed within said cylinder, said first and said second oil receiving chambers hydraulically separated by a slidable piston portion of said cylinder, a rubber-like membrane, said rubber-like membrane disposed within said cylinder, a closed air receiving chamber disposed in said cylinder for containing air therewithin, the interior portions of said air receiving chamber separated from the interior portions of said second oil receiving chamber by said rubber membrane, means to selectively positively pressurize and impose a partial vacuum of said air at a fixed selected air or vacuum pressure within said air receiving chamber only when said slidable piston portion is disposed in a stationary position and at varying decreasing positive pressure levels and increasing partial vacuum in accordance with the position of said slidable piston portion along the length of said cylinder intermediate said stationary position and said pipe, means to independently control the rate of flow of hydraulic fluid from said first oil receiving chamber into said tank and from said tank to said first oil receiving chamber, said means to control including a multi-orifice plate, said multi-orifice plate having a plurality of different size orifices therein, a pair of plate contacting blocks, said pair of blocks selectively engaging one of said orifices, whereby the rate of flow of said hydraulic fluid from said first oil receiving chamber into said tank may be increased when the size of said orifice is increased.

4,353,548
BASKETBALL GOAL ASSEMBLY

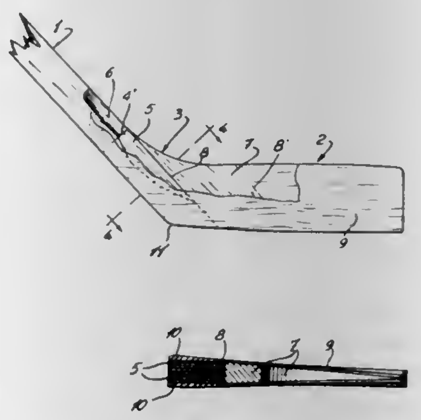
Kenneth J. Mahoney, Dorrance, Kans. 67634
Filed Dec. 12, 1980, Ser. No. 215,647
Int. Cl.^{3} A63B *63/08*
U.S. Cl. 273—1.5 R 7 Claims



1. A basketball goal assembly adapted to be connected to a basketball backboard member, comprising:
(a) a basic support assembly connectable to the backboard member;
(b) a rim assembly having a rim member secured to said basic support assembly;
(c) a net support assembly connected to said rim assembly having a net member connected thereto;
(d) said net support assembly including a net connector member secured to a lower area of said rim member;
(e) said net connector member having dependent connector sections secured thereto to receive a portion of said net member;
(f) each of said connector sections and said rim member forming an opening there between receiving portion of said net member therein from one side thereof;
(g) said net support assembly further including an anchor member trained through said portion of said net member from the other side of said opening to provide vertical support thereto; and
(h) said portion of said net member and said anchor member within respective ones of said openings of a conjoint size to fill the area in said opening to prevent insertion of a person's finger therein.

4,353,549
HOCKEY STICK

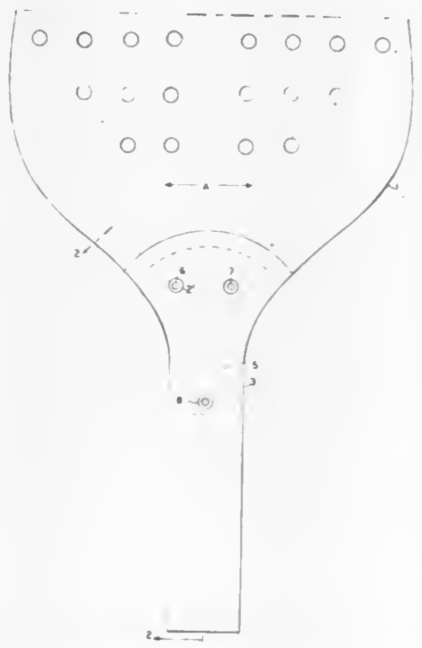
Marcel Goupil, 88 Gall Blvd., Drummondville, Canada (J2C 1H6), and Leo Tessier, 1 Guevremont St., Drummondville, Canada (J2B 2H2)
Filed Dec. 29, 1980, Ser. No. 225,243
Claims priority, application Canada, Dec. 11, 1980, 366588
Int. Cl.^{3} A63B *59/14*
U.S. Cl. 273—67 A 12 Claims



1. A handle for a hockey stick, said handle being elongated and straight and having a rectangular cross-section defining a pair of opposite wider lateral faces and a pair of opposite narrower faces, said handle having a substantially uniform cross-section over the major portion thereof and a progressively-tapering terminal portion, the taper of said terminal portion being across said narrower opposite faces, said handle being made of a core of low density wood and of two groups of lateral laminations of high density wood between which said core is sandwiched throughout its length, said core and laminations adhering to one another, said lateral laminations defining said wider opposite faces, the core section which extends in said terminal portion tapering across said narrower opposite faces, and the thickness of each group of laminations across said narrower faces being substantially uniform throughout the length of said handle.

4,353,550
PADDLE BALL RACKET WITH ADJUSTMENT FOR FLEXING

Andrew Krosnick, 2404 Deerfield Rd., Far Rockaway, N.Y. 11691
Filed Feb. 11, 1981, Ser. No. 233,673
Int. Cl.^{3} A63B *59/00*
U.S. Cl. 273—67 R 3 Claims



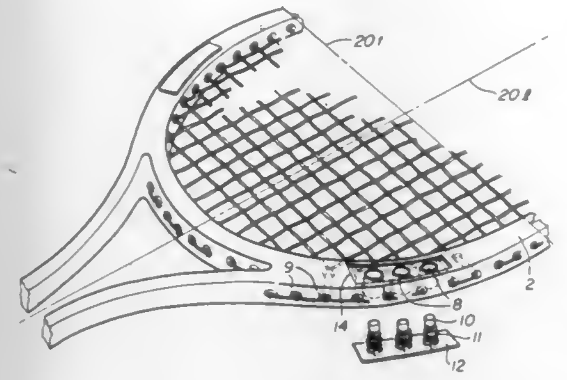
1. Paddle ball racket comprising:
a paddle member having a handle portion,
first and second plates shaped like the handle portion, the first and second plates being mounted on first and second sides of the handle portion,
first and second laterally spaced screws mounted in the upper portion of the plates and a third screw mounted on the lower portion of the plates to squeeze the plates together against the handle portion of the paddle,
whereby the screws may be adjusted to adjust the flexibility of the paddle.

4,353,551
TENNIS RACKET WITH FRAME MOUNTED OSCILLATABLE WEIGHTS

Simon Arieh, Geneva; Jean-Pierre Budliger, Onex, and Guy Courvoisier, Geneva, all of Switzerland, assignors to Battelle Development Corporation, Columbus, Ohio
Continuation-in-part of Ser. No. 61,052, Jul. 26, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 177,993
Int. Cl.^{3} A63B *49/04*
U.S. Cl. 273—73 R 5 Claims

1. An improved tennis racket having a predetermined fundamental vibrational frequency comprising a frame head, a throat, a handle and strings across the frame head and including dynamic weights on the frame head for expanding the

center of percussion in the plane of the strings, improving angular stability and for initially absorbing ball impact energy and thereby damping impact vibrations on the racket but then restoring at least a portion of the absorbed impact energy to the racket while the ball is still contacting the strings characterized in that the weights are coupled to the racket frame head by elastic means at locations on both sides of the longitudinal axis of the frame head between the racket throat and the transverse axis of the head, said elastic means having a predetermined elasticity and orientation such that the weights oscillate in a direction substantially perpendicular to the plane of the strings with an intrinsic frequency of about 1.4–2 times that of the fundamental vibrational frequency of the racket.



4,353,552

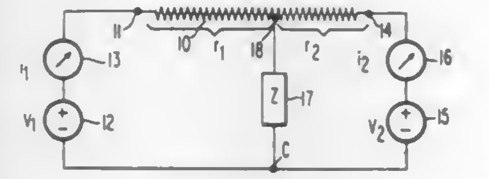
TOUCH PANEL SYSTEM AND METHOD

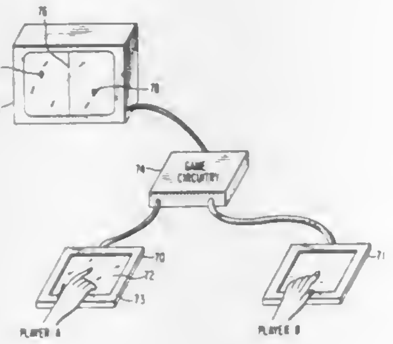
William Pepper, Jr., Bethesda, Md., assignor to Peptek, Incorporated, Bethesda, Md.

Division of Ser. No. 14,450, Feb. 23, 1979, Pat. No. 4,293,734. This application Jan. 29, 1980, Ser. No. 116,502

Int. Cl.³ A63F *9/22*

U.S. Cl. 273—85 G **11 Claims**





1. In a video game system having a visual display, electronic game generating means for generating control signals for said visual display according to the game being played including at least one player controlled game element, at least one player controlled signal generator, said electronic game generating means having input means for receiving control signals from said player controlled signal generator and controlling the position of said player controlled game element in said visual display, at least one player touchable electrically conductive surface, said at least one player touchable electrically conductive surface being adapted to be touched by one or more player's fingers, and means for electrically sensing the position of said player's finger on said electrically conductive player touchable surface and producing a position signal corresponding thereto which position signal is applied to said at least one player control signal input means of said electronic game generator so as to control the position of the player's game element in said visual display, the improvement in said means for electrically sensing the position of said player's finger on said electrically conductive player touchable surface comprising,

said at least one player touchable surface having at least a pair of current collecting means on said surface through which separate currents flow,

means for causing an electrical current to flow through the point touched on said player touchable surface as the sum of the separate currents passing through said electrically conductive surface between the point touched and each boundary of said at least a pair of current collecting means, and

ratiometric means for translating said separate currents to an electrical signal corresponding to the position of the point touched on said player touchable surface and constituting said position signal applied to said at least one player control signal input means of said electronic game generator.

4,353,553

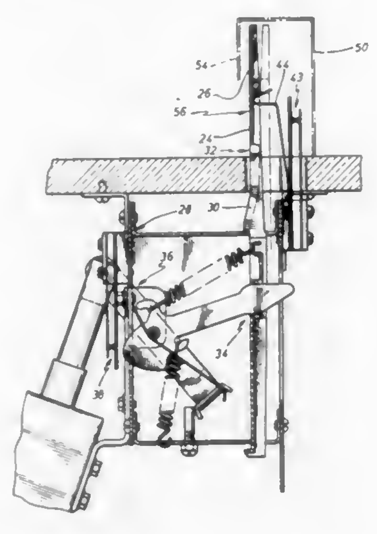
DROP TARGET ASSEMBLY FOR PINBALL GAME

Edward P. Krynski, Downers Grove, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.

Filed Feb. 17, 1981, Ser. No. 234,731

Int. Cl.³ A63D *3/02*

U.S. Cl. 273—121 R **5 Claims**



1. In a flipper-type pinball game machine of the type having an inclined playfield which supports a rolling ball and one or more drop target assemblies, each drop target assembly having a target member which extends through an opening in the playfield to define a ball engageable target area and which is movable to advance the target area between a position above the surface of the playfield and a position below the surface of the playfield, the improved drop target assembly comprising:

(a) means, including at least one slidable member, defining at least first and second ball engageable target areas above the playfield surface, wherein the slidable member is an elongated member having a portion extending above the playfield surface and which defines the first and second target areas to be at different elevations above the playfield when the first target area is in an above-surface position, the slidable member being movable to advance the first target area between a position above the surface of the playfield and a position below the surface of the playfield without advancing the second target area below the playfield surface;

(b) a mechanism for moving the one slidable member upon ball engagement of the first target area, thereby advancing the first target area to the below-surface position and providing said second target area for ball engagement; and

(c) a set of switch contacts disposed in association with the elongated member on the side thereof opposite ball engagement and at an elevation to enable ball engagement of either the first or second target areas to actuate the switch contacts.

4,353,554

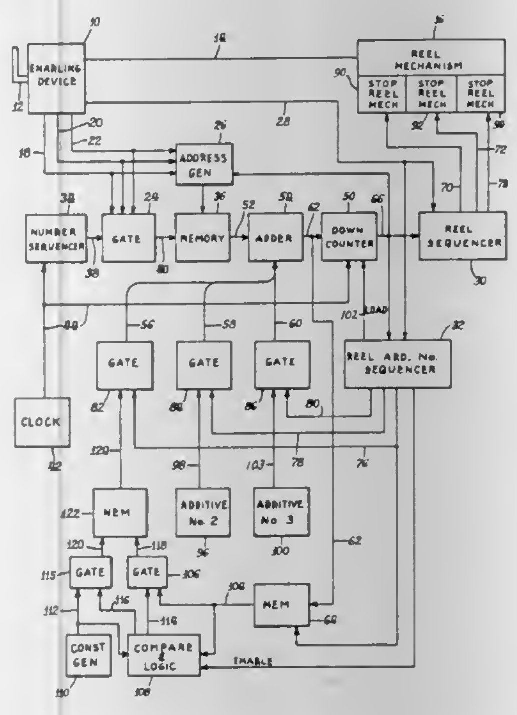
ELECTRONIC RANDOM DELAY GENERATOR FOR GAME DEVICES OR THE LIKE

Laren D. Fisher, Round Lake Park, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 970,241, Dec. 18, 1978, abandoned. This application Sep. 17, 1980, Ser. No. 188,039

Int. Cl.³ A63F *5/04*

U.S. Cl. 273—143 R **22 Claims**



1. Apparatus for use in a game device of the type which has at least one set of symbols that sequentially appear in a viewing area when said set is placed in motion and which has at least one symbol in said viewing area when movement is terminated, comprising:

means for generating at least one enabling signal in response to a player playing said game device;

means for initiating movement of said set of symbols in response to one of said enabling signals;

means for generating a clock signal;

means for cycling through a group of numbers and generating an output signal corresponding to one of said numbers in response to receiving certain ones of said enabling signals and being driven by said clock signal;

means for storing each of said outputs from said cycling means;

means for generating a first signal indicative of a first additive value, said first additive value generating means comprising means for generating a signal corresponding to a first minimum value, means for storing the value of the first additive value from the preceding play of the game device, and means for comparing the preceding play additive value with the minimum value and means for applying the minimum value to said adding means when the preceding play additive value is below the minimum value or above a predetermined maximum value and means applying the preceding play additive value when it is not;

means for adding said first additive value signal to one of said stored output signals and providing a signal corresponding to the summed value;

counter means for receiving said summed value signal and being preset to the summed value thereof, said counter means counting to a predetermined count when driven by said clock signal and providing a counter output signal when said counter means reaches said predetermined count; and

means for stopping said movement of said set of symbols in response to receiving said counter output signal.

4,353,555

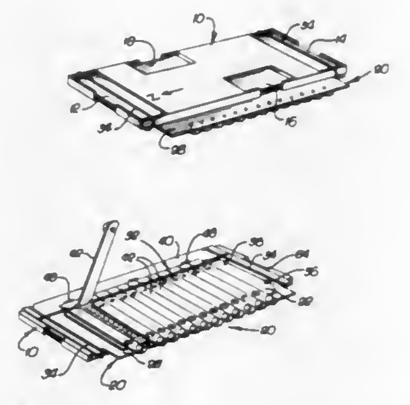
DUPLICATE BRIDGE SCORING SYSTEM

Frederick H. Flam, 2160 Century Park East, Los Angeles, Calif. 90067

Filed Jul. 28, 1980, Ser. No. 172,569

Int. Cl.³ A63B *71/00;* **A63F** *9/00, 1/10*

U.S. Cl. 273—148 R **23 Claims**



1. In match point duplicate scoring apparatus cooperable with a deck of playing cards and with a data card divided by substantially equally spaced transverse parallel lines into a series of individual spaces for writing information corresponding to results of card play:

(a) a duplicate bridge board having four pockets for four sets of thirteen cards corresponding to individual bridge hands;

(b) said duplicate board also having a holder for said data cards;

(c) a series of elongated concealer strips each of the same width corresponding to that of said data card spaces;

(d) each of said concealer strips extending parallel to each other to extend transversely of said data card;

(e) each of said concealer strips being individually manually movable to conceal and to reveal said data card spaces; and

(f) means for retaining said concealer strips with said holder during movement of said concealer strips from concealing position to revealing position and from revealing position to concealing position during the course of use in a play session, whereby said concealer strips are prevented from detaching from the holder.

4,353,556

GOLF CLUB SWING TRAINING AID

James M. Self, and Charles Schaubel, both of Metairie, La., assignors to Golf Bands Products/Louisianna Partnership, New Orleans, La.

Filed Jan. 27, 1981, Ser. No. 228,734

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 A **15 Claims**

2. A golf training aid comprising:

alignment band means;

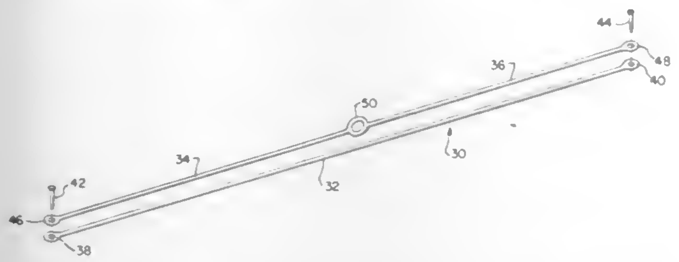
means for attaching one end of said alignment band means to one of a pair of spaced apart mounting points and the other end of said alignment band means to the other of said mounting points to establish a straight baseline;

a first tension member;

means for securing one end of said first tension member to the head of a golf club;

means for attaching the other end of said first tension member to one of said spaced mounting points;

a second tension member;
means for securing one end of said second tension member to said golf club head;
means for attaching the other end of said second tension member to the other of said spaced mounting points;



said first and second tension members urging said golf club head into alignment with a baseline established by said alignment band means; and
said alignment band means being free from protuberances which would interfere with a proper stroke of a golf club when the head of such club is secured to said tension members.

4,353,557
GOLF BALL

Ryota Kajita, Matsudo; Tasuku Saito, Tokorozawa; Tsutomu Matsunaga, Iruma; Sakae Inoue, Kodaira, and Masayuki Ohtake, Yokohama, all of Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

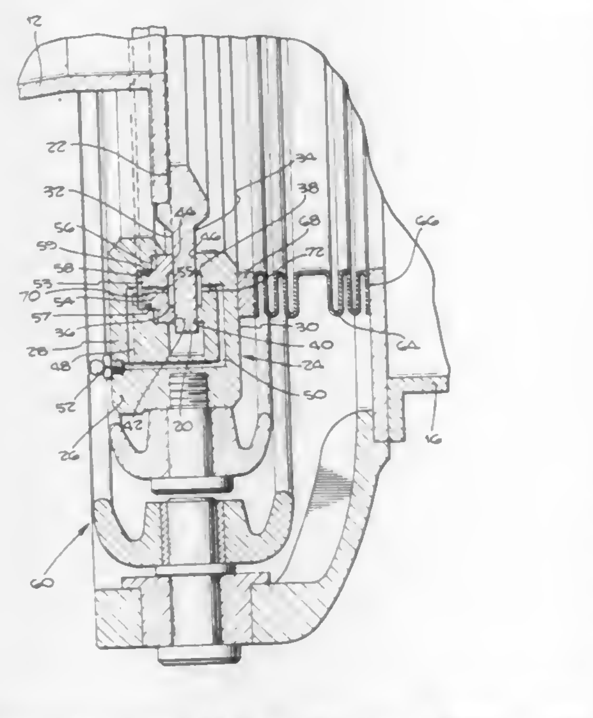
Filed Mar. 3, 1980, Ser. No. 126,748
Claims priority, application Japan, Mar. 16, 1979, 54-31326
Int. Cl.^{3} A63B *37/12;* **C08K** *3/04;* **C08L** *7/00, 9/00*
U.S. Cl. 273—227 **1 Claim**

1. In a rubber thread wound golf ball composed of a core, a rubber thread layer and a cover layer, the improvement comprising; wherein the rubber thread in the rubber thread layer of a rubber composition consists essentially of 100 parts by weight of at least one rubber component selected from the group consisting of natural rubber cis-1,4-polyisoprene and mixtures thereof, and 2–20 parts by weight of carbon black.

4,353,558
HYDROSTATIC RETORT SEAL

Donald Firth, Los Angeles, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Nov. 4, 1980, Ser. No. 203,972
Int. Cl.^{3} F16J *15/40*
U.S. Cl. 277—30 **8 Claims**

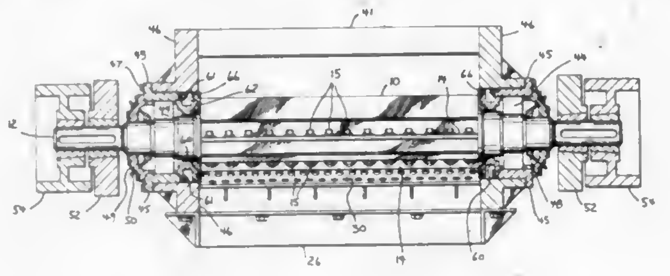


1. Hydrostatic retort seal means adapted to seal the rotating portion of a rotating retort to the stationary retort portions comprising:
first seal surface means associated with said rotating vessel portion for providing an annular sealable surface, said first seal surface means including a radially extending seal disc having first and second side surfaces with the first side surface facing towards the rotating vessel portion and the second side surface facing away from the rotating vessel portion;
second seal surface means associated with said stationary retort portion for providing an annular sealable surface located in sealable relation with said first real surface means, said second seal surface means including an annular seal jacket having first and second integral arm portions extending around said sealing disc adjacent said disc side surfaces, said first arm portion being adjacent said first side surface and said second arm portion being adjacent said second side surface;
interface seal means for sealing the first seal surface means to said second seal surface means by providing a liquid interface seal layer between the first and second seal surface means to prevent escape of gases and liquids from said rotating retort, said interface seal means including annular sealing channels in said arm portions adjacent said disc side surfaces to provide annular sealing chambers for containing said interface seal layer, said sealing channels being open adjacent said side discs whereby said interface seal layer contacts said side surfaces and seals the interface between the side surfaces and arm portions, and wherein at least one of said sealing channels is provided with an annular sealing piston which is slidably mounted within said arm portion whereby the distance between the first and second sealing channels may be varied; and
gimbal means for mounting said second seal surface to provide for movement of said second seal surface to follow nutation of said first seal surface and during rotation of the rotary report.

4,353,559
LABYRINTH SEAL

Mieczyslaw Budzich, Lexington, and Forest G. Fitz, Jr., West Columbia, both of S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Jul. 23, 1980, Ser. No. 171,632
Int. Cl.^{3} F16J *15/44*
U.S. Cl. 277—53 **6 Claims**

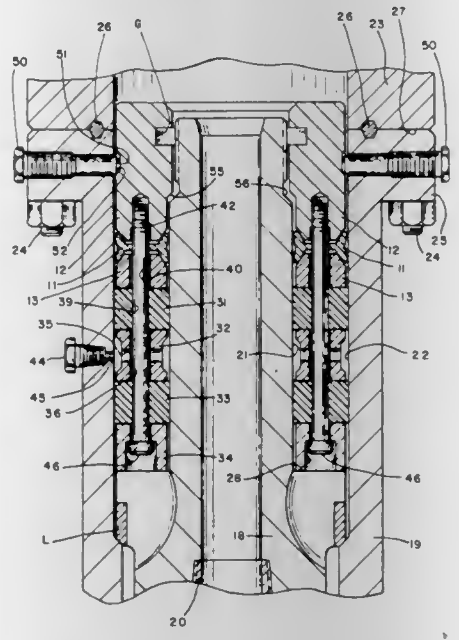


1. A labyrinth seal for a granulator of the type having a rotor that has a blade support from which a shaft extends through a bearing housing, and with the labyrinth seal comprising an annular first section having a tortuous path defining face; an annular second section having a rim and a tortuous radial path defining face located closely adjacent said first section tortuous path defining face; and an annular third section having a plurality of arcuate segments removably mounted to said second section in a position overlaying said second section rim.

4,353,560
METAL SEAL ASSEMBLY WITH DEFORMABLE SEALING RING

Henry O. Tohill, Bossier City, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 7, 1981, Ser. No. 328,053
Int. Cl.^{3} F16J *15/08, 15/10*
U.S. Cl. 277—236 **6 Claims**

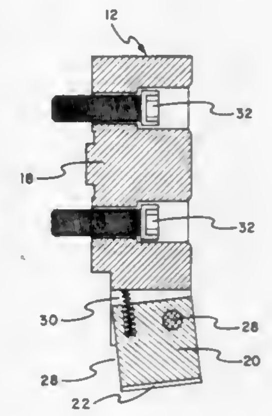


1. A metallic sealing ring assembly for sealing an annulus between concentric tubular members, said metallic sealing assembly comprising:
a metallic sealing ring mounted within said annulus in sleeved relationship about the inner concentric tubular member, said metallic annular sealing ring comprising a central annular rib section;
a first pair of upper and lower annular flanges integrally formed with said rib section at the inner periphery thereof;
each said annular flange of said first pair being characterized by a radially inward facing frusto-conical surface which decreases in diameter to the distal end tip of said flange and is convergent with the other radially inward facing frusto-conical surface of said first pair along the central transverse axial plane through said metallic sealing ring to define therewith the inner peripheral surface of said metallic sealing ring;
and a radially outward facing frusto-conical surface extending upwardly from said rib section and decreasing in diameter to the distal end tip of each said flange;
a second pair of upper and lower annular flanges integrally formed with said rib section at the outer periphery thereof, each said annular flange of said second pair being characterized by a radially outward facing frusto-conical surface which increases in diameter to the distal end tip thereof and is convergent with the other radially outward facing frusto-conical surface of said second pair along the central transverse axial plane through said metallic sealing ring to define therewith the outer peripheral surface of said metallic sealing ring, and each having a radially inward facing frusto-conical surface extending from said rib section and increasing in diameter to the distal end of each said outer flange;
an upper adapter ring having inner and outer diameter substantially corresponding to the inner and outer diameter of said metallic sealing ring and disposed atop said metallic sealing ring in concentric relation therewith, said upper adapter ring adjacent its bottom surface having inner and outer bevelled surfaces, said inner bevelled surface being defined by a radially inward facing frusto-conical surface extending upwardly from the bottom surface of said upper adapter ring and decreasing in diameter to the inner periphery of said upper adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially outward facing frusto-conical surface of the upper flange of said first pair of annular flanges and said outer bevelled surface being defined by a radially outward facing frusto-conical surface extending upwardly from the bottom surface of said upper adapter ring and increasing in diameter to the external periphery of said upper adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially inward facing frusto-conical surface of the upper flange of said second pair of annular flanges;
a lower adapter ring having inner and outer diameters substantially corresponding to the inner and outer diameters of said metallic sealing ring and disposed below said metallic sealing ring in concentric contacting relation therewith, said lower adapter ring adjacent its top surface having inner and outer bevelled surfaces, said inner bevelled surface of said lower adapter ring being defined by a radially inward facing frusto-conical surface extending downwardly from the top surface of said lower adapter ring and decreasing in diameter to the inner periphery of said lower adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially outward facing frusto-conical surface of the lower flange of said first pair of annular flanges, and said outer bevelled surface of said lower adapter ring being defined by a radially outward facing frusto-conical surface extending from the top surfaces of said lower adapter ring and increasing in diameter to the external periphery of said lower adapter ring at a flare angle which is approximately 5° less than the flare angle of the radially inward facing frusto-conical surface of the lower flange of said second pair of annular flanges; and
means for effecting an axial compression of said metallic sealing ring assembly whereby said inner upper and lower pair of annular flanges are deflected radially inward and said outer upper and lower pair of annular flanges are deflected radially outward to engage and establish metal-to-metal seals with the surfaces of the concentric tubular members defining said annulus.

4,353,561
SELF-ALIGNING LATHE CHUCK JAWS

William R. Peterson, Kennewick, Wash., assignor to The United States of America as represented by the Unites States Department of Energy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,519
Int. Cl.^{3} B23B *31/12, 31/16, 31/18, 31/19*
U.S. Cl. 279—123 **1 Claim**



1. A jaw, for use in a lathe chuck having a longitudinal axis of the type wherein the jaws are radially adjustable across the chuck's face to grip a workpiece, comprising:
(a) A jaw base radially adjustable across said face;
(b) a jaw shoe having a generally workpiece-conforming surface engageable with, and generally orientationally matchable with, said workpiece;
(c) means for rotatably attaching said shoe to said base comprising a pivot pin generally perpendicular to the longitudinal axis of said lathe chuck and generally perpendicular to the direction of adjustment of said base and disposed

further from said face than is the centroid of said shoe, wherein said base has a yoke and said shoe has a matching tongue, with said tongue and said yoke also having transverse holes which, when said tongue is disposed in said yoke, form a single bore which contains said pivot pin; and

(d) further comprising biasing means for resiliently tilting said surface comprising a compression spring, with said shoe having a superficies, generally opposite said surface, containing a cavity generally perpendicular to said surface and disposed closer to said face than is said pivot pin, and with said spring disposed in said cavity and contacting said base to resiliently tilt said surface so that, when said jaw is adjusted to grip said workpiece, the portion of said surface closest to said face engages said workpiece first and said surface draws said workpiece into said lathe chuck.

4,353,562
ICE SKATE

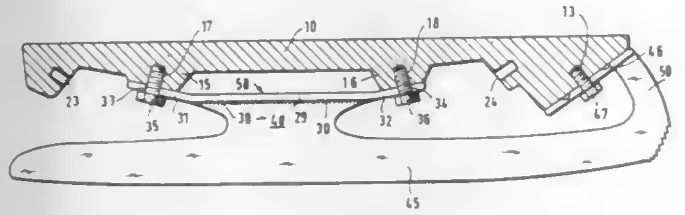
Alfred Tiefenthal, Grenzstrasse 47j, 4220 Dinslaken, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,321

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 8018079[U]

Int. Cl.^{3} A63C *17/18*

U.S. Cl. 280—7.13 **8 Claims**



1. An ice skate, comprising a shoe support adapted to be attached to a shoe of a user; an elongated blade having a front end, said blade being formed with only two upward projections a first projection positioned at said front end and inclined rearwardly towards said support and a second projection extending towards said support and located substantially in the middle of the blade; and connection means for connecting the blade to the shoe support, including a first metallic plate rigidly connected to said first projection and inclined towards the middle of the blade, said first plate being connected to said support by means of at least one screw, and a second metallic plate having a central portion rigidly connected to said second projection and two lateral portions outwardly extending from said central portion in a direction of elongation of the blade, each of said lateral portions being connected to said support by at least one screw.

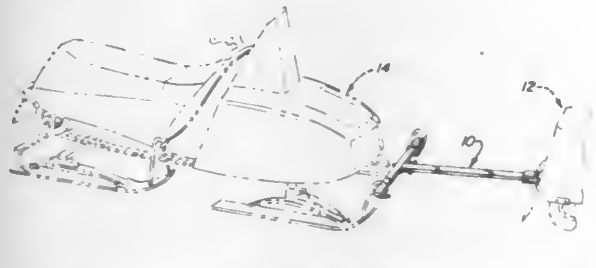
4,353,563
SNOWMOBILE TOWBAR

Thomas R. Foster, 602 Water St., Warren, Ill. 61087

Filed Dec. 10, 1979, Ser. No. 101,893

Int. Cl.^{3} B62B *17/00*

U.S. Cl. 280—24 **9 Claims**



1. A towbar for towing a snowmobile comprising: an elongated tongue, a hitch connected to one end of said tongue for releasably securing the tongue to a vehicle, an elongated crossbar connected to the other end of the tongue for engagement with skis of a towed snowmobile, and an elongated ear connected to each end of the crossbar to hold the crossbar in engagement with the skis, each of said ears having one end fixed to the crossbar and the other end spaced away from the crossbar and extending toward the other end, each of said ears being no greater distance from the hitch than the crossbar.

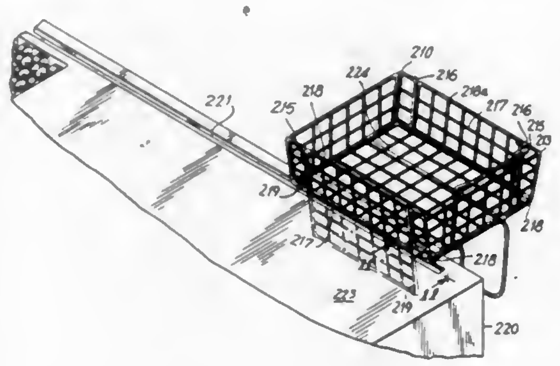
4,353,564
SUPERMARKET COUNTER CONSTRUCTION AND METHOD OF USING SAME

Stanley Joseloff, 185 S. Atlantic Ave., Cocoa Beach, Fla. 32931

Division of Ser. No. 836,031, Sep. 23, 1977, Pat. No. 4,114,727. This application Jun. 15, 1978, Ser. No. 918,611

Int. Cl.^{3} B62B *3/02*

U.S. Cl. 280—79.3 **4 Claims**



1. In a shopping cart having a wheeled frame and a basket element supported thereby, said basket element including front, rear and first and second side walls, the improvement comprising: at least one of said side walls having a slidably mounted portion thereof, selectively positionable between opened and closed positions, said mounted portion being movable in a plane substantially parallel to that of said side wall; resilient means interconnecting said mounted portion and the remainder of said side wall, urging said mounted portion in an upward direction to said closed position; and latching means maintaining said mounted portion in opened position against said resilient means.

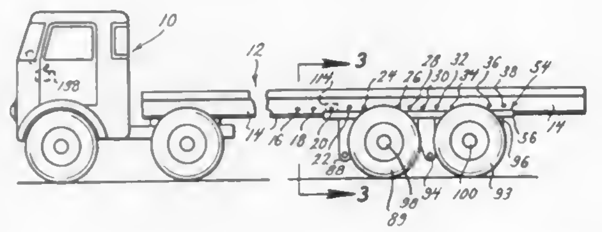
4,353,565
ATTACHMENT FOR AUTOMOTIVE TRAILERS

Gary L. Smith, Granite City; Delbert E. Smith, Cahokia; Floyd D. Catterson, Granite City, all of Ill., and Ronald G. Dooley, P.O. Box 38, Madison, Ill. 62060

Filed Dec. 18, 1980, Ser. No. 217,855

Int. Cl.^{3} B60G *5/06;* B62D *27/04*

U.S. Cl. 280—80 B **16 Claims**



1. A power-actuated locking and unlocking system for two relatively-movable objects which can be selectively locked together for conjoint movement or which can be unlocked for movement relative to each other, said objects being an automotive trailer and a wheel-supporting slider for said automotive trailer which is adjacent the rear of said automotive trailer, said system comprising interacting relatively-movable surfaces on said objects which can permit relative forward or rearward movement of said objects, a power-actuated locking and unlocking member that is mounted on and movable with one of said objects, a plurality of longitudinally-spaced surfaces on the other of said objects that can be selectively engaged by said power-actuated locking and unlocking member, said power-actuated locking and unlocking member being selectively responsive to the application of power to move into locking engagement with various of said longitudinally-spaced surfaces on said other of said objects to lock said objects together in various longitudinally-spaced positions, said power-actuated locking and unlocking member being selectively responsive to the application of power to move to a position wherein it is out of locking engagement with all of said longitudinally-spaced surfaces on said other of said objects to free said objects for relative forward or rearward movement, and said power-actuated locking and unlocking member and any one of said longitudinally-spaced surfaces being adapted to prevent relative forward or rearward movement of said objects and hence to insure conjoint movement of said objects whenever said power-actuated locking and unlocking member responds to the application of power to move into locking engagement with said one of said longitudinally-spaced surfaces, said power-actuated locking and unlocking member being separate from, and being independent of, all braking systems for said automotive trailer.

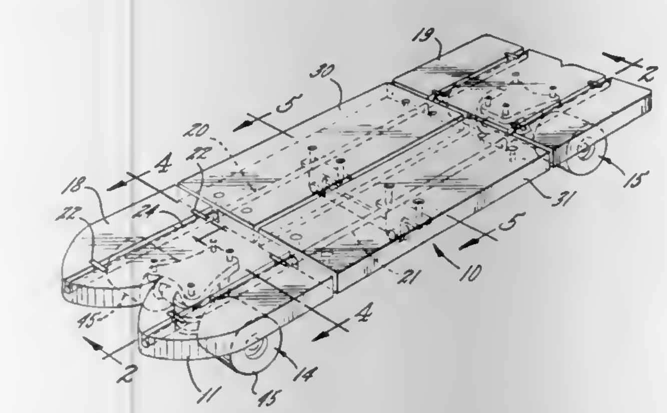
4,353,566
ROLLER SKI TRAINING DEVICE

William Mohlenbrock, Box 1711, Rancho Santa Fe, Calif. 92067

Filed Jan. 11, 1980, Ser. No. 111,366

Int. Cl.^{3} A63C *17/26*

U.S. Cl. 280—87.04 A **13 Claims**



1. A roller ski training device comprising support means, a pair of parallel foot plates upon which a user may stand pivotally carried in side by side relation by said support means, front and rear roller means for carrying said support means for rolling movement, and means for coupling said roller means to said support means and for causing the device to turn in the direction of one side in response to shifting of weight by the user to the foot plate of the other side.

4,353,567
STEERING AND SUSPENSION SYSTEM FOR THE FRONT WHEEL OF A THREE-WHEELED VEHICLE

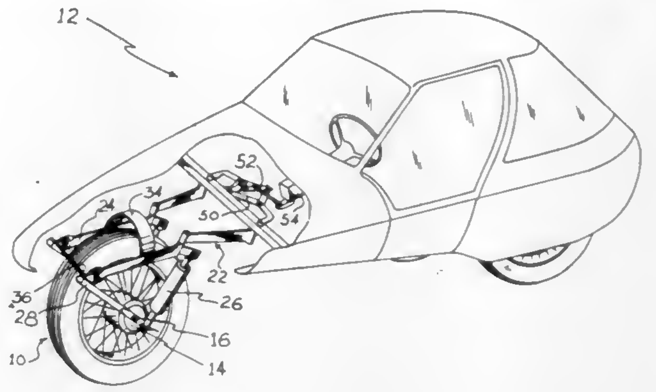
Ross A. Weldy, 61497 Rte. #1, C.R. 3 South, Elkhart, Ind. 46514

Filed Nov. 24, 1980, Ser. No. 209,523

Int. Cl.^{3} B62D *1/02*

U.S. Cl. 280—92 **7 Claims**

1. A steering and support device in combination with a wheel of a vehicle in which said wheel has a hub including a central axle, said vehicle including a frame, said steering and support device comprising: a pair of suspension frames carried by said axle, the first of said suspension frames spaced from and on an opposite side of said wheel from the second suspension frame, a lateral cross brace rigidly connected at one end to said first suspension frame and at its other end to said second suspension frame, a first steering arm pivotally connected at one end to said first suspension frame, and a second steering arm pivotally connected at one end to said second suspension frame, a first pin attached to said first steering arm and pivotally journalled in bearing means on said vehicle frame at a location spaced from said first steering arm one end, a second pin attached to said second steering arm spaced from said second steering arm one end and journalled in a second bearing means on said vehicle frame spaced from said first mentioned bearing means on said vehicle frame, linkage means for associating said first and second steering arms at their opposite ends to a steering control apparatus wherein said linkage means causes the steering arms to rotate about said first and second pins upon actuation of said steering control apparatus to turn said wheel in a chosen direction.



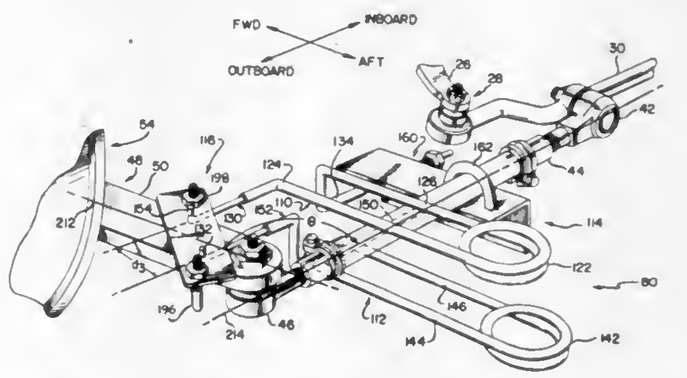
4,353,568
PROGRAMMABLE STEERING CONTROL APPARATUS FOR MOTOR VEHICLES

William A. Boyce, Huntington Beach, Calif., assignor to Macaster Controls, Inc., Huntington Beach, Calif.

Filed Jun. 6, 1980, Ser. No. 157,194

Int. Cl.^{3} B62D *15/02*

U.S. Cl. 280—94 **20 Claims**



7. Programmable steering control apparatus for motor vehicles having left and right steerable wheels, left and right steering arms connected, respectively, to the left and right steerable wheels, left and right tie rods pivotally connected to ends of the first and second steering arms and wheel steering linkages connected to the tie rods, said apparatus comprising:

(a) a pair of first spring elements, each of said first spring elements having tangentially loaded, helical spring coils with attachment ends connected thereto, said first spring element attachment ends being configured to cause opening of said coils in response to said ends being pulled apart and closing of said coils in response to said ends being pushed together;

(b) a pair of second spring elements, such of said spring elements having tangentially loaded, helical spring coils with attachment ends connected thereto, said second spring element attachment ends being configured to cause closing of said coils in response to said ends being pulled apart and opening of the coils in response to said ends being pushed together;

(c) means for connecting one each of the first and second spring elemens, in mutual parallel relationship, between the left steering arm and left tie rod and the other one each of the first and second spring elements, in mutual parallel relationship, between the right steering arm and right tie rod, to cause, when the wheels are swiveled from one turn direction to the other turn directional change in loading of the spring elements between push and pull loading; and

(d) means for selectively preloading said first and second spring elements after said spring elements are connected between the steering arm and the tie rods for enabling, when one of the spring elements connected between one of the steering arms and tie rods is unloaded from the selected preload thereof by swiveling of the wheels, the spring element connected in parallel therewith is loaded more heavily from the selected preload thereof.

4,353,569

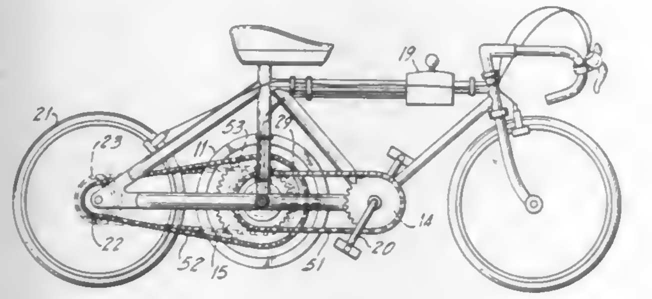
FREEWHEEL FLYWHEEL TRANSMISSION SYSTEM

Antonio F. Molina, 105-10 66th Ave., Apt. 3C, Forest Hills, N.Y. 11375

Filed Sep. 14, 1978, Ser. No. 942,423

Int. Cl.^{3} B62M *1/10*

U.S. Cl. 280—217 3 Claims



1. An inertia vehicle, comprising:
(a) a frame;
(b) an axle supported by said frame;
(c) a hub shell rotatively supported by said axle;
(d) a flywheel rigidly mounted on said hub shell;
(e) first sprocket means rigidly mounted on said hub shell;
(f) power means for rotating said first sprocket means;
(g) second sprocket means, having a diameter greater than the diameter of said first sprocket means, rotatively supported on bearings by said hub shell, and positioned adjacent to said flywheel right side,
(h) first clutch means for engaging and disengaging said second sprocket means and said flywheel;
(i) third sprocket means, having a diameter smaller than said second sprocket means, rotatively supported on bearings by said hub shell; positioned adjacent to said flywheel left side;
(j) second clutch means for engaging and disengaging said third sprocket means and said flywheel;
(k) a driven wheel rotatively supported by said frame, including fourth and fifth sprocket means mounted at right and left sides on the axle of said driven wheel, and further having first and second transmission means for coupling the rotation of said second and third sprocket means, respectively, to said fourth and fifth sprocket means, whereby activation and de-activation of said first and second clutch means enables the transmission of rotational movement from said flywheel to said fourth and fifth sprocket means.

4,353,570

OIL BRAKE DEVICE FOR USE IN BICYCLES

Kuniyoshi Kanazawa, 2-21-5 Nakamiya, Asahi-ku Osaka-shi 535, Japan

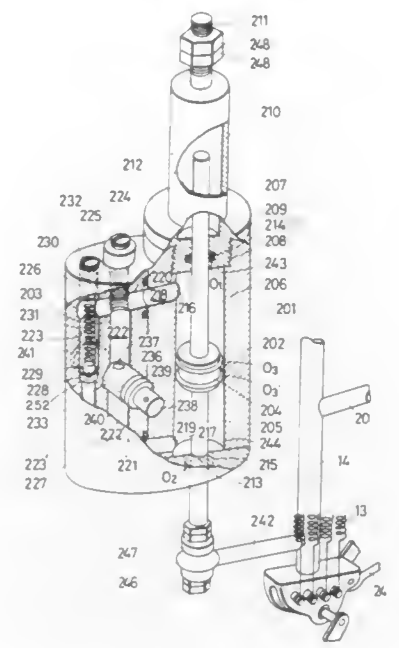
Filed Apr. 18, 1980, Ser. No. 141,622

Claims priority, application Japan, Apr. 21, 1979, 54-49234

Int. Cl.^{3} B62J *1/06*

U.S. Cl. 280—283 5 Claims

1. An oil brake device for use in bicycles wherein a saddle support is suspended independent of a main body frame, said saddle support having a saddle and a rear wheel driving gear means secured respectively to the upper and the lower ends of said saddle support, said oil brake device comprising an oil cylinder having upper and lower ends with said upper end of said cylinder being adjacent said upper end of said saddle support, a piston rod provided in said cylinder moving together with said saddle support, an oil passage opened at and communicating with the upper and lower ends of the cylinder chamber of said oil cylinder thereby establishing an oil circuit with the oil cylinder chamber, and a main valve located in said oil passage and operated together with a wheel brake to block the flow of oil inside the oil passage by operating the wheel brake and to permit the flow of oil by releasing the brake.



4,353,571

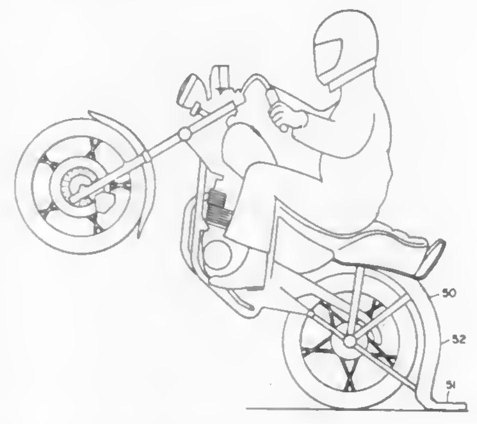
WHEELIE SUPPORT

Ray C. Anderson, 7605 S. Quebec, Tulsa, Okla. 74136

Filed Sep. 26, 1980, Ser. No. 191,124

Int. Cl.^{3} B62H *1/12;* **B62J** *27/00*

U.S. Cl. 280—295 3 Claims



1. Apparatus for use with a two-wheeled conveyance having a frame, such as a motorcycle or bicycle, having a forward and a rearward wheel, providing means when the front wheel is raised off the support surface to add stability to the vehicle, comprising:

a fender covering the upper portion of the rear wheel of the conveyance;

means affixed to and extending rearwardly of the conveyance rear wheel fender which is normally above and out of contact with the support surface, and which engages the support surface when the conveyance front wheel is raised off the support surface a preselected amount.

4,353,572

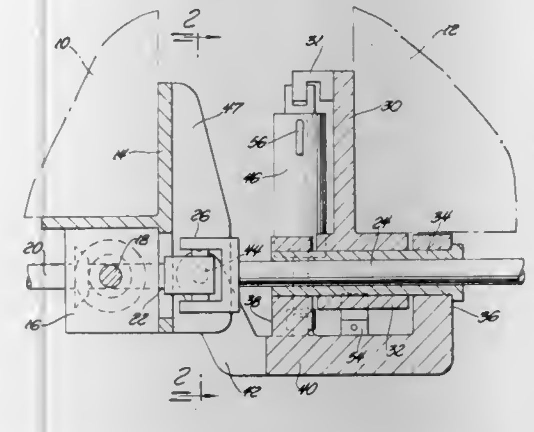
ARTICULATION JOINT ROLL STABILIZER

William T. McCain, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1980, Ser. No. 155,341

Int. Cl.^{3} B60D *7/00*

U.S. Cl. 280—492 2 Claims



1. An articulated wheeled vehicle comprising a tractor; a trailer; a first hitch fitting (**14**) carried by the tractor at its rear end; circular bearing means (**32**) carried by the trailer front end, said bearing means extending along the trailer longitudinal centerline to define a trailer roll plane axis; a second hitch fitting (**40**) swingable on said bearing means in the trailer roll plane; said second hitch fitting including two laterally spaced arms (**42**) extending forwardly from the trailer toward the first hitch fitting; hinge pin means (**44**) connecting the second hitch fitting spaced arms to the first hitch fitting; said hinge pin means extending along a horizontal axis transverse to the tractor longitudinal axis in intersecting relationship to the aforementioned trailer roll plane axis, whereby the hinge pin means defines a tractor-trailer pitch plane axis; hydraulic means for introducing mechanical resistance to motion of the trailer in the roll plane; said hydraulic means comprising a closed hydraulic circuit that includes at least one hydraulic piston-cylinder mechanism trained between the trailer and the second hitch fitting, said piston-cylinder mechanism defining two piston-cylinder chambers of inversely-varying volume; a fluid line (**52, 56**) interconnecting the two chambers; and

a solenoid valve (**54**) in said fluid line; said valve having a first substantially closed condition offering substantial resistance to liquid flow through the fluid line, and a second open condition offering minimum resistance to liquid flow through the fluid line.

4,353,573

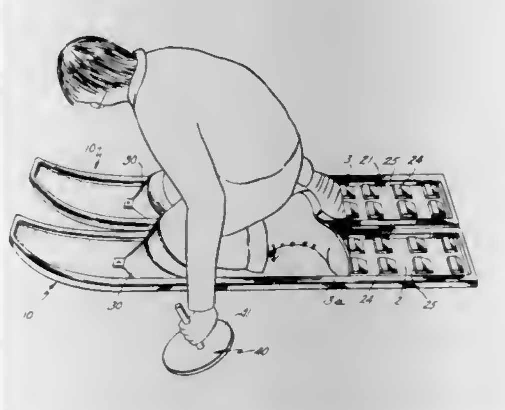
KNEE ENGAGING SKI

Donald F. Morgan, 133 E. Central Ave., Zeeland, Mich. 49464

Filed Aug. 18, 1980, Ser. No. 178,799

Int. Cl.^{3} A63C *5/00*

U.S. Cl. 280—606 8 Claims



1. A ski-like board member for slidably supporting a person in kneeling position for movement over a low friction surface, said device having an elongated body formed as an integral single unitary piece with an upwardly curved forward end, an upstanding, rearwardly inclined, transverse panel defining a rearwardly facing pocket of a size and shape to receive a person's knee, said pocket being forwardly bowed and adjacent to and rearward of said curved forward end; an upstanding stop integrally formed with said body and having a forwardly facing substantially vertical wall for engaging the toe of a person's boot, said stop being spaced from said pocket and adjacent the rearward end of said body.

4,353,574

SKI BINDING STRUCTURE

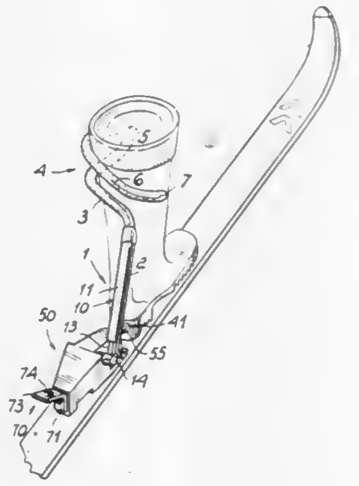
Antonio Faulin, Via G. da Procida 4, Milano, Italy

Filed Feb. 4, 1980, Ser. No. 118,377

Claims priority, application Italy, Feb. 16, 1979, 20285 A/79; Aug. 8, 1979, 24981 A/79

Int. Cl.^{3} A63C *9/08*

U.S. Cl. 280—613 10 Claims



1. A ski binding structure comprising a front latching means and a rear latching means for removably securing a skier's footwear to a ski, said front latching means comprising a front latching body fixed to said ski and said rear latching means comprising a rear latching body connected to said ski, a substantially rigid rod-like element having one end pivotally connected to said rear latching body for rotation about an axis substantially parallel to an upper ski surface and substantially perpendicular to a ski longitudinal extension, said rod-like element having another end shaped for engaging a skier's leg at a middle portion thereof, resilient means arranged between said rod-like element and said rear latching body for maintaining said rod-like element in contact with the skier's leg, wherein said front latching means further comprises a recess in a sole of said skier's footwear in a front sole portion and a peg in said recess, said front latching body and said peg being shaped for removable mutual engagement, and wherein said rear latching means further comprises a rear groove defined at a rear portion of said skier's footwear and a plunger housed in said rear latching body and extending towards said front latching means and resiliently and detachably engaging said rear groove, said rear groove and said plunger being arranged such as to maintain said skier's footwear slightly raised from the ski under normal rest conditions.

4,353,575

SKI BINDING

Ralph E. Brice, 3012 124th Ave. Northeast, Bellevue, Wash. 98005

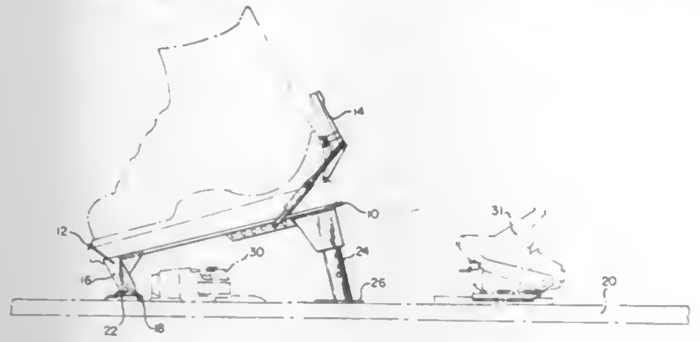
Filed Oct. 9, 1980, Ser. No. 195,392

Int. Cl.^{3} A63C *9/00*

U.S. Cl. 280—614 5 Claims

1. A detachable alpine ski binding suitable for use on a downhill ski of the type having a downhill binding with releasable toe and heelpieces, comprising:

bridge means having a forward end detachably mounted on the ski forward of the downhill binding toepiece for supporting the forward portion of a ski boot above the downhill binding toepiece,



means engageable with the ski for supporting the rearward portion of the ski boot between the downhill binding toe and heelpieces while allowing the rearward portion of the ski boot to move freely upward, and

means for holding a boot on the platform.

4,353,576

SYSTEM FOR BINDING A BOOT TO A SKI

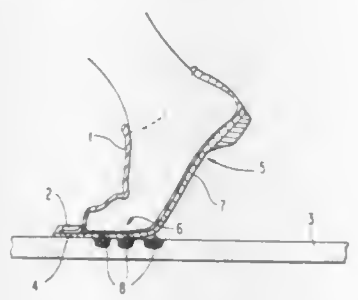
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon & Fils, Annecy, France

Filed Jan. 18, 1980, Ser. No. 113,164

Claims priority, application France, Jan. 26, 1979, 79 02002

Int. Cl.³ A63C ***9/10***

U.S. Cl. 280—615 14 Claims



1. A system for binding a boot to a ski intended for cross-country skiing, comprising

(a) means for connecting said boot and said ski located at the front of said boot and allowing the heel of said boot to lift with respect to the top surface of said ski; and

(b) means for laterally retaining said boot on said ski during the full course of its descent from a position in which its metatarsal and heel portions are raised from the surface of said ski, to a position in which said portions rest on said ski, said means being located between the sole of said boot and the top surface of said ski under the metatarsal zone of the foot of the user of said ski, and comprising two members, one of said members comprising at least one rigid piece provided with at least one projection, the other of said members comprising a piece made of soft, elastic material for said one of said members;

(c) one of the said members being fixedly arranged on the part of said sole corresponding to the plantar support zone of the metatarsal zone, and the other of said members being affixed to said ski in the zone where said first member abuts.

4,353,577

ADJUSTABLE-BACKREST COLLAPSIBLE STROLLER

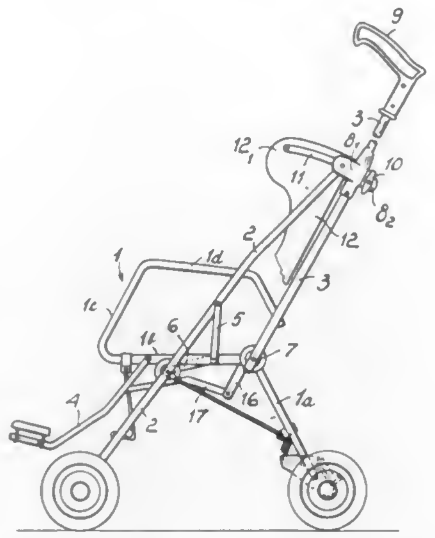
Pietro Giordani, Via Rupe, 19 - Sasso Marconi (Province of Bologna), Italy

Filed Nov. 26, 1979, Ser. No. 97,583

Claims priority, application Spain, May 8, 1979, 480.368

Int. Cl.³ B62B ***7/02***

U.S. Cl. 280—642 3 Claims



1. In a widthwise and lengthwise collapsible baby stroller having a longitudinal plane of symmetry, an adjustable backrest structure, a seat structure defining a seating plane and four legs supporting the backrest and seat structure, and including a pair of approachable wheeled front legs and a pair of approachable wheeled rear legs, the improvement comprising said seat structure including a left side portion and a right side portion in symmetrical relationship to each other with respect to said longitudinal plane of symmetry, each of said side portions comprising a multiply bent rod member having a first extension forming integral therewith one of said rear legs, a second extension integral therewith beginning at a first bent of said rod member and directed transverse to said first extension and parallel to said seating plane, a third extension extending transverse to said second extension in a direction opposite to said rear leg forming first extension and departing from a second bent of said rod member at the front side of said second extension remote from said first bent and a fourth extension extending from a third bent of said rod member remote from said second bent and extending above and in the direction of said seat forming second extension from the front towards the rear of the stroller, said third and fourth extension forming one of symmetrically arranged armrests of the stroller,

said backrest structure including symmetrically arranged, on each lateral sides thereof an upright rod member articulated at a lower end thereof with said multiply bent rod member at said first bent thereof and having at the opposite end thereof a handle member for the stroller, a first articulation point supported by said upright rod member and located below and adjacent said handle member,

said pair of approachable wheeled front legs including for each front leg a connecting rod member extending from the respective front wheel up to said first articulation point defining a first articulation relationship between said connecting rod member and said upright rod member, lever means connected with said second extension of said multiply bent rod member and providing a second articulation point defining a second articulation relationship between said connecting rod member and said multiply bent rod member,

said backrest structure including further a central structure portion angularly adjustable with respect to said upright rod members, said central structure portion having a lower end thereof connected in articulation relationship with said multiply bent rod member at said first bent thereof, said central structure portion having an upper end thereof including guide means extending in the longitudinal direction of the stroller, said upright rod members having slider means rigid therewith and in slidable engagement with said guide means to allow adjustable displacement of said upper end of said central structure portion along said guide means thereby to cause angular displacement of said central structure portion about said articulation relationship thereof.

4,353,578

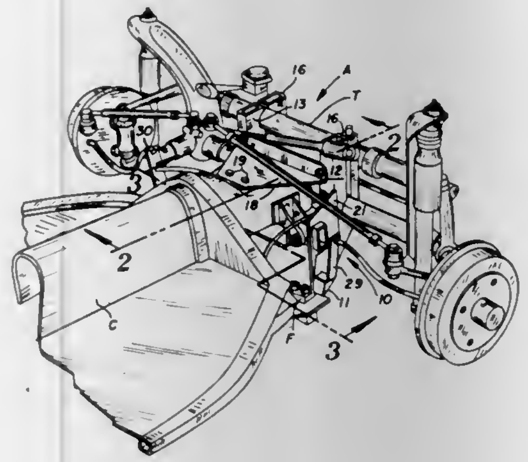
AUTOMOBILE FRAME CONVERSION UNIT

Gerald W. Knapp, Cokato, Minn., assignor to Elite Enterprises Inc., Minn.

Filed Oct. 17, 1980, Ser. No. 197,913

Int. Cl.³ B62D ***21/00***

U.S. Cl. 280—781 7 Claims



1. An automobile frame conversion unit for the replacement of a normally provided first front axle assembly of the automobile with a second selected front axle assembly, the automobile frame including a forwardly extending tunnel chassis and the second selected front axle assembly including a pair of vertically spaced torsion bar members, said conversion unit including:

a. a rearwardly directed tunnel clamping assembly including a pair of vertically spaced plate members received on vertically opposite sides of the tunnel portion of the frame with means for clamping said tunnel therebetween;

b. a forwardly directed clamping assembly including a pair of first horizontally spaced, vertically upstanding elements secured to the lower of said vertically spaced plate members and extending upwardly therefrom, each of said first upstanding elements includes recessed portions which receive said torsion bar members;

c. means for securing the upper portions of said upstanding elements to said upper plate of said clamping assembly;

d. a pair of second horizontally spaced, vertically upstanding elements, each of said second upstanding elements includes recessed portions which receive said torsion bar members; and,

e. a pair of clamp members which clamp said second upstanding elements to said first upstanding elements with said torsion bars received in said recessed portions.

4,353,579

AUTOMOBILE PASSIVE TYPE SAFETY SEAT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

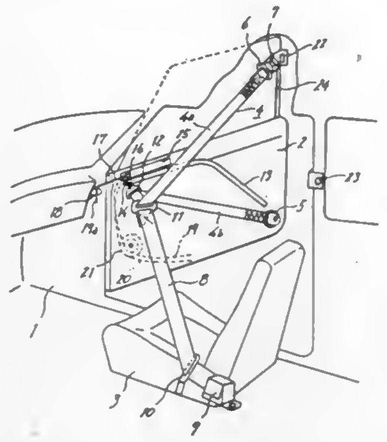
Filed Oct. 10, 1980, Ser. No. 195,726

Claims priority, application Japan, Oct. 18, 1979, 54-143328[U]

Int. Cl.³ B60R ***21/10***

U.S. Cl. 280—804 4 Claims

1. In a passive occupant restraint belt system for a vehicle which includes a restraining belt, apparatus for moving the belt from an occupant-restraining position to an occupant-releasing position in response to opening of a door of the vehicle comprising belt transfer means engaging the belt for moving the belt along a guide means from the restraining position to the releasing position, and output transmission means coupled to the belt transfer means for transmitting and amplifying opening motions of the door to the transfer means, and a motion amplifier mounted in the door, the improvement wherein the motion amplifier comprises (a) an output gear wheel engaging the output transmission means of the belt and (b) a second input gear wheel having a smaller diameter and mounted concentric to and rotatable with the output gear wheel and engaging a second input transmission means, the second input transmission means being coupled to the rearward end of a link rod by a second transfer means received in a second guide means and transferable between a rearward position along the second guide rail corresponding to the occupant-restraining position and a forward position along the second guide rail corresponding to the occupant-releasing position, the forward end of the link rod being releasably attached to the body of the vehicle.



4,353,580

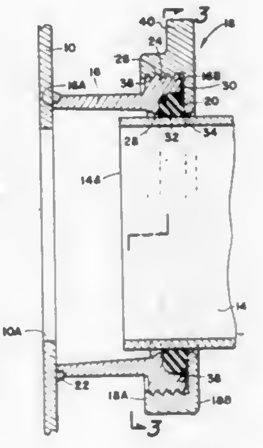
APPARATUS FOR REMOVABLY ATTACHING A PIPE

Theodore B. Houck, Rte. 1, Box 46, Haskell, Okla. 74436

Continuation of Ser. No. 165,775, Jul. 3, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,331

Int. Cl.³ F16L ***41/00***

U.S. Cl. 285—39 3 Claims



1. Apparatus for removably attaching a pipe comprising:

a tubular body of short axial length adapted at its inner end for attachment to a vessel, pipe or other object with which communication is required, the body having, at the outer end an integral enlarged external diameter portion having external threads thereon, the body having adjacent and spaced from its outer end an integral reduced internal diameter circumferential portion, the internal diameter of which is slightly greater than the external diameter of the pipe to be attached, the outer end surface of the tubular body being defined in cross-section in a plane of the tubular axis by an outer planar portion perpendicular the tubular axis providing a relatively large area planar annular surface and by an inward semi-circular portion of selected radius connecting the reduced internal diameter portion and the planar annular end surface;

a circular flange having an inner end and outer end and having an axial opening therethrough of internal diameter slightly greater than the external diameter of the pipe to be attached and substantially equal to the internal diameter of said body reduced internal diameter portion, and having an enlarged internal diameter portion communicating with said inner end and having internal threads dimensioned to engage said body external threads, and the flange being defined in a plane of the tubular axis by a relatively large area annular planar surface extending from said axial opening therethrough to said enlarged internal diameter threaded portion;

a toroidal gasket defined in cross-section by a circle of a radius substantially equal said tubular body end surface semi-circular portion radius, the gasket having an internal diameter substantially equal or less than the external diameter of the pipe to be received, the gasket being received on a pipe between said body and said flange within said body end semi-circular portion, the gasket being compressed sealably against the pipe and normally extending beyond said tubular body outer planar surface and as said flange is threadably tightened onto said body to the maximum tightened position, said flange annular planar surface engages and compresses the gasket and engages said body large area planar annular surface; and

said flange having an external circumferential surface having a plurality of spaced apart increased external diameter lobes whereby said flange may be threaded onto or off of said body by hammering on the lobes.

4,353,581

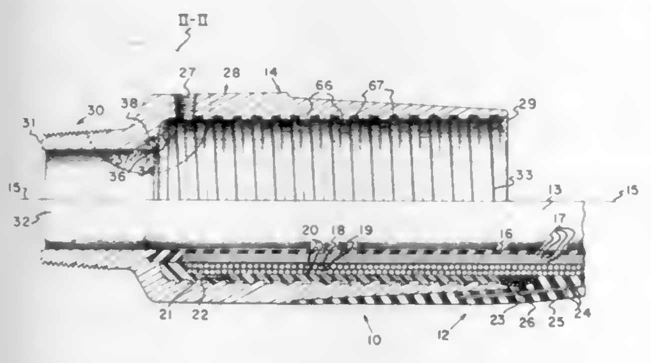
HOSE COUPLING

George W. Eisenzimmer, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 28, 1980, Ser. No. 210,944

Int. Cl.^{3} F16L *39/02*

U.S. Cl. 285—149 **10 Claims**



1. In combination, a reinforced hose and coupling assembly comprising:

(a) a hose including a radially innermost tube of elastomeric material, at least two plies of reinforcing elements, and a cover layer of polymeric material;

(b) a rigid coupling having a nipple portion joined to a sleeve portion that extends over the hose, said nipple portion having a coaxial bore therethrough in communication with a counterbore of greater dimension extending coaxially through said sleeve portion, said coupling including a generally radial shoulder that defines the maximum extent of the counterbore, said coupling including an annular recess extending from said shoulder toward the nipple portion, said recess being filled with elastomeric material that is adhered to the surfaces defining the recess and to the radially innermost tube of said hose;

(c) said plies of reinforcing elements extending into the sleeve portion and not beyond said shoulder and being embedded in an anchoring matrix material disposed within the sleeve portion of the coupling that anchors the reinforcing elements to the sleeve portion of the coupling.

4,353,582

DOOR LOCK WITH TWO LOCK CASE PORTIONS DISPOSED IN PARALLEL OPPOSED RELATIONSHIP

Willi Eigemeier, Friedrichshaller Strasse 66/1, Bad Friedrichshall D-7107, Fed. Rep. of Germany

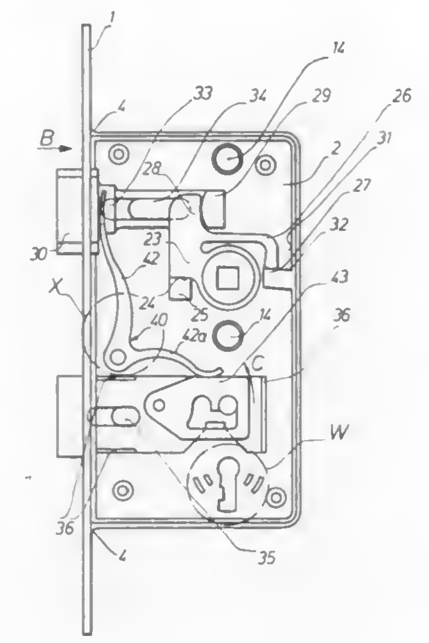
PCT No. PCT/EP79/00001, § 371 Date Mar. 18, 1980, § 102(e) Date Mar. 18, 1980, PCT Pub. No. WO80/00359, PCT Pub. Date Mar. 6, 1980

PCT Filed Jan. 15, 1979, Ser. No. 193,948

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833622

Int. Cl.^{3} E05B *65/06;* E05C *1/12*

U.S. Cl. 292—169.15 **15 Claims**



1. A door lock comprising two lock case parts disposed in parallel opposed relationship and forming a lock case, an injection molded resilient thermoplastic material follower mounted in the lock case and moveable therein between inoperative and operative positions, the follower having a body part which in the follower inoperative position is engaged against a stop bar in the case, said follower further having a lever-like follower leg, said lock further including a spring bolt, a tumbler and a spring member engageable with both said spring bolt and said tumbler, radial rotative movement of the follower to an operative position causing lateral shifting of the spring bolt, characterized in that

the follower leg forks off the follower body part and bears against an abutment structure in the lock case, said follower leg resiliently bending outwardly relative to the body part upon radial rotary movement of the follower from inoperative to operative positions, the spring bolt and tumbler spring member being a structure having free legs which are integral with a base structure, one leg of said spring member engaging the spring bolt and the other the lock tumbler.

4,353,583

SEAL OF THE PADLOCK TYPE

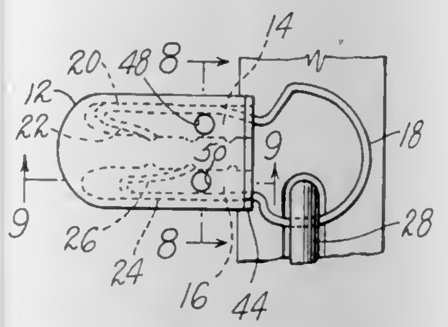
Sigurd M. Moberg, Etlan, Va., assignor to E. J. Brooks Company, Newark, N.J.

Continuation of Ser. No. 661,829, Feb. 26, 1976, abandoned. This application Apr. 29, 1980, Ser. No. 144,871

Int. Cl.^{3} B65D *33/34*

U.S. Cl. 292—320 **3 Claims**

1. A padlock-type seal, comprising a housing having a cavity opening to the exterior of the housing and a U-shaped wire shackle, said shackle having a pair of legs, one leg being attached to the seal housing, the other leg being disposed in the cavity and having a reverse bend near the end thereof forming a bight which is flexed together by the cavity walls, and a straight walled obstruction extending through the cavity, said obstruction being smaller in plan area than the cavity and being positioned to be in the path of the bight if attempts are made to pull the leg out of the cavity, said obstruction being formed by deforming a wall portion of the cavity inwardly through the cavity to form a surface indentation on one side of the seal and causing a wall portion on the opposite side of the seal to provide visual indication of sealing.



4,353,584

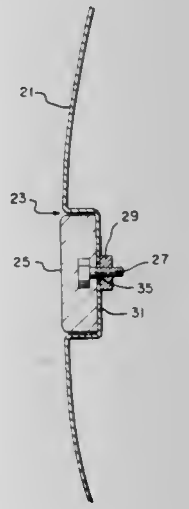
LOCKABLE REMOVABLE DECORATIVE AND PROTECTIVE PANELS FOR VEHICLES

Bruce E. Lovett, 1005 Congress La., McLean, Va. 22101

Continuation-in-part of Ser. No. 100,262, Dec. 4, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 238,073

Int. Cl.^{3} B60R *19/00*

U.S. Cl. 293—1 **5 Claims**



1. A removable locking panel for a vehicle which comprises:

(a) a frame region on the exterior surface of a vehicle, said frame region having an open end and substantially the same or continuously narrower dimension in a direction away from said open end;

(b) a panel of substantially the same outer contour as the inner contour of said frame region removably positioned in said frame; and

(c) locking means, accessible and operable only from the interior of said vehicle and positioned within said frame region and the interior of said vehicle.

4,353,585

FISHING TOOL TO RETRIEVE CABLES FROM WELLS

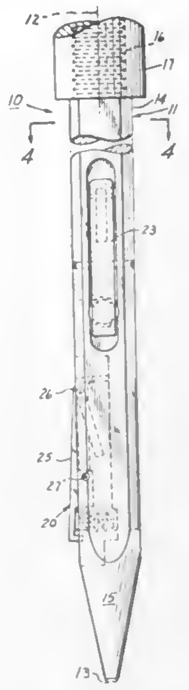
Herman C. Carver, 1105A Sequoia, Bakersfield, Calif. 93308

Filed Oct. 2, 1980, Ser. No. 193,304

Int. Cl.^{3} E21B *31/12*

U.S. Cl. 294—86.1 **13 Claims**

1. A fishing tool to snag and retrieve cables from wells, comprising: an elongated body having two ends, a substantial length, and a peripheral boundary of lesser lateral dimensions than a well down which the tool is to be sent with a first of its ends pointed down; a snag member comprising a shank and a snag end on said shank, said shank being mounted to said body so that said snag end faces toward the second of said ends and so that said snag end is movable toward and away from said peripheral boundary; bias means biasing said shank to move said snag end toward said peripheral boundary; and detent means interposed between said snag member and said body adapted to releasably hold said snag member with its snag end away from said boundary in oppostion to the bias force exerted by said bias means, and upon release to permit said bias means to move said snag member to cause said snag end to move toward said boundary in the absence of some other impediment thereto.



4,353,586

VIBRATION DAMPED RAILWAY WHEEL

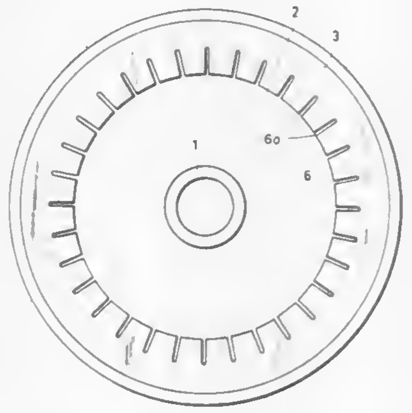
Erwin Raquet, Witten, and Richard Klatt, Bochum, both of Fed. Rep. of Germany, assignors to Fried. Krupp Huttenwerke AG, Bochum, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 903,013

Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720333; Jun. 3, 1977, 2725177; Nov. 12, 1977, 2750743; Mar. 11, 1978, 2810568

Int. Cl.^{3} B60B *17/00, 19/00;* F16F *15/10;* F16H *55/14*

U.S. Cl. 295—7 **33 Claims**

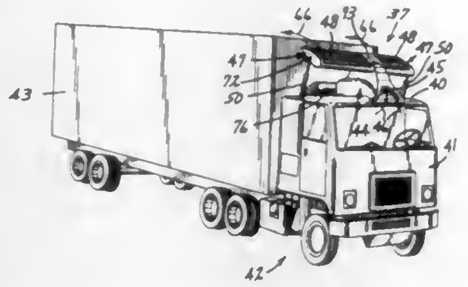


1. In a vibration absorber for absorbing the vibrations of a vibration absorbing track wheel having at least one natural frequency, said track wheel having a wheel body with a wheel flange, and at least one resonance absorber on said track wheel, the improvement comprising:

said at least one resonance absorber including at least two adjacent and contiguous tongues each having one end rigidly connected with each other and said track wheel and a layer of damping material intermediate beween each said two adjacent tongues, said two adjacent tongues each being tuned to different natural frequencies of said wheel and being coupled over their whole length to said wheel by said intermediate damping material.

4,353,587
TRANSPORT VEHICLE ACCESSORY

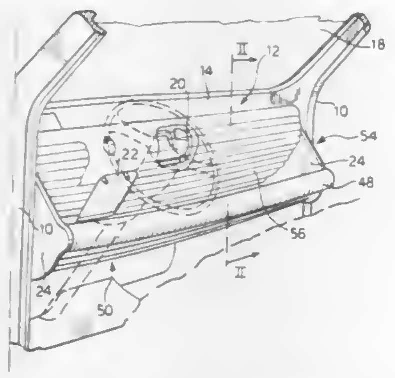
David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.
Filed Sep. 29, 1980, Ser. No. 192,321
Int. Cl.^{3} B62D *35/00*
U.S. Cl. 296—15 14 Claims



1. An accessory, to be mounted on the cab roof of a traction vehicle having a power plant with inlet and exhaust conduits, to interact with and direct the air stream resulting from forward movement of the vehicle, said accessory including:
means for directing the air stream so as to reduce the effective wind resistance of a load compartment behind the cab;
a ram air inlet positioned in the path of said air stream;
mean for connecting said inlet to said inlet conduit;
at least one exhaust gas outlet positioned to discharge into said air stream; and
means for connecting said outlet to said exhaust conduit.

4,353,588
OBJECT-HOLDING TRAY FOR MOTOR VEHICLES

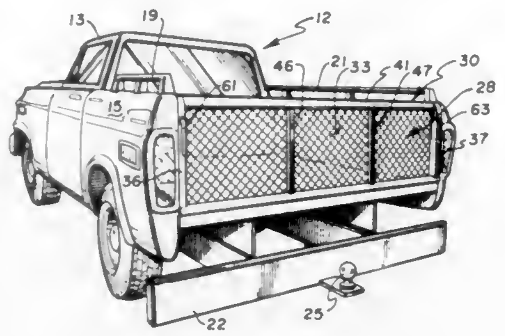
Giorgetto Giugiaro, and Aldo Mantovani, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy
Filed Jun. 10, 1980, Ser. No. 158,093
Claims priority, application Italy, Aug. 21, 1979, 53522/79[U]
Int. Cl.^{3} B60R *5/00*
U.S. Cl. 296—37.1 5 Claims



1. In a motor vehicle body having a passenger compartment defined by a pair of side walls, an upper frontal transverse wall portion inclined upwardly to the base of the vehicle windshield, and a lower frontal transverse wall portion inclined downwardly towards the front of said vehicle and cooperating with said upper wall portion to form a substantially L-shaped part of said transverse wall, an object-holding tray which extends across the interior of said vehicle, wherein said tray comprises:
said lower transverse wall portion which defines a wall of said tray;
respective side panels secured to respective said side walls;
a flexible base wall secured at each side to a lower edge of a respective said side panel, and
a crosspiece connected to said side panels and extending in spaced-parallel condition with respect to the said lower transverse wall portion, the said crosspiece supporting one edge of said base wall thereby defining an open receptacle spanning the entire width of the said passenger compartment.

4,353,589
AIR PERMEABLE CLOSURE ASSEMBLY

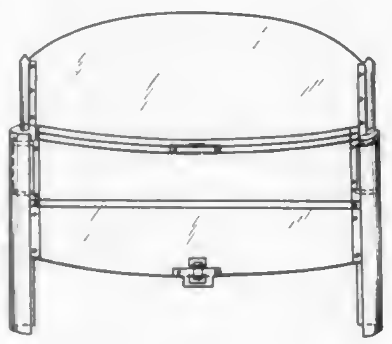
Bruce L. Hartberg, Heron Lake, Minn. 56137
Filed Apr. 6, 1977, Ser. No. 785,239
Int. Cl.^{3} B62D *25/00*
U.S. Cl. 296—50 16 Claims



1. A closure assembly for the rear of a vehicle having an open top, two solid sidewalls and a flat bed positioned between the sidewalls, comprising:
a frame;
means for attaching the frame to the rear of the vehicle so that the frame in is upright position extends between the sidewalls and is positioned immediately above the bed of the vehicle; and
a permeable member attached to and covering at least a portion of the frame so that air trapped between the sidewalls and bed when the vehicle is in motion can flow through the closure assembly.

4,353,590
CONTROLLABLE MOTORCYCLE WINDSHIELD

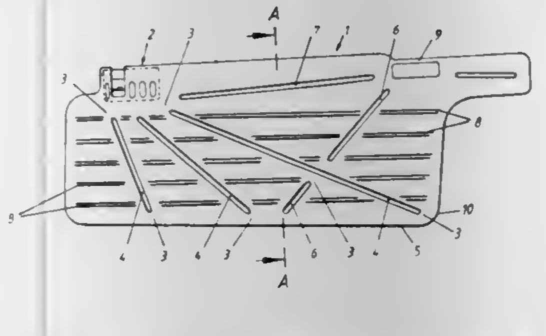
Chang Wei-Chuan, Ping-Tung, Taiwan, assignor to Yang Yin-Lung, Kaohsiung, Taiwan, a part interest
Continuation of Ser. No. 626,552, Nov. 26, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 790,425
Int. Cl.^{3} B62J *17/04*
U.S. Cl. 296—78.1 1 Claim



1. An adjustable windshield for use on vehicles comprising:
a pair of tubular holders each having a longitudinal slot,
a first stationary transparent plate having opposed side edges fixedly secured to a respective one of said tubular holders adjacent said slots,
a second transparent plate having opposed side edges, means for slidably mounting said second plate on said tubular holders including a tubular rod slidably received within each of said tubular holders,
means for limiting the sliding movement of said rods within said holders,
a spring spindle fixedly secured to each tubular holder at the lower end thereof and resilient means positioned between each of said spring spindles and each of said tubular rods for raising said tubular rods to a raised position,
said side edges of said second transparent plate being secured to a respective one of said tubular rods through said longitudinal slots of said tubular holders, and latching means for releasably securing said second transparent plate with respect to said first transparent plate including a mounting frame fixedly secured at a bottom center back edge of the stationary plate, a spring loaded clamp pivotably mounted on said frame and having a portion thereof extending through an aperture in said first plate, a catch member fixed to a bottom center back edge of said second plate, and
means for pivoting said extending portion of said clamp into and out of engagement with said catch member thereby releasably securing said second transparent plate with respect to said first transparent plate, said resilient means urging said second transparent plate to a raised position when said extending portion is out of engagement with said catch member.

4,353,591
SUN VISOR FOR VEHICLES

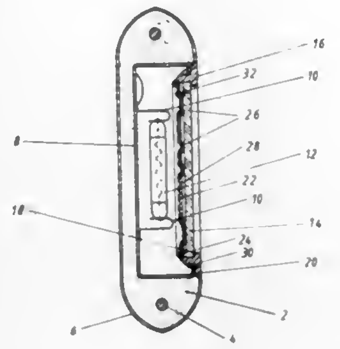
Kurt Cziptschirsch, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany
Filed Mar. 13, 1980, Ser. No. 129,991
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910631; Jan. 12, 1980, 3001062
Int. Cl.^{3} B60J *3/00*
U.S. Cl. 296—97 H 16 Claims



1. In a sun visor for an automotive vehicle, or the like, a generally rectangularly shaped blow molded body defined by two opposite, spaced apart sides which are held together; the body having an upper and a lower edge and two lateral side edges, the body being surrounded by edge regions defined at the respective edges; the body having corner regions; the body having an open internal space extending from the edges through the edge regions and being substantially continuous across said body;
the body having a mount therefor arranged in at least one of the corner regions thereof at the upper edge thereof;
a plurality of depressed corrugations formed in each of the opposite sides of the body and the corrugations extending across the interior regions of the body between the edge regions thereof;
at least a first one of the corrugations extending in that direction of tensile stress of the body that extends generally from the mount toward the corner region which is diagonally opposite the mount; and
the corrugations having respective ends that terminate in the body, before extending into the edge regions of the body, whereby the corrugations do not extend into the edge regions of the body.

4,353,592
SUN VISOR WITH ILLUMINATED MIRROR

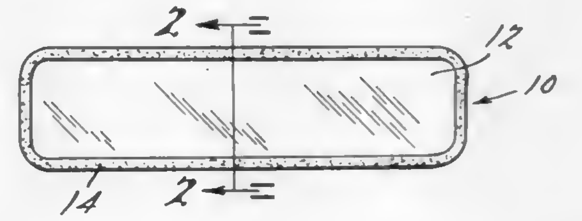
Kurt Cziptschirsch, Wuppertal, Fed. Rep. of Germany, assignor to Gebr. Happich GmbH, Fed. Rep. of Germany
Filed Dec. 19, 1980, Ser. No. 218,170
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000810
Int. Cl.^{3} B60J *3/02*
U.S. Cl. 296—97 B 12 Claims



1. A sun visor with an illuminated mirror, comprising:
a sun visor body; a recess in a surface of the sun visor body; a housing defined in the recess;
a mirror supported in the housing toward the surface of the sun visor body, leaving space behind the mirror in the housing; a light source in the space in the housing behind the mirror;
a metal plate behind the mirror in the housing and between the light source and the mirror;
support means between the housing, on the one hand, and the mirror and the metal plate, on the other hand;
beads protruding from the metal plate to the rear side of the mirror, thereby defining a space between the metal plate and the mirror for serving as a heat insulating layer.

4,353,593
SUN VISOR

Artel R. Henson, P.O. Box 1487, Green Valley, Ariz. 85614
Continuation of Ser. No. 109,126, Dec. 31, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 257,976
Int. Cl.^{3} B60J *3/00*
U.S. Cl. 296—97 D 6 Claims



1. A system of fastening means for the interior of a passenger-carrying vehicle, comprising:
first fastening means at multiple selected locations within the vehicle including locations adjacent the peripheral edges of portions of the front and side windows of the vehicle, said first fastening means comprising elongated fastening elements extending substantially the entire length of said edge portions of said vehicle windows, in said interior;
accessory means to be used in said interior; and
second fastening means fixedly attached to said accessory means and capable of being fastened to and separated from said first fastening means;
said first fastening means including both multiple means for operably disposing said accessories and multiple means for storing said accessories at multiple locations throughout the interior of said vehicle;

whereby said accessory means may be utilized or stored at selected positions throughout said interior.

4,353,594
VEHICLE SEATS

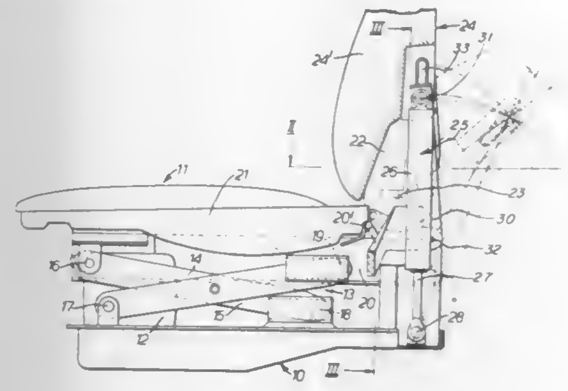
Frederick G. Lowe, Little Billing, England, assignor to UOP Inc., Des Plains, Ill.

Filed Aug. 29, 1979, Ser. No. 70,936

Claims priority, application United Kingdom, Sep. 1, 1978, 35283/78

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—307 2 Claims



1. A suspension seat comprising a seat part, which includes a seat support frame, a back rest frame, and means pivotally supporting the back rest frame on the seat support frame adjacent the lower end of the back rest frame for tilting movement about a horizontal axis, said means comprising a base part, a spring suspension supporting the seat part for resilient upward and downward movement on the base part, and a vibration damper of the type comprising a piston and piston rod movable within a cylinder containing damper fluid, the vibration damper being pivotally connected at its upper and lower ends respectively to the seat part and the base part, characterized by a pivotal linkage pivoted at a lower end thereof to the seat part on or adjacent the rearward end of the seat support frame, said pivotal linkage being in the form of a U shaped yoke whose free ends are pivoted to the seat part and whose closed end is pivoted to the upper end of the vibration damper, the vibration damper including the pivotal linkage adjacent the upper end thereof having a sliding connection with the back rest frame, whereby to accommodate tilting of said back rest frame.

4,353,595
HEADREST CONTROL DEVICE FOR A TREATMENT CHAIR

Kazuyoshi Kaneko, Tokyo, and Katsumi Suzuki, Jyoyo, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto and Kazuyoshi Kaneko, Tokyo, both of, Japan

Filed Dec. 11, 1980, Ser. No. 215,395

Claims priority, application Japan, Dec. 27, 1979, 54-180408[U]

Int. Cl.³ A47C *7/38*

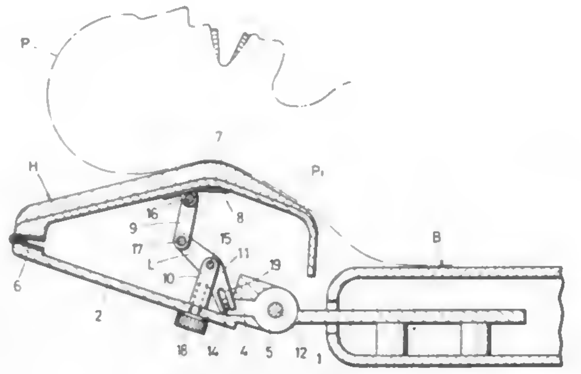
U.S. Cl. 297—408 4 Claims

1. A headrest control device for a treatment chair of the type wherein a headrest having a head supporting portion above a headrest frame is tiltable forwardly and rearwardly and lockable with respect to a headrest support mounted to a backrest, said control device comprising:

a tilting control device mounted to said headrest support for locking and unlocking the rearward tilting of said headrest with respect to said support,

hinge means for permitting the opening and closing of said head supporting portion with respect to said headrest frame, and

linkage means contained in said headrest and responsive to the tilting thereof for opening said head supporting portion as said headrest is caused to tilt forwardly and for closing said head supporting portion as said headrest is caused to tilt rearwardly.



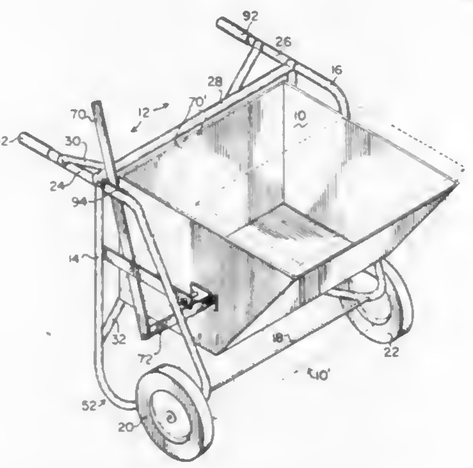
4,353,596
BREAK DOWN DUMPING CART

Calvin Gibson, 111 Daphney Way, E. Palo Alto, Calif. 94303

Filed Aug. 25, 1980, Ser. No. 180,687

Int. Cl.³ B62B *1/24*

U.S. Cl. 298—2 8 Claims



1 A break down dumping cart comprising:

hopper means having a bottom portion, a rear wall portion and a pair of opposing side wall portions rising substantially perpendicularly from said bottom portion, and a front wall portion rising obtusely from said bottom portion, said portions defining a containment volume having a fixed maximum dimension; and

support structure means having a plurality of members each of which has dimensions less than said maximum dimension, said support structure including

a pair of spaced apart, generally triangular side frame members having an upper corner, a lower, forward corner and a lower, rearward corner, each side frame member being operably juxtapositioned with one of said side wall portions,

an axle removably coupled between said lower, forward corners of said side frame members,

a pair of wheels removably attached to opposite ends of said axle,

over center support means pivotally coupling said first side frame member to a first side wall portion and said second side frame member to a second side wall portion,

an actuating mechanism for selectively moving said hopper means between a dumping position and an over center non-dumping position, said actuating mechanism including a first support bar attached to said first side frame member, an elongated actuating lever having a mid-length portion pivotally coupled to said first support bar, and a link having a first end pivotally attached to a first end of said actuating lever and a second end pivotally attached to said first side wall portion, such that forward movement of a second end of said actuating lever causes said hopper means to move forwardly to said dumping postion, and rearward movement of said second end of said actuating lever causes said hopper means to move rearwardly to said over center, non-dumping position;

a pair of handle members each removably attached to one of said side frame members, and

bracing means removably attached between said side frame members,

whereby when said dumping cart is dis-assembled said members can be simultaneously stored within the containment volume of said hopper means.

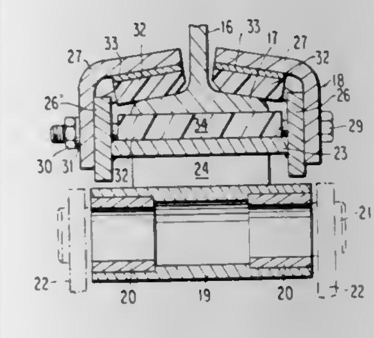
4,353,597
READILY REMOVABLE AND REPLACEABLE WEAR PADS FOR SLIDING BED VEHICLES

Gary L. Shoup, Greencastle, Pa., assignor to Jerr-Dan Corporation, Greencastle, Pa.

Filed Jun. 11, 1980, Ser. No. 158,620

Int. Cl.³ B60P *1/34*

U.S. Cl. 298—12 12 Claims



1. A wear pad arrangement particularly for sliding and tilting bed vehicles comprising a pivot bearing means adapted for engagement with a supporting pivot element on a sliding and tilting bed vehicle or the like, a wear pad containment frame fixed to the pivot bearing means for pivotal movement therewith, opposing side upper wear pad retainers on said frame, spaced releasable fasteners for said retainers engaging the retainers and frame and extending across the frame, a lower wear pad on the frame between said spaced fasteners and held against displacement in one direction by the fasteners and in a second direction by the frame, the lower wear pad being adapted to slidably support a rail carried by the bed of a sliding and tilting bed vehicle, and a pair of upper wear pads arranged above the lower wear pad and held within said retainers and restrained by the retainers against displacement in two directions, the upper wear pads adapted to engage upper surfaces of a rail on the bed of a sliding and tilting bed vehicle.

4,353,598
METHOD OF BLASTING PILLARS WITH VERTICAL BLASTHOLES

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Apr. 18, 1980, Ser. No. 141,604

Int. Cl.³ E21C *41/10*

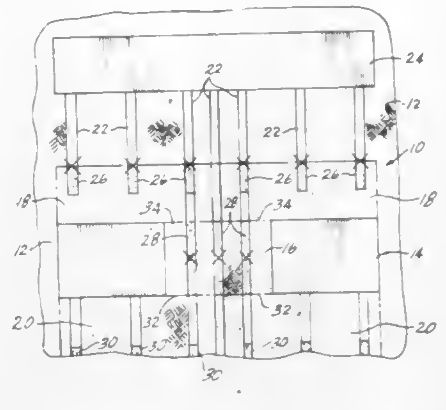
U.S. Cl. 299—2 25 Claims

1. A method for forming a fragmented permeable mass of formation particles in an in situ oil shale retort in a subterranean formation containing oil shale, comprising the steps of:

(a) excavating formation to form at least one horizontally extending void in the subterranean formation, leaving at least one support pillar of unfragmented formation in the void, and leaving zones of unfragmented formation above and below the void and pillar, such a pillar having opposed free faces;

(b) forming an array of explosive charges in at least one of such zones of unfragmented formation for explosively expanding such a zone of unfragmented formation toward the void;

(c) forming an array of spaced apart, vertical, columnar explosive charges substantially along the centerline between the opposed free faces of such a support pillar, the amount of explosive on each side of the centerline being about equal;



(d) detonating explosive in the support pillar for expanding the pillar about equally toward the opposed free faces; and

(e) detonating explosive in such a zone of unfragmented formation for explosively expanding the unfragmented formation toward the void for forming a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort.

4,353,599
BRAKING CORRECTOR FOR DOUBLE BRAKING CIRCUIT

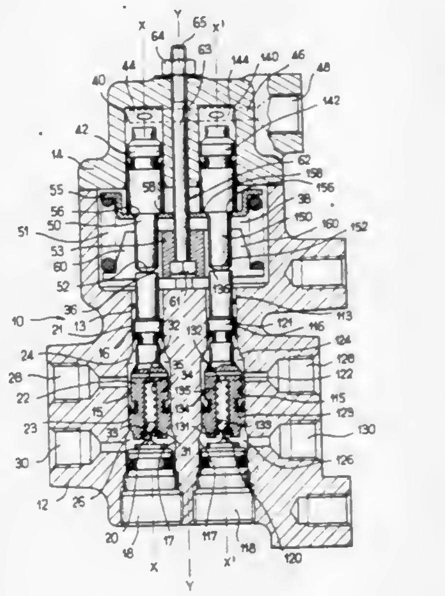
Jean-Jacques Carre, Montreuil, and Christian Riquart, Paris, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Oct. 9, 1980, Ser. No. 195,701

Claims priority, application France, Oct. 10, 1979, 79 25199

Int. Cl.³ B60T *8/18*

U.S. Cl. 303—22 R 7 Claims



1. Braking corrector, for a double braking circuit of a motor vehicle, comprising: a body, two identical parallel bores in the said body defining between them an axis of symmetry, each of the said bores communicating with a corresponding inlet orifice and outlet orifice, two identical pistons sliding in the said bores, each of the said pistons controlling the displacement of a valve element controlling the flow of a fluid under pressure between one of the said inlet orifices and the corresponding outlet orifice, each said pistons presenting an end projecting out from the said body, and a distributor assembly capable of generating, from a control force, two pilot forces acting on the

said ends so as to urge the pistons into the body in the direction for establishing the said flow of fluid, the said fluid under pressure urging the pistons out of the body in the direction for cutting off the flow of fluid, said distributor assembly being of the type permitting to increase the pilot force urging one of the pistons when only the inlet orifice corresponding thereto receives fluid under pressure, characterized in that the said distributor assembly comprises: a cover solid with the said body, two iddentical push rods sliding in the said cover parallelly to the said pistons and capable of coming into abutment with the ends of these last, divider means for dividing the said control force into two equal half control-forces each applied to one of the two push rods so as to urge the said pistons into the said body, resilient means for generating a reaction force opposed to the said half control-forces, and a transmission element for distributing the said reaction force as two partial reaction forces each applied to one of the said push rods, each push rod being thereby subjected to two opposed forces: a half control-force and a partial reaction force whose resultant constitutes the said pilot force, the said transmission element being capable of being in contact with the said push rods in two manners: a first manner, when both inlet orifices receive fluid under pressure, in which the surfaces of contact between the transmission element and the push rods are disposed in a symmetrical way with respect to the said axis of symmetry, and a second manner, when only one of the two inlet orifices receives fluid under pressure, in which, following tilting of the transmission element, the surfaces of contact between said transmission element and the push rods are disposed in an asymmetric manner with respect to the said axis of symmetry, which results in a distribution of the reaction force as two unequal partial forces and a corresponding inequality of the two pilot forces.

4,353,600

NON-LINKAGE TYPE LOAD SENSING VALVE

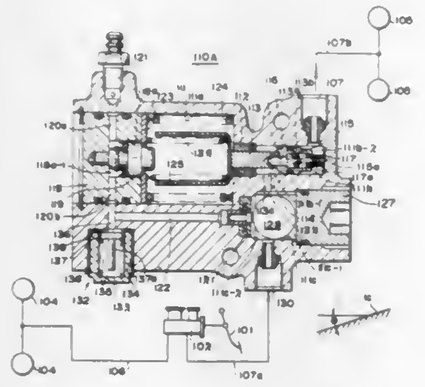
Tatsuo Uchihara, Yokosuka; Tadao Takimoto, Yokohama; Junichi Fujimoto, Yokohama; Katuhiro Morita, Yokohama, and Hitoshi Kubota, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2, 1980, Ser. No. 155,259

Claims priority, application Japan, Jun. 5, 1979, 54-69381

Int. Cl.³ B60T *8/14*

U.S. Cl. 303—24 F 15 Claims



1. A load sensing valve for a hydraulic brake system for a wheeled vehicle, comprising:

a proportioning valve for controlling hydraulic pressure in a fluid outlet port thereof in response to application of a hydraulic pressure to a fluid inlet port thereof;

a deceleration sensing valve for changing the pressure controlling characteristic of said proportioning valve in accordance with the magnitude of a sealed hydraulic pressure in a fluid sealing chamber, the sealed hydraulic pressure being variable in accordance with the amount of deceleration of said vehicle; and compensating

means for varying the volume of a space communicating with said fluid sealing chamber in accordance with the magnitude of the sealed hydraulic pressure at the time when the sealed hydraulic pressure is lower than a predetermined level which is corresponding to such a pressure as to cause the change of said pressure controlling characteristic of said proportioning valve, wherein said compensating means comprises a piston sealingly and axially movably received in a fixed non-expandable bore to define an expandable chamber which communicates with said fluid sealing chamber, and a spring biasing said piston to move in a direction to reduce the volume of said expandable chamber.

4,353,601

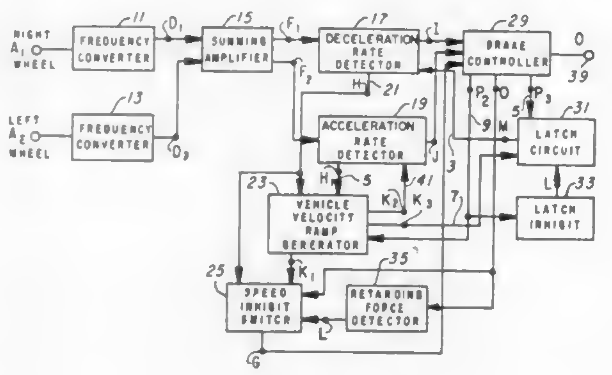
VEHICLE SKID CONTROL

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 837,418, Jun. 30, 1969, Pat. No. 3,617,760, Ser. No. 837,433, Jun. 30, 1969, Pat. No. 3,611,109, Ser. No. 837,497, Jun. 30, 1969, abandoned, and Ser. No. 837,855, Jun. 30, 1969, abandoned. This application Apr. 2, 1970, Ser. No. 25,131

Int. Cl.³ B60T *8/02, 8/08*

U.S. Cl. 303—106 65 Claims



1. A skid control module for a vehicle brake control system of the type that generates a brake control output signal varying in accordance with braking conditions, comprising in combination:

(a) signal generating means for generating a variable A.C. signal proportional to vehicle wheel speed;

(b) frequency converter means coupled to said signal generating means for converting said variable A.C. signal to a variable D.C. output signal proportional to vehicle wheel speed;

(c) wheel speed rate detector means coupled to said frequency converter means for generating a first brake inhibit signal when the rate of change of said variable D.C. output signal varies from a predetermined wheel speed rate of change;

(d) circuit means for generating signals proportional to selected braking conditions of the vehicle and the vehicle brake control system;

(e) switching means coupled to said frequency converter means and said circuit means for generating a second brake inhibit signal when said selected braking conditions vary from predetermined parameters; and

(f) brake controller means coupled to said wheel speed rate detector means and said switching means for generating said brake control signal when said first and second brake inhibit signals are applied thereto, thereby controlling the operation of said vehicle brake control system.

4,353,602

AXIAL ELECTROMAGNETIC BEARING FOR SMOOTH SHAFTS OF LARGE DIAMETER

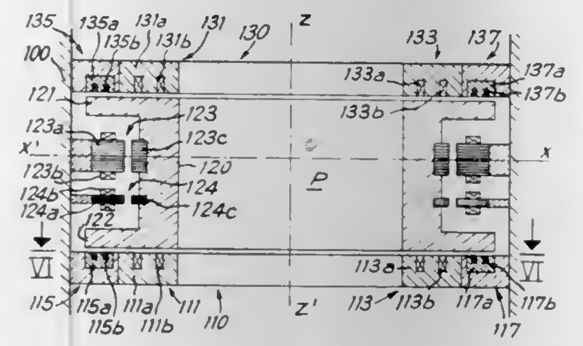
Helmut Habermann, Vernon, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Continuation of Ser. No. 867,522, Jan. 6, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,494

Claims priority, application France, Jan. 12, 1977, 77 00766

Int. Cl.³ F16C *39/06*

U.S. Cl. 308—10 7 Claims



1. A magnetic suspension system for a rotor of large diameter and relatively smaller length, comprising at least one axial electromagnetic bearing and one radial electromagnetic bearing, said radial electromagnetic bearing being controlled by a shaft radial position detector, but said axial bearing including a stator constituted by first and second parts disposed on opposite sides of an armature integral with said rotor, each said part consisting essentially of four independent sectors wherein each said independent sector includes a ferromagnetic core and a winding wherein the only magnetic flux is electromagnetic flux, and a detector integral with each independent sector, the sectors of the first and second parts being symmetrically disposed relative to the armature, and each detector controlling one of the said sectors or groups of sectors defining the stator of the axial bearing so as to control simultaneously the movement of the shaft in the axial sense and rocking movement relative to the two normal radial axes.

4,353,603

BEARING DEVICE

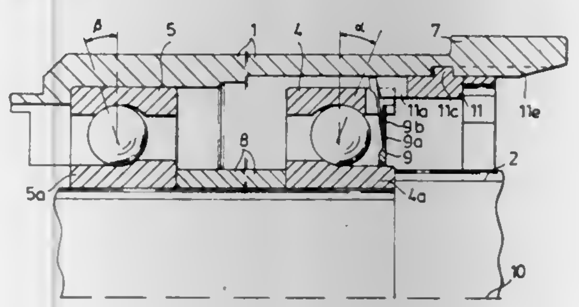
Johan P. Ström, and Leif-Olof Fager, both of Järfälla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 15, 1980, Ser. No. 112,382

Claims priority, application Sweden, Jan. 15, 1979, 7900357

Int. Cl.³ F16C *25/08, 27/04*

U.S. Cl. 308—26 1 Claim



1. A bearing device for supporting associated first and second bodies for rotational movement relative to one another comprising: a bearing having first and second bearing rings which are rotatable relative to each other, said second bearing ring carrying the second body and said first bearing ring carrying the first body by means which permit relative axial movement between said first bearing ring and the first body, said bearing device comprising a spring element which comprises a substantially ring-shaped portion and a plurality of alternating longer and shorter spring arms which are distributed around and project substantially radially from said ring-shaped portion, said longer arms, at their distal ends, acting on the first body to preload the first body in one axial direction and the shorter arms, at their distal ends, acting on the first bearing ring to preload the first bearing ring in the opposite axial direction.

4,353,604

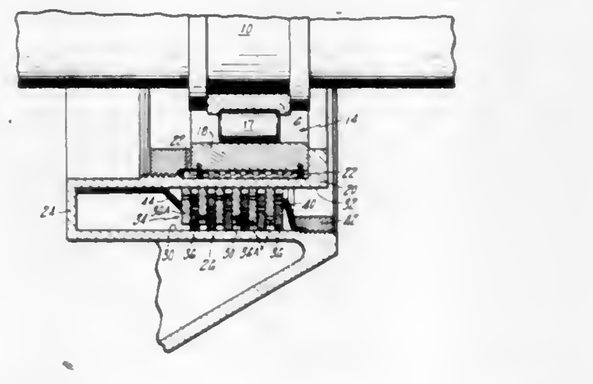
VISCOUS/FRICTION DAMPER

Michael D. Dulberger, Manchester; David H. Hibner, Colchester, and Donald C. Moringiello, Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1980, Ser. No. 215,299

Int. Cl.³ F16C *23/08, 27/04*

U.S. Cl. 308—184 A 5 Claims



1. For a rotor rotatably supported by a bearing, first damping means having a fluid cavity and fluid therein surrounding said bearing and damping a first magnitude of vibrations, a second damping means having a plurality of axially juxtaposed circular plates surrounding said fluid cavity in a predetermined centered position and being in friction relationship with each other, connection means serially interconnecting said first damping means and said second damping means including resilient means, said resilient means responding solely to a second magnitude of vibrations exceeding the first magnitude of vibrations for displacing alternate friction plates in a direction that is opposite and normal to each adjacent friction plate, and a loading spring for imposing a load axial to said plates and the load thereby being selected so that said resilient means restores said plates to their predetermined centered position.

4,353,605

ROLLER BEARING OF THE TYPE HAVING A SEALING RING CAPABLE OF FORCIBLY CIRCULATING THE LUBRICANT

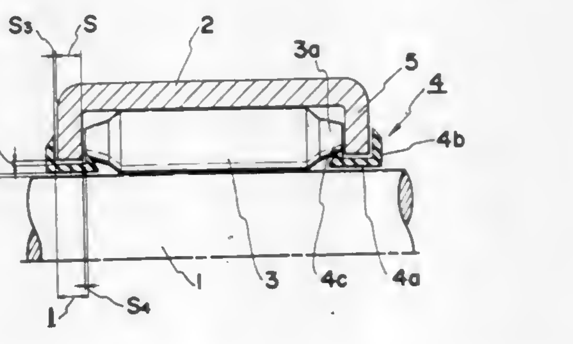
Moichi Chiba, Yokosuka, and Toshio Suzuki, Chigasaki, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,322

Claims priority, application Japan, Sep. 3, 1979, 54-121571[U]

Int. Cl.³ F16C *33/78, 19/26*

U.S. Cl. 308—187.2 15 Claims



1. A roller bearing containing a lubricant therein which comprises:

(a) an outer ring hving at least an annular flange at one axial end thereof, the flange extending in a radially inward direction;

(b) a plurality of rollers housed in said outer ring for receiving a shaft;

(c) at least a sealing ring interposed between the inner circumference of said flange and the outer circumference of the shaft, and wherein said sealing ring comprises:

(1) a cylindrical portion having an axial length slightly larger than the thickness of said flange of said outer ring, an inside diameter slightly larger than the outside diameter of the shaft, and an outside diameter slightly smaller than the inside diameter of the flange of said outer ring such that the cylindrical portion can be loosely interposed between said flange and said shaft with predetermined clearances;

(2) a flanged annular ring portion extending radially outwardly from the outer axial end of said cylindrical portion and keeping a predetermined clearance with the outer surface of said flange of said outer ring; and

(3) at least one projection having a radial height and circular directional width for laying on the inner surface of said flange so as to prevent the sealing ring from escaping outside of the said flange; and

(d) means for imparting forced rotation to said sealing ring, and

wherein the means for imparting forced rotation coacts with said sealing ring to impart the forced rotational force to said sealing ring such that a forced circulation of the lubricant is effected through said clearance by centrifugal scattering force generated along said surface of said flange annular portion when said sealing ring is driven by said means for imparting forced rotation.

4,353,606
MOUNTING FOR A DRIVEN WHEEL

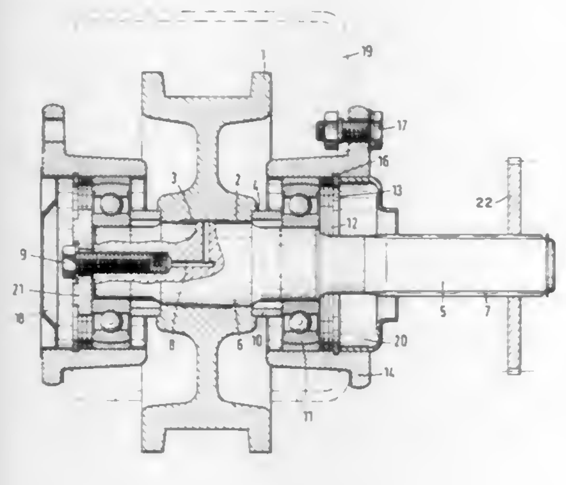
Harald Bitsch, Witten, and Karl Knaack, Dortmund, both of Fed. Rep. of Germany, assignors to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,776

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922330

Int. Cl.³ F16C *23/06, 35/06*

U.S. Cl. 308—189 R **10 Claims**



1. A wheel support for an overhead crane comprising:

(a) a shaft having a wheel carrying curved surface;

(b) anti-friction bearings, said shaft being rotatably supported by said bearings;

(c) bushings for supporting said bearings;

(d) an oil duct extending into said shaft, said oil duct exiting said shaft at said curved surface of said shaft;

(e) a wheel having a central bore hole, a portion of the central bore hole of said wheel overlying said curved surface of said shaft where said oil duct exits from said shaft;

(f) an oil pressure providing means for supplying oil, under pressure, to said oil duct and to said portion of the central bore hole of said wheel;

(g) said bushings being provided with selectively secured positioning means; and

(h) selected spacer ring members are provided between said positioning means and said bearings for adjustably positioning said bearings with respect to said bushings.

4,353,607
ROLLING BEARING

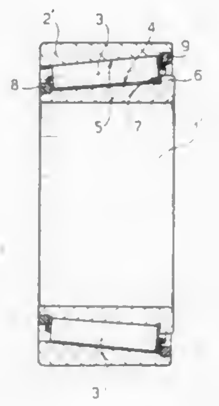
Giuseppe Sturniolo, Turin, Italy

Filed Aug. 1, 1980, Ser. No. 174,357

Claims priority, application Italy, Aug. 1, 1979, 68594 A/79

Int. Cl.³ F16C *19/26*

U.S. Cl. 308—214 **1 Claim**



1. A rolling bearing comprising:

an inner ring and an outer ring, said inner ring having an outer conical race and outer ring having an inner conical race,

one or more rows of rolling bodies disposed between the said rings so that said bodies roll between said conical races,

said inner ring having an inner cylindrical surface and said outer ring having an outer cylindrical surface,

each of said rolling bodies having an outer conical surface and the axes of said bodies lying on a further conical surface,

wherein said bodies are dimensioned so that the ratio between the axial length of each body and the maximum diameter of each body is more than three, and wherein the ratio between the axial length of the bearing and the distance between the outer surface of the outer ring and the inner surface of the inner ring is more than two,

a first cylindrical retainer surface formed circumferentially around the inner ring conical race at the end of the inner ring conical race having the smaller diameter, said first cylindrical retainer surface being open to an end of said inner ring,

a second cylindrical retainer surface formed circumferentially around the outer ring conical race at the end of the outer ring conical race having the larger diameter, said second cylindrical retainer surface being open to an end of said outer ring opposite from said end of said inner ring,

a first retaining ring constructed of a deformable plastic material and secured by an interference fit to said first cylindrical retainer surface and second retaining ring constructed of a deformable plastic material and secured by an interference fit to said second cylindrical retainer surface.

4,353,608
SYSTEM OF COLLECTORS FOR CONDUITS IN A DWELLING

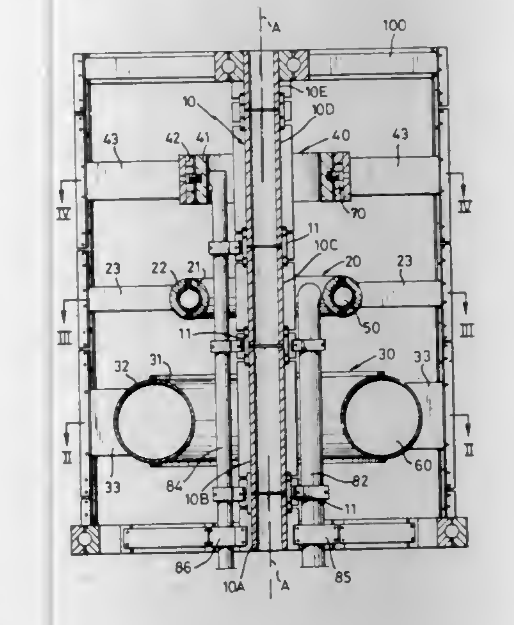
Julien G. Massau, Genistroit, 132, 1348 Louvain-la-Neuve, Belgium

Filed Jun. 19, 1980, Ser. No. 160,789

Claims priority, application Belgium, Jun. 21, 1979, 195.874

Int. Cl.³ H01R *39/00, 39/14*

U.S. Cl. 339—2 R **7 Claims**



1. System of collectors for conduits in a dwelling having an assembly revolving around a rotation axis, said system comprising:

a fixed central spindle (**10**) extending coaxially with the rotation axis;

an annular collector (**20**) comprising a first ring and a second ring, of any desired cross section, associated with each other so as to define at least one annular chamber (**50**) extending symmetrically about said rotation axis, the first ring (**21**) being fixed and integrally mounted on the fixed central spindle, and the second ring (**22**) being integral with the revolving assembly of the dwelling, said second ring being mounted on the first ring so as to be capable of moving relative to the first ring by rotating about said rotation axis;

at least one first transverse passage (**80**) formed in the first ring to bring said annular chamber into communication with a fixed conduit;

at least one second transverse passage (**90**) formed in the second ring to bring said annular chamber into communication with a conduit of the revolving assembly; and

a plurality of further coaxial annular collectors (**30, 40**) extending in parallel planes perpendicular to the fixed central spindle, each of said further collectors comprising two concentric rings, wherein the fixed central spindle (**10**) comprises a plurality of sections fixed end to end (**10A, 10B**, . . .) and wherein each collector is mounted on a separate spindle section.

4,353,609
TERMINAL FOR PRINTED CIRCUIT BOARDS

Richard M. Haas, Phoenix, Ariz., assignor to Henes Products Corp., Phoenix, Ariz.

Filed Oct. 2, 1980, Ser. No. 193,382

Int. Cl.³ H01R *9/09, 13/428*

U.S. Cl. 339—17 C **2 Claims**

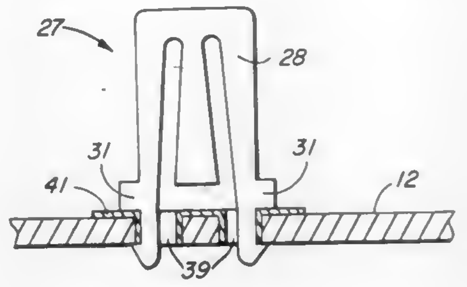
1. A connector for a printed circuit board comprising:

a relatively flat member having a substantially E-shaped configuration,

said E-shaped configuration comprising three arms, two of which form substantially identical leg members extending longitudinally of said member along opposite edges thereof,

the third arm of said E-shaped configuration being shorter in length than the other two arms and tapering from its free end to a narrower width at the bite of the E-shaped configuration, said third arm lying in a coplanar arrangement with said other two arms and spaced therefrom by two substantially equally configured slots extending from the free end of said third arm along opposite edges thereof toward the other end of said member,

the free ends of said legs being notched along said opposite edges of said member for receiving therein a portion of the edges of plated-through holes in an associated circuit board when said legs of said member are mounted thereon,



the opposed edges of the free ends of said legs being canted outwardly from their ends longitudinally therealong, and

the E-shaped configuration, when mounted to said board, being formed to slidably receive thereabout, a female clip with bent over arms, the third arm of the connector providing continuous flat surface means for secure electrical engagement with said bent over arms.

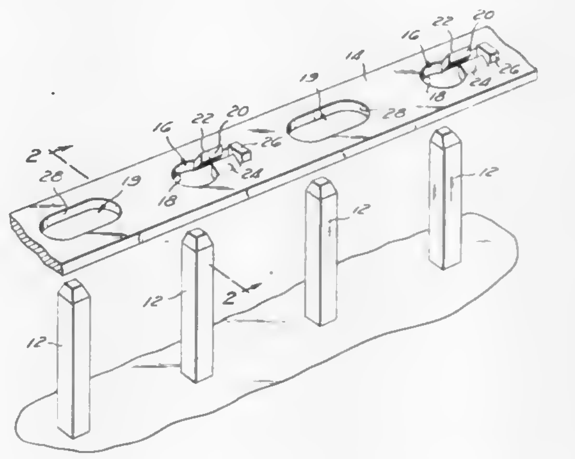
4,353,610
ELECTRICAL CONDUCTING STRIP

Paul M. Deters, Manhattan Beach, Calif., assignor to Bussco Engineering, Inc., El Segundo, Calif.

Filed Jul. 1, 1980, Ser. No. 165,038

Int. Cl.³ H01R *31/08*

U.S. Cl. 339—19 **10 Claims**



1. An electrical conducting strip for forming a path for electricity between terminal posts of a bus bar, said electrical conducting strip comprising:

an elongated metallic member, said metallic member having a opening arrangement formed therein, said opening arrangement including an access opening and an engaging opening, said access opening being connected to said engaging opening, said access opening being of a size to readily permit entry of a terminal post, said engaging opening having a side wall assembly defining a size adapted to tightly engage a terminal post establishing an electrical connection therebetween, said elongated member to be moved longitudinally to relocate the terminal post from said access opening into said engaging opening; and stop means attached to said elongated metallic member, said stop means to connect with said engaging opening, said stop means to abut said terminal post when said terminal post is fully inserted within said engaging opening.

4,353,611

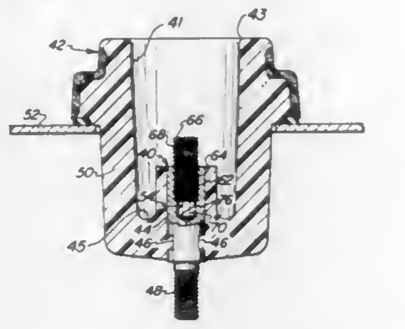
BUSHING WELL STUD CONSTRUCTION

Larry N. Siebens, Great Meadows, and Alan D. Borgstrom, Hackettstown, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 129,618

Int. Cl.^{3} H01A *13/621*

U.S. Cl. 339—92 R **7 Claims**



1. A bushing well for use in connection with a bushing insert in a high voltage electrical distribution system, the bushing insert having an insert end portion including a first electrical contact element of conductive material, the first electrical contact element including an aperture therein and an internal thread in the aperture, said bushing well comprising:

a bushing well member of dielectric material;

a receptacle in the bushing well member, the receptacle extending between an opening, for receiving the insert end portion of the bushing insert, and a remote closed bottom spaced from the opening;

a second electrical contact element of conductive material integral with the bushing well member at the closed bottom of the receptacle, the second electrical contact element having a threaded fastening means therein including a hole in the second electrical contact element and an internal thread in the hole;

a coupling member of conductive material, the coupling member having a first portion and a second portion, threaded means for affixing the first portion of the coupling member to the first electrical contact element, said threaded means including a generally cylindrical pin having an external thread complementary to the internal thread in the aperture of the first electrical contact element, and complementary threaded fastening means for engaging the threaded fastening means of the second electrical contact element to mechanically couple the bushing insert with the bushing well and electrically connect the first and second electrical contact elements, the complementary threaded fastening means including a generally cylindrical shank having an external thread complementary to the internal thread in the hole of the second electrical contact;

locking means establishing a locking force between the coupling member and the second electrical contact element for tending to lock the coupling member against rotation relative to the second electrical contact element upon engagement of the external thread of the shank with the internal thread of the hole and seating of the second portion of the coupling means within the second electrical contact element; and

wrenching means integral with the second portion of the coupling means for enabling wrenching of the second portion against the locking force to allow selective removal of the second portion from the complementary threaded fastening means independent of the presence of the first portion of the coupling means.

4,353,612

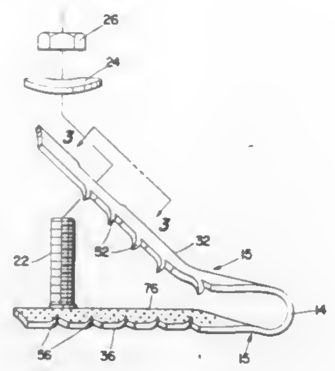
SHIELD CONNECTOR

Richard G. Meyers, Euclid, Ohio, assignor to The National Telephone Supply Company, Cleveland, Ohio

Filed Jun. 6, 1980, Ser. No. 156,932

Int. Cl.^{3} H01R *4/24*

U.S. Cl. 339—95 R **19 Claims**



1. A connector for joining the shield of a cable having a tubular cable sheath including an inner shield and an outer jacket, to a conductor, said connector comprising:

a longitudinal inner member having a first and second end, said inner member being electrically conductive, and substantially all of said inner member being located inside said cable sheath adjacent to and conductively contacting said shield, whereby shield currents are conducted to said inner member,

a longitudinal outer member having a first and a second end, said outer member being located outside said cable sheath adjacent to said outer jacket and in longitudinal alignment with said inner member,

at least one of said inner and outer members being elastic and presenting a longitudinally convex curvature toward the other member,

first joining means joining said first end of said inner member to said first end of said outer member,

second joining means joining said second end of said inner member to said second end of said outer member, said cable sheath being compressed by the action of said first and said second joining means between said inner and said outer members, and

contact means electrically connecting said inner member to said conductor.

4,353,613

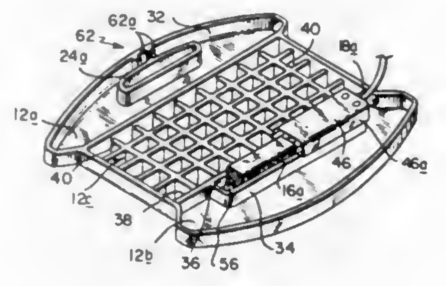
ELECTRICAL OUTLET CORD AND HOLDER

Arthur Carlow, Beverly, Mass., assignor to Carico, Inc., Beverly, Mass.

Filed Apr. 14, 1980, Ser. No. 140,097

Int. Cl.^{3} H01R *13/58*

U.S. Cl. 339—119 C **10 Claims**



1. In combination, a terminated electrical cord and holder therefor, said holder comprising a relatively large, thin bobbin formed as a unitary plastic piece and having a pair of enlarged ends and an intervening narrower waist, said waist being formed as a grid extending through the holder whose webs project substantially perpendicularly to the general plane of the holder; means defining a grip opening in one enlarged end of the holder; means defining one or more openings in the other enlarged end, electric outlet means mounted to said other end, said outlet means having the plug-receiving portions thereof exposed in said openings in said other end, and a length of electrical cord having one end electrically connected to said outlet means and having its opposite end terminating in an electrical connector, said cord being arranged to be wound around the waist of the holder.

4,353,614

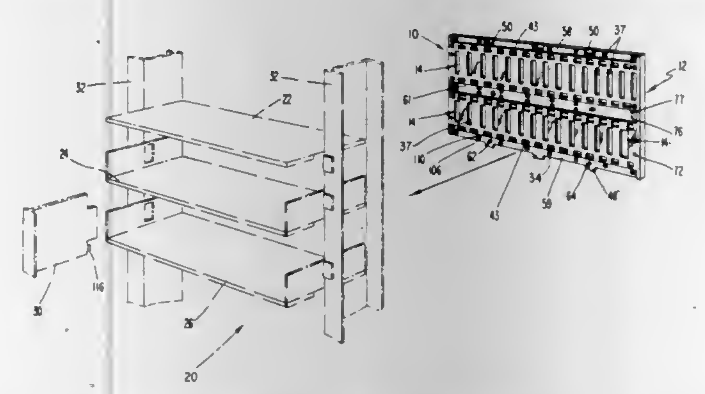
UNITARY MOLDED PLASTIC CONNECTOR PLUG SUPPORT MEMBER

John O. Etchison, Jr., Clemmons, and Robert H. W. Jones, Jr., Greensboro, both of N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,497

Int. Cl.^{3} H02B *1/02*

U.S. Cl. 339—125 R **16 Claims**



1. A unitary molded plastic backplane member for equipment of a type in which substrate circuit devices on one side of the backplane member are inserted into connector plugs mounted on an opposite side of the backplane member, which comprises:

an essentially planar main body having opposite first and second sides and having at least one row of openings extending through the main body, the openings being dimensioned for the insertion of substrate circuit devices from the first side of the main body through the openings; and

at least one row of spaced pedestals integrally molded with the main body and projecting from the second side of the main body to define channels between the pedestals, the pedestals having openings extending therethrough for the reception of the connector plugs in the openings and merging with respective ones of the openings in the main body.

4,353,615

DYNAMIC MOUNTING FOR HOLOGRAPHIC SPINNERS

Charles J. Kramer, Pittsford; Alan F. McCarroll, Rochester, both of N.Y., and Tibor S. Fisli, Los Altos Hills, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 921,411, Jul. 3, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,215

Int. Cl.^{3} G02B *5/32*

U.S. Cl. 350—3.71 **24 Claims**

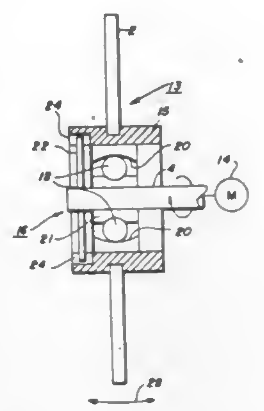
1. A holographic scanning mechanism including:

a rotatable shaft;

a holographic spinner having on its surface at least one holographic facet;

a hub assembly having a first member which is fixedly connected to said spinner and a second member which is located between said first member and said shaft, and said second member movable relative to said first member in a direction which is transverse to the plane of the shaft rotation;

drive means for coupling the angular velocity of the shaft to the spinner; and



means for rotating said shaft whereby during rotation the transverse movement of said second hub member permits the spinner to move in the same direction and achieve its optimum perpendicular alignment.

4,353,616

OPTICAL DEVICE FOR PRINTING PLANAR OBJECTS

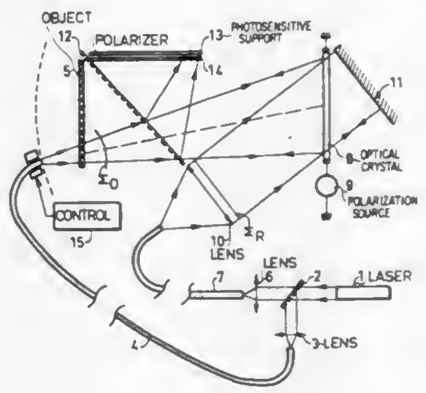
Pierre Leclerc; Jean-Pierre Huignard, and Philippe Aubourg, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 13, 1980, Ser. No. 121,178

Claims priority, application France, Feb. 16, 1979, 79 04016

Int. Cl.^{3} G03H *1/22, 1/28, 1/32*

U.S. Cl. 350—3.75 **12 Claims**



1. An optical device for printing duplicates of planar objects comprising: a coherent light source; an illuminating device forming an object wave for illuminating the object using the coherent light from the source, said illuminating device also forming a reference wave using the coherent light from the source; an optically active device for receiving the object wave emerging from the object and the reference wave; a mirror for producing in real time a wave phase-conjugate with the incident object wave; a means supporting a photosensitive recording medium for receiving said wave phase-conjugate to form thereon a real image of the object to be printed; the illuminating device being such that the object is successively illuminated several times in order to superimpose, in the photosensitive recording medium, a plurality of images of the object having uncorrelated noise.

4,353,617

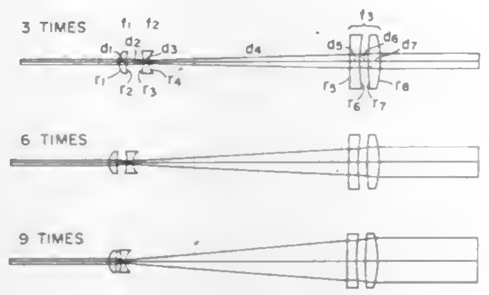
OPTICAL SYSTEM CAPABLE OF CONTINUOUSLY VARYING THE DIAMETER OF A BEAM SPOT

Jun Tokumitsu, Kawasaki, and Kazuo Minoura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,038

Int. Cl.^{3} G02B *27/17, 15/16*

U.S. Cl. 350—6.8 **6 Claims**



1. An optical system capable of continuously varying the diameter of a light beam spot, comprising:

a light source emitting a light beam;

a light receiving medium for receiving the light beam emitted from said light source;

optical means disposed between said light source and said light receiving medium for directing the light beam from said light source to said light receiving medium, said optical means including means for causing the light beam to become parallel to the optical axis of said optical means in a particular area; and

an afocal zoom lens, disposed in said area of said optical means, for continuously varying the diameter of the parallel light beam as it emerges therefrom with respect to the diameter of the parallel light beam as it is incident thereon, said afocal zoom lens comprising, from the light beam incident side to the light beam emergent side thereof, a positive first lens group, a negative second lens group and a positive third lens group satisfying the following relations:

$$0.027<\phi_1<0.055$$

$$-0.34<\phi_2<-0.18$$

$$0.0087<\phi_3<0.02$$

$$12.0<e_1'<30.0$$

$$42.0<e_2'<75.0$$

where, ϕ_1 is the power of said first lens group, ϕ_2 is the power of said second lens group, ϕ_3 is the power of said third lens group, e_1' is the interval between the principal point of said first lens group and the principal point of said second lens group in their initial positions, and e_2' is the interval between the principal point of said second lens group and the principal point of said third lens group in their initial positions.

4,353,618

OPTICAL ARRANGEMENT FOR THE REFLECTING MICROSCOPIC EXAMINATION OF AN OBJECT

Willi Hagner, Solms; Andreas Thaer, Leihgestern, and Francis Bigar, Zurich, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,819

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848590

Int. Cl.^{3} G02B *21/12*

U.S. Cl. 350—91 **7 Claims**

1. An optical system for the reflecting microscopic examination of a rear surface of a biological tissue object, comprising:

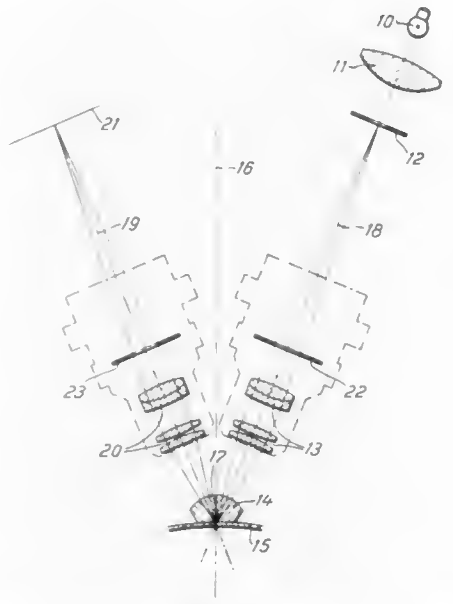
imaging optical means for providing an illuminating beam having a path on a first axis;

viewing means for providing an observation beam having a path along a second axis;

lens means comprising:

a first lens portion positioned in said illuminating beam path for directing said illuminating beam to said object along a first direct lens path leading from an illuminating beam entry surface on the opposite side of said first lens portion from said object through a flat lens surface adjacent said object;

a second lens portion positioned in said observation beam path for directing reflected light from said rear surface of said object to said observation beam path along a second direct lens path leading from said flat lens surface adjacent said object through an observation beam exit surface on the opposite side of said second lens portion from said object;



said first and second lens paths forming an angle of not more than 90° therebetween in the region of said lens means; and

said first and second lens portions having a light impermeable surface therebetween, said light impermeable surface being positioned in a plane bisecting the angle between the first and second axes,

said light impermeable surface comprising means for preventing undesirable reflected and refracted light from said illuminating beam from entering said observation beam path and for permitting reflected light from said rear surface to enter said observation beam path to be examined;

said lens means including means for positioning said light impermeable surface along a normal to said object rear surface and perpendicular to the plane defined by said first and second axes.

4,353,619

DISCONNECTABLE OPTICAL FIBRE JOINT

David T. Parr, Warrington, England, assignor to BICC Limited, London, England

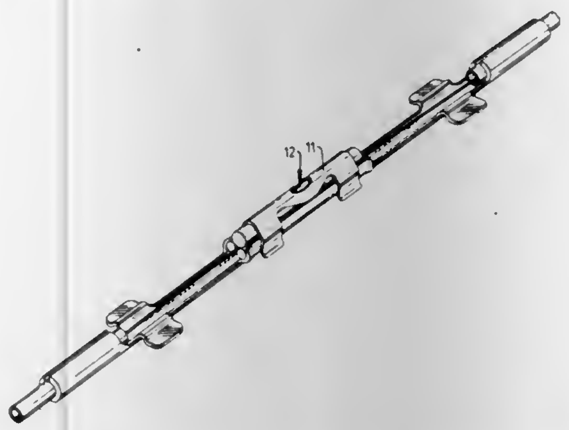
Filed May 12, 1980, Ser. No. 148,925

Claims priority, application United Kingdom, Jan. 30, 1980, 8003181; Apr. 3, 1980, 8011193

Int. Cl.^{3} G02B *7/26*

U.S. Cl. 350—96.21 **6 Claims**

1. A disconnectable optical fibre joint comprising a sub-assembly comprising a substantially rigid elongate support device and two cylindrical rods carried by the support device and constrained by the support device to lie in tangential contact with one another with their longitudinal axes substantially parallel, the cylindrical rods defining between them an interstitial space; two optical fibres aligned in the interstitial space with their end faces substantially abutting; an elongate holding member positioned over the ends of the optical fibres and covering the interstitial space over at least a part of its length; and at least one resilient spring clip applied over the elongate holding member and engaging the sub-assembly to urge the elongate holding member towards the two rods so that the optical fibres are secured with their end faces substantially abutting in the interstitial space between the two rods; wherein each optical fibre is surrounded by a sheath with the ends of the optical fibres bared to facilitate jointing, and wherein the support device of the sub-assembly is of elongate form and has integral with and spaced from each of its ends, means by which the sheath of each optical fibre can be secured.



4,353,620

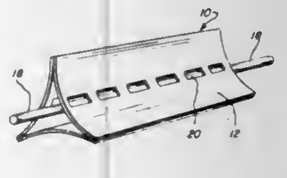
OPTICAL FIBER CONNECTOR CONSTRUCTION

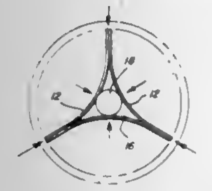
Ronald L. Schultz, Northfield, Ill., assignor to TRW Inc., Elk Grove Village, Ill.

Filed May 14, 1980, Ser. No. 149,889

Int. Cl.^{3} G02B *7/26*

U.S. Cl. 350—96.21 **25 Claims**





1. A connector for optical fibers adapted to be joined in an optical signal transmissive connection comprising at least three flexible convex surfaces defining an open-ended passageway in which optical fibers are to engage in optical signal transmissive relation intermediate the passageway open ends; the ends of said surfaces converging into terminal exterior edges; discrete means engaging said edges for exerting forces on said edges directed toward said passageway to thereby flex said surfaces and reduce the size of said passageway defined thereby, said flexible surfaces being substantially uniform and defining a rigid flexing system in which inward flexing which increases the concavity of one of said surfaces results in substantially the uniform flexing of the remainder of said convex surfaces.

4,353,621

OPTICAL TOYS FOR REVERSING SIGHTED IMAGES

Mary W. Geer, 14024 SE. 44th Pl., Bellevue, Wash. 98006, and Charles W. Geer, deceased, late of Bellevue, Wash. (by Mary W. Geer, executrix)

Filed Jun. 9, 1978, Ser. No. 914,027

Int. Cl.^{3} G02B *7/18;* A63H *33/22*

U.S. Cl. 350—145 **7 Claims**

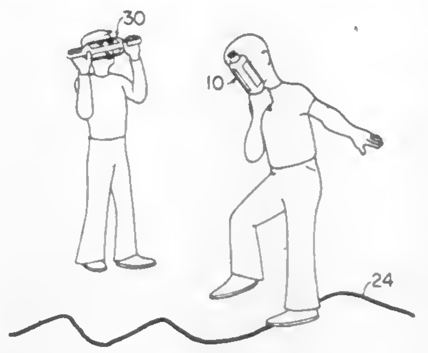
1. An optical game comprising:

(a) selectively positionable means for making a pathway which is adapted to be attempted to be walked by a participant while playing said game; and

(b) a sighted image reversing optical toy comprising:

(i) at least one means for reversing sighted images left to right and vice versa, so a participant sees his left foot on his right side and vice versa; and

(ii) a support means positionable before said participant's eyes which carries said at least one means for reversing sighted images; wherein during said game said participant looks through said optical toy and attempts to walk said pathway despite his seeing reversed sighted images through said optical toy.



4,353,622

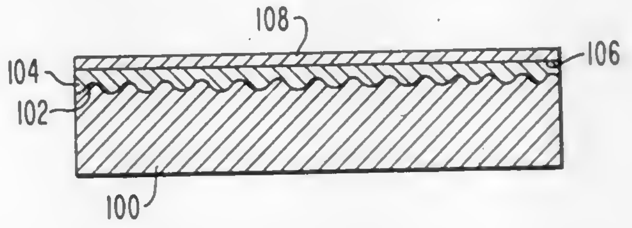
RECORDING BLANK AND METHOD FOR FABRICATING THEREFROM DIFFRACTIVE SUBTRACTIVE FILTER METAL EMBOSSING MASTER

Michael T. Gale, Wettswil, and James Kane, Zumikon, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,399

Int. Cl.^{3} G02B *5/18*

U.S. Cl. 350—162 SF **5 Claims**



1. A recording blank for use in recording a metal master of a given surface relief diffractive structure spatially modulated by screened spatial information; said blank comprising:

a substrate having a given surface composed of a first given metal that is substantially inert to a given etchant, said surface of said substrate incorporating said given surface relief pattern diffractive structure unmodulated by said screened spatial information;

said given surface of said substrate being covered by a layer of a second given metal which is etchable by said given etchant, said layer of said second given metal having one of two opposite surfaces in intimate contact with said given surface relief pattern, the other of said two opposite surfaces being smooth and level, and

said other surface of said layer of said second given metal being covered by a layer of photoresist.

4,353,623

LEADTHROUGH FOR ELECTRIC CONDUCTORS

Hermann F. L. Maier, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

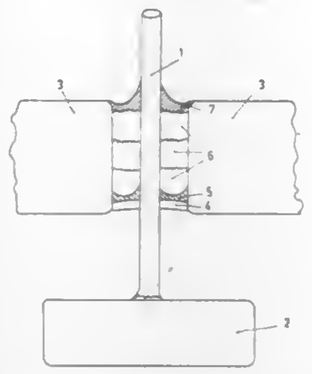
Filed Jun. 11, 1980, Ser. No. 158,659

Int. Cl.^{3} G02F *1/07;* B32B *31/00;* H01B *17/26*

U.S. Cl. 350—391 **2 Claims**

1. A leadthrough for electric conductors through glass walls or quartz glass walls, in particular for electrode connections in Kerr cells, characterized in that the electric conductor (1) is fixed in the lower part of an aperture through the wall (3) facing the interior of the cell by means of a ring (4) of polytet-

rafluoroethylene in such manner that the conductor is held in the center of the aperture, that a layer (5) of cyano acrylate talcum cement is provided over the ring inside the aperture, that a layer (6) of a granular filler soaked with cyano acrylate adhesive is present above said layer in the blind hole thus formed, and that the uppermost part of the aperture directed outwards is filled and sealed with a layer (7) of cyano acrylate talcum cement.



4,353,624
AFOCAL RELAY LENS SYSTEM

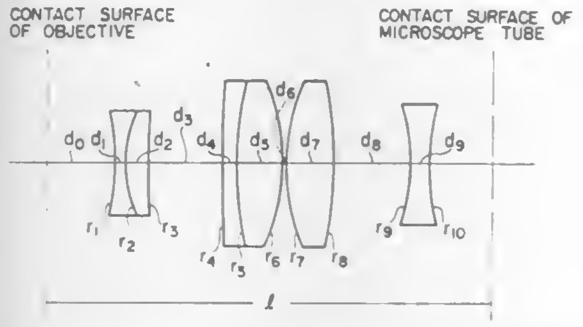
Ken Yonekubo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 133,651

Claims priority, application Japan, Mar. 30, 1979, 54-37973

Int. Cl.^{3} G02B *9/58, 13/00*

U.S. Cl. 350—453 **3 Claims**


CONTACT SURFACE OF OBJECTIVE
CONTACT SURFACE OF MICROSCOPE TUBE
d0
d1
d2
d3
d4
d5
d6
d7
d8
d9
r1
r2
r3
r4
r5
r6
r7
r8
r9
r10
l

1. In a relay lens system arranged between an objective lens and an eyepiece and used for relaying an image of an object formed by said objective lens, a relay lens system is designed as an afocal lens system having a magnification level of 1X and comprises a first lens group, a second lens group and a third lens group, wherein said first lens group is a negative lens group, said second lens group is a positive lens group and said third lens group is a negative lens group, and wherein said relay lens system is located between the objective and the image position of the objective.

4,353,625
EYE-REFRACTOMETER DEVICE

Masao Nohda, Yokohama, and Izumi Umemura, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

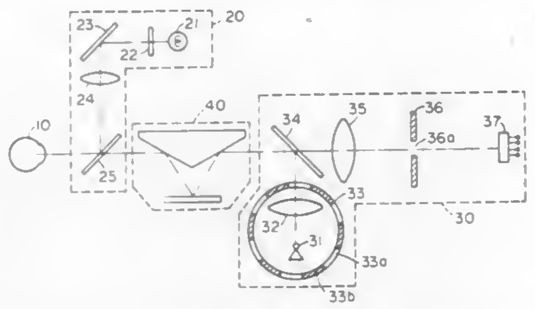
Filed May 23, 1980, Ser. No. 152,602

Claims priority, application Japan, Jun. 2, 1979, 54-69083

Int. Cl.^{3} A61B *3/14, 3/10*

U.S. Cl. 351—13 **8 Claims**

1. In an eye-refractometer device having a beam splitter; a projection optical system disposed in one optical path of said beam splitter to project a beam of light into the pupil of an eye to be examined therethrough and to effect scanning linearly thereof; a condensing optical system including a condenser lens fixedly provided in the other optical path of said beam splitter, a diaphragm member fixedly provided behind said condenser lens and a light receiving member fixedly provided further behind said diaphragm member at a conjugate point with the cornea of said eye relative to said condenser lens, said condensing optical system being disposed to condense the reflected light from the fundus of said eye on said light receiving member through said beam splitter; beam rotating member disposed at the eye side of said beam splitter to rotate the beam about the center of the optical path as its rotational axis; and a signal processing system for processing the signals coming from said light receiving member, the improvement wherein said light receiving member has a pair of photoelectric elements for detection of astigmatic axis and a pair of photoelectric elements for detection of diopter provided on the light receiving surface of said member apart from the optical axis of said condenser lens, said pair of astigmatic axis detection photoelectric elements being positioned on a straight line normal to the scanning direction of the beam projected through said projection optical system whereas said pair of diopter detection photoelectric elements being positioned on a line extending in said scanning direction, said signal processing system including first and second phase difference detection means for detecting the phase difference between the output signals from said pair of astigmatic axis detection photoelectric elements and the phase difference between the output signals between said pair of diopter detection photoelectric elements, respectively.



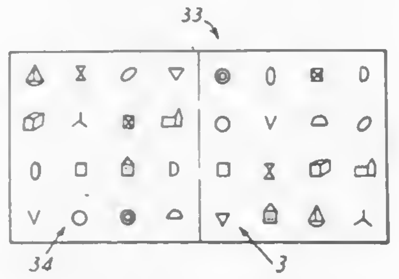
4,353,626
VISUAL RECOGNITION TESTING APPARATUS

Leslie H. R. Harrison, Orchard End, Furze Hill, Wimborne, Dorset, England

Filed Jan. 28, 1980, Ser. No. 115,765

Int. Cl.^{3} A61B *3/02*

U.S. Cl. 351—36 **23 Claims**



1. Apparatus for use in testing visual recognition, the apparatus comprising:

a first array of illuminating means individually selectable for energisation;

first register means coupled to the first array of illuminating means and adapted to select for energisation each illuminating means of the first array in accordance with a respective first predetermined sequence;

a second array of illuminating means individually selectable for energisation;

second register means coupled to the second array of illuminating means and adapted to select for energisation a chosen illuminating means in the second array;

mechanically controllable means for causing the said second register means to select for energisation in accordance with a respective second predetermined sequence a set of the illuminating means terminating with a chosen illuminating means and for establishing a signal indicative of selection of the said chosen illuminating means;

a first array of terminals representative of the said first array of illuminating means;

a second array of terminals representative of at least some of said second array of illuminating means, means for interconnecting at least one pair of said terminals, each such pair of terminals comprising one terminal from each of said arrays of terminals;

comparator means coupled to said register means and said interconnecting means to compare the contents of said register means in dependence upon the interconnection of terminals by said interconnecting means;

logic means coupled to said comparator means and to said mechanically controllable means whereby said comparator means is adapted to provide a first output signal in response to the said signal indicative of selection when there is correspondence between the contents of the second register means representing said chosen illuminating means and the contents of the first register means, and to provide a second output signal in response to the said signal indicative of selection when there is absence of such correspondence;

error memory means coupled to said register means and said arrays of illuminating means and to said logic means and adapted to store respective addresses for the selected illuminating means of the first array of illuminating means and the chosen illuminating means of the second array of illuminating means in response to the said second output signal; and

review means coupled to the error memory means and actuable to cause said error memory means to establish energisation of respective illuminating means in said arrays of illuminating means in accordance with the respective stored addresses.

4,353,627
OVER-HEAD PROJECTOR WITH PARTIAL PROJECTION DEVICE

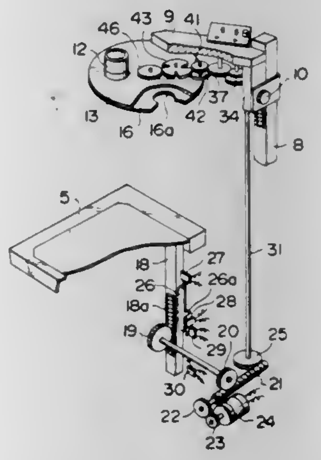
Takashi Maemori, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1980, Ser. No. 194,827

Claims priority, application Japan, Oct. 11, 1979, 54-140699[U]

Int. Cl.^{3} G03B *1/48, 21/14*

U.S. Cl. 353—24 **7 Claims**



1. An overhead projector capable of projecting at least a part of an original image in enlarged scale comprising a vertically movable stage for supporting an original transparent image thereon and movable from a normal, lowered position wherein said stage supports said original image for normal projection to at least one raised position for projection of a part of said image in enlarged scale; projection lens group means carrying a plurality of lenses each corresponding with a respective one of said lowered and raised positions of said vertically movable stage, said lenses including a standard lens for projecting the entire original image when said stage is at its lowered position and at least one partial projection lens for projecting a part of the original image when said stage is at a respective raised position thereof; automatic projection lens selecting means for automatically selecting one of the lenses of said projection lens group for according to the respective position of the stage; stage moving means for moving said stage between its raised and lowered positions; and mechanical linkage means associating said lens selecting means with said stage moving means so that the position of the stage and the projection lens selected by the lens selecting means automatically correspond correctly with each other for each said vertical position of said stage.

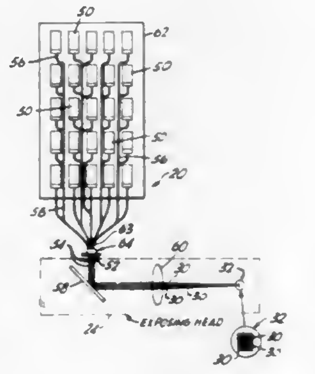
4,353,628
APPARATUS FOR PRODUCING IMAGES ON RADIATION SENSITIVE RECORDING MEDIUMS

Richard M. Berman, Dresher, Pa., assignor to Delta Scan, Inc., Willow Grove, Pa.

Filed May 8, 1981, Ser. No. 261,952

Int. Cl.^{3} B41B *13/00, 21/14*

U.S. Cl. 354—5 **33 Claims**



1. Apparatus for producing an image on a radiation sensitive recording medium, comprising:

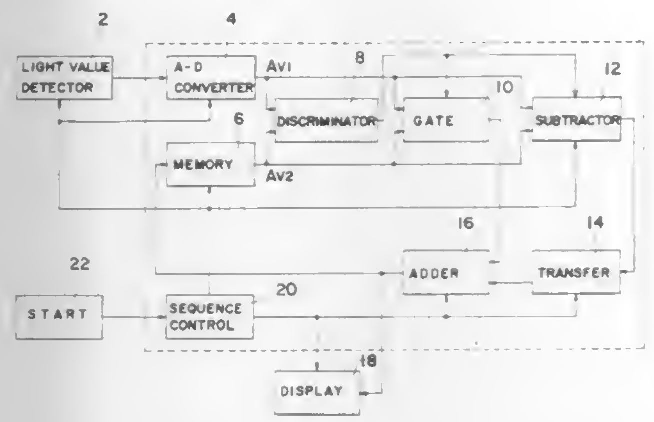
radiation signal means operable for producing a plurality of radiation signals at a predetermined location from said radiation signal means, said plurality of radiation signals being arranged to define a matrix having m rows and n columns in which m and n are each integers greater than 1, and said matrix of signals being of a predetermined size at said predetermined location;

mounting means for mounting a radiation sensitive recording medium and said radiation signal means to provide relative movement between said recording medium and said radiation signal means so that respective portions of said recording medium are presented at said predetermined location from said radiation signal means; and

control means for selectively operating said radiation signal means so as to selectively produce at selected intervals one or more of said radiation signals as said radiation signal means and said recording medium move relative to one another to thereby expose a series of dot areas on said recording medium to produce said image, each of said exposed dot areas being produced during one of said selected intervals and comprising one or more exposed subdot areas corresponding in number to the number of said radiation signals selectively produced during said one interval to produce said exposed dot area whereby the size of said exposed dot area is less than or equal to said predetermined size and corresponds to the size at said predetermined location of said radiation signals selectively produced for said selected interval, said control means being operable so that said radiation signals selectively produced during each of said intervals are in a corresponding preselected pattern dependent on the number of radiation signals selectively produced during each said interval, there being a one to one relationship between the number of radiation signals selectively produced and said corresponding preselected pattern of said radiation signals selectively produced for exposing said dot areas on said recording medium.

4,353,629
SYSTEM AND METHOD FOR CALCULATING A LIGHT INFORMATION VALUE

Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 31, 1979, Ser. No. 8,334
Claims priority, application Japan, Feb. 7, 1978, 53-13287
Int. Cl.^{3} G03B *17/18;* G01J *1/42*
U.S. Cl. 354—23 D **20 Claims**

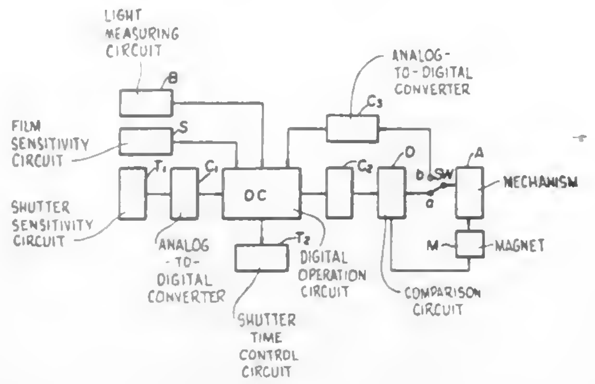


1. A system for processing a plurality of signals used for calculating the sum of a plurality of pieces of light information in logarithmic value, said pieces of light information obtained sequentially one after another through an individual measurement, said system comprising:
  means for producing a first signal indicative of a logarithmic value of one piece of light information;
  storing means for storing a second signal;
  means for producing a third signal indicative of a difference between the first and second signals;
  means responsive to the third signal for producing a fourth signal which is in a predetermined relationship to the third signal; and
  means for adding said fourth signal to one of the first and second signals, the sum of said addition being applied to the storing means for renewing the second signal.

4,353,630
EXPOSURE CONTROL DEVICE FOR A CAMERA HAVING A DIGITAL OPERATION DEVICE

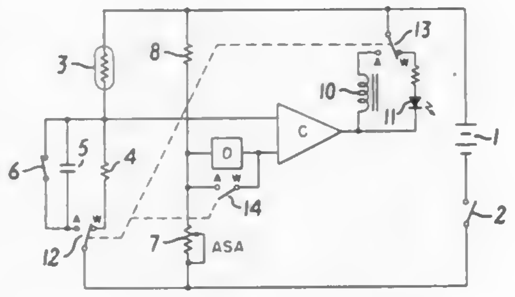
Fumio Ito; Tadashi Ito, both of Yokohama; Soichi Nakamoto, Machida, and Yasuo Isobe, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 729,788, Oct. 5, 1976, abandoned, which is a continuation of Ser. No. 485,634, Jul. 3, 1974, abandoned. This application Jan. 23, 1978, Ser. No. 871,492
Claims priority, application Japan, Jul. 4, 1973, 48-75529
Int. Cl.^{3} G03B *7/14*
U.S. Cl. 354—29 **3 Claims**

1. In a camera operable both in a shutter time preference mode and in a diaphragm preference mode, having diaphragm control means which is provided with two input terminals to determine an aperture size of a taking lens by comparing two input signals applied through the two input terminals and shutter control means which determines an exposure time based on an input signal, the improvement comprising:
  (a) diaphragm value producing means for producing an electrical signal corresponding to the aperture size, the diaphragm value producing means having an output for providing said signal; and
  (b) change-over switch means which connects the output of said diaphragm value producing means to one of the two input terminals of said diaphragm control means for applying an instantaneous value indicating the aperture size to said diaphragm control means when the shutter time preference mode is selected, and which operatively connects the output of said diaphragm value producing means to an input receiving stage of said shutter control means for applying a diaphragm value indicating the aperture size preferentially set when said diaphragm preference mode is selected.


LIGHT MEASURING CIRCUIT
B
ANALOG-TO-DIGITAL CONVERTER
C3
FILM SENSITIVITY CIRCUIT
S
T1
C1
OC
C2
D
b
SW
A
MECHANISM
a
SHUTTER SENSITIVITY CIRCUIT
ANALOG-TO-DIGITAL CONVERTER
T2
DIGITAL OPERATION CIRCUIT
M
MAGNET
COMPARISON CIRCUIT
SHUTTER TIME CONTROL CIRCUIT

4,353,631
EXPOSURE INFORMATION INPUT CIRCUIT FOR ELECTRIC SHUTTER

Yuzuru Takazawa, and Shinji Nagaoka, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan
Filed Apr. 25, 1980, Ser. No. 143,912
Claims priority, application Japan, Apr. 28, 1979, 54-52863
Int. Cl.^{3} G03B *17/18*
U.S. Cl. 354—51 **15 Claims**



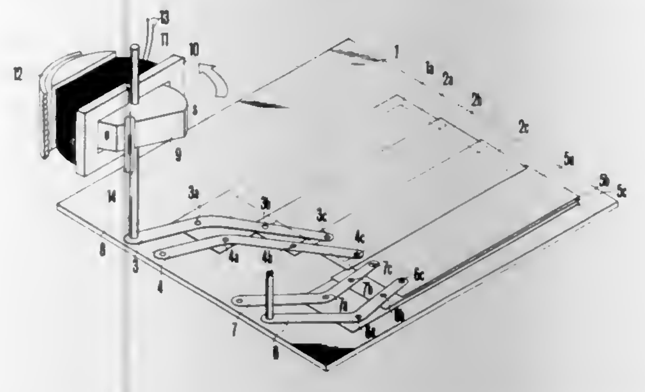
1. An exposure information feeding circuit in an electric shutter having a time constant circuit including a photoelectric element and a capacitor, a shutter control magnet connected to an output from said time constant circuit, a low brightness sensor circuit including a partial voltage circuit comprised of a comparison resistor and said photoelectric element for producing a voltage corresponding to a brightness of an object, and a display circuit connected to an output of said low brightness sensor circuit, characterized in that there is provided an exposure information setting circuit having a function correction circuit for correcting exposure information applied by said exposure information setting circuit to the time constant circuit or the low brightness sensor circuit in order to apply a reference voltage representative of the exposure information other than brightness information to said time constant circuit and the low brightness sensor circuit.

4,353,632
ELECTROMAGNETICALLY DRIVEN SHUTTER DEVICE

Syuichiro Saito, Kawasaki, and Masanori Uchidoi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 31, 1980, Ser. No. 221,632
Claims priority, application Japan, Jan. 8, 1980, 55-499[U]
Int. Cl.^{3} G03B *9/08, 15/03*
U.S. Cl. 354—133 **5 Claims**

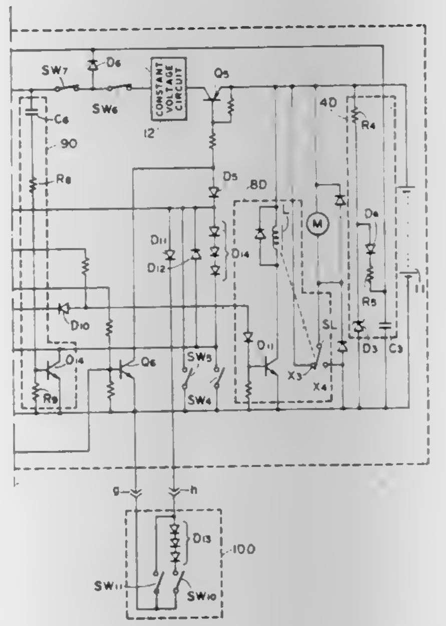
1. An electronically driven shutter comprising:

  at least one shutter blade for opening and closing an optical path by displacement of said blade;
  a permanent magnet member forming a magnetic field, a conductive member in the magnetic field of the permanent magnet, the one of the permanent magnet member and the conductive member being movable and connected to the shutter blade, the other member being fixed in the camera so that when a current is supplied to the conductive member along a predetermined direction an electromagnetic force operates between the permanent magnet member and the conductive member and displaces the movable one of the members so that the shutter blade opens and closes the photographic optical path at a given speed; and
  a magnetic sensor at a predetermined position relative to one of the members so as to detect the displacement position of the movable one of the members.



4,353,633
CAMERA WITH MOTOR DRIVE DEVICE

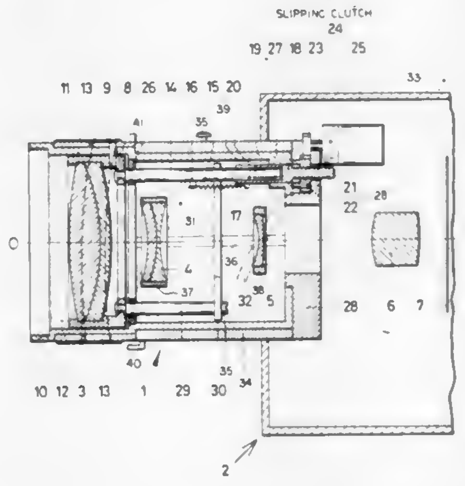
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Mar. 16, 1981, Ser. No. 244,288
Claims priority, application Japan, Mar. 22, 1980, 55-35747
Int. Cl.^{3} G03B *1/18, 17/38*
U.S. Cl. 354—173 **24 Claims**



1. In a motor drive device to be coupled with a camera for driving a film advancing mechanism thereof, wherein each of said camera and motor drive device is provided with an electric control device and a power supply circuit for power supply to said electric control device, wherein said camera ia provided with a power supply control circuit controlling power supply from said power supply circuit of the camera to said electric control device of the camera, and wherein said power supply control circuit is adapted to receive power supply from said power supply circuit of the motor drive device upon electric connection of said camera with said motor drive device;
  an improvement comprising means for controlling the power supply from the power supply circuit of said motor drive device in synchronization with the control function of said power supply control circuit upon electric connection with said camera.

4,353,634
FOCUSING MECHANISM FOR CAMERA OBJECTIVE

Paul Himmelsbach, Bad Kreuznach, Fed. Rep. of Germany, assignor to Jos. Schneider & Co. Optische Werke Kreuznach, Bad Kreuznach, Fed. Rep. of Germany
Filed Apr. 14, 1978, Ser. No. 896,588
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716679
Int. Cl.^{3} G02B *7/10;* G03B *3/10*
U.S. Cl. 354—195 **8 Claims**



1. In a camera provided with a housing and an objective projecting forwardly from said housing, said objective including a lens barrel centered on an optical axis and a plurality of lenses in said lens barrel, at least one of said lenses being provided with an axially shiftable lens mount,
  the combination therewith of:
  stationary bearing means in said lens barrel;
  a guide rod slidably and nonrotatably held in said bearing means, said guide rod being fastened to said lens mount and extending rearwardly therefrom parallel to said optical axis;
  a threaded member forming a coaxial rearward extension of said guide rod nonrotatably held in said housing with freedom of axial displacement, said guide rod and said member being relatively axially shiftable;
  a threaded drive element matingly engaging said member, said element being provided with gear teeth and being held against axial displacement in said housing;
  a reversible motor provided with a pinion in mesh with said gear teeth;
  a manually rotatable setting ring carried on said lens barrel in an axially fixed position, said setting ring being provided with a camming groove registering with an axially extending slot in said lens barrel, said lens mount being provided with a projection extending through said slot into engagement with said camming groove; and
  biasing means urging said guide rod and said member into a predetermined relative axial position, said camming groove and said slot receiving said projection with sufficient play to enable an axial shift of said lens mount by said motor independently of the position of said setting ring, said lens mount being axially entrainable by said setting ring via said projection against the force of said biasing means.

4,353,635

APPARATUS FOR AUTOMATICALLY DEVELOPING FILM

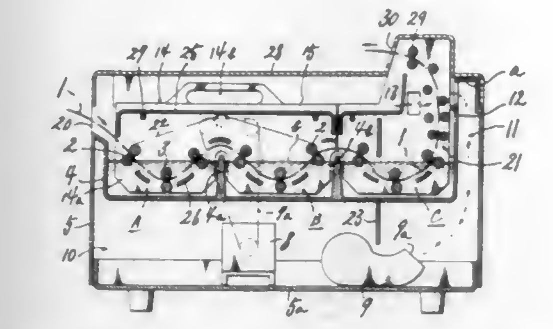
Hiroshi Tanaka, No. 1029, Asahi-Coop, 13-10, 5-chome, Takadono, Asahi-ku, Osaka-shi, Japan

Filed Jun. 2, 1981, Ser. No. 269,657

Claims priority, application Japan, Jun. 14, 1980, 55/80759; Jun. 18, 1980, 55/85928[U]

Int. Cl.^{3} G03D *3/08*

U.S. Cl. 354—320 **2 Claims**



1. An apparatus for automatically developing a film by passing the film through a bath, said apparatus comprising:

a container for the bath having upwardly extending side and end walls;

a main body within which said container is positioned, said main body having upwardly extending side and end walls spaced from the side and end walls of said container to define spaces therebetween, the upper ends of said side and end walls being integrally joined together to close the upper end of said spaces; said container having a bottom positioned above the bottom of said side and end walls of said main body to define a bottom space thereunder and which is joined to said space between said side and end walls;

a feed roller assembly removably mounted in said container;

a power transmission assembly in one of said spaces and detachably connected to said feed roller assembly;

a drive motor in one of said spaces connected to said power transmission assembly for driving said power transmission assembly;

said container end wall and side walls having openings therein at the delivery end of said feed roller assembly and opening out of the upper ends of the spaces between said side walls and end walls; and

a drying blower in one of said spaces and having a hot air discharge directed toward said spaces between said container and main body side and end walls for directing hot air upwardly therethrough and out of said openings for drying film being discharged by said feed roller assembly.

4,353,636

DEVICE FOR CLEANING OPTICAL FIBER TUBE INCORPORATED IN IMAGE FORMING APPARATUS

Hiroaki Kojima, Toyokawashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1980, Ser. No. 171,438

Claims priority, application Japan, Sep. 27, 1979, 54-134040[U]

Int. Cl.^{3} G03B *27/00, 27/52*

U.S. Cl. 355—1 **9 Claims**

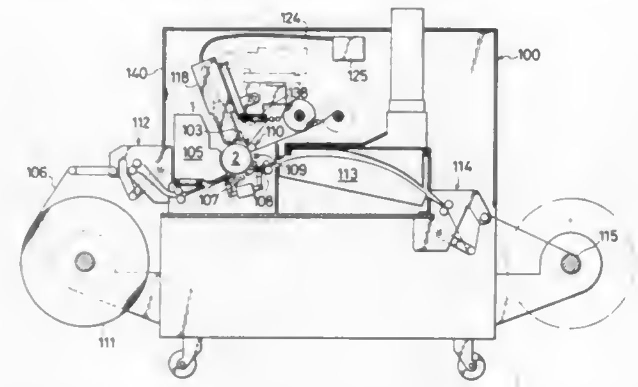
1. In an image-forming apparatus which includes an optical fiber tube for producing an image to be electrostatically copied in the surface of a photoconductive member, the optical fiber tube having a light-emitting surface which is susceptible to becoming dirty, the improvement wherein said image-forming apparatus includes

first moving means connected to said optical fiber tube to position said optical fiber tube either at a first position in close proximity to the surface of said photoconductive member or at a second position located remotely of said surface of said photoconductive member; said optical fiber tube, when at said first position, producing an image to be reproduced on the surface of said photoconductive member from light emitted from said light-emitting surface thereof, and, when in said second position, being capable of having its light-emitting surface cleaned;

cleaning means capable of cleaning the tight-emitting surface of said optical fiber tube when said optical fiber tube is at said second position;

second moving means connected to said cleaning means for moving said cleaning means over said light-emitting surface of said optical fiber tube;

control means for controlling the operation of said first moving means and said second moving means;



a power switch operable to turn on the supply of electrical current to said image-forming apparatus or turnoff the supply of electrical current to said image-forming apparatus;

first detection means connected to said control unit for supplying a signal thereto when said optical fiber tube is at said second position;

said control means causing said second moving means to move said cleaning means over said light-emitting surface of said optical fiber tube when said power switch is turned on and said first detection means detects the positioning of said optical fiber tube at said second position.

4,353,637

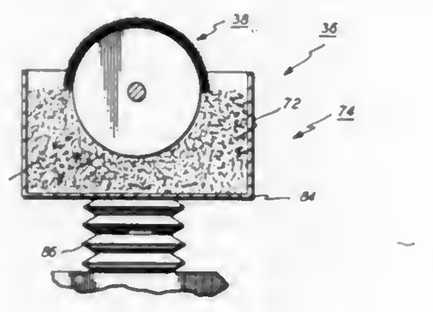
DEVELOPMENT SYSTEM

Delmer G. Parker, Irondequoit, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1981, Ser. No. 297,586

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 DD **32 Claims**



1. An apparatus for developing a latent image including:

means, defining a chamber, for storing a supply of developer material therein;

means, disposed in the chamber of said storing means, for transporting the developer material into contact with the latent image to form a powder image thereof; and

means for automatically moving said storing means toward said transporting means to provide a continuous supply of developer material to said transporting means.

4,353,638

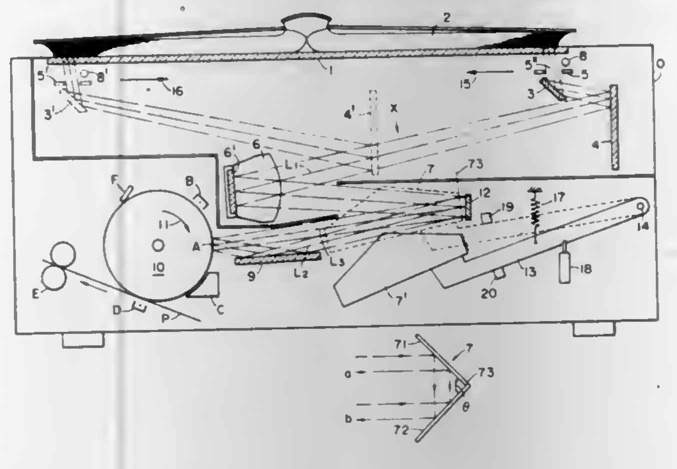
COPYING APPARATUS

Wilhelm Knechtel, Biebertal, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,370

Int. Cl.^{3} G03G *15/28*

U.S. Cl. 355—8 **6 Claims**



1. A copying apparatus comprising:

scanning means for scanning an original to be copied in a first direction or alternatively in a second direction opposite to said first direction;

first reflecting means disposed in a first optical path which the light for forming an image of said original on a photosensitive medium passes through during the original scanning in said first direction;

second reflecting means movable between first and second positions, wherein said second reflecting means when being in the first position during the original scanning in said first direction takes no part in forming the image but during the original scanning in said second direction said second reflecting means is in the second position in which it forms a second optical path different from said first optical path and takes a part in forming the image; and

third reflecting means disposed in said second optical path to project the original image on said photosensitive medium during the original scanning in said second direction, wherein said second and third reflecting means cooperate to change the orientation of the original image on said photosensitive medium by 180° relative to that formed during the original scanning in said first direction.

4,353,639

DEVICE FOR REMOVING DEVELOPER LIQUID FROM A RECORDING MATERIAL

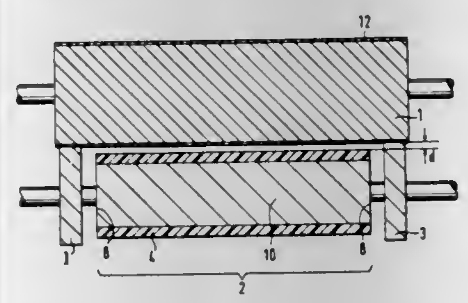
Roland Moraw, and Günther Schädlich, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 266,977

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021050

Int. Cl.^{3} G03G *15/10*

U.S. Cl. 355—10 **14 Claims**



1. A device for use in an electrophotographic copying machine to remove developer liquid from a recording material, comprising:

a rotatable drum carrying on its outside circumferential surface the recording material which is intended to be charged and exposed to an optical image of an original in order to produce a latent charge image thereon; and

a roller mounted parallel to said drum for rotation in the direction opposite to the direction of movement of the recording material for applying a developer liquid to the latent charge image on said drum, said roller being arranged to provide a gap between the roller and the recording material, and said roller comprising a surface layer of a material having a smaller coefficient of friction than the recording material and a thickness such that the gap between said roller and said recording material on said drum is less than about 0.05 mm.

4,353,640

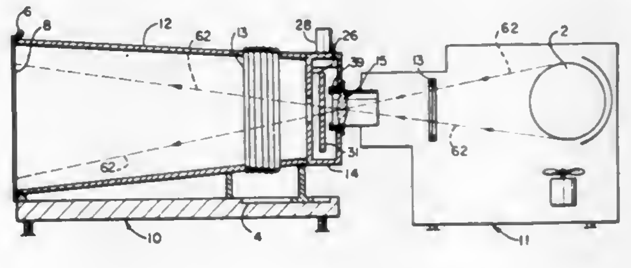
PRINT MAKER

Arne A. Wyller, Stockholm Observatory, S-133 00 Saltsjöbaden, Sweden

Continuation of Ser. No. 4,437, Jan. 18, 1979, Pat. No. 4,239,376. This application Oct. 8, 1980, Ser. No. 195,123

Int. Cl.^{3} G03B *27/52*

U.S. Cl. 355—21 **8 Claims**



1. An apparatus for making prints from transparencies, for use with a stand-alone projector formed by a first housing in which are disposed a light source and a focusable image projection lens defining between them a first optical path, the projection lens being adjustably positionable along the first optical path in a range of positions which lies at least in part outside the first housing, and a transparency holding station disposed in the first optical path, the apparatus comprising:

a second housing, light-tight except for one wall having an opening therethrough;

a conically shaped resilient seal disposed in the opening for receiving the projection lens in light-tight relationship;

a shutter assembly disposed in the housing, adjacent the seal;

a detachable film holder forming at least part of another wall of the housing, the seal, the shutter assembly and the film holder defining a second optical path; and,

adjustable means for orienting the second housing to align the first and second optical paths, whereby the image will be projected onto the film holder without distortion.

4,353,641

COLOR PHOTOGRAPHY PRINT WITH EXPOSURE DATA AND MEANS FOR MAKING

Armando M. Merlo, 1561 Keele St., Toronto, Ontario, Canada (M6N 3G1), assignor to Armando M. Merlo and Angelo Balsamo, both of Toronto, Canada

Division of Ser. No. 5,817, Jan. 23, 1979, Pat. No. 4,259,423. This application Apr. 4, 1980, Ser. No. 137,305

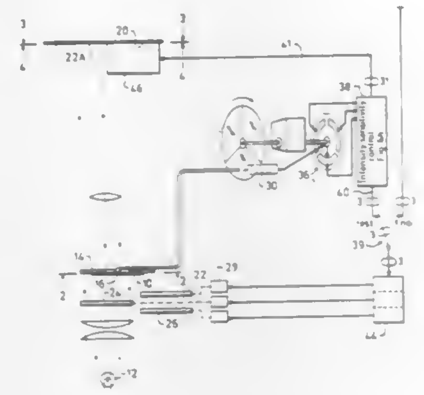
Int. Cl.^{3} G03B *27/80*

U.S. Cl. 355—38 **20 Claims**

1. Means for preparing color photographic prints using equipment wherein the negative is used to produce a print while illuminated with radiation containing three ranges of color components sufficient to provide the colors required for the printing process and wherein the illumination time of the negative, by light from said radiation within each color com-

ponent range, is terminated by insertion in the illumination path of a filter having an approximately complementary range to the range of the colour component range to be terminated, and wherein means are provided for controlling the time of insertion and the insertion of said filters;

means operable during production of a test print comprising: means, corresponding to each of said color ranges, and operable during the illumination of said negative, for sensing the intensity of light, within the corresponding color range, transmitted through a small selected area, of said negative,



means responsive to each of such intensities for controlling in accord with the intensity so sensed, the insertion of the filter having the complementary color range to the intensity so sensed, to provide an exposure time to the color range having an inverse relationship to the sensed intensity,

means corresponding to each of said color ranges for recording, in machine readable form, the illumination time for that color range up to such termination.

4,353,642

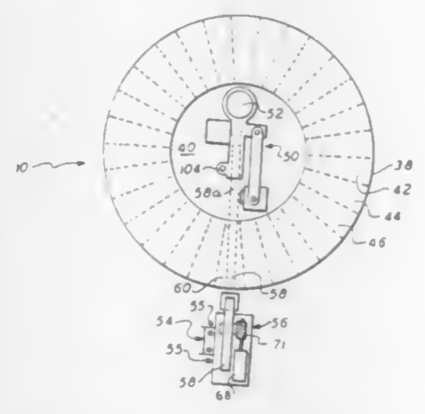
MICROFILM RETRIEVAL SYSTEM

Hans Weigert, 284 Franklin Turnpike, Ridgewood, N.J. 07450

Filed Apr. 23, 1980, Ser. No. 143,162

Int. Cl.³ G03B *21/00*

U.S. Cl. 355—45 **12 Claims**



1. A microfilm cartridge storage drum having a given axis and a plurality of tiers, each of which includes successive side-by-side compartments oriented along radials of said cylinder and adapted to hold a microfilm cartridge;

cartridge receiving means mounted proximate to the said compartments of said drum, and movable axially relative to said drum for receiving a cartridge from one of said compartments in operative opposition thereto, and for optically projecting a selected frame thereof;

cartridge displacement means mounted proximate the compartments of the drum and movable axially parallel to and in conjunction with said cartridge receiving means for displacing a cartridge in operative opposition thereto to said receiving and projection means;

orienting means for providing relative displacement between said drum and each of said receiving and projection head means and said cartridge displacement means, and for providing relative angular displacement of said drum about its axis relative to each of said means to thereby bring each of said receiving and projection head means and said cartridge displacement means in operative opposition to one of said compartments containing a selected cartridge; and

control means responsive to operative selection of a cartridge and frame thereof for actuating said orienting means, and thereupon said cartridge displacement means, and said cartridge receiving and projection head means.

4,353,643

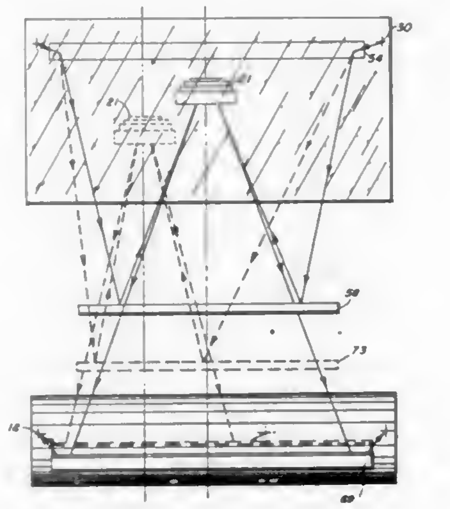
MULTIMAGNIFICATION MODE OPTICAL SYSTEM WITH ROTATING AND TRANSLATING LENS

William L. Statt, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1980, Ser. No. 155,705

Int. Cl.³ G03B *27/34, 27/40, 27/70*

U.S. Cl. 355—57 **10 Claims**



1. In a multimagnification mode optical system for projecting an image of an object from an object plane to an image plane including the following disposed along an optical path, support means to support an object at said object plane, a lens at a first position, at least one reflecting surface on each of the object side and image side of said lens and a photosensitive surface at said image plane to receive said projected image, the length of the optical light path from the object plane to the lens relative to the length of the optical light path from the lens to the image plane forming a first image magnification ratio, the improvement including means to simultaneously rotate and translate said lens about and along a stationary axis in three dimensional space to a second position whereby the length of the optical light path from the object to the lens is increased thereby forming a second image magnification ratio and whereby the optical axis of said lens is altered.

4,353,644

FRAMES

Eric Taylor, London, England, assignor to Paterson Products Limited, London, England

Filed Oct. 29, 1980, Ser. No. 201,985

Claims priority, application United Kingdom, Nov. 8, 1979, 7938784

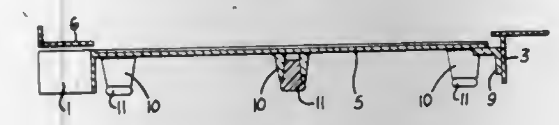
Int. Cl.³ G03B *27/58*

U.S. Cl. 355—72 **4 Claims**

1. A frame adapted to receive a shaped sheet of material, said frame comprising a one-piece moulding consisting of:

(a) a polygonal member the sides of which define an aperture, said member having a first side, and a number of other sides, said other sides having flanged inner edges, wherein the flanges lie substantially on the same plane; and

(b) a substantially flat support plate integrally molded with said polygonal member, and extending from said first side thereof, across the aperture, towards the other sides of said member, the outer edges of said plate, as viewed from a direction normal to the plate plane, being inwardly spaced from the inner edges of said other sides, and the plane of said plate being displaced a short distance from the plane of said flanges.



4,353,645

NEGATIVE FILM CARRIER

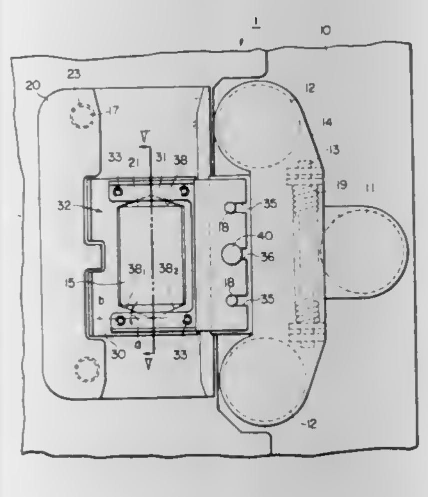
Mikio Kogane, and Seiichi Yamazaki, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 25, 1980, Ser. No. 210,183

Claims priority, application Japan, Dec. 28, 1979, 54/182577[U]

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **5 Claims**



1. A negative film carrier for printing pictures comprising: a carrier stand having an abutting and moving drive mechanism adapted to be rocked by solenoid means; a plurality of stationary frames of different image window size, said frames being interchangeably mountable on said carrier stand; a plurality of abutting movable frames provided in correspondence with said plurality of stationary frames which are interchangeably coupled to said abutting and moving drive mechanism, the image window of each of said abutting movable frames having a first two opposed sides parallel to the direction of advancement of a negative film and having a second two opposed sides connecting said first two opposed sides and forming an obtuse angle with ends of said first two opposed sides, said second two sides being symmetrical with respect to the direction of advancement of a negative film.

4,353,646

APPARATUS FOR POSITIONING ORIGINALS IN PHOTOGRAPHIC COPYING MACHINES

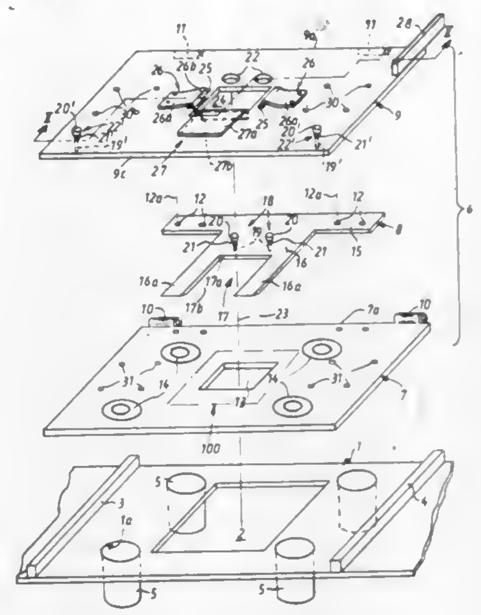
Siegfried Bartel, Gauting; Ernst Biedermann, Taufkirchen; Erich Nagel, Anzing, and Franz Kramer, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,184

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030901

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—76 **25 Claims**



1. Apparatus for positioning sheet-like commodities, particularly for positioning originals in photographic copiers wherein such originals are normally inserted, shifted and/or removed by hand, comprising a support; and a holder on said support, said holder comprising a first section carried by said support and having a first opening, a second section movable with reference to said first section to and from an operative position in which said second section overlies said first section, said second section having a second opening in register with said first opening in the operative position of said second section, a substantially U-shaped hold-down device interposed between said sections and having an open-sided cutout in register with said first opening, a commodity being insertable between said device and said first section so that a selected portion of such commodity overlies said first opening and three sides of the selected portion are held by said device against said first section, and a biasing element provided on said second section and extending along the open side of said cutout in the operative position of said second section to urge the remaining side of the selected portion of a commodity between said device and said first section against said first section.

4,353,647

APPARATUS FOR EXPOSING AND CONVEYING PHOTOSENSITIVE PLATES

Robert E. Harrell, Manchester; Tedd L. Harrell, Springfield, and Harold E. Coons, Jr., St. Charles, all of Mo., assignors to Western Litho Plate & Supply Company, St. Louis, Mo.

Filed Jan. 8, 1981, Ser. No. 223,317

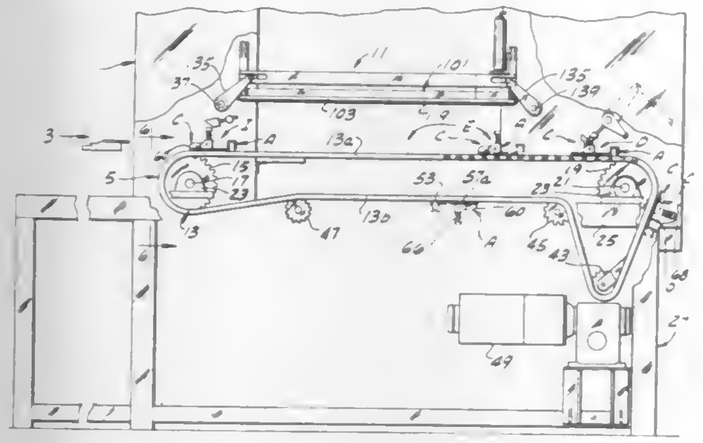
Int. Cl.³ G03B *27/04*

U.S. Cl. 355—85 **18 Claims**

1. In apparatus for exposing photosensitized plates comprising a conveyor having gripping means spaced at intervals along its length each adapted releasably to grip a plate and a film on the plate for movement of the plate and a film on the plate by the conveyor in a forward direction along a predetermined path, the conveyor being intermittently operable to index each gripping means from a first station for application of a plate and film thereto to a second station along said path for bringing the gripped plate and film to an exposure position and

thence to a third station farther along said path for discharge of the plate, means including a window movable downwardly from a raised retracted position clear of a plate and film in the exposure position at the second station to a lowered position for the pressing of the plate and film, and movable upwardly from its lowered to its raised position, the improvement comprising the provision of:

means for actuating the gripping means on the conveyor at the second station operable to open the gripping means to allow a film on a plate at the second station to be lifted from the plate;



means associated with the window operable on raising it to grip a film on a plate at the second station and lift the said film away from the plate to a raised position clear of the plate;

the means for actuating the gripping means being operable to close the gripping means on a plate at the second station after the said film has been lifted from the plate to enable the conveyor to index the plate to the third station and bring the next plate to the second station for exposure; and

the window then being movable down to its lowered position for the pressing of the said film and the next plate and the exposure of said next plate through said film.

4,353,648

COPY PAPER SEPARATING METHOD FOR USE IN ELECTROPHOTOGRAPHIC COPYING APPARATUS

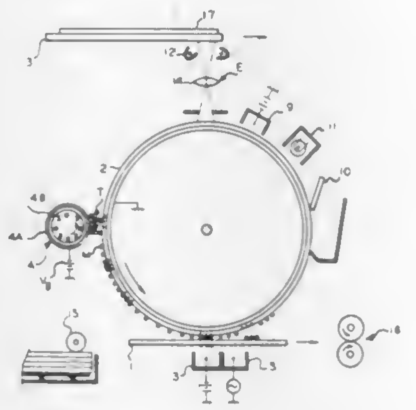
Susumu Tanaka; Tateki Oka, both of Sakai, and Hiroshi Mizuno, Ikoma, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Oct. 21, 1980, Ser. No. 199,220

Claims priority, application Japan, Oct. 23, 1979, 54-136679

Int. Cl.^{3} G03G *15/06, 13/06*

U.S. Cl. 355—133 6 Claims



1. A copy paper separating method for use in an electrophotographic copying apparatus which forms a latent electrostatic image on a recording member, develops the latent image to a toner image, places copy paper over the toner image on the recording member, charges the rear side of the copy paper to a polarity opposite to that of the toner by corona discharge to transfer the toner image from the recording member to the front side of the copy paper, and thereafter separates the copy paper from the recording member, which comprises a step of depositing fine particles having insulating properties charged to a polarity opposite to that of the toner image on the surface of the recording member by a reversal developing process before the copy paper is placed over the recording member to cause the particles to reduce the electrostatic attraction between the copy paper and the recording member when the copy paper is to be separated from the recording member, thereby facilitating separation of the copy paper.

4,353,649

APPARATUS FOR SURFACE STRESS MEASUREMENT OF GLASS COATING AND TRANSPARENT PLASTIC PRODUCT

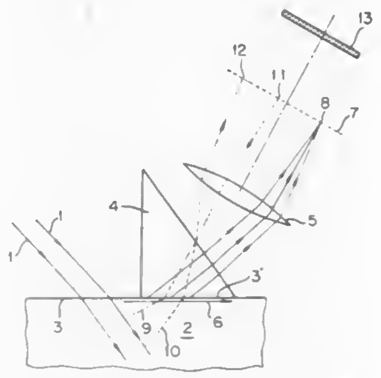
Toru Kishii, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 164,496

Claims priority, application Japan, Jul. 6, 1979, 54-84924; Dec. 10, 1979, 54-159133

Int. Cl.^{3} G01B *11/18*

U.S. Cl. 356—33 13 Claims



1. An apparatus for measuring surface stress of glass coating and transparent plastic products, comprising means for projecting coherent light to provide scattered light in the surface layer of the object to be measured, an output prism having a refractive index greater than that of said surface, mounted proximal to the light incident point on said surface in such a manner that one face thereof is in optically close contact with said surface, a telescope to measure the critical angle at the interface of said surface and said output prism in respect of the projected light from said output prism, and a means, including a polarizer located on the optical path of said projected light downstream of said output prism, for observing interference light spots formed at a focal plane of an objective lens of the telescope.

4,353,650

LASER HETERODYNE SURFACE PROFILER

Gary E. Sommargren, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 159,893

Int. Cl.^{3} G01B *11/30, 9/02*

U.S. Cl. 356—371 15 Claims

1. A method for testing the deviation of the face of an object from a flat smooth surface comprising the steps of

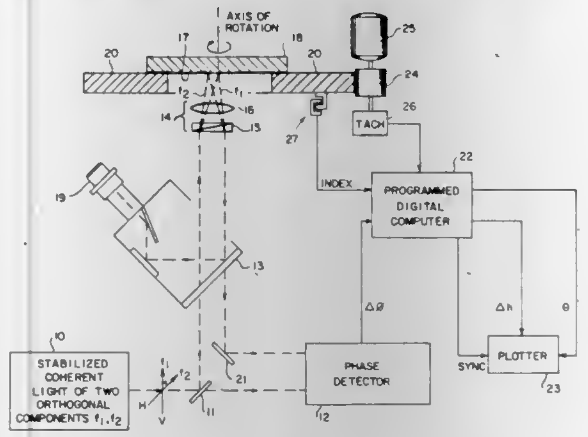
generating a dual frequency beam of coherent light having a stable frequency difference with a constant reference phase,

splitting said beam into first and second frequency components,

directing said separating components onto spaced apart points on the face of said object,

recombining said components into a single beam after reflection from said points,

rotating said object about an axis normal to said face with respect to said first of said split components so as to have said second one of said components reflected from points along a circular track on said face while the first component is continually reflected from a stationary point on said axis at the center of rotation of said object, and


AXIS OF ROTATION
TACH
INDEX
PROGRAMMED DIGITAL COMPUTER
STABILIZED COHERENT LIGHT OF TWO ORTHOGONAL COMPONENTS f1, f2
PHASE DETECTOR
PLOTTER
SYNC

measuring the phase shift of the difference frequency of said components in the recombined beam as a measure of the variation of said face from a flat smooth surface.

4,353,651

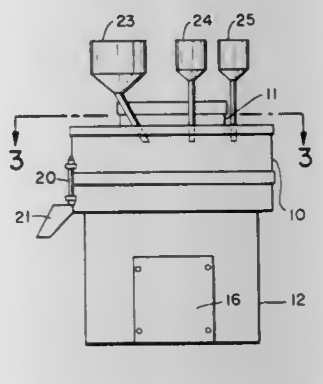
METHOD OF MIXING CHEMICALLY BONDED FOUNDRY SAND BY VIBRATORY ACTION

William H. Moore, Whitehall Apts.-6E, Whitehall Rd., Chattanooga, Tenn. 37405, and Donald R. Jorgensen, R.F.D. 1, Udell Ct., Peekskill, N.Y. 10566

Filed Jul. 31, 1980, Ser. No. 173,991

Int. Cl.^{3} B28C *5/08*

U.S. Cl. 366—2 4 Claims



1. A method for mixing foundry sand with two part chemical binders comprising the steps of locating the place of introduction of the first part of the binder in respect to a lengthwise extending mixing trough, locating the place of introduction of the second part of the binder in respect to the mixing trough, introducing the sand into one end of the mixing trough, vibrating the mixing trough causing the sand to turn over, the sand laterally moving in the mixing trough sequentially past the places of introduction of the first part and second part of the binder respectively, introducing the first part and second part of the binder into the mixing trough, said vibrating the mixing trough also mixing the sand and two part chemical binder, and discharging the sand and two part chemical binder mixture from the other end of the mixing trough.

4,353,652

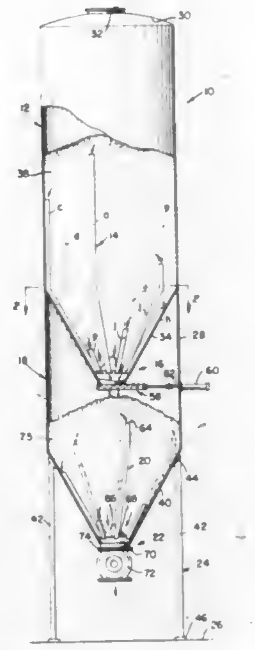
APPARATUS FOR GRAVITY BLENDING OR PARTICULATE SOLIDS

Henry T. Young, 801 Merrill Pl., North Myrtle Beach, S.C. 29582

Filed Apr. 16, 1980, Ser. No. 140,700

Int. Cl.^{3} B01F *5/24*

U.S. Cl. 366—193 12 Claims



1. A gravity flow particulate solids blender for blending a mass of heterogeneous material, comprising:

a first storage vessel having a first material receiving inlet and a first material exit port,

a first plurality of particulate solids withdrawal downcomers communicating said first storage vessel with said first material exit port, said first downcomers being of differing lengths and having inlets and outlets spaced, respectively, around the periphery of said first storage vessel and the circumference of said first material exit port,

a second storage vessel positioned downstream of said first storage vessel and having a second inlet communicating with said first material exit port and having a second material exit port,

a second plurality of particulate solids withdrawal downcomers communicating said second storage vessel with said second material exit port, said second downcomers being of differing lengths and having inlets and outlets spaced, respectively, around the periphery of said second storage vessel and the circumference of said second material exit port and

gating means for selectively allowing blended particulate solids to flow from said second material exit port for further processing.

4,353,653

FONT SELECTION AND COMPRESSION FOR PRINTER SUBSYSTEM

Lee T. Zimmerman, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,384

Int. Cl.^{3} B41J *5/30*

U.S. Cl. 400—70 7 Claims

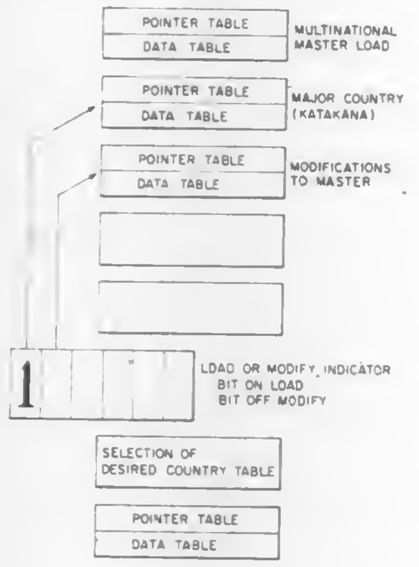
1. A font selection and compression arrangement for a printer subsystem having a printer unit and assemblies for feeding a form and printing character images on said form in a variety of languages during print operations, comprising:

language selection means providing multinational, major, and modifier language selection signals indicative of a plurality of language character images to be printed, said language character images being characterized as multinational, major, and modifier images;

storage means for storing a plurality of image sets in a compressed format for access by said printer subsystem during printing, said storage means storing said language images in the form of a plurality of character image information sets including a multinational master set that is a composite of images used in most of said languages, at least one major country set incorporating images not included in said multinational master set and at least one modifier set including images to be modified in said multinational master set;

font selection means responsive to a multinational signal from said language selection means to select said multinational master set from said storage means for use in developing character image signals during printing operations, said font selection means being further responsive to font selection signals in real time during printing operations, said font selection means being operable responsive to a major language signal from said language selection means to select said major country set from said storage means to substitute for said multinational master set and operable responsive to a modifier language signal from said language selection means to select said modifier set from said storage means to modify but maintain said multinational master set as the primary source of images; and

image generator means in said printer subsystem operable to utilize said character image sets for producing character image signals in accordance with the language character image set selected and further operable to supply said character image signals to said printer unit for printing of characters required.



4,353,654
DIRECT INK DELIVERY SYSTEM FOR PRINT HEADS UTILIZING ADJUSTABLE MEANS FOR CONTROLLING INK FLOWS

John Shiurila, Londonderry, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed May 16, 1980, Ser. No. 150,319

Int. Cl.³ B41J *27/04, 27/20*

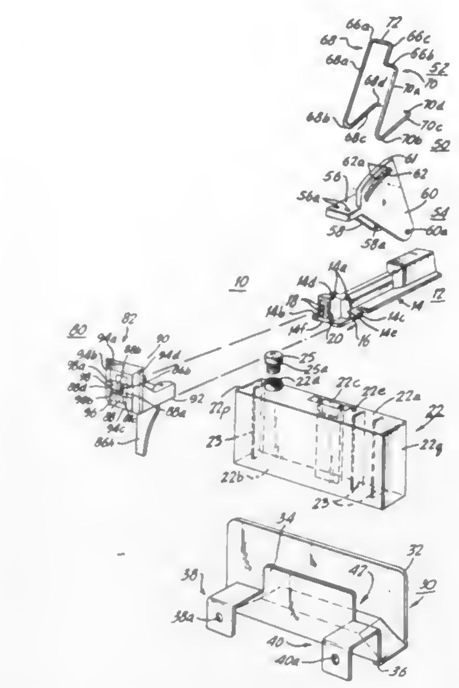
U.S. Cl. 400—124 **28 Claims**

1. Apparatus for direct delivery of ink to a printing member comprising:

a reciprocating member having a printing face at its forward end; an ink supply container;

a first capillary member in said container, at least a portion thereof being immersed in the ink in said container;

a bracket for supporting a second capillary member so that at least a first portion of said second capillary member is positioned to wipingly engage said printing member and a second portion thereof extends into said container and engages said first capillary member;



means for moving said first and second capillary members relative to one another for altering the flow of ink therebetween.

4,353,655
ELECTRONIC TYPEWRITER AND ITS CONTROL APPARATUS

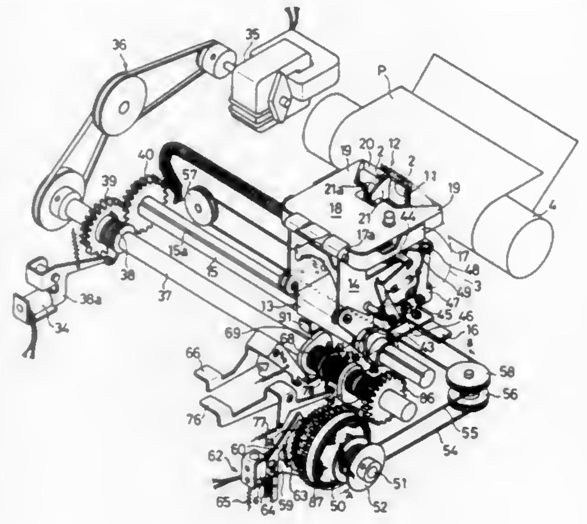
Tomoyoshi Watanabe, Chiryu; Takanobu Hirayama, Chita; Motokazu Yoshimura, Nagoya; Kenji Mizuno, Nagoya, and Yukio Inukai, Nagoya, all of Japan, assignors to Brother Industries, Ltd., Nagoya, Japan

Filed Feb. 21, 1979, Ser. No. 13,329

Claims priority, application Japan, Mar. 7, 1978, 53-25856

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **12 Claims**



1. In an electronic typewriter, in combination:

(a) a frame;

(b) a keyboard (**25**) having a plurality of character keys (**26**) arranged on said frame;

(c) a platen (**4**) provided on said frame for supporting and feeding a print paper;

(d) a print head (**1**) mounted on a base member (**13**) provided in said frame between said keyboard and platen, said print head including a rotatable print wheel (**3**) with a plurality of type elements (**2**) disposed around the periphery thereof and corresponding to each key, a cyclic step motor (**5**) mounted on said base member and coupled to said print wheel for rotating said print wheel to desired rotational positions in order to place a selected type element at a printing position adjacent said print paper to be printed thereon, and a print hammer (**21**) disposed in alignment with said printing position for impacting a selected type element located at said printing position;

(e) moving means (**50–65**) for incrementally moving said platen and said print head each relative to the other along a printing line;

(f) ribbon holding means for holding an ink ribbon at the printing position before said platen;

(g) lifting means (**40–43, 45–49**) for lifting at least a part of said ink ribbon to a position between said type element to be impacted and the print paper before every impacting action of said print hammer;

(h) feeding means (**40–44**) for feeding said ink ribbon to successively change the portion of said ink ribbon against which said print hammer (**21**) will impact;

(i) electronic circuit lodging means in said frame for holding electronic circuit means which generate signals in response to each depressing of said keys so as to sequentially control each operation of said print head, said moving means, said lifting means and said feeding means respectively so that said step motor is rotated acceleratively from a first rotate position to a position beyond the middle point of the entire rotate cycle step required for locating a selected type element at said printing position and then deceleratively thereafter in said cyclic step so that said step motor rotates a first distance at an accelerating speed and a last distance at a decelerating speed in order to bring the selected type element to said printing position, the electronic circuit means lodged in said frame comprising:

(j) pulse generating means (**300**) for generating a first pulse (**328**) to start the rotation of said step motor in response to each depressing of each key;

(k) detecting means (**6, 112**) for detecting a plurality of rotate positions of said step motor determined at the same interval relative to each type element of said print wheel and generating a position signal corresponding to each of said rotate positions;

(l) pulse signal means (**115**) for generating an acceleration-deceleration pulse signal (**170**) in response to said position signal at each rotate position of at least more than half of a cyclic step but less than one step of the rotation before a stable point determined by the energizing state of said step motor;

(m) drive means (**216**) for driving said step motor according to said first pulse and said acceleration-deceleration pulse signal transmitted from said generating means;

(n) indicating means (**290**) for indicating the boundary position between the acceleration rotate first distance and deceleration rotate last distance; and,

(o) responsive means (**346**) responding to said indicating means for suppressing one pulse of said acceleration-deceleration pulse signals to be transmitted to said driving means at said boundry position, so that said step motor in said acceleration rotate first distance is shifted to a next energizing state at the rotate position of the last distance before a stable point determined by each energizing state of said step motor, said step motor in said deceleration rotate last distance being shifted to a next energizing state at the position less than said first distance.

4,353,656
MOVING COIL, MULTIPLE ENERGY PRINT HAMMER SYSTEM INCLUDING A CLOSED LOOP SERVO

Gordon Sohl, Richardson; John R. Masters, Dallas, and John R. Leicht, Bedford, all of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 14, 1980, Ser. No. 196,494

Int. Cl.³ B41J *19/00*

U.S. Cl. 400—157.3 **4 Claims**

1. A printing system having a moving coil hammer for use with an independently operable printing machine having a platen, a print element containing predetermined characters and a carriage for traversing said platen, said print hammer system comprising:

means for creating a permanent magnetic field in the area of said hammer,

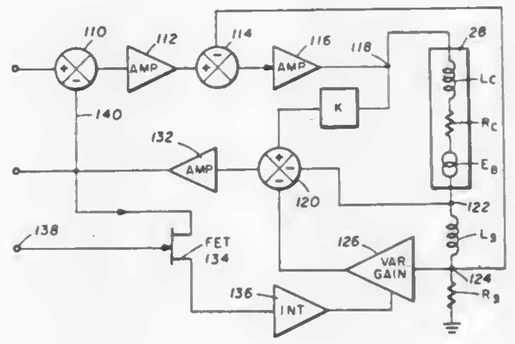
means for generating a velocity command which is the velocity profile for the character to be printed,

means for converting said velocity command into a current,

a coil connected to said hammer and coupled to said current for moving said hammer against and away from said print element,

a resistor in series with said coil for generating a voltage proportional to the voltage dropped by the internal resistance of said coil,

an inductor in series with said coil for generating a voltage proportional to the voltage dropped by the inductance of said coil,



means for determining the velocity of said hammer by calculating all resistance and inductance voltages in the coil circuit and subtracting said voltages from the total voltage applied by said means for converting, the remainder equaling the back emf voltage of the coil which is a voltage proportional to the hammer velocity,

wherein said means for generating is responsive to said hammer velocity voltage determination to generate an updated velocity command, and

wherein said means for determining further includes a variable gain amplifier to provide compensation for any changes in the resistance of said coil in the moving coil hammer due to changes in the temperature of said coil, thereby allowing the sensed velocity of the moving coil hammer to be independent of any changes in the resistance of the coil in the moving coil hammer.

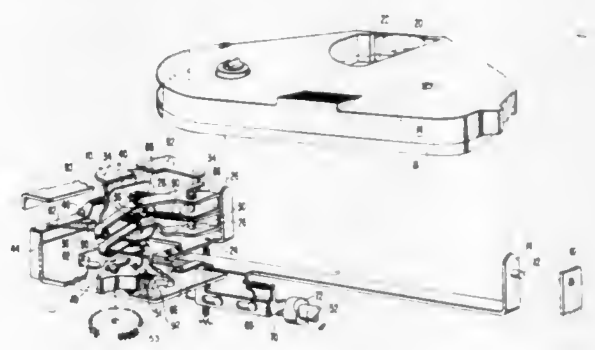
4,353,657
RIBBON FEED MECHANISM AND CORRECTION TAPE FEED MECHANISM FOR A TYPEWRITER

John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 853,704, Nov. 21, 1977, abandoned. This application Oct. 3, 1979, Ser. No. 81,586

Int. Cl.³ B41J *33/20, 33/24, 29/26, 35/28*

U.S. Cl. 400—208 **4 Claims**



1. A ribbon feed mechanism, in combination with a single

element impact printer having a print line and having a cyclically operable shaft, said printer being cyclically operable in print and correction modes, said mechanism capable of accepting a cartridge containing a printing ribbon and a correction tape, said combination operative to feed said printing ribbon and correction tape in said cartridge, said cartridge comprising superimposed supply spools; and superimposed take up spools having spatially fixed axes with respect to said cartridge, said take up spools respectively for receiving used ribbon and supporting a ribbon disc and for receiving used tape and supporting a tape disc, said ribbon feed mechanism comprising:

a holder for said cartridge mounted on said typewriter for cyclically controlled oscillation of said holder and said cartridge to move said ribbon in a direction substantially perpendicular to said print line;
a ribbon drive wheel insertable into said cartridge and peripherally engageable with said ribbon disc for rotating said ribbon disc to feed said ribbon in feed increments;
a tape drive wheel insertable into said cartridge and peripherally engageable with said tape disc for rotating said tape disc to feed said tape;
a first cam means mounted for intermittent rotation and driven by said shaft;
a first cam follower means interconnecting said first cam means and said ribbon drive wheel for effecting ribbon feed in said feed increments upon the rotation of said cam means;
a second cam follower means interconnecting said first cam means and said holder to effect said oscillation of said holder and said cartridge to present a plurality of levels of said ribbon at a writing line of said printer and to permit depression of said cartridge to a position whereby the ribbon is below the writing line;
a second cam means mounted for intermittent rotation and driven by said shaft;
a third cam follower means operatively connected to said tape drive wheel, and mounted for normal disengagement from said second cam means when in said print mode, and oscillatable into engagement with said second cam means by the elevation of said cartridge to effect feed of said correction tape when in said correction mode, whereby said ribbon is fed upon each cyclic operation of said shaft and tape is fed upon each cyclic operation of said shaft when said second cam is engaged by said third cam follower means by said drive wheels onto a fixed axis takeup spool within said oscillatable cartridge.

4,353,658

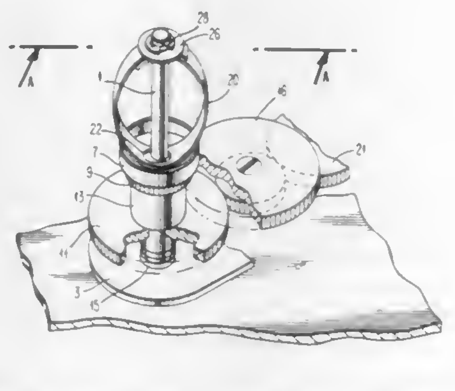
RIBBON FEED MODE SHIFT MECHANISM

James A. Craft, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,475

Int. Cl.^{3} B41J *33/22, 33/38*

U.S. Cl. 400—232 **7 Claims**



1. A ribbon feed mechanism having at least one gear mounted for longitudinal movement relative to a shaft, resilient means urging said at least one gear in one direction of longitudinal movement to one gear engagement position, and a leaf spring deformed to apply a force to said at least one gear opposite to the urging of said resilient means, a member stationary relative to said shaft, said leaf spring contacting said member, which member holds said leaf spring to apply the force of said leaf spring to said at least one gear said resilient means having sufficient force to overcome said leaf spring and cause it to bow outward, said leaf spring in said bowed condition being positioned so as to be contacted and deflected to a less bowed condition by a depending member mounted on a ribbon cartridge, the relative strengths of said leaf spring and said resilient means being selected so that when said leaf spring is in said bowed condition, it is displaced by said resilient means and when said leaf spring is in said less bowed condition it exerts a force sufficient to overcome said resilient means, deflection of said leaf spring to said less bowed condition resulting in movement of said at least one gear in the direction opposite said one direction to another gear engagement position.

4,353,659

UMBRELLA LOCKING SLEEVE

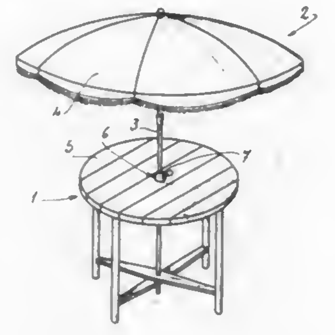
Pierre Comte, La Tour du Pin, France, assignor to Societe d'Exploitation Clairitex, Saint Clair de la Tour, France

Filed Jul. 20, 1981, Ser. No. 284,992

Claims priority, application France, Jul. 22, 1980, 80 16395

Int. Cl.^{3} A47B *37/04*

U.S. Cl. 403—24 **7 Claims**



1. A locking device for the pole of a shade umbrella, parasol or the like adapted to mount the same upon an article of furniture formed with a hole through which the pole can pass with clearance, said device comprising a split tubular body of an outwardly deformable material adapted to be received in said hole, said body being formed with a throughgoing threaded bore extending generally radially but inclined to the axis of said body, and a screw threaded into said bore and having a head rotatable from a location external of said body whereby rotation of said screw engages said screw against said pole and simultaneously expands said body radially to lock said body in said hole and said pole in said body.

4,353,660

BALL JOINT ASSEMBLY

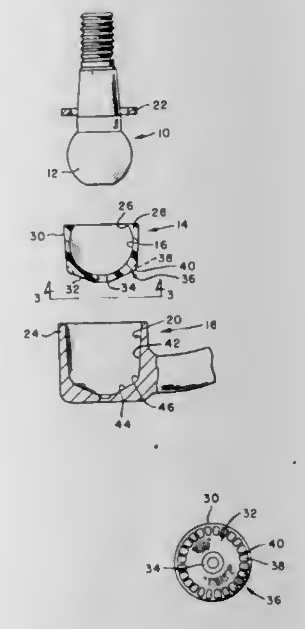
Kevin Parks, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 2, 1980, Ser. No. 183,653

Int. Cl.^{3} F16B *3/00;* **F16C** *11/00;* **F16D** *1/12*

U.S. Cl. 403—132 **3 Claims**

1. In a ball joint assembly having a socket with an opening leading to an inner surface on the socket, the inner surface having a predetermined contour of varying dimension, a bearing disposed within the opening, the bearing including a substantially spherical cavity leading to an aperture, and a ball stud disposed within the cavity and extending outwardly from the bearing via the aperture, the ball stud being attached to the bearing prior to the attachment of the bearing and ball stud to the socket, the ball stud defining an outer spherical surface substantially identical to the spherical cavity prior to fitting the ball stud in the cavity, and the bearing outer surface having a first portion and a second portion engageably cooperating with complementary portions of said predetermined contour for said socket inner surface, said bearing portions defining dimensions substantially equal to dimensions for said socket inner surface, characterized by said bearing outer surface defining an intermediate portion between said first and second portions and shorter in length than said first and second portions, said intermediate portin engageably cooperating with a complementary section of said socket inner surface and having a dimension greater than the dimension defined by the complementary section of said socket inner surface, said intermediate portion cooperating with said ball stud and said socket when the bearing and ball stud are fitted into said socket to preload said bearing, and said intermediate portion defining an interference fit with said socket inner surface to provide the majority of preload imparted to said bearing, whereby said bearing is defomed only by said intermediate portion to preload the entire bearing into tight engagement with said socket inner surface and said ball stud.



4,353,661

EXHIBITION/HOUSE FURNITURE AS WELL AS PLAY AND SPORT EQUIPMENT

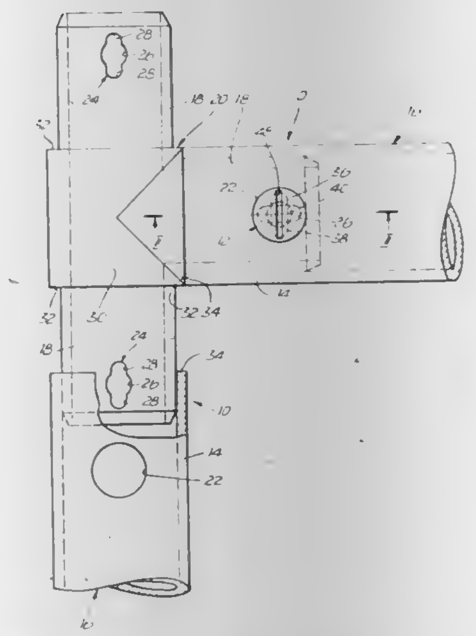
Hubert Rüther, Elbring 25, Seevetal 8 bei Hamburg, Fed. Rep. of Germany (D-2105)

Filed Jun. 29, 1979, Ser. No. 53,601

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 7820267[U]

Int. Cl.^{3} F16D *1/00;* **F16B** *7/00;* **A44B** *17/00*

U.S. Cl. 403—171 **16 Claims**



1. Exhibition/house furniture and play and sport equipment part, comprising

circular-cylindrical connecting pipes and plug connectors, each of the latter having at least two cylindrical connector sockets formed on an attachment part, said connecting pipes and said sockets are circular-cylindrical and form plug units each comprising a plug connection of one of the connector sockets and the end of one of the connecting pipes forming a radially inner part and a radially outer part placed thereon,
said radially outer part is formed with at least one outer wall opening,
said radially inner part is formed with at least one inner wall opening radially alignable with said outer wall opening, said inner opening having a non-circular cross sectional shape,
a toggle is inserted into the radially aligned said openings and turnable therein and constitutes means for locking each said plug unit, said toggle engaging in complementary manner in said aligned openings and frictionally engaging behind an edge of the inner opening in said radially inner part to prevent unintentional turning,
said toggle includes a turning head connected at a radially outer end thereof,
said turning head is disposed in and has a diameter equal to the diameter of said outer opening, said turning head has an inner surface frictionally engaging a peripheral outermost surface of said radially inner part.

4,353,662

CONSTRUCTION SYSTEM FOR RETICULATED STEEL STRUCTURES

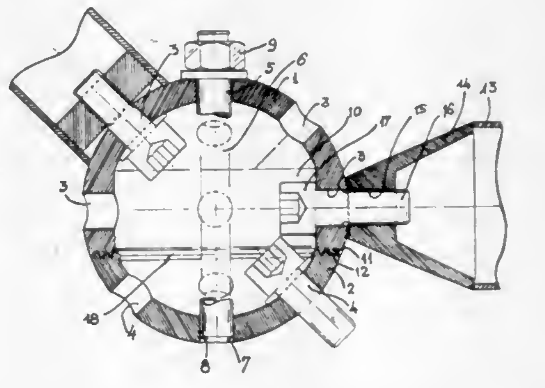
Stephane Du Chateau, 15 Villa des Arts, 75018 Paris, France

Filed Mar. 27, 1980, Ser. No. 134,602

Claims priority, application France, Mar. 27, 1979, 79 07636

Int. Cl.^{3} F16B *7/00*

U.S. Cl. 403—171 **6 Claims**



1. A spherical connector for a network structure of framework members, comprising,

a hollow spherically shaped main part of dimension greater than a hemisphere,
annular serration profiles provided on the peripheral edge of said main parts,
holes provided through the wall of said main part outside the edge area of said main part, including holes positioned in the plane of a great circle through said main part,
securing bolts passing through said holes and presenting a head portion disposed inside said main part and a threaded body portion projecting from said main part and adapted to coact with an end piece of a framework member,
a closing shell part of reduced size with respect of said main part and forming a sphere together with said main part,
annular serration profiles provided on the edge of said shell part and adapted to fit in said annular serration profiles of the edge of the main part,
holes provided through the wall of said shell part outside the edge area of the shell part,
securing bolts passing through said holes on the shell part and presenting a head portion disposed inside said shell part and a threaded portion projecting from said main part

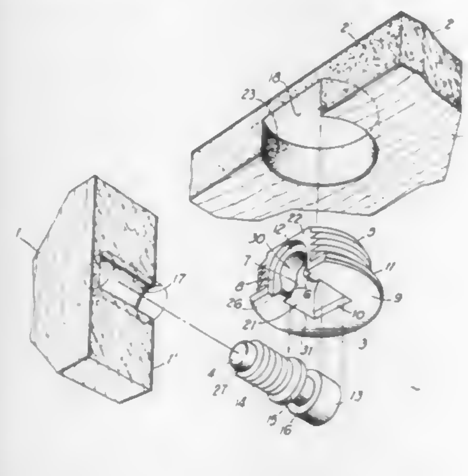
and adapted to co-act with an end piece of a framework member,

and a bolt passing through and connecting and securing said main part and said shell part in their assembled position, so that said connector presents a spherical shape, ensures an efficacious securing of the framework members particularly in a plane parallel to the connection plane of the two parts of the connector, and ensures a good strength against the traction and compression stresses applied in a plane parallel to said connection plane.

4,353,663
DETACHABLE CONNECTOR FOR STRUCTURAL MEMBERS AND METHOD OF INSTALLATION

Joel I. Glickman, Huntington Valley, Pa., assignor to Conroy, Inc., San Antonio, Tex. and Magic Mold Corporation, Southhampton, Pa.

Filed Jun. 3, 1980, Ser. No. 156,101
Int. Cl.^{3} B25G *3/00;* **F16B** *7/08, 9/00*
U.S. Cl. 403—230 **14 Claims**



1. A two-piece connector for detachable connection of first and second structural members through abutting surfaces of the members, said connector comprising:

(a) A pin for partial insertion in a bore hole in the first structural member along an axis perpendicular to the abutting surface of the first member, said pin having a head on one end, an insertion shank for insertion in the bore hole in the first member on the other end, and a neck of lesser diameter than the head between the head and the insertion shank; and

(b) a holding piece for insertion in the second structural member along an axis parallel to the abutting surfaces of the structural members in a bore hole in the second member communicating with the abutting surface of the second member, said holding piece having a recess to accept the head and neck of the pin, the walls of said recess defining an arcuate portion comprising a substantially semicircular opening in the holding piece of substantially the same diameter as the neck of the pin with rounded surfaces spaced apart a distance slightly narrower than the neck of the pin to form a constriction at the entrance of the recess to removably capture the neck of the pin.

4,353,664
FREE GUSSET METAL LEDGER HANGER

Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.

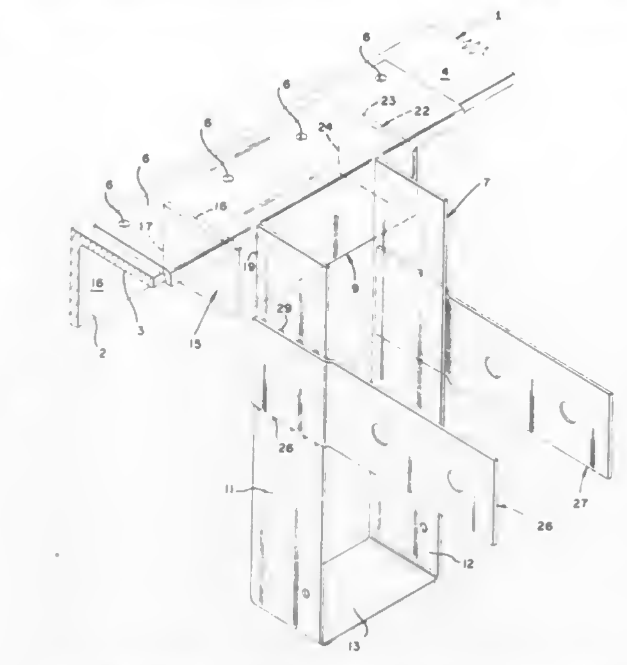
Filed Jul. 24, 1980, Ser. No. 172,002
Int. Cl.^{3} F16B *5/00*
U.S. Cl. 403—232.1 **6 Claims**

1. A free gusset metal ledger hanger for attachment to a metal ledger **1** wherein the metal ledger includes a lower leg **2** attached to the face of a wall and an outstanding leg **3** having an upper face **4** and a lower face **5**, said ledger hanger comprising:

a. a top flange **8** adapted for connection to said upper face **4** of said outstanding ledger leg **3**;

b. a depending flange **9** attached to said top flange **8** extending downwardly therefrom;

c. first and second stirrup members **11** and **12** attached to said depending flange **9** extending downwardly therefrom and adapted for holding a structural bean member;



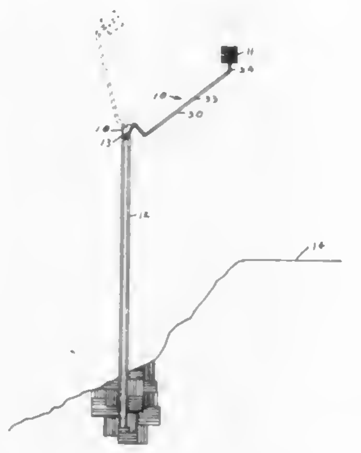
d. a first gusset member **15** operatively and ridgedly connected to said top flange **8** having a top edge **16** in registration with said lower face **5** of said outstanding leg **3** of said ledger and having a side edge **17** in close fitting relation to said outward face **18** of said lower leg **2** of said metal hanger **1**; and

e. said gusset member is an integral part of said depending flange **9**.

4,353,665
DELINEATOR

Helen Green, Box 156, Gildford, Mont. 59525

Filed Feb. 25, 1980, Ser. No. 124,447
Int. Cl.^{3} E01F *9/01*
U.S. Cl. 404—10 **5 Claims**



1. An attachment for an upright highway delineator post having an upper delineator supporting end adapted to project above the ground surface to support a delineator and a bottom end adapted to be anchored to the ground alongside a roadway, said attachment comprising:

a bracket having a mounting surface thereon adapted to engage the post;

a socket on the bracket defining a delineator pivot axis;

mounting means adapted to secure the bracket to the post at a selected elevation adjacent the upper end thereof so the delineator pivot axis is inclined toward the roadway from the post;

an elongated delineator support arm having (a) an inclined inner end received by the socket for pivotal movement about the delineator pivot axis, (b) an intermediate, substantially horizontal portion extending outwardly of the delineator pivot axis, and (c) an outside arm adapted to mount a delineator;

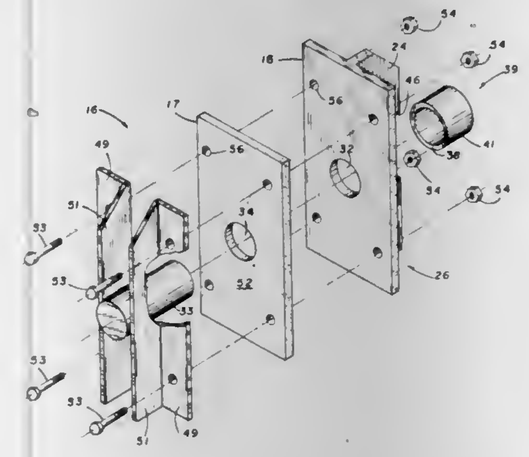
a gravity biased, axial detent means on the support arm inner end and socket for releasably locating the delineator support arm at a prescribed angular position relative to said pivot axis, said detent including mating parts normally held in interlocking engagement by the weight of the support arm and capable of releasing by shifting the arm inner end axially along the delineator pivot axis, in response to lateral forces on the arm in excess of normal wind velocity; and

stop means on the bracket extending outwardly into the pivot path of the delineator support arm to engage and prevent undesired pivotal movement of the delineator support arm past said prescribed angular position.

4,353,666
DEVICE FOR TRANSFERRING LOADS BETWEEN ADJOINING CONCRETE SLABS

Reinard W. Brandley, 3855 Oak Vista Way, Loomis, Calif. 95650

Filed Dec. 8, 1980, Ser. No. 214,114
Int. Cl.^{3} E01C *11/14*
U.S. Cl. 404—60 **10 Claims**



1. Device for transferring vehicle load between a pair of adjoining concrete slabs having a circular in cross-section core hole perpendicular to the slab surfaces and parallel to the joint faces with the core hole axis approximately midway between the joint faces, said device comprising:

a. a rectangular board of premolded compressible filler material positioned vertically substantially on a diameter of the core hole and parallel to the joint faces, said board having its long dimension extending substantially from the bottom of the core hole to the surfaces of the slabs and having a central aperture;

b. a metal plate substantially coextensive in size with said board, said plate covering one side of said board and having a central opening coaxial with said central aperture in said board;

c. a pair of metal angles arranged vertically on the other side of said board with respective flanges in opposed parallel relation and separated a predetermined distance;

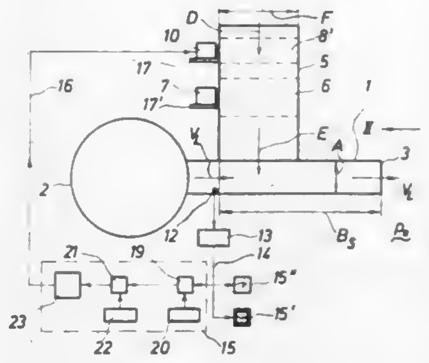
d. a right circular cylindrical dowel having a diameter substantially equal to said predetermined distance, said dowel being secured to said flanges in horizontal attitude with one end portion extending through said opening and said aperture to project a given distance beyond said aperture, the axis of said dowel being coincident with the axis of said opening and said opening;

e. cap means covering said one end of said dowel for shielding the surface of said one end portion thereof.

4,353,667
METHOD OF AND APPARATUS FOR MAINTAINING SUBSTANTIALLY CONSTANT A QUANTITY OF OPENED FIBROUS MATERIAL

Gerhard Mandl, Brütten; Robert Moser, Winterthur, and Rudolf Wildbolz, Winterthur, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 497,617, Aug. 15, 1974, abandoned. This application Aug. 26, 1977, Ser. No. 828,037
Claims priority, application Switzerland, Aug. 22, 1973, 12044/73
Int. Cl.^{3} B65G *53/66*
U.S. Cl. 406—29 **7 Claims**



1. A method for maintaining substantially constant a quantity of opened fibrous material delivered per unit of time, to a spinning preparatory machine, comprising the steps of:

(a) generating a conveying air stream by means of a fan having a characteristic diagram;

(b) flowing the conveying air stream into a transporting duct for the fibrous material;

(c) supplying the fibrous material into the transporting duct in such manner that the material is accelerated by the conveying air stream and a change in the quantity of material accelerated per unit time causes a corresponding change in the operating condition of the fan as represented by said characteristic diagram;

(d) delivering the accelerated fibrous material within the duct in the direction of the spinning preparatory machine;

(e) measuring a parameter which is characteristic for the operating condition of the fan;

(f) comparing the measured parameter with a set value parameter corresponding to a desired operating condition of the fan and hence to a desired quantity of opened fibrous material which is to be delivered per unit of time to the spinning preparatory machine;

(g) upon deviation of the measured parameter from the set value parameter, adjusting the further supply of fibrous material into the transporting duct until re-establishing a supply of fibrous material to said spinning preparatory machine corresponding to the substantially constant quantity of opened fibrous material desired to be delivered to the spinning preparatory machine;

wherein the characteristic parameter which is measured is the drive moment of the fan.

4,353,668
HOPPER BOTTOM UNIT

Arthur I. Anderson, St. Paul, Minn., assignor to North American Car Corporation, Chicago, Ill.

Filed Apr. 29, 1980, Ser. No. 144,850
Int. Cl.^{3} B65G *53/20, 53/38*
U.S. Cl. 406—90 **25 Claims**

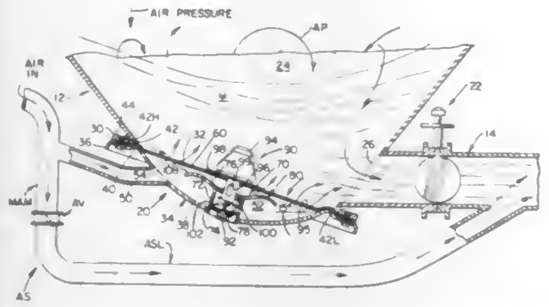
1. A discharge unit for use on hopper cars comprising:

a material discharge pipe connected to a car hopper;

an arcuate body section attached to the bottom of the car hopper to be independent of and spaced from said discharge pipe;

a flexible foraminous membrane mounted on said body section to cover the car hopper bottom, said membrane covering said body section to define a chamber, said membrane being tilted at an angle with respect to horizontal and sloping toward said discharge pipe;

air induction means connected to said body section to introduce air into said chamber, said air moving from said chamber through said foraminous membrane to form an



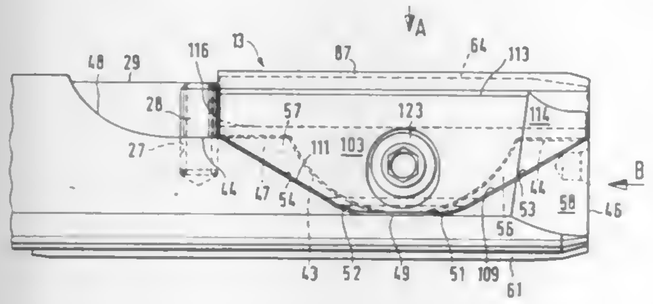
air sweep which assists in moving material located in the hopper adjacent said membrane toward said discharge pipe; and

vibration inducing means connected to said membrane for causing said membrane to pulsate relative to said body section, thereby assisting movement of material located in said hopper toward said discharge pipe.

4,353,669
DEVICE FOR MACHINE REAMER

Georg Striegl, Liststr. 29, 7472 Reutlinger, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 174,624
Int. Cl.^{3} B23B *27/16, 29/02*
U.S. Cl. 408—185 9 Claims

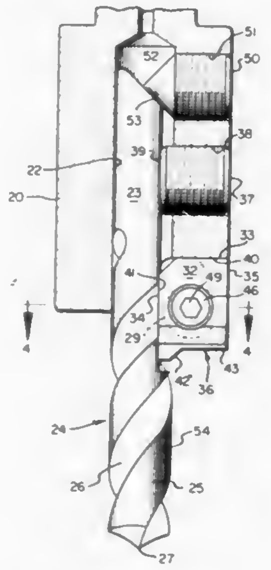


1. In a machine reamer having:
a head,
a hard metal cutter knife having two cutting edges, first and second sides between said cutting edges, and a pair of end regions, and
means for adjusting said hard metal cutter knife between first and second positions corresponding to smaller and larger cutting diameters; said means including
a clamping member resting against said first side of said cutter knife and having a bore therein for a shank and a seat,
a recessed bearing plane in said head for absorbing the pressure of said clamping member,
said head having a tapped hole traversing said head and ending in said bearing plane, and a pair of bore holes spaced apart and ending in said bearing plane,
a pair of set screws in said pair of bore holes associated with the end regions of said cutter knife for moving said cutter knife in the direction of increased cutting diameter,
and a clamping screw having a shank which traverses said clamping member bore and is screwed into said tapped hole and a head seated in said seat of said clamping member; the improvement comprising:
a counter clamping member separate from said cutter knife having one side displaceable on said recessed bearing plane in the direction of increased cutting diameter, a straight holding portion with a holding region for supporting said second side of said cutter knife, and a center region with an oblong hole traversed by said shank of said clamping screw which extends longitudinally in the direction of increased cutting diameter,
said hole in said clamping member for said clamping screw being oblong and congruent with said oblong hole in said counter clamping member and said seat in said clamping member for said clamping screw head being an oblong seat,
one of said cutting edges of said cutter knife projecting beyond said holding region of said counter clamping member, in the direction of increased cutting diameter, and
contoured locking means connecting said clamping member with said counter clamping member, said contoured locking means having effective locking surfaces that extend substantially perpendicular to the direction of increased cutting diameter.

4,353,670
MACHINING TOOL

Charles A. Jorgensen, Antioch, Ill., assignor to Everede Tool Company, Chicago, Ill.

Filed Jun. 2, 1980, Ser. No. 155,103
Int. Cl.^{3} B23B *51/10*
U.S. Cl. 408—193 16 Claims

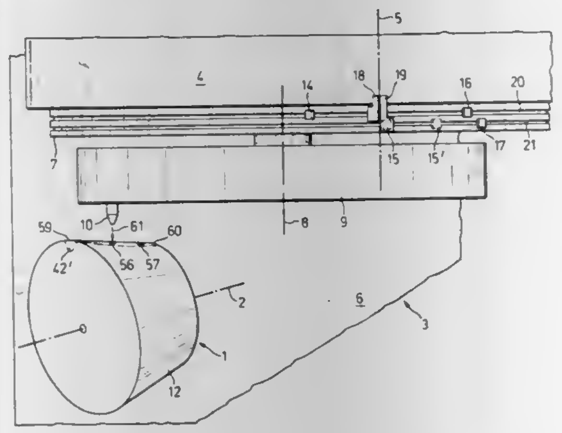


1. A machining tool comprising:
a holder;
an axially adjustable, leading element having a shank and a head portion terminating at a tip;
a hole in said holder, extending along the axis of said holder, and comprising means for receiving the shank of said leading element and for mounting said leading element in axially adjustable relation to said holder;
said hole in the holder comprising means mounting said leading element for rotation about its axis;
a cutting insert having inside and outside surfaces and a plurality of peripheral sides;
a seating surface on said holder for mounting thereon the inside surface of said insert;
a first locating surface on said holder for engaging a first peripheral side of said insert;
a second locating surface on said axially adjustable leading element for engaging a second peripheral side of the insert;
said first and second peripheral sides of the insert being angularly disposed to each other;
said first and second locating surfaces being angularly disposed to each other in the same angular relation as the first and second peripheral sides of said insert;
means for fixing said leading element in a predetermined axial position relative to the holder;
means for fixing said leading element in a predetermined rotative position in which said second locating surface is positioned to engage the second peripheral side of the insert;
a cutting edge along a third peripheral side of said insert, said third peripheral side being opposite said first peripheral side and extending angularly to said second peripheral side;
an opening extending into said holder from said seating surface thereon;
an opening extending through said insert from its outside to its inside surface and overlying said opening in the seating surface on said holder;
a cam pin extending through said opening in the insert and into said opening in the holder;
means in said openings mounting said cam pin for rotation between a locking position, in which said insert is fixed against movement relative to said holder and said leading element, and an unlocking position in which said cam pin and said insert are removable from said holder;
and means on said cam pin for urging the insert's first peripheral surface toward engagement with said first locating surface and for urging the insert's second peripheral surface toward engagement with said second locating surface, in response to rotation of said cam pin to a locking position;
said cutting edge on the insert extending radially beyond the periphery of said head portion of the leading element when the insert is mounted on the holder;
said cam pin, said openings and said first locating surface comprising means for fixing the position of said cutting edge axially in relation to said holder, and for preventing adjustment in an axial direction of the fixed position of said cutting edge.

4,353,671
METHOD FOR FABRICATING GEARS WITH GENERATED TOOTH FLANKS

Erich Kotthaus, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Jul. 21, 1980, Ser. No. 170,532
Claims priority, application Switzerland, Aug. 10, 1979, 7346/79
Int. Cl.^{3} B23F *9/12*
U.S. Cl. 409—26 3 Claims

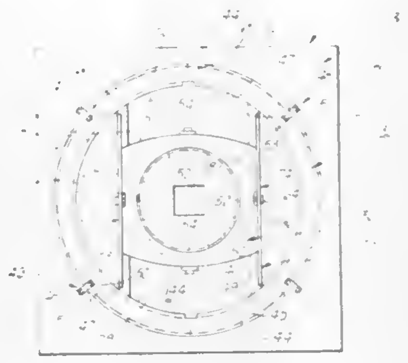


1. A method of fabricating gears having generated tooth flanks by cutting-out tooth slots with at least one face-mill cutter head carrying out a rotational movement about a cutter head axis, comprising the steps of:
providing a face-mill cutter head and a workpiece at which there are to be cut tooth slots;
during a first working step for the purpose of rough cutting the tooth slots carrying out a plunge-cut movement between the face-mill cutter head and the workpiece;
during such plunge-cut movement cutters of the face-mill cutter head initially contacting the workpiece at a predeterminable plunge-cut position between end regions of a tooth slot which is to be fabricated; and
during a further working step for the purpose of finish cutting the tooth slot performing a generating motion between the face-mill cutter head and the workpiece.

4,353,672
TEMPLATE DEVICE

Gerald T. Smith, 5312 N. Walker, Oklahoma City, Okla. 73118

Filed Jun. 9, 1980, Ser. No. 157,249
Int. Cl.^{3} B23C *1/16*
U.S. Cl. 409—97 23 Claims

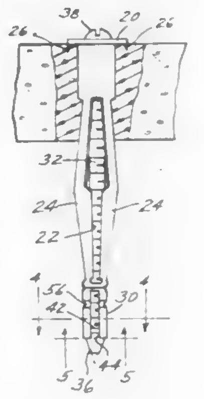


1. A template device for guiding a cutting tool in cutting engagement with a surface of a work piece comprising:
a base plate having a base plate opening therein;
a carriage support rotatably supported by the base plate in the base plate opening, the carriage support having a carriage support opening therein;
first locking means for securing the carriage support in a selected fixed position within the base plate opening;
a carriage assembly mounted on the carriage support such that the carriage assembly generally traverses the carriage support opening; and
a template assembly supported by the carriage assembly, comprising:
a template support plate slideably mounted on the carriage assembly such that the template support plate can be moved along the carriage assembly to selectively position the template support plate within the carriage support opening, the template support plate having a template support opening therein; and
a template supported by the template support plate such that the template is selectively rotatable about its central axis, the template having a template opening therein.

4,353,673
WALL ANCHOR

Joseph Lesowsky, 335 E. Taft Ave., Orange, Calif. 92665

Filed Sep. 11, 1981, Ser. No. 301,240
Int. Cl.^{3} F16B *13/06*
U.S. Cl. 411—38 6 Claims



1. A wall anchor comprising:
a tubular body having a flange at one end,

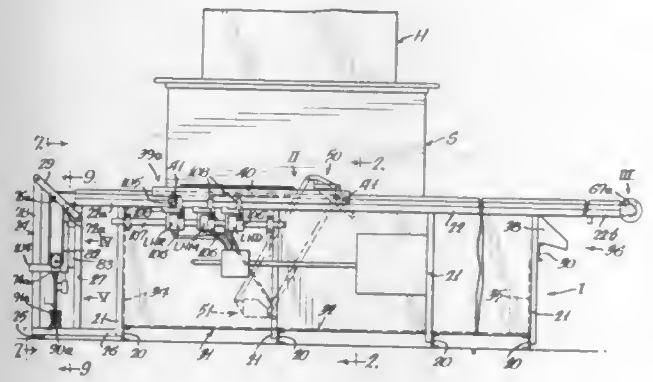
said body having elongated slots therein to provide spaced elongated ribs;
a sleeve extending from the other end of said body;
a nut element coaxial with and located within said sleeve,
said nut element and said sleeve having cooperating means for permitting non-rotative axial sliding movement therebetween;
means within said sleeve to limit movement of said nut element therein;
and a threaded bolt extending through said body and said sleeve and threadedly engaging said nut element on the inner end of said bolt,
said bolt having a head to engage said flange,
said bolt being slidable out of said body by grasping said head,
said head upon slidable movement of said bolt being spaced from said flange a distance determined by the limits of movement of said nut element in said sleeve.

4,353,674

DRAG BUCKET APPARATUS FOR SEPARATING PIECES OF SOLID MATERIAL FROM A LIQUID IN A RECEIVING TANK

Elwood R. Margison, Downers Grove, Ill., assignor to United Conveyor Corporation, Deerfield, Ill.

Filed May 30, 1980, Ser. No. 155,155
Int. Cl.^{3} B65G *25/08*
U.S. Cl. 414—323 **27 Claims**



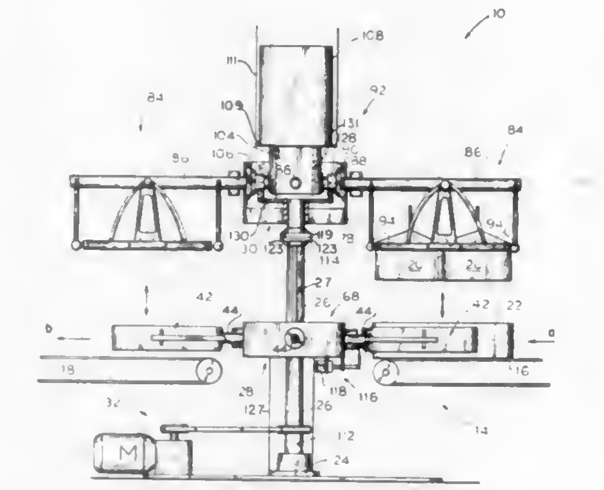
1. Drag bucket apparatus for removing pieces of solid material from the bottom of an elongated, rectangular, liquid filled receiving tank, said apparatus comprising, in combination:
trolley means adapted to move along the longitudinal upper margins of the tank between a start end and a dump end;
drive means for moving said trolley means between said ends in a pickup run and a return run;
a drag bucket in the tank;
supporting means suspending said drag bucket from the trolley means for movement between an initial pickup level near the bottom of the tank and a fully elevated discharge level above the liquid surface level;
drag bucket elevating means for moving the drag bucket between said initial pickup level and said discharge level;
drag bucket pickup level control means operatively associated with said supporting means and said elevating means, said level control means comprising,
means for detecting when resistance to movement of the drag bucket through the material reaches a predetermined high point during a pickup run,
and means operable when resistance reaches said predetermined high point to operate said elevating means only until said resistance drops below said high point, whereby the drag bucket is elevated incrementally during a pickup run to keep said resistance below said high point;
means for operating said elevating means to fully elevate the drag bucket to the discharge level as it nears the dump end;
load release means adjacent the dump end which cooperates with the fully elevated drag bucket to release the entire contents therefrom;
a material support out of the liquid onto which the drag bucket contents drops;
means for starting the trolley driving means and lowering the drag bucket to the initial pickup level to begin a pickup run;
means for stopping the trolley driving means when the drag bucket dumps;
means operable to cause the elevating means to lower the drag bucket to a return level;
and means for operating the trolley driving means to return the trolley means to the start end.

4,353,675

CASE AND CARTON HANDLING DEVICE

George W. Risener, and R. V. Risener, both of 4014 Barcelona St., Tampa, Fla. 33609

Continuation-in-part of Ser. No. 788,152, Apr. 18, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,399
Int. Cl.^{3} B65B *21/02;* B25J *11/00*
U.S. Cl. 414—403 **16 Claims**



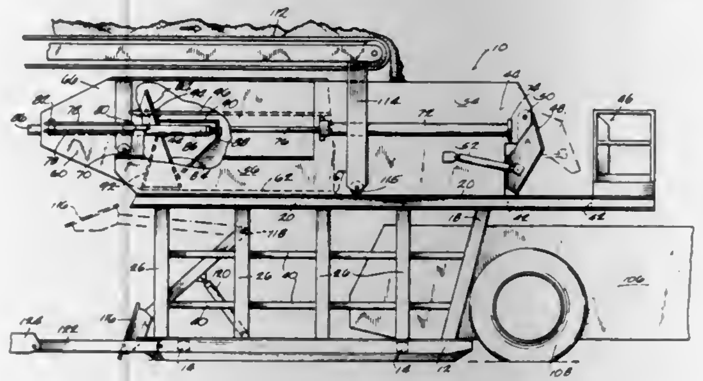
1. A case and carton handling device for the removal of trash and debris from case and carton combination and visual inspection thereof wherein a plurality of cartons is contained within the case, said case and carton handling device comprising a base means having a substantially vertically disposed drive shaft extending upwardly therefrom, a main drive means, said drive shaft being operatively coupled to said main drive means mounted on said base means, a case ring assembly including at least one case clamp assembly operatively mounted on said drive shaft to selectively engage the cases, a carton ring assembly including at least one carton clamp assembly operatively mounted on said drive shaft above said case ring assembly and a conveyor means including a feed conveyor belt to deliver the case and carton combination to said case ring assembly and a discharge conveyor belt to discharge the case and carton combinations, said drive shaft rotatably mounted on said base means to move said case ring assembly and said carton ring assembly between said feed conveyor belt and said discharge conveyor belt, and a case ring positioning means movable between a first and second position to move said case ring assembly upward relative to said carton ring assembly such that when in said first position said case ring assembly engages the case to remove the case from said feed conveyor belt and when in said second position the plurality of cartons is operatively engaged by said carton ring assembly to remove said plurality of cartons from the case, said case means coupling ring assembly to said drive shaft to transport the case from said feed conveyor belt to said discharge conveyor belt in response to rotation of said drive shaft, said case clamp assembly being rotated in the horizontal plane as said drive shaft rotates so that trash and debris contained therein is gravitationally removed therefrom and said carton ring assembly being coupled to said drive shaft to transport the case, from said feed conveyor belt to said discharge conveyor belt as said drive shaft rotates said carton clamp assembly being rotated in the horizontal plane as said drive shaft rotates so that trash and debris contained therein is gravitationally removed therefrom and that as said drive shaft moves said case ring assembly and said carton ring assembly into operative relationship relative to said discharge conveyor belt, said case ring positioning means moves from said first to said second position to return the cartons to the case and to said first position to place the case and carton combinations on said discharge conveyor belt.

4,353,676

BUNKER FOR TUNNEL BORING

Henry V. Mikulich, and Richard P. Lehmann, both of Kingsford, Mich., assignors to Lake Shore, Inc., Iron Mountain, Mich.

Filed Jul. 21, 1980, Ser. No. 170,650
Int. Cl.^{3} B60P *1/00*
U.S. Cl. 414—512 **15 Claims**



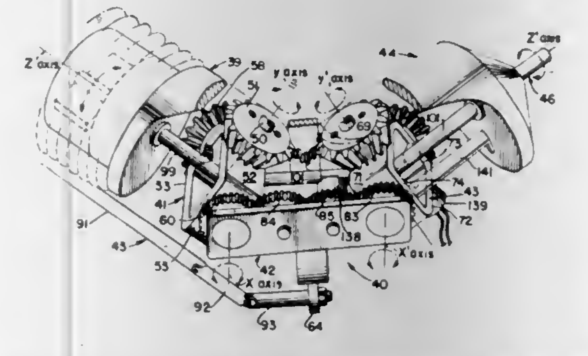
12. A bunker for receiving and storing material for subsequent discharge into a vehicle, comprising,
a framework,
a telescopic body mounted on the framework at a height permitting a vehicle to move under the body, said body having two sections,
the discharge end of said body being closed by a tail gate and provided with means to open the tail gate,
a push plate mounted in the telescopic body for movement with respect to both body sections,
and means for moving the push plate relative to the body to move material towards the discharge end,
the top of the body being open to receive material on either side of the push plate depending on the location of the push plate when the material is received,
the end of the body opposite the discharge end being open,
said push plate being moveable to eject material out of the open end of the body.

4,353,677

WRIST CONSTRUCTION FOR INDUSTRIAL ROBOTS

Kenneth J. Susnjara, Santa Claus, and Mark A. Fleck, Huntingburg, both of Ind., assignors to Thermwood Corporation, Dale, Ind.

Filed Mar. 5, 1980, Ser. No. 127,482
Int. Cl.^{3} B25J *9/00;* F16H *35/18*
U.S. Cl. 414—735 **36 Claims**



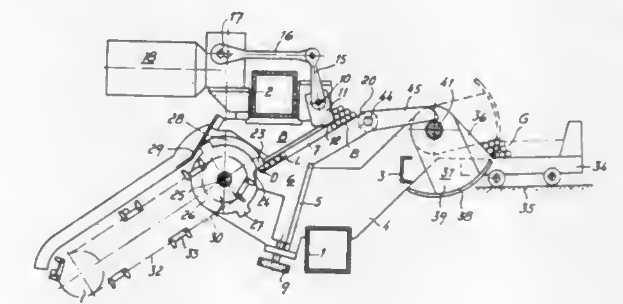
1. A wrist construction for an industrial robot having an arm member comprising a base unit mountable on said arm member, a tool supporting unit, means for pivotally connecting said tool supporting unit to said base unit for movement of said tool supporting unit relative to said base unit about at least a first axis of said base unit, means operatively connected to said tool supporting unit for pivoting said tool supporting unit relative to said base unit about said first axis, and means responsive to the pivotal movement of said tool supporting unit relative to said base unit about said first axis for pivoting said tool supporting unit about a second axis wherein said means for pivoting said tool supporting means about said second axis comprises a gear drive.

4,353,678

MECHANISM FOR TRANSFERRING CUT-TO-LENGTH WIRES OUT OF A LOOSE BUNDLE OF WIRES INTO A SINGLE LAYER OF PARALLEL WIRES

Hans Gött; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H, Graz, Austria

Filed Jan. 30, 1980, Ser. No. 116,914
Claims priority, application Austria, Feb. 6, 1979, 876/79
Int. Cl.^{3} B21F *23/00*
U.S. Cl. 414—748 **8 Claims**



1. A mechanism for transferring cut-to-length wires out of a loose bundle of wires into a single layer of parallel wires, said mechanism comprising an inclined wire channel, for receiving a single layer of parallel wires, said channel having an upper side and a lower side and the upper end of said lower side extending beyond the upper end of said upper side to form thereby a rest for said loose bundle of wires; at least one wiper-cam, said wiper-cam being positioned above said extended end of said lower side of said channel; and means for pivoting said wiper-cam to and fro in a direction substantially along said channel, said wiper-cam having an end face facing said lower side of said channel, said face being arcuately curved cylindrically about its pivot and spaced from said lower side by a distance such as to allow a single wire to pass therebeneath into said channel.

4,353,679

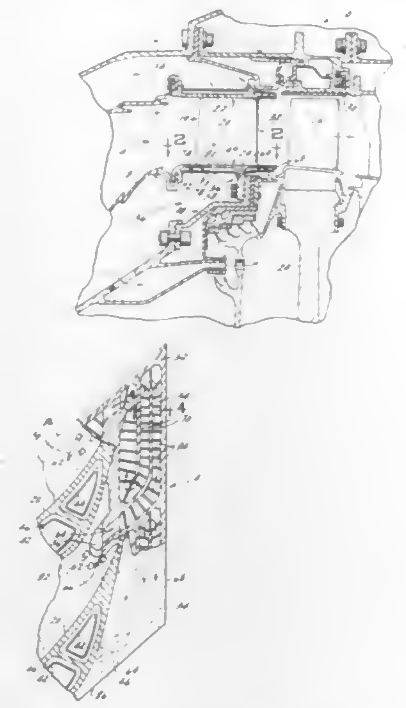
FLUID-COOLED ELEMENT

Ambrose A. Hauser, Wyoming, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jul. 29, 1976, Ser. No. 709,918
Int. Cl.^{3} F01D *9/02, 5/18*
U.S. Cl. 415—115 **10 Claims**

1. The nozzle band as recited in claim 22 wherein said wall

is segmented into sectors, the circumferential extremities of which are provided with seals to preclude substantial leakage of cooling fluid from said cooling fluid passage into said hot gas passage.



4,353,680

EXHAUST FAN WITH REMOVABLE FACE COVER

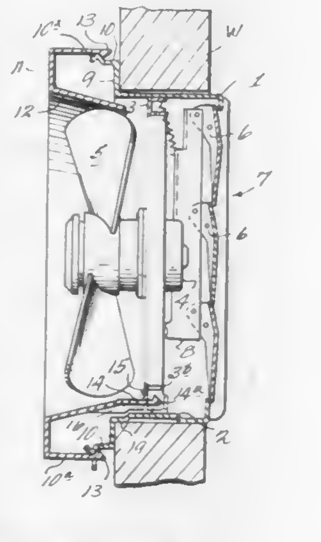
Shunji Hiraoka, Nagoya; Makoto Niwa, Aichi, and Satoru Ishii, Chita, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 27, 1980, Ser. No. 152,981

Claims priority, application Japan, Jun. 19, 1979, 54-83592[U]; Jun. 22, 1979, 54-86285[U]

Int. Cl.^{3} F04D *29/52*

U.S. Cl. 415—219 R **15 Claims**



1. An exhaust fan comprising:
rotatable fan blades;
drive means for rotating said rotatable fan blades;
a frame for supporting said drive means;
a case for mounting and surrounding at least said frame;
a face cover detachably mounted on said case and including a bellmouth for surrounding said rotatable fan blades;
engaging means mounted on said cover and said case for engagement with each other for limiting of movement of said cover to a predetermined distance.

4,353,681

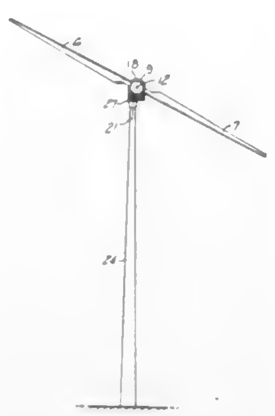
WIND TURBINE WITH YAW TRIMMING

Glidden S. Doman, Granby, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 19, 1980, Ser. No. 151,016

Int. Cl.^{3} F03D *7/04*

U.S. Cl. 416—11 **10 Claims**



1. A horizontal axis, free yaw wind turbine comprising a plurality of airfoil blades mounted on a hub rotatable about an axis of rotation, said hub being pivotable about a yaw axis, said wind turbine being characterized by said yaw axis being laterally offset from the axis of rotation of said hub and the vector resultant of thrust on said blades acting through said yaw axis for stabilizing said hub in yaw against the influence of vertical wind velocity gradients acting on said blades.

4,353,682

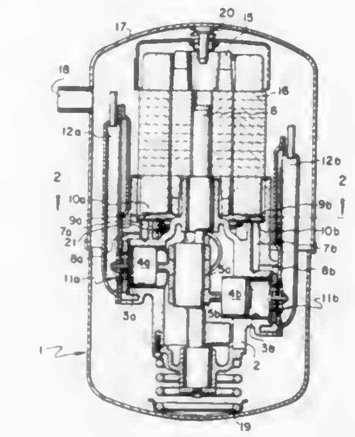
RECIPROCATING GAS COMPRESSOR HAVING SUCTION SHUT-OFF UNLOADING MEANS

Peter J. Linnert, and James R. Quinn, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sep. 22, 1980, Ser. No. 189,485

Int. Cl.^{3} F04B *49/02, 35/04*

U.S. Cl. 417—295 **18 Claims**



1. A variable capacity reciprocating gas compressor comprising

a. a housing defining a plurality of cylinder bores extending radially from and spaced circumferentially about a central axis;
b. a piston disposed in each of said cylinder bores;
c. a crankshaft extending along said central axis and supported for rotation within said housing;
d. means connecting each of said pistons to the crankshaft such that the pistons undergo reciprocating motion within their respective cylinder bores upon rotation of said crankshaft;
e. suction flow passage means associated with each of said cylinder bores for conveying gas thereto, the suction flow passage means of at least one of said cylinder bores having an inlet spaced radially from said central axis and including a valve seat comprising a generally planar surface surrounding said inlet and lying in a plane substantially perpendicular to said central axis, and valve plate means associated with each cylinder bore for controlling gas flow with respect thereto;
f. unloader valve means for selectively shutting off gas flow through the suction flow passage means of said at least one cylinder bore and comprising
    i. a valve element having a generally flat, planar surface;
    ii. means supporting said valve element for movement between a first position wherein its planar surface lies in overlying relationship to the planar surface of said valve seat, whereby gas flow therethrough is prevented; and a second position removed from said valve seat whereby gas flow therethrough is permitted; and
    iii. actuator means for moving said valve element between said first and second positions.

4,353,683

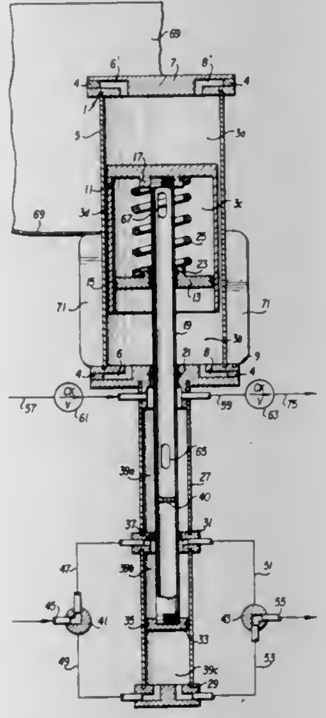
STIRLING CYCLE ENGINE AND FLUID PUMP

Earl A. Clark, 1143 Manchester Ave., Norfolk, Va. 23508

Filed Apr. 21, 1980, Ser. No. 142,556

Int. Cl.^{3} F04B *17/00;* **F02G** *1/04*

U.S. Cl. 417—379 **8 Claims**



1. A fluid pump comprising:
a housing enclosing a working volume;
a variable volume displacement means disposed within said housing and dividing said working volume into first, second and third regions, said third region being defined within said variable volume displacement means, and said first and second regions being interconnected so that substantially equal pressures may be maintained between them;
a displacement means drive shaft slidably extending through said housing and attached to said variable volume displacement means, said shaft being hollow and having an opening communicating with said third region whereby a fluid being pumped is alternately driven in first one and then the other direction through said shaft as said variable volume displacement means increases and decreases said third volume;
means defining a pumping chamber, said displacement means drive shaft extending into said pumping chamber and having a second opening therein forming a flow path between the interior of said drive shaft and said pumping chamber;
means for reciprocating said displacement means drive shaft;
inlet means for admitting fluid to said pumping chamber; and,
outlet means permitting egress of fluid from said pumping chamber.

4,353,684

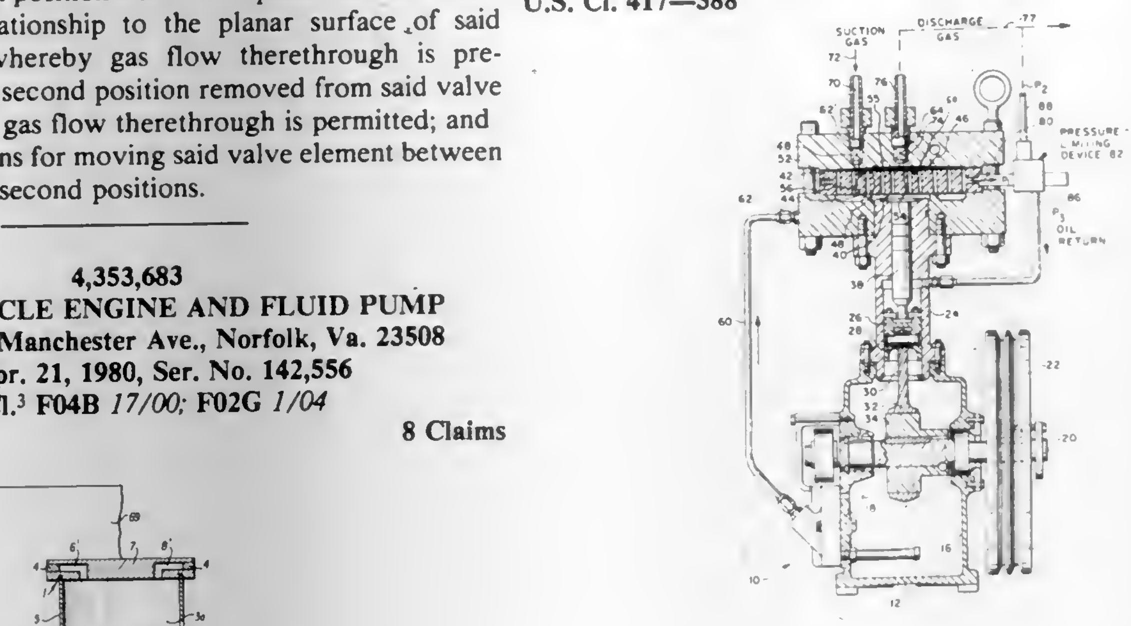
PRESSURE LIMITING DEVICE

Ross D. Christman, Ellicott City, Md., assignor to Superpressure, Inc., Silver Spring, Md.

Filed Sep. 5, 1980, Ser. No. 184,243

Int. Cl.^{3} F04B *43/06;* **F16K** *5/00*

U.S. Cl. 417—388 **12 Claims**



1. For use with a diaphragm pump, a pressure limiting device including a body having a pressure control chamber therein, an inlet in said body to said pressure control chamber adapted to be coupled to a working chamber in the diaphragm pump, a first outlet opening from said control chamber, a first poppet valve including a first valve seat at said first outlet opening facing into a larger cross-section first poppet-valve chamber, first poppet in said first poppet-valve chamber engaging said first valve seat, means in said first poppet-valve chamber for urging said first poppet against said first valve seat at a first predetermined force, outlet means from said first poppet-valve chamber adapted to be connected to a sump for the working liquid id, a second outlet opening from said pressure control chamber, a second poppet valve including a second valve seat at said second opening facing into a larger cross-section second poppet-valve chamber, a second poppet in said second poppet-valve chamber engaging at one end thereof said second valve seat, means in said second poppet-valve chamber for urging said second poppet against said second valve seat at a second predetermined force, means for facilitating the application of additional force, directly related to the pressure of the pumped fluid, to the other end of said second poppet, and outlet means from said second poppet-valve chamber adapted to be coupled to the sump for the working liquid.

4,353,685

TURBOCHARGER COMPRESSOR ROTOR RETAINER

Norbert L. Osborn, Irving, and John R. Rae, Dallas, both of Tex., assignors to WRR Industries, Inc., Dallas, Tex.

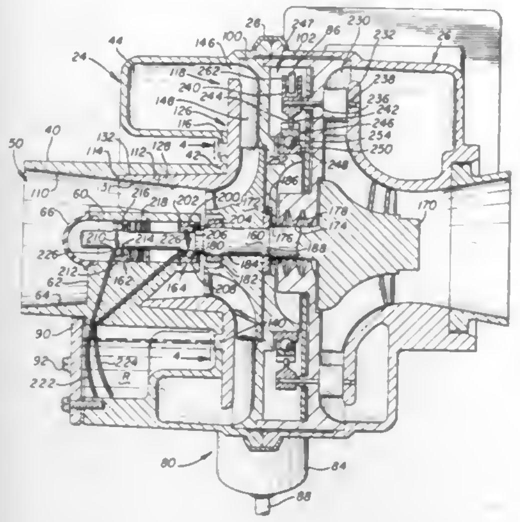
Continuation-in-part of Ser. No. 917,066, Jun. 19, 1978, abandoned. This application Jun. 10, 1980, Ser. No. 158,147

Int. Cl.^{3} F01D *5/04;* **F04B** *35/00*

U.S. Cl. 417—406 **14 Claims**

1. In turbomachinery comprising a compressor rotor mounted for rotation on a compressor shaft, a retainer for securing the compressor rotor to the compressor shaft, wherein the compressor rotor has an aperture therethrough for receiving the compressor shaft therein, comprising:
a retaining sleeve having a bore therethrough for mounting said sleeve onto said shaft for abutment against the com-

pressor rotor, said sleeve bore defining an interior surface substantially conforming to and for engaging only said shaft, said bore having a diameter to form an interference fit over the shaft such that said sleeve alone prevents movement of the rotor relative to the shaft in the direction of said sleeve.



4,353,686

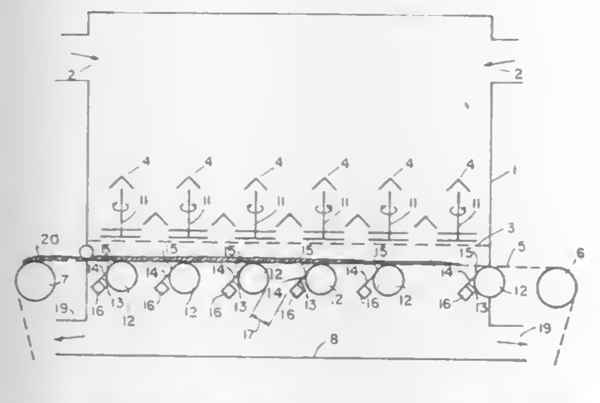
APPARATUS FOR AIR-LAYER FIBROUS WEBS

John F. Hosler, and Paul W. White, both of Cincinnati, Ohio, assignors to Formica Corporation, Wayne, N.J.

Filed Jan. 19, 1981, Ser. No. 226,347

Int. Cl.^{3} B29J *1/00*

U.S. Cl. 425—83.1 **4 Claims**



1. In an apparatus for the production of a fibrous webbed product comprising (A) a distributor housing having an inlet and a perforated, bottom wall, (B) a plurality of distributor means within said housing for distributing discrete fibers across said bottom wall, (C) a foraminous forming surface immediately below said bottom wall, (D) a suction box connected with the underside of said foraminous surface and extending substantially along the entire length and width of said permeable bottom-wall and (E) a plurality of rollers positioned under said foraminous surface and within the confines of said suction box, each roller being in substantial contact with said foraminous surface, the improvement which comprises (F) a plurality of damper means positioned within the confines of said suction box each adjacent to one of said plurality of rollers, each of said damper means comprising a blade adapted to contact its adjacent roller and an adjustable bar which functions to modify the space between its roller and its next adjacent member while maintaining the blade in contact with the roller.

4,353,687

ROTARY KILN

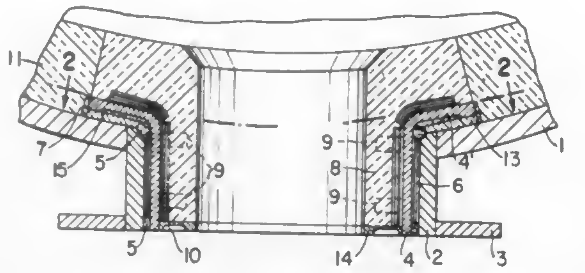
Poul W. Nielsen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 30, 1980, Ser. No. 221,517

Claims priority, application United Kingdom, Jan. 2, 1980, 8000095

Int. Cl.^{3} F27D *15/02;* F27B *7/00*

U.S. Cl. 432—80 **10 Claims**



1. A rotary kiln which comprises a plurality of outlet openings for passing material from within the kiln to associated cooler tubes mounted in planetary fashion around the outlet end portion of the kiln, each kiln outlet opening having a tubular support member to which the inlet end portion of the associated cooler tube is attached, and a reinforcing ring positioned within said support members, insulation means positioned between the ring and said support member, said ring being lined internally with a wear-resisting ceramic material, an annular collar formed of the same material as said ring and carried by said ring at the end portion thereof closest to the kiln, said collar extending radially beyond the joint between said support member and the kiln shell, said collar being insulated from both the support member and the kiln shell, means positioned adjacent said collar for directly attaching said collar to the kiln shell and adapted so as to allow for the expansion of said ring, and coating means in the form of wear-resistant ceramic material on said collar.

4,353,688

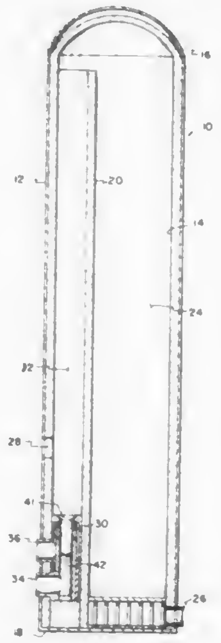
BAFFLE STRUCTURE FOR BLAST FURNACE STOVE

Walter D. Ahner, Murrysville, Pa., and James B. Malosh, Columbus, Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 12, 1981, Ser. No. 243,015

Int. Cl.^{3} C21B *9/00;* F28C *3/10*

U.S. Cl. 432—217 **9 Claims**



1. A hot blast stove including a vertically extending shell divided into a vertically disposed combustion space and a space, parallel to said combustion space, containing refractory checkerwork, both of which spaces communicating at their upper ends for the flow of fluid through said stove, and a burner compartment substantially coaxially disposed in said combustion space at the lower end thereof, said burner compartment comprising:

- (a) an axially elongated flow passage communicating at its upper end with said combustion space;
- (b) means for supplying gas to said flow passage adjacent the lower end thereof;
- (c) means for supplying combustion air to said flow passage including a plurality of openings defining air ports adjacent the discharge end of said flow passage communicating substantially tangentially therewith; and
- (d) means for inducing a swirling motion in the gas flowing through said passage counter to that induced in the combustion air by said tangential air ports, said means including:
  - (i) a baffle plate disposed transversely of said flow passage intermediate the points of communication of said gas supply means and said combustion air supply means;
  - (ii) a plurality of through-openings in said plate; and
  - (iii) means associated with said openings for directing the gas flowing therethrough tangentially in a direction opposite to that induced in the combustion air by said air ports.

4,353,689

HEATING ARRANGEMENT FOR REVOLVING BODIES WHOSE DIAMETER VARIES DURING PRODUCTION THEREOF BY BUILD-UP WELDING

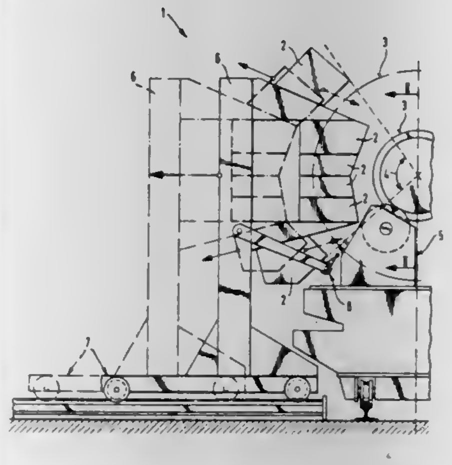
Jose Fernandez; Jürgen Herm; Heinz Krakow; Ernst Wortmann, and Harald Tomsen, all of Hamburg, Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duessoldorf, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,477

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942867

Int. Cl.^{3} F24J *3/00*

U.S. Cl. 432—225 **2 Claims**



1. Heating apparatus for a revolving workpiece of increasing diameter having a generally cylindrical configuration defining a generally horizontal axis of revolution wherein said workpiece is produced by build up of welding material thereon during a welding process comprising: an assemblage of heating elements located alongside said workpiece and confined to within a geometrical sector bounded by a pair of radii extending through said horizontal axis of revolution perpendicularly thereto; said heating elements being generally arranged to extend in the vicinity of a circular arc of said geometrical sector; said heating elements including a first plurality of heating elements arranged generally centrally of said sector on said circular arc and a second plurality of heating elements divided into two groups each located circumferentially on opposite sides of said first plurality of heating elements; said first and said second plurality of heating elements being movable relative to each other in directions extending radially generally perpendicularly to said horizontal axis of revolution whereby said first plurality of heating elements may be moved closer to said workpiece than said second plurality of heating elements during the initial stages of said build up of welding material when said diameter of said workpiece is relatively smaller; and undercarriage means upon which said first and second plurality of heating elements are mounted for moving said heating elements together relative to said workpiece perpendicularly to said axis of revolution toward and away from said workpiece; said first and second plurality of heating elements being thereby movable relative to each other toward and away from said workpiece to enable control of the heat energy imparted to said workpiece in dependence upon the degree of the increase in the diameter thereof.

4,353,690

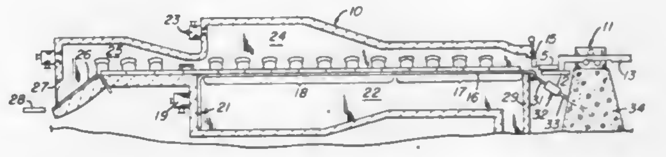
APPARATUS TO ANCHOR SKIDS FOR A REHEAT FURNACE

Francis H. Bricmont, Pittsburgh, Pa., assignor to Bricmont & Associates, Inc., McMurray, Pa.

Filed Jul. 13, 1981, Ser. No. 282,963

Int. Cl.^{3} F27D *3/02, 3/00*

U.S. Cl. 432—234 **8 Claims**



1. In a reheat furnace for metallic workpieces, apparatus to adjustably anchor a workpiece-support skid to a foundation for resisting longitudinal movement of the skid while workpieces move therealong in the furnace, said apparatus including the combination of:

- a housing including side walls engaged with inner and end bearing plates,
- rod members each extending from one of the opposite ends of said housing for attachment to said foundation and said skid, one rod member being attached to said housing and the other rod member being longitudinally movable in the housing between the side walls thereof,
- bearing flanges joined to the longitudinally-movable rod member in said housing to form first and second spacer cavities with said inner and end bearing plates,
- an actuator means in said first cavity for moving the movable rod member in said housing toward the rod member attached thereto, and
- rigid spacer means for said second cavity to hold the movable rod member in said housing.

4,353,691

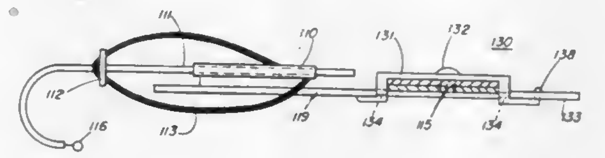
ORTHODONTIC HEADGEAR TRACTION APPLIANCE SYSTEM

John H. Hickham, #5 Chateau Palmer Dr., Kenner, La. 70062

Filed Feb. 27, 1981, Ser. No. 239,003

Int. Cl.^{3} A61C *7/00*

U.S. Cl. 433—5 **8 Claims**



1. An orthodontic traction appliance system, including headgear having at least two head straps extendable onto both sides of the head of the wearer for wearing by the user, further comprising:

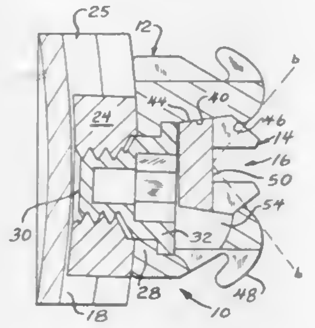
- (a) a first "J"-hook tube assembly having a "J"-hook member resiliently and elastically carried within a tube, and a first face plate positionable along side the side of the face of the wearer to which said first "J"-hook tube assembly is connected and which is attached to said headgear;

(b) a second "J"-hook assembly having a "J"-hook member resiliently and elastically carried within a tube, and a second face plate positionable along side the opposite side of the face of the wearer to which said second "J"-hook tube assembly is connected and to which is attached to said headgear; each of said face plates, including a variable length portion, each of said variable length portions comprising:
  - a flat, longitudinally extended base portion, to which the tube of one of the "J"-hook assemblies is fixed, said base, having a series of like female openings through it and spaced along its length;
  - a slideable connector portion, to which the head straps of the headgear are connected, said connector portion riding on said base portion with a top portion over the area of said base portion in which said series of like female openings are located, and said connector portion having spaced lateral slots at both ends through which said base portion extends and said connector portion having a male protrusion extending up from an area adjacent one of said slots for insertion into a selected one of said female openings of said base portion, the availability of said series of like female openings allowing for adjustability of the relative location of the tube of its respective "J"-hook assembly with respect to the straps of the headgear.

4,353,692

ORTHODONTIC APPLIANCE

Stefanos Karrakussoglu, 1313 S. Finley Rd., Lombard, Ill. 60148
Filed Sep. 15, 1980, Ser. No. 187,361
Int. Cl.^{3} A61C *7/00*
U.S. Cl. 433—16 **6 Claims**

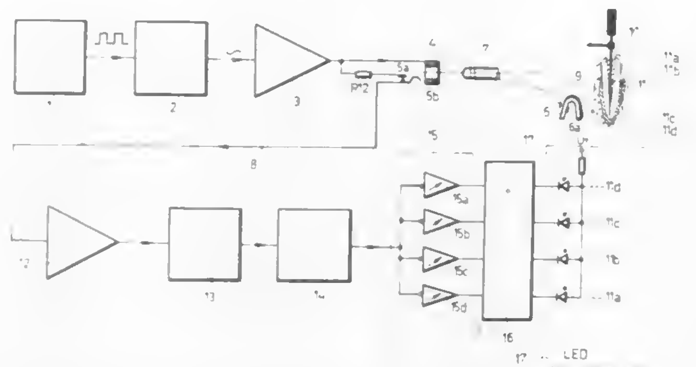


1. An orthodontic bracket comprising
a base adapted for mounting to the labial or buccal side of a patient's tooth against which a force is to be exerted by means of an arch wire;
a holder slideably mounted on the base containing a mesio-distal extending groove of non-circular cross-section which opens through its opposed ends;
a set of interchangeable members each of a cross-sectional shape complementing that of the groove in the holder and each separably insertable into said recess through one open end thereof so as to be non-rotatably held by the holder;
each said interchangeable members having a longitudinal axis and containing an arch wire receiving channel the disposition of which to said longitudinal axis is different from that of the channel in the other members such that the arch wire when received therein enforces a different force vector on the tooth to which the bracket is mounted;
the holder being slideably mounted on the base to adjust the force vector enforced on the tooth by the arch wire; and
means releaseably locking the holder to the base in an adjusted position on the bracket base.

4,353,693

APPARATUS FOR THE DETERMINATION AND THE DIGITAL DISPLAY OF THE POSITION OF ROOT TREATING MEANS IN THE TOOTH

Tibor Dery, 12, Feherhajo utca, 1052 Budapest, and Attila Madocsay, 5, Tarnok utca, 1014 Budapest, both of Hungary
Filed May 13, 1980, Ser. No. 150,409
Claims priority, application Hungary, May 14, 1979, DE 994
Int. Cl.^{3} A61C *3/00*
U.S. Cl. 433—27 **4 Claims**

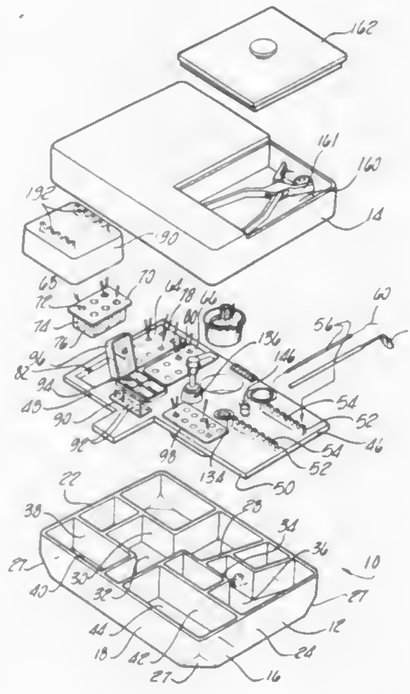


1. Apparatus for the determination and digital display of the position in the tooth channel of root treating means, comprising a saliva suction device, means for sensing the variation of the impedance between the saliva suction device and the root treating means, means for amplifying the variations in said impedance, means for converting said amplified variations into a DC voltage, a plurality of light displays actuated by said DC voltage, and means for varying the intensity of illumination of each of said light displays whereby the intensity of illumination of the most brightly lit said light display and the intensity of illumination of the adjacent said light displays gives a visible indication of the position of the root treating means in the tooth canal.

4,353,694

DENTAL KIT FOR PERFORMING ROOT CANALS

Joseph J. Pelerin, 2756 Shallowbrook, Bloomfield Hills, Mich. 48013
Filed Jan. 25, 1980, Ser. No. 115,346
Int. Cl.^{3} A61C *3/00;* **B65D** *1/36*
U.S. Cl. 433—77 **9 Claims**



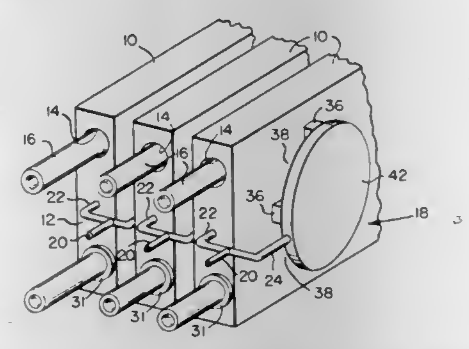
1. A dental device for containing tools, medicines and supplies for performing root canal therapy comprising:

a housing having a base and a lid, said lid dimensioned to fit over and cover said base,
a plurality of holder assemblies, each holder assembly comprising a body having a plurality of receiving openings formed in it, said receiving openings in each holder assembly being dimensioned to contain a single type of tooth working implement or supply,
said base of said housing including a plurality of openings, each opening dimensioned to receive one holding assembly therein,
said holding assemblies being removably positioned within said openings in said housing base, and wherein said dental device is portable and hand carriable and
wherein said device further comprises a working well removably mounted to said housing base, said working well having a bottom wall and a closed side wall thus defining an interior chamber open at its top, means for supporting at least one tooth working implement adjacent the top of the working well so that the tooth working implement extends downwardly into the interior of the well, a plate contained within the interior of the well and means for variably adjusting the position of the plate with respct to the bottom wall.

4,353,695

RETRACTION MECHANISM FOR DENTAL UNITS AND THE LIKE

Gerd H. Merkle, Buchenring, Fed. Rep. of Germany, assignor to Sybron Corp.; Rochester, N.Y.
Filed Apr. 21, 1980, Ser. No. 141,792
Int. Cl.^{3} A01C *1/14*
U.S. Cl. 433—78 **4 Claims**

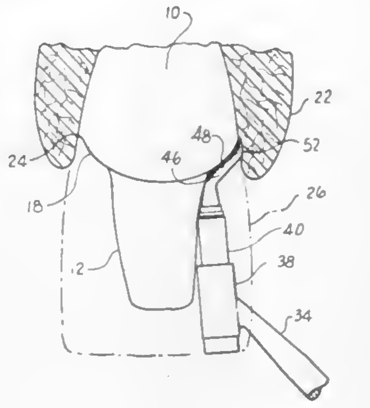


1. A take up system for the utility lines of a dental unit or the like comprising:
(a) a storage chamber for a utility line, said chamber defining an air cylinder wherein the utility line extends into said chamber through a front end wall thereof;
(b) a piston within said chamber and operatively connected to said utility line such that movement of the utility line out of said chamber moves said piston towards said front end wall and retraction of the utility line is accomplished by pressurizing said chamber to move said piston away from said front end wall;
(c) said chamber having a vent adjacent said front end wall to permit the free exhaust of air from said chamber as withdrawal of the utility line moves said piston towards said front end wall;
(d) a pressure operated valve for sealing said vent including a valve housing fixed to the exterior of a side wall of said chamber about said vent, said housing having a plurality of elongated exhaust ports disposed about its periphery, the total area of said ports being at least substantially equal to the cross sectional area of said vent;
(e) a flexible diaphragm in said valve housing, said diaphragm being normally spaced from said vent so as to define a free air passage between said vent and exhaust ports; and
(f) means for introducing fluid under pressure simultaneously into said chamber and valve housing for moving said diaphragm against said side wall to a sealing position over said vent and for pressurizing said chamber to move said piston away from said front end wall.

4,353,696

VIBRATING DENTAL TOOL DEVICE AND METHOD

Byron K. Bridges, 110 Church St., Greer, S.C. 29651
Filed Jul. 10, 1981, Ser. No. 281,984
Int. Cl.^{3} A61C *3/06*
U.S. Cl. 433—125 **17 Claims**

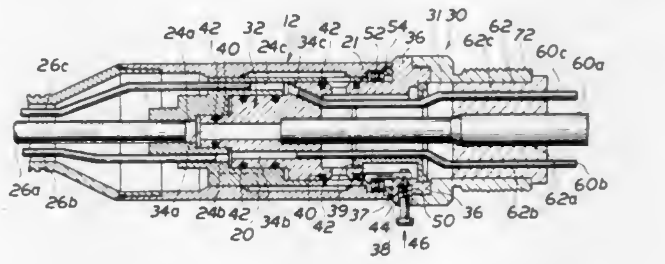


1. A dental tool device for performing dental crown work on a tooth and improving the sealing and cosmetic appearance thereof which may be utilized with ultrasonic dental apparatus for ultrasonically vibrating said tool device, wherein said tool device comprises:
a shank portion adapted for connection to an operating handle portion of said ultrasonic dental apparatus;
contoured surface means carried by said shank portion having abrasive means carried thereon abrading said tooth during vibration; and
said contoured surface and abrasive means providing means forming a gnereally smooth beveled surface on said tooth;
whereby an edge of said surface may be formed to lie below the gum providing a concealed joint between said tooth and crown work and said crown fitting seals solidly on said smooth surface.

4,353,697

DENTAL HANDPIECE AND A CONNECTING MEANS THEREOF

Takasuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Manufacturing Co., Kanuma, Japan
Filed Jul. 16, 1980, Ser. No. 169,320
Claims priority, application Japan, Jan. 21, 1980, 55-6320[U]
Int. Cl.^{3} A61C *1/08*
U.S. Cl. 433—126 **3 Claims**

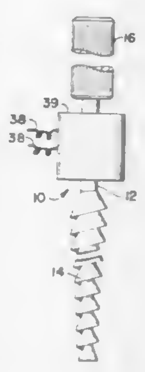


1. A dental handpiece comprising: a handle portion and a powerhead assembly which is supported on a top end of said handle portion; a sleeve bearing tightly held into a rear end opening of said handle portion, said sleeve bearing having a fowardly reducing cylindrical internal surface, said cylindrical internal surface including three stepped annular space walls adjacent and perpendicular to circumferential internal regions respectively; a central air supply passage and two passages for exhaust and water axially provided to extend through a substantial length of said sleeve bearing; an air supply pipe inserted into said central air supply passage and two pipes for exhaust and water inserted respectively into two axial passages, a rear internal portion of said sleeve bearing being so shaped as to form a socket for snugly receiving a plug of connecting means; a connecting means to be inserted into said sleeve bearing, a

front portion of said connecting means being so formed into a forwardly reducing cylindrical plug as to fit into said socket of said sleeve bearing, said plug including a central axial straight passage for an air pipe and another straight passage for an exhaust pipe and a forwardly outwardly biased water passage provided from the socket to a rearmost annular space wall, said plug including a plurality of inwardly recessed slots at circumferentially distributed points, each slot including a seal; an air supply pipe inserted into said axial air passage; an exhaust pipe inserted into another axial passage; a water pipe inserted into said forwardly outwardly biased passage; a hollow mount insert having three axial openings and secured into a rear end interior of said connecting means for allowing said three pipes to penetrate therethrough; a mounting nut provided with internal threads and screwed onto external threads on said connecting means; a bearing retainer including a plurality of roller bearings therein and fitted into an inlet peripheral recess of said handle portion; a radial socket provided through a peripheral flange to extend into an axial groove provided through a wall of said plug; a cylindrical casing fixedly set in said radial socket; and a push-pull rod having a head at its outer end and a right angle hook at its inner end held in said casing by a dead spring, whereby the introduction of said hook into said axial groove engaging a front annular wall of said bearing retainer and constant urging of said rod outwardly by said dead spring forms a locking device.

4,353,698
DENTAL TOOL

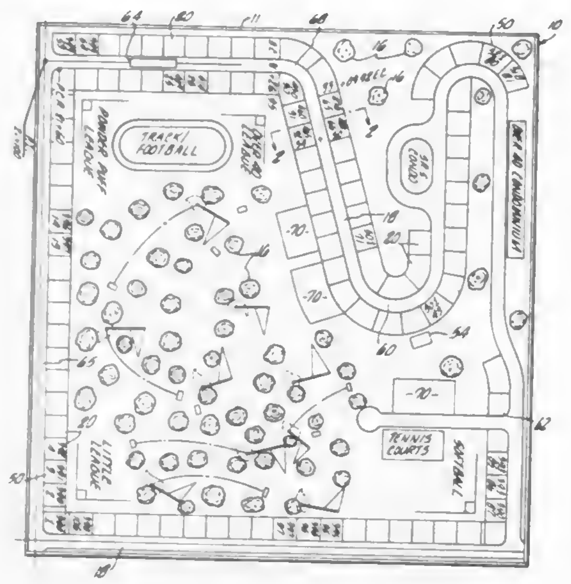
John T. McSpadden, Johnson City, Tenn., assignor to Inventive Technology International, Inc., Johnson City, Tenn.
Continuation of Ser. No. 105,761, Dec. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,464, Dec. 18, 1978, abandoned. This application Aug. 27, 1981, Ser. No. 297,007
Int. Cl.^{3} A61C *3/08*
U.S. Cl. 433—164 **1 Claim**



1. A compactor for gutta-percha comprising a bit having a shank portion and a working portion, flute means on said working portion defining a continuous spiral flute having a shoulder facing away from said shank portion and making an angle with the longitudinal axis of said working portion of from about 90° to about 80°, the diameter of said flute means progressively decreasing away from said shank portion to provide a tapered working portion, said continuous spiraled flute making from about 0.5 to about 2.0 spirals per millimeter along the longitudinal axis of said working portion, and said continuous spiral flute having a surface which immediately tapers from the outside diameter of said shoulder of said flute toward the inside diameter of an adjacent shoulder so that there is a minimal peripheral land at the opposite diameter of said continuous spiral flute.

4,353,699
THREE DIMENSIONAL EDUCATIONAL TOY MODEL SUBDIVISION

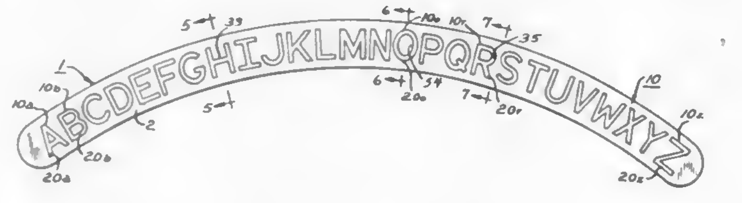
Burton R. Johnson, 208 Hunsaker La., Eugene, Oreg. 97404
Continuation-in-part of Ser. No. 952,152, Oct. 17, 1978, Pat. No. 4,245,400, which is a continuation-in-part of Ser. No. 409,784, Oct. 26, 1973, abandoned. This application Jun. 16, 1980, Ser. No. 159,500
Int. Cl.^{3} G09B *25/06*
U.S. Cl. 434—72 **3 Claims**



1. A three dimensional toy for use in teaching the construction and topography of a housing subdivision, said toy comprising a sheet of material formed so as to define a varying topography of said housing subdivision, said topography including a roadway of varying elevation having a plurality of curves therein and a plurality of housing lots disposed alongside said roadway, a first plurality of indicia printed on said sheet indicating the relative position and elevation of each of said housing lots and a second plurality of indicia on said sheet indicating one or more of the surveying parameters of each of said curves in said roadway such that upon comparing the relative positions and locations of said roadway and said building lots with said first and second plurality of indicia, one is instructed in the topography of a housing subdivision, a third plurality of indicia printed on said sheet for identifying the sequential development of said roadway, and a plurality of overlays adapted to be disposed over and secured to said roadway, said overlays having indicia printed there-on corresponding to said third plurality of indicia for indicating the positioning of said overlay on said roadway such that upon comparing said first and second pluralities of indicia with such third plurality of indicia, one is instructed in the construction of a roadway over a varying topography and about a plurality of building lots positioned on said topography.

4,353,700
EDUCATIONAL LEARNING AID

John A. Volakakis, 9810 S. Marion, Oak Lawn, Ill. 60453
Filed Mar. 19, 1981, Ser. No. 245,263
Int. Cl.^{3} G09B *1/08*
U.S. Cl. 434—168 **5 Claims**

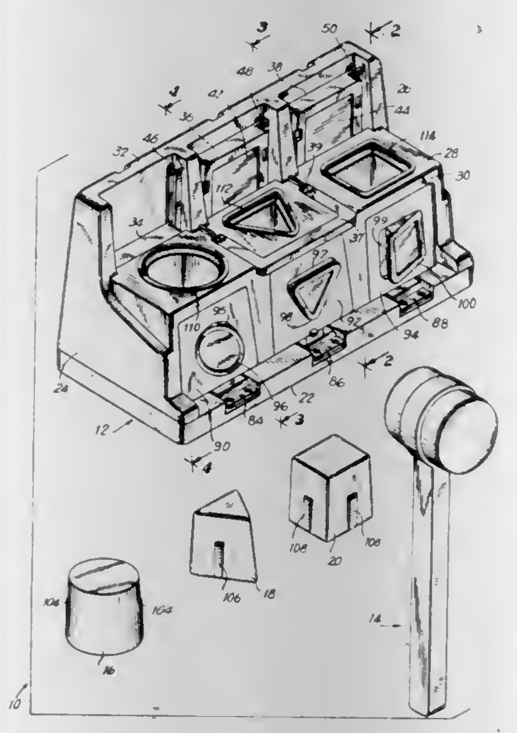


1. An educational aid assembly comprising:
cover means having an upper face,

said face having a plurality of openings therethrough and defining a respective symbol in a predetermined order, said openings adapted to receive a separate piece corresponding to said respective symbols,
a plurality of pieces corresponding to the configuration of said openings for respective insertion therein,
flange means integrally attached to said cover means beneath said face,
said flange means having a downwardly disposed surface arranged immediately adjacent said opening and defining at least a portion of said opening beneath said face,
backing means detachably coupled to said cover means and positioned beneath said plurality of openings,
said face is in the form of an elongated surface having an arcuate configuration, and
said backing means includes indicia situated beneath each of said plurality of openings outlining the shape thereof to provide enhanced visualization of said respective symbols.

4,353,701
EDUCATIONAL, ACTION-TYPE, AMUSEMENT CENTER TOY

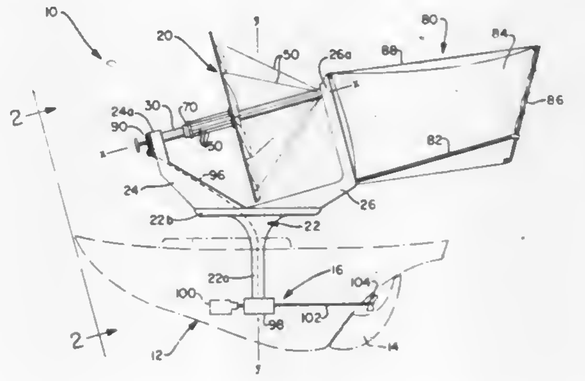
Sheldon Greenberg, New York, N.Y., assignor to Shelcore, Inc., New York, N.Y.
Filed Dec. 1, 1980, Ser. No. 211,652
Int. Cl.^{3} A63H *33/00*
U.S. Cl. 434—259 **33 Claims**



1. An educational, action-type, amusement center toy for children, comprising:
(a) a housing;
(b) at least one pop-up member having display means mounted thereon;
(c) means for mounting said one pop-up member and its associated display means on the housing for joint movement along a path between
  a hidden position in which the display means is substantially hidden from a child's view, and
  a display position in which the display means is visible to the child;
(d) a plurality of different actuator means for moving said one pop-up member, each of said different actuator means being operative for moving said one pop-up member from its hidden position to its display position in response to different manual actions performed by the child;
(e) a common actuator member pivotally mounted on the housing for turning displacement about a pivot axis transversely of said path of said one pop-up member, said common actuator member having a latching element mounted thereon for joint displacement between a latched position in which the latching element extends into said path to retain said one pop-up member in its hidden position, and an unlatched position in which the latching element is located remotely from said path to unlatch said one pop-up member, each actuator means being operatively connected to the latching element for displacing the latching element from its latched position to its unlatched position; and
(f) means for constantly urging said common actuator member in a predetermined circumferential direction about the pivot axis, each of said actuator means being operative for moving said common actuator member in the reverse circumferential direction opposite to said predetermined direction,
whereby any one of the plurality of different actuator means can be selected by the child to move said one pop-up member to its display position.

4,353,702
SAILING CRAFT MAINSAIL AND AUXILIARY PROPULSION MEANS THEREFOR

Laszlo Nagy, Barberton, Ohio, assignor to F M Machine Company, Akron, Ohio
Filed Jul. 21, 1980, Ser. No. 170,921
Int. Cl.^{3} B63H *13/00*
U.S. Cl. 440—8 **20 Claims**

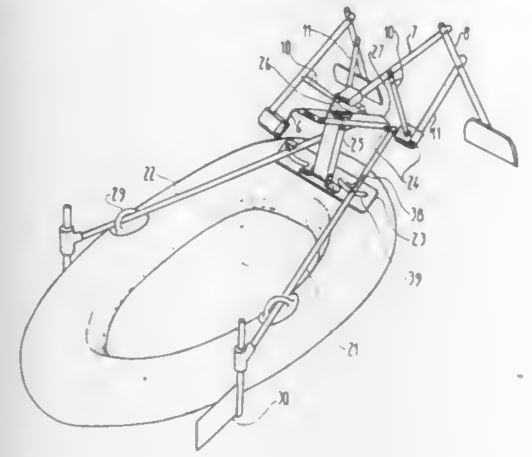


1. A wind-driven, water borne sailing craft comprising in combination:
a flotation hull;
a propeller mounted to move said hull through the water upon being rotated;
means to steer said hull;
a pedestal configured mast vertically mounted on said hull and having a substantially horizontal platform and capable of rotating about a substantially vertical axis;
windward and leeward bracing members mounted in spaced-apart relationship on said platform;
a tubular shaft mounted for axial rotation and carried between said windward and leeward bracing members, said shaft oriented at a windward-to-leeward angle with respect to the pedestal platform, said angle determined by the maximum roll that may be experienced by the hull without capsizing;
a hub member mounted on said shaft between the bracing members to rotate with said shaft, said hub having a plurality of flexible fabric sailblades mounted about its periphery on spars connected into the hub, each of said sailblades extending outwardly from its respective spar by a boom affixed to the spar toward its outer extent;
means associated with said sailblades for changing the orientation of said sailblades about their respective spar in the leewardly direction;
a vertical sail mounted to the pedestal mast and positioned leewardly of the hub member to effect rotation of the mast in response to the direction of the wind so as to automatically maintain the sailblades directed into the wind; and
means intercoupling the tubular shaft at one of its ends to the propeller to drive said propeller into rotation according to the rotational motion of the tubular shaft which in turn is

set into motion by a wind effecting motion of the flexible sailblades, said sailing craft capable of being steered to a desired direction irrespective of the direction from which the wind is blowing.

4,353,703
NAUTICAL PROPULSION DEVICE

Xavier d'Elloy, Les Queras-Audes, 03190 Herisson, France
PCT No. PCT/FR80/00064, § 371 Date Dec. 9, 1980, § 102(e) Date Dec. 9, 1980, PCT Pub. No. WO80/02270, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 23, 1980, Ser. No. 220,065
Claims priority, application France, Apr. 25, 1979, 79 10464
Int. Cl.³ B63H ***16/12***
U.S. Cl. 440—21 9 Claims



1. A paddle-operated propulsion device for small water craft such as a pneumatic raft, said device comprising:

A. a pedal crank system to produce circular motion;
B. a holder carrying a paddle; and
C. a frame-supported mechanism which makes it possible for the paddle to extend well in front of the crank system while transmitting the circular motion of the crank system to the paddle holder to cause the paddle to undergo translation in a vertical plane whereby the paddle is plunged into the water to propel the craft and then raised thereabove, said mechanism including a bar coupled to the crank system to transmit the motion thereof, one end of the bar being hingedly connected to the end of the paddle holder, first and second connecting rods joined together at a hinged junction point, the end of the first rod being pivotally connected to the bar and the end of the second rod being pivotally connected to the holder to define therewith a deformable quadrilateral structure, said frame being constituted by a pair of bars whose ends are coupled to an articulation shaft, the frame bars being connected at intermediate points thereon to an anchor plate to define an A-shaped structure.

4,353,704
PILOTED FLEXIBLE COUPLING

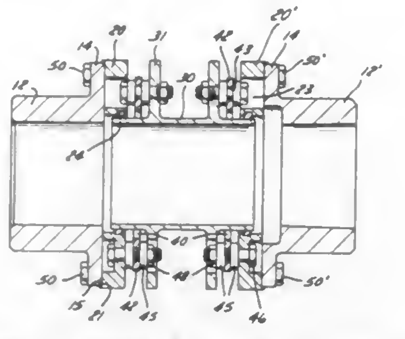
Dennis J. Corey, Youngsville, Pa., assignor to Rexnord Inc., Milwaukee, Wis.
Filed Mar. 28, 1980, Ser. No. 135,051
Int. Cl.³ F16D ***3/78***
U.S. Cl. 464—72 11 Claims

1. A flexible torque transmission coupling of the type comprising a hub, a center member and a flexing element piloted to said hub by a pilot ring, the improvement comprising:

said hub having a first plurality of circumferentially spaced and axially directed holes and having a second plurality of circumferentially spaced and axially directed holes; said second plurality being tapped and alternately spaced between said first plurality of holes;

said pilot ring having a plurality of circumferentially spaced and axially directed holes circumferentially aligned with the first holes in said hub;

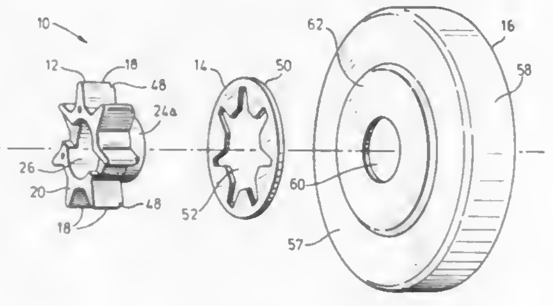
said center member having a plurality of circumferentially spaced and axially directed holes circumferentially aligned with the holes in said pilot ring; and



fastening means engageable with said holes to connect said pilot ring to said hub for assembly of said coupling and to remove said pilot ring from said hub to disassemble said coupling.

4,353,705
SPROCKET AND CLUTCH DRUM ASSEMBLY

Dennis G. Scott-Jackson, and Hui C. Lim, both of Burnaby, Canada, assignors to Windsor Machine Company Limited, Burnaby, Canada
Filed Jan. 16, 1980, Ser. No. 112,801
Claims priority, application Canada, Nov. 14, 1979, 339815
Int. Cl.³ F16H ***55/12***
U.S. Cl. 474—158 5 Claims



1. In a drive assembly a centrally located hub formation having a longitudinally axis, an axially aligned toothed drive sprocket formation and associated clutch drum member mounted on said hub formation, said drive sprocket formation including like axially extending radially projecting teeth, said teeth each presenting at the end thereof adjacent to said clutch drum member substantially co-planar end wall surfaces at right angles to said axis, said clutch drum member including an outwardly radiating wall portion surrounding said hub formation and presenting an uninterrupted substantially planar surface to said co-planar end wall surfaces of said sprocket teeth, an axially extending reinforcing element carried by said toothed drive sprocket formation in the region of said co-planar end wall surfaces thereof, said reinforcing element including an outer marginal portion extending radially beyond and surrounding said sprocket teeth and integral portions projecting radially inwardly into the recesses between said sprocket teeth and in close proximity to the surfaces thereof so as to substantially bridge the separation therebetween, said outer marginal portion and integral inwardly projecting portions likewise presenting substantially co-planar surfaces to said uninterrupted surface of said clutch drum member and in substantial alignment with said co-planar end wall surfaces of said sprocket teeth, and joining means extending between and joining the adjacent and co-planar and uninterrupted surfaces respectively of said reinforcing element, clutch drum member and drive sprocket formation.

CHEMICAL

4,353,706
PROCESS FOR PRODUCING SCULPTURED PILE FABRIC

Alonzo M. Burns, Jr., Inman, and Woodrow P. Gilbert, Spartanburg, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.
Filed Apr. 17, 1980, Ser. No. 141,036
Int. Cl.³ D06Q ***1/02***
U.S. Cl. 8—114.6 15 Claims

1. A process for sculpturing a pile fabric having pile fibers selected from nylon, wool, nylon-wool blends which comprises selectively contacting the pile surface of said pile fabric with from about 150 percent to about 250 percent by weight based upon the weight of said fabric substrate contacted of a fiber degrading agent; said fiber degrading composition comprising from about 20 percent to about 50 percent by weight based upon the weight of said composition of para-toluenesulfonic acid, an aqueous diluent for said para-toluenesulfonic acid and a thickening agent in an amount sufficient to provide a viscosity of from about 100 to about 1,000 cps: heating said pile fabric to a temperature sufficient to cause the tensile strength of said fibers of said pile in the selected areas to be reduced sufficiently so that said fibers may be removed by mechanical means, but said temperature being low enough so as not to result in complete destruction of the pile integrity prior to removal by mechanical means; and removing said degraded portion of said pile fibers by mechanical means to provide a sculptured pile fabric.

4,353,707
TEXTILE FINISHING AGENTS FROM REACTION PRODUCTS OF CARBAMATES AND GLUTARALDEHYDE

John G. Frick, Jr., New Orleans, and Robert J. Harper, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Sep. 15, 1981, Ser. No. 302,007
Int. Cl.³ D06M ***13/34***
U.S. Cl. 8—187 3 Claims

1. A process for imparting increased wrinkle-resistance to a cellulosic fabric without using materials made from formaldehyde by:

(a) preparing a reaction product from methyl carbamate and glutaraldehyde;
(b) applying the product in concentrated solution to fabric with an acidic metallic salt catalyst; and
(c) heating the fabric to cause reaction of the product under the influence of the catalyst.

4,353,708
EVALUATION OF THE STATE OF CHANGE OF KERATIN FIBERS

Pierre Bore, Montfermeil, and Arnaud De Labbey, Aulnay-Sous-Bois, both of France, assignors to L'Oreal, Paris, France
Filed Jul. 6, 1979, Ser. No. 55,213
Claims priority, application France, Jul. 13, 1978, 78 20975; Jun. 8, 1979, 79 14791
Int. Cl.³ G01N ***31/00***
U.S. Cl. 23—230 B 21 Claims

1. A process for evaluating the ionic state of keratin fibers with particular respect to the surface thereof, which process comprises:

taking samples having a weight between about 10 mg. and about 50 mg. of fibers from the fibers to be evaluated; then

contacting at a temperature of about normal room or other ambient temperature the said fiber samples with:

a set of at least two solutions of dyestuff, each of which is placed in contact with a sample of the fibers,

one of said two solutions containing at least one acidic dyestuff and being capable of changing its coloration in the presence of fibers in the (+) ionic state, and

the other of said two solutions containing at least one basic dyestuff and being capable of changing its coloration in the presence of fibers in the (−) ionic state,

the pH of the two solutions being such that the initial coloration of each solution remains unchanged in the presence of fibers in the neutral ionic state; and

the solution capable of changing its coloration in the presence of fibers in the (+) ionic state containing two acidic dyestuffs giving different colorations; and

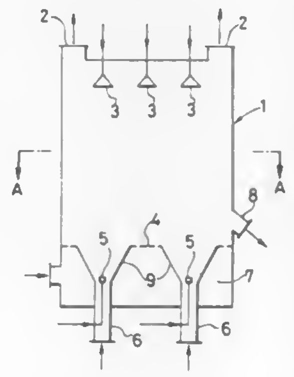
each of said solutions in any given combination set thereof being in volume in a quantity that is between about 0.25 $cm.^3$ and about 1 $cm.^3$ with the dyestuff concentration in each of said solutions being on the order of between about 0.005% by weight and about 0.03% by weight; and thereafter

observing what, if any, change in the color of the solutions has occurred; and finally

deducing by color comparison the ionic state of at least the surface of said fibers according to the detectable change in coloration of said involved sets of dyestuff solutions.

4,353,709
GRANULATION PROCESS

Susumu Nioh, Tokyo; Hiroshi Hirayama; Tetsuzo Honda, both of Funabashi; Takashi Nagahama, and Masaki Naruo, both of Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Toyo Engineering Corporation, both of, Japan
Filed Nov. 18, 1980, Ser. No. 207,928
Claims priority, application Japan, Nov. 28, 1979, 54-152985
Int. Cl.³ A01N ***25/06;*** **B01J** ***2/04, 2/16***
U.S. Cl. 23—313 FB 4 Claims



1. A process for producing substantially spherical granules having a diameter larger than about 2 mm, which comprises the steps of:

(a) dropping as liquid droplets the melt of a substance solidifiable by cooling or drying through a cooling zone having a sufficient height to solidify said liquid droplets, said melt containing up to 40% by weight of water;
(b) countercurrently contacting said liquid droplets with a gas stream for cooling or drying, thereby forming solidified prills having diameter smaller than about 2 mm;
(c) fluidizing said prills with a gas stream at the bottom of said cooling zone to form a fluidized bed;
(d) spraying as fine liquid grains the melt of substance solidifiable by cooling or drying upwardly into said fluidized bed along with a gas stream to form a sprouted bed of said prills in said fluidized bed, while coating and enlarging said prills with said liquid grains, thereby forming granules having a diameter of up to 5 times greater than the diameter of said prills, the weight ratio of the melt dropped as liquid droplets to the melt sprayed as fine liquid grains ranging from 1:4 to 4:1, and
(e) discharging said granules from said fluidized bed.

4,353,710

NOVEL METHOD OF EXTENDING A HYDROCARBON FUEL HEAVIER THAN GASOLINE BY ADDING A METHOXY OR ETHOXY GROUP

William M. Sweeney, Wappingers Falls, and Sheldon Herbstman, Spring Valley, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,033

Int. Cl.^{3} C10L *1/18*

U.S. Cl. 44—56 **14 Claims**

1. The method of extending a furnace oil which comprises mixing said furnace oil and 2-methoxyethyl acetate, said 2-methoxyethyl acetate being present in amount of about 1 v %-30 v % of total composition—thereby forming a single phase extended furnace oil, which is free of methanol or ethanol; and

recovering said single phase extended furnace oil.

4,353,711

MULTIFUNCTIONAL GASOLINE ADDITIVES

Michael E. Childs, Wilmette, Ill., assignor to UOP Inc., Des Plaines, Ill.

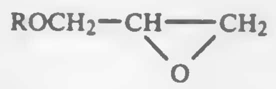
Continuation-in-part of Ser. No. 161,828, Jun. 23, 1980, Pat. No. 4,295,860. This application Sep. 14, 1981, Ser. No. 301,541

Int. Cl.^{3} C10L *1/18, 1/22*

U.S. Cl. 44—63 **4 Claims**

1. A composition comprising a major amount of a fuel oil and an additive consisting of from about 10 ppm up to 100 ppm of the reaction product of:

(a) a glycidyl ether represented by the formula



wherein R is either

(i) a saturated hydrocarbyl group possessing from about 6 to about 20 carbon atoms or

(ii) $R_1R_2CHCH_2$—, wherein R_1 and R_2 are saturated hydrocarbyl radicals containing from 1 to 17 carbon atoms and wherein the sum of R_1 and R_2 is from about 4 to about 18 carbon atoms, with

(b) a polyamine selected from the group consisting of unsubstituted alkylene diamines, where the alkylene group contains from 2 to about 8 carbon atoms, and ethylene polyamines of the formula $H_2N(CH_2CH_2NH)_xH$, where x is an integer from 2 to about 8.

4,353,712

START-UP METHOD FOR PARTIAL OXIDATION PROCESS

Charles P. Marion, Mamaroneck; Albert Brent, Huntington, both of N.Y.; George N. Richter, San Marino, Calif.; William B. Crouch, Chappaqua; Edward T. Child, Tarrytown, both of N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 167,876, Jul. 14, 1980, Continuation-in-part of Ser. No. 107,215, Dec. 26, 1979. This application Jun. 10, 1981, Ser. No. 272,416

Int. Cl.^{3} C10J *3/46*

U.S. Cl. 48—197 R **8 Claims**

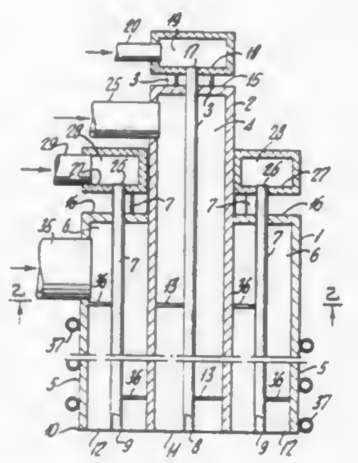
1. A method of starting up and operating a free-flow non-catalytic partial-oxidation gas generator comprising:

(1) passing a stream of preheat fuel comprising fuel gas or liquid hydrocarbon fuel through either the central or annular bunch of tubes of a burner mounted in the upper portion of said gas generator, said burner comprising a central conduit, an outer conduit coaxial and concentric with said central conduit and forming an annular passage along its length, and said central and annular bunches of parallel tubes respectively extending lengthwise in said central conduit and annular passage;

(2) simultaneously passing a stream of air through either the central conduit or annular passage of said burner whichever is associated with the bunch of tubes through which said stream of preheat fuel is flowing, and introducing said stream of air into the interstices between said bunch of tubes; mixing together the said preheat fuel and air to produce a well-distributed blend; and burning the mixture, by substantially complete combustion downstream in the reaction zone of said gas generator at an absolute pressure in the range of about 0.5 to 300 atmospheres; heating the reaction zone to the temperature required for ignition of the autothermal partial oxidation reaction of the principal fuel selected from the group consisting of a pumpable slurry of solid carbonaceous fuel, liquid or gaseous hydrocarbon fuel, and mixtures thereof with a free-oxygen containing gas and with or without a temperature moderator; removing flue gas from the reaction zone; thereafter

(3) passing a stream of said principal fuel through either said central or annular bunch of tubes, whichever is unoccupied, with or without admixture with a temperature moderator;

(4) simultaneously passing a stream of free-oxygen containing gas with or without admixture with a temperature moderator through either the central conduit or annular passage of said burner whichever is associated with the bunch of tubes through which said stream of principal fuel is flowing, and introducing said stream of free-oxygen containing gas into the interstices between said bunch of tubes;



(5) mixing together said stream of principal fuel and free-oxygen containing gas to produce a well-distributed blend, igniting and burning said mixture by partial oxidation downstream in the reaction zone of said gas generator at an autogenous temperature in the range of about 1700° to 3500° F., a pressure in the range of about 1 to 300 atmospheres, an atomic ratio of oxygen/carbon in the range of about 0.5 to 1.7, and an H_2O/fuel weight ratio in the range of about 0 to 5.0;

(6) completely cutting off the preheat fuel stream in (1) and the associated air stream in (2) after said partial oxidation reaction in (5) commences, or adjusting the flow rates of said preheat fuel stream and associated air stream to provide an atomic ratio O/C in the range of about 0.5 to 1.7 and the partial oxidation of said preheat fuel stream after said partial oxidation reaction commences; and

(7) removing from said reaction zone a raw stream of synthesis gas, fuel gas, or reducing gas.

4,353,713

INTEGRATED GASIFICATION PROCESS

Shang-I Cheng, 17 Woodland Dr., Matawan, N.J. 07747

Filed Jul. 28, 1980, Ser. No. 173,169

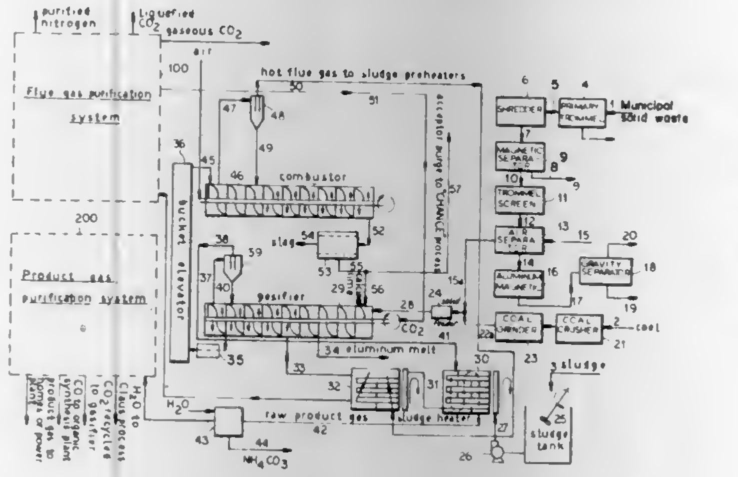
Int. Cl.^{3} C10J *3/12*

U.S. Cl. 48—202 **7 Claims**

1. A method of gasifying water and a carbon-containing substance consisting of coal alone or coal together with municipal waste, sewage sludge or another biomass which comprises the steps of:

(a) pyrolyzing said carbon-containing substance by contacting it with hot CaO in the form of calcined lime or dolomite, thereby producing a solid phase containing CaO, $CaCO_3$ and char, and a gaseous phase containing CO_2, H_2O, CO, H_2 and hydrocarbons;

(b) reacting water from a source other than step (a) with said char in said solid phase in a steam-carbon reaction energetically promoted by concurrently reacting CO_2 with said CaO to form $CaCO_3$ and the heat necessary to drive the steam-carbon reaction, thereby producing a combustible-containing solid residue which also includes $CaCO_3$, and a gas containing CO_2, CO, H_2 and hydrocarbons;



(c) removing CO_2 which remains unreacted with CaO from the gas produced in step (b) and recycling at least a portion of the removed CO_2 back to step (b);

(d) combusting the residue produced in step (b) and transforming the $CaCO_3$ thereof to CaO and carbon dioxide, the steam-carbon reaction of step (b) being controlled so that residual char in said solid residue will upon combustion in step (d) produce sufficient heat to completely decompose the $CaCO_3$;

(e) recycling the CaO from step (d) to step (a);

(f) recovering at least a major portion of the gas from step (c) after removal of CO_2 to form a product gas; and

(g) recovering CO_2 from flue gas obtained from step (d) and sending part of it back to step (b).

4,353,714

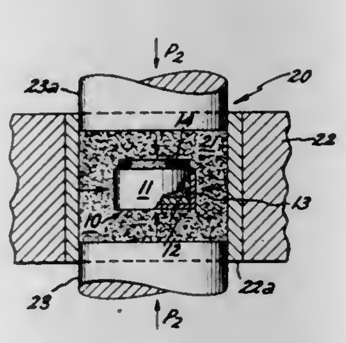
POLYCRYSTALLINE SILICON-BONDED CUBIC BORON NITRIDE BODY AND METHOD

Minyoung Lee, Schenectady, and Lawrence E. Szala, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1981, Ser. No. 315,332

Int. Cl.^{3} B24B *1/00*

U.S. Cl. 51—295 **5 Claims**



1. A process for producing a bonded polycrystalline cubic boron nitride body of predetermined shape and size which comprises the steps of:

(a) applying a coating of metal selected from the group consisting of molybdenum and tungsten to a plurality of cubic boron nitride particles covering at least 50 percent of the surface area thereof;

(b) placing a mass of the coated particles in a mold cavity of size and shape corresponding to the size and shape of the desired bonded polycrystalline body;

(c) infiltrating said mass of coated particles in the mold cavity under pressure with molten metal selected from the group consisting of silicon and silicon-base alloy;

(d) cooling the infiltrated mass thereby solidifying the molten metal; and

(e) recovering the resulting bonded polycrystalline cubic boron nitride body from the mold.

4,353,715

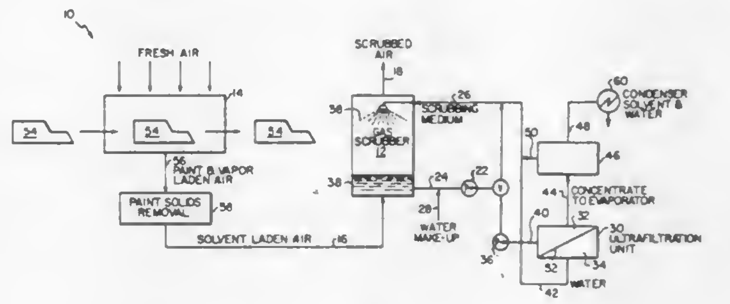
APPARATUS FOR AND PROCESS OF REMOVAL OF SOLVENT VAPORS

Leon Mir, Newton, and Joseph Zahka, Dracut, both of Mass., assignors to Abcor, Inc., Wilmington, Mass.

Division of Ser. No. 121,638, Feb. 14, 1980, Pat. No. 4,265,642, which is a continuation of Ser. No. 16,419, Mar. 1, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 217,435

Int. Cl.^{3} B01D *47/00*

U.S. Cl. 55—22 **10 Claims**



1. A process for the removal of a volatile organic solvent from a solvent-laden air stream, which process comprises:

(a) intimately contacting and scrubbing the solvent-laden air stream with an aqueous, multiple-phase scrubbing media to provide a solvent-lean air stream and a solvent-rich scrubbing media, the scrubbing media comprising a surfactant-dispersed, activated carbon or molecular-sieve particles, which particles adsorb the solvent from the solvent-lean air stream, to form a solvent-rich scrubbing media;

(b) discharging the solvent-lean air stream;

(c) concentrating the solvent-rich scrubbing media in a low-pressure ultrafiltration-membrane unit having a feed zone and a permeate zone separated by a membrane which permits the passage of water, but retards the passage of the dispersed activated carbon or molecular-sieve particles of the scrubbing media, to provide a concentrated, solvent-rich scrubbing media in the feed zone and permeate water which passes through the membrane into the permeate zone;

(d) heating the concentrated, solvent-rich scrubbing media to a temperature to remove the solvent from the activated carbon or molecular-sieve particles of the concentrated, solvent-rich scrubbing media, to form a solvent vapor and a concentrated, solvent-lean scrubbing media;

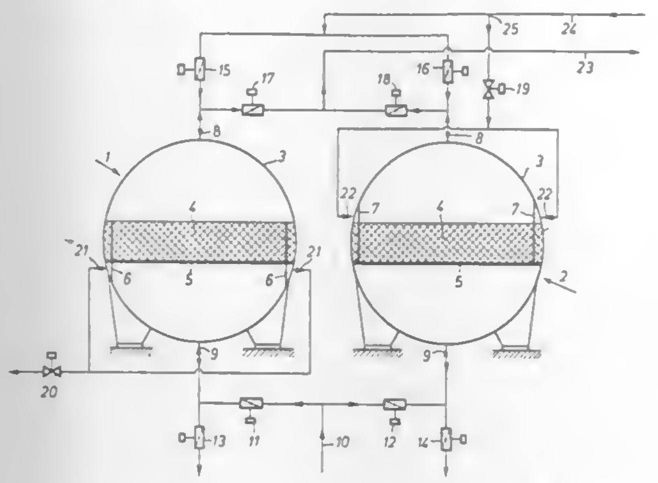
(e) recovering the solvent vapor; and

(f) continuously recycling the concentrated, solvent-lean scrubbing media and the permeate water from the permeate zone for use in the contacting and scrubbing of the solvent-lean air stream, to reconstitute a scrubbing media for use in the contacting and scrubbing steps,

whereby the volatile organic solvent is condensed, a solvent-lean air stream is discharged and the multiple-phase scrubbing media is continuously recycled and reused in removing the solvent from the solvent-laden air stream.

4,353,716
PROCESS AND APPARATUS FOR THE REGENERATION OF AN ADSORBER

Wilhelm Rohde, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany
Filed Aug. 12, 1981, Ser. No. 292,116
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1980, 3030474
Int. Cl.^{3} B01D *53/04*
U.S. Cl. 55—59 **12 Claims**



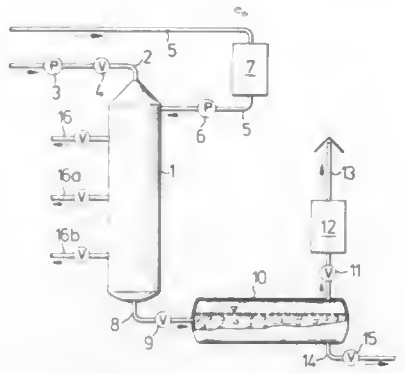
1. In a process for regenerating an adsorber of the type wherein a raw gas and a regenerating gas alternatingly flow therethrough, the adsorber including an adsorbent material supported within a container having a wall extending around said container, the improvement comprising: conducting the regenerating gas over the loaded adsorbent and simultaneously adjusting the ratio of the rate of flow of the regenerating gas relative to the rate of flow of a previously conducted raw gas flow to be higher over the adsorbent material located adjacent said container wall than the defined ratio of the rate of flow over the remaining adsorbent material in the container.

8. In an adsorber for conducting a process wherein a raw gas and a regenerating gas alternatingly flow therethrough, the adsorber including an adsorbent arranged in a container having a wall extending around said container, and having primary feeding means and primary discharge means connected thereto for feeding and discharging raw gas and regenerating gas, the improvement comprising:
  bulkhead means located adjacent said container wall for separating a portion of the adsorbent material adjacent said container wall from the remaining adsorbent material in said container, said bulkhead means being open on one side in the direction of flow of the gases and almost entirely closed on the other side thereof; and
  secondary feeding means or secondary discharge means associated with the space defined by said bulkhead means for independently respectively feeding regenerating gas to, or discharging regenerating gas from, the portion of adsorbent material in said space defined by said bulkhead means.

4,353,717
PROCESS FOR ABSORBING OZONE

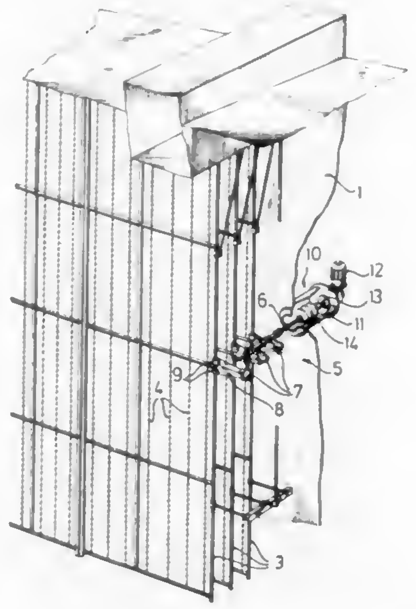
Peter Herbrechtsmeier, Hofheim am Taunus; Günter Greiner; Wolfgang Grünbein, both of Liederbach; Norbert Nix, Hofheim am Taunus; Hans Schäfer, Bad Soden am Taunus, and Wolfgang Wendel, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 24, 1981, Ser. No. 247,009
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011615
Int. Cl.^{3} B01D *47/00*
U.S. Cl. 55—68 **2 Claims**

1. A process for absorbing ozone in water by introducing an ozone-containing gas into a water current streaming downwardly in a cylindrical absorber, which comprises introducing the ozone-containing gas into the stream of water in the form of bubbles at the upper end of the absorber and passing the gas bubbles downwardly to an absorber outlet, said ozone-containing gas being introduced into the water stream at a rate independent of the velocity of the water stream flowing downwardly through the absorber, the velocity of the water stream being greater than about 0.6 m/sec. above the point at which the ozone-containing gas is introduced and less than about 0.6 m/sec. below said gas introduction point, said absorber having a conical shape immediately above said gas introduction point and absorbing ozone in the water.



4,353,718
ELECTRIC PRECIPITATOR

Rudolf Franzen; Peter Klingberg, both of Cologne, and Michael Zeug, Lohmar, all of Fed. Rep. of Germany, assignors to Buckau-Walther AG, Grevenbroich, Fed. Rep. of Germany
Filed Nov. 23, 1981, Ser. No. 323,909
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1980, 3044053
Int. Cl.^{3} B03C *3/76*
U.S. Cl. 55—112 **8 Claims**

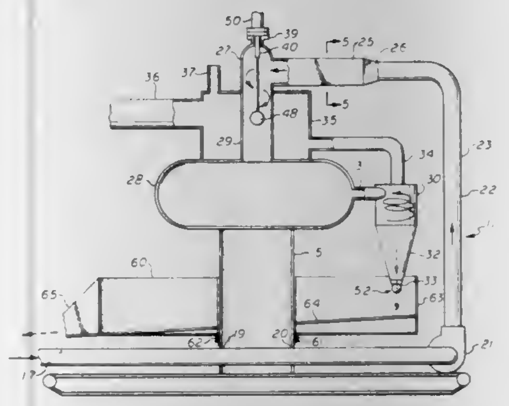


1. An electric precipitator, comprising a housing; a plurality of collecting electrodes arranged in said housing; a plurality of voltage-supplied spark electrodes arranged between said collecting electrodes in said housing; a knocking device for cleaning at least one group of said electrodes, said knocking device including a plurality of anvil members connected with said electrodes of said one group, and a plurality of hammer members arranged to strike against said anvil membersand mounted on a rotary knocking shaft; means for driving in rotation said knocking shaft of said knocking device and including a driving shaft; and means for connecting said driving shaft of said driving means with said knocking shaft of said knocking device, said connecting means including two engaging members each connected with a respective one of said shafts, and an insulating coupling extending through said housing and connecting

said engaging members with one another, said insulating coupling including two drive bushes each connected with a respective one of said engaging members, and an intermediate coupling member connecting said drive bushes with one another, each of said drive bushes having a first end portion facing toward said intermediate cupling member and a second end portion facing toward a respective one of said engaging members, said second end portion of each of said drive bushes having a polygonal receiving opening with rounded corners and concave connecting lines between said rounded corners, and each of said engaging members having an outer surface having a shape corresponding to the shape of said receiving opening with a small play and engaging into said receiving opening.

4,353,719
DRILLING FLUID GAS AND SOLIDS REMOVAL SYSTEM

Alvin B. Kennedy, Jr., P.O. Box 822, Angleton, Tex. 77511
Filed Jan. 9, 1981, Ser. No. 223,787
Int. Cl.^{3} B01D *19/00*
U.S. Cl. 55—170 **20 Claims**

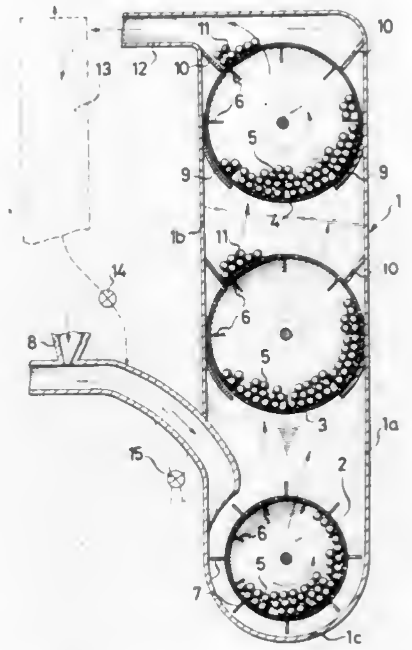


1. A system for removing gas and drilled solids from drilling fluid, which comprises:
  a pedestal;
  a pressure vessel supported by said pedestal, said pressure vessel including a cylindrical degassing neck;
  means for maintaining a pressure greater than atmospheric pressure in said pressure vessel;
  a conduit connected tangentially to said degassing neck;
  means for pumping drilling fluid through said conduit to flow tangentially about said degassing neck and into said pressure vessel;
  a plurality of hydrocyclones connected to said pressure vessel to remove drilled solids from said drilling fluid;
  and means for collecting clean drilling fluid discharged from said hydrocyclones.

4,353,720
CONTACT COMPARTMENT FOR REMOVING NOXIOUS GASEOUS COMPONENTS FROM A GAS STREAM

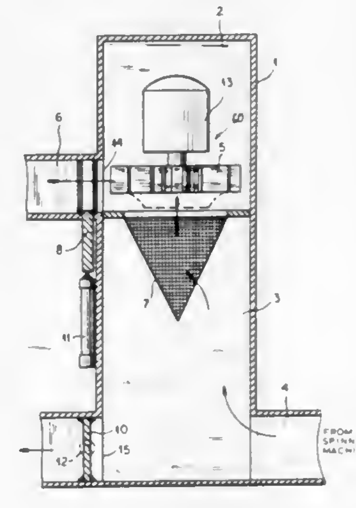
Adolf Margraf, Am Schleplingsbach 46, 3060 Stadthagen, Fed. Rep. of Germany
Filed Jan. 7, 1981, Ser. No. 222,976
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001525
Int. Cl.^{3} B01D *53/14, 50/00*
U.S. Cl. 55—262 **6 Claims**

1. In a contact compartment having an upright fluid-bed chamber provided with an inlet opening at the lower portion thereof and an outlet opening at the top portion thereof and in which a turbulence material comprising solid substances adapted to form absorptive bonds with noxious gaseous components, and a turbulence carrier comprising gases having noxious components, are intermixed in a turbulent whirling manner to form absorption compounds therefrom, said turbulence solid substances and gases being fed via the inlet opening into the lower portion of said chamber for upward flow to the top portion and outlet opening of said chamber, the improvement which comprises said upright fluid-bed chamber comprising a rectangular cross-section, means for intermixing said turbulence solid substances and gases and forming absorptive bonds therebetween, which means is disposed at the lower portion of said chamber for contacting said turbulence solid substances and gases fed via the inlet opening into said chamber, at least one rotating sieve drum provided internally with axially parallel peripherally distributed entraining bars and which is positioned in said chamber above said intermixing means, and a plurality of loose spheriod-shaped bodies movably disposed inside said at least one drum, so as to interrupt the upward flow of said intermixed and absorptively bonded solid substances and gases toward the outlet opening of said chamber, and to form a homogeneous turbulent layer thereof.



4,353,721
EXHAUST SYSTEM FOR REMOVING AIRBORNE PARTICLES FROM THE VICINITY OF TEXTILE MACHINERY

Walter Mollstätter, Pfreimd, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany
Filed May 7, 1981, Ser. No. 261,631
Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017838
Int. Cl.^{3} B01D *46/04*
U.S. Cl. 55—283 **4 Claims**



1. In a system for removing airborne particles from the

vicinity of textile machinery, with a plurality of filter boxes each divided by a screen into a first compartment and a second compartment, each filter box being provided with an intake duct for unfiltered air permanently opening into said first compartment, a normally open discharge duct for filtered air extending from said second compartment, blower means adjacent said screen operable to generate an air flow from said first compartment through said screen and said second compartment into said discharge duct, a suction duct communicating with said first compartment at a location remote from said intake duct, first shutter means positioned and arranged to block said discharge duct, second shutter means positioned and arranged to normally block said suction duct, and operating means coupled with said first and second shutter means for intermittently unblocking said suction duct while blocking said discharge duct during a regenerating phase to enable the extraction of particles accumulating on a surface of said screen facing said first compartment, the suction ducts of all said filter boxes opening into a common manifold provided with exhaust means for drawing accumulated particles from said first compartment of any filter box whose suction duct has been unblocked,

the improvement wherein said operating means comprises a first actuator coupled with said first shutter means, a second actuator coupled with said second shutter means, and control means coupled with said actuators for displacing said first and second shutter means at different instants so as to initiate said regenerating phase by moving said first shutter means into a blocking position after moving said second shutter means into an unblocking position and to terminate said regenerating phase by moving said second shutter means into a blocking position after moving said first shutter means into an unblocking position whereby air is continuously aspirated through said intake duct into said first compartment.

4,353,722

GRANULAR BED FILTER DEVICE INCLUDING A REGENERATIVE GRANULAR BED CLEANING APPARATUS

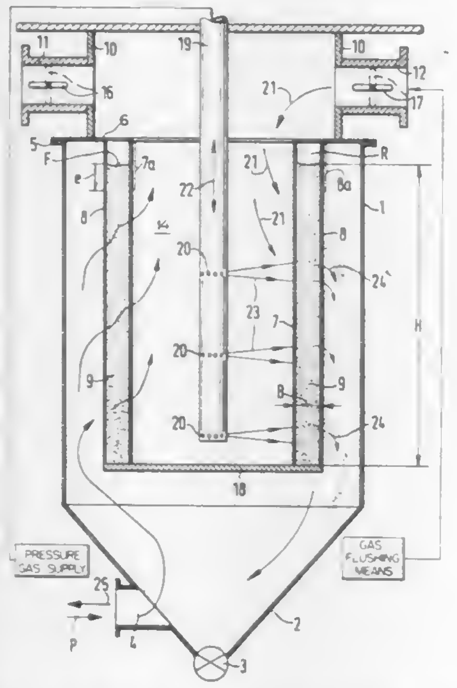
Wolfgang Berz, Westmount, Canada, assignor to Gimag Aktiengesellschaft, Switzerland

Filed Apr. 2, 1980, Ser. No. 136,613

Claims priority, application Switzerland, Apr. 3, 1979, 3092/79; May 29, 1979, 5007/79

Int. Cl.^{3} B01D *46/30*

U.S. Cl. 55—294 **14 Claims**



1. A filter apparatus having regenerative filter cleaning means comprising:

(a) a filter bed device including a granular filter bed vertically disposed between two laterally spaced walls located inside a gas-tight housing having a raw gas inlet and a clean gas outlet,

(b) the two spaced walls are gas-permeable over a large part of their total area and the ratio (H/B) of the height to the width of the granular filter bed is greater than 1,

(c) the granular filter bed projects upwardly, above the gas-permeable walls, into a bed expansion region defined by gas-impermeable wall sections, said filter bed being completely enclosed by the gas-permeable walls, and

(d) the cleaning means including a tube connected to a source of pressure gas and is movably disposed outside the granular filter bed and adjacent said gas-permeable walls in the region of the filter bed,

(e) said tube including a plurality of outlet nozzles for directing pressure gas through the spaced walls and filter bed to cause fluidization of the granular filter bed.

4,353,723

PLEATED FILTER PACK AND METHOD OF MAKING SAME

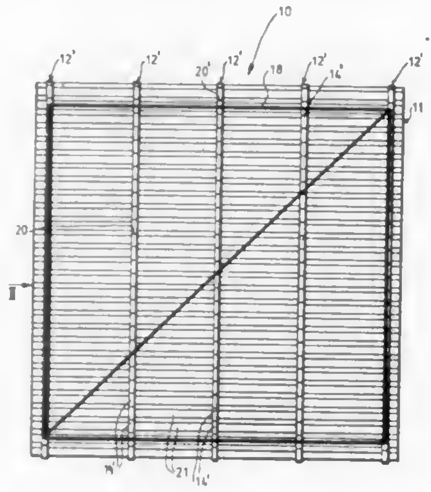
Rainer Schulz, Eichenstrasse 1, 5820 Gevelsberg, and Wilfried Schulz, Oststr. 49, 4322 Sprockhövel, both of Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,289

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003409

Int. Cl.^{3} B01D *46/10*

U.S. Cl. 55—521 **3 Claims**



1. A filter pack for the purification of gaseous fluids, comprising an undulating sheet of porous material overlain on at least one side by a set of parallel, spaced-apart retaining strips folded into a series of integrally interconnected U-shaped pleats embracing respective undulations of said sheet, said sheet and said strips each consisting of a fleece of elastic fibers of heat-fusible thermoplastic material, adjacent pleats having closely juxtaposed legs thermally bonded to each other and to said sheet only at contact points of their respective fibers between undulations of said sheet.

4,353,724

METHOD FOR FORMING MINERAL FIBERS

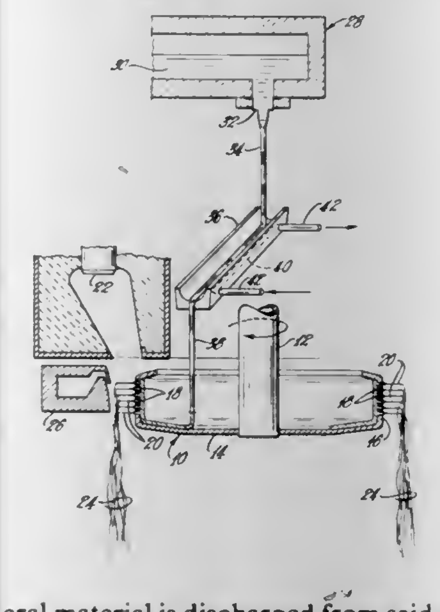
Robert L. Houston, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 6, 1981, Ser. No. 251,590

Int. Cl.^{3} C03B *37/04*

U.S. Cl. 65—8 **7 Claims**

1. In a method of fiberizing molten mineral material of the type in which molten mineral material is supplied to a spinner and caused to flow outwardly to the spinner peripheral wall, from which the molten mineral material is centrifuged into mineral fibers, the improvement comprising supplying the molten mineral material to said spinner at a temperature above the liquidus temperature, and cooling the molten mineral material to a temperature below the liquidus temperature before the molten mineral material is discharged from said spinner peripheral wall.



4,353,725

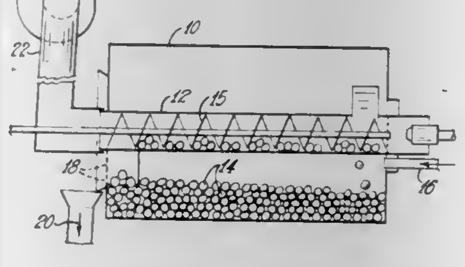
PROCESS AND APPARATUS FOR RECYCLING SCRAP GLASS

Charles M. Hohman, and William L. Streicher, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,537

Int. Cl.^{3} C03B *3/00*

U.S. Cl. 65—27 **7 Claims**



1. A process for producing glass by charging to a melting furnace and melting therein a glass batch, including the steps of simultaneously,

(1) providing a double shell apparatus comprising an inner shell and an outer shell having an annulus therebetween wherein the inner shell has an aperture therethrough,
(2) charging heat transfer media to one end of the aperture,
(3) charging heated gases to the other end of the aperture,
(4) moving the media and gases past each other in the aperture to heat the media,
(5) removing heated media from the hot end of the aperture and charging it to the hot end of the annulus,
(6) charging scrap glass to the hot end of the annulus,
(7) moving scrap glass and hot media in the same direction through the annulus to remove organic binders or sizes from the scrap glass while simultaneously heating the scrap glass,
(8) removing the cleaned, heated scrap glass from the cold end of the annulus and feeding it to a glass melting furnace, and
(9) recycling the cooled media from the cold end of the annulus to the cold end of the aperture.

6. A double shell apparatus for recycling scrap glass comprising:

(a) an inner shell and an outer shell having an annulus therebetween wherein the inner shell has an aperture therethrough,
(b) means for charging heat transfer media to one end of the aperture,
(c) means for charging heated gases to the other end of the aperture,
(d) means for moving the media and gases past each other in the aperture,
(e) means for removing heated media from the hot end of the aperture and charging it to the hot end of the annulus,
(f) means for charging scrap glass to the hot end of the annulus,
(g) means for moving the scrap glass and media through the annulus,
(h) means for removing the scrap glass from the cold end of the annulus and feeding it to a glass melting furnace, and
(i) means for recycling the media from the cold end of the annulus to the cold end of the aperture.

4,353,726

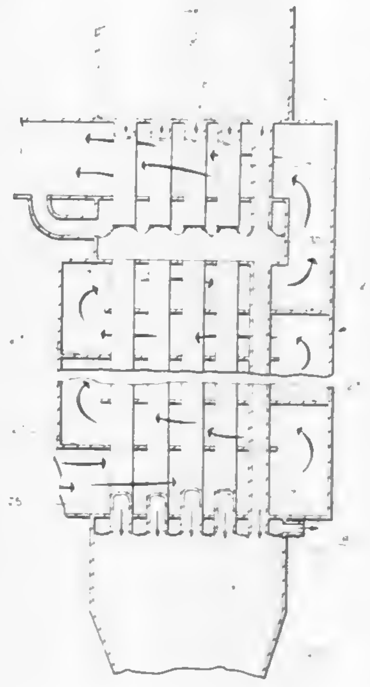
METHOD AND APPARATUS FOR PREHEATING PULVEROUS MATERIALS PRIOR TO THEIR INTRODUCTION INTO A MELTING FURNACE

Robert R. Rough, Sr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 17, 1981, Ser. No. 255,006

Int. Cl.^{3} C03B *3/00*

U.S. Cl. 65—27 **18 Claims**



1. The process of preheating glass batch prior to its delivery to a glass melting furnace comprising the steps of introducing the fully-intermixed, moisture-containing, glass batch constituents into the upper region of a tubular heat exchanger, allowing the glass batch to flow downwardly by gravity through a plurality of interrupted lengthy open-ended tubes of said heat exchanger, said tubes being interrupted within an enclosed exhaust chamber located within an upper region of said heat exchanger, passing hot gases upwardly through said heat exchanger around said open-ended tubes and said exhaust chamber to heat the glass batch contained therein by countercurrent indirect heat transfer, venting the contained moisture from within said glass batch during its passage through said exhaust chamber, and delivering the essentially moisture-free heated glass batch from the bottom of said heat exchanger into the glass melting furnace.

11. Combined apparatus for preheating glass furnace batch comprising an elongated vertically-mounted heat-exchanger having a plurality of interrupted lengthy open-ended tubes extending vertically throughout a major central portion of its height, means for delivering glass batch in fully-intermixed moisture-containing condition to an upper region of said heat-exchanger for its passage by gravity through said open-ended tubes, an exhaust chamber disposed in an upper region of said

heat-exchanger into which said tubes are interrupted and headed, means for introducing hot gases from said glass furnace into a lower region of said heat-exchanger to circulate upwardly between said open-ended tubes and around said exhaust chamber, baffle means mounted around said tubes to direct said hot gases in a circuitous path around said tubes and out of contact with said glass batch for countercurrent indirect heat transfer, venting means leading from said exhaust chamber to separate the contained moisture in vapor form from said glass batch, and means for delivering the said glass batch continuously to said glass furnace in essentially moisture-free preheated condition.

4,353,727

METHOD FOR FABRICATING FLUORESCENT LAMP

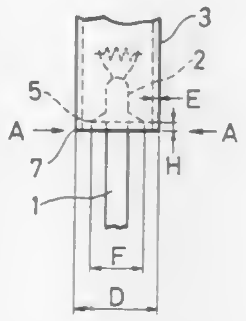
Etsuo Urataki; Yoshio Takano; Yoshinobu Tomita, and Mitsuru Nakagawa, all of Ohme, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1981, Ser. No. 286,067

Claims priority, application Japan, Jul. 23, 1980, 55-99919

Int. Cl.^{3} C03D *23/20*

U.S. Cl. 65—36 4 Claims



1. In a method for sealing both end parts of a glass tube by the use of mounts; a method for fabricating a fluorescent lamp comprising the step of holding the mount inside said glass tube under a state under which a center axis of said mount having a flared portion coincides with a center axis of the straight glass tube having the unconstricted end part and under which an end face of said flared portion lies slightly inwards with respect to an end face of said glass tube, and the step of uniformly heating an outer surface of said end part of said glass tube while maintaining the surface temperature of the whose glass tube at a temperature which is sufficient to prevent water droplets to adhere to the inner surface of the glass tube, thereby to melt said flared portion and said end part of said glass tube and to stick them to each other.

4,353,728

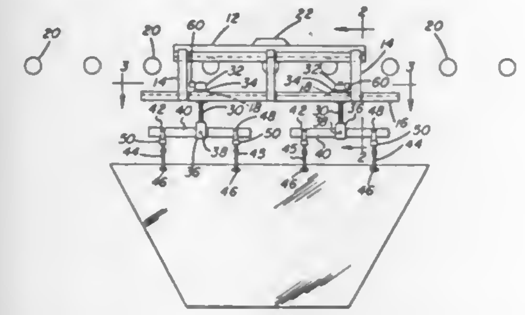
TONG SUPPORT CARRIAGE FOR USE IN PRESS BENDING GLASS SHEETS

John C. Slabach, Jr., and Joseph B. Kelly, both of Crestline, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 11, 1981, Ser. No. 262,104

Int. Cl.^{3} C03B *23/02*

U.S. Cl. 65—273 9 Claims



1. A carriage for supporting tongs that grip a glass sheet during press bending comprising a straight, elongated tong support member, a pair of straight, elongated slots for said tong support member, a vertical rod supported for sliding movement along each of said elongated slots between first and second positions and free to rotate about the axis of said rod, a clevis attached to the lower end of each rod, a lever arm mounted intermediate its ends to said clevis for rotation therewith about a vertical axis, a tong suspended from each said lever arm on each side of said clevis, said vertical rods being free to slide to said first positions along said tong support member to enable said tongs to grip the upper edge of a flat glass sheet at spaced points flanking points subtended by said vertical rods and to slide to said second positions spaced closer to one another than the distance between said first positions when said glass sheet is shaped by press bending and the distance between said spaced subtended points is shortened.

4,353,729

PLANT FERTILIZING AND GROWTH ACTIVATING STRUCTURES AND APPLICATIONS THEREOF

Alain Faure, Saint-Chamond; Paul Maldonado, Saint Symphorien d'Ozon; Jean-Francois Husson, Bron, and Camille Coste, Ceret, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Filed Apr. 14, 1980, Ser. No. 139,875

Claims priority, application France, Apr. 13, 1979, 79 09417

Int. Cl.^{3} C05G *1/00*

U.S. Cl. 71—11 9 Claims

1. A microporous fertilizing composition which aids in retaining water in soil and accelerates the growth of plants produced by the process comprising: mixing a normally solid hydrocarbon base containing asphaltenes at a temperature at which it is fluid with a pulverulent material selected from the group consisting of oxidizing agents which liberate gas when reacted with the hydrocarbon base selected from the group consisting of sulfur, potassium permanganate and potassium bichromate, mineral compounds which liberate a gas in an acid medium and mixtures thereof; causing said gas to be liberated to form the microporous composition and incorporating therein effective amounts of fertilizer.

4,353,730

GRANULATING PROCESS

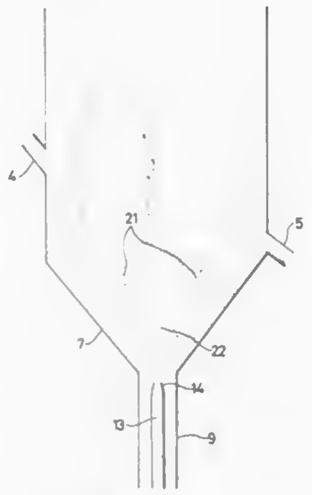
Bunji Kinno, Chiba; Hiroshi Hirayama, and Tetsuzo Honda, both of Funabashi, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Incorporated, both of, Japan

Filed Nov. 17, 1980, Ser. No. 207,646

Claims priority, application Japan, Nov. 29, 1979, 54/153681

Int. Cl.^{3} C05B *15/00;* B21B *15/02*

U.S. Cl. 71—29 19 Claims



1. In a granulating process which comprises feeding priming granules of a particulate material to a spouted bed granulation zone and spraying an adherent and solidifiable liquid, together with a gas stream, into said spouted bed granulation zone to form a spouted bed of said priming granules where said priming granules are enlarged by depositing said adherent and solidifiable liquid on the surfaces thereof, the improvement comprising the steps of providing a plurality of spouted bed granulation zones arranged in series and one or more fluidizing and cooling zones for cooling and drying purposes each disposed between two adjacent ones of said spouted bed granulation zones; introducing said priming granules into the spouted bed granulation zone located at the first stage; passing said priming granules through said spouted bed granulation zones and said fluidizing and cooling zones successively, whereby said adherent and solidifiable liquid sprayed into each of said spouted bed granulation zones becomes attached to said priming granules and said priming granules having said adherent and solidifiable liquid attached thereto are fluidized with a gas stream in the succeeding fluidizing and cooling zone and thereby cooled and/or dried; and withdrawing the enlarged granules from the spouted bed granulation zone located at the last stage.

4,353,731

AMIDE AND HYDRAZIDE DERIVATIVES OF N-TRIFLUOROACETYL-N-PHOSPHONOMETHYLGLYCINE

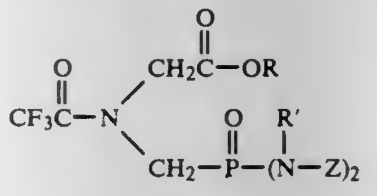
John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 922,923, Jul. 10, 1978. This application Apr. 2, 1981, Ser. No. 250,524

Int. Cl.^{3} C07F *9/36;* A01N *57/32*

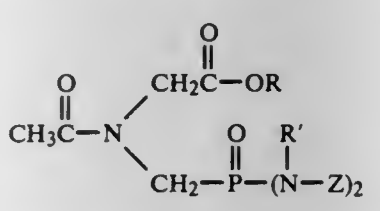
U.S. Cl. 71—88 10 Claims

1. A compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, Z is a member of the class consisting of N-piperidyl or N-morpholino.

8. A herbicidal method which comprises contacting a plant or the plant growth medium with a herbicidally effective amount of a compound of the formula



wherein R is an alkyl group of from 1 to 10 carbon atoms, a chloro lower alkyl group, a lower alkoxy lower alkyl group containing from 3 to 6 carbon atoms or a lower alkoxy lower alkoxy lower alkyl group containing from 5 to 9 carbon atoms, R′ is hydrogen, Z is a member of the class consisting of N-piperidyl or N-morpholino.

4,353,732

3,4,5,6-TETRAHYDRO-1,2,4,6-THIATRIAZINE-3,5-DIONE-1,1-DIOXIDES; PROCESSES FOR CONTROLLING UNDESIRED PLANT GROWTH

Rolf-Dieter Acker, Leimen; Gerhard Hamprecht, Weinheim; Adolf Parg, Bad Duerkheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

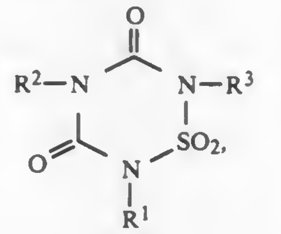
Filed Mar. 26, 1981, Ser. No. 247,983

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013268

Int. Cl.^{3} A01N *43/72;* C07D *285/00*

U.S. Cl. 71—91 3 Claims

1. A 3,4,5,6-tetrahydro-thiatriazine-3,5-dione-1,1-dioxide of the formula



I

where R^1 is hydrogen, R^2 is alkyl of 1 to 4 carbon atoms and R^3 is halogen- or, haloalkyl-substituted phenyl .

3. A process for combating the growth of unwanted plants, wherein the plants or the soil are treated with a herbicidally effective amount of a tetrahydro-thiatriazine-3,5-dione-1,1-dioxide of the formula I as claimed in claim 1.

4,353,733

HERBICIDE MIXTURE

Clive A. Raven, and Alan J. Sampson, both of Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 902,124, May 2, 1978, abandoned. This application Apr. 10, 1979, Ser. No. 28,766

Claims priority, application United Kingdom, May 3, 1977, 18435/77

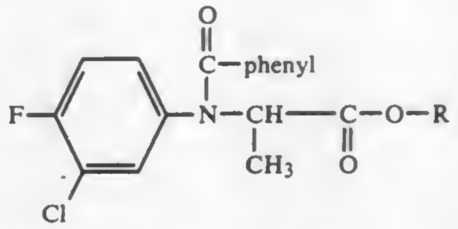
Int. Cl.^{3} A01N *43/70*

U.S. Cl. 71—93 6 Claims

1. A herbicidal composition containing as the herbicide a combination of

(a) 2-ethylamino-4-(1-cyano-1-methylethylamino)-6-chloro-1,3,5-triazine or 2-ethylamino-4-(1-cyano-1-methylethylamino)-6-methylthio-1,3,5-triazine, and

(b) a compound of the formula:



wherein R is methyl, ethyl or isopropyl, the weight ratio of (b) to (a) being within the range of from 1:1 to 50:1.

4,353,734

MALEIMIDE AND SUCCINIMIDE DERIVATIVES AND HERBICIDAL METHOD OF USE THEREOF

Jenö Seres, Istvánné Daróczí, nee Csuka; Jánosné Várkonyi, nee Slovicsko; Gabor Horvath, all of Budapest; Ildikó Szilágyi, Ocsa; Belane Radvanyi, nee Hegedüs, Budapest, all of Hungary

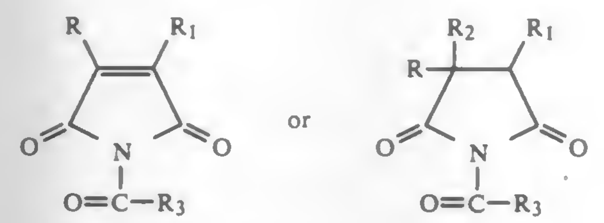
Filed Jul. 24, 1978, Ser. No. 927,343

Claims priority, application Hungary, Jul. 25, 1977, 1757

Int. Cl.^{3} A01N *43/36;* C07D *207/40*

U.S. Cl. 71—95 8 Claims

1. A compound of the formula



wherein

R is hydrogen, halogen, phenyl, phenyl-C_1 to C_4 alkylthio, C_1 to C_6 alkylthio, C_5 to C_7 cycloalkylthio, phenylthio or phenylsulfonyl;

R_1 is amino, C_5 to C_7 cycloalkylamino, C_1 to C_6 alkylamino, C_1 to C_4-alkoxy-substituted-phenyl-(C_1 to C_4-alkylamino), phenylamino, naphthylamino, furfurylamino, phenyl-(C_1 to C_4)alkylamino, phenylamino-substituted by C_1 to C_4 alkoxy, halogen or C_1 to C_4 alkyl or phenylsulfonyl;

R_2 is hydrogen; and

R_3 is C_1 to C_6 alkyl, alkoxy or phenyl.

7. A method of controlling undesirable vegetation comprising applying to the locus of such undesirable vegetation a herbicidally effective amount of a compound as defined in claim 1

4,353,735
OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

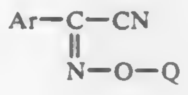
Filed Aug. 20, 1979, Ser. No. 68,263

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.³ A01N *37/34;* C07C *121/52*

U.S. Cl. 71—105 **5 Claims**

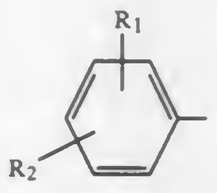
1. A compound of the formula



$$\mathrm{Ar{-}C(=N{-}O{-}Q){-}CN}$$

wherein

Ar is



in which each of R_1 and R_2 is hydrogen, halogen, lower alkyl, lower alkoxy or nitro, or

1-naphthyl, and

Q is halopropynyl.

4,353,736
METHOD OF SELECTIVELY CONTROLLING WEEDS AND HERBICIDAL DIPHENYL ETHER OXIME DERIVATIVES

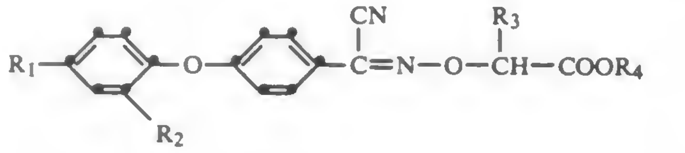
Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 112,767, Jan. 17, 1980, abandoned, which is a continuation of Ser. No. 938,544, Aug. 31, 1978, abandoned. This application Jan. 28, 1981, Ser. No. 229,246

Int. Cl.³ A01N *37/34;* C07C *121/60*

U.S. Cl. 71—105 **14 Claims**

1. A method of selectively controlling weeds in crops of barley, wheat, maize, rice and oats, which comprises treating sown cultivated areas in pre-emergent application, or weed-infested crops of cultivated plants in post-emergent application, with an effective amount, not exceeding 6 kg of active ingredient per hectare of treated crop area, of a diphenyl ether oxime derivative of the formula I


(I)

wherein

R_1 is chlorine or a trifluoromethyl group,

R_2 is hydrogen or chlorine,

R_3 is hydrogen or a methyl group and

R_4 is a C_1–C_6-alkyl or a C_3–C_6 alkenyl group.

4,353,737
METHOD OF MAKING METALLIC GLASS POWDERS FROM GLASSY ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 23,411, Mar. 23, 1979, Pat. No. 4,290,808. This application Apr. 17, 1981, Ser. No. 255,020

Int. Cl.³ B22F *9/04, 9/06*

U.S. Cl. 75—0.5 R **8 Claims**

1. A method for making metallic glass powder comprising: annealing a solid metallic glass body at temperature within the range from about 250° C. below its glass transition temperature up to its glass transition temperature, for time sufficient to effect embrittlement; and comminuting the embrittled metallic glass body.

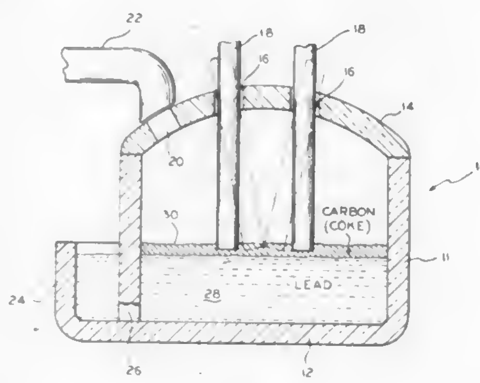
4,353,738
LEAD SMELTING METHOD

John A. Persson, Gibsonia, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed May 18, 1981, Ser. No. 264,447

Int. Cl.³ C22B *4/00*

U.S. Cl. 75—10 R **6 Claims**



1. A method of smelting lead comprising the steps of containing a quantity of lead in solid form an electric arc furnace, disposing a layer of granular carbonaceous material over said lead, disposing at least two electrodes in engagement with said carbonaceous material and in spaced apart relation, passing an electric current through said carbonaceous material and between said electrodes for generating resistance heating in carbonaceous material, transferring heat from said carbonaceous material to said lead, and continuing the energization of said electrodes until said lead material is fused.

4,353,739
DESULPHURIZATION OF FERROUS MELTS

John K. Batham, Brierley Hill; Alan G. Fox, Birmingham, and Evan T. R. Jones, Sutton Coldfield, all of England, assignors to Foseco International Limited, Birmingham, England

Filed May 7, 1981, Ser. No. 261,685

Claims priority, application United Kingdom, May 10, 1980, 8015566

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 **14 Claims**

1. A method of desulphurising a ferrous melt which comprises injecting into the melt a desulphurisation agent comprising lime-containing particles having pores, which pores are blocked by the solidification of molten inorganic matter distinct from lime in the pores of the lime, the surfaces of the particles thereby being rendered smooth and having a low tendency to absorb moisture thereby being imparted to the particles.

4,353,740
CHLORINE EXTRACTION OF GOLD

Wendell E. Dunn, Star Rte. 68D, Lead, S. Dak. 57754

Filed Sep. 11, 1981, Ser. No. 301,239

Int. Cl.³ C22B *11/00*

U.S. Cl. 75—83 **6 Claims**

1. A process for recovering gold from a gold-containing ore comprising the steps of:
- (a) grinding the ore,
- (b) oxidative roasting of the ore in the presence of a gas selected from the group consisting of air or oxygen to remove sulfides in the ore, at an elevated temperature;
- (c) chlorinating the ore by contacting the ore with chlorine at a temperature of 300° to 400° C., in the presence of at least one mole or iron per mole of gold present in the ore to convert gold in the ore into volatile gold chloride and gold chloride-iron chloride complex and producing spent ore,
- (d) passing volatiles from the chlorination step through a halide salt selected from the group consisting of a alkali and alkaline metal chloride, bromide and iodide to separate volatilized gold values to form a halide salt-gold chloride mixture, and
- (e) separating metallic gold from the halide salt.

4,353,741
SILVER COATED PARTICLES AND A PROCESS FOR PREPARING THEM

Italo A. Capuano, Orange; Lawrence P. Carr, Plantsville, and Patricia A. Turley, Orange, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 19,795, Mar. 12, 1979, abandoned. This application Mar. 27, 1980, Ser. No. 134,386

Int. Cl.³ B01J *21/18;* C07D *301/04*

U.S. Cl. 75—109 **24 Claims**

1. A process for producing silver coated particles which comprises:
- (a) admixing active carbon carrier particles with an aqueous solution of a silver salt to form a slurry consisting of said active carbon carrier particles in said aqueous solution of the silver salt;
- (b) adding a reducing agent consisting of a hydrogen compound to said slurry to deposit metallic silver on said active carbon carrier particles and therby form a reaction mixture of the resulting silver coated active carbon carrier particles in an acid medium having an increasing acidity as said silver is deposited, at the conclusion of said silver deposition, said reaction mixture having a pH of less than about 4; and
- (c) recovering said silver coated particles from said reaction mixture.

4,353,742
COBALT-CONTAINING ALLOYS

Paul Crook, Fairford, England, assignor to Cabot Stellite Europe Limited, Swindon, England

Filed Sep. 20, 1979, Ser. No. 77,825

Claims priority, application United Kingdom, Oct. 3, 1978, 39117/78; Apr. 27, 1979, 7914682

Int. Cl.³ C22C *30/00*

U.S. Cl. 75—122 **14 Claims**

1. An alloy consisting essentially of the following composition (excluding impurities):

	Constituents	% by weight of composition
(a)	cobalt	25 to 40
(b)	nickel	4 to 12
(c)	iron	more than 10, up to 25
(d)	chromium	27 to 35
(e)	at least one element selected from the group consisting of molybdenum and tungsten	5 to 15
(f)	at least one element selected from the group consisting of carbon and boron	0.3 to 2.25
(g)	material selected from the group consisting of silicon and manganese	0 to 3
(h)	material selected from the group consisting of titanium, hafnium, niobium, zirconium, vanadium and tantalum	0 to 5
(i)	copper	0 to 5
(j)	material selected from the group consisting of lanthanum, cerium, yttrium and thorium	0 to 2

wherein:
- (i) the combined percentages by weight of cobalt, nickel and iron are in the range of about 50 to 70% by weight;
- (ii) the total percentage by weight of constituents (h) to (j) is up to 7.5%;
- (iii) there is more than 30% by weight of chromium present when there is at least 2% by weight of constituent(s) (f); and
- (iv) the % by weight iron is greater than the % by weight nickel.

4,353,743
STEEL COMPOSITION FOR CHIPPER KNIFE

George F. Vander Voort, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

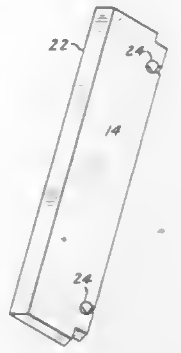
Division of Ser. No. 43,069, May 29, 1979, Pat. No. 4,287,007. This application Dec. 18, 1980, Ser. No. 217,650

Int. Cl.³ C22C *39/02*

U.S. Cl. 75—124 **8 Claims**

1. A wear resistant and machinable ferrous alloy consisting essentially of, by weight, carbon between about 0.40 to 0.60%, a maximum of about 1.0% manganese, a maximum of about

0.035% phosphorus, a maximum of about 0.035% sulfur, a maximum of about 1.50% silicon, a maximum of about 2.00% nickel, chromium between 4.4 and 5.2% molybdenum between 1.6 and 2.3%, a maximum of about 0.10% aluminum, a maximum of 0.52% niobium, and the balance essentially iron, said alloy having the capability of being austenitized at a temperature no higher than 1850° F., quenched and double tempered within the range of 940° to 1020° F. to produce a level of toughness of at least 100 ft-lbs on unnotched specimens, and a hardness of at least 56 HRC.



4,353,744
PROCESS FOR PRODUCING A VANADIUM SILICON ALLOY

Rodney F. Merkert, Buffalo, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Jun. 30, 1981, Ser. No. 278,960
Int. Cl.^{3} C22B *34/22*
U.S. Cl. 75—134 V 1 Claim

1. A process for producing a vanadium-silicon alloy having a low carbon and oxygen content, which comprises: forming a mixture of finely-divided V_2O_3, carbon and silicon metal in at least the stoichiometric amounts necessary to reduce the V_2O_3 and form V_2Si while simultaneously preventing the vanadium from combining with carbon and oxygen, and then heating the mixture to temperatures of between about 1200° C. and 1400° C. under a vacuum of between about 100 and 500 microns.

4,353,745
CLEANER FOR ANTI-GRAFFITI SYSTEM

Robert E. Ebbeler, Cincinnati, Ohio, assignor to Chemed Corporation, Cincinnati, Ohio
Filed Aug. 26, 1981, Ser. No. 296,434
Int. Cl.^{3} C09D *5/20*
U.S. Cl. 106—2 3 Claims

1. A composition adapted for priming a surface prior to the application of a protective coating thereon and for removing said protective coating when defaced with graffiti, said composition consisting essentially of (in parts by weight):

Ethylene glycol mono ethyl ether	1.0–99.0
Water	1.0–20.0
Methylene chloride	5.0–55.0
Non-ionic surfactant	0.1–5.0
Triethanolamine	0.1–5.0

4,353,746
HYDRAULIC CEMENT COMPOSITION

James D. Birchall, Mouldsworth; Kevin Kendall, Runcorn, and Anthony J. Howard, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Jun. 17, 1980, Ser. No. 160,368
Claims priority, application United Kingdom, Dec. 3, 1979, 7941587
Int. Cl.^{3} C04B *7/02*
U.S. Cl. 106—89 16 Claims

1. A cement composition which comprises a hydraulic cement and water, the hydraulic cement comprising two or more distinct bands or modes of particle sizes in which the total weight of particles of intermediate size does not exceed 20% of the total weight of the particles in the bands or modes adjacent thereto, and in which the amount of water is not greater than 25% by weight of the hydraulic cement.

4,353,747
HYDRAULIC CEMENT COMPOSITION

James D. Birchall, Mouldsworth, and Kevin Kendall, Runcorn, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Jun. 17, 1980, Ser. No. 160,370
Claims priority, application United Kingdom, Jun. 29, 1979, 7922788
Int. Cl.^{3} C04B *7/02*
U.S. Cl. 106—89 13 Claims

1. A hydrualic cement composition comprising a mixture of at least one particulate hydrualic cement and water in which the weight average mean particle size of the particles of the cement is less than 20 microns and in which the proportion of water is not greater than 30% by weight of the hydraulic cement in the composition.

4,353,748
CEMENTITIOUS PRODUCT

James D. Birchall, Mouldsworth; Kevin Kendall, Runcorn, and Anthony J. Howard, Warrington, all of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Jun. 13, 1980, Ser. No. 159,283
Claims priority, application United Kingdom, Jun. 26, 1979, 7922208; May 2, 1980, 8014847
Int. Cl.^{3} C04B *7/02*
U.S. Cl. 106—89 15 Claims

1. A cementitious product produced by setting of a composition comprising a mixture of at least one hydraulic cement and water not more than 2% of the total volume of the product comprising pores of maximum dimension exceeding 100 microns.

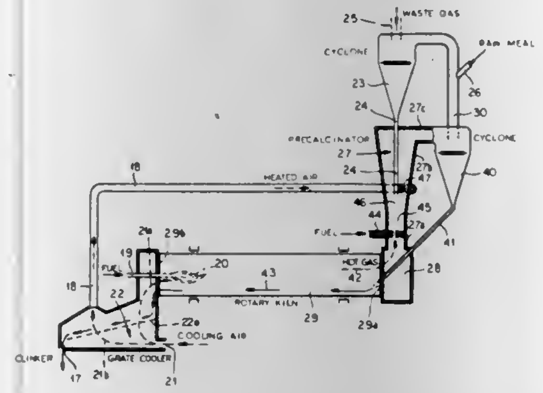
4,353,749
PROCESS OF PRODUCING A USEFUL SOIL CEMENT PRODUCT FROM INDUSTRIAL CHEMICAL WASTE

Louis F. Ray, 5441 Heatherstone, Baton Rouge, La. 70808, and David G. Azar, Sr., 11023 Major Oaks Dr., Baton Rouge, La. 70815
Filed Oct. 23, 1980, Ser. No. 199,909
Int. Cl.^{3} C04B *7/02*
U.S. Cl. 106—97 4 Claims

1. A process for producing an environmentally safe and useful product, said process consisting essentially of the steps of mechanically mixing an acid waste having a particle size such that it passes a 50 mesh sieve, 25% to 100% by weight calcium sulfate, and a pH of about 1.5 to 6.5 with an alkaline waste material having a particle size such that all of said alkaline material passes a 50 mesh sieve, said alkaline waste material having a pH from about 7.5 to 12.5, the blend of said acid waste and said alkaline waste having a pH of about 7.0 to 10.0, and mixing said blend with 1% to 30% by weight of either Portland cement and/or fly ash and water, compacting said mixture, and curing said mixture to form a soil cement product.

4,353,750
METHOD OF FIRING CARBONATE-CONTAINING MINERALS

Wolfram Quittkat, Gauting, Fed. Rep. of Germany, assignor to BKMI Industrieanlagen GmbH, Munich, Fed. Rep. of Germany
Filed Jul. 31, 1981, Ser. No. 288,935
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029210
Int. Cl.^{3} C04B *7/02*
U.S. Cl. 106—100 4 Claims



1. In a method of calcining a raw meal wherein the raw meal is preheated, the preheated raw meal is deacidified and precalcined in an upright precalcinator at a solids-inlet end of a rotary kiln, the deacidified precalcined meal is calcined in the rotary kiln, the calcined product of the rotary kiln is cooled by air which is thereby heated, hot kiln gases passing upwardly through the precalcinator, a fuel is introduced into the precalcinator and oxidation is effected in the precalcinator with said heated air, the improvement which comprises:

passing the hot kiln gases upwardly through said precalcinator with a velocity sufficient to maintain a suspension of the preheated meal at a location in said precalcinator below which the particles of said meal are prevented from passing, mixing said fuel with said hot kiln gases in a zone spaced below said location, thereby gasifying said fuel in said hot kiln gases with sensible heat thereof producing a gasified mixture, thereafter contacting said gasified mixture with said meal at said location, and oxidizing the gasified mixture with said heated air whereby said meal is precalcined.

4,353,751
METHOD TO PRODUCE MINERAL FILLERS CONTAINING HYDRATED CALCIUM MONOCARBOALUMINATE

Jacques Baudouin; Jean-Pierre Caspar, both of Viviers, and Jacques Gaillard, Villeneuve de Berg, all of France, assignors to Lafarge, Paris, France
Filed Nov. 26, 1980, Ser. No. 210,543
Claims priority, application France, Nov. 30, 1979, 79 29534
Int. Cl.^{3} C04B *31/40*
U.S. Cl. 106—306 10 Claims

1. A method for producing mineral fillers containing hydrated calcium monocarboaluminate, said process comprising reacting aluminum hydroxide under crystallized form, calcium oxide or calcium hydroxide and a normal carbonate $CaCO_3$ and/or a double calcium magnesium carbonate, in the presence of water, the operating temperature being higher than 50° C.

4,353,752
METHOD OF MAKING A SUSPENSION OF A FILLER FOR RUBBER MIXTURES

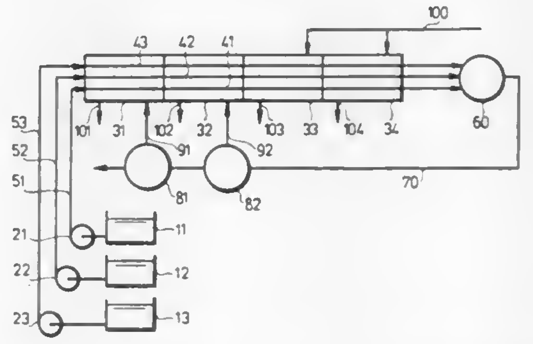
Genrickh D. Lyakhevich, ulitsa Matusevicha, 3, kv. 146, and Alexandr E. Sokolovsky, ulitsa Olshevskogo, 33, korpus 1, kv. 67, both of Minsk, U.S.S.R.
Filed Jan. 7, 1981, Ser. No. 223,076
Int. Cl.^{3} C09C *1/26, 1/04, 1/58*
U.S. Cl. 106—309 5 Claims

1. A method of making a suspension of a filler for rubber mixtures in a hydrocarbonaceous solvent, comprising the steps of:
- (a) mixing polymeric materials containing a filler with a hydrocarbonaceous solvent in a ratio of 1:05 to 1:60 parts by mass;
- (b) heating the obtained mixture under such pressure as to prevent volatilization of any component thereof at a temperature sufficient to bring about thermal decomposition of the polymeric materials and for formation of a suspension;
- (c) distilling low-boiling fractions from the suspension formed as a result of the thermal decomposition in the presence of an inert gaseous agent at a temperature of 50° to 400° C. and at a pressure of 1.10^2 to 1.10^5 N/m^2.

2. A method as claimed in claim 1, wherein the hydrocarbonaceous solvent is liquid hydrocarbon selected from the group consisting of petroleum fractions having a boiling temperature of from 25° to 600° C.; petroleum residues having a softening temperature by the ring and ball method of from 5° to 150° C.; low-boiling fractions obtained as a result of said distillation from the products of the thermal decomposition; mixtures of said petroleum fractions with the suspension of a filler; mixtures of said low-boiling fractions with the suspension of a filler.

4,353,753
CLEANING BOILER TUBES OF DIGESTING HEAT EXCHANGERS USED IN ALUM EARTH PROCESSING

Zoltan Osvald; Gergely Veres, both of Budapest; Gyula Odor, Mosonmagyarovar; György Lang, and Janos Steiner, both of Budapest, all of Hungary, assignors to Magyar Aluminiumipari Troszt, Budapest, Hungary
Filed Dec. 3, 1980, Ser. No. 212,636
Int. Cl.^{3} B08B *3/10*
U.S. Cl. 134—22.13 4 Claims



1. A method of operating a plant for digesting aluminum oxide in a sodium aluminate liquor, said method comprising the steps of:
- (a) passing a slurry of aluminum oxide mineral in a sodium aluminate liquor through a plurality of tubes of at least one tube-type digester while heating said tubes of said digester and recovering digestion liquor downstream from said digester;
- (b) passing a cleaning liquid selected from the group which consists of sodium aluminate liquor, sodium hydroxide solution and water through at least one other tube of said digester while the latter is heated concurrently with the other tubes thereof and other tubes of said digester conduct said slurry therethrough and recovering the heated

cleaning liquid downstream of said digester, whereby deposits formed in the tube traversed by the cleaning liquid during previous passage of slurry therethrough, are dissolved in the cleaning liquid;

(c) cyclically applying step (b) to each of the tubes of the digester while conducting said slurry as in step (a) through each tube previously subjected to step (b); and

(d) combining the digestion liquid with the cleaning liquid recovered from step (b).

4,353,754
THERMO-SENSITIVE SWITCHING ELEMENT MANUFACTURING METHOD

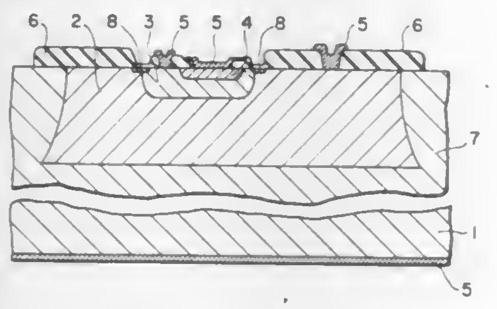
Kenichi Yamanaka; Yutaka Mihashi, and Toshio Sogo, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,568

Claims priority, application Japan, Aug. 6, 1979, 54/101576

Int. Cl.³ H01L *21/265, 23/56*

U.S. Cl. 148—1.5 **4 Claims**



1. A method of manufacturing a semiconductor element having a four-layer pnpn structure including a first semiconductor region of a first conductivity type, a second semiconductor region of a second conductivity type in contact with said first semiconductor region through a first pn junction, a third semiconductor region of said first conductivity type in contact with said second semiconductor region through a second pn junction, and a fourth semiconductor region of said second conductivity type in contact with said third semiconductor region through a third pn junction, said second pn junction having a defect layer formed therein by implantation of argon ions, comprising subjecting said element to annealing at a temperature in a range of from 400° C. to 900° C. in a nitrogen atmosphere after said argon ion implantation, said temperature of said annealing being determined in accordance with a desired switching temperature.

4,353,755
METHOD OF MAKING HIGH STRENGTH DUPLEX STAINLESS STEELS

Harvey D. Solomon, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,840

Int. Cl.³ C21D *1/26, 6/02*

U.S. Cl. 148—136 **11 Claims**

1. A method for heat treating a duplex stainless steel alloy body which comprises the steps of:

(1) heating said alloy body to a first temperature and maintaining said first temperature for a first time sufficient to convert said duplex microstructure to a substantially ferritic microstructure;

(2) cooling said alloy body to about room temperature at a rate sufficient to retain said substantially ferritic microstructure;

(3) heating said alloy body to a second temperature and maintaining said second temperature for a time sufficient to precipitate austenite, but insufficient to precipitate sigma phase, in said substantially ferritic microstructure; and

(4) cooling said alloy body to about room temperature at a rate sufficient to retain the microstructure developed in step (3) thereby producing a duplex stainless steel alloy body having a microstructure of austenite precipitates in a ferritic matrix, substantially isotropic yield and tensile strengths, substantially isotropic impact properties of at least about 50 ft-lbs and a minimum yield strength of at least 90 ksi.

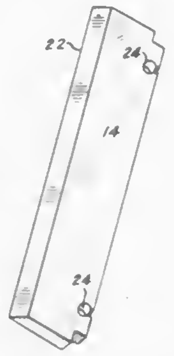
4,353,756
METHOD OF HEAT TREATING A STEEL COMPOSITION FOR CHIPPER KNIFE

George F. Vander Voort, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 43,069, May 29, 1979, Pat. No. 4,287,007. This application Dec. 18, 1980, Ser. No. 217,728

Int. Cl.³ C21D *1/18*

U.S. Cl. 148—143 **8 Claims**



1. A method of heat treating a ferrous alloy consisting essentially of, by weight, carbon between about 0.40 and 0.60%, a maximum of about 1.0% manganese, a maximum of about 0.035% phosphorus, a maximum of about 1.0% sulfur, a maximum of about 1.50% silicon, a maximum of about 2.00% nickel, chromium between about 4.4 and 5.2%, molybdenum between about 1.6 and 2.3%, a maximum of about 0.10% aluminum, a maximum of 0.52% niobium, and the balance essentially iron, by the steps which include subjecting said alloy to an austenitizing temperature no higher than 1850° F., quenching, and double tempering at a temperature between 940° to 1020° F., whereby said alloy is characterized in the quenched and tempered state by a level of toughness of at least 100 ft-lbs on unnotched specimens, a hardness of at least 56 HRC, good machinability, and good wear resistance.

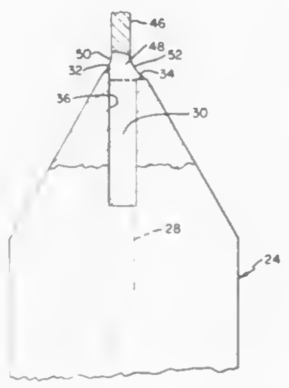
4,353,757
DISPLACED CAPILLARY DIES

Juris P. Kalejs, Wellesley; Bruce Chalmers, Falmouth, both of Mass., and Thomas Surek, Englewood, Colo., assignors to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Division of Ser. No. 11,527, Feb. 12, 1979. This application Jul. 3, 1980, Ser. No. 165,635

Int. Cl.³ C30B *15/34*

U.S. Cl. 148—172 **5 Claims**



1. A method of making a solar cell comprising the steps of:

(a) growing a silicon ribbon from a silicon melt by means of a capillary die so that silicon carbide precipitating from the melt will be distributed asymmetrically in the crystalline body, the growth of said ribbon being achieved by providing a die made wholly of graphite and having an upper end, a lower end and a capillary, with said upper end comprising first and second surfaces spaced from one another so as to provide an opening for said capillary and so that the first surface is located at a greater distance from said botton end than is said second surface, immersing said bottom end in a reservoir supply of a silicon melt so that molten silicon will substantially fill said capillary by action of capillary rise, establishing a growth pool of melt in the form of a film of molten silicon on said first and second end surfaces which extends to and is a continuum of the melt in said capillary, and growing a silicon ribbon from said growth pool of melt by pulling the same along the longitudinal axis of said die while maintaining the film so that it will have a first meniscus extending between said first end surface and a first side of said ribbon and a second meniscus extending between said second end surface and a second side of said ribbon, with said second meniscus having a greater length and extending lower than said first meniscus, whereby silicon carbide precipitating from the film and appearing as an impurity in said ribbon is concentrated near the first side of said ribbon grown from said first meniscus;

forming a P-N junction at said second side of said ribbon; and

providing electrodes to the opposite sides of at least a portion of said ribbon with the electrode on said second side of said ribbon grown being adapted to allow said junction to respond to radiant energy received by said second side of said ribbon.

4,353,758
DIRECT PROCESS FOR EXPLOSIVES

Irving B. Akst, 1032 Duncan St., Pampa, Tex. 79065, and Mary M. Stinecipher, 324 Connie St., Los Alamos, N. Mex. 87544

Filed Nov. 29, 1979, Ser. No. 98,643

Int. Cl.³ C06B *31/32*

U.S. Cl. 149—109.6 **3 Claims**

1. A method of forming an explosive mixture of ammonium nitrate and ethylenediamine dinitrate which comprises:

(a) combining ethylenediamine and a stoichiometric excess of ammonium nitrate, said ammonium nitrate being present in an amount to form, after reaction of said ethylenediamine therewith, a mixture of ammonium nitrate and ethylenediamine dinitrate; and

(b) reacting said ethylenediamine with the stoichiometric portion of said ammonium dinitrate to form said explosive mixture of ammonium nitrate and ethylenediamine dinitrate.

4,353,759
PROCESS AND APPARATUS FOR MATCHING INDICIA PANELS AND THE LIKE

Glenda L. Stallings, 4398 Arbor Dr., Okemos, Mich. 48864

Filed May 1, 1981, Ser. No. 259,452

Int. Cl.³ B32B *31/18;* G01B *3/14*

U.S. Cl. 156—64 **2 Claims**

1. An apparatus for matching a covering material to a background where the covering is to be applied to cover plates comprising:

a laminar structure having an upper sized and scored templet sheet having a lower release surface, said sheet having sized and scored portions defining relief indicia around orifices and edges of selected of said cover plates;

an intermediate contact adhesive layer releasably adhered to said templet sheet; and

a lower release paper sheet releasably adhered to said intermediate adhesive layer.

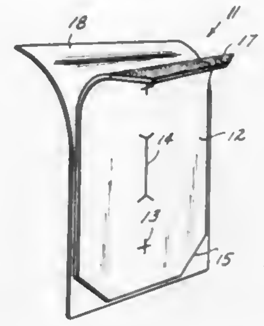
2. A process for matching a cover material to a background where the covering is to be applied to cover plates, the steps of:

covering an existing cover plate with a piece of covering material and adjusting said covering material to match background wall covering material;

marking through said piece of cover material to register positions on said cover plate while holding said match;

applying a pre-scored and sized templet adhesively to said back side of said piece of covering material and locating by registry with said marked positions;

trimming said covering material to templet size and scoring said covering as said templet is scored;



peeling said templet away from said adhesive and exposing said adhesive surface as adhered to the back side of said trimmed covering material;

registering said wall plate to be covered over said exposed adhesive surface in face down relation and pressing said wall plate face against said adhesive using said marked positions for location; and

wrapping the surplusage of adhesive backed covering material around the edges of said wall plate in accord with said sizing and scoring for smooth adherence and clean lines around edges and openings whereby upon attaching said covering wall plate to its original position the covering material is in pattern registry with said wall covering the background.

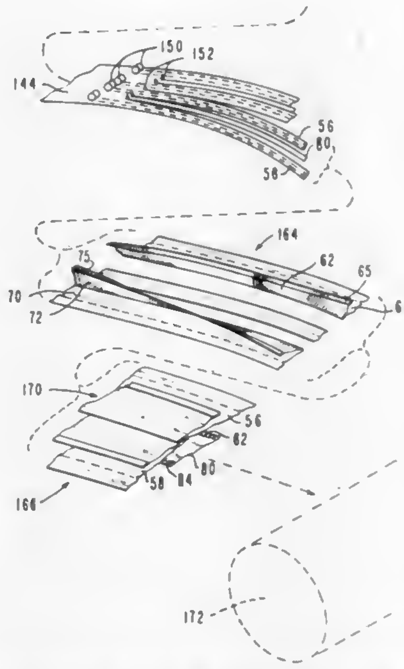
4,353,760
FORMING ARTICLES WITH SLIDE FASTENERS AND ATTACHED SEWING GUIDES

George B. Moertel, Conneautville, Pa., assignor to American Thread, Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,407

Int. Cl.³ A44B *19/42, 19/34*

U.S. Cl. 156—66 **14 Claims**



1. A method of forming slide fasteners with attached sewing guides comprising

coating a stock strip of paper with strips of adhesive and release material, the adhesive strips being suitable for adhering to tapes of a slide fastener and to an article to which the slide fastener is to be sewn,

forming pairs of member sections with folded article-holding flaps from the stock strip,

attaching the pairs of member sections to center strip sections to form composite sections,

punching perforations in the composite sections to form guide sections, and

attaching the guide sections by means of at least two of the strips of adhesive to tapes of a slide fastener.

4,353,761

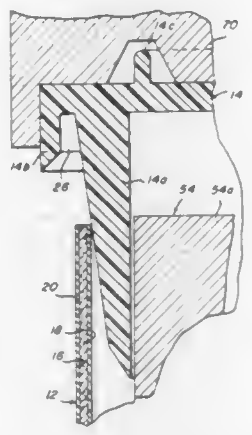
METHOD FOR SPIN BONDING ENDS FOR COMPOSITE CONTAINERS

Stephen E. Woerz, Florissant, and Travis K. Canup, Ferguson, both of Mo., assignors to Boise Cascade Corporation, Boise, Id.

Filed Jul. 30, 1981, Ser. No. 288,344

Int. Cl.^{3} B29C *27/08;* **B65B** *7/28*

U.S. Cl. 156—69 **3 Claims**



1. The method of spin bonding to one end of a vertically arranged tubular composite container body member an end closure member formed of thermoplastic synthetic plastic material, said body member including a fibrous body wall layer, an inner liner layer formed of a thermoplastic synthetic plastic material, and an outer label layer, said end closure member including opposite said body member annular inner fin and outer chime portions that are concentrically spaced to define an annular groove arranged to receive the adjacent extremity of said body member, said groove having side walls that converge in the direction of the bottom of the groove, which comprises the steps of

(a) flaring radially outwardly the extremity of the composite body member adjacent the end closure member;

(b) rotating one of the end closure and body members relative to the other, when said members are in spaced vertical alignment, at a rotational velocity sufficient to produce friction welding; and

(c) axially displacing said members together to wedge the flared extremity of said body member within said annular groove while simultaneously supporting the end closure fin portion against radial inward deflection.

4,353,762

METHOD AND APPARATUS FOR CONTINUOUSLY ATTACHING ELASTIC STRANDS TO DISPOSABLE ABSORBENT PRODUCTS

Francis J. Bouda, 13319 Centerville Rd., Cleveland, Wis. 53015

Filed Nov. 19, 1980, Ser. No. 208,222

Int. Cl.^{3} A61F *13/16;* **B32B** *31/08*

U.S. Cl. 156—164 **7 Claims**

1. A method for continuously attaching selected lengths of elastic ribbon to isolated portions of a moving, substantially inelastic web of inter-connected articles to impart an elasticized character to pre-determined isolated portions of said articles, while preserving the substantially inelastic character of said articles in areas where said ribbon is unattached to said web, said method comprising the steps of:

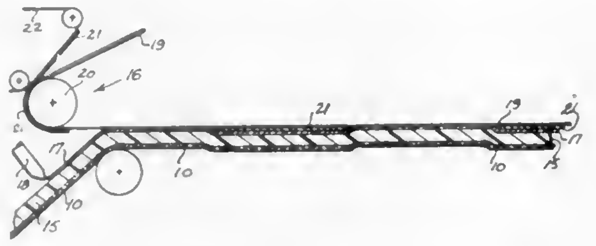
feeding an elastic ribbon to an assembly station in a stretched condition;

continuously applying an adhesive to said stretched elastic ribbon along the length of said ribbon while said stretched elastic ribbon is being fed to said assembly station;

feeding a web of inter-connected articles made with webs of substantially inelastic materials to said assembly station;

applying a release medium to spaced, intermittent portions of one of said substantially inelastic webs;

adhering the stretched, elastic strand to pre-determined, isolated portions of one of said webs in areas which do not have the release medium applied thereto;



maintaining said elastic ribbon in a stretched condition at least until said adhesive sets up;

cutting said elastic ribbon transversely in an area which is not adhered to said web, thereby forming severed, unadhered ends of elastic at both ends of each length of stretched, elastic ribbon adhered to said web;

and allowing the severed, unadhered ends of said elastic ribbon to relax and contract to their unstretched state, whereby said unadhered ends do not impart an elasticized character to said web, nor do they interfere with the functioning of the elasticized portion of the web to which the selected lengths of elastic ribbon are adhered.

4,353,763

METHOD FOR MAKING PIPES, PLATES OR CONTAINERS FROM PLASTIC MATERIAL

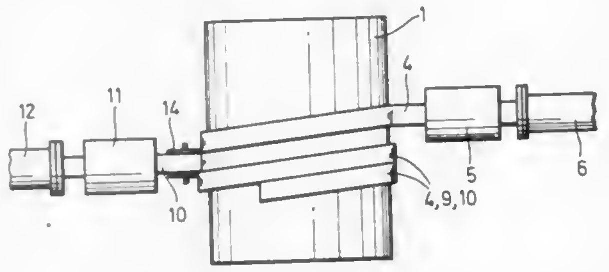
Günter Simons, Troisdorf, Fed. Rep. of Germany, assignor to Henze GmbH, Troisdorf-Oberlar, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,714

Claims priority, application Fed. Rep. of Germany, May 13, 1980, 3018194

Int. Cl.^{3} B65C *31/00*

U.S. Cl. 156—184 **6 Claims**



1. A process for producing a composite plastic tubular member of two or more plastic materials, said tubular member being leach and acid resistant and having inner and outer layers of different thermoplastic materials and an intermediate layer of a thermosetting resin, said process comprising the steps of:

(a) disposing a first layer of a thermoplastic material about a heated winding element for forming said inner layer, said first layer of thermo-plastic material being polyvinylidene fluoride;

(b) fusing overlapping adjacent edges of said first layer;

(c) disposing a second intermediate layer of a thermo setting resin about said inner layer of polyvinylidene;

(d) disposing a third outer layer of a thermoplastic material about said second layer, said third layer of thermoplastic material being polypropylene;

(e) fusing said outer layer of polypropylene to said first layer of polyvinylidene fluoride and said second layer of the thermosetting resin.

4,353,764

PROCESS OF FORMING PROFILES ESPECIALLY TUBULAR PROFILES

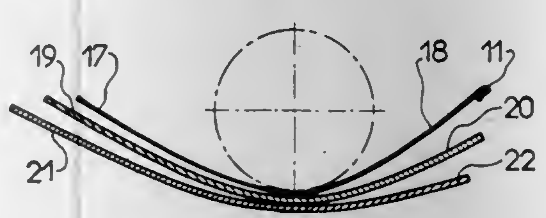
Georges Sireix, 9, Rue Saint-Marc, 68400 Riedisheim (Haut-Rhin), France

Filed Mar. 9, 1981, Ser. No. 241,529

Claims priority, application France, Mar. 11, 1980, 80 05684

Int. Cl.^{3} B29D *23/10*

U.S. Cl. 156—203 **7 Claims**



1. Process of forming a tubular profile by gluing together a plurality of bands of fibrous, cellulosic, metallic, plastic or other flexible material, comprising the steps of:

superposing a plurality of said bands, previously coated with adhesive on at least one face, with said bands offset laterally relative to one another so that their side edges are stepped,

initially bonding said superposed bands together only in an area of narrow width intermediate their side edges,

progressively bending said superposed bands into tubular form around a mandrel and concurrently progressively increasing the width of the area in which said bands are bonded while advancing said superposed bands in a lengthwise direction, the progressive bending of said bands and the lateral spreading of said area of bonding of said bands proceeding in a helicoidal manner until the area in which said bands are bonded has extended to lateral edges of said bands as said lateral edges are brought together, and

joining offset lateral edges of said superposed bands to complete the formation of said tubular profile.

4,353,765

PROCESS FOR MAKING SINGLE ORNAMENT STONES COATED WITH HEAT-ACTIVATED ADHESIVE

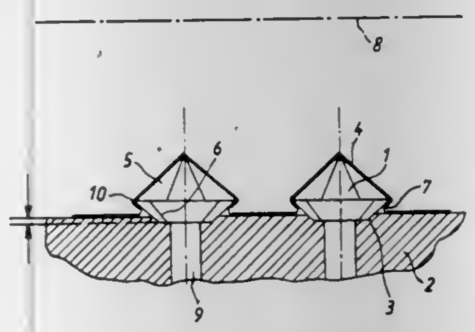
Christian Covi, Innsbruck, and Martin Pöll, Fritzens, both of Austria, assignors to D. Swarovski & Co., Osterreich, Fed. Rep. of Germany

Continuation of Ser. No. 102,623, Dec. 11, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 245,174

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855426

Int. Cl.^{3} B29C *17/04*

U.S. Cl. 156—212 **2 Claims**



1. In a process for making single ornament stones with a coating of heat-activated adhesive, including placing a plurality of ornament stones having opposed ornament and mounting faces in spaced apart hollows located on one side of a plate provided with means for applying a vacuum to the bottom area of the hollows with the ornament faces in the hollows, the mounting faces and ornament faces of each stone being divided by a periphery of maximum diameter that is greater than that diameter of the stones that lies in the plane including the apertured side of the plate when the stones are disposed in the hollows, the maximum diameter of each hollow on the side of the plate being smaller than the maximum diameter of the respective ornamental stone in the hollow, placing a sheet of heat-activated and softenable adhesive foil over the mounting faces of the ornament stones with the foil being disposed generally parallel to the plate; drawing the adhesive foil over the mounting faces of the stones towards the plate by applying a vacuum between the foil and the plate through the hollows while heating the foil to soften same to cause the foil to adhere to the stones, the improvement comprising:

drawing the foil over and around the periphery of maximum diameter of the stones by vacuum until the foil extends over and adheres to the mounting face and a portion of the ornamental face of each stone, the applied vacuum and heat being sufficient to cause stretching and thinning of the foil in the areas between the stones and the plate;

cooling the stones and foil to room temperature; and

separating individual stones with adhered foil from the unitary assembly of multiple stones and sheet of foil by severing the foil at the thinned areas.

4,353,766

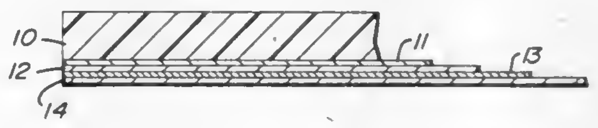
LIGHT AND HEAT REFLECTING SURFACE

Mahesh J. Dani, Newtown, Pa., assignor to Dunmore Corporation, Newtown, Pa.

Filed May 19, 1980, Ser. No. 150,932

Int. Cl.^{3} B44C *31/00;* **B32B** *31/00*

U.S. Cl. 156—233 **2 Claims**



1. The method of preparing glass window pane having thermally insulating and controlled light transmitting properties which comprises applying to one surface of the pane a coated plastic film having on the surface thereof successive layers of:

a release coating, an acrylic nitrocellulose lacquer,

and a vapor deposited aluminum coating over said lacquer, with said aluminum coating facing the glass surface; adhesively attaching the thus coated plastic film to the glass pane, and peeling the plastic film from the pane as the release layer; said aluminum coating being of such thickness as to transmit 10 to 80% of incident light through the pane after peeling the plastic film therefrom.

4,353,767

METHOD OF MANUFACTURING AN OPTICAL READING DISC

Richard L. Wilkinson, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

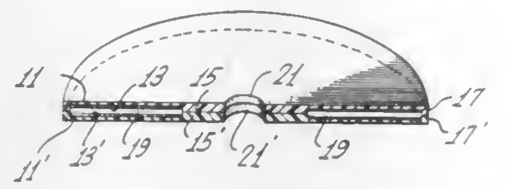
Continuation of Ser. No. 121,852, Feb. 15, 1980, abandoned, which is a division of Ser. No. 67,657, Aug. 20, 1979, Pat. No. 4,264,911. This application Jun. 19, 1981, Ser. No. 275,270

Int. Cl.^{3} B29C *19/00;* **C09J** *5/02*

U.S. Cl. 156—245 **5 Claims**

1. A method of making an optical recording disc, comprising the steps of:

molding two thin, disc-shaped members, each having an inner integral ring-shaped boss located at the center of the member and an outer integral ring-shaped boss concentric with said inner boss and located at the outer periphery of said member and projecting upwardly from a confronting side thereof and forming a shallow, annular recess therebetween wherein the inner and outer bosses of each member both have uniform thicknesses and planar upper surfaces parallel to the plane of the member, and wherein the two members are substantially identical in shape and at least one of the two members is transparent;



said step of molding including a step of forming a circular hole in the center of each of the two disc-shaped members, concentric with its inner and outer bosses;
coating the annular recess portion of one of the two disc-shaped members with a thin recording layer of light-sensitive material; and
bonding together the pair of disc-shaped members in a coaxial relationship, with their respective inner and outer bosses in abutment with each other, thereby producing the optical recording disc.

4,353,768
METHOD FOR CONSTRUCTING A LIGHTWEIGHT RESISTIVE SCREEN FOR UNDERWATER SOUND ABSORPTION

Jerome Goodman, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1981, Ser. No. 306,840
Int. Cl.^{3} B32B *3/12;* E04B *1/84*
U.S. Cl. 156—253 5 Claims

1. A method for preparing a resistive screen for underwater sound absorption consisting of a stiffening cell type structure, the method comprising adding a thermosetting type plastic material to the cells within said structure, wherein said structure's thickness is from about one-fourth inch to about one-half inch, heating said structure under pressure until said thermoplastic is rigid and forming small apertures within said plastic material by a method selected from the group consisting of laser irradiation, high velocity liquid droplets, neutron irradiation, and electrical spark discharge.

4,353,769
RADAR TRANSPARENT RIGID POLYURETHANE LAMINATE SYSTEMS FOR RADOMES

Henry J. Lee, 12 Knollwood Dr., Cherry Hill, N.J. 08002

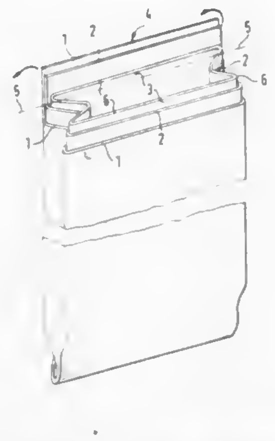
Filed Oct. 3, 1980, Ser. No. 193,859
Int. Cl.^{3} B32B *31/12*
U.S. Cl. 156—299 8 Claims

1. A method of fabricating a composite laminate with low dielectric constant and low loss tangent particularly useful in radomes, comprising:
heating a selected amount of 4,4-diphenyl methane diisocyanate to melt without polymerization;
mixing an effective amount of 2,4-toluene diisocyanate to form a mixture of selectively reactive diisocyanates;
adding to said mixture an effective amount of ethylene glycol to form a polymerized reaction product having an excess of isocyanate groups without cross-linking;
heating the reaction product for a controlled time and at a controlled temperature to increase the polymerization to form a polyurethane resin of proper viscosity for optimum wetting without cross-linking;
impregnating an effective amount of the resin in a plurality of plies of fibrous cloth to form a composite; and
curing the composite under a controlled temperature and pressure for a predetermined time to produce a rigid polyurethane laminate by allophanate formation.

4,353,770
METHOD FOR WELDING THE INNER LAYERS OF MULTI-LAYER PAPER SACKS

Gustav Kuckhermann, Achern, Fed. Rep. of Germany, assignor to Icoma Packtechnik GmbH, Achern, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,238
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951597; Dec. 6, 1980, 3046036
Int. Cl.^{3} C09J *5/02;* B31B *1/14;* B65D *33/02*
U.S. Cl. 156—308.4 5 Claims



1. A method for welding together the free edges of the inner layer of a multi-layer paper sack, wherein the sack is of the type consisting of front and back paper sheets the edges of which define two opposing outer faces, an open mouth extending transversely between the longitudinal side edges of said outer faces, and a closed bottom extending between the side edges of said outer faces in spaced relation to said open mouth, said sack further including a pair of inner sheets that are disposed in facing relation to one another between said front and back paper sheets, said inner sheets having transverse edges which are disposed adjacent the open mouth of the sack and comprising a heat weldable material adjacent at least said transverse edges, the outer face of said sack defined by said back paper sheet extending in a longitudinal direction relative to the bottom of the sack beyond said open mouth and beyond said transverse edges of said inner sheets to define a closure flap which normally overlies said transverse edges of said inner sheets, said method including the step of folding the closure flap portion of said back paper sheet away from said inner sheets along a fold line which extends in a transverse direction between the longitudinal side edges of the sack and which transverse fold line is located between the bottom of the sack and the said transverse edges of said inner sheets thereby to fully expose said transverse edges of said inner sheets, and, with the said closure flap in its said folded back position, thereafter applying heat directly to said exposed transverse edges of said pair of inner sheets thereby to weld together the inner surfaces of said inner sheets along a region which extends in a transverse direction across the inner layer of said sack.

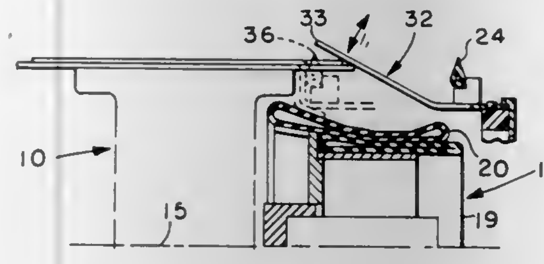
4,353,771
PLY DOWN ASSEMBLY FOR TIRE BUILDING MACHINE

Gerald J. Yuhas, Quincy, Ill., assignor to NRM Corporation, Akron, Ohio

Filed Dec. 8, 1980, Ser. No. 214,123
Int. Cl.^{3} B29H *17/22*
U.S. Cl. 156—403 22 Claims

1. A ply down assembly for a tire building machine comprising a metal L-shape ring including an axially extending leg, a plastic ring secured to said metal ring and including an axially extending surface cooperating with said axially extending leg,

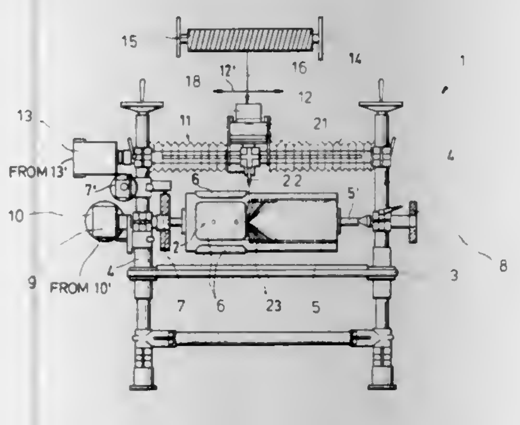
spring fingers secured between said leg and said surface, said ring including finger retaining means which permit removal or insertion of said fingers upon flexure of said fingers without disassembly of said plastic and metal rings.



4,353,772
APPARATUS FOR WINDING FORCE TRANSMITTING ELEMENTS OF FIBER REINFORCED MATERIALS

Josef Groeber, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,594
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005654
Int. Cl.^{3} B65H *81/00*
U.S. Cl. 156—433 4 Claims

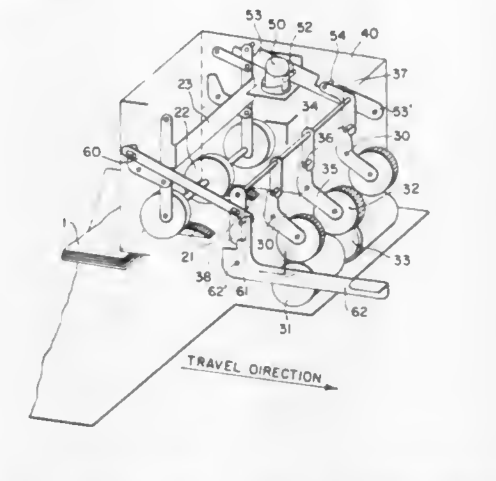


1. An apparatus for winding force transmitting elements having a given thickness and made of uni-directional fiber strands of a fiber reinforced material, comprising a machine frame, winding carrier means mounted for rotation on said machine frame, a plurality of winding cores distributed and arranged about the circumference of the winding carrier means, fiber strand supply means for supplying fiber strands to said plurality of winding cores, fiber strand impregnating means operatively arranged for impregnating a fiber strand on its way to said winding cores, said fiber strand supply means being mounted for translation on said machine frame, a plurality of fiber strand holding and guide elements (**23**) on said winding carrier means, first drive means for translating said fiber strand supply means relative to the machine frame and relative to the winding carrier means, second drive means for rotating said winding carrier means relative to the machine frame and relative to said fiber strand supply means, and wherein each winding core of said plurality of winding cores comprises an inner core member (**6**) secured to said winding carrier means, said inner core member having a thickness corresponding to said given thickness of the respective force transmitting element, and removable outer cover means (**25**) secured to said inner core member (**6**) on a side thereof facing away from said winding carrier means, whereby a winding space is defined between said cover means and said winding carrier means and by said inner core member therebetween, and control means operatively connected to said drive means for controlling the respective motion of the winding carrier means (**5**) and fiber strand supply means (**12**) relative to each other in such a manner that each winding on each winding core is formed as a closed loop from a single fiber strand in said winding space in a removable manner.

4,353,773
DEVICE FOR LIFTING LETTER FLAPS

Horst Denzin, Berlin, Fed. Rep. of Germany, assignor to Francotyp GmbH, Berlin, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,320
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948929
Int. Cl.^{3} B29H *9/00*
U.S. Cl. 156—442.1 4 Claims



1. Device for lifting letter flaps for moistening in letter feeding and/or letter sealing machines, comprising a device for separating letters from a stack having separators and eccentric wheels disposed below said separators, a transport cylinder following said separating device in transport direction of the letters and having a cut formed substantially in the middle thereof, first, second and third pressure rollers disposed above said transport cylinder, said first pressure roller being adjustably insertable into said cut for stiffening letters of different thicknesses by bending them in the longitudinal direction thereof in conjunction with said second and third pressure rollers and for lifting the letter flaps, a common lever arm being adjustable for raising and lowering said separators above said eccentric wheels and for raising and lowering said pressure rollers above said transport cylinder for letters of different thicknesses, and a knob having detent steps formed on the periphery thereof in spiral fashion for adjusting said lever arm.

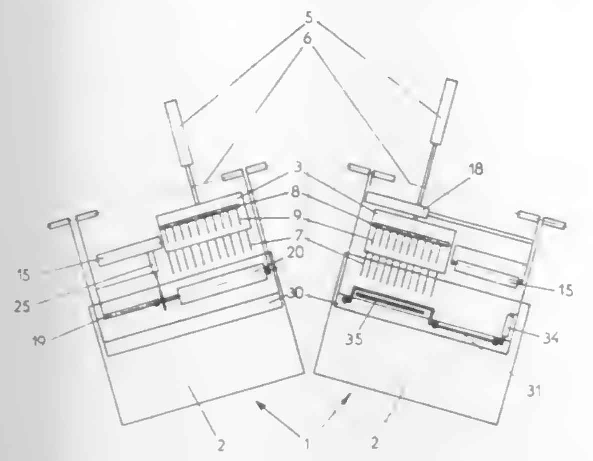
4,353,774
APPARATUS FOR FORMING TUCKS IN A PIECE OF MATERIAL AND FOR SECURING THOSE TUCKS BY A HEAT-SEALED REINFORCEMENT

Andre Zaehringer, Strasbourg-Meinau, France, assignor to Vestra-Union, S.A., Paris, France

Filed Feb. 3, 1981, Ser. No. 231,153
Claims priority, application France, Feb. 6, 1980, 80 02892
Int. Cl.^{3} B32B *31/20;* D05B *35/08*
U.S. Cl. 156—443 7 Claims

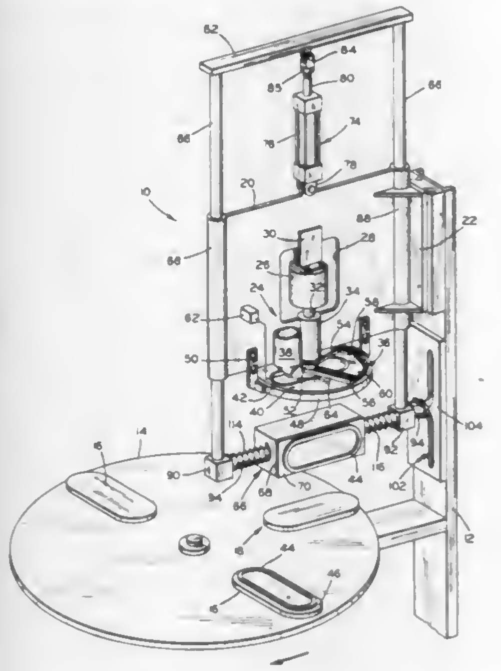
1. Apparatus for forming tucks in a piece of material and for securing said tucks by means of a heat-sealed reinforcement, comprising a flat work table, a lower set of spaced needles, an upper set of spaced needles, means for sliding said sets of needles endwise above the work table, means for moving the upper set of needles vertically relative to the lower set of needles to form tucks in a piece of flexible material disposed on the work table between said sets of needles, means for releasably securing said material to the work table, a double-faced heating plate having a first substantially flat face and a second face having a plurality of slots therein that have the same spacing as the lower set of needles, and means for moving said heating plate toward and away from said needles and for turning said heating plate so that one or the other of said faces thereof confronts said lower set of needles, whereby when a piece of said material is disposed between said sets of needles

and said needles are so positioned as to form tucks in the material and said heating plate is rotated so that said slots confront the material, and a heat-sealable reinforcement is disposed between said material and said heating plate and said heating plate is pressed against said heat-sealable reinforcement, said heat-sealable reinforcement will be bonded to said material in the regions of said first set of needles so as to bond said heat-sealable reinforcement to said material in spaced regions, and when said needles are withdrawn lengthwise from said tucks and said heating plate is rotated so that said substantially flat face confronts the material and said substantially flat face is moved toward and against said heat-sealable reinforcement to press said material against said work table, said material is bonded to said heat-sealable reinforcement between said spaced regions.



4,353,775
APPARATUS FOR APPLYING GASKET-FORMING MATERIAL TO WORKPIECES

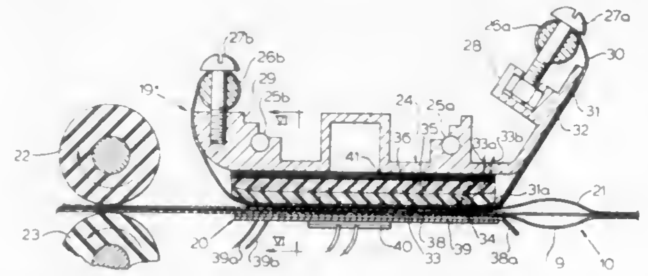
William A. Paul, 2338 Townley Rd., Toledo, Ohio 43614
Continuation-in-part of Ser. No. 90,466, Nov. 1, 1979, Pat. No. 4,273,607. This application Jun. 10, 1981, Ser. No. 272,115
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.
Int. Cl.^{3} B44C *1/00*
U.S. Cl. 156—540 16 Claims



1. Apparatus for applying a bead of gasket-forming material in a pattern of predetermined size and shape to a mateable surface of a workpiece, said apparatus comprising a source of gasket-forming material, a transfer member having a transfer surface conforming to the mateable surface of the workpiece to which the bead of gasket-forming material is to be applied, applicator means for applying gasket-forming material to said transfer surface of said member from said source in the shape of the bead to be applied to the mateable surface, means for supporting the workpiece, means for moving said transfer member toward and away from the workpiece and said applicator means, and cam means for moving said transfer member in an arcuate path between a position with the transfer surface adjacent the mateable surface of the workpiece when on said support and a position with the transfer surface adjacent said applicator means.

4,353,776
LAMINATING MACHINE WITH WRINKLE PREVENTION SYSTEM

Joseph D. Giulie, Palo Alto, Calif., and Michael K. Sabo, Glenview, Ill., assignors to General Binding Corporation, Northbrook, Ill.
Filed Dec. 18, 1980, Ser. No. 217,655
Int. Cl.^{3} B30B *15/34*
U.S. Cl. 156—555 20 Claims



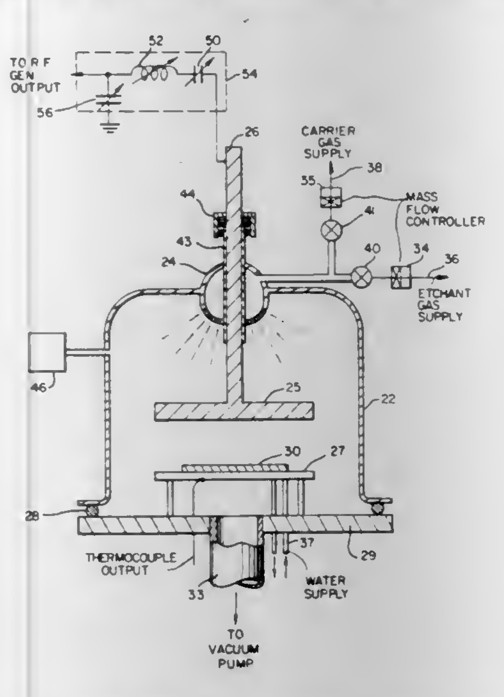
1. A laminating machine system, comprising:
a packet comprised of upper and lower heat reactivatible films on an object;
a heating and comrpession zone provided by upper and lower heater assemblies, at least one of which is movable to directly compress and laminate the film on the object during heating;
means for moving the object and film through the heating and compression zone in a feed direction between the heater assemblies;
at least one of said heater assemblies having means for creating a substantially constant pressure profile formed of increased pressure on a central portion of the top and bottom films upon entry into and throughout movement of the entire packet through the heating and compression zone so as to prevent wrinkling or creasing of the film during laminating by creating a wave front which causes the film to spread out evenly during passage through the heating and compression zone; and
said means for creating increased pressure comprising a tapering member positioned on the one heater assembly for contacting the top or bottom film, said tapering member having a decreasing thickness from a central portion outwardly in a direction perpendicular to the feed direction.

4,353,777
SELECTIVE PLASMA POLYSILICON ETCHING

Adir Jacob, Framingham, Mass., assignor to LFE Corporation, Clinton, Mass.
Filed Apr. 20, 1981, Ser. No. 255,495
Int. Cl.^{3} H01L *21/306*
U.S. Cl. 156—643 6 Claims

1. Process for selectively etching polysilicon material comprising the steps of:
(a) placing polysilicon material within a reactor chamber, and

(b) exposing said polysilicon material within the chamber to a gas plasma at a pressure between 50 and 150 microns Hg for etching, wherein said gas plasma consists essentially of RF discharge $CFCl_3$.



4,353,778
METHOD OF ETCHING POLYIMIDE

Jonathan P. Fineman, Alburg, and Leonard A. Kieny, Jr., Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 4, 1981, Ser. No. 299,370
Int. Cl.^{3} B29C *17/08;* C03C *15/00, 25/06*
U.S. Cl. 156—644 6 Claims

1. A method of etching an opening in polyimide material wherein the polymide material is provided in a sufficiently uncured condition to permit etching by a basic etchant, and wherein a selected location of the uncured polyimide is exposed for etching the opening, the improvement comprising:
etching said polyimide at the desired location with a basic reagent to provide the opening in the polyimide,
some of said etchant being absorbed by a layer of polyimide material surrounding said opening but remaining in place,
curing the polyimide to a sufficient extent to prevent any etching of the polyimide free of absorbed etchant, and
etching the exposed location a second time with a basic reagent and remove the layer of polyimide having absorbed etchant, whereby the material surrounding the opening after the second etch is rednered free of absorbed etchant.

4,353,779
WET CHEMICAL ETCHING OF III/V SEMICONDUCTOR MATERIAL WITHOUT GAS EVOLUTION

John X. Przybysz, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Aug. 14, 1981, Ser. No. 292,977
Int. Cl.^{3} H01L *21/312*
U.S. Cl. 156—659.1 10 Claims

7. A method of etching a III/V semiconductor material comprising the steps of:
(A) applying a photo-resist mask on the body of the semiconductor material in a predetermined, and pattern
(B) applying to the semiconductor material an etching solution consisting essentially of: 20 vol.% to 90 vol.% of phosphoric acid solution; 15 vol.% to 80 vol.% of hydrogen peroxide solution; 0 vol.% to 60 vol.% of water; and an amount of fluorine ion effective to provide at least 0.01 mole of fluorine ion per liter of solution, said etching solution having a pH of between about 0.5 and 4, to etch the unmasked portion of the semiconductor without evolving a gaseous product.

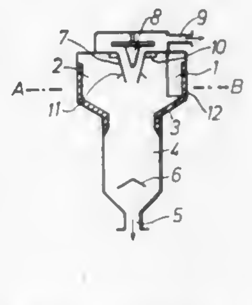
4,353,780
CHEMICAL MILLING OF HIGH TUNGSTEN CONTENT SUPERALLOYS

Robert E. Fishter, Boca Raton; Henry Lada, and Brian A. Manty, both of Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 1, 1980, Ser. No. 192,667
Int. Cl.^{3} C23F *1/00;* C09K *13/08*
U.S. Cl. 156—664 5 Claims

1. The method of chemical milling a superalloy having a base metal selected from the group consisting of nickel and cobalt, and a tungsten content of greater than 6 weight percent, which comprises the use of the etchant consisting essentially by volume percent of 40–60 concentrated HNO_3, 0.3–0.8 concentrated HF, and 30–70 H_2O, together with at least 0.008 moles/liter $CuSO_4$ and 0.0016–0.025 moles/liter $FeCl_3$.

4,353,781
DEVICE AND PROCESS FOR COOLING LIQUIDS CONTAINING SOLIDS

Edgar Muschelknautz, Leverkusen, and Rudolf Juse, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Erdolchemie Gesellschaft, Cologne, both of, Fed. Rep. of Germany
Division of Ser. No. 886,495, Mar. 14, 1978, Pat. No. 4,219,380, which is a continuation of Ser. No. 775,212, Mar. 7, 1977, abandoned, which is a continuation of Ser. No. 681,923, Apr. 30, 1976, abandoned, which is a continuation of Ser. No. 506,626, Sep. 16, 1974, abandoned. This application Aug. 15, 1979, Ser. No. 66,737
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1973, 2361236
Int. Cl.^{3} B01D *1/00*
U.S. Cl. 159—2 R 12 Claims



1. A cyclone for the flash evaporation of liquids-containing solids which consists essentially of an inlet chamber, a separating part, a feed delivery pipe axially opening into a suddenly enlarged opening of the inlet chamber and wherein the cross-section of the inlet chamber is 5 to 30 times greater than that of the feed delivery pipe, wherein the inlet chamber is tangentially attached to said separating part and said separating part comprises a ring chamber to which said inlet chamber is connected and below which there is a separating cylinder of

smaller diameter, said separating chamber having therebeneath a funnel-shaped member, said separating part having an inverted conical surface connecting said ring chamber and said separating cylinder, said inlet chamber before opening into the ring chamber being continuously reduced in width and continuously increased in height.

4,353,782

METHOD OF SOLID-STATE PYROLYSIS OF ORGANIC POLYMERIC SUBSTANCES

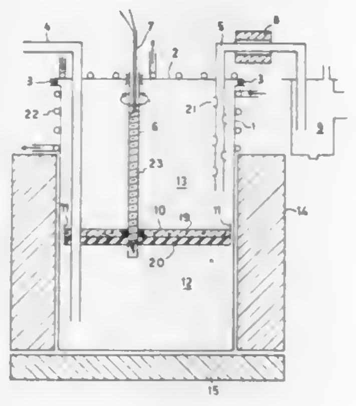
Bernhard Lersmacher, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 82,395, Oct. 5, 1979, Pat. No. 4,287,025. This application May 1, 1981, Ser. No. 259,711

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843676

Int. Cl.^{3} C01B *31/02;* C10B *47/16, 53/00*

U.S. Cl. 201—25 **1 Claim**



1. In the method of converting natural and synthetic organic polymeric substances into vitreous carbon by solid-state pyrolysis by heating said polymeric substances under given temperature/time conditions in a non-oxidizing atmosphere in a reaction vessel the improvement wherein the reaction vessel is divided into a lower part and an upper part, the polymeric substance is positioned in the lower part and is heated under quasi-isothermal conditions, and the atmosphere, in the upper part of the reaction vessel, is heated in a manner so as to provide a temperature that decreases in the upward direction and the volatile decomposition products formed during the pyrolysis are condensed and evaporated again in the upper part of the reaction vessel.

4,353,783

PROCESS FOR SEPARATING WATER FROM MIXTURES THEREOF WITH VINYL ACETATE AND ACETIC ACID

Günter Roscher, Kelkheim; Karl-Heinz Schmidt, Idstein; Horst Langner, Hattersheim am Main; Hermann Neu, Neu-Isenburg; Aladar Lienerth, Kelkheim; Dominik Dempf, Mehring-Öd, and Klaus Kaiser, Burghausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

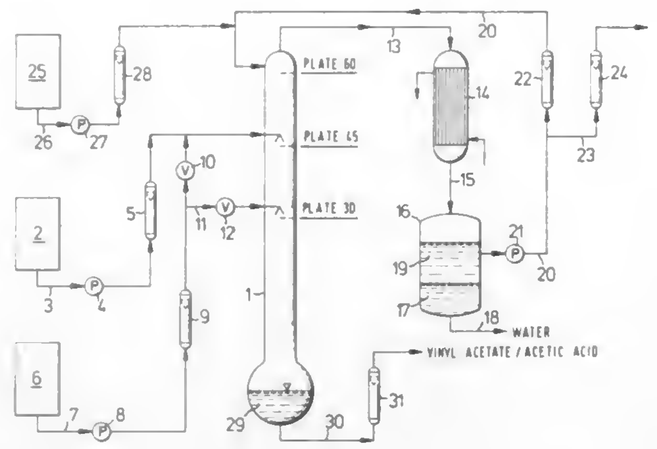
Filed Oct. 29, 1980, Ser. No. 201,752

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943985

Int. Cl.^{3} B01D *3/36*

U.S. Cl. 203—14 **2 Claims**

1. In a method for the manufacture of vinyl acetate by gaseous phase reaction of ethylene with acetic acid and oxygen in the presence of a catalyst containing palladium, or compounds thereof, to form a gaseous mixture of acetic acid, vinyl acetate, water, carbon dioxide and ethylene as main components wherein said gaseous mixture is condensed to form a condensate containing the major amount of acetic acid, vinyl acetate and water present in said gaseous mixture and absorbing the residual amount of vinyl acetate and water in said gaseous mixture in acetic acid to form an acetic acid solution, the method which comprises feeding separately the condensate and the acetic acid solution to a separation column containing 50 to 80 trays said condensate being fed thereto at a point located 4 to 30 trays above that point at which said acetic acid solution is fed to said column, forming a distillate of water in the overhead stream as an azeotrope with vinyl acetate which distillate forms a water and a vinyl acetate phase and removing the water phase therefrom.



4,353,784

METHOD OF RECOVERY OF ACETIC ACID

Kunio Koga, Ohimachi, and Ryoichi Kishimoto, Sakai, both of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Sep. 21, 1981, Ser. No. 304,145

Int. Cl.^{3} B01D *11/04;* C07C *51/44, 51/48*

U.S. Cl. 203—16 **13 Claims**

1. A method of recovering acetic acid by extracting an acetic acid-containing aqueous solution with an organic extracting agent and subjecting the extract to distillation, said method comprising the first step of performing extraction by using a tertiary amine having a boiling point higher than that of acetic acid and being capable of forming a non-aqueous phase as the organic extracting agent in combination with an oxygen-containing, high-boiling-point organic solvent selected from the group consisting of di-isobutyl carbinol, isophorone, methyl benzoate, tributyl phosphate, 3,3,5-trimethylcyclohexanone and 2-ethoxyethyl acetate, the second step of performing dehydration by subjecting the extract to distillation, and the third step of subjecting the dehydrated mixture to distillation in a reduced pressure distillation column at a column bottom temperature of 120° to 170° C. to distill acetic acid and separate it from the organic extracting agent.

4,353,785

METHOD OF AND APPARATUS FOR WIRE-CUT MACHINING WORKPIECES OF NON-PLANAR SURFACE CONTOURS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Sep. 13, 1979, Ser. No. 75,231

Claims priority, application Japan, Sep. 26, 1978, 53/118458

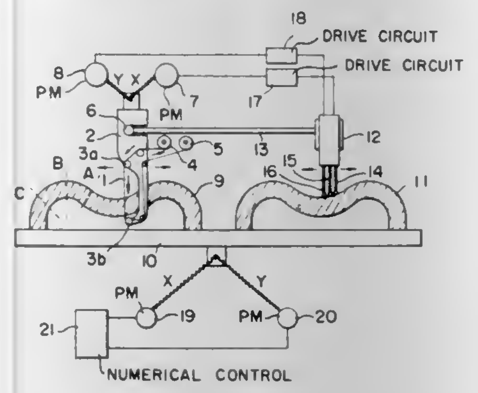
Int. Cl.^{3} B23P *1/00, 1/12*

U.S. Cl. 204—129.2 **10 Claims**

1. A method of the wire-cut machining of a workpiece having a non-planar surface contour with a thin, continuous elongate tool traveling between a pair of tool-positioning and machining guide members from a supply side to a take-up side and adapted to traverse, between said guide members and through said workpiece, the workpiece transversely to said surface contour, the method comprising the steps of:

sensing an imaginary plane which is tangent to said surface contour of the workpiece at any point thereon to be successively substantially intersected by the axis of said traveling elongate tool;

automatically, in response to the sensing of said imaginary plane of said surface contour, orienting the axis of said traveling elongate tool traversing the workpiece at a predetermined angle relative to said imaginary tangential plane substantially at said point; and



automatically maintaining substantially said predetermined orientation of the traveling elongate tool traversing said workpiece relative to said surface contour, in spite of change in the tangential plane from point to point relative to a fixed plane, throughout a substantial portion of the entire machining operation.

4,353,786

ELECTROLYTIC SILVER TARNISH REMOVAL METHOD

Jan de Jager, DE Meern, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 22, 1981, Ser. No. 276,390

Int. Cl.^{3} C25F *1/00*

U.S. Cl. 204—144 **5 Claims**

1. A method of removing silver sulfide from silver articles comprising forming a solution comprising 1.4 to 5.0% of sodium carbonate, 0 to 3.0% of a nonionic surfactant and water; the solution having a pH of greater than 10; contacting the solution with an aluminum anode; and contacting the silver articles to be cleaned with both the anode and the solution to form an electrolyte cell; the improvement which comprises incorporating from 0.6 to 2.5% by weight of sodium sulfite into the solution.

4,353,787

PHOTO CURABLE POLYESTER WITH BENZOYL OXIME CARBONATE, PHOTO REDUCIBLE DYE (EOSIN), AND A BENZYL AMINE

Ian J. Alexander, and Roger J. Scott, both of Wellingborough, England, assignors to Scott Bader Company Limited, Northamptonshire, England

Continuation of Ser. No. 107,779, Dec. 28, 1979, abandoned. This application May 21, 1981, Ser. No. 265,916

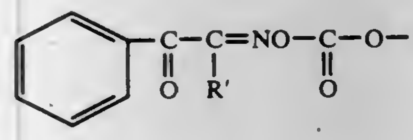
Claims priority, application United Kingdom, Jan. 11, 1979, 7901117

Int. Cl.^{3} C08F *2/46;* C08L *67/06*

U.S. Cl. 204—159.15 **21 Claims**

1. A visible-light curable unsaturated polyester resin composition comprising

(a) at least one benzoyl oxime carbonate ester of the formula



wherein R′ and R″ are members of the group consisting of alkyl, aryl and aralkyl; and

(b) at least one photo-reducible dye; and

(c) at least one N,N-disubstituted benzylamine reducing agent.

4,353,788

RF SPUTTERING FOR PREPARING SUBSTANTIALLY PURE AMORPHOUS SILICON MONOHYDRIDE

Frank R. Jeffrey, and Howard R. Shanks, both of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 26, 1980, Ser. No. 181,410

Int. Cl.^{3} C23C *15/00*

U.S. Cl. 204—192 S **6 Claims**

1. A process for producing substantially pure amorphous silicon monohydride by reactive rf sputtering of a silicon target, comprising providing a chamber with an amorphous silicon target and a substrate therein, positioning said substrate and said target such that the adjacent edges of the substrate and the target are within about 2 cm, providing a partial pressure of hydrogen of at least 10^{-3} torr to said chamber, providing argon to said chamber, reducing the pressure in said chamber to a value sufficient to maintain a sputtering plasma therein, and applying rf power to the silicon target to provide a power density of not less than about 15 watts per square inch to sputter substantially pure amorphous silicon monohydride onto said substrate while maintaining said partial pressure of hydrogen.

4,353,789

GAS-LIQUID ANALYZER

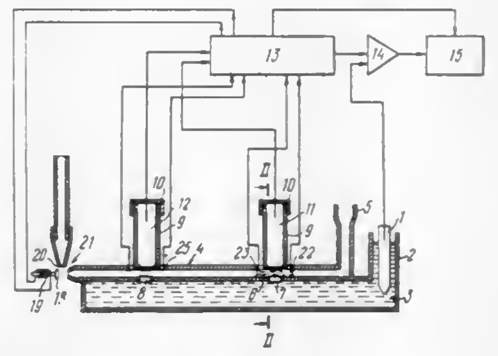
Chingiz M. O. Kashkai, ulitsa Azizbekova, 8, kv. 6, Baku, U.S.S.R.

Filed Jun. 23, 1981, Ser. No. 276,591

Claims priority, application U.S.S.R., Feb. 5, 1981, 2965818

Int. Cl.^{3} G01N *27/28, 27/30*

U.S. Cl. 204—195 R **9 Claims**



1. A gas-liquid analyzer comprising:

a bath;

electrolyte filling up said bath;

a reference electrode immersed in said electrolyte;

a potentiometer having first and second inputs and outputs, the first input thereof being connected to said reference electrode;

a switching unit having a first group of inputs, a second group of inputs, first, second, third and fourth outputs, said first output thereof being connected to said second input of said potentiometer;

a potential corrector having first and second inputs, said first and second inputs thereof being connected with said output of said potentiometer and said second output of said switching unit, respectively;

a sample conveying assembly;

a capillary tube of said sample conveying assembly having a wall, an inlet end, and an outlet end, the capillary tube being arranged to overlie said bath; the capillary tube further comprising first and second rows of openings arranged in opposition in said wall;

a group of porous inserts of said sample conveying assembly located in said openings of said first row of openings and adapted to intimately contact said electrolyte;

a sample displacement means of said sample conveying assembly, the sample displacement means being disposed in close proximity to said outlet end of said capillary tube and connected with said third and fourth outputs of said switching unit;

a group of ion-selective electrodes equal in number to the number of said porous inserts and hermetically secured in said openings of said second row of openings, each of the electrodes being connected to one of said inputs of said first group of inputs of said switching unit;

said sample under analysis which is introduced into said inlet end of said capillary tube adapted during displacement thereof to alternately contact with one of said ion-selective electrodes and one of said porous inserts positioned to face such ion-selective electrode.

4,353,790

INSOLUBLE ANODE FOR GENERATING OXYGEN AND PROCESS FOR PRODUCING THE SAME

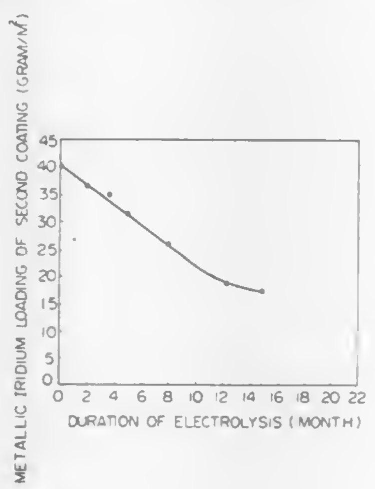
Hideo Kanai; Akihiro Shinagawa, both of Maebashi; Takahiko Yamazaki, Shibukawa, and Reiichi Itai, Maebashi, all of Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,290

Claims priority, application Japan, Feb. 20, 1980, 55-19904

Int. Cl.^{3} C25B *11/08, 11/10;* **B05D** *5/12*

U.S. Cl. 204—290 F **8 Claims**



1. An insoluble anode for generating oxygen which comprises a substrate made of titanium or an alloy thereof, a first coating on said substrate which is made of metallic bismuth or bismuth oxides and a second coating on said first coating layer which is made of metallic iridium and iridium dioxide, said second coating containing 5 to 50 mol% of metallic iridium.

4,353,791

HYDROTREATING CATALYST AND LIQUEFACTION OF COAL

Regis J. Pellet, Tarrytown, N.Y., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 27, 1981, Ser. No. 238,936

Int. Cl.^{3} C10G *1/06*

U.S. Cl. 208—10 **6 Claims**

1. In the process of the hydroconversion of coal solids to liquid and gaseous products comprising contacting the coal solids, gas containing molecular hydrogen and catalyst solids in a fuel reaction zone at elevated temperatures and pressures at which a major portion of said coal solids undergo hydroconversion to gaseous and liquid products, the improvement comprising using a hydrotreating catalyst composition comprising particles of Component A consisting essentially of at least one Group VIB metal component supported on refractory inorganic oxide and particles of Component B consisting essentially of either cobalt and/or nickel component supported on refractory inorganic oxide.

4,353,792

PROCESS TO UPGRADE COAL LIQUIDS BY EXTRACTION PRIOR TO HYDRODENITROGENATION

Abraham Schneider, Overbrook Hills, Pa.; Elmer J. Hollstein, Wilmington, Del.; Edward J. Janoski, Havertown, and Edward G. Scheibel, Media, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Feb. 1, 1980, Ser. No. 117,596

Int. Cl.^{3} C10G *17/00, 45/00;* **B07B** *1/34*

U.S. Cl. 208—254 H **6 Claims**

1. In a catalytic hydrodenitrogenation treatment for conversion of nitrogen compounds contained in a coal liquid to hydrocarbons and ammonia, thereby to reduce the nitrogen level of the coal liquid prior to subsequent processing such as hydrocracking or catalytic cracking, the improvement which comprises, prior to the hydrodenitrogenation, removing oxygen and other compounds contained in the coal liquid, thereby to obtain a greater removal rate of the nitrogen compounds in the hydrodenitrogenation than that obtained in hydrodenitrogenation of the coal liquid without prior removal of said compounds, said removal comprising extracting the coal liquid with an extractant selected from aqueous methanol or a mixture of a dialkylformamide and a paraffinic hydrocarbon.

4,353,793

METHOD FOR REMOVING POLYHALOGENATED HYDROCARBONS FROM NONPOLAR ORGANIC SOLVENT SOLUTIONS

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,760

Int. Cl.^{3} C07C *7/10;* **C10G** *19/02, 21/16*

U.S. Cl. 208—262 **6 Claims**

1. A method of treating a PCB contaminated solution of a substantially inert organic solvent having a concentration of polyhalogenated aromatic hydrocarbon at up to 1% by weight to reduce the polyhalogenated aromatic hydrocarbon concentration to less than 50 ppm, which comprises, agitating a mixture at a temperature of 25° C. to 200° C. comprising such substantially inert organic solvent solution of polyhalogenated aromatic hydrocarbon, monocapped-polyalkyleneglycol alkyl ether and alkali metal hydroxide for a time which is at least sufficient to effect the minimum aforedescribed reduction in concentration of the polyhalogenated aromatic hydrocarbon in the agitated mixture which comprises by weight,

(A) up to 1% of polyhalogenated aromatic hydrocarbon,

(B) about 0.1 to 10% of monocapped-polyalkyleneglycol alkyl ether,

(C) about 0.1 to 10% of alkali metal hydroxide, and

(D) about 80 to 99.8% of substantially inert organic solvent,

where the sum of (A)+(B)+(C)+(D) is equal to 100%.

4,353,794

PROCESS FOR THE SOLVENT EXTRACTION OF AROMATICS AND THE RECOVERY OF AN AROMATICS-FREE NON-AROMATIC PRODUCT FROM A HYDROCARBON FEEDSTOCK

George R. Winter, III, Mt. Prospect; William H. Maier, Hoffman Estates, and K. N. Srinivas Prabhu, Arlington Heights, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 26, 1980, Ser. No. 210,633

Int. Cl.^{3} C10G *21/00, 21/06, 21/28*

U.S. Cl. 208—321 **6 Claims**

1. A process for the solvent extraction of aromatic hydrocarbons from a mixture thereof with non-aromatic hydrocarbons and the recovery of a non-aromatic hydrocarbon fraction substantially free of aromatic hydrocarbons, which comprises the steps of:

(a) treating said mixture in a first extraction zone in contact with a water-soluble, aromatics-selective solvent at conditions to provide an aromatics-rich solvent stream and a first raffinate stream comprising non-aromatic hydrocarbons and residual solvent;

(b) treating said aromatics-rich solvent stream in a first separation zone at conditions to separate substantially all of the residual non-aromatic hydrocarbons retained therein;

(c) treating the resulting aromatics-rich solvent stream in a first solvent recovery zone in contact with stripping steam at conditions to provide a high purity aromatics stream and a lean solvent stream;

(d) recycling a major portion of said lean solvent stream to said first extraction zone, and recovering said high purity aromatics stream;

(e) treating a minor portion of said lean solvent stream in a second solvent recovery zone in contact with stripping steam at conditions to provide a lean solvent stream substantially free of residual aromatics for use in accordance with step (h);

(f) treating the raffinate stream recovered from said first extraction zone in a second separation zone at conditions to provide a bottoms fraction comprising the higher boiling non-aromatic components and residual solvent as a second raffinate stream, and an overhead fraction comprising the lower boiling non-aromatic component as a third raffinate stream;

(g) treating said second raffinate stream in contact with an aqueous stream in a second water-wash zone at conditions to separate a solvent-containing aqueous stream and recover said second raffinate stream substantially solvent-free;

(h) treating said third raffinate stream in a second extraction zone in contact with the lean solvent stream provided pursuant to step (e) at conditions to extract residual aromatic hydrocarbons contained therein; and,

(i) treating the resulting raffinate stream in contact with an aqueous stream in a first water-wash zone at conditions to separate a solvent-containing aqueous stream and recover said third raffinate stream substantially free of aromatic hydrocarbons.

4,353,795

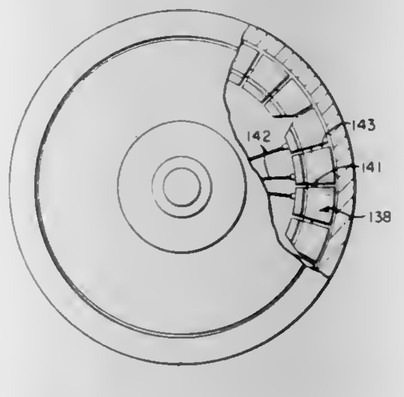
FIELD FLOW FRACTIONATION CHANNEL

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1981, Ser. No. 249,963

Int. Cl.^{3} B03B *5/62*

U.S. Cl. 209—155 **10 Claims**



1. In an apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein:

said channel comprises an outer support ring and a continuous inner channel ring mating with said support ring to define said channel,

said channel ring having a tension modulus capable of following centrifugally induced expansions of said support ring, and

means to load said channel ring to follow said expansion.

4,353,796

APPARATUS FOR DIGGING AND TRANSPORTING SOIL AND SAND, STONES AND ROCKS, MINERALS AND THE LIKE

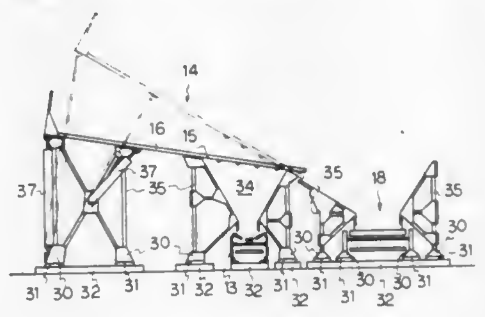
Masaaki Kubo, Musashino; Yasutaka Onodera, Kawaguchi; Hiroshi Kawaguchi, Tokyo, and Masaharu Sibata, Kawaguchi, all of Japan, assignors to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 925,606, Jul. 17, 1978, Pat. No. 4,261,119. This application Oct. 10, 1980, Ser. No. 195,954

Claims priority, application Japan, Jul. 22, 1977, 52/87303

Int. Cl.^{3} B07B *1/00*

U.S. Cl. 209—240 **6 Claims**



1. Apparatus for transporting soil and sand, rocks and stones, minerals or the like dug by a dragline, said apparatus including a hopper means straddling a conveyor means for transferring the material dug, said hopper means comprising a pair of opposed side walls extending parallel to the longitudinal axis of said conveyor means, the walls defining an upper opening for receiving the material dug and sloping downwardly inwardly toward the conveyor means to form therebetween a lower discharge opening through which the dug materials are deposited onto the conveyor means;

a pair of opposed end walls extending transversely to the length of the conveyor means;

a sieve means extending across said upper opening for separating relatively large masses from said dug material;

a dug material receiving solid plate forming a part of said opposed side wall to define said upper opening for receiving the material dug, said solid plate being associated with said sieve means and adapted to slope down the dug material and transfer it to the sieve means;

and support means for supporting at least said side walls, said support means including fixing legs provided with jack support portions for supporting jacks operable to lift said fixing legs, a wheel being rotatably mounted to each of said fixing legs, whereby when said hopper means is shifted to another location along said conveyor means said jacks are actuated to lift said fixing legs and said wheels are brought into contact with rails to ride therealong, and during the loading of said dug material into the hopper means said jacks are deenergized to lower the bottoms of said fixing legs into contact with the ground while said wheels are disengaged from the rails.

4,353,797

DEVICE FOR PURIFYING LIQUIDS, PARTICULARLY WATER

Andre Verbandt, 130, Parmentierlaan, Knokke, Belgium

Filed Mar. 5, 1981, Ser. No. 240,975

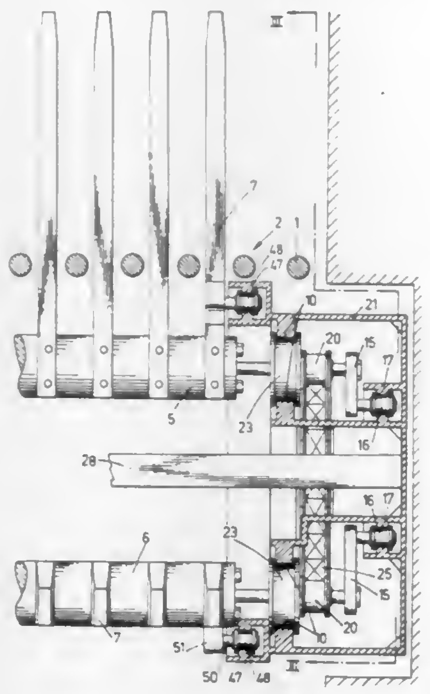
Claims priority, application Belgium, Mar. 13, 1980, 199787

Int. Cl.^{3} B01D *35/16*

U.S. Cl. 210—159 **13 Claims**

1. Device for purifying liquids, more particularly water, with a grate comprised of bars in parallel relationship with one another which can be arranged cross-wise in a liquid stream,

with the grate top portion projecting out of said liquid up to a discharge chute or similar, wherein on the back side of the grate bars is mounted at least one toothed beam which extends substantially in parallel relationship with said grate at right angle to the lengthwise direction of the grate bars, and which is drivably led in said lengthwise direction substantially over the whole grate height in a closed circle with a rising run and a falling run, in such a way that the teeth project through the grate bars during the rising run, and on at least one end of said beam lever means are provided with at least two discrete bearings, at least the one bearing lying outside the beam rotation axis, said bearings moving in two different guideways, said ways each having two approximately straight portions substantially in parallel relationship with said grate and two arc-shaped portions connecting said straight portions together to form two closed continuous ways, said guideways being so arranged relative to one another that the teeth undergo at the beginning of said falling run, a backwards swinging to an inoperative position over at least some determined distance of said falling run to then at the transition from the falling run to the rising run, and undergo a further swinging from said inoperative position in the same direction to an operative position wherein said teeth project anew during the rising run through said grate, whereby during said rising run, the one bearing leads relative to the other bearing and the conditions are reversed during the falling run, in such a way that said reversal occurs on the arc-shaped portions of said guideways, and antijamming means for always moving both bearings together in the balk translation direction to prevent jamming of said bearing during both said tooth swingings as said bearing moves in said closed circle.



4,353,798

APPARATUS FOR REMOVING POLYCHLORINATED BIPHENYLS FROM CONTAMINATED TRANSFORMER DIELECTRIC LIQUID

Stephen D. Foss, Pittsfield, Mass., assignor to General Electric Company

Division of Ser. No. 151,152, May 19, 1980, Pat. No. 4,299,704. This application Jun. 1, 1981, Ser. No. 268,976

Int. Cl.^{3} B01D *21/00*

U.S. Cl. 210—181 **2 Claims**

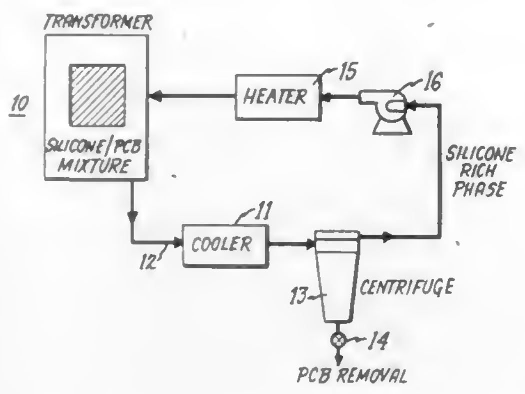
1. A system for removing polychlorinated biphenyl (PCB) from a silicone dielectric fluid contained in a power transformer tank, said system comprising, in combination:

a separator tank;

conduit for conveying silicone dielectric fluid from the transformer tank for introduction into the upper portion of said separator tank;

a valve for controlling the flow of silicone dielectric fluid from the transformer tank into said separator tank;

means physically associated with one of said conduit and said separator tank for cooling the silicone dielectric fluid, whereby to reduce the solubility of PCB in silicone dielectric fluid and thus create in said separator tank a two-phase system consisting of a silicone rich mixture and a PCB rich mixture, said PCB rich mixture settling to the lower portion of said separator tank due to the higher specific gravity of PCB relative to silicone dielectric fluid;



valved outlet in the bottom of said separator tank for controllably removing said PCB rich mixture;

fluid handling means including conduit and a pump for conveying said silicone rich mixture from said separator tank back into the transformer tank; and

a heater physically associated with said fluid handling means for heating said silicone rich mixture up to the approximate temperature of the silicone dielectric fluid contained in the transformer tank.

4,353,799

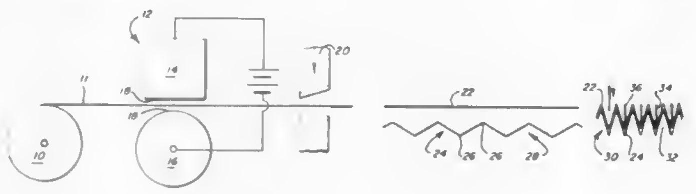
HYDROPHOBIC DIFFUSION MEMBRANES FOR BLOOD HAVING WETTABLE SURFACES

Ronald J. Leonard, Harvard, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 687,590, May 19, 1976, abandoned. This application May 1, 1978, Ser. No. 901,945

Int. Cl.^{3} B01D *31/00*

U.S. Cl. 210—321.3 **31 Claims**



10. In a diffusion device for blood which comprises membrane support means overlaid with a diffusion membrane comprising hydrophobic material, said diffusion device defining a first flow path for one fluid along one side of the diffusion membrane, and a second flow path for another fluid along the other side of the diffusion membrane, the improvement comprising: said hydrophobic diffusion membrane defining a large number of pores of no more than five microns in diameter, and a corona discharge-created, hydrophilic outer surface exhibiting a surface tension of at least 50 dynes/cm., whereby said membrane exhibits less platelet attachment in contact with blood, when compared with a corresponding, hydrophobic diffusion membrane which has not been treated with a corona discharge.

4,353,800

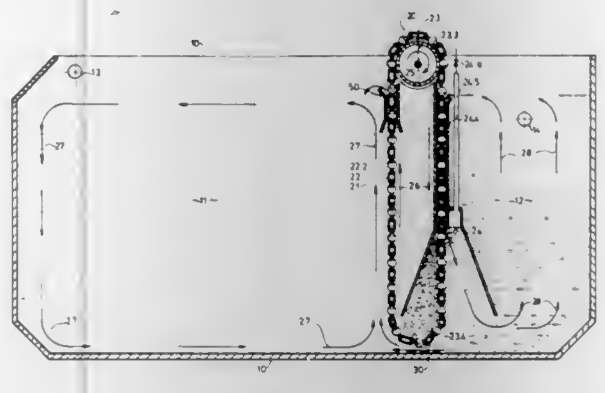
METHOD AND AN APPARATUS FOR BIOLOGICAL TREATMENT OF WASTE WATERS

Ferdinand Besik, 3243 Chokecherry Crs., Mississauga, Ontario, Canada (L5L 1B1)

Filed Aug. 25, 1980, Ser. No. 181,136

Int. Cl.^{3} C02F *3/08*

U.S. Cl. 210—605 **23 Claims**



1. A method for treating waste waters comprising

mixing the content of a single reaction tank by single aerating means in three substantially different reaction zones, the first reaction zone being substantially without dissolved oxygen, the second reaction zone being substantially saturated with dissolved oxygen, the third reaction zone being substantially saturated with dissolved oxygen and having a fluidized bed of activated sludge therein, said aerating means comprising a pair of endless chain means arranged at opposite sides of said reaction tank, said chain means being positioned within said reaction tank with the top portion of said chain means located above the top part of said reaction tank and the bottom portion of said chain means extending near the bottom of said reaction tank, said chain means having plurality of horizontal pipe means attached to and extending between said chain means, said chain means forming with said pipe means an endless belt means, said pipe means being a chamber having openings located along their length thereof for flowing the reactor liquor out and for entering the air into said pipe means when said pipe means are located above the liquid level of the reactor mixed liquor and for release of the entrapped air from said pipe means through said openings in form of bubbles into said reactor mixed liquor when said pipe means are submerged in said reactor mixed liquor and are moving downwardly in said reaction tank, said belt means and said belt support means being rotated by motor means, said reaction tank including first solid wall partition and second solid wall partition, said first partition being positioned inside said belt means and being attached to two side walls of said reaction tank separating said reaction tank into first and third reaction zones, said second partition being positioned in parallel with said first partition alongside said belt means in said third reaction zone, said second partition in its lower portion being bent outwardly to form a funnel shaped aeration zone between said first partition and said second partition for aerating the reactor liquor, said second partition being attached to two side walls of said reaction tank and being submerged in the liquid held in said third reaction zone, said first and third reaction zones being in communication with each other under said funnel shaped aeration zone via openings formed by the bottoms of said first and second partitions, said two side walls and the bottom of said reaction tank, said belt means being arranged to move around said first partition and downwardly in the space between said first and second partitions and upwardly in said first reaction zone, said belt means recirculating the liquid from the top of said third reaction zone downwardly in the space between said first and second partitions to the bottom of said reaction tank and then upwardly through said third reaction zone to maintain a fluidized bed of sludge solids therein and said belt means being arranged to pump and disperse air into the reactor liquor in said funnel shaped aeration zone, rotate the content in said first reaction zone and circulate the reactor mixed liquor between said first reaction zone and said second reaction zone,

feeding the waste water into said first reaction zone, continuously rotating by said aerating means the content therein and contacting the waste water with activated sludge solids in the absence of dissolved oxygen therein,

continuously flowing the reactor mixed liquor by gravity and by said aerating means from said first reaction zone into said aeration zone and from said aeration zone into said third reaction zone,

continuously recirculating the reactor liquor by said aerating means from the top of said third reaction zone downward through said aeration zone, maintaining a fluidized bed of sludge solids in said third reaction zone and contacting the waste water with the fluidized activated sludge solids in said third reaction zone in presence of dissolved oxygen therein,

continuously pumping by said aerating means sludge solids and the reactor liquor from said aeration zone into said first reaction zone,

continuously pumping air by said aerating means into said aeration zone and continuously dispersing the air by said aerating means into the reactor liquor therein,

continuously flowing the reactor liquor from said third reaction zone into a clarifier for separating the sludge solids from the treated waste water,

continuously returning the separated sludge solids from said clarifier back into said reaction tank and the clarified waste water flowing out of said clarifier for further treatment or disposal, and

continuously withdrawing the excess sludge out of the system.

4,353,801

SPECIAL SOLVENT COLUMN FOR GPC AND GPC METHOD USING THE SAME

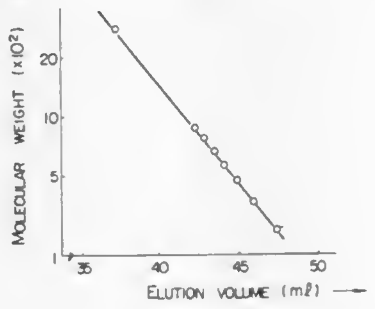
Yoshiyuki Mukoyama; Nobutoshi Chikazumi, both of Hitachi, and Hatuo Sugitani, Ibaraki, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,243

Claims priority, application Japan, Oct. 6, 1979, 54/129218

Int. Cl.^{3} B01D *15/08*

U.S. Cl. 210—635 **10 Claims**



5. In a gel-permeation chromatographic method comprising passing an eluent dissolving a substance to be measured through a column packed with porous styrene-divinylbenzene type copolymer spherical particles in an immersed and swollen state with said eluent, and fractionating the substance depending on the largeness of molecular weight of said substance, the improvement which comprises using as the eluent a mixture of hexafluoroisopropanol and a chlorine-containing organic solvent in a mixing ratio of hexafluoroisopropanol to the chlorine-containing organic solvent of 5/95 to 70/30 by volume.

4,353,802

SEMIPERMEABLE COMPOSITE MEMBRANE

Shigeyoshi Hara; Yuzuru Hayashi; Takeyuki Kawaguchi; Noriaki Sasaki; Yutaka Taketani, and Hiroyoshi Minematsu, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

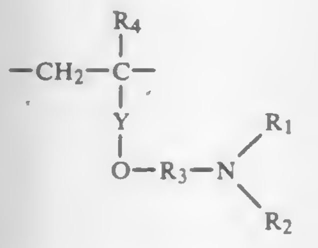
Filed Oct. 18, 1979, Ser. No. 86,192

Claims priority, application Japan, Oct. 18, 1978, 53-127300

Int. Cl.^{3} B01D *13/00*

U.S. Cl. 210—654 **31 Claims**

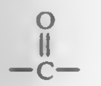
1. A semipermeable composite membrane comprising a thin semipermeable film of a polymeric material deposited on one side of a microporous substrate, said polymeric material being prepared by crosslinking a soluble polymer containing at least 30 mole% of a recurring unit of the formula



(I)

wherein

Y represents a direct bond, a methylene group, a carbonyl group of the formula



$$-\overset{O}{\overset{\|}{C}}-$$

or an unsubstituted or substituted phenylene group;

R_1 represents a hydrogen atom, or a mono-valent organic radical containing 1 to 20 carbon atoms which may contain an amino group containing 1 to 2 active hydrogen atoms and a heteroatom selected from the group consisting of oxygen, nitrogen and sulfur atoms;

R_2 represents a hydrogen atom, an amino group containing 1 to 2 active hydrogen atoms or a monovalent oganic radical containing 1 to 20 carbon atoms and which contains at least one amino group containing 1 to 2 active hydrogen atoms and which may contain a heteroatom selected from the group consisting of oxygen, nitrogen and sulfur atoms;

R_1 and R_2, together with the nitrogen atom to which they are bonded may represent a 5- to 18-membered nitrogen-containing heterocyclic ring which contains at least one amino group having one active hydrogen atom;

R_3 represents an alkylene group containing 2 to 5 carbon atoms which may have an —OH group;

R_4 represents a hydrogen atom or a methyl group,

and having at least 0.5 milliequivalent, per gram of said polymer, of an amino group containing 1 or 2 active hydrogen atoms, with a polyfunctional compound containing at least two functional groups capable of reacting with the amino group having 1 or 2 active hydrogen atoms.

27. In a method for desalination of saline or brackish water by reverse osmosis comprising contacting the saline or brackish water under pressure with a reverse osmosis membrane, the improvement wherein the membrane of claim 1 is used as the reverse osmosis membrane.

4,353,803

LAND RESTORATION FOLLOWING OIL-WELL DRILLING AND PRODUCTS USEFUL THEREFOR

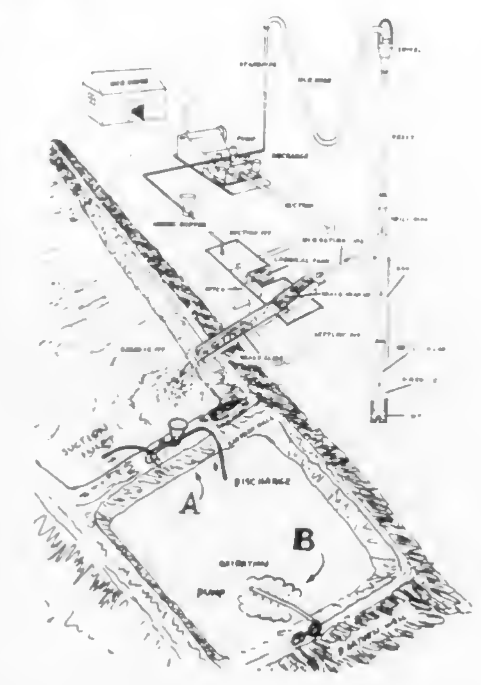
Virgil L. Dover, Jr., 501 Marie Antoinette St., Lafayette, La. 70506

Continuation-in-part of Ser. No. 17,558, Mar. 5, 1979, Pat. No. 4,234,421. This application Nov. 10, 1980, Ser. No. 205,098

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.^{3} C02F *1/56*

U.S. Cl. 210—728 **13 Claims**



1. A flocculant useful for waste drilling-fluid reserve pit treating wherein the reserve pit contains an aqueous spent oil-well drilling mud including an anionic colloid selected from the group consisting of drilling-fluid grade lignosulfonate and alkaline-soluble lignite, the flocculant consisting essentially of from 24 to 49 parts by weight of aluminum sulfate per part by weight of polyacrylamide homopolymer having from 130 to 500 pendant amide groups per pendant carboxylic-acid or carboxylic-acid-salt group and having a molecular weight in the range of from 10,000 to 5 million.

7. A process of separating, into good-quality water and high-density solids, an admixture of waste drill cuttings, drilling fluid and by-products of rotary drilling which comprises combining an effective amount of flocculant according to claim 1 with the admixture, flocculating solids in the admixture and separating water from the flocculated solids.

4,353,804

IMPROVED FLUID LOSS CONTROL SYSTEM

Peter C. Green, Ellicott City, and Jacob Block, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 169,886, Jul. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 144,365, Apr. 28, 1980, abandoned. This application Feb. 27, 1981, Ser. No. 239,071

Int. Cl.^{3} C09K *7/02*

U.S. Cl. 252—8.5 A **15 Claims**

1. A composition capable of imparting fluid loss control to aqueous systems comprising a mixture of solid particulate materials of:

(a) a substantially water insoluble, solid, particulate silicate or alumino-silicate material which contains a major amount of kaolinite, halloysite, montmorillonite or illite or mixtures thereof, or attapulgite or sepiolite and being of a particle size such that at least about 90 percent by weight is capable of passing through a No. 20 U.S. Standard Sieve, in combination with

(b) a reaction product formed in an aqueous acidic medium having a pH of about 5.5 or lower between polyvinyl alcohol having an weight average molecular weight of at least 20,000 with at least about 1 to 200 percent of stoichiometry of a compound containing at least one aldehyde group therein or capable of generating in an aqueous medium at least one aldehyde group;

wherein the amount of component (a) to component (b) is in the ratio of from about 0.75:1 to 3:1.

4,353,805

ENHANCED OIL RECOVERY

Horst Kragen, Carentan, and Gerard Brigand, Portbail, both of France, assignors to CECA S.A., Velizy Villacoublay, France

Filed Nov. 29, 1979, Ser. No. 98,410

Claims priority, application France, Dec. 1, 1978, 78 34021

Int. Cl.^{3} E21B *43/22*

U.S. Cl. 252—8.55 D **4 Claims**

1. In a process wherein an aqueous medium is injected into a subsurface oil-bearing reservoir through an injection well in order to displace crude oil from said reservoir, the improvement which comprises incorporating into said aqueous medium a mixture comprising a xanthan salt of trivalent iron in an amount sufficient for increasing the viscosity of said aqueous medium and a complexant for iron which is a salt of an acid selected from the group consisting of a citric acid, tartaric acid, lactic acid, acetic acid, oxalic acid, hydrofluoric acid and ethylenediamine tetracetic acid, the ratio of iron ion equivalents to the complexant salt acid ion equivalents ranging between about 10:1 and 1.10.

3. In a process wherein an aqueous medium is injected into a subsurface oil-bearing reservoir through an injection well in order to displace crude oil from said reservoir, the improvement which comprises incorporating into said aqueous medium a mixture comprising a xanthan salt of aluminum in an amount sufficient for increasing the viscosity of said aqueous medium and a complexant for aluminum which is a salt of an acid selected from the group consisting of citric acid, tartaric acid, lactic acid, acetic acid, oxalic acid, hydrofluoric acid and ethylenedimine-tetracetic acid, the ratio of aluminum ion equivalents to the complexant salt acid ion equivalents ranging between about 10:1 and 1:10.

4,353,806

POLYMER-MICROEMULSION COMPLEXES FOR THE ENHANCED RECOVERY OF OIL

Nathan H. Canter, Edison; Max L. Robbins, South Orange, and Edward G. Baker, Berkeley Heights, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 3, 1980, Ser. No. 136,936

Int. Cl.^{3} E21B *43/22*

U.S. Cl. 252—8.55 D **23 Claims**

1. A stabilized microemulsion system containing a polymer-microemulsion complex which comprises:

(a) a microemulsion, said microemulsion including as components

  (1) an oil

  (2) water having up to 25% by weight of dissolved inorganic salts and

  (3) 0.2 to 15 wt.%, based on the microemulsion, of at least one anionic surfactant balanced to form the microemulsion, and

(b) from 0.1 to 10% by weight, based on the microemulsion of a polar polymer capable of forming a polymer-microemulsion complex wherein the polar polymer has a molecular weight of from 4,000 to 5,000,000 and is selected from the group consisting of branched polyethylene oxide condensation product of polyethylene oxide, bisphenol A and epichlorohydrin and polyvinyl pyrrolidone, the polymermicroemulsion complex being characterized by a complexation energy of at least 2 Kcal/mole.

4,353,807

LUBRICANTS AND FUELS CONTAINING BOROXAROPHENANTHRENE COMPOUNDS

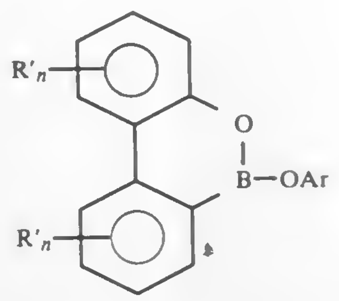
Milton Braid, Haddonfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 24, 1981, Ser. No. 247,177

Int. Cl.^{3} C07F *5/04;* **C10M** *1/10*

U.S. Cl. 252—49.6 **12 Claims**

1. A compound of the formula



wherein R′ is a hydrocarbyl group containing 1 to 30 carbon atoms, n may be 0 or an integer of 1 to 4, and Ar is an aromatic moiety derived from a hindered phenol.

5. A lubricant or liquid hydrocarbon fuel composition comprising a major proportion of a lubricant or liquid hydrocarbon fuel and an antioxidant amount of the compound of claim 1.

4,353,808

PHOSPHORS AND PROCESS FOR PRODUCING THE SAME

Shinkichi Tanimizu, Kokubunji; Masaki Nakano, Hamuramachi; Teruki Suzuki, Funabashi, and Toshikatsu Manabe, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,674

Claims priority, application Japan, Mar. 30, 1979, 54/36887; Dec. 26, 1979, 54/168371

Int. Cl.^{3} C09K *11/477*

U.S. Cl. 252—301.4 P **41 Claims**

1. A phosphor represented by the formula:

$$a(SR_{1-x-y-z}M_x^{II}M_y^{III}Eu_z^{2+})_3(PO_4)_2.b\ M'X_2 \qquad (I)$$

wherein M^{II} is at least one element selected from the group consisting of Zn, Mg, Ca and Ba; M^{III} is at least one element selected from the group consisting of Y, Gd and La; M′ is at least one element selected from the group consisting of Ca, Sr and Ba; X is one or more halogens; $0 \leqq x \leqq 0.999$, $0.001 \leqq y \leqq 0.15$, $0.0015 \leqq z \leqq 0.20$ and $x+y+z \leqq 1$; and the ratio a/b is in the range of $0.3 \leqq a/b \leqq 1.2$.

29. A phosphor represented by the formula:

$$a(Sr_{1-x-y-z}M_x^{II}M_y^{III}Eu_z^{2+})_3(PO_4)_2.b\ M'X_2 \qquad (I)$$

wherein M^{II} is at least one element selected from the group consisting of Zn, Mg, Ca and Ba; M^{III} is at least one element selected from the group consisting of A, Y, Gd and La; M′ is at least one element selected from the group consisting of Ca, Sr and Ba; X is one or more halogens; $0 < x \leqq 0.999$, $0.001 \leqq y \leqq 0.15$, $0.0015 \leqq z \leqq 0.20$ and $x+y+z \leqq 1$; and the ratio a/b is in the range of $1.2 < a/b \leqq 3.0$, whereby said phosphor is not deteriorated by baking in air.

4,353,809

PROCESS FOR THE PRODUCTION OF MICROCAPSULES

Yoshiyuki Hoshi, and Hiroharu Matsukawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 10, 1980, Ser. No. 128,786

Claims priority, application Japan, Mar. 9, 1979, 54/27406; Jan. 22, 1980, 55/6087

Int. Cl.^{3} B01J *13/02*

U.S. Cl. 252—316 7 Claims

1. In a process for producing microcapsules which process comprises polymerizing urea and formaldehyde in the presence of a water-soluble polymer to form formaldehyde resin walls around a hydrophobic oily liquid, the improvement in which a polyvalent isocyanate, a polyvalent isothiocyanate or a prepolymer thereof is added to the hydrophobic oily liquid in an amount of about 0.02 to 1 part per 100 parts of hydrophobic oily liquid.

4,353,810

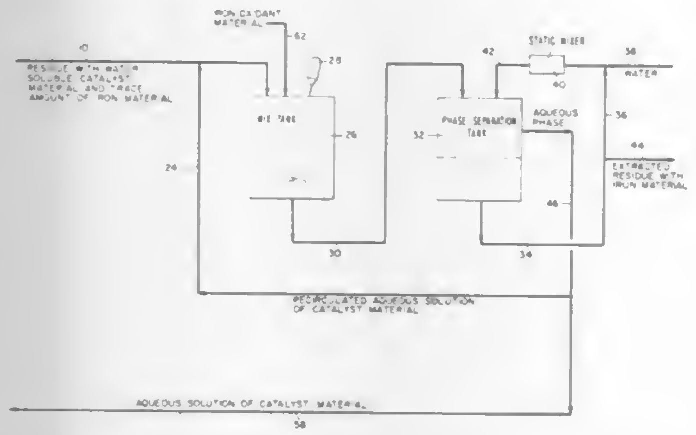
MINIMIZING IRON IN RECOVERED OXIDATION CATALYST MATERIAL IN DMT PROCESS

Jesse G. Wendle, Jr., New Hanover County, N.C., assignor to Hercofina, Wilmington, N.C.

Filed Jan. 21, 1981, Ser. No. 227,002

Int. Cl.^{3} B01J *31/40;* **C07C** *69/82;* **C01G** *51/00, 49/02*

U.S. Cl. 252—412 **7 Claims**


IRON OXIDANT MATERIAL
RESIDUE WITH WATER SOLUBLE CATALYST MATERIAL AND TRACE AMOUNT OF IRON MATERIAL
STATIC MIXER
WATER
PHASE SEPARATION
AQUEOUS PHASE
EXTRACTED RESIDUE WITH IRON MATERIAL
RECIRCULATED AQUEOUS SOLUTION OF CATALYST MATERIAL
AQUEOUS SOLUTION OF CATALYST MATERIAL

1. In the cooxidation-coesterification process for the production of dimethyl terephthalate, in which an esterified oxidate residue containing water-soluble, heavy metal, oxidation catalyst material is obtained and catalyst material is recovered in an aqueous solution at a pH in the range of about 3 to 4 by aqueous extraction of said residue, and said aqueous solution of recovered catalyst material is recycled, the improvement in which iron oxidant material selected from the group consisting of hydrogen peroxide, hydrogen peroxide generating compounds, and ozone is admixed with said aqueous solution in quantity sufficient to cause a substantial portion of any iron content of said solution to precipitate, and separating precipitated iron from said solution.

2. The process according to claim 1 in which said iron oxidant material is admixed with said aqueous solution after said aqueous solution has been separated from said residue, and any precipitated iron that results is separated from the resulting iron depleted aqueous solution.

3. A process according to claim 1 in which said iron oxidant material is admixed with said aqueous solution as it is being formed in the aqueous extraction of said residue, and any precipitated iron that results is separated from said solution with the extracted residue when said solution and extracted residue are separated.

4,353,811

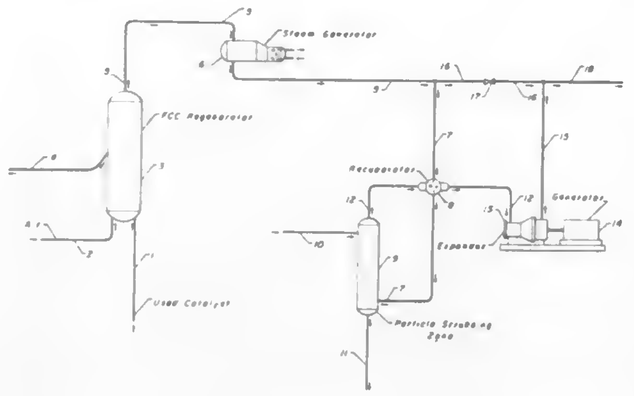
POWER RECOVERY PROCESS USING RECUPERATIVE HEAT EXCHANGE

Allen H. Fink, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 8, 1980, Ser. No. 213,780

Int. Cl.^{3} B01J *21/20;* **F02C** *3/00, 7/00;* **C10J** *3/84*

U.S. Cl. 252—417 **10 Claims**



1. A process for recovering energy from a high temperature flue gas stream of a catalyst regeneration zone of a fluidized catalytic cracking unit which comprises the steps of:

(a) passing said high temperature flue gas stream having a superatmospheric pressure of between about 25 to 60 psig through a first indirect heat exchange means and cooling the gas stream to a temperature below about 400° C.;
(b) passing the gas stream through a second indirect heat exchange means and cooling the gas stream to a temperature below 150° C.;
(c) removing particles from the gas stream in a particle removal zone in which the gas stream is contacted with a liquid under conditions suitable for the transfer of particles from the gas stream to the liquid;
(d) passing the gas stream through the second indirect heat exchange means and heating the gas stream to a temperature above 300° C. and within 50° to 70° of the temperature of the gas stream entering said second indirect heat exchange means in step (b); and
(e) depressurizing the gas stream in a power recovery expander and thereby recovering useful mechanical energy from the gas stream.

2. The process of claim 1 further characterized in that the gas stream is heated to a temperature between about 300° C. and about 375° C. in step (d).

3. The process of claim 2 further characterized in that the liquid with which the gas stream is contacted in the particle removal zone is water.

4,353,812

FLUID CATALYST REGENERATION PROCESS

David A. Lomas, Arlington Heights, and Gregory J. Thompson, Waukegan, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

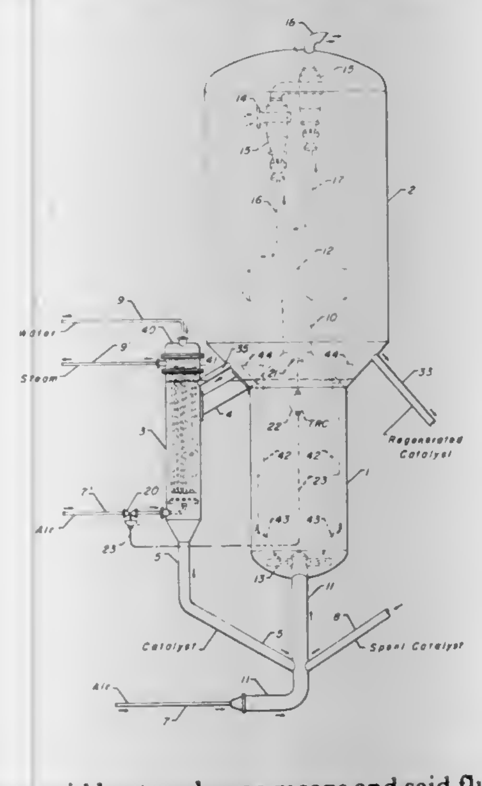
Filed Jun. 15, 1980, Ser. No. 273,296

Int. Cl.^{3} B01J *21/20;* **C10G** *11/18;* **F27B** *15/08;* **B01J** *29/38*

U.S. Cl. 252—417 **7 Claims**

1. A process for regenerating a coke contaminated fluid catalyst, said process including the steps of:

(a) introducing oxygen containing regeneration gas, coke contaminated fluid catalyst, and cool recycled regenerated catalyst from a source hereinafter described, into a lower locus of a dilute phase combustion zone maintained at a temperature sufficient for coke oxidation and therein oxidizing coke to product hot regenerated catalyst and hot flue gas;
(b) transporting said hot flue gas and said hot regenerated catalyst from an upper locus of said combustion zone into a regenerated catalyst disengaging zone, wherein said hot regenerated catalyst is separated from said flue gas;
(c) transporting a portion of said hot regenerated catalyst from said disengaging zone to the upper locus of a cooling zone separate from said disengaging zone wherein said cooling zone said hot regenerated catalyst is passed downwardly and heat is withdrawn from said hot regenerated catalyst by indirect heat exchange with a cooling fluid enclosed in a heat exchange means inserted into said cooling zone to produce cool regenerated catalyst, said catalyst being maintained in said cooling zone as a dense phase fluidized bed by passing a fluidizing gas upwardly through such bed, the quantity of heat withdrawal from said catalyst in said cooling zone being controllably maintained by controlling the quantity of said fluidizing gas into said cooling zone, whereby the heat transfer coefficient between said heat exchange means and said fluidized bed and thus the quantity of heat transferred is controlled; and
(d) withdrawing said cool regenerated catalyst from a lower locus of said cooling zone and transporting said catalyst to said lower locus of said combustion zone as said cool recycled regenerated catalyst.



2. The process of claim 1 wherein the temperature at a selected locus of said combustion zone is controllably maintained by controlling the quantity of said fluidizing gas to said cooling zone, and thereby the quantity of heat withdrawal from said catalyst in said cooling zone, in response to said temperature at said selected locus.

3. The process of claim 2 wherein said selected locus is an upper locus of said combustion chamber.

4,353,813

CATALYST FOR POLYMERIZATION OF ALPHA-OLEFINS

Nicholas M. Karayannis, Naperville, and John S. Skryantz, Lisle, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,853

The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 252—429 B **8 Claims**

1. An alpha-olefin polymerization catalyst component obtained by contacting, in the substantial absence of oxygen, water, carbon oxides and other extraneous catalyst poisons, components comprising (A) at least one liquid, halogenated aliphatic having a sufficiently high halogen content to exhibit only insubstantial reactivity with (B); and (B) a solid reaction product of components comprising:

(1) at least one titanium(IV) halide;
(2) at least one organic electron donor which contains oxygen, nitrogen, sulfur and/or phosphorus; and
(3) at least one hydrocarbon-insoluble, magnesium-containing pretreatment product of components comprising
    (a) at least one magnesium alcoholate; and
    (b) at least one Group II or IIIA metal alkyl;

wherein the atomic ratio of metal in (3)(b) to metal in (3)(a) ranges from about 0.001:1 to about 1:1, the atomic ratio of titanium in (1) to metal in (3)(a) is at least about 0.5:1, and (2) is employed in an amount ranging from about 0.001 to about 1 mole per gram-atom of titanium contained in (1).

4,353,814

REFORMING WITH AN IMPROVED PLATINUM-CONTAINING CATALYST

Regis J. Pellet, Wheaton, Ill.; Ralph J. Bertolacini, Chesterton, Ind., and Donna L. Lysholm, Lisle, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 28, 1979, Ser. No. 108,177

Int. Cl.^{3} B01J *27/06, 27/10*

U.S. Cl. 252—441 **18 Claims**

1. An improved catalyst for the reforming of a hydrocarbon stream, which catalyst comprises a physical particle-form mixture of a Component A and a Component B, said Component A comprising one or more Group VIII noble metals and a combined halogen deposed on a refractory inorganic oxide and said Component B comprising a metal from Group IVB or Group VB of the Periodic Table of Elements and a combined halogen deposed on a refractory inorganic oxide.

4,353,815

HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 46,885, Jun. 8, 1979, Pat. No. 4,238,366, which is a division of Ser. No. 943,492, Sep. 18, 1978, Pat. No. 4,183,805, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Nov. 3, 1980, Ser. No. 203,017

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.^{3} B01J *23/58*

U.S. Cl. 252—466 PT **13 Claims**

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material, containing a uniform dispersion of catalytically effective amounts of an alkali or alkaline earth component, a manganese component and a platinum group component which is maintained in the elemental metallic state.

4,353,816

POWER CONDUCTIVE COATING MIXED WITH COPPER POWDER

Yamahiro Iwasa, Hachioji, Japan, assignor to Asahi Chemical Research Laboratory Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,098

Claims priority, application Japan, Jan. 22, 1980, 55-6609

Int. Cl.^{3} H01B *1/02*

U.S. Cl. 252—512 **1 Claim**

1. A power conductive coating consisting of a mixture in a liquid condition of 70–85 weight percent of copper powder, 15–30 weight percent of at least one selected from the group of phenol resin, epoxy resin, polyester resin and xylene resin, and 0.2–5 weight percent of at least one annex agent selected from the group of anthracene, anthracene carbonylic acid, anthranylic acid and anthrazine.

4,353,817
POLYETHYLENE BASE RESIN COMPOSITION HAVING HIGHLY FILLED WITH AN INORGANIC MATERIAL

Hiroyuki Nakae, Kawasaki; Isamu Noguchi, Tokyo, and Morikuni Hasebe, Kamakura, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
PCT No. PCT/JP79/00230, § 371 Date Apr. 18, 1980, § 102(e) Date Apr. 18, 1980, PCT Pub. No. WO80/00448, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 29, 1979, Ser. No. 201,066
Claims priority, application Japan, Aug. 29, 1978, 53-105318
Int. Cl.³ C08K *3/20, 9/04, 3/22, 5/09*
U.S. Cl. 524—232 **6 Claims**

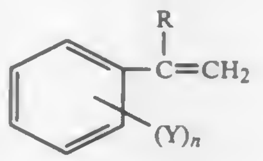
1. A polyethylene resin composition containing a high concentration of inorganic materials, characterized in that it mainly consists of a resin component formed of (i) 10 to 75 parts by weight of polyethylene which has a density ranging from 0.910 to 0.945 g/cm^3, and a melt index ranging from 0.01 to 2.0 g/10 min., the value of its absorptivity coefficient K'770 of the absorption peak in the proximity of 770 cm^{-1} in the infrared absorption spectrum, being 0.5 to 6, and (ii) 90 to 25 parts by weight of an ethylene-vinyl acetate copolymer, said composition also contains 80 to 250 parts by weight of powdered aluminum hydroxide on the basis of 100 parts by weight of said resin component of said polyethylene resin composition and a monoalkoxy organic titanate compound.

4,353,818
ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 19, 1980, Ser. No. 160,888
Int. Cl.³ C08L *23/28*
U.S. Cl. 524—458 **8 Claims**

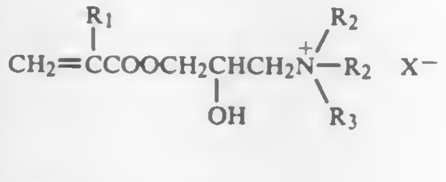
1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



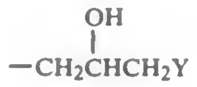
wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 percent of a cationic monomer having the formula



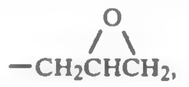
$$CH_2{=}\overset{R_1}{C}COOCH_2\underset{OH}{C}HCH_2\overset{+}{N}{<}^{R_2}_{R_3}{-}R_2\quad X^-$$

wherein
R$_1$ is hydrogen or methyl,
R$_2$ is hydrogen or a C$_1$–C$_4$ alkyl,
R$_3$ is hydrogen, a C$_1$–C$_4$ alkyl,



$$-CH_2\overset{OH}{C}HCH_2Y$$

where Y is hydroxy or halogen,



$$-CH_2\overset{O}{\widehat{CHCH_2}},$$

and —CH$_2$CH$_2$O)$_n$H where n is an integer 1 or more and X$^-$ is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,353,819
FAST CURING POLYEPOXIDE COATING COMPOSITIONS WITH GOOD POT LIFE

Russell T. McFadden, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 13, 1981, Ser. No. 243,278
Int. Cl.³ C08K *5/07*
U.S. Cl. 523—454 **18 Claims**

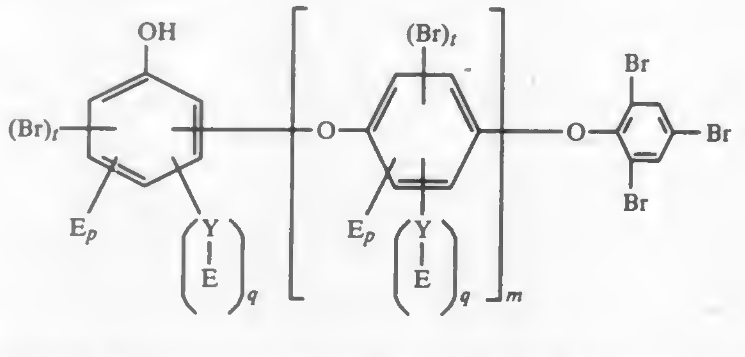
1. A resin composition having extended pot life in bulk form and a fast cure rate in thin sections comprising a mixture of

(A) a nonvolatile amine dissolved in a solvent having no groups reactive with an amine, said nonvolatile amine being at least partially neutralized with a mixture of hydrobromic acid or hydriodic acid and hydrochloric acid,
(B) a volatile ketone, and
(C) a polyglycidyl ether or ester.

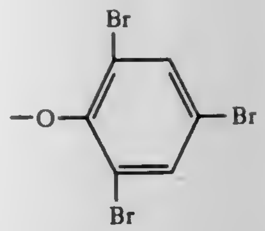
4,353,820
FLAME-RETARDED HIGH IMPACT POLYSTYRENE COMPOSITION

Michael W. Lindvay, 7005 Salge Ct., Ft. Wayne, Ind. 46815
Continuation-in-part of Ser. No. 911,642, Jun. 1, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,745
Int. Cl.³ C08L *25/04, 71/04;* **C08K** *3/22*
U.S. Cl. 524—409 **5 Claims**

1. A flame retarded polystyrene composition comprising from about 50 to about 90 parts by weight polystyrene, from about 9 to about 22 parts by weight of a branched polymer having a hydroxyl number of from 2.8 to about 30 of the structural formula



wherein each repeating unit set out within the brackets of the structural formula is attached in an ortho or para configuration to its adjacent phenyl and phenoxy moiety; and wherein E is an end group of the formula



Y is a side chain of the same structure and configuration as said repeating unit; the substituents Br, E and Y on each phenyl ring are attached only to the ortho or para positions relative the hydroxyl group in the structural formula and the oxygen atom in the repeating unit; each t, p and q are independently the integer 0 or 1, provided that the sum of t plus q plus q equals 2, and provided that from about 10 to about 80 percent of the repeating units have the side chain and end unit —Y—E attached thereto; and m is an integer such that the total molecular weight of the polymer ranges from 2000 to 20,000, and from about 1 to about 10 parts by weight fire retarding enhancing agent comprising an oxide or chloride of antimony, arsenic, bismuth, tin, lead or germanium.

4,353,821
METHOD OF PREPARING THYMOSIN α_1 AND DERIVATIVES THEREOF

Christian Birr, Leimen-St. Ilgen, and Ulrich Stollenwerk, Heidelberg, both of Fed. Rep. of Germany, assignors to Max Planck-Gesellschaft zur Forderung der Wissenschaften E.V., Gottingen, Fed. Rep. of Germany
Filed Mar. 24, 1980, Ser. No. 133,031
Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919592
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **8 Claims**

1. Polypeptides of the sequence Ser-Asp-Ala-Ala-Val-Asp-Thr-Ser-Ser-Glu-Ile-Thr-Thr-Lys-Asp-Leu-Lys-Glu-Lys-Lys-Glu-Val-Val-Glu-Glu-Ala-Glu-Asn, characterized in that at least one of the amino acids 10, 15, 21, 25 and/or 28 is present as amide or alkyl amide, and/or amino acid 1 bears an acyl group other than acetyl, having up to 6 carbon atoms, especially an acyl glycine residue.

4,353,822
ANTIGENIC LINEAR PEPTIDE COMPOUNDS

Erwin Goldberg, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.
Filed May 26, 1981, Ser. No. 267,021
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **5 Claims**

1. The linear peptide compounds having chain lengths of from 8 to 10 amino acids arranged in a sequence from N-terminal to C-terminal amino acids which include the antigenic sequence Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg, said compounds being selected from the class of compounds consisting of:

(a) Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg,

(b) Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg-Val,

(c) Gly-Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg, and

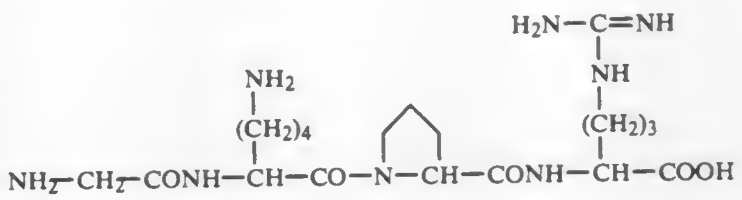
(d) Gly-Ile-Ser-Gly-Phe-Pro-Val-Gly-Arg-Val,

wherein Gly represents glycine, and Ile, Ser, Phe, Pro, Val, and Arg, respectively represent the L-amino acid forms of isoleucine, serine, phenylanine, proline, valine, and arginine.

4,353,823
SYNTHETIC ANALOG OF TUFTISIN

Gunar I. Chipens, ulitsa Apes, 12, kv. 81; Nadezhda I. Veretennikova, ulitsa Veyavas, 10/1, kv. 11, and Zeltite A. Atare, ulitsa Volguntes, 82, kv. 1, all of Riga, U.S.S.R.
Filed Sep. 1, 1981, Ser. No. 298,396
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **1 Claim**

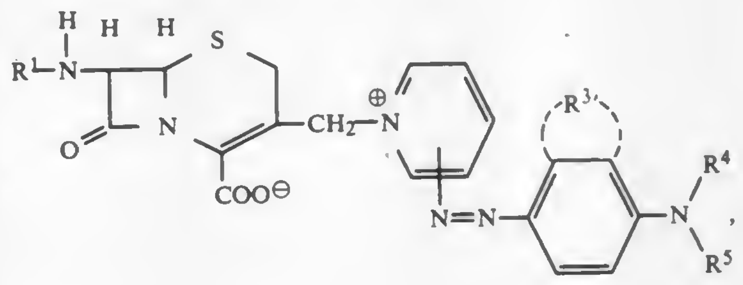
1. A synthetic analog of tuftisin, viz. glycyl-lysyl-prolyl-arginine of the formula:



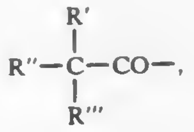
4,353,824
CHROMOPHORIC CEPHALOSPORINS

Peter Schindler, Rodgau, and Gerhard Huber, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Apr. 22, 1980, Ser. No. 142,767
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916433
Int. Cl.³ C07D *501/38*
U.S. Cl. 260—156 **3 Claims**

1. A cephalosporin of the formula

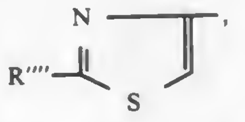


wherein
R^1 is hydrogen, formyl, or



$$R''-\underset{R'''}{\overset{R'}{C}}-CO-,$$

wherein in turn
R' is hydrogen; alkyl having 1 to 4 carbon atoms; such alkyl substituted by chlorine, by bromine, by cyano, by hydroxy, or by alkoxy having 1 to 4 carbon atoms; or is ω-carboxyalkyl; ω-carboxy-ω-aminoalkyl; ω-carboxy-ω-benzoylaminoalkyl; cycloalkyl or cyclalkenyl having 5 to 7 carbon atoms; phenyl; phenyloxy; or phenyl or phenyloxy mono- or di-substituted by alkyl having 1 to 4 carbon atoms, by hydroxy, by alkoxy having 1 to 4 carbon atoms, by alkanoyloxy having 1 to 4 carbon atoms, by fluorine, by chlorine, by carboxy, by sulfoxy, by amino, or by alkanoylamino having 1 to 4 carbon atoms; or R' is 2-pyridon-1-yl; 4-pyridon-1-yl; 3,5-dichloro-pyridon-1-yl; 2-thienyl; 3-thienyl; 2-furyl; 3-furyl; tetrazolyl; or is thiazolyl of the formula



wherein R'''' is alkyl having 1 to 4 carbon atoms, formamido, acetamido, chloroacetamido, bromoacetamido, or trifluoroacetamido; or R′ is 2-methyl-1,3,4-thiadiazol-5-yl-thio; or is 2-amino-1,3,4-thiadiazol-5-yl-thio;

R″ and R‴, taken together, are oxygen, or, taken alone, are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; hydroxy; alkanoyloxy having 1 to 4 carbon atoms; alkoxy having 1 to 4 carbon atoms; amino; alkylamino; alkylamino mono- or di-substituted by p-methoxyphenyl or mono-, di-, or tri-substituted by phenyl; alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl group; chlorine; bromine; cyano; sulfoxy; aminosulfonyl; or are acylamino selected from the group consisting of formylamino, acetylamino, chloroacetylamino, bromoacetylamino, benzoylamino, tert.butoxycarbonylamino, 2,2,2-trichloroethoxy-carbonylamino, 4-hydroxy-1,5-naphthyridin-2-carbonylamino, 3-hydroxypyridazin-4-carbonylamino, imidazolidin-2-on-1-yl-carbonylamino, (3-methyl-sulfonyl-imidazolidin-2-on-1-yl) carbonylamino, and (4-ethyl-piperazin-2,3-dion-1-yl) carbonylamino;

R^4 and R^5 are the same or different and are hydrogen; alkyl having 1 to 4 carbon atoms; or alkyl having 1 to 4 carbon atoms substituted by cyano, by carboxy, by alkoxy having 1 to 4 carbon atoms, by hydroxy, by alkanoyloxy having 1 to 4 carbon atoms, by aminocarbonyl, by sulfoxy, or by chloro; and

$R^{3'}$ is two hydrogen atoms or is benzo, pyrido, thieno, pyrimidino, or thiazolo.

4,353,825
5,6-DEHYDROPENICILLINS

Luciano Re; Alberto Brant, both of Rome, and Luciano Bassignani, Passo Corese, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

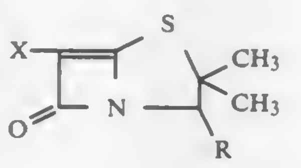
Division of Ser. No. 58,945, Jul. 19, 1979, Pat. No. 4,288,366, which is a division of Ser. No. 949,546, Oct. 10, 1978, abandoned, which is a division of Ser. No. 769,527, Feb. 17, 1977, Pat. No. 4,133,807. This application Feb. 19, 1981, Ser. No. 236,029

Claims priority, application Italy, Feb. 23, 1976, 20457 A/76

Int. Cl.^{3} C07D *499/44;* **A61K** *31/43*

U.S. Cl. 260—239.1 **5 Claims**

1. Compounds of the formula:



wherein X is an aminic group which may be substituted with at least one member selected from the group consisting of aralkyl and acyl and R is a carboxyl group or a salt, an amide, an ester, or thioester thereof.

4,353,826
SUBSTITUTED RIFAMYCINS

Hans Bickel, Binningen, and Wilhelm Kump, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

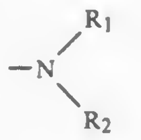
Division of Ser. No. 31,679, Apr. 19, 1979, Pat. No. 4,261,891, which is a continuation of Ser. No. 734,855, Oct. 22, 1976, abandoned, which is a division of Ser. No. 508,974, Sep. 25, 1974, Pat. No. 4,005,077, which is a continuation-in-part of Ser. No. 342,222, Mar. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 5,899, Jan. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 571,413, Aug. 10, 1966, abandoned. This application Sep. 30, 1980, Ser. No. 192,578

Claims priority, application Switzerland, Aug. 24, 1965, 11879/65; Aug. 11, 1969, 12131/69; Dec. 8, 1969, 18249/69

Int. Cl.^{3} C07D *521/00*

U.S. Cl. 260—239.3 P **13 Claims**

1. A member selected from the group consisting of a 3-amino rifamycin S, in that it contains in position 3 an amino group of the formula



wherein the groups R_1 and R_2 are each a group selected from the group consisting of hydrogen, an alkyl or alkenyl group with at most 8 C-atoms, a cycloalkyl or cycloalkenyl group having from 3–8 ring C-atoms, a cycloalkyl-alkyl, cycloalkenyl-alkyl, cycloalkyl-alkenyl or cycloalkenyl-alkenyl group having at most 8 C-atoms in the aliphatic moiety and 3–8 ring C-atoms, a phenyl-alkyl- or phenyl-alkenyl group having at most 8 C-atoms in the aliphatic moiety, the cyclic derivatives being unsubstituted or substituted by one to three alkyl groups having not more than 3 C-atoms, and any of all these radicals substituted by one to three functional groups selected from among the group consisting of free or etherified hydroxyl groups derived from aliphatic alcohols having not more than 3 carbon atoms, halogen atoms, free or esterified carboxyl groups with at most 4 C-atoms, aldehyde groups or aldehyde acetal groups derived from alkanols with not more than 3 C-atoms, nitrile groups or open chained primary, secondary or tertiary aliphatic amino groups derived from alkyls having from 1 to 4 C-atoms, a pyrrolidino, piperidino or piperazinyl-1 group or an N′-(1–6 C)-alkyl-piperazinyl-1 group or morpholino group, the corresponding rifamycin SV derivatives, their 16, 17; 18, 19; tetrahydro and 16, 17; 18, 19; 28, 29-hexahydroderivatives, and therapeutically acceptable metal salts of compounds of acidic character, therapeutically acceptable acid addition salts of compounds having a basic group and quaternary ammonium salts of all these compounds with hydrohalic, sulphuric or sulphonic acid esters of alkanols having from 1 to 16 C-atoms.

4,353,827
DIAZEPINE DERIVATIVES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

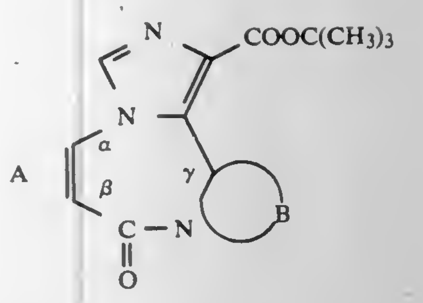
Filed Feb. 18, 1982, Ser. No. 349,801

Claims priority, application Switzerland, Feb. 27, 1981, 1338/81; Feb. 27, 1981, 1339/81; Feb. 27, 1981, 1341/81; Feb. 27, 1981, 1342/81; Jun. 4, 1981, 3675/81; Dec. 11, 1981, 7934/81

Int. Cl.^{3} C07D *513/22, 471/14, 471/22*

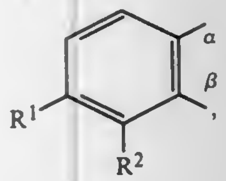
U.S. Cl. 260—239.3 P **21 Claims**

1. A compound of the formula

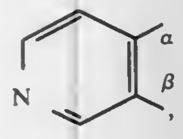


I

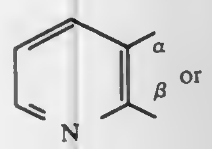
wherein A together with the two carbon atoms denoted as α and β is the group



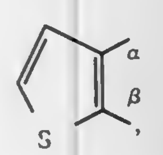
(a)



(b)



(c)



(d)

B is dimethylene, trimethylene or propenylene, R^1 is hydrogen, halogen, trifluoromethyl, amino, nitro, cyano or lower alkyl and R^2 is hydrogen, halogen, trifluoromethyl, amino, nitro, cyano, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulphinyl or lower alkylsulphonyl, and the carbon atom denoted as γ has the (S)— or (R,S)—configuration,

and pharmaceutically acceptable acid addition salts thereof.

4,353,828
PREPARATION OF FLUORINATED METHYL AMINOALKANOIC ACIDS AND NOVEL PROCESS INTERMEDIATES

Philippe Bey, Strasbourg, France; Fritz Gerhart, Willstaett, Fed. Rep. of Germany, and Viviane Van Dorsselaer, Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

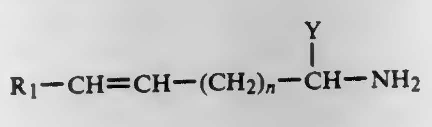
Filed Jul. 21, 1980, Ser. No. 170,395

Claims priority, application United Kingdom, Jul. 26, 1979, 7926030; Jan. 25, 1980, 8002554

Int. Cl.^{3} C07C *87/26;* **C07D** *209/48*

U.S. Cl. 260—326 NS **5 Claims**

1. A fluorinated alkenylamine of the formula



$$R_1-CH=CH-(CH_2)_n-\overset{\overset{\large Y}{|}}{C}H-NH_2$$

wherein
- R_1 represents hydrogen or a straight or branched chain alkyl group of from 1 to 10 carbon atoms;
- n represents zero, 1, 2, or 3; and
- Y represents
  - (a), when n represents 0, CH_2F,
  - (b), when n represents 1, CH_2F or CHF_2, and
  - (c), when n represents 2 or 3, CH_2F, CHF_2, or CF_3,

or an acid addition salt thereof, or a derivative of said alkenylamine in which the amino group is protected against oxidation by a subsequently removable blocking group selected from lower alkanoyl, monocyclic aroyl, lower alkoxycarbonyl, carbobenzoxy, benzenesulfonyl, tosyl, and phthalyl.

4,353,829
PROCESS FOR 5-AROYLATION OF 1,2-DIHYDRO-3H-PYRROLO[1,2-A]PYRROLE-1-CARBOXYLIC ESTERS

T. C. Thurber, Los Altos, and Derek Tegg, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

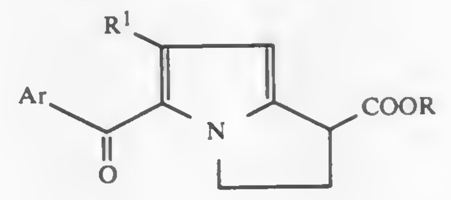
Filed Nov. 21, 1980, Ser. No. 208,920

Int. Cl.^{3} C07D *487/04*

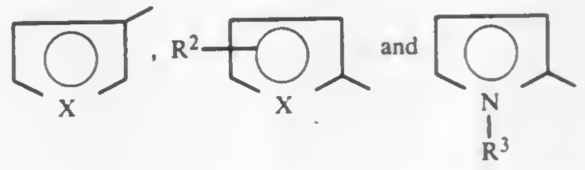
U.S. Cl. 260—326.25 **25 Claims**

1. A process for preparing a compound of the formula

(II)



wherein
- R is lower alkyl;
- R^1 is hydrogen or lower alkyl; and
- Ar is phenyl, optionally substituted by 1 to 3 substituents selected from the group consisting of halogen, lower alkyl, or lower alkoxy or is selected from the group consisting of

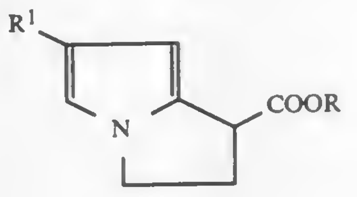


wherein X is O or S, R^2 is hydrogen, methyl, chloro or bromo; and R^3 is hydrogen or lower alkyl;

which process comprises:

(a) treating a compound of the formula

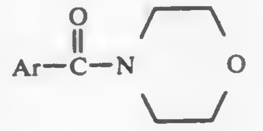
(I)



wherein

R and R^1 are as herein defined, with a mixture of an inorganic acid chloride and a compound of the formula:

(A)



wherein Ar is as herein defined, optionally in the presence of an inert aprotic solvent, followed by

(b) mixing therewith a weak base.

4,353,830

PROCESS FOR THE PREPARATION OF SUBSTITUTED AMIDINES

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

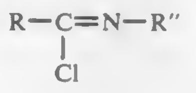
Filed Dec. 26, 1979, Ser. No. 106,678

Int. Cl.^{3} C07D *207/04;* **C07C** *81/00*

U.S. Cl. 260—326.86 **10 Claims**

1. In process for making substituted amidines which comprises reacting (a) (chloroalkylene)ammonium chlorides with a primary amine or (b) substituted imidoyl chlorides with a secondary or a primary amine the improvement comprising carrying out the reaction in the presence of at least one mole of a coreacted base selected from the group consisting of:

(A) tertiary amines;
(B) alkali or alkaline earth metal hydroxide;
(C) the amidine itself that is the product of the reaction;
(D) an excess of the primary or secondary amine reactant;
(E) quaternary ammonium hydroxides, said substituted imidoyl chlorides being represented by the formula



$$R-\underset{Cl}{\underset{|}{C}}=N-R''$$

wherein R″ is independently selected from the group consisting of C_1–C_{20} alkyl, C_3–C_{12} cycloalkyl; C_6–C_{14} aryl; alkaryl or aralkyl which are combinations of said alkyl and said aryl; substituted alkyl, wherein the substituents are C_1–C_{10} alkoxy, C_1–C_{10} alkylthio and C_2–C_{12} dialkylamino; substituted aryl, wherein the substituents are the same as defined for said substituted alkyl, plus chlorine, bromine and fluorine; and, R is the same as R″ or hydrogen; said reaction being conducted in the absence of moisture in an inert medium at temperatures in the range of about 0°–100° C.

4,353,831

PROCESS FOR MAKING ALKYLENE CARBONATES

Paul E. Strege, and James M. Renga, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1981, Ser. No. 230,213

Int. Cl.^{3} C07D *317/38, 317/36*

U.S. Cl. 549—229 **10 Claims**

1. A process for making a cyclic alkylene carbonate which comprises heating a mixture of hexachloroacetone with about a molar equivalent of a vicinal alkylene diol in the presence of a small but effective amount of a base selected from the group consisting of an alkali metal alkoxide, a non-nucleophilic organic base, and a salt of a strong base and a weak acid at about 100° C.–250° C., thereby causing the formation and substantial distillation of chloroform from said mixture and separating the alkylene carbonate product from the residual mixture.

4,353,832

PROCESS FOR THE PREPARATION OF CARBOXYL COMPOUNDS

Andre Lecloux, Meise; Claude Declerck, Brussels, and Franz Legrand, Quaregnon, all of Belgium, assignors to INTEROX (Societe Anonyme), Brussels, Belgium

Filed Jun. 5, 1980, Ser. No. 157,274

Claims priority, application France, Jun. 29, 1979, 79 17307

Int. Cl.^{3} C07D *313/04;* **C07C** *51/16, 51/235, 67/39*

U.S. Cl. 549—272 **13 Claims**

1. In a process for the oxidation of a carbonyl compound in a liquid reaction mixture to form the corresponding carboxyl compound, wherein the carbonyl compound is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, aliphatic or alicyclic ketones and aldehydes, and wherein the corresponding carboxyl compound is a carboxylic acid when the carbonyl compound is an aldehyde, an ester when the carbonyl compound is a ketone, and a lactone when the carbonyl compound is a cyclic ketone, by reacting the carbonyl compound with hydrogen peroxide in the liquid reaction mixture, and in the presence of a catalyst, the improvement comprising maintaining the liquid reaction mixture in a substantially anhydrous state.

4,353,833

CATIONIC DYES

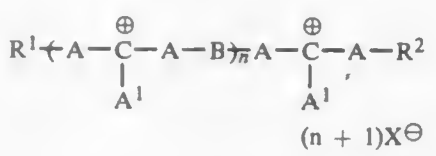
Horst Bruder, Ludwigshafen; Hans-Juergen Degen, Lorsch; Franz Feichtmayr, Ludwigshafen; Klaus Grychtol, Bad Duerkheim, and Udo Mayer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 206,254

Int. Cl.^{3} C07C *15/16;* **C09B** *11/10*

U.S. Cl. 260—386 **1 Claim**

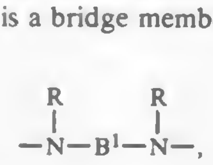
1. A cationic dye of the formula



$$R^1\left(A-\overset{\oplus}{\underset{A^1}{\underset{|}{C}}}-A-B\right)_{\overline{n}}A-\overset{\oplus}{\underset{A^1}{\underset{|}{C}}}-A-R^2 \qquad (n+1)X^{\ominus}$$

wherein

n is an integer equal to or greater than 1; where the radicals A, A^1 and B are identical or different and
A is unsubstituted or substituted benzene or heteroaromatic,
A^1, if n=1, is unsubstituted or substituted heteroaromatic or is aryl which is unsubstituted or substituted by alkyl, aryl, cycloalkyl, chlorine, bromine, hydroxyl, alkoxy, aryloxy, nitro, hydroxycarbonyl, alkoxycarbonyl or aminocarbonyl, and if n>1, A^1 may also be aryl substituted by unsubstituted or substituted amino,
B is a bridge member of the formula



$$-\overset{R}{\overset{|}{N}}-B^1-\overset{R}{\overset{|}{N}}-,$$

where the R's are the same or different and are selected from the group consisting of hydrogen; C_1–C_4-alkyl which is unsubstituted or substituted by chlorine, bromine hydroxyl, C_1–C_4-alkoxy, phenyl or tolyl; cycloalkyl; phenyl and tolyl,
B^1 is a bridge member which may or may not be quaternized,
R^1 and R^2 are hydrogen, unsubstituted or substituted alkyl, cycloalkyl, aryl, alkoxy or amino, and
$X^{\ominus}$ is an anion.

4,353,834

CARBONATE AND CARBOXYLIC ACID ESTER GROUP-CONTAINING NON-IONIC SURFACE-ACTIVE AGENTS

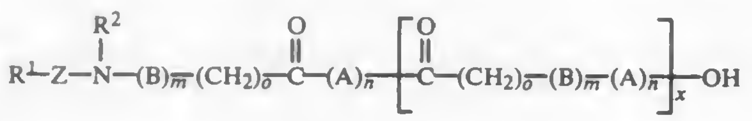
William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 13, 1981, Ser. No. 229,048

Int. Cl.^{3} C07C *68/00, 69/96*

U.S. Cl. 260—404.5 **10 Claims**

1. A composition of matter having the formula



$$R^1-Z-\overset{R^2}{\overset{|}{N}}-(B)_{\overline{m}}(CH_2)_{\overline{o}}-\overset{O}{\overset{\|}{C}}-(A)_{\overline{n}}\left[\overset{O}{\overset{\|}{C}}-(CH_2)_{\overline{o}}-(B)_{\overline{m}}-(A)_{\overline{n}}\right]_x-OH$$

wherein R^1 is the residue of a hydrophobic aliphatic or aliphatic-aromatic compound selected from the group consisting of at least one of an alkyl, alkylaryl, arylalkyl, and alkylarylalkyl group; wherein each alkyl group, contains about 6 to about 30 carbon atoms; R^2 is hydrogen, alkyl, or substituted alkyl of 1 to about 4 carbon atoms; wherein A is the residue of a hydrophilic oxyalkylene polymer derived from the same or different alkylene oxides; wherein said polymer is selected from at least one of the group consisting of heteric, block, or homopolymer polyalkylene glycols derived respectively from the reaction of ethylene oxide with an alkylene oxide having 3 to 4 carbon atoms or ethylene oxide with an active hydrogen compound having at least two active hydrogen atoms; wherein B is C═O, m is 0 or 1, Z is C═O or O═S═O, x is an integer of 1 to 20, n is individually selected from integers such that the molecular weight of A is about 104 to about 1000; o is an integer of 0 to 4, and when o is 0, m is 0.

4,353,835

PROCESS FOR HYDROGENATING UNSATURATED CARBOXYLIC ACIDS AND CARBOXYLIC ACID ESTERS

Harold E. Swift, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 2, 1981, Ser. No. 250,236

Int. Cl.^{3} C11C *3/12*

U.S. Cl. 260—409 **13 Claims**

1. A process for hydrogenating unsaturated carboxylic acids and esters of unsaturated carboxylic acids which comprises reacting an unsaturated carboxylic acid, an ester of a carboxylic acid or a mixture thereof with hydrogen in contact with a nickel silica catalyst obtainable from a layered complex nickel silicate characterized as having repeating units of the structural formula:

$$[(1-x)Ni^{+2}+xMg^{+2}]_3(OH)_4Si_2O_5.wH_2O,$$

wherein x is a number from 0 to 0.6 and w is a number ranging from 0 to 4, by a multi-stage procedure comprising a first reduction in a hydrogen atmosphere at a temperature of about 200° C. to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of at least about one hour, an oxidation in an atmosphere containing molecular oxygen at a temperature of about 100° C. to about 600° C. for a period of at least about two hours using a gas containing from about two to about 90 volume percent molecular oxygen; and then again a reduction in a hydrogen atmosphere at a temperature of about 200° C. to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of at least about one hour.

4,353,836

4-(2,5-DIHYDROXYPHEN-1-YL)-CROTONIC ACID AND ITS DERIVATIVES, AND THE PREPARATION OF THESE COMPOUNDS

Michael Horner, Neustadt, and Axel Nissen, Leimen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

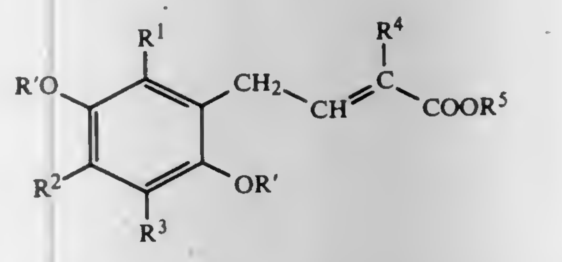
Filed Feb. 26, 1981, Ser. No. 238,609

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010474

Int. Cl.^{3} C07C *69/28, 69/734, 59/64*

U.S. Cl. 260—410.5 **3 Claims**

1. 4-(2,5-Dihydroxyphen-1-yl)-crotonic acid and its derivatives of the general formula I



I

where R^1, R^2, R^3 and R^4 are each H or C_1–C_8-alkyl, R^5 is H, C_1–C_{30}-alkyl or C_2–C_{30}-alkenyl, and R′ is H or an organic radical which can be split off hydrolytically or hydrogenolytically.

4,353,837

METHOD FOR CONTINUOUS AZEOTROPIC PROCESSING OF VEGETABLE AND PROTEIN MATERIAL

Roy W. Barns, P.O. Box 215-B, R.R. 1, Broadway, Va. 22815
Continuation-in-part of Ser. No. 14,090, Feb. 22, 1979, Pat. No. 4,260,457, which is a continuation-in-part of Ser. No. 807,021, May 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 550,157, Feb. 14, 1975, abandoned. This application Apr. 6, 1981, Ser. No. 251,547

Int. Cl.^{3} B01D *3/36;* **C11B** *1/10*

U.S. Cl. 260—412.4 **11 Claims**

1. An azeotropic oil extraction process, comprising the steps of:

(a) continually feeding particles of oil-bearing protein material containing both bound and unbound water to the top of a vertical column which has a plurality of vertically spaced perforate plates containing small openings through which the protein material progressively settles downwardly creating a plurality of spaced beds of downwardly settling oil-bearing protein material,
(b) passing a quantity of oil solvent vapor maintained at a temperature above the azeotropic boiling point upwardly through the column in sufficient volume to provide upward flow through the perforate plates counter-current to the downwardly settling oil-bearing protein material to carry fluids upwardly through the column without carrying the particles upwardly from one bed to another therewith,
(c) assisting settling of the particles of oil-bearing protein material by periodically blocking upward vapor flow through the perforate plates at the bottom of the beds and immediately adjacent the surface of the plates with a blade,
(d) maintaining the solvent vapor at a temperature above the azeotropic boiling point for the solvent and water during its entire passage upwardly through the column,
(e) creating a turbulent miscella pool of oil, and liquid solvent above a relatively thin layer of particles disposed immediately above the top plate,
(f) maintaining a vapor atmosphere above the liquid miscella pool of solvent and water immediately adjacent the top of the column into which the oil-bearing protein material is introduced,
(g) supplying a liquid solvent at a point between the lowermost perforate plate and the top perforate plate,
(h) withdrawing the miscella from the liquid miscella pool to separate the oil therefrom,
(i) removing solvent and water vapor from the top of the column,
(j) supplying additional solvent vapor to the column at an intermediate point in the column below and near the top plate at a volume which is dependent upon the azeotropic conditions in the column, and
(k) withdrawing a de-oiled and dried protein material from the bottom of the column.

4,353,838

PROCESS FOR SEPARATING A MONOETHANOID FATTY ACID

Michael T. Cleary, Elmhurst, and Santi Kulprathipanja, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 13, 1981, Ser. No. 234,518

Int. Cl.^{3} C09F *5/10;* **C11B** *3/00*

U.S. Cl. 260—419 **12 Claims**

1. A process for separating a monoethanoid fatty acid from a mixture of fatty acids comprising a monoethanoid fatty acid and a diethanoid fatty acid, wherein said monoethanoid fatty acid possesses a lesser degree of unsaturation than said diethanoid fatty acid, which comprises contacting said mixture at adsorption conditions with a nonionic hydrophobic insoluble crosslinked polystyrene polymer adsorbent to selectively ad-

sorb said monoethanoid fatty acid having a lesser degree of unsaturation and to permit said diethanoid fatty acid having a greater degree of unsaturation to elute through said adsorbent.

4,353,839

PROCESS FOR SEPARATING SATURATED FATTY ACIDS

Michael T. Cleary, Elmhurst, and Santi Kulprathipanja, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 25, 1981, Ser. No. 238,231

Int. Cl.³ C11C *1/08*

U.S. Cl. 260—419 **10 Claims**

1. A process for separating stearic acid from a mixture comprising said stearic acid and palmitic acid which comprises contacting said mixture at adsorption conditions with a nonionic hydrophobic insoluble crosslinked polystyrene polymer adsorbent in an adsorption column containing said adsorbent to selectively adsorb said stearic acid and to selectively permit the nonadsorbed portion of said mixture comprising palmitic acid to elute through said adsorption column.

4,353,840

USE OF AMINE-ALUMINUM CHLORIDE ADDUCTS AS ALKYLATION INHIBITORS IN A LIGAND-COMPLEXING PROCESS

Donald J. Haase, Houston; David G. Walker, Baytown, and Paul C. Ostrowski, Webster, all of Tex., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Division of Ser. No. 171,630, Jul. 23, 1980, abandoned. This application Mar. 6, 1981, Ser. No. 241,200

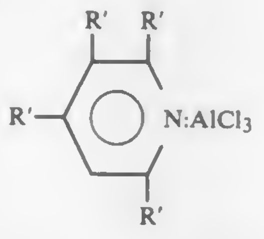
Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 R **7 Claims**

1. An alkylation inhibitor for ligand-separation processes in which a gas feedstream containing a complexible ligand is contacted with a liquid sorbent comprising cuprous aluminum tetrachloride and an aromatic hydrocarbon that is a solution of an amine-aluminum chloride adduct selected from the group consisting of

(a) adducts having the formula $R_3N{:}AlCl_3$, wherein each R represents hydrogen, alkyl having 1 to 3 carbon atoms, phenyl, or methylphenyl;

(b) adducts having the formula



wherein each R' represents hydrogen or alkyl having 1 to 4 carbon atoms, and

(c) mixtures thereof in a solvent selected from the group consisting of aromatic hydrocarbons and liquid sorbents that comprise cuprous aluminum tetrachloride and an aromatic hydrocarbon.

4,353,841

AROMATIC ISOCYANATE PREPARATION

Jai H. Kyung, Dublin; Robert A. Grimm, Upper Arlington, and Joseph G. Holehouse, Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 19, 1982, Ser. No. 350,445

Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P **8 Claims**

1. A method for preparing an aromatic isocyanate which comprises contacting a Group VII of a Group VIII metal catalyst at a temperature between about 350° and 550° C. with a feed stream consisting essentially of an aromatic hydrocarbon, nitric oxide and carbon monoxide wherein the mole ratio of nitric oxide to carbon monoxide is at least one and recovering aromatic isocyanate from the reaction effluent stream.

4,353,842

AMIDINOUREAS

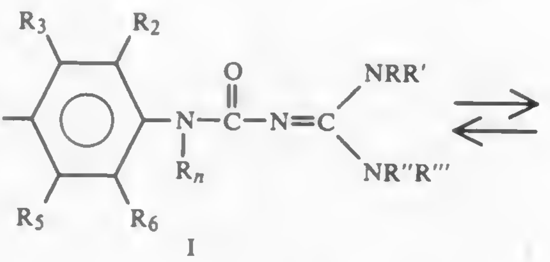
Julius Diamond, Morris Plains, N.J., and George H. Douglas, Malvern, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 942,247, Sep. 14, 1978, Pat. No. 4,204,000, which is a continuation-in-part of Ser. No. 787,673, Apr. 14, 1977, abandoned, which is a division of Ser. No. 558,187, Mar. 31, 1975, Pat. No. 4,060,635. This application Feb. 5, 1980, Ser. No. 118,826

Int. Cl.³ C07C *127/19, 129/12, 121/52*

U.S. Cl. 260—465 D **3 Claims**

1. An amidinourea compound of the general formula I or its tautomeric form II wherein R is hydrogen:



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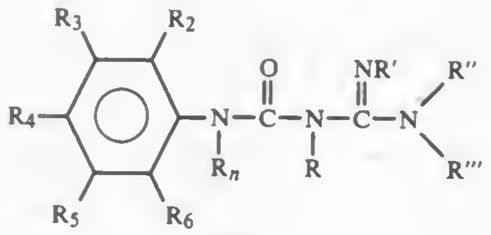


II

where:

R_2, R_3, R_4, R_5 and R_6 may be the same or different and are
hydrogen,
haloloweralkyl,
nitro,
arloweralkoxy,
acyloxy,
cyano,
haloloweralkoxy, or
loweralkylsulfonyl;

R and R' are hydrogen or loweralkyl;

R" and R''' are hydrogen,
loweralkyl,
loweralkenyl,
cycloalkenyl up to 9 carbon atoms,
cycloalkylloweralkyl,
cycloalkyl,
aralkyl,
loweralkynyl,
haloalkyl,
hydroxyalkyl,
alkoxyalkyl,
cyanoalkyl,
aminoalkyl,
mono- and di-loweralkylaminoalkyl,
carbamoylalkyl,
mono- and di-carbamoylalkyl,
carboxyalkyl,
alkoxycarbonylalkyl,
aralkoxycarbonylalkyl,
formyl,
acyl,
acylalkyl,
alkylsulfonyl or
aralkylsulfonyl;

R_n is hydrogen or loweralkyl provided at least one of R, R', R" and R''' is other than hydrogen; and the non-toxic acid addition salts thereof.

4,353,843

PREPARATION OF NITRITE ESTERS

Arthur R. Doumaux, Jr., Charleston; James M. Downey, St. Albans; Joseph P. Henry, South Charleston, and John M. Hurt, St. Albans, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 227,798, Jan. 23, 1981, abandoned. This application Mar. 12, 1981, Ser. No. 239,761

Int. Cl.³ C07C *77/00*

U.S. Cl. 260—466 **20 Claims**

1. The process for making methyl or ethyl nitrite from methanol or ethanol, respectively, which comprises reacting in a reaction zone a molar amount of nitrogen oxide composition containing a nitric oxide to nitrogen dioxide molar ratio of greater than 1, in the vapor state, with a molar amount of vaporized methanol or ethanol wherein the molar ratio of methanol or ethanol to the combined molar amount of nitric oxide and nitrogen dioxide is greater than one, in the presence of an inert gaseous diluent for said reaction, at a temperature of between about 10° C. to about 300° C. for a period of time sufficient to form methyl or ethyl nitrite.

4,353,844

PREPARATION OF ANHYDRIDES BY CARBONYLATION OF ESTERS

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 7, 1981, Ser. No. 281,179

Claims priority, application France, Sep. 11, 1980, 80 19875

Int. Cl.³ C07C *51/56, 53/12*

U.S. Cl. 260—549 **30 Claims**

1. A process for the preparation of a carboxylic acid anhydride, comprising carbonylating a carboxylic acid ester in liquid phase, in an essentially anhydrous reaction medium including a sulfone reaction solvent, and in the presence of a catalytically effective amount of (i) nickel and an alkyl or acyl iodide promoter therefor, and (ii) a co-catalyst which comprises at least one alkali or alkaline earth metal salt, or quaternary ammonium or phosphonium iodide.

4,353,845

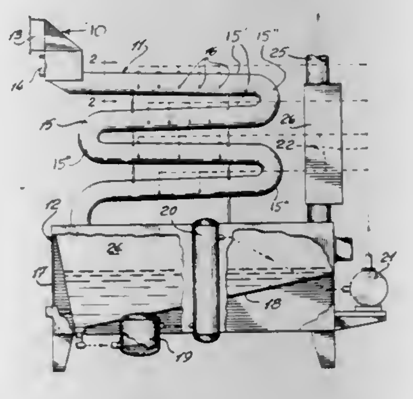
GAS SCRUBBER

Joseph A. Chartrand, St. Hugues, Province of Quebec, Canada (J0H 1N0), and Irenee Perreault, 515 Casavant Blvd., West, Saint-Hyacinthe, Province of Quebec, Canada (G2S 7K1)

Filed May 4, 1981, Ser. No. 259,832

Int. Cl.³ B01D *47/02, 47/06, 47/12*

U.S. Cl. 261—3 **1 Claim**



1. A gas scrubber for hot gases, comprising an upstream precipitation section and a downstream sedimentation section located below the precipitation section and consisting of an elongated tank, water contained in said tank, the latter defining a gas compartment above said water, said precipitation section consisting of a serpentine duct comprising a plurality of straight duct portions disposed one below the other, said serpentine duct having an upper inlet and a lower outlet for the hot gases flowing therethrough, each straight duct portion downwardly inclined in the direction of gas flow, said lower outlet communicating with the top of said tank at one end thereof, a gas exhaust chimney communicating with the top of said tank at the opposite end thereof, a plurality of groups of water jets extending into each straight duct portion, and longitudinally spaced along the same, the water jets of each group being spacedly arranged in a common transverse plane relative to each straight duct portion and inwardly extending radially and convergingly to form a water curtain in the corresponding transverse plane, the hot gasses passing through the successive water curtains and the water from said water curtains flowing under gravity along said straight and said U-shaped duct portions into said tank so as to form a layer of water in said straight duct portions, pump means for recirculating the water in said tank through said water jets, and a heat exchanger in the water of said tank to recuperate the heat from said water for external use.

4,353,846

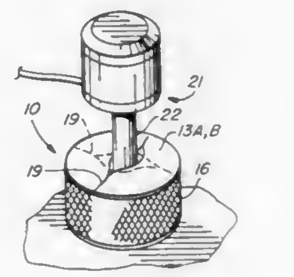
FILTER ASSEMBLY FOR EVAPORATIVE COOLER PUMPS

Douglas W. Mehrens, 918 W. Portland, Phoenix, Ariz. 85004, and James F. Kuchar, 5524 E. Cactus, Scottsdale, Ariz. 85254

Filed Nov. 16, 1981, Ser. No. 321,766

Int. Cl.³ B01D *35/02*

U.S. Cl. 261—4 **6 Claims**



1. A filter assembly for a pump comprising:
a cylindrical housing open at one end with the cylindrical side of said housing being formed of an open mesh material,
a filter pad mounted within said housing juxtapositioned to the inside periphery of said housing, and
cover means for the open end of said housing,
said cover means defining an opening extending through a resilient portion thereof which is distortable when an impeller blade and its shaft is forced therethrough, but which assumes a substantially closed relaxed position sequentially thereafter.

4,353,847

FUEL SUPPLY SYSTEM FOR SMALL ENGINE

Masato Sato, Akashi, and Masanobu Yamashita, Miki, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 28, 1981, Ser. No. 335,014

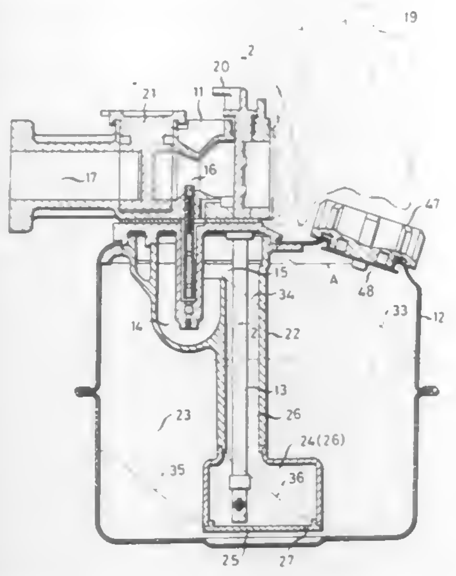
Claims priority, application Japan, Dec. 26, 1980, 55-188404

Int. Cl.³ F02M *17/06*

U.S. Cl. 261—36 A **3 Claims**

1. A fuel supply system for a small engine comprising a fuel tank mounted on the underside of a carburetor, and a constant level fuel chamber receiving fuel from the fuel tank through a fuel drawing pipe to store same temporarily therein and eject same into the carburetor, such fuel supply system further comprising:
a cover enclosing said fuel drawing pipe and said constant level fuel chamber to separate the fuel drawing pipe and

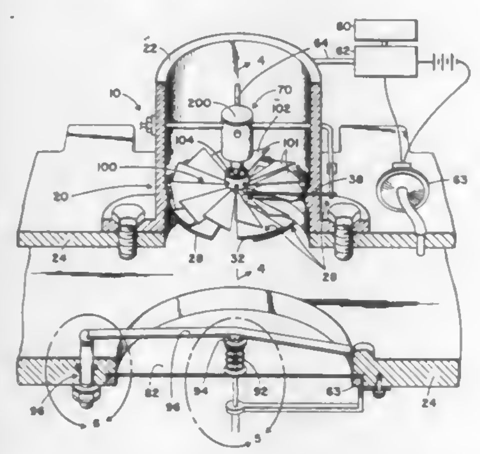
the constant level fuel chamber from a fuel storing section in the fuel tank; and



a communication port formed at the bottom of said cover for communicating a fuel feeding section in the fuel cover with the fuel storing section.

4,353,848
FUEL/AIR METERING APPARATUS

Earl D. Carsten, 15421 Cameo Dr., Sun City, Ariz. 85351
Filed Jul. 25, 1980, Ser. No. 172,258
Int. Cl.^{3} F02M *17/16*
U.S. Cl. 261—69 R **4 Claims**



1. A fuel/air metering system for an externally timed ignition internal combustion engine, comprising:

air metering means having an air conduit and a throttle plate rotatably mounted within said air conduit provided with at least a generally planar throttle plate surface and an axis of rotation perpendicular to said planar surface for controllably metering at least an airflow into the engine;

fuel metering means having a diaphragm for controllably metering a flow of fuel into said airflow in response to intake manifold vacuum so that a fuel/air mixture flow is provided;

vaporizing means for mechanically inducing turbulence and swirl into said fuel/air mixture flow so that said fuel tends to vaporize;

said fuel metering means further comprising said diaphragm having a first surface in communication with said intake manifold vacuum and a second surface in communication with atmospheric pressure;

said fuel metering means further comprising a pump for pumping a flow of said fuel under pressure from the fuel reservoir;

said fuel metering means further comprising fuel control valve means at least partly in communication with said air conduit having a rotatable valve body for controllably restricting the rate of entry of said fuel flow into said airflow;

said fuel metering means further comprising rotating means in communication with said diaphragm and said valve body for rotating said valve body as a function of at least a displacement of said diaphragm;

said fuel control valve means further comprising said valve body having a metering rod portion provided with a valve head at a first end and a threaded portion;

said fuel control valve means further comprising a valve housing coupled to said air conduit having a fuel inlet aperture, a fuel outlet aperture concentrically disposed about said metering rod portion of said valve body, a valve seat at the terminus of said fuel outlet aperture so that said valve seat and said valve head cooperatively define a valve orifice, and a valve body aperture having at least a portion threadedly engaged to said valve body threaded portion so that rotating said valve body produces a longitudinal translation of said valve body within said valve housing tending to vary the area of said valve orifice;

said rotating means comprising said valve body having an arm member;

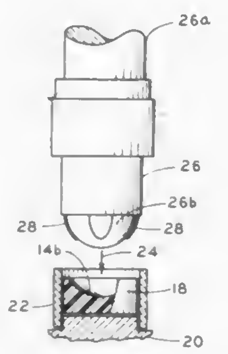
said rotating means further comprising first means having a cable provided with a diaphragm end coupled to said portion of said diaphragm for transferring said displacement of said portion of said diaphragm to said arm member so that said valve body can be rotated thereby;

said rotating means further comprising said arm member having a cam follower surface; and

said rotating means yet further comprising said cable means having cam means having a cam surface in communication with said cam follower surface for translating said cam follower surface as a function of said displacement of said diaphragm.

4,353,849
MANUFACTURE OF SOFT CONTACT LENSES HAVING VENT PASSAGEWAYS

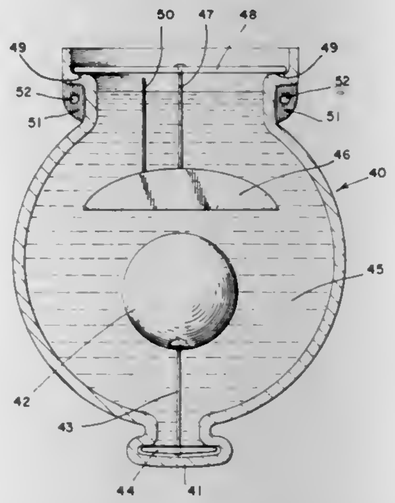
Lawrence Lewison, c/o Contact Lens Specialists, 489 Fifth Ave., New York, N.Y. 10017
Filed Jun. 19, 1981, Ser. No. 275,373
Int. Cl.^{3} B29D *11/00*
U.S. Cl. 264—2.7 **3 Claims**



1. A method of making a soft corneal contact lens with vent passageways about the periphery thereof comprising the steps of providing the plastic construction material for fabricating a soft corneal contact lens in an initial work-in-process cylindrical form, machining the upper portion of said form into a concave shape to embody said lens with an internal optical lens surface, providing the vent passageways in peripheral locations about said internal optical lens surface by forming impressions into said surface and correspondingly increasing the density of said construction material bounding said impressions, and machining the lower portion of said form into a convex shape to embody said lens with an external optical lens surface preparatory to subsequent hydrophilic absorption of the water for conversion of said lens into a softened condition, whereby said high-density construction material bounding said vent passageways resists flattening even in said softened condition of said lens.

4,353,850
METHOD OF MAKING A BOWLING BALL

Gene W. MacDonald, Kent, Ohio, assignor to GMSG, Inc., Kent, Ohio
Division of Ser. No. 19,823, Mar. 12, 1979, Pat. No. 4,268,034. This application Feb. 29, 1980, Ser. No. 126,162
Int. Cl.^{3} B29C *6/02;* **B29D** *3/00*
U.S. Cl. 264—25 **4 Claims**

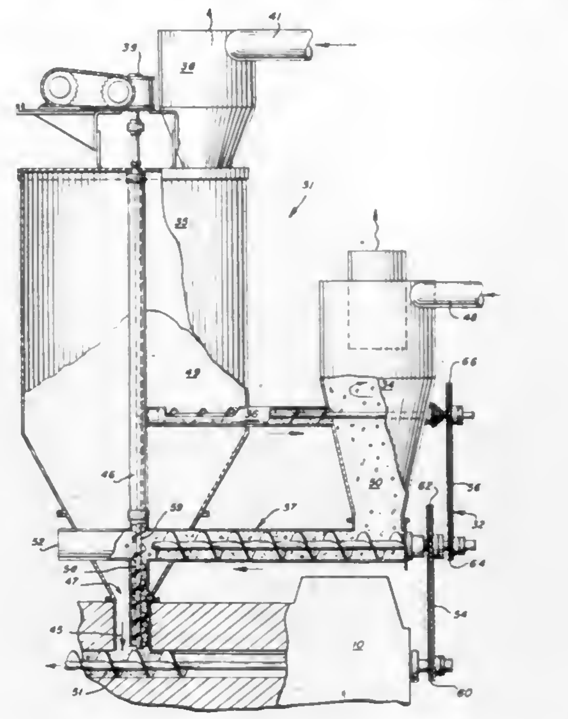


1. A method of making a bowling ball in a mold comprising the steps of placing a member in the mold, filling the mold with a polymerizable mass having a specific gravity greater than the member so that the member will float within the polymerizable mass, selectively restraining the member so that the centroid thereof will be in the range of approximately three to approximately six and one-half inches from a point of reference on the outer surface of the bowling ball, suspending a weight block of greater specific gravity than the polymerizable mass in the mass to a depth in the range of approximately one-half inch to approximately three and one-quarter inches from said point of reference on the outer surface of the ball generally on the same axis as the member to effect with the member a selected degree of eccentricity in the bowling ball, effecting polymerization of the mass until solidification thereof, removing the mold by grinding the same away from the solidified mass, and forming the removed mass into a finished bowling ball.

4,353,851
ON-LINE RECLAIM METHOD

Jack F. Godfrey, and Charles L. Grant, both of Hazlehurst, Ga., assignors to Standard Oil Company (Indiana)
Continuation of Ser. No. 848,742, Nov. 4, 1977, abandoned. This application May 23, 1979, Ser. No. 41,606
Int. Cl.^{3} B29C *29/00*
U.S. Cl. 264—37 **3 Claims**

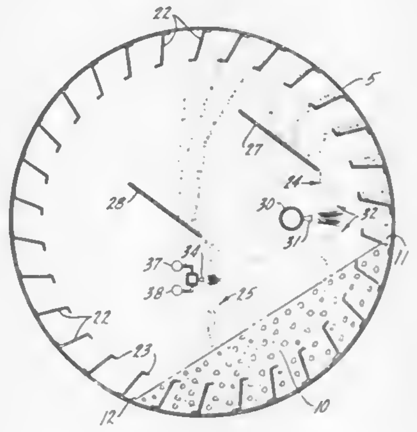
1. An on-line process for reclaiming a portion of oriented and unoriented film produced on an extrusion line, said process comprising: entangling said oriented and unoriented film to form a collection thereof containing at least 25% by weight unoriented film; chopping said collection to form a chopped reclaim, positively transferring at least 1½ parts by weight of a virgin resin from a first container to a mixing zone in a second container while simultaneously transferring 1 part by weight of said chopped reclaim to said mixing zone of said second container; swirling said virgin resin and said chopped reclaim to form a mixture thereof; positively transferring said mixture through a conduit, to a plasticization zone which is within said extrusion line; and gravitationally transferring additional virgin resin from said first container to said plasticization zone



downstream from where said mixture enters said plasticization zone.

4,353,852
PELLETIZING METHOD AND APPARATUS

Samuel Y. Tse, Calgary, Canada, assignor to Procor Limited-Procor Limitee, Oakville, Canada
Division of Ser. No. 88,235, Oct. 25, 1979, Pat. No. 4,272,234. This application Jan. 26, 1981, Ser. No. 228,446
Int. Cl.^{3} B01J *2/12*
U.S. Cl. 264—37 **33 Claims**



1. The method of maintaining within a predetermined range the temperature of a zone where solid particles falling through the air into a rotating bed of such particles are sprayed with a substance which adheres to the surface of the falling particles, comprising the steps of:

A. removing some of the particles from said bed;
B. wetting the removed particles with a liquid; and
C. dropping the wetted particles into said zone, whereby evaporation of the liquid from said wetted particles as they pass through said zone lowers the temperature of said zone.

4,353,853

METHOD FOR MAKING RETICULATED FOAM STRUCTURES

Joseph A. Swift, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1980, Ser. No. 171,561
Int. Cl.^{3} B29D *27/04*

U.S. Cl. 264—41 9 Claims

1. A process for making reticulated foam structure of a cross-linkable thermosetting fluoroelastomer which comprises: the sequential steps of dissolving said fluoroelastomer in a solvent to form a solution, said solvent being evaporatable at or about ambient temperature; adding an emulsifying vehicle and a surface active agent to said solution, said emulsifying vehicle having a normal volatility lower than that of said solvent, and forming the mixture into an emulsion; forming said emulsion into the desired structure; substantially removing said solvent from said emulsion structure at or about ambient temperature while said emulsifying vehicle is present; removing said vehicle from said structure; and curing the polymer structure to form a reticulated foam structure.

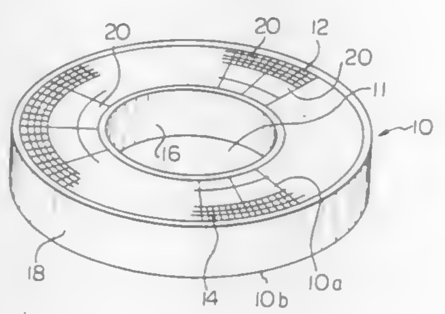
4,353,854

METHOD OF PRODUCING LARGE-SIZED CERAMIC HONEYCOMB STRUCTURE BODY BY INTEGRATION OF SMALL UNIT BLOCKS

Akira Oyamada, Yokosuka; Shin Fujii, Zama; Nobuhiko Okoshi, Tochigi; Satoshi Ambe, Yokosuka, and Shigeyoshi Nakagawa, Isesaki, all of Japan, assignors to Nissan Motor Company, Japan

Continuation of Ser. No. 34,072, Apr. 27, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,451
Claims priority, application Japan, May 2, 1978, 53-52350
Int. Cl.^{3} C04B *37/00*

U.S. Cl. 264—63 18 Claims



1. A method of producing a large-sized body of a ceramic honeycomb structure, comprising the steps of:
   integrating a plurality of unit blocks each having a prismatic shape and a honeycomb structure providing a number of continuous and axially extending gas passages into a large-sized body of a desired shape by bonding said unit blocks to one another with a bonding agent, said unit blocks being formed by extrusion molding of a ceramic composition comprising a powdered ceramic material, an organic binder material, which can be entirely converted into gaseous substances and dissipated by firing, and a solvent for said binder material and thereafter dried with resultant evaporation of said solvent, said bonding agent comprising only two essential components one of which is said organic binder material and the other is a liquid which serves as a solvent for said binder material;
   drying said large-sized body so as to evaporate said liquid in said bonding agent;
   heating the dried large-sized body to a first temperature so as to gasify and dissipate said binder material; and
   firing the heated large-sized body at a second temperature higher than said first temperature so as to cause sintering of said ceramic material constituting the integrated unit blocks thereby to convert the large-sized body into an entirely and homogeneously ceramic honeycomb structure body.

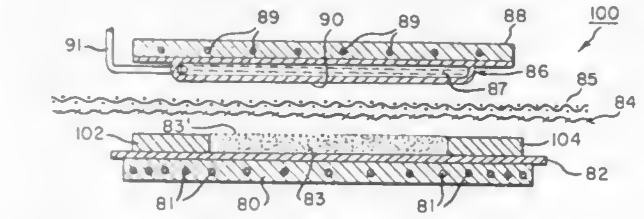
4,353,855

PROCESS FOR MAKING A STRESS-FREE PLASTIC ARTICLE

Armen Garabedian, 8-22 Astoria Blvd., Long Island City, N.Y. 11102

Division of Ser. No. 929,304, Jul. 31, 1978, Pat. No. 4,243,368, which is a continuation-in-part of Ser. No. 817,048, Jul. 19, 1977, Pat. No. 4,104,101, and a continuation-in-part of Ser. No. 647,832, Jan. 9, 1976, abandoned, which is a continuation of Ser. No. 424,654, Dec. 14, 1973, abandoned, which is a continuation of Ser. No. 141,495, May 10, 1971, abandoned, which is a division of Ser. No. 805,093, Feb. 14, 1969, abandoned, which is a continuation of Ser. No. 536,140, Mar. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 473,342, Jul. 20, 1965, Pat. No. 3,383,265, said Ser. No. 817,048, is a continuation of Ser. No. 279,964, Aug. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,495, , abandoned. This application Dec. 23, 1980, Ser. No. 219,430
Int. Cl.^{3} B27J *5/00*

U.S. Cl. 264—126 3 Claims



1. The process for producing a stress free plastic article from plastic particles comprising the steps of providing a layer of said plastic particles, disposing a unitary microporous parting and air release means against said layer of plastic particles, placing said layer and said microporous parting and air release means between a first member and a flexible diaphragm, heating said plastic particles to at least their fusion temperature, applying a fluid pressure to said diaphragm to evenly impress a fluid-like pressure to said layer of particles with a force sufficient to cause the plastic particles to fuse to a coherent mass defining said plastic article and venting any gases in said layer of plastic particles through said microporous means during said heating and pressing and cooling and removing said fluid-like pressure from said fused plastic article.

4,353,856

PROCESS AND EMBEDDING SYSTEM FOR EMBEDDING TISSUE SAMPLES

Karl-Friedrich Mück, Wiesbaden; Lothar Post, Kelkheim, and Hannes Westen, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 190,974
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939582
Int. Cl.^{3} G01N *31/00;* **A01N** *1/00*

U.S. Cl. 264—240 6 Claims

1. In a process for embedding tissue samples in which the sample is embedded by polymerization, at temperatures of at most +20° C., of (meth)acrylate, optionally admixed with a plasticizer, in the presence of a low-temperature initiator system which contains an accelerator in addition to the agent which forms free radicals, the improvement of which comprises: treating first the tissue sample with a mixture of at least one monomer of an alkyl (meth)acrylate and a hydroxy alkyl (meth)acrylate, accelerator and/or agent which forms free radicals, the concentration of accelerator and/or agent which forms free radicals being greater in this first polymerization mixture than in a second polymerization mixture, said concentration of accelerator and/or agent which forms free radicals being at least 2 to 10 times higher than the concentration in the second polymerization mixture; further treating said tissue with the second polymerization mixture of an alkyl (meth)acrylate and a hydroxyalkyl (meth)acrylate, the weight ratio of hydroxyalkyl (meth)acrylate to alkyl (meth)acrylate in a mixture with said initiator system not exceeding the value of 9:1, and polymerizing said mixture whereby an embedded tissue is recovered.

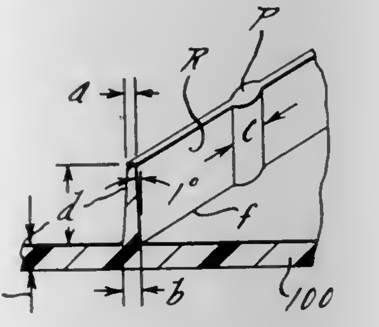
4,353,857

METHOD FOR MAKING PLASTIC PANEL AND PANEL

Donald J. Ray, Plymouth, and Kenneth H. Woodrich, Rochester, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 1, 1980, Ser. No. 117,728
Int. Cl.^{3} B29D *3/02;* **B29G** *1/00*

U.S. Cl. 264—258 32 Claims



1. A method for producing a compression molded, fiber reinforced, plastic panel comprising a plate having an outer surface and an inner surface bearing integrally molded reinforcing members, which method comprises:
   A. providing a mold with heated first and second mold members that close to form a configuration for said panel, one of said mold members having a surface interrupted by rib-forming chambers that fill to form a rib pattern that rigidifies said panel, said chambers having a width about equal to or less than the thickness of said plate and a depth at least as large as said thickness;
   B. introducing molding compound between said mold members in sufficient amount to form under heat and pressure said panel, said molding compound being in layers positioned one atop another, a first part of said layers comprising thermosetting resin and relatively short chopped fibers and the other part comprising thermosetting resin and relatively long chopped fibers;
   C. causing said mold members to close upon said molding compound at a pressure in a relatively high range so as to cause flow of said molding compound between said mold members into said configuration whereby said relatively short fibers flow into said chambers;
   D. reducing said pressure to a subsequent pressure in a relatively low range and permitting said molding compound to at least substantially cure at a pressure in said relatively low range;
   E. parting said mold members;
   F. removing said panel from between said mold members.

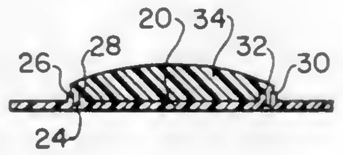
4,353,858

METHOD FOR FORMING A BOSS UPON A THERMOPLASTIC POLYMER SURFACE AND RESULTING ARTICLE

Kenneth B. Gilleo, and Willard H. Kriebich, both of Sparta, Wis., assignors to Northern Engraving Corporation, Sparta, Wis.

Filed Dec. 24, 1980, Ser. No. 220,087
Int. Cl.^{3} B32B *3/30*

U.S. Cl. 264—268 19 Claims



1. A method for forming a boss upon an essentially planar thermoplastic polymer surface which comprises:
   (a) heating the thermoplastic polymer surface to a temperature above the deformation temperature of the thermoplastic polymer and below the decomposition and melt stick temperatures of the thermoplastic polymer;
   (b) impressing the thermoplastic surface, for from about 0.1 to about 10 seconds with a debossing die having at least one edge in the shape of a first pattern, to form a second pattern area on the surface defined and encompassed by at least one continuous self-connecting retaining dam on the surface, at least a portion of said dam being formed by said impressing by said die, said portion of said dam comprising at least one debossed region between at least two raised ridges having upper edges;
   (c) introducing into the second pattern area, a liquid resin in a quantity sufficient to fill the second pattern area and insufficient to overflow the continuous dam, the liquid resin being solidifiable at a temperature below the deformation temperature of the thermoplastic polymer, the thermoplastic polymer, having reaction and solubility rates with the liquid resin which are sufficiently slow to prevent significant weakening of said thermoplastic polymer prior to solidification of the liquid resin; and
   (d) while the upper edge of each such ridge is in an essentially horizontal plane, solidifying the liquid resin to form an elevated boss.

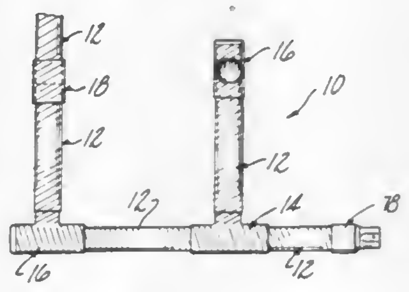
4,353,859

METHOD FOR MAKING FITTINGS AND COUPLINGS

Sherwin Palmer, 1711 Woodslea Dr., Flint, Mich. 48508

Division of Ser. No. 384,753, Aug. 1, 1973, abandoned. This application Mar. 4, 1977, Ser. No. 774,303
Int. Cl.^{3} B29D *23/03, 23/04;* **B29C** *17/14*

U.S. Cl. 264—506 3 Claims



1. A method of manufacturing a plastic ground drainage component comprising the steps of:
   (a) molding a first plastic tubular member having a hollow interior, said first plastic tubular member being formed with a first closed end and a second substantially closed end;
   (b) forming an inwardly directed double-entry helical thread

in the exterior and interior surfaces of said first plastic tubular member in at least one portion of said surfaces between said first end and said second end;

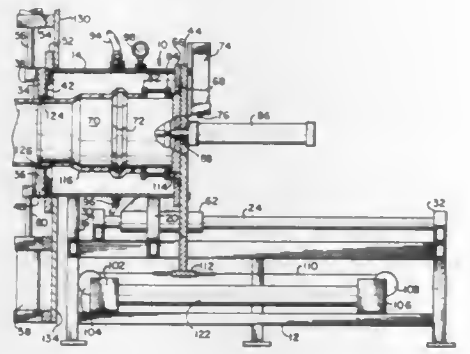
(c) forming circumferential guide lines on the exterior surface of said first plastic tubular member proximate said first end and proximate said second end of said first plastic tubular member;

(d) forming smooth portions on the exterior and interior surfaces of said first plastic tubular member between each said guide line and the adjacent helically-threaded portion; and

(e) severing along said circumferential guide line proximate said second end.

4,353,860
METHOD FOR PRESSURE FORMING PIPE BELLS

John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335
Division of Ser. No. 77,657, Sep. 21, 1979, Pat. No. 4,277,231.
This application Jun. 29, 1981, Ser. No. 278,441
Int. Cl.³ B29D *23/00*
U.S. Cl. 264—519 **7 Claims**



1. The method of forming a bell shape in a heated end of a length of plastic pipe comprising

positioning a shaped mandrel in the rear of a pressure chamber;

inserting the pipe end into an opening in the pressure chamber and over the shaped mandrel;

closing the opening about the pipe end and forming a sealed pressure chamber about the softened pipe end;

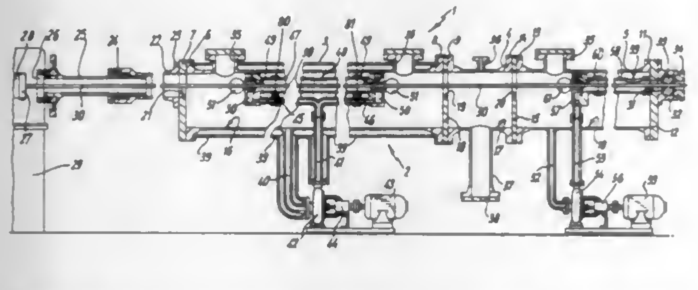
pressurizing the sealed pressure chamber and pressing the softened end against the mandrel;

setting the softened end against the mandrel for a sufficient time to set a bell shape in the softened end and then releasing the pressure; and

withdrawing the pipe end from the pressure chamber.

4,353,861
PROCESS AND PLANT FOR VULCANIZING A CONTINUOUS LENGTH OF CURABLE MATERIAL

Gustavo Caser, Gaglianico, Italy, assignor to General Engineering Radcliffe 1979 Limited, Radcliffe, England
Filed Mar. 9, 1981, Ser. No. 241,883
Claims priority, application Italy, Mar. 13, 1980, 67387 A/80
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—561 **12 Claims**

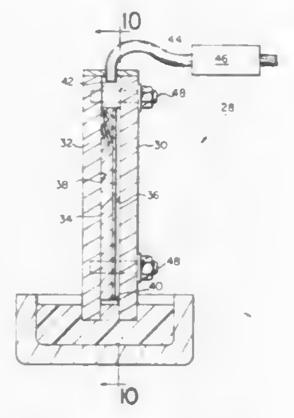


1. Apparatus for curing a continuous length of curable material comprising a first tubular body which defines a chamber for a heat exchange liquid, a second tubular body disposed inside the first tubular body and defining a curing chamber, inlet means leading into the tubular bodies, and outlet means leading from the tubular bodies arranged by permit a length of material to be cured to pass through the tubular bodies, first and second sealing means placed upstream and downstream respectively of the inlet and outlet means and operative to sealingly cooperate with a length of material, at least one tubular injector for injecting a heat exchange liquid into said second tubular body, heat exchange liquid supply means for the supply of heat exchange liquid to the or each tubular injector, means for heating at least a part of the first tubular body, means for feeding a pressurized fluid to the first tubular body and means for cooling the continuous cured length of curable material emerging in operation from the second tubular body.

11. A method of curing a continuous length of curable material including the steps of supplying a heat exchange liquid to a first tubular body, pressurising the first tubular body, heating the heat exchange liquid in the first tubular body, feeding the heat exchange liquid from the first tubular body to an injector, injecting the liquid so fed into a second tubular body disposed within the first tubular body, simultaneously passing the continuous length of material through the second tubular body disposed within the first tubular body so that the heat exchange liquid passes over it, allowing the heat exchange liquid to drain back from the second tubular body to the first tubular body, and subsequently cooling the continuous length of material.

4,353,862
METHOD FOR MAKING SOUND BOARD

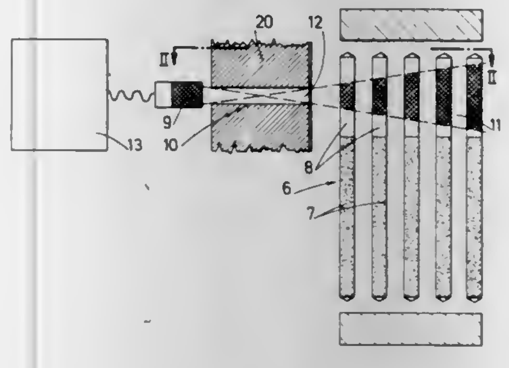
Charles W. Kaman, II, Marlborough, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.
Filed May 12, 1980, Ser. No. 149,243
Int. Cl.³ B29C *11/00, 27/10;* B29D *3/02;* B29G *7/00*
U.S. Cl. 264—571 **5 Claims**



1. A method for making a sound board assembly for a stringed musical instrument comprising the steps of positioning a layer of finely woven fiber glass fabric in adhering face-to-face relation with a sheet of wood with threads of the fabric extending in generally parallel relation to the grain of the wood, temporarily adhering said sheet of wood to a first mold plate with said fabric facing away from said plate, disposing a second mold plate so that a narrow space is left between said second mold plate and said layer of fabric to form a mold cavity between said first mold plate and said second mold plate, disposing said mold plates so that major surfaces of said plates are vertically oriented, introducing a transparent, curable liquid resin into the lower part of the space between said fabric and said second mold plate, evacuating air from between said mold plates at the upper part thereof while the curable liquid resin is being introduced fill said cavity, curing said resin to bond said fabric to said wood, and removing said sound board assembly from the mold plates.

4,353,863
METHOD FOR LOCALIZING A LEAKING ROD IN A NUCLEAR FUEL ASSEMBLY

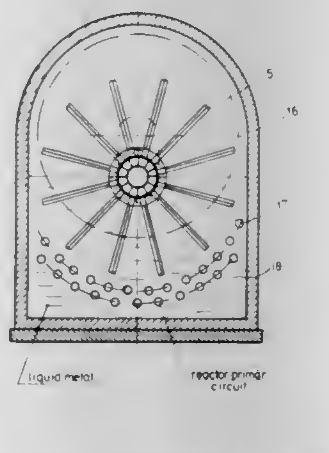
Leon G. Leenders, Mol, Belgium, assignor to Centre d'Etude de l'Energie Nucleaire, C.E.N., Brussels, Belgium
Filed Jul. 3, 1980, Ser. No. 165,812
Claims priority, application France, Jul. 6, 1979, 79 17579
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—251 **24 Claims**



1. Method for localizing a leaking rod inside a nuclear fuel assembly, in which for each rod in an assembly, the radioactivity in at least two discrete rod rows in which said rod lies is measured and a leaking rod is localized by sensing a lowering of the radio-activity in the tested rows where said rod lies relative to the radio-activity in an identical row of non-leaking rods.

4,353,864
PRESSURE REGENERATOR

Paul Morcov, No. 12 i/S, Georg-Büchner-Weg, 6050 Offenbach, Fed. Rep. of Germany
Division of Ser. No. 967,551, Dec. 7, 1978, Pat. No. 4,307,684.
This application Jan. 28, 1981, Ser. No. 229,248
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758619
Int. Cl.³ G21D *1/00*
U.S. Cl. 376—402 **4 Claims**



1. A nuclear power plant comprising a nuclear reactor and a pressure regenerator, said pressure regenerator comprising:

(a) a housing defining a chamber and including heating means to heat a first sector of said chamber, the remaining sector of said chamber being cooler;

(b) an assembly mounted for rotation about an axis in said chamber, said assembly comprising a plurality of elongated, open-ended ducts arranged in an annular configuration about said axis and extending substantially parallel to said axis and a plurality of heat exchange means arranged radially about said annular arrangement of ducts, each of said heat exchange means being connected to one of said ducts to permit steam to circulate between each of said ducts and the associated heat exchange means; and

(c) an annular receiver head and an annular outlet head in sealing engagement with opposite ends of said plurality of ducts, respectively, said receiver and outlet heads being arranged to communicate with said plurality of ducts during rotation of said assembly;

(d) said heating means comprising a bath of liquid contained in said first sector of said chamber and conduit means immersed in said liquid and connected to said nuclear reactor for heating said liquid bath;

(e) whereby steam may be directed through said receiver head, said ducts, said plurality of heat exchange means and said outlet head and may be heated in said heat exchange means during passage of said heat exchange means through said heated first sector of said chamber.

4,353,865
BORON CONTAINING, IRON-MANGANESE-ZIRCONIUM MASTER-ALLOY

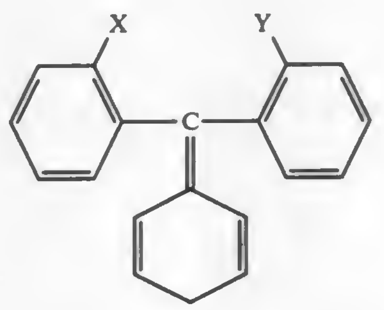
Alex E. Petrus, 3560 Ridge Rd., Cleveland, Ohio 44102
Filed Apr. 24, 1981, Ser. No. 257,216
Int. Cl.³ C22C *16/00, 22/00, 30/00*
U.S. Cl. 420—422 **4 Claims**

1. A New Master-alloy composition for the addition of Boron to Steels comprised of the following broad ranges of alloying elements, including 5.0 to 50.0% Iron, 10.0 to 60.0% Mn, 5.0 to 55% Zr, 0.1 to 10.0% B, 0.1 to 5.0% C, with the balance residual elements in small percentages of less than 1.5%.

4,353,866
ACTIVATION OF HYPOCHLORITE BLEACHING OF DYES

Louis F. Wong, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 5, 1980, Ser. No. 204,120
Int. Cl.³ B03D *9/02;* A61L *2/16*
U.S. Cl. 422—37 **14 Claims**

1. A method of treating a flush toilet, which comprises a flush tank and bowl, with a hypochlorite sanitizing agent each time the toilet is flushed, and providing a transitory visual signal to indicate the activity of the sanitizing agent in the bowl, the said method comprising the step of dispensing from separate dispensing means, into the flush water; (A) an aqueous solution of a compound which produces hypochlorite ion in aqueous solution; and (B) an aqueous solution comprising a dye, a compound which produces bromide ion in aqueous solution and a compound which produces ammonium ion in aqueous solution, thereby to form a solution in the toilet bowl at the end of the flush cycle which comprises from about 0.02 to about 0.45 ppm of said dye, from about 2 ppm to about 30 ppm available chlorine from said hypochlorite ion, from about 0.1 ppm to about 3 ppm bromide ion, from about 0.1 ppm to about 2 ppm ammonium ion and an available chlorine to dye ratio of from about 2:1 to about 150:1, said solution in said bowl having a pH of from about 6 to about 9.5, wherein said dye is selected from the group consisting of water-soluble, ortho-substituted triarylmethane dyes having in their structure the moiety

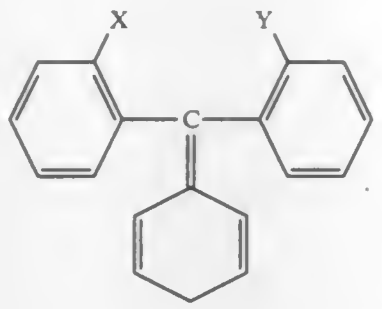


wherein X is selected from the group consisting of substituent groups other than hydrogen or methyl and Y is selected from the group consisting of X, hydrogen and methyl, and wherein said solution in said bowl is bleached from a colored state to a colorless state within about 40 minutes after the end of said flush cycle.

9. An article of manufacture designed for placement below the high water line of the flush tank of a toilet comprising a flush tank and a bowl, said article comprising two dispensing means;

(A) the first dispensing means containing a solid composition which is soluble in water and comprises a compound which provides hypochlorite ions in aqueous solution, and

(B) a second dispensing means containing a water-soluble source of bromide ion, a water-soluble source of ammonium ion and a dye selected from the group consisting of water-soluble, ortho-substituted triarylmethane dyes which have in their structure the moiety



wherein X is selected from the group consisting of substituent groups other than hydrogen or methyl and Y is selected from the group consisting of X, hydrogen and methyl, said first dispensing means and second dispensing means each having means for receiving water from the flush tank when said flush tank refills after a flush, and for maintaining said received water in contact with the respective solid compositions in said first and second dispensing means during the quiescent period between flushes so as to form concentrated solutions of said compositions in said respective dispensing means between flushes, said first dispensing means and said second dispensing means each having means for releasing said concentrated solutions into the water in the flush tank when said water flows from the tank during flushing, said first and second dispensing means and the compositions therein cooperating to produce, in the toilet bowl at the end of the flush, a concentration of available chlorine of from about 2 ppm to about 30 ppm, a concentration of said dye of from about 0.02 ppm to about 0.45 ppm with a ratio of available chlorine to dye of from about 2:1 to about 150:1, a concentration of bromide ion of greater than 0.1 ppm, a concentration of ammonium ion of greater than 0.1 ppm and a pH of from about 6 to about 9.5.

4,353,867

METHOD AND APPARATUS FOR THE DETERMINATION OF SUBSTANCES IN BIOLOGICAL SOLUTIONS BY DIFFERENTIAL PH MEASUREMENT

Massimo Luzzana, Via Olgettina 60, Milan, Italy

Filed Sep. 30, 1980, Ser. No. 192,204

Int. Cl.³ G01N *33/84, 27/30*

U.S. Cl. 422—68 **10 Claims**

1. An analyzer for the quantitative determination of a substance in a simple solution based upon a change of pH of the solution comprising:

a sample cuvette,

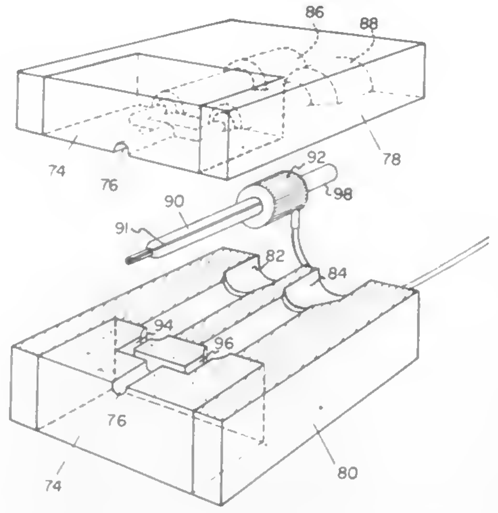
means for filling said cuvette with a known volume of said sample solution,

means for adding a reactant to the sample solution in said cuvette for reacting with said substance and producing a change in hydrogen ion concentration,

a cell having two glass capillary electrodes each for the measurement of pH,

means for selectively transferring solution from said cuvette to said electrodes before and after addition of a reactant through a common supply conduit connected to said cell,

said supply conduit being of an electrically conductive material and forming a liquid junction between said electrodes and being at machine ground potential,



electronic means for processing the pH measurements made by said electrodes and producing a digital indication of the concentration of said substance in said sample solution.

4,353,868

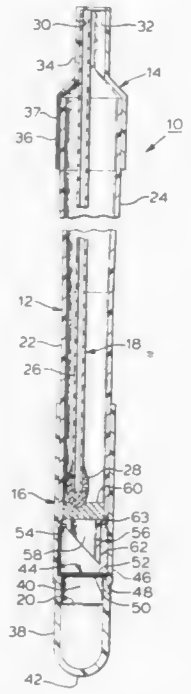
SPECIMEN COLLECTING DEVICE

Joel A. Joslin, Sunset Hills, and Marshall T. Dennison, Creve Coeur, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed May 29, 1981, Ser. No. 268,217

Int. Cl.³ B01L *11/00;* **C12M** *1/30*

U.S. Cl. 422—101 **13 Claims**



1. A specimen collecting and transporting device comprising a longitudinally extending sleeve container member including a removable cap for selectively closing and opening one end of said container member, a swab in said container member including a rod connected adjacent one end thereof to said cap, and an absorbent tip connected to the opposite end of said rod, the opposite end of said container member having an opening therethrough, and seal piercing means extending from said container member opposite end, fluid flow metering means covering said opening and being in contact with said absorbent tip, a reservoir member having a sleeve receiving an opposite end portion of said container member in longitudinal slidable relation therewith, a reservoir chamber having a closed bottom end, an upper open end, a seal closing said upper open end of said chamber, and a liquid culture-sustaining medium in said chamber, and means including abutment means on one of said

members engagable with the other of said members for locating said container member in a position relative to said reservoir member wherein said piercing means is above said seal, said container and reservoir members being relatively slidable to move said piercing means through said seal and connect said opening and absorbent pad in fluid communication with said medium and thereby wet said absorbent tip.

4,353,869

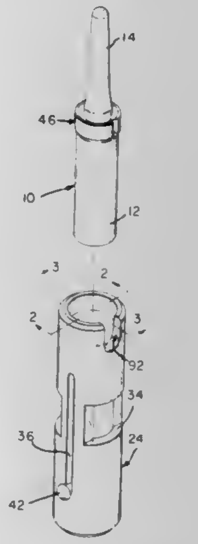
AMPOULE ASSEMBLY AND HOLDER

Richard U. Guth, 439 N. 46th St., Harrisburg, Pa. 17111

Filed Jan. 9, 1981, Ser. No. 223,757

Int. Cl.³ B65D *1/02;* **C01G** *9/00*

U.S. Cl. 422—102 **10 Claims**



1. The combination of an ampoule having a body, a tip and a reduced diameter neck joining the tip and body wherein the improvement comprises an annular collar formed from a stiffly resilient material having a slit extending through the circumference thereof, said collar being fitted around the ampoule neck with the ampoule body and tip extending to either side of the collar, the interior opening of the collar being normally smaller than the exterior of the tip, the collar including an inner edge engaging the minimum diameter portion of the neck when the slit is relatively closed to form a fulcrum for breaking the tip away from the ampoule body, said collar being moveable over said tip to the reduced diameter neck by relatively opening said slit to enlarge the interior opening of the collar and permit movement of the collar over the ampoule tip to the neck.

4,353,870

INSTALLATION FOR PROTECTING OF REACTORS

Cornelis M. Munnichs, Born, and Theodorus F. I. Bookelmann, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation of Ser. No. 968,795, Dec. 12, 1978, abandoned, which is a continuation of Ser. No. 801,244, May 27, 1977, abandoned. This application May 8, 1981, Ser. No. 261,798

Claims priority, application Netherlands, May 29, 1976, 7605817

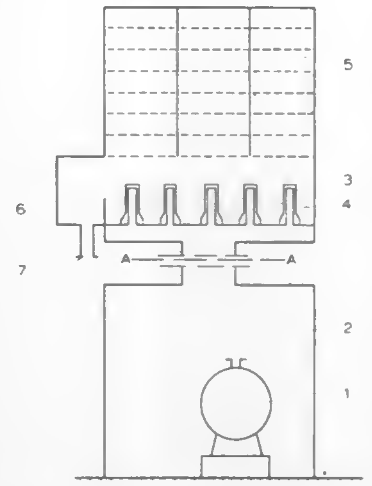
Int. Cl.³ B01F *3/04*

U.S. Cl. 422—129 **8 Claims**

1. Apparatus for the protection of the atmosphere from a sudden inadvertent escape of harmful gases from a chemical reactor, said apparatus comprising the combination of reactor enclosing means, liquid containing means and connecting means between said reactor enclosing means and said liquid containing means wherein:

said reactor enclosing means define an enclosed space surrounding said reactor, and are adapted to contain said escaping gases, and to withstand the static and dynamic pressure required for the introduction and flow of said gases into said liquid containing means;

said liquid containing means are adapted to contain a liquid in sufficient depth and volume to take up by absorption, dissolution, condensation or reaction all such gases which may inadvertently escape from said chemical reactor, and to provide for the introduction of said gases into said liquid containing means near the bottom thereof; and



said connecting means provide open communication between said enclosed space and said liquid containing means, and are adapted to guide the flow of said gases into said liquid containing means near the bottom thereof.

4,353,871

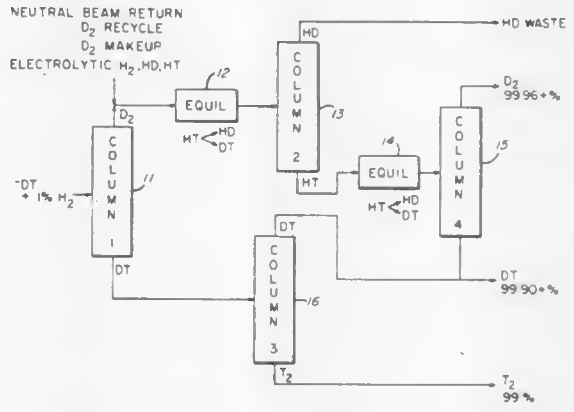
HYDROGEN ISOTOPE SEPARATION

John R. Bartlit, Los Alamos, N. Mex.; William H. Denton, Abingdon, Great Britain, and Robert H. Sherman, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 10, 1979, Ser. No. 37,603

Int. Cl.³ B01D *3/00;* **F25J** *3/02*

U.S. Cl. 422—159 **1 Claim**



1. An apparatus for hydrogen isotope distillation separating a feed stream of about 50% deuterium and about 50% tritium, the streams also containing on the order of 1% hydrogen, into four product streams, a tritium-free stream of HD for waste disposal, a stream of high-purity D_2, a stream of DT, and a stream of high purity tritium, said apparatus comprising:

(a) a first column;

(b) a first equilibrator;

(c) said first column having a top and a bottom and an input into which said feed stream is directed for depletion of the top stream in DT and T_2 and for subsequent splitting of the HT molecule in said first equilibrator in the presence of excess D_2 and depleted HT into HD and DT according to the reversible reaction $HT+D_2 \rightleftarrows HD+DT$;

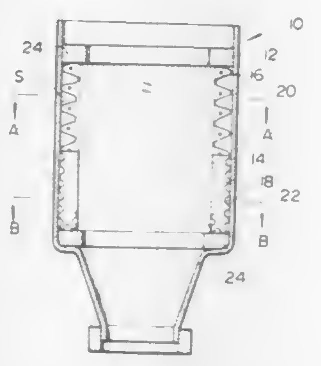
(d) a second column;

(e) means for drawing a D_2 rich top stream from said top of said first column through said first equilibrator and into said second column having a top and a bottom;

(f) means for drawing from the top of said second column said tritium free stream of HD for waste disposal;
(g) a third column having a top and a bottom;
(h) means for drawing DT from the bottom of said first column and inputting it into said third column;
(i) means for drawing said stream of high purity tritium from the bottom of said third column;
(j) means for drawing DT from the top of said third column and insertng it into said product stream of DT;
(k) a second equilibrator;
(l) a fourth column;
(m) means for drawing a D_2 stream from the bottom of said second column, passing it through said second equilibrator to drive the reaction $HT+D_2 \rightleftarrows HD+DT$ to the right side of the equation and inputting it into said fourth column having a top and a bottom;
(n) means for drawing DT from the bottom of said fourth column and inserting it into said product stream of DT;
(o) means for drawing said stream of high-purity D_2 product from the top of said fourth column; and
(p) means for recycling part of said high-purity D_2 product stream into said stream from the top of said first column immediately before said first equilibrator to drive the reaction to the right side of the equation $HT+D_2 \rightleftarrows HD+DT$.

4,353,872
CATALYTIC CONVERTER

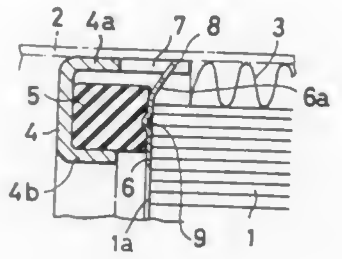
Minoru Midorikawa, Koganei, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 6, 1981, Ser. No. 241,069
Claims priority, application Japan, Mar. 7, 1980, 55-28831[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 422—179 **4 Claims**



1. A catalytic converter having a casing, comprising:
- a monolithic catalyst disposed in the casing so as to form a space between the inner surface of the casing and the outer surface of said monolithic catalyst;
- a gas seal member disposed around a part of the outer surface of said catalyst, said gas seal member being formed of a heat-resistant and expandable sheet material selected from the group consisting of vermiculite, quartz, and asbestos;
- a wire netting disposed around the remaining part of the outer surface of said catalyst and interposed between the inner surface of the casing and the outer surface of said catalyst; and
- a protector member interposed between the inner surface of the casing and the outer surface of said gas seal member, said protector member being integral with said wire netting and made of the same material as that of said wire netting, said protector member being an elongate section extending from said wire netting and forming part of said wire netting, said elongate section being so flattened as to readily enter a narrow space between the outer surface of said gas seal member and the inner surface of the casing, the outer surface of said elongate section being substantially at the same level as that of said wire netting, the free end part of elongate section being so bent as to wrap the end section of said gas seal member.

4,353,873
SUPPORT APPARATUS FOR CATALYST BLOCK

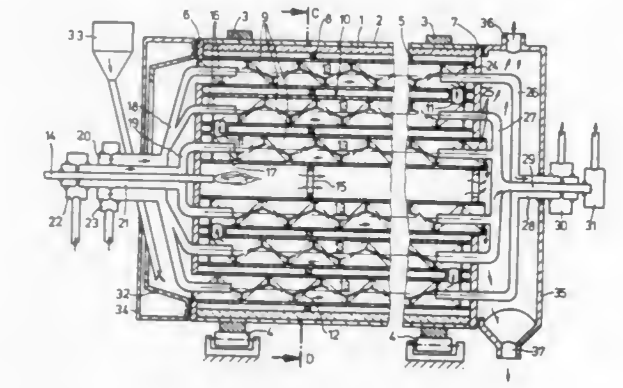
Yutaka Noritake, Kawagoe; Ikuo Kajitani, Hanno, and Yutaka Hirayama, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 24, 1981, Ser. No. 257,265
Claims priority, application Japan, Apr. 30, 1980, 55-58272[U]
Int. Cl.³ F01N *3/10*
U.S. Cl. 422—179 **1 Claim**



1. A device for supporting a cylindrical catalyst block having an end face, comprising in combination: a casing, an axially extending tubular cushion within said casing and encircling the catalyst block, an annular end member fixed within said casing, an annular cushion carried on said end member, a ring member having a frustro-conical peripheral portion, said ring member being interposed between said annular cushion and said end face of said catalyst block, and interengaging parts comprising a projection on said peripheral portion of said ring member received in a recess on said annular end member for preventing rotation of said ring member with respect to said casing.

4,353,874
ROTARY TUBE REACTOR FOR THE THERMAL TREATMENT OF MATERIAL

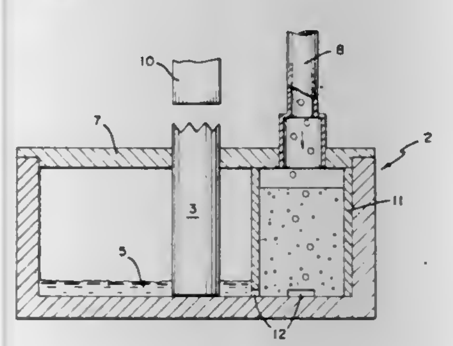
Wolfgang Keller, Bergisch-Gladbach, and Wolfgang Weiss, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany
Filed Mar. 24, 1980, Ser. No. 132,948
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914964
Int. Cl.³ B01J *19/18*
U.S. Cl. 422—193 **8 Claims**



1. In a rotary tube reactor for the thermal treatment of material in the form of powdered to lumpy solid material and/or substances in the form of liquid, with evolution of gases and optionally the supply of other substances, having a bundle of axially parallel tubes which are mounted in plates arranged perpendicularly thereto, wherein the individual tubes are joined together to form at least one treatment line whose beginning is provided with material supply means and whose end is supplied with a material outlet, the improvement wherein: the treatment line includes means dividing same into individual sections forming gas chambers which are sealed from each other and capable of being maintained at different pressures relative to each other, wherein each section has at least one conveying element rotatable therewith to convey material through the section, a gas outlet and adjacent sections are joined together by material passages.

4,353,875
APPARATUS FOR GROWING CRYSTALLINE MATERIALS

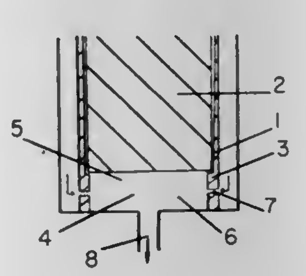
Paul J. Yancey, Matthews, N.C., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Division of Ser. No. 958,089, Nov. 6, 1978, Pat. No. 4,269,652. This application Sep. 2, 1980, Ser. No. 183,518
Int. Cl.³ C30B *15/34*
U.S. Cl. 422—249 **1 Claim**



1. In an apparatus for growing crystalline material from a melt comprising a crucible for maintaining a reservoir of molten material from which the crystal is drawn and furnace for heating a solid supply of said material; the improvement which comprises providing an inner container to hold solid particulate material said container having one or more shallow slots at the bottom thereof to permit exiting of liquid therethrough to the crucible, said slots communicating directly with said reservoir of molten material, a product-shaping member disposed in said crucible, and a capillary passageway extending from the bottom of said crucible to the top end surface of said product-shaping member.

4,353,876
APPARATUS FOR MIXING CHEMICAL PRODUCTS UNDER RUNNING WATER

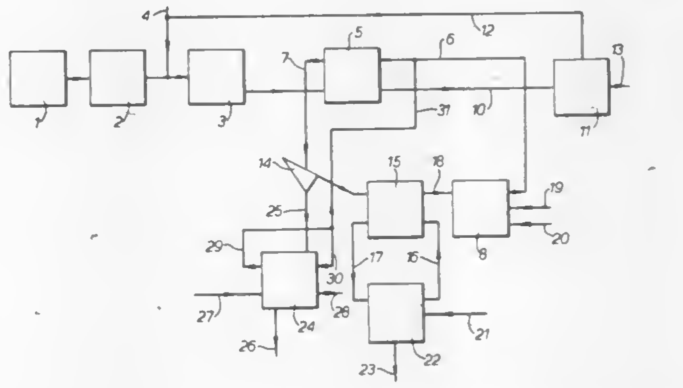
Vincent Ballu, Epernay, and Remi Perret, Meyzieu, both of France, assignors to Rhodic, Ecully, France
Filed Apr. 23, 1980, Ser. No. 143,144
Claims priority, application France, Apr. 23, 1979, 79 11186
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—263 **9 Claims**



1. In a device for homogeneously mixing chemical products with water in which the chemical product is embodied in a water-splittable cartridge, said device comprising an enclosure and means subdividing the enclosure into a magazine dimensioned to receive the cartridge and a mixing chamber with one side of the magazine open to the mixing chamber, said mixing chamber having a low height relative to the magazine diameter, stop means positioned to engage the cartridge to retain the cartridge within the magazine with a free surface of the cartridge exposed to the mixing chamber, said mixing chamber being formed of a splitting zone and a homogenization zone with the splitting zone adjacent the magazine, an outlet in communication with the homogenization zone, at least one inlet in communication with the mixing chamber for the introduction of water into the mixing chamber for engagement with the free surface of the cartridge whereby chemical product is split from the cartridge into the splitting zone and homogenized with water in the homogenization zone before issuing from the outlet, the improvement in which the inlets for the introduction of water into the mixing zone are situated beyond the plane separating the magazine from the mixing chamber.

4,353,877
EXTRACTION PROCESS

John S. Rendall, Rosedene, Branksome Ave., Stanford-le-Hope, Essex, England
Filed Nov. 27, 1978, Ser. No. 963,777
Claims priority, application United Kingdom, Mar. 13, 1978, 9811/78
Int. Cl.³ C01G *43/00;* **C01B** *25/01*
U.S. Cl. 423—6 **12 Claims**



1. A process for the extraction of phosphoric acid and metal values from phosphate rock comprising:
- acidulating the phosphate rock with hydrochloric acid to convert the phosphate of the rock into phosphoric acid,
- contacting a slurry of the acidulated rock with selective extractants for phosphoric acid and metal values contained in the slurry;
- removing the extractants substantially independently of the solids of the slurry; and
- separately recovering the phosphoric acid and metal values.

4,353,878
TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, Athens; Marie B. Terlizzi, Monroeton, and Brice E. Martin, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.
Filed May 7, 1981, Ser. No. 261,407
Int. Cl.³ C01G *49/00*
U.S. Cl. 423—53 **4 Claims**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in concentrated sodium hydroxide to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing sodium tungstate from the aqueous portion, the improvement comprising: comminuting said tungsten ore concentrate to a particle size less than 325 mesh, adding said comminuted ore to aqueous sodium hydroxide at a concentration of at least 10 molar and digesting in the presence of about 6 to 17 moles of

sodium hydroxide per mole of tungsten at a temperature of from about 75° C. to 150° C. for a sufficient period of time to convert substantially all of the tungsten values to dissolvable sodium tungstate, and diluting the digested mixture to reduce the sodium hydroxide concentration to between about 4.5 and 5.5 molar at a temperature below about 90° C. to substantially dissolve all the dissolvable sodium tungstate.

4,353,879

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, and Brice E. Martin, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,409

Int. Cl.^{3} C01G *49/00*

U.S. Cl. 423—53 **3 Claims**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in concentrated sodium hydroxide to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing soluble sodium tungstate from the aqueous portion, the improvement comprising: comminuting said tungsten ore concentrate to a particle size less than 200 mesh, dispersing the comminuted ore to separate agglomerated particles; adding the dispersed ore by permitting separated particles to fall into aqueous sodium hydroxide at a concentration of at least 10 molar to obtain a mole ratio of from about 6 to 17 moles of sodium hydroxide per mole of tungsten and digesting at a temperature of from about 75° C. to 150° C. for about one-half hour to about 2 hours to convert substantially all of the tungsten values to dissolvable sodium tungstate, and diluting the mixture to reduce the sodium hydroxide concentration to between about 4.5 and 5.5 molar at a temperature below about 90 degrees centrigrade to substantially dissolve all the sodium tungstate.

4,353,880

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, Athens, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,410

Int. Cl.^{3} C01G *49/00*

U.S. Cl. 423—53 **1 Claim**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in the presence of about 6 to 17 moles of sodium hydroxide per mole of tungsten to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing sodium tungstate from the aqueous portion, the improvement comprising: drying the insoluble sludge portion, comminuting the dried sludge to a particle size less than about 200 mesh, and recycling said comminuted sludge to said diluting step wherein said comminuted sludge is contacted with sodium hydroxide between about 4.5 and 5.5 molar at a temperature below about 90° C. to substantially dissolve sodium tungstate present in said sludge.

4,353,881

TUNGSTEN RECOVERY FROM TUNGSTEN ORE CONCENTRATES BY CAUSTIC DIGESTION

Lucretia R. Quatrini, Athens; Martin C. Vogt, Monroeton, and Brice E. Martin, Towanda, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 7, 1981, Ser. No. 261,408

Int. Cl.^{3} C01G *41/00*

U.S. Cl. 423—58 **1 Claim**

1. A method for increasing the recovery of dissolved sodium tungstate from tungsten ore concentrate of the type which produce a sludge containing tungsten values when processed according to the steps of digesting said tungsten ore concentrate in concentrated sodium hydroxide to produce a mixture comprising soluble sodium tungstate and an insoluble sludge, diluting the mixture with water to form an aqueous portion containing dissolved sodium tungstate, separating the aqueous portion from the insoluble sludge portion and crystallizing soluble sodium tungstate from the aqueous portion, the improvement comprising: comminuting said tungsten ore concentrate to a particle size less than about 200 mesh, adding the comminuted ore to an aqueous solution of sodium hydroxide at a temperature from about 10 to about 30 degrees centigrade dispersing said comminuted ore in the aqueous solution of sodium hydroxide at a temperature of about 10 to about 30 degrees centrigrade prior to digestion, digesting at a mole ratio of from about 6 to 17 moles of sodium hydroxide per mole of tungsten, at a temperature of from about 75° C. to about 150° C. for a sufficient period of time to convert substantially all of the tungsten values to dissolvable sodium tungstate, diluting the mixture to reduce the sodium hydroxide concentration to between about 4.5 and 5.5 molar at conditions retarding reversal of dissolvable sodium tungstate forming insoluble tungsten values and at a temperature below about 90° C. to substantially dissolve all said dissolvable sodium tungstate, crystallizing said sodium tungstate and separating sodium tungstate crystals from a remaining aqueous portion containing excess sodium hydroxide, treating said remaining portion to concentrate said excess sodium hydroxide, cooling and recycling said concentrated remaining portion of sodium hydroxide for dispersing additional comminuted ore.

4,353,882

PURIFICATION OF ALUMINUM CHLORIDE

Ernest Foley, East Burwood; Lionel J. Rogers, Rockbank; Henry J. Gardner, East Ringwood, and Louis J. Wibberley, Newcastle, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Oct. 3, 1980, Ser. No. 193,493

Claims priority, application Australia, Oct. 3, 1979, PE0760

Int. Cl.^{3} C01F *7/62;* **C01G** *49/10*

U.S. Cl. 423—111 **12 Claims**

1. A method for the recovery of anhydrous aluminium chloride from a mixture of aluminium chloride with ferrous chloride which is essentially free of ferric chloride, which comprises subjecting a liquid mixture of said aluminium chloride with ferrous chloride to a reduction in pressure, the conditions being such as to bring about dissociation of compounds formed between aluminium chloride and ferrous chloride present in the mixture, thereby to form an aluminium chloride-rich vapour and an iron chloride-rich solid and

then separating collecting the iron- and aluminium-rich components at conditions under which the extent of reformation of compounds between aluminium chloride and ferrous chloride is minimized.

4,353,883

SELECTIVE EXTRACTION OF COBALT(II) FROM AQUEOUS SOLUTIONS WITH PHOSPHINIC ACID EXTRACTANTS

William A. Rickelton, Niagara Falls; Allan J. Robertson, Thorold, both of Canada, and David R. Burley, Kinnelon, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 182,296, Aug. 28, 1980, abandoned. This application May 14, 1981, Ser. No. 263,537

Int. Cl.^{3} C01G *57/00*

U.S. Cl. 423—139 **31 Claims**

8. A process for the extraction of cobalt(II) from an aqueous cobalt(II)-bearing solution containing nickel(II) and having a pH of about 4 to 6 comprising contacting said solution with an extraction solvent at about 0° to 80° C., thereafter separating the aqueous phase from the cobalt(II)-loaded phase wherein said extraction solvent comprises from about 2 to 99 parts by volume of an organic-soluble phosphinic acid having at least 2 carbon atoms or an organic-soluble salt thereof, from about 98 to 1 parts by volume of a water-immiscible organic diluent and from 0 to about 15 parts by volume of a phase modifier.

19. A process according to claim 8 with the additional steps of contacting the cobalt(II)-loaded extraction solvent with an aqueous solution of a mineral acid at about 0°–80° C. to strip the cobalt(II) into the aqueous phase; separate the cobalt(II)-containing aqueous phase; and, recovering the stripped extraction solvent for subsequent reuse.

4,353,884

METHOD FOR SYNTHESIZING BORACITIES

Gary A. Wolf, Kennewick, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 9, 1981, Ser. No. 310,247

Int. Cl.^{3} C01B *35/06*

U.S. Cl. 423—277 **4 Claims**

1. A method for the production of boracites of the formula $M_3B_7O_{13}X$ wherein M is a divalent metal and X is a halogen, comprising:

(a) dissolving $M(CH_3COO)_2$, H_3BO_3, and HX in water;
(b) evaporating the solution from step (a) to dryness;
(c) heating any solid residue from step (b) under pressure in an inert atmosphere.

4,353,885

TITANIUM DIBORIDE ARTICLE AND METHOD FOR PREPARING SAME

Howard H. Hoekje, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 11,596, Feb. 12, 1979, Pat. No. 4,282,195, which is a continuation-in-part of Ser. No. 546,838, Feb. 3, 1975, abandoned. This application Mar. 9, 1981, Ser. No. 241,986

Int. Cl.^{3} C01B *35/04*

U.S. Cl. 423—289 **22 Claims**

1. A process for preparing submicron refractory metal diboride powder of the metals titanium, zirconium and hafnium, which powder is capable of being cold formed and sintered to a density of at least 90 percent of its theoretical density, by gas phase reaction of the halide of the corresponding metal and boron source reactants in the presence of hydrogen in a reactor, which comprises projecting a plasma heated hydrogen gas stream into a reaction zone in the reactor, introducing substantially pure gaseous metal halide and boron source reactants into said reaction zone, the temperature of the reactants so introduced being below the boride forming reaction temperature in the reaction zone and the heat content of the hydrogen gas stream and reactants being sufficient to establish refractory metal boride forming reaction temperatures in said reaction zone, reacting said metal halide and boron source reactants in the reaction zone in the substantial absence of oxygen and a source of carbon, and removing solid, submicron refractory metal boride powder from the reactor, at least 90 percent of the particles of which have a nominal sectional diameter of less than one micron, said particles having a number median particle size of between about 0.08 and 0.6 microns and being tabular to equidimensional hexagonal crystals with well developed faces.

11. A titanium diboride article of manufacture having a density of at least 90 percent of the theoretical density of titanium diboride and a carbon content of less than 0.1 weight percent, which article is prepared by hot pressing, hot isostatic pressing, or cold forming and sintering submicron titanium diboride powder having a surface area of between about 3 and 25 square meters per gram and containing less than 0.4 weight percent metal impurities and less than 0.1 weight percent carbon, the nominal sectional diameter of at least 90 percent of the titanium diboride particles of said powder being less than one micron, said particles being tabular to equidimensional hexagonal crystals having well developed faces and a number median article size of between about 0.08 and 0.6 microns.

4,353,886

METHOD FOR DETECTING ORGANIC VAPORS

Herbert R. Lukens, Jr., and Colin B. Williams, both of La Jolla, Calif., assignors to IRT Corporation, San Diego, Calif.

Filed May 5, 1980, Ser. No. 146,476

Int. Cl.^{3} G01N *33/00*

U.S. Cl. 424—1 **20 Claims**

1. A method of detecting the presence of a particular organic material within a region comprising;

providing a test plate having a surface coated with an antibody for a specific organic material;

exposing said test plate to the atmosphere of a region suspected of carrying vapors of said organic material;

and,

observing changes in optical properties of said surface indicating the presence of said organic material.

4,353,887

DIVISIBLE TABLET HAVING CONTROLLED AND DELAYED RELEASE OF THE ACTIVE SUBSTANCE

Hans Hess, Binningen, and Carlo Voellmy, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,028

Claims priority, application Switzerland, Aug. 16, 1979, 7514/79; May 21, 1980, 3959/80

Int. Cl.^{3} A61K *9/20, 9/22, 9/24, 9/28*

U.S. Cl. 424—15 **7 Claims**

1. A divisible tablet having controlled and delayed release of the active substance, characterised in that it consists of a compact, with or without a coating having no influence on the release of said active substance, said compact being formed by pressing a granulate of at least one active substance and an adjunct composition which effects the controlled and delayed release of the active substance to form a granulate-retard matrix, with or without one or more additional granulate adjunct compositions which contain an active substance or do not contain such active substance and are arranged in longitudinal layers, the compact being of an ablong shape in which the ratio of length to width to depth is approximately 2.5 to 5:approximately 0.9 to 2:1 and the width constitutes at most $\frac{2}{3}$ of the length, and in which one or more deep dividing groves are present which run perpendicularly to the length and depth and have a total depth of from approximately $\frac{1}{3}$ to approximately $\frac{1}{2}$ of the depth of the tablet, but are at least so deep that one fracture surface area multiplied by the number of possible fragments constitutes a maximum of 15% of the surface area of the undivided tablet, the base and top faces independently of one another are planar or are convexly curved about the longitudinal axis or about parallels to this axis, the side faces are planar, the end faces can be of any shape and with or without bevelled or rounded edges.

4,353,888

ENCAPSULATION OF LIVE ANIMAL CELLS

Michael V. Sefton, 21 Prince Charles Dr., Toronto, Ontario, Canada (M6A 2H1)

Filed Dec. 23, 1980, Ser. No. 219,238

Int. Cl.^{3} A61K *9/28, 9/00*

U.S. Cl. 424—25 **10 Claims**

1. A process for preparing micro-encapsulated viable mammalian cells for introduction to host, living mammalian tissue, which comprises:

(a) preparing an aqueous suspension of said viable mammalian cells;

(b) dispersing the aqueous suspension of cells in a relatively high molecular weight, hydrophobic, non-toxic, non-cell-penetrating liquid and agitating the dispersion to form an emulsion having a discontinuous aqueous phase comprising droplets containing small numbers of said viable cells;

(c) adding to the emulsion so formed a solution of a biocompatible, water-insoluble polymer in a polar, non-toxic liquid solvent for said polymer;

(d) precipitating the polymer at the interface of the aqueous, cell-containing droplets and the hydrophobic phase so as to encapsulate some at least of the cells in said droplets with a membrane of said polymer which will allow passage of cell substrates and secretions, but will prevent the passage of larger molecules; and

(e) separating the bulk of the hydrophobic medium from the encapsulated cellular material.

4,353,889

REBAUDIOSIDE ANALOGS

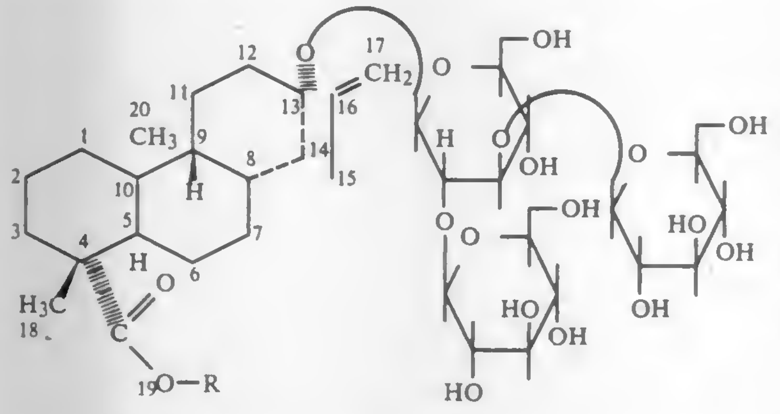
Grant E. DuBois, Palo Alto, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Jun. 11, 1981, Ser. No. 272,799

Int. Cl.^{3} A61K *31/70;* **C07H** *15/24*

U.S. Cl. 424—48 **17 Claims**

1. A nonglycosidic polar ester compound of rebaudioside C having the structure



wherein R is a physiologically acceptable noncarbohydrate polar organic group that is α-carbon oxygen free and that contains from 1 to 10 carbon atoms inclusive.

16. A sweet comestible comprising an edible material admixed with an effective sweetening amount of the compound of claim **1**.

4,353,890

STABILIZATION OF CARRAGEENAN-CONTAINING TOOTHPASTE

George V. Scott, Scotch Plains, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 24, 1979, Ser. No. 87,651

Int. Cl.^{3} A61K *7/16, 41/00;* **A61L** *2/12;* **B01J** *1/10*

U.S. Cl. 424—49 **7 Claims**

1. In a closed-system method for raising the temperature of a gel composition containing a carrageenan gelling agent to at least the gel-sol transition temperature of the gelling agent and thereby stabilizing a gel composition containing a carrageenan gelling agent selected from the group consisting of kappa carrageenan, lambda carrageenan, iota carrageenan, kappa-iota carrageenan, kappa-lambda carrageenan, sodium salt of kappa carrageenan, potassium salt of kappa carrageenan, calcium salt of kappa carrageenan, sodium salt of lambda carrageenan, potassium salt of lambda carrageenan, calcium salt of lambda carrageenan, sodium salt of iota carrageenan, potassium salt of iota carrageenan, calcium salt of iota carrageenan and mixtures thereof, and mixtures of any such carrageenan gelling agent with a gelling agent selected from the group consisting of sodium carboxymethyl cellulose, hydroxyethylcarboxyethyl cellulose, polyvinyl pyrollidone, gum tragacanth, hydroxypropylmethyl cellulose, methyl cellulose, starch, starch glycolate, polyvinyl alcohol, sodium alginate, carob bean gum, locust bean gum, and hydrophilic colloidal hydroxyvinyl polymers, and mixtures thereof, a lossy dielectric material selected from the group consisting of water and other polar materials, and a flavoring material subject to loss of volatile component and/or deterioration, causing flavoring differences, if overheated, which composition tends to decrease in viscosity when subjected to mechanical working at room temperature, which decrease in viscosity is avoidable to a significant extent by avoiding working of the gel composition when the temperature thereof is below the gel-sol transition temperature of the carrageenan gelling agent, and which composition is one which can be conventionally heated to above the gel-sol transition temperature of the carrageenan gelling agent to increase the viscosity of the gel obtained on subsequent cooling, the improvement which consists essentially of the steps of directing microwave radiation onto such composition in a closed system, over a period of less than five minutes for bulk treatments and no more than two minutes for in-line treatments, at a frequency in the range of 0.8 to 3 gigahertz, in such a quantity as to heat the composition, due to the effect of the microwave radiation on the lossy dielectric component of the gel composition, and raise the temperature thereof to at least the gel-sol transition temperature of the carrageenan, and quiescently cooling the composition to room temperature.

4,353,891

MUTANASE

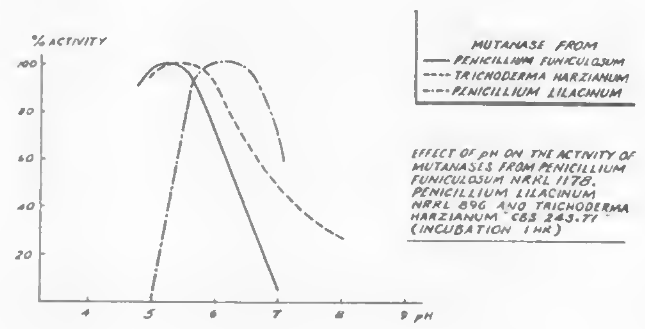
Bernhard Guggenheim, 25 Alfred-Escherstrasse, and Hans-Rudolf Muhlemann, 8 Beustweg, both of Zurich, Switzerland

Filed Oct. 19, 1971, Ser. No. 190,621

Claims priority, application United Kingdom, Oct. 26, 1970, 50712/70

Int. Cl.^{3} A61K *7/28;* **C12N** *9/24*

U.S. Cl. 424—50 **8 Claims**



EFFECT OF pH ON THE ACTIVITY OF MUTANASES FROM PENICILLIUM FUNICULOSUM NRRL 1178, PENICILLIUM LILACINUM NRRL 896 AND TRICHODERMA HARZIANUM CBS 243.71 (INCUBATION 1 HR)

1. A fermentation process for producing an enzyme capable of selectively attacking a streptococci derived alpha-1,3 glucosidic bonded glucan which comprises oxidizing and reducing a streptococci derived dental plaque glucan characterized by at least 50% alpha-1,3 glucosidic bonds to destroy the alpha-1,6 bonds therein, leaving a glucan which contains almost exclusively alpha-1,3 glucosidic bonds, aerobically cultivating a microorganism thereon, and thereafter recovering the enzyme produced extracellularly by the microorganism from the fermentation broth.

4,353,892

FLUORIDE PREPARATIONS CONTAINING SURFACE-ACTIVE AGENTS

Vera B. Caslavsky, Lexington, and Poul Gron, Needham, both of Mass., assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Aug. 13, 1981, Ser. No. 292,496

Int. Cl.^{3} A61K *7/18*

U.S. Cl. 424—52 **24 Claims**

1. A composition for use in the oral cavity to increase fluorapatite formation in teeth enamel, which composition comprises:

(a) a dental-caries-inhibiting amount of a water-soluble fluoride compound; and

(b) a fluoroalkyl surfactant in an amount to increase the fluorapatite formation of the teeth enamel, the surfactant having the structure R_f—A—Z, wherein R_f represents a perfluoroalkyl group having the formula $CF_3(CF_2)_n$—, wherein n is 5 to 11, A represents a hydrocarbon linking group and Z represents a hydrophilic group.

4,353,893

KA-6606 AMINOGLYCOSIDES ANTIBIOTICS AND COMPOSITIONS THEREOF

Isamu Watanabe, Higashimurayama; Takashi Yamaguchi, Seki; Kazuhiro Kamiya, and Toshihito Mori, both of Higashimurayama, all of Japan, assignors to Kowa Company, Ltd., Aichi, Japan

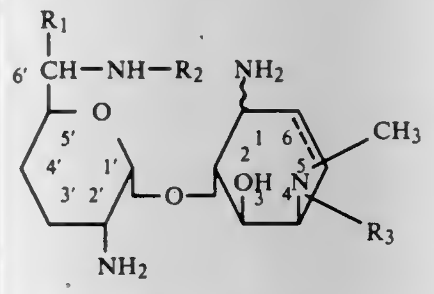
Filed May 20, 1981, Ser. No. 265,562

Claims priority, application Japan, May 22, 1980, 55-67084; Jun. 17, 1980, 55-80842

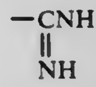
Int. Cl.^{3} A61K *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **3 Claims**

2. An antibiotic composition which comprises an antibiotically effective amount of a compound of the formula:



wherein R_1 and R_2 are different and each represents a hydrogen atom or a methyl group, R_3 represents a hydrogen atom, or a group represented by the formula —$COCH_2NHR'$ in which R′ is a member selected from the group consisting of a hydrogen atom, —CH═NH and



$$-\underset{\underset{NH}{\|}}{C}NH_2,$$

and the symbol $\overset{\text{- - -}}{\text{———}}$ between the carbon atoms at the 5- and 6-positions represents a single or double bond, and a pharmaceutically acceptable diluent or carrier.

4,353,894

5-IMINODOXORUBICIN

Edward M. Acton, Menlo Park, and George L. Tong, Cupertino, both of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 201,522, Oct. 27, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,056

Int. Cl.^{3} A61K *31/70;* **C07H** *15/24*

U.S. Cl. 424—180 **3 Claims**

1. 5-Iminodoxorubicin and its pharmaceutically acceptable acid addition salts.

3. A dosage unit of a pharmaceutical composition for treating leukemia in a warm-blooded animal comprising an amount within a range of from about 0.1 to about 500 mg per dosage unit, therapeutically effective to ameliorate leukemia, of at least one compound selected from the group consisting of 5-iminodoxorubicin and its pharmaceutically acceptable acid addition salts, together with a pharmaceutically acceptable, nontoxic, sterile carrier or diluent therefor.

4,353,895

CARDENOLIDE-BIS-DIGITOXOSIDE ALKYL COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Wolfgang Schaumann, Heidelberg; Fritz Kaiser, Lampertheim; Wolfgang Voigtländer, Weinheim; Edgar Hoyer, and Klaus Koch, both of Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

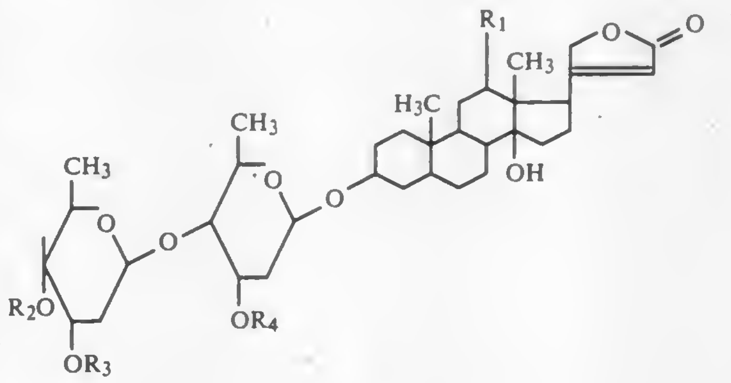
Filed Jul. 30, 1981, Ser. No. 288,442

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034658

Int. Cl.^{3} A61K *31/705;* **C07J** *19/00*

U.S. Cl. 424—182 **8 Claims**

1. A cardenolide-bis-digitoxiside of the formula:



in which

R_1 is a hydrogen atom, a hydroxyl group or an acyloxy radical containing up to 3 carbon atoms, and

R_2, R_3 and R_4 each independently is a hydrogen atom or, an acyl or alkyl radical containing up to 3 carbon atoms,

with the proviso that the compound contains at least one alkyl radical.

7. A method for reducing the cardiac activity of a patient which comprises administering to such a patient a cardioactive effect amount of a compound according to claim **1**.

4,353,896

PENETRATING TOPICAL MEDICAMENT

Michael A. Levy, 9911 Campbell, Kansas City, Mo. 64131

Filed Jun. 8, 1981, Ser. No. 271,427

Int. Cl.^{3} A61K *11/56, 31/60, 31/605, 35/78*

U.S. Cl. 424—195 **10 Claims**

1. A penetrating topical medicament, comprising:

from about 0.5 to 5% by volume of a member selected from the group consisting of the corticosteroids, derivatives of the corticosteroids, and mixtures thereof;

from about 10 to 35% by volume of a substance selected from the group consisting of methyl salicylate, triethanolamine salicylate, salicyamide, oil of eucalyptus menthol and mixtures thereof; and

from about 5 to 50% by volume of a medium for transporting said at least said member through the skin to a subcutaneous site.

4,353,897

PESTICIDAL COMPOSITIONS

Klaus-Detlef Bock, Kelsterbach, Fed. Rep. of Germany, and Horst Baum, Nairobi, Kenya, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 181,982

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934978

Int. Cl.³ A01N *57/00, 57/26*

U.S. Cl. 424—200 **9 Claims**

1. An insecticidal composition, containing as active ingredient, insecticidally effective amounts of (I) 1-Phenyl-3-(O,O-diethylthionophosphoryl)-1,2,4-triazole and (II) O,O-diethyl-O-3,5,6-trichloro-2-pyridyl-phosphorothioate wherein the proportion by weight of component (I) to component (II) is in the range of from 1:10 to 10:1.

4,353,898

11α-AMINO-ANDROSTANES

Gordon H. Phillipps, Wembley; David C. Humber, Ealing; George B. Ewan, Northolt, and Barry A. Coomber, Pinner, all of England, assignors to Glaxo Group Limited, London, England

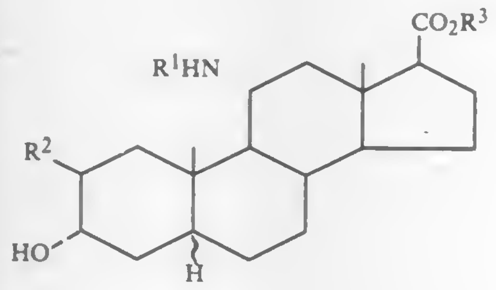
Filed Jul. 15, 1981, Ser. No. 283,454

Claims priority, application United Kingdom, Jul. 16, 1980, 8023295; Dec. 9, 1980, 8039383; Mar. 2, 1981, 8106487; May 29, 1981, 8116413

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—238 **13 Claims**

1. Compounds of the formula:



(I)

wherein:

R^1 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group;

R^2 is a hydrogen atom, a C_{1-6} alkoxy group or a C_{2-5} alkanoyloxy group; and

R^3 is a C_{1-8} alkyl group or a C_{3-7} cycloalkyl group;

provided that when the compounds contain a 5β-hydrogen atom, R^2 is a hydrogen atom, and the D-homo analogues thereof having the group $—CO_2R^3$ (wherein R^3 is as defined above) at the 17aβ-position, and acid addition salts thereof.

13. A method of treatment or prophylaxis of a human or animal subject suffering from or liable to ventricular dysrhythmias which comprises administering to said subject an effective amount of one or more compounds as claimed in claim 1.

4,353,899

NOVEL 16α-METHYL-PREGNANE

Jean G. Teutsch, Pantin, and Roger Deraedt, Pavillons-sous-Bois, both of France, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 170,627, Jul. 21, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 300,252

Claims priority, application France, Jul. 26, 1979, 79 19296

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 **4 Claims**

1. 9α,11β-dichloro-16α-methyl-21-oxycarbonyldicyclohexylmethoxy-$\Delta^{1,4}$-pregnadiene-3,20-dione.

4. A method of treating asthma in warm blooded animals comprising applying "in loco" to warm blooded animals an anti inflammatorily effective amount of the compound of claim 1.

4,353,900

9-(ARYLALKYL OR AROYLALKYL)-1-OXA-4,9-DIAZASPIRO(5.5)UNDECAN-3-ONES

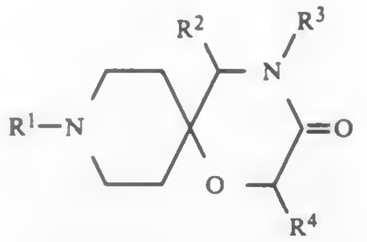
Robin D. Clark, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 19, 1981, Ser. No. 312,448

Int. Cl.³ C07D *498/10;* **A61K** *31/535*

U.S. Cl. 424—248.54 **21 Claims**

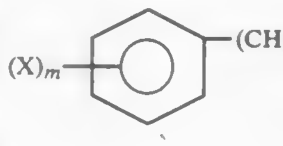
1. A compound of the formula



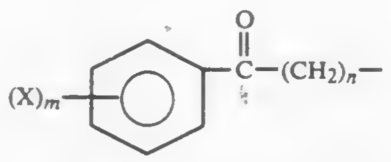
(I)

wherein:

R^1 is



or



wherein X is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, halo, carboxamido or hydroxy; m is 1, 2 or 3; and n is 1, 2 or 3;

R^2, R^3 and R^4 are independently hydrogen or lower alkyl of one to four carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

4,353,901

9-(1,4-BENZODIOXAN-2-YLALKYL AND HYDROXYALKYL)-1-OXA-4,9-DIAZASPIRO[5.5]UNDECAN-3-ONES

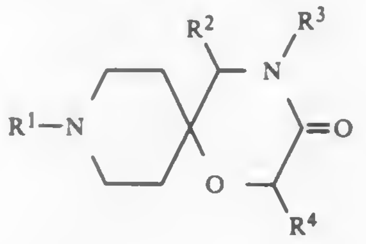
Robin D. Clark, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 19, 1981, Ser. No. 312,447

Int. Cl.³ C07D *498/10;* **A61K** *31/535*

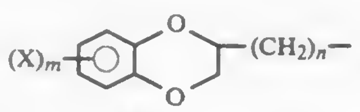
U.S. Cl. 424—248.57 **15 Claims**

1. A compound of the formula:



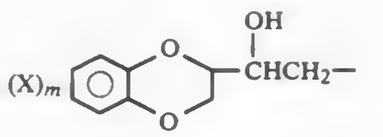
(I)

wherein: R^1 is



(a)

or



(b)

R^2, R^3, and R^4 are independently hydrogen or lower alkyl of one to four carbon atoms;

X is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms or halo;

m is 1 or 2; and

n is 1, 2 or 3; and

and the pharmaceutically acceptable acid addition salts thereof.

4,353,902

LIVESTOCK FEED AND METHOD FOR IMPROVING FOOD UTILIZATION

Richard D. Hedde, West Chester, and Roger C. Parish, King of Prussia, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Sep. 22, 1980, Ser. No. 189,540

Int. Cl.³ A23K *1/16*

U.S. Cl. 424—250 **17 Claims**

1. The method of improving food utilization to increase growth rate or feed efficiency in meat producing monogastric and ruminant animals comprising administering orally or parenterally to said animals an effective therefor but not toxic quantity of a chemical compound having histamine H_2 receptor antagonist activity.

4,353,903

2,3-DIHYDRO-IMIDAZO[1,2-b]PYRIDAZINE DERIVATIVES, THEIR PREPARATION AND USE IN TREATMENT OF DEPRESSION

Paul Fabiani, Neuilly; Francis Rose, Paris; Abkar Vartanian, Amilly, and Christian Warolin, Paris, all of France, assignors to Synthelabo, Paris, France

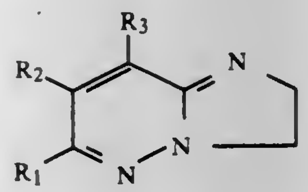
Filed Jan. 15, 1981, Ser. No. 225,265

Claims priority, application France, Jan. 16, 1980, 80 0092

Int. Cl.³ C07D *487/04;* **A61K** *31/50*

U.S. Cl. 424—250 **9 Claims**

1. A compound of the formula:



in which R_1 represents a phenyl, halogenophenyl, trifluoromethylphenyl, (C_{1-4})-alkylphenyl, (C_{1-4})-alkoxyphenyl, hydroxyphenyl, nitrophenyl, aminophenyl, (C_{1-4})-alkylaminophenyl, di-(C_{1-4})-alkylaminophenyl, acetamidophenyl, thienyl, pyridyl, furyl or nitrofuryl radical, R_2 represents a hydrogen atom or a (C_{1-4})-alkyl radical, and R_3 represents a hydrogen atom or a (C_{1-4})-alkyl, phenyl, halogenophenyl, trifluoromethylphenyl, (C_{1-4})-alkylphenyl, (C_{1-4})-alkoxyphenyl, hydroxyphenyl, nitrophenyl, aminophenyl, (C_{1-4})-alkylaminophenyl, di-(C_{1-4})-alkyl-aminophenyl or acetamidophenyl radical, and its addition salts with pharmaceutically acceptable acids.

8. A pharmaceutical composition for the treatment of depression comprising an anti-depression effective amount of a compound as claimed in claim 1 in association with a pharmaceutical carrier.

4,353,904

PHENYLPIPERAZINE DERIVATIVES OF 1,3,4-OXADIAZOLYLPHENOLS, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Peter C. Thieme; Albrecht Franke, both of Wachenheim; Dieter Lenke, Ludwigshafen; Hans D. Lehmann, Hirschberg-Leutershausen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

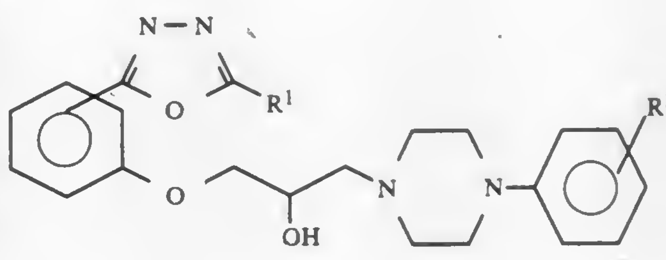
Filed Jan. 26, 1981, Ser. No. 228,370

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005287

Int. Cl.³ C07D *413/12;* **A61K** *31/495*

U.S. Cl. 424—250 **6 Claims**

1. A compound of the formula I



I

where R^1 is hydrogen or lower alkyl of 1 to 4 carbon atoms and R^2 is hydrogen, halogen, lower alkyl of 1 to 4 carbon atoms or lower alkoxy of 1 to 3 carbon atoms, and where the phenyl ring may contain one or two substituents R^2, and its physiologically tolerated addition salts with acids, the 1,3,4-oxadiazol-2-yl radical being in the o- or m- position to the ether group.

4,353,905

SUBSTITUTED 4,5-DIHYDRO-6-[4-(1H-IMIDAZOL-1-YL)PHENYL]-3(2H)-PYRIDAZINONES AND 6-[4-(1H-IMIDAZOL-1-YL)PHENYL]-3(2H)-PYRIDAZINONES

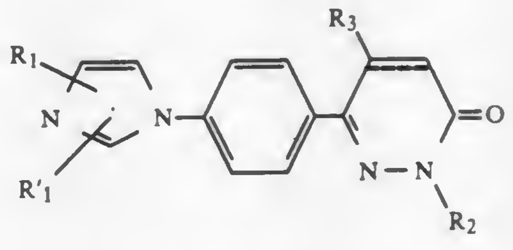
Ila Sircar, and James A. Bristol, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 17, 1981, Ser. No. 302,181

Int. Cl.³ C07D *403/10;* **A61K** *31/50*

U.S. Cl. 424—250 **6 Claims**

1. A compound having the structural formula:



wherein represents a double or single bond between two carbon atoms; R_1 and R_1' are independently hydrogen, lower alkyl, $CH_2C_6H_5$ or C_6H_5; R_2 is hydrogen, lower alkyl or 2-hydroxyethyl; and R_3 is hydrogen or lower alkyl wherein lower alkyl has one to six carbon atoms; and the pharmaceutically acceptable salts thereof.

4,353,906

CHROMANOL DERIVATIVES AND THEIR USE FOR TREATING HYPERTENSION

Graham A. Showell, Harlow, England, assignor to Beecham Group Limited, England

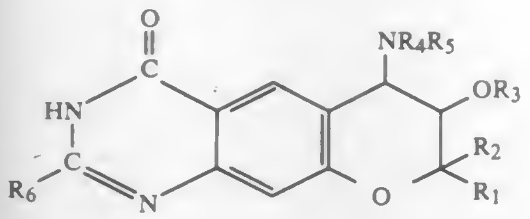
Filed Feb. 2, 1981, Ser. No. 230,540

Claims priority, application United Kingdom, Feb. 2, 1980, 8003594

Int. Cl.³ A61K ***31/505;*** **C07D** ***487/04***

U.S. Cl. 424—251 **8 Claims**

1. A compound of the formula (I):



(I)

wherein:

R_1 and R_2 are independently selected form a hydrogen atom and a C_{1-3} alkyl group;

R_3 is a hydrogen atom, a C_{1-3} alkyl or C_{2-4} acyl group;

R_4 is a hydrogen atom or C_{1-5} alkyl group;

R_5 is a C_{1-5} alkyl group, a straight chain C_{1-3} alkyl group terminally substituted by a chlorine atom; or

R_4 and R_5 are joined so that together with the nitrogen atom to which they are attached they form pyrrolidino or piperidino; and

R_6 is a C_{1-5} alkyl group;

the NR_4R_5 and OR_3 moieties are trans; and pharmaceutically acceptable salts thereof.

7. An anti-hypertensive pharmaceutical compositions comprising an anti-hypertensive effective amount of the compound according to claim 1, 2, 3, 4, or 6, and a pharmaceutically acceptable carrier.

8. A method of treatment or prophylaxis of hypertension in mammals, which comprises administering to the sufferer an anti-hypertensive effective amount of the compound according to claim 1, 2, 3, 4, or 6.

4,353,907

AMIDINO HYDRAZONE . $C_{17}H_{29-35}$ COOH INSECT AND FIRE ANT BAIT FORMULATIONS

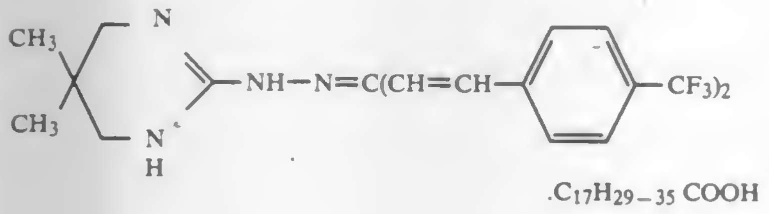
James B. Lovell, Pennington, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 125,592, Feb. 28, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 293,581

Int. Cl.³ C07D ***239/18;*** **A01N** ***9/22***

U.S. Cl. 424—251 **16 Claims**

1. Compounds of the formula:



4,353,908

SELECTED 2-TRICHLOROMETHYL-4-PYRIMIDINYL CARBONATES AND THEIR USE AS FUNGICIDES

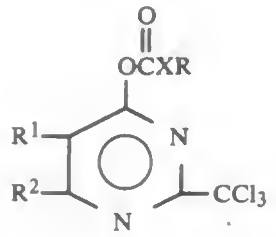
Lawrence E. Katz, Orange, and Walter A. Gay, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 13, 1981, Ser. No. 321,033

Int. Cl.³ A01N ***43/54;*** **C07D** ***239/36***

U.S. Cl. 424—251 **26 Claims**

1. A compound having the formula:



wherein X is an atom selected from the group consisting of oxygen and sulfur; R is a lower alkyl group having 1 to 4 carbon atoms or a phenyl group; R^1 is hydrogen or halo; and R^2 is a lower alkyl group having 1 to 4 carbon atoms.

4,353,909

6-HYDROXY-2-PHENYL-IMIDAZO[4,5-B]PYRIDINES AND SALTS THEREOF

Willi Diederen; Axel Prox; Albert Reuter; Willy Roth, all of Biberach, and Jochen Schmid, Warthausen, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

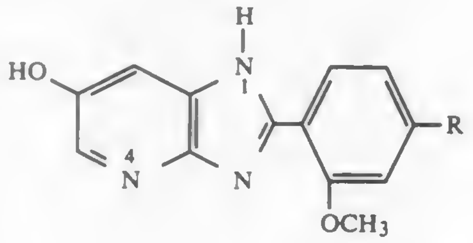
Filed Sep. 24, 1981, Ser. No. 305,159

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1980, 3037464

Int. Cl.³ A61K ***31/44;*** **C07D** ***487/04***

U.S. Cl. 424—256 **5 Claims**

1. A compound of the formula



wherein R is methylsulfinyl or methylsulfonyl, its 3H-tautomer, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,353,910

DERIVATIVES OF 4,5,6,7-TETRAHYDROISOXAZOLO [5,4-C] PYRIDINE-3-ONE, PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT

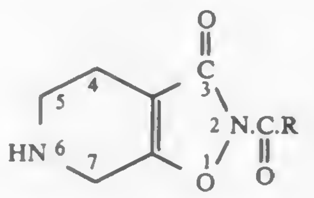
Jens K. Perregaard, Oelstykke, Denmark, assignor to Kefalas A/S, Copenhagen-Valby, Denmark

Filed Nov. 27, 1981, Ser. No. 325,292

Int. Cl.³ C07D ***498/04;*** **A61K** ***31/44***

U.S. Cl. 424—256 **8 Claims**

1. A compound of the formula:



I

wherein R is an alkyl group, branched or unbranched, having from one to seventeen crabon atoms inclusive, a phenyl group optionally substituted with one or two groups selected from lower alkyl, lower alkyloxy and halogen, a phenylalkyl group, a lower alkyloxy group or a —NHR¹ group, wherein R^1 is hydrogen, lower alkyl, phenyl or cyclohexyl, as well as pharmaceutically acceptable acid addition salts thereof.

2. A pharmaceutical composition suitable for the alleviation of GABA-system-malfunction-related disorders containing as an active ingredient a compound of formula I as defined in claim 1, or a pharmaceutically acceptable acid addition salt thereof together with a pharmaceutical carrier or excipient.

4,353,911

INDOLO(2,3-A)QUINOLIZIDINES, USEFUL IN INCREASING FEMORAL AND VERTEBRAL BLOOD FLOW

Andre Buzas, 25, Route de Versailles, 91570 Bievres, France

PCT No. PCT/FR78/00043, § 371 Date Jul. 25, 1979, § 102(e) Date Jul. 20, 1979, PCT Pub. No. WO79/00319, PCT Pub. Date Jun. 14, 1979

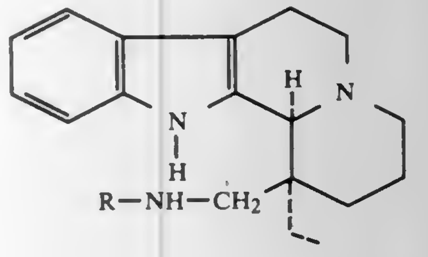
PCT Filed Nov. 24, 1978, Ser. No. 129,974

Int. Cl.³ A61K ***31/475;*** **C07D** ***401/02***

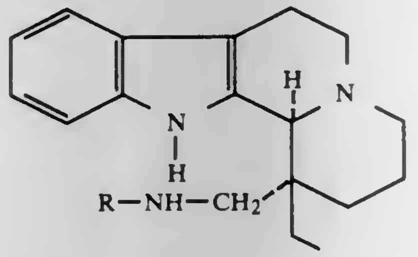
U.S. Cl. 424—258 **2 Claims**

1. A method of increasing femoral blood flow and vertebral blood flow without significantly affecting arterial blood pressure and inducing only a slight increase in cardiac rhythm comprising the administration of 5 mg to 40 mgs of a compound according to the formulae (I) and (II)

(I)



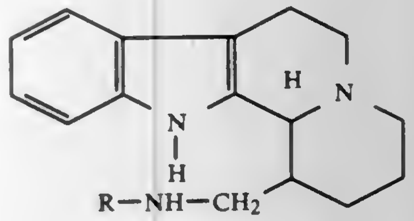
(II)



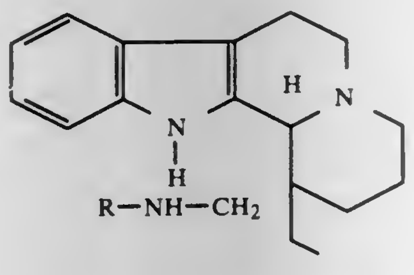
wherein R is alkoxy carbonyl, the alkoxy having up to 5 carbon atoms, trimethoxy substituted phenyl carbonyl or a therapeutically acceptable acid addition salt of one of the foregoing.

2. A therapeutic composition comprising in a therapeutically acceptable carrier, a therapeutically effective amount for increasing femoral blood flow and vertebral blood flow without significantly affecting arterial blood pressure and inducing only a slight increase in cardiac rhythm of a compound of the formulae (I) and (II)

(I)



(II)



wherein R is an alkoxy carbonyl, the alkoxy having up to 5 carbon atoms, trimethoxy substituted phenyl carbonyl or a therapeutically acceptable acid addition salt of one of the foregoing.

4,353,912

N-HALOALKYL NOR APOMORPHINES AND METHOD OF INACTIVATING DOPAMINE RECEPTOR SITES AND ENHANCING DOPAMINERGIC ACTIVITY THEREWITH

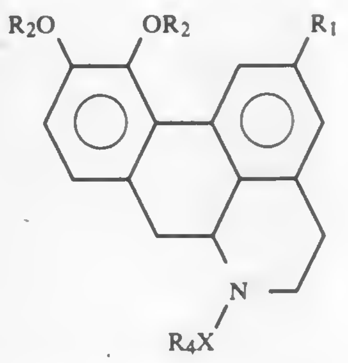
John L. Neumeyer, Wayland, Mass., assignor to Northeastern University, Boston, Mass.

Filed May 8, 1980, Ser. No. 147,737

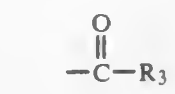
Int. Cl.³ A61K ***31/47;*** **C07D** ***221/18***

U.S. Cl. 424—258 **4 Claims**

1. A method of inactivating dopamine receptor sites and enhancing dopaminergic activity by administering a therapeutically effective amount of a compound of the formula



wherein R_1 is R_2O; R_2 is hydrogen, C_1 to C_6 alkyl or



$$-\overset{\overset{\displaystyle O}{\|}}{C}-R_3$$

where R_3 and R_4 are C_1 to C_6 alkyl and X is halogen and the acid addition salts thereof selected from the group formic acid, acetic acid, isobutyric acid, alpha-mercaptopropionic acid, malic acid, fumaric acid, succinic acid, succinamic acid, tartaric acid, citric acid, lactic acid, benzoic acid, 4-methoxybenzoic acid, phthalic acid, anthranilic acid, 1-naphthalenecarboxylic acid, cinnamic acid, cyclohexanecarboxylic acid, mandelic acid, tropic acid, crotonic acid, acetylene dicarboxylic acid, sorbic acid, 2-furancarboxylic acid, cholic acid, pyrenecarboxylic acid, 2-pyridinecarboxylic acid, 3-indoleacetic acid, quinic acid, sulfamic acid, methanesulfonic acid, isothionic acid, benezenesulfinic acid, p-toluenesulfonic acid, benzenesulfinic acid, butylarsonic acid, diethylphosphinic acid, p-aminophenylarsinic acid, phenylstibnic acid, phenylphosphinous acid, methylphosphinic acid, phenylphosphinic acid, hydrofluoric acid, hydrochloric acid, hydrobromic acid, hydroidic acid, perchloric acid, nitric acid, sulfuric acid, phosphoric acid, hydrocyanic acid, phosphotungstic acid, molybdic acid, phosphomolybdic acid, pyrophosphoric acid, arsenic acid, picric acid, picrolonic acid barbituric acid and boron trifluoride.

2. The compound (−)N-(2-chloroethyl)norapomorphine and the acid addition salts thereof selected from the group formic acid, acetic acid, isobutyric acid, alpha-mercaptopropionic acid, malic acid, fumaric acid, succinic acid, succinamic acid, tartaric acid, citric acid, lactic acid, benzoic acid, 4-methoxybenzoic acid, phthalic acid, anthranilic acid, 1-naphthalenecarboxylic acid, cinnamic acid, cyclohexanecarboxylic acid, mandelic acid, tropic acid, crotonic acid, acetylene dicarboxylic acid, sorbic acid, 2-furancarboxylic acid, cholic acid, pyrenecarboxylic acid, 2-pyridinecarboxylic acid, 3-indoleacetic acid, quinic acid, sulfamic acid, methanesulfonic acid, isethionic acid, benzenesulfinic acid, p-toluenesulfonic acid, benzesulfinic acid, butylarsonic acid, diethylphosphinic acid, p-aminophenylarsinic acid, phenylstibnic acid, phenylphosphinous acid, methylphosphonic acid, phenylphosphinic acid, hydrofluoric acid, hydrochloric acid, hydrobromic acid, hydriodic acid, perchloric acid, nitric acid, sulfuric acid, phosphoric acid, hydrocyanic acid, phosphotungstic acid, molybdic acid, phosphomolybdic acid, pyrophosphoric acid, arsenic acid, picric acid, picrolonic acid, barbituric acid and boron trifluoride.

4,353,913

BENZIMIDAZOLYLCARBAMIC ACID ESTER COMPOUNDS, THEIR PRODUCTION, AND THEIR MEDICINAL USE

Hartmund Wollweber, Wuppertal; Heinrich Kölling, Haan; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 83,883, Oct. 11, 1979, Pat. No. 4,287,199. This application Jan. 12, 1981, Ser. No. 224,584

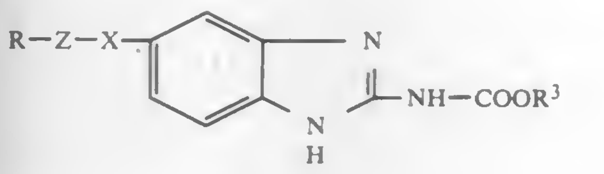
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845537

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ A61K *31/44, 31/445;* **C07D** *235/32, 401/02*

U.S. Cl. 424—263 **10 Claims**

1. A 2-benzimidazolylcarbamic ester of the formula



(I)

or a salt thereof in which

X denotes a sulphur atom, an oxygen atom, an SO group or an SO_2 group,

Z denotes an alkylene group with 1 to 6 carbon atoms in the main chain, which can optionally be substituted by C_1 to C_4 alkyl,

R denotes a cycloalkyleneimino, cycloalkenylimino or cycloalkadienyleneimino group which has a total of 4 to 7 ring members and/optionally substituted by one or two C_1 to C_4 alkyl groups, and

R^3 denotes a C_1 to C_4 alkyl group which is unsubstituted or substituted by C_1-C_4 alkoxy, halogen, trifluoromethyl, cyano or nitro or a C_2 to C_6 alkenyl group.

4,353,914

ANTITUSSIVE ANILIDES

Juhani O. W. Kaila; Erkki J. Honkanen; Joachim E. Alberty, and Jaakko J. Hukki, all of Helsinki, Finland, assignors to Orion-yhtyma Oy, Finland

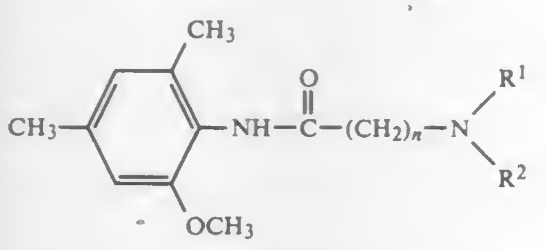
Division of Ser. No. 7,170, Jan. 29, 1979, abandoned. This application Jan. 11, 1980, Ser. No. 111,508

Claims priority, application Finland, Feb. 7, 1978, 780387

Int. Cl.³ A61K *31/165, 31/445*

U.S. Cl. 424—267 **2 Claims**

1. A process for relieving coughing comprising administering to a subject an effective amount of a compound having the general formula



wherein n is an integer from 2 to 3, and R^1 and R^2 each separately represent a lower alkyl group having 1 to 3 carbon atoms, or they form together with the nitrogen atom to which they are attached a piperidine ring which is substituted by a methyl group, and non-toxic acid addition salts thereof.

4,353,915

COMBATING PESTS WITH 2-(AZOL-1-YL)-ALDOXIME-CARBAMATES

Jörg Stetter, Wuppertal; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

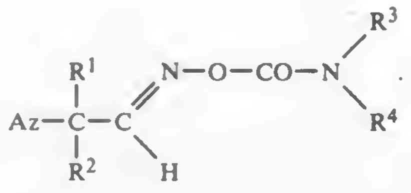
Filed Jan. 12, 1978, Ser. No. 869,067

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704682; Jul. 28, 1977, 2734107

Int. Cl.³ A01N *47/24;* **C07D** *231/12, 233/61, 249/08*

U.S. Cl. 424—269 **9 Claims**

1. A carbamate of the formula



wherein

R^1 and R^2 each independently is alkyl of 1 to 4 carbon atoms or together form a tetramethylene, pentamethylene or hexamethylene bridge,

R^3 is hydrogen or alkyl of 1 to 4 carbon atoms,

R^4 is hydrogen, alkyl of 1 to 12 carbon atoms, alkenyl or alkynyl of 2 to 4 carbon atoms, halogenoalkyl with up to 2 carbon atoms and 5 halogen atoms, halogenoalkenyl with up to 3 carbon atoms and 5 halogen atoms, or alkoxyalkyl or alkylthioalkyl

8. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidally or nematicidally effective amount of a compound according to claim 1.

4,353,916

BENZOTHIAZOL-2-ONES AND PHYTOPATHOGENIC FUNGICIDAL USE THEREOF

Tamon Uematsu, Toyonaka; Satoru Inoue, Nishinomiya, and Norihisa Yamashita, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Japan

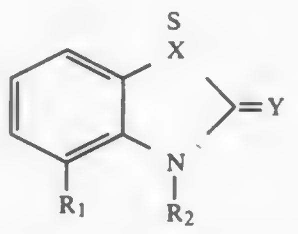
Continuation of Ser. No. 866,401, Dec. 30, 1977, abandoned. This application Oct. 21, 1980, Ser. No. 199,222

Claims priority, application Japan, Jan. 17, 1977, 52-4296; Apr. 5, 1977, 52-39308; Sep. 2, 1977, 52-106192

Int. Cl.³ A01N *43/78;* **C07D** *277/68*

U.S. Cl. 424—270 **7 Claims**

1. A compound of the formula:



wherein R_1 is a halogen atom or methyl group, R_2 is a methyl or ethyl group and X is a sulfur atom and Y is an oxygen atom.

5. A method for controlling *phytopathogenic fungi* which comprises applying an effective amount *against phytopathogenic fungi* of the compound according to claim **1** to the fungi.

4,353,917

AMINO DERIVATIVES OF 2-METHYL-5-(2-HYDROXYSTYRYL)-1,3,4-THIADIAZOLE, THEIR PREPARATION, AND FORMULATIONS CONTAINING THESE COMPOUNDS

Fritz-Frieder Frickel, Deidesheim; Peter C. Thieme; Albrecht Franke, both of Wachenheim; Helmut Hagen, Frankenthal; Dieter Lenke, Ludwigshafen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,834

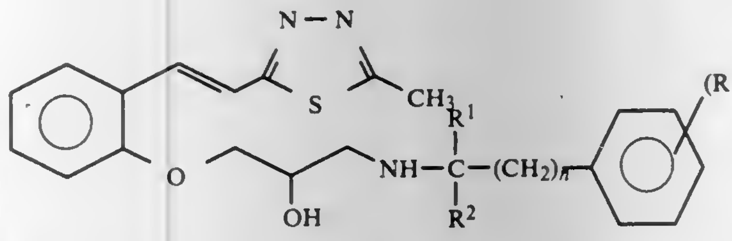
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943406

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.³ A61K *31/41, 31/425;* **C07D** *285/12*

U.S. Cl. 424—270 **4 Claims**

1. A compound of the general formula (I)



(I)

were n is 1 or 2, o is 1, 2 or 3, R^1 and R^2 are hydrogen or straight-chain or branched alkyl of 1 to 5 carbon atoms, R^3 is hydrogen, halogen, hydroxyl, alkyl, alkoxy or alkylthio of 1 to 5 carbon atoms (the last-mentioned three groups each being unsubstituted, or mono-, di- or tri-substituted by halogen, or mono-substituted by hydroxyl or alkoxy of 1 to 3 carbon atoms), alkenyl, alkynyl or alkynyloxy, each of 2 to 6 carbon atoms and cycloalkoxy of 3 to 8 carbon atoms, benzyloxy or amino which is unsubstituted or is mono- or di-substituted by alkyl of 1 to 5 carbon atoms, and if o is 2 or 3, the R^3's may be identical or different, or R^3 is methylenedioxy or alkylene of 3 or 4 carbon atoms, and its addition salts with acids.

4. A therapeutic agent for treating angina pectorus, hypertonia and cardiac arrhythmias which comprises: a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of a compound of the formula I of claim **1**, or a physiologically tolerated acid addition salt thereof.

4,353,918

DEXTROROTATORY BICYCLIC THIADIAZA COMPOUNDS AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Richard Göschke, Bottmingen, and Pier G. Ferrini, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 108,904, Dec. 31, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,195

Claims priority, application Switzerland, Jan. 5, 1979, 87/79

Int. Cl.³ C07D *277/60*

U.S. Cl. 424—270 **10 Claims**

1. The dextrorotatory enantiomer of trans-5,6-di-p-methoxyphenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,353,919

ANALGESIC AND ANTIPYRETIC PHARMACEUTICAL COMPOSITIONS CONTAINING A BENZOTHIAZOL-2(3H)-ONE

Wolfhard Engel, Biberach; Günter Trummlitz, Warthausen; Wolfgang Eberlein, Biberach; Günther Schmidt, Biberach; Günther Engelhardt, Biberach, and Rainer Zimmermann, Mittelbiberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach, Fed. Rep. of Germany

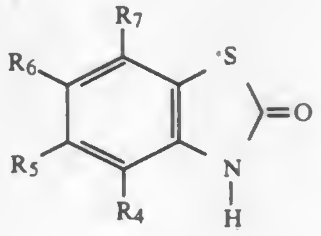
Continuation-in-part of Ser. No. 163,964, Jun. 30, 1980, abandoned. This application Apr. 15, 1981, Ser. No. 254,539

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016816; May 10, 1980, 3017977

Int. Cl.³ A61K *31/425*

U.S. Cl. 424—270 **4 Claims**

1. The method of relieving pain or reducing fever in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective analgesic or antipyretic amount of a compound of the formula



wherein

R_5 is methyl or methoxy, and R_4, R_6 and R_7 are hydrogen; or

R_6 is fluorine or chlorine, and R_4, R_5 and R_7 are hydrogen; or

R_7 is chlorine, and R_4, R_5 and R_6 are hydrogen; or

R_5 and R_6 are methoxy, and R_4 and R_7 are hydrogen; or

R_4 is methyl or chlorine, and R_5, R_6 and R_7 are hydrogen.

4,353,920

USE OF SELECTED 3-TRIHALOMETHYL-5-UREIDO-1,2,4-OXADIAZOLES AND -1,2,4-THIADIAZOLES AS AGRICULTURAL VIRICIDES

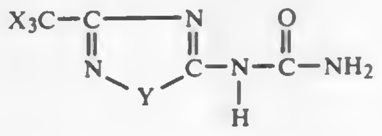
Walter A. Gay, Cheshire, and Elizabeth A. Twohig, Seymore, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 181,039, Aug. 25, 1980. This application Dec. 24, 1981, Ser. No. 334,483

Int. Cl.³ A01N *47/36;* **C07D** *271/06, 285/08*

U.S. Cl. 424—270 **5 Claims**

1. The method of controlling agricultural viruses which comprises contacting said viruses with a viricidally effective amount of a compound of the formula:



wherein X is either Cl or F and Y is either S or O.

4,353,921
ANTIARRYTHMIC 1-ARYLCARBAMOYLALKYL-2-IMIDAZOLINE DERIVATIVES, COMPOSITION AND METHOD OF USE

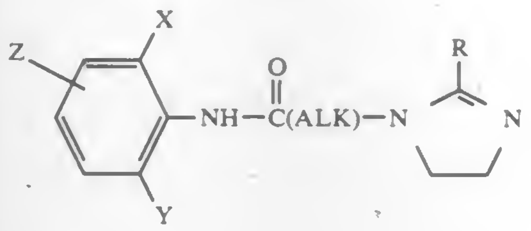
Julius Diamond, Mountain Lakes; Thomas K. Morgan, Jr., and Ronald A. Wohl, both of Morris Plains, all of N.J., assignors to Berlex Laboratories, Inc., Cedar Knolls, N.J.

Filed Jun. 19, 1981, Ser. No. 275,172

Int. Cl.^{3} A61K *31/415;* **C07D** *233/81, 233/06, 233/20*

U.S. Cl. **424—273 R** **14 Claims**

1. A compound having the formula:



wherein

R = C_1–C_8 alkyl, phenyl, benzyl, substituted phenyl, C_3–C_7 cycloalkyl, C_4–C_8 cycloalkylalkyl

X = C_1–C_4 alkyl, fluoro, chloro, bromo, trifluoromethyl;

Y = hydrogen, C_1–C_4 alkyl, fluoro, chloro, bromo;

Z = hydrogen, hydroxy, fluoro, chloro, bromo, methyl, C_1–C_4 alkoxy, C_1–C_4 acyloxy;

ALK = straight or branched chain alkylene having up to 8 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

13. The method for the suppression of cardiac arrythmia in an animal which comprises administering to said animal an amount effective for the suppression of said arrythmia of a compound according to claim **1**.

4,353,922
ANTICHOLINERGIC BRONCHODILATORS

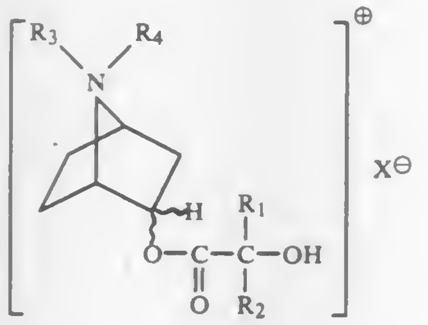
Jurg R. Pfister, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 13, 1981, Ser. No. 243,674

Int. Cl.^{3} C07D *487/08;* **A61K** *31/40*

U.S. Cl. **424—274** **13 Claims**

1. A compound having the general formula



(1)

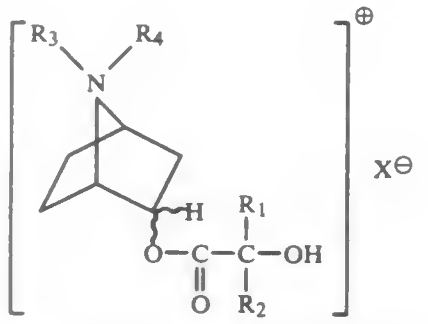
wherein the serrated lines denote both endo and exo forms;

R_1 and R_2 are the same or different and are C_1 to C_6 alkyl, C_5 or C_6 cycloalkyl, C_5 or C_6 cycloalkenyl, phenyl optionally substituted with C_1 to C_6 alkyl, C_1 to C_6 alkoxy or halo, or 5 or 6 membered heterocyclic aryl wherein the heteroatom is oxygen, nitrogen or sulfur;

R_3 is a C_1 to C_6 alkyl;

R_4 and X are optionally present, and when present R_4 is a C_1 to C_6 alkyl radical or hydrogen and X is an inorganic or organic anion which forms a pharmaceutically acceptable salt.

12. An anticholinergic pharmaceutical composition which comprises a pharmaceutically acceptable carrier and a compound represented by the formula



(1)

wherein the serrated lines denote both endo and exo forms;

R_1 and R_2 are the same or different and are C_1 to C_6 alkyl, C_5 or C_6 cycloalkyl, C_5 or C_6 cycloalkenyl, phenyl optionally substituted with C_1 to C_6 alkyl, C_1 to C_6 alkoxy or halo, or 5 or 6 membered heterocyclic aryl wherein the heteroatom is oxygen, nitrogen or sulfur;

R_3 is a C_1 to C_6 alkyl;

R_4 and X are optionally present, and when present R_4 is a C_1 to C_6 alkyl radical or hydrogen and X is an inorganic or organic anion which forms a pharmaceutically acceptable salt.

4,353,923
PHARMACEUTICAL COMPOSITION CONTAINING A BENZOFURANCARBOXAMIDE DERIVATIVE AS THE ACTIVE INGREDIENT

Hiroshi Takizawa; Yoshimasa Oiji, and Tatsuyuki Hirayama, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

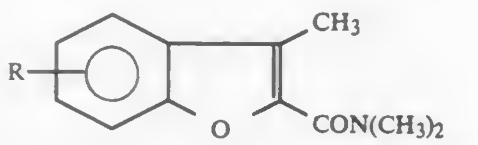
Filed Jul. 17, 1981, Ser. No. 284,377

Claims priority, application Japan, Aug. 1, 1980, 55/105138

Int. Cl.^{3} A61K *31/34*

U.S. Cl. **424—285** **12 Claims**

1. A muscle-relaxing, anti-inflammatory or analgesic composition which comprises at least one pharmaceutically acceptable carrier and an effective amount of a benzo[b]furancarboxamide compound represented by the general formula:



(I)

wherein R represents a halogen atom, an alykyl group having 1–5 carbon atoms or an alkoxy group having 1–5 carbon atoms to provide therapeutic activity to said composition.

4,353,924
ANIMAL FEED SUPPLEMENT HAVING REDUCED CORROSION CHARACTERISTICS

Joseph W. Baker, St. Louis, Mo.; Dennis L. Mansfield, Nitro, W. Va., and David J. Weinkauff, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 4, 1979, Ser. No. 72,541

Int. Cl.^{3} A61K *31/19*

U.S. Cl. **424—317** **5 Claims**

1. An animal feed supplement having reduced metal corrosion characteristics comprising an aqueous solution containing 87–90 percent by weight 2-hydroxy-4-(methylthio)-butanoic acid, said solution having a pH of 0.9–1.2.

4,353,925
INSECTICIDAL N-[4-(3′-HALOPROP-2′-EN-1′-YL)-AMINOPHENYL]-N′-BENZOYLUREAS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

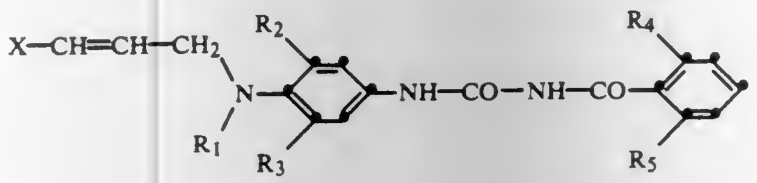
Filed Jul. 9, 1981, Ser. No. 281,546

Claims priority, application Switzerland, Jul. 16, 1980, 5457/80; Aug. 12, 1980, 6095/80; Feb. 26, 1981, 1294/81; Jun. 3, 1981, 3628/81

Int. Cl.^{3} A01N *47/34;* **C07C** *127/22*

U.S. Cl. **424—322** **14 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, C_1–C_4-alkyl, C_3-alkenyl, C_3-alkenyl substituted by a chlorine or bromine atom, or C_3–C_6-cycloalkyl, R_2 and R_3 are each hydrogen or halogen, R_4 is methyl or halogen, R_5 is hydrogen or halogen, and X is chlorine or bromine; and salts thereof.

12. An insecticidal composition which contains (1) as active ingredient an insecticidally effective amount of a compound according to claim **1** and (2) a suitable carrier.

13. A method for combatting insects which comprises applying to said insects or to a locus desired to be protected from said insects an insecticidally effective amount of a compound according to claim **1**.

4,353,926
SODA CRACKERS

Takashi F. Sugihara, Pinole, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 29, 1979, Ser. No. 98,460

Int. Cl.^{3} A21D *8/04*

U.S. Cl. **426—20** **13 Claims**

1. A method for rapid, controlled preparation of soda cracker dough, which comprises the steps of

(a) preparing a liquid starter by a process comprising
  forming a slurry containing flour and water in the proportion of about 3–5 parts of water per part of flour,
  inoculating the slurry with viable cells of *Lactobacillus plantarum* in a concentration such that the liquid starter can be developed in about 6–8 hours, and developing the inoculated slurry by holding it with agitation at a temperature of about 25°–35° C. to cause proliferation of the added microorganisms,
(b) preparing a liquid sponge by a process comprising
  mixing the liquid starter with flour, shortening, and yeast, and
  fermenting the liquid sponge, and
(c) mixing a portion of the so-prepared and so-fermented liquid sponge with flour to form a soda cracker dough, the amount of liquid starter mixed with flour in step b being sufficient to reduce the fermentation time of the sponge and the amount of liquid sponge mixed with flour to form a soda cracker dough in step c being sufficient to reduce the fermentation time of the dough such that
  step b and c above are carried out in approximately eight hours or less.

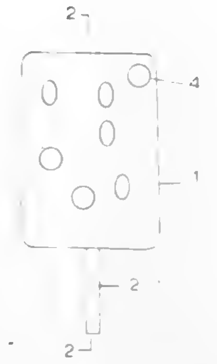
4,353,927
FROZEN DESSERT PRODUCT

Susan L. Lovercheck, 210 Castle Dr., #33, Bethel Park, Pa. 15102

Filed May 18, 1981, Ser. No. 264,346

Int. Cl.^{3} A23G *9/00, 9/24, 9/26*

U.S. Cl. **426—101** **7 Claims**



1. A frozen dessert product comprising a matrix of frozen dessert and at least one inner bit dispersed therein, wherein said dessert matrix is ice cream, ice milk, fruit sherbet, french ice cream, custard, french custard ice cream or mellorine, each of said inner bits having a solid center, a readily water-soluble solid confectionary coating enclosing said center and a substantially water insoluble coating substantially enclosing said confectionary coating whereby dissolution of said confectionary coating into said dessert matrix is suppressed by the substantially water insoluble coating so that when consumed, the solid confectionary coating dissolves in the mouth of the consumer, thereby providing enhanced flavor.

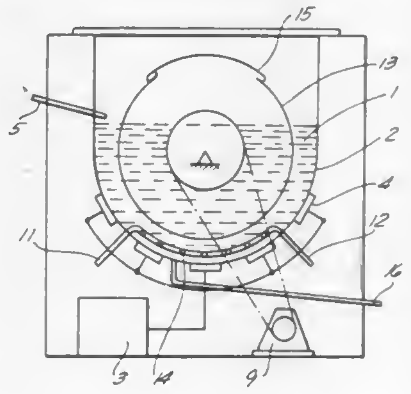
4,353,928
METHOD OF AND AN APPARATUS FOR TREATING FISH MATERIAL TO MAKE THE SAME READY FOR CONSUMPTION

Ewald Seliger; Klaus Dudar, both of Halle an der Saale; Günter Stöhr, Plauen; Rudolf Millner, and Wilhelm Banse, both of Halle an der Saale, all of German Democratic Rep., assignors to Veb Rationalisiering Halle, Halle, German Democratic Rep.

Filed Nov. 25, 1977, Ser. No. 854,747

Int. Cl.^{3} A23L *3/30, 1/325*

U.S. Cl. **426—238** **13 Claims**



1. A method of treating fish material to make the same ready for consumption, comprising the steps of preparing a flavoring bath; accommodating the fish material to be treated in the flavoring bath; and subjecting the flavoring bath to ultrasonic sound waves for the latter to be transmitted through the flavoring bath to the fish material to enhance the penetration of the flavoring bath into the fish material and also to tenderize the latter.

4,353,929

RADIATION AND ELECTRIC CURRENT COOKING OF MEAT

David B. Flavan, Jr.; Merrill M. E. Jenkins, Sr., both of St. Louis; James S. White, Webster Groves, and James E. Pate, Fenton, all of Mo., assignors to Three Rivers Development Corporation, St. Charles, Mo.

Division of Ser. No. 42,747, May 29, 1979, Pat. No. 4,244,284. This application Nov. 3, 1980, Ser. No. 203,082

Int. Cl.^{3} A23L *3/00, 3/32*

U.S. Cl. 426—243 **5 Claims**

1. A method of cooking meat comprising the steps of:

subjecting said meat to surface cooking by radiation in a first radiation cooking region, said surface cooking being concentrated substantially on a first side only of said meat in said first radiation cooking region leaving the opposite side of said meat substantially, unradiated;

moving said meat to a further cooking region;

clamping said meat between two electrodes in said further cooking region;

passing electric current through said meat between said electrodes to provide cooking throughout the thickness of said meat;

subjecting said meat to surface cooking by radiation applied substantially on said opposite side in a second radiation cooking region; and

wherein said opposite side radiation step is conducted following said electric current passing step, and wherein said second radiation cooking region is different from said first radiation cooking region and said further cooking region.

4,353,930

CALCIUM CHLORIDE INFILTRATION OF APPLES

Katsuji Hirahara, Santa Clara, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Jul. 2, 1981, Ser. No. 279,896

Int. Cl.^{3} A23B *7/156;* **A23L** *1/212*

U.S. Cl. 426—281 **4 Claims**

1. A method of treating a batch of apples, consisting of open and closed-core apples comprising the steps of positioning the batch of apples in a chamber at atmospheric pressure; sealing the chamber; moving a quantity of $CaCl_2$ solution into the chamber; raising the pressure of the atmosphere in the chamber to a predetermined level to pressurize the $CaCl_2$ solution; maintaining the pressure at said predetermined level for approximately 10 seconds with the apples in the pressurized atmosphere to raise the internal pressure of the open-core apples in the batch in the chamber; immersing all of the apples in the $CaCl_2$ solution to initiate inward movement of the solution toward the center of the closed-core apples in the batch; reducing the pressure in the chamber slightly to reduce the internal pressure of the open-core apples; returning the pressure of the chamber to said predetermined level to cause $CaCl_2$ solution to be moved into the openings at the core end of the open-core apples; lowering the pressure of the atmosphere in the chamber to atmospheric pressure; removing the $CaCl_2$ solution from the chamber; washing and drying all of said apples; and then placing all of the apples in a cold storage environment.

4,353,931

METHOD OF HULLING PISTACHIO NUTS

Joseph Volk, Sr., Gilroy, Calif., assignor to Benjamin Volk, Gilroy, Calif.

Filed Jun. 19, 1981, Ser. No. 275,263

Int. Cl.^{3} A23N *5/00*

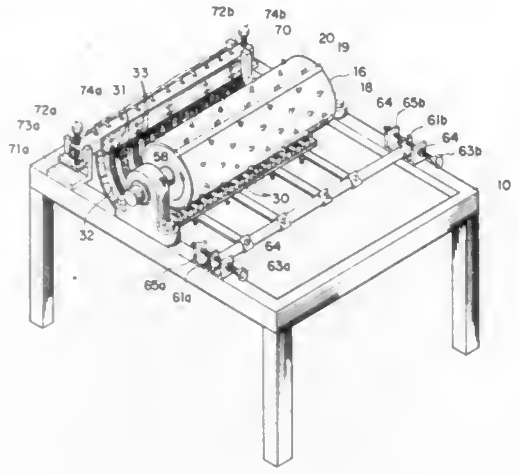
U.S. Cl. 426—483 **3 Claims**

1. A method of removing hulls from pistachio nuts said method comprising the steps of

(a) depositing unhulled pistachio nuts between rotating means having projections extending outward from a surface thereof and a means having slots, said projections being spaced apart on said surface and said surface movably mounted on support means with said surface having projections disposed in close proximity to the surface of said means having slots so that the projections extend into the slots, said slots being narrower than the pistachio nuts;

(b) passing said unhulled pistachio nuts between the surface having projections and a surface of said means having slots by means of moving the surface of said means having projections, so as to push said pistachio nuts in said slots with said projections; and

(c) abrading said hulls from said pistachio nuts by means of the surface having projections and the surface of said means having slots contacting said hulls while said unhulled pistachio nuts pass between said surface having projections and said surface of said means having slots.



4,353,932

REFRIGERATOR POURABLE AND STABLE PANCAKE BATTERS FOR PREPARING STABLE PANCAKES AND METHOD FOR PREPARING

David P. Bone, Palatine, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 11, 1981, Ser. No. 233,364

Int. Cl.^{3} A21D *10/04*

U.S. Cl. 426—532 **2 Claims**

1. A pancake batter capable of retaining microbiological stability at refrigerator temperatures for an extended period of time, said batter including:

a. at least 25% flour;

b. about 35% to about 40% water;

c. about 10% to about 15% oil;

d. sugars comprising saccharides and polyhydric alcohols, said sugars being in ratios to said water of from 0.3/1.0 to 0.6/1.0;

e. said saccharides being from about 6% to about 11.5%;

f. said polyhydric alcohols being from about 2.5% to about 13.5%;

g. a heat-setting protein; and

h. minor but effective amounts of a leavening agent, an antioxidant, salt and flavoring; said batter being mechanically homogenized to provide a stable emulsion having a water phase solute concentration of about 2 to about 5 molal, a water activity of from about 0.88 to about 0.95 and a substantially neutral pH, said batter being capable of forming pancake of good flavor, texture and appearance.

4,353,933

METHOD FOR CONTROLLING ELECTROLESS PLATING BATH

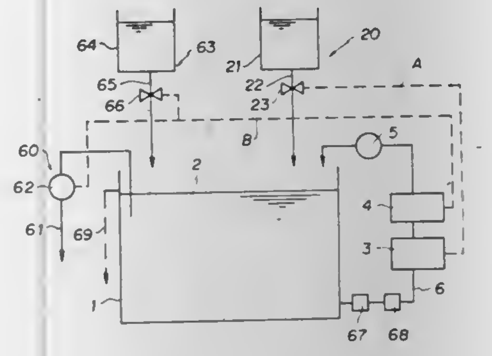
Ken Araki, Ibaragi; Hiromitsu Sakai, Kawanishi, and Yutaka Sugiura, Kobe, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Nov. 4, 1980, Ser. No. 204,046

Claims priority, application Japan, Nov. 14, 1979, 54-147215; Dec. 22, 1979, 54-167333; Dec. 22, 1979, 54-167334

Int. Cl.^{3} B05D *1/18*

U.S. Cl. 427—8 **5 Claims**



1. A method for controlling the content of an electroless plating bath such that the bath may be used for an extended period of time without remaking, the bath consisting of consumable ingredients including a metal ion and a reducing agent and unconsumable ingredients including a complexing agent, the metal ion being reduced to a metal by the reducing agent, whereby reaction by-products including decomposition products of the reducing agent are produced, the method comprising the steps of:

continuously or intermittently measuring the concentration of at least one consumable ingredient in the electroless plating bath;

automatically adding to the plating bath a first replenishing composition consisting essentially of the consumable ingredients after detecting that the measured value has reached a predetermined concentration in order to maintain the concentration of the consumable ingredients in the bath at the predetermined concentration;

continuously or intermittently measuring at least one of the physical properties of the electroless plating bath including the specific gravity, electrical conductivity and refractive index, to determine the degree of aging of the bath; and

automatically discharging a predetermined volume of the plating solution and automatically adding to the plating bath a second replenishing composition containing the unconsumable ingredients in an amount essentially corresponding to the lost amount discharged after detecting that the measured value of the physical property has reached a predetermined value in order to maintain the amount of the reaction by-products in the bath at a predetermined amount without an increasing accumulation of the by-products.

4,353,934

DIP-COATING METHOD

Atushi Nakashima; Michisuke Edamatu, and Kenji Kushi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

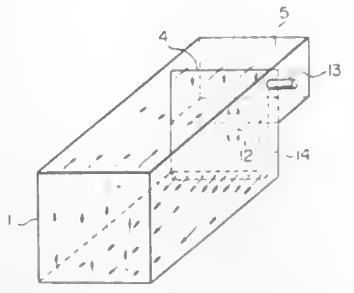
Filed Jun. 26, 1980, Ser. No. 163,360

Claims priority, application Japan, Jul. 9, 1979, 54/86722; Jul. 10, 1979, 54/87232

Int. Cl.^{3} B05D *3/12*

U.S. Cl. 427—57 **4 Claims**

1. In the dip-coating method for obtaining a coated film on the surface of an article by circulating a coating solution in a tank, dipping the article in the solution and then pulling the article up out of the coating solution, the improvement which comprises irradiating the coating solution with ultrasonic waves, and jetting the coating solution uniformly and parallel to the bottom of the coating solution tank through a jet nozzle at the tank bottom and from the side of the tank on which the coating solution overflows toward the side opposite it at the bottom of the tank, the ultrasonic waves ranging in frequency from 1 to 100 KHz and in strength from 0.2 to 2 w/cm^2, and the flow velocity of the coating solution within the coating solution tank ranging from 2 to 100 cm/sec.



4,353,935

METHOD OF MANUFACTURING A DEVICE HAVING A CONDUCTOR PATTERN

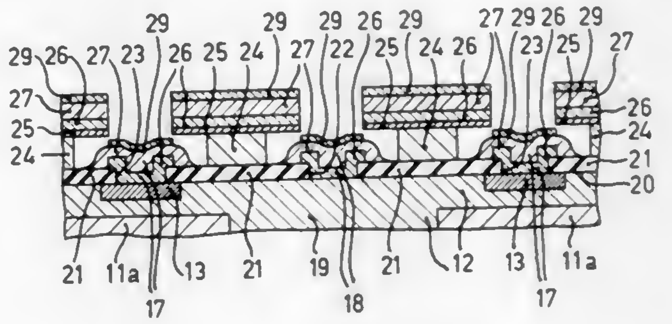
Bohuslav Symersky, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 764,589, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 612,718, Sep. 12, 1975, abandoned. This application Aug. 24, 1978, Ser. No. 936,616

Claims priority, application Netherlands, Sep. 19, 1974, 7412383

Int. Cl.^{3} H01L *21/285*

U.S. Cl. 427—89 **2 Claims**



1. A method of manufacturing a device comprising a body which has a conductor pattern, comprising the steps of:

(a) providing said body having a surface,

(b) providing a masking layer on said surface, said masking layer comprising at least first and second masking sub-layers of respective materials differing from each other, said first masking sub-layer underlying said second masking sub-layer and being of metal,

(c) providing in said masking layer recesses in the form of said conductive pattern that is to be provided,

(d) etching said first masking sub-layer, using said second masking sub-layer as an etching mask for the underlying first masking sub-layer, exposing part of said body surface,

(e) thereafter providing a layer of conductive material on the exposed said surface and on said masking layer, said conductive layer comprising plural conductive sub-layers of respective materials differing from each other, said step of providing said conductive layer comprising providing a first conductive sub-layer on said surface and then providing a second conductive sub-layer which covers the whole free surface of the underlying said first conductive sub-layer such that said first conductive sub-layer is completely shielded from the environment by said second conductive sublayer, and

(f) then removing said masking layer and a first part of said conductive layer present on said masking layer so that a second part of said conductive layer present in said recesses of said masking layer remains on said body as said conductive pattern,

wherein said step of providing said conductive layer comprises providing said first and second conductive sub-layers at different respective pressures, the pressure during the provision of said first conductive sub-layer being smaller than the pressure during the provision of said second conductive sub-layer.

4,353,936

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

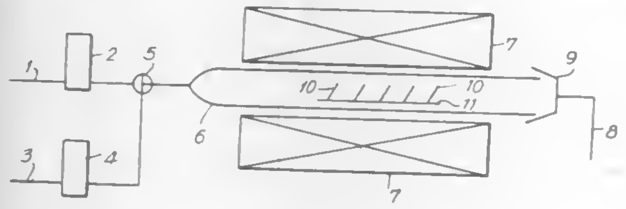
Takao Nozaki, Aizuwakamatsu, and Takashi Ito, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP79/00046, § 371 Date Sep. 5, 1980, § 102(e) Date Sep. 5, 1980

PCT Filed Feb. 27, 1979, Ser. No. 252,974

Int. Cl.³ B05D *5/12;* ~~B44C~~ *1/22;* H01L *21/306*

U.S. Cl. 427—94 **5 Claims**



1. A method of manufacturing a semiconductor device in a reaction chamber, said method comprising the steps of

preparing a silicon substrate having an exposed surface in the reaction chamber;

initially heating the substrate in said reaction chamber to a temperature sufficient for vapor etching said surface in an inert atmosphere substantially free from oxidative gases; and

thereafter heating said substrate to a temperature sufficient for the deposition of a film of silicon nitride on said surface in said reaction chamber in an atmosphere including ammonia and substantially free from other compound gases by direct reaction of nitrogen of said ammonia and silicon of said substrate.

4,353,937

COATING METHOD

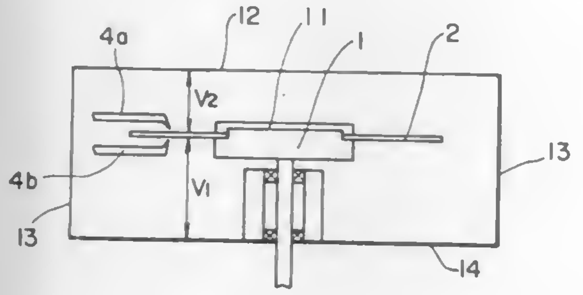
Katsuyoshi Chiba, Hachioji; Teruo Tsunoda, Nanpeidaimachi; Yoshiki Kato, Hinodemachi; Mitsushi Endo, Hadano; Fumihiko Sawase, Hakonemachi; Katuji Itikawa, Numazu, and Masa-aki Imamura, Minami-ashigara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,120

Claims priority, application Japan, Nov. 30, 1979, 54-154379; Jul. 11, 1980, 55-93922; Jul. 21, 1980, 55-98742

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—130 **18 Claims**



1. A method of forming magnetic coatings comprising the step of spraying a magnetic coating composition with magnetic powder dispersed therein onto both sides of a horizontally arranged disk substantially simultaneously while the disk is being rotated at a speed of 5 to 700 r.p.m. to distribute said coating composition over whole surfaces of said disk due to the rotation of said disk and to centrifugally throw off excess coating composition, and the step of further rotating said disk at a rotational frequency which is not lower than said speed to adjust thicknesses of the coatings; the rotation of said disk for adjusting thicknesses of the coatings being executed under a state wherein a shield plate is arranged over at least that part of said disk formed with said coating and a bottom plate is arranged under at least that part of said disk formed with said coating, and wherein a distance from the shield plate to the disk is less than a distance from the bottom plate to the disk.

4,353,938

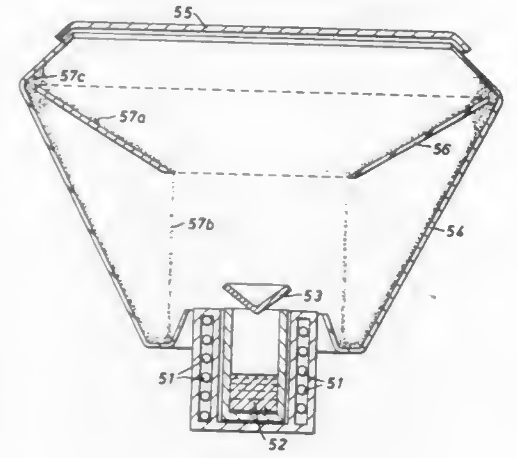
COATING POWDER WITH VALVE-METAL

Henley F. Sterling, Great Dunmow; Eric L. Bush, Matching Green, Nr. Harlow; Miles P. Drake, Harlow; Denis W. J. Hazelden, Bishop's Stortford, and Sarah Y. Hughes, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,574

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—214 **17 Claims**



1. A method of coating powder particles with valve metals, comprising the steps of confining the particles to be coated in the interior of a rotatable drum; exposing the particles to an evacuated atmosphere; introducing vapors of at least one valve metal into the evacuated atmosphere, including evaporating the valve metal; presenting the particles to the vapors wherein the particles are coated with a layer of elemental valve metal, including rotating the drum and entraining the particles for joint travel with the rotating drum; and countering the tendency of the coated particles to form agglomerates, including at least occasionally enriching the evacuated atmosphere with oxygen at a controlled rate sufficient for substantially preventing the formation of such agglomerates.

3. A method as claimed in claim 1, and further comprising the step of repeating said introducing step with a different valve metal after the termination of said introducing step with said one valve metal to coat the particles already coated with said one valve metal with a layer of said different valve metal.

4,353,939

PROCESS FOR THE MANUFACTURE OF TUBING BASED ON CELLULOSE HYDRATE HAVING A COATING ON ITS INSIDE AND APPARATUS FOR CARRYING OUT THE PROCESS

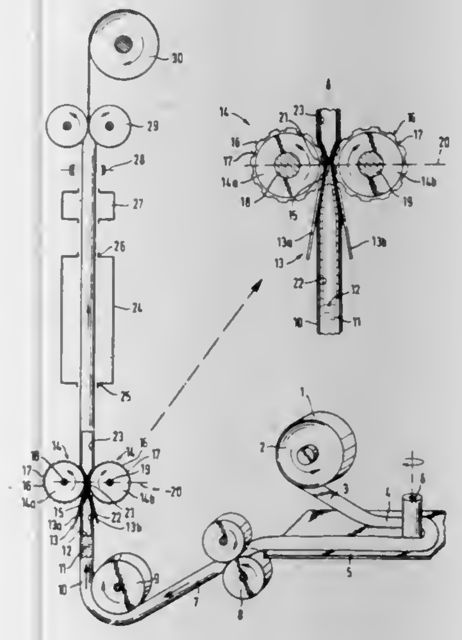
Reinhold Becker, Wiesbaden; Heinz Kälberer, Walluf, and Richard Regner, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,933

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012251

Int. Cl.³ B05D *1/40, 7/22*

U.S. Cl. 427—238 **29 Claims**



1. A process for coating the inside of a length of tubing essentially consisting of cellulose hydrate, comprising the steps of:

forming at least one loop of tubing having a cavity therein with a downwardly inclined portion and an upwardly inclined portion;

filling the cavity of the tubing forming the loop with coating liquid;

transporting the tubing along its longitudinal axis in a substantially vertically upward direction to coat the inside surface of the tubing above the level of the coating liquid with an initial layer of coating liquid;

constricting the tubing adjacent to and above the level of the coating liquid with a metering device having a constriction zone which flattens a portion of the tubing passing therethrough to substantially eliminate all of the initial layer thereon and partially flattens the remaining portion of the tubing to allow a desired quantity of coating liquid to remain on the tubing issuing from the constriction zone;

filling the cavity of the tubing immediately upon issuance from the constriction zone with support gas in order to at least partially inflate the tubing; and

exposing the tubing to the action of heat at a sufficiently high temperature to remove the coating liquid and to fuse the coating layer to the inside thereof and form an uninterrupted film of uniform thickness on the inside o the tubing.

4,353,940

PROCESS FOR THE MANUFACTURE OF TUBING HAVING A COATING ON ITS INSIDE AND APPARATUS FOR CARRYING OUT THE PROCESS

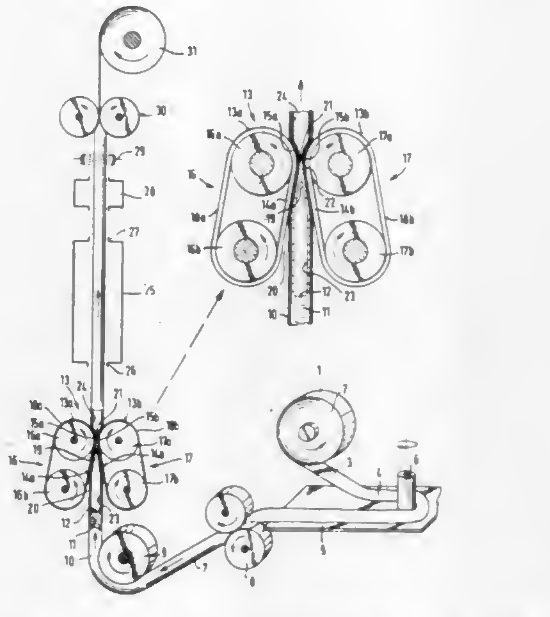
Reinhold Becker, Wiesbaden; Heinz Kälberer, Walluf, and Richard Regner, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,945

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012252

Int. Cl.³ B05D *1/40, 7/22*

U.S. Cl. 427—238 **26 Claims**



1. A process for coating the inside surface of a length of tubing esentially consisting of cellulose hydrate, comprising the steps of:

forming at least one loop of tubing having a cavity therein with a downwardly inclined portion and an upwardly inclined portion;

filling the cavity of the tubing forming the loop with a coating liquid;

transporting the tubing along its longitudinal axis in a substantially vertically upward direction to coat the inside of the tubing above the level of the coating liquid with an initial layer of coating liquid;

constricting the tubing adjacent to and above the level of the coating liquid along a constriction zone transverse to the longitudinal axis of the tubing, the constriction zone progressively diminishing in width in the direction of travel of the tubing to reduce the thickness of the initial layer and form a thin layer of desired thickness of the inside of the tubing issuing from the constriction zone;

filling the cavity of the tubing immediately upon issuance from the constriction zone with support gas in order to at least partially inflate the tubing; and

exposing the tubing to heat at a sufficient temperature to remove the coating liquid and to fuse the coating layer to the inside of the tubing and form an uninterrupted film of uniform thickness thereon.

4,353,941

APPARATUS AND METHOD OF FORMING SELF-LOCKING FASTENER

James L. Bowman, Cincinnati, Ohio, assignor to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Continuation of Ser. No. 640,028, Dec. 12, 1975, abandoned. This application Sep. 5, 1980, Ser. No. 184,461

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—287 **3 Claims**

1. A method for forming a self-locking patch-type threaded fastener is which the threads include crests and grooves, said grooves including cooperating thread flanks, and wherein said

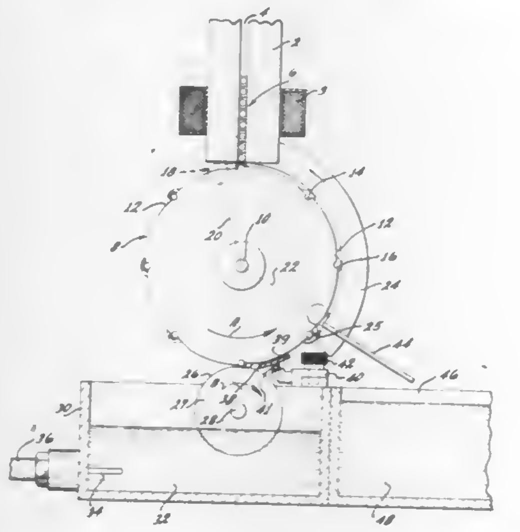
patch includes individual segments of plastic material in said grooves and securely adhered directly to the thread flanks and separated by the crest threads, whereby the major diameter of the fastener remains essentially unchanged, said method comprising:

heating a threaded metal fastener having crests and grooves, said grooves cooperating adjacent thread flanks;

gripping said heated threaded metal fastener and moving said gripped heated fastener along an arcuate path in a continuous motion;

placing a heated liquid polyethylene terephthalate resin on a contact surface and moving the contact surface along a path which is substantially tangential to the arcuate path of movement of the threaded fastener at at least one point to bring the contact surface into contact with a portion of the threads of the gripped fastener;

controlling the speed of movement and the direction of movement of the contact surface during contact with the threads of said heated threaded fastener to provide an even transfer of said heated liquid resin from the contact surface directly to the portion of the fastener threads in contact therewith whereby said liquid resin directly wets said fastener threads and flows into the grooves between adjacent crests to form individual pools contacting the adjacent thread flanks and separated by the crests of said threads to form a patch which extends axially of the fastener;



ungripping the fastener after transferring resin to the fastener threads; and

quenching said fastener and the resin in said grooves to rapidly solidify the resin on said fastener and to cause said resin to adhere directly to said fastener threads thereby forming a patch of individual segments securely and directly adhered in said grooves and to the adjacent thread flanks and separated by the crests of said threads.

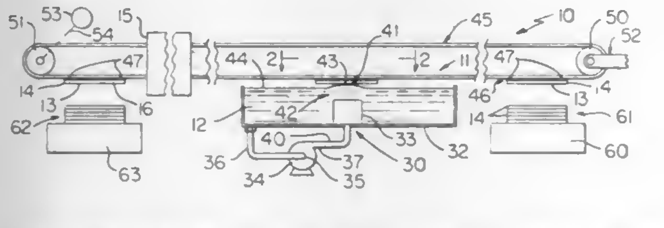
4,353,942
COATING METHOD

Richard D. Carey, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 17, 1980, Ser. No. 207,585

Int. Cl.³ B05D *1/18*

U.S. Cl. 427—434.3 **6 Claims**



1. In a method for providing a coating on irregular surface means of a workpiece defined by metal support means for a railway vehicle, said support means comprising a metal sheet having a planar surface and a grid-like metal structure fixed against said planar surface, said irregular surface means being disposed in multiple planes and comprised of said grid-like structure and said planar surface; comprising the steps of providing a reservoir containing a substantially nonmetallic liquid coating material, applying a liquid film of said liquid coating material on all portions of said irregular surface means against said grid-like structure and said planar surface, and drying said liquid film to solidify same and define said coating, said applying step comprising the steps of producing a standing wave of said liquid coating material in a stationary position, forming a crest in said standing wave disposed above the substantially planar main surface of said material, said crest having a dimension which is at least as large as one dimension of said irregular surface means, and moving said work piece relative to said standing wave so that said liquid coating material engages said irregular surface means and defines said liquid film.

4,353,943
ALIGNING LIQUID CRYSTAL LAYERS

William A. Crossland, Harlow, England, and Joseph H. Morrissy, Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,549

Claims priority, application United Kingdom, Aug. 18, 1980, 8026902

Int. Cl.³ B05D *3/12, 3/02;* **G02F** *1/13*

U.S. Cl. 428—1 **9 Claims**

1. A method of providing a liquid crystal parallel homogeneous molecular alignment layer on a glass substrate which method comprises:

applying a uniform thickness coating to the substrate of a solution containing organic compound that will hydrolyze in contact with glass to form an adherent film that can be pyrolyzed to convert the film into a layer consisting of or containing silica;

heating the coated substrate sufficient at least to drive off the solvent;

rubbing the coated substrate in a particular direction; and

firing the coated substrate to pyrolyze the film.

4,353,944
SHOE SCRAPER MAT

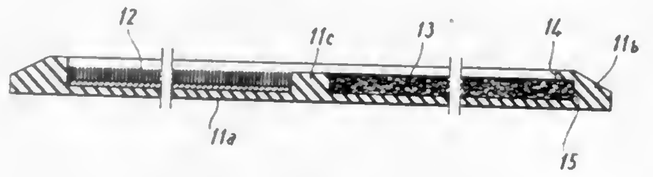
Hiroyuki Tarui, 9, Chikko 2-Chome, Wakayama-Shi, Wakayama-Ken, Japan

Filed May 2, 1980, Ser. No. 146,543

Claims priority, application Japan, Nov. 10, 1979, 54-156308[U]; Nov. 10, 1979, 54-156309[U]

Int. Cl.³ A47L *23/22*

U.S. Cl. 428—74 **3 Claims**



1. A shoe scraper mat, comprising:

a mat holder having a bottom wall, integral side walls extending upwardly from the perimeter of said bottom wall and an integral partition wall extending upwardly from the central portion of said bottom wall so that said side walls and said partition wall define two shallow, mat-holding recesses, said mat bolder being made of heavy gauge soft rubber so that the mat holder has good positional stability and possesses compressive rebound elasticity;

a rough scraper mat body disposed in and substantially completely filling one of said recesses, said rough scraper mat body being a laminate of irregularly coiled, undulating, stiff filaments which are interlaced, interlocked and bonded with each other and are distributed sparsely in a multi-layer state to provide a relatively large void volume in said rough scraper mat body so that said rough scraper mat body is effective for scraping off and retaining dirt from shoes;

a finishing scraper mat body disposed in and substantially completely filling the other of said recesses, said finishing scraper mat body being made of a carpet piece with the upper surface of said finishing scraper mat body being downwardly offset from the upper edges of said side walls;

said side walls continuing with the same lateral width past both said mat bodies, the portions of said side walls adjacent the marginal edges of only said rough scraper mat body having along their inner surfaces laterally outwardly extending recessed portions which recessed portions snugly receive therein the marginal portions of only said rough scraper mat body, said recessed portions forming the upper edges of said side walls adjacent the marginal edges of only said rough scraper mat body as integral, inwardly projecting lips of the same soft rubber material, which lips overlie the marginal edge portions of the upper surface of said rough scraper body so that said rough scraper mat body is releasably retained by said soft rubber lips in said one recess, the upper surface of said rough scraper mat body being downwardly offset from the upper edges of said lips whereby to retain dirt within said rough scraper mat body, the filaments of said rough scraper mat body being entirely disposed below the lower surfaces of said lips, the top surfaces of of the lips being coplanar with the top surface of the portions of the side walls bounding said other recess;

the upper edge of said partition wall being downwardly offset from the upper edges of said side walls, both said mat bodies having substantially planar upper surfaces which are substantially coplanar with each other and with the upper edge of said partition wall and with the underside of said lips, the recessed portions of the side wall extending from one end of said partition around the periphery of said one recess to the other end of said partition, but not beyond said partition ends or into the other recess.

4,353,945
FLOCKED, FOAM-COATED, WATER VAPOR PERMEABLE, BACTERIAL BARRIER

Arthur J. Sampson, Belle Meade, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 956,840, Nov. 2, 1978, abandoned. This application Aug. 11, 1980, Ser. No. 176,822

Int. Cl.³ B32B *3/26, 33/00*

U.S. Cl. 428—90 **22 Claims**

1. A water vapor permeable bacterial barrier having the appearance of fabric, and being capable of filtering bacteria, comprising a microporous plastic film, said film being both water vapor permeable and capable of filtering bacteria, said film being coated on at least one surface with a foamed latex polymer, and flocked fibers on the exterior surface of said foamed latex polymer.

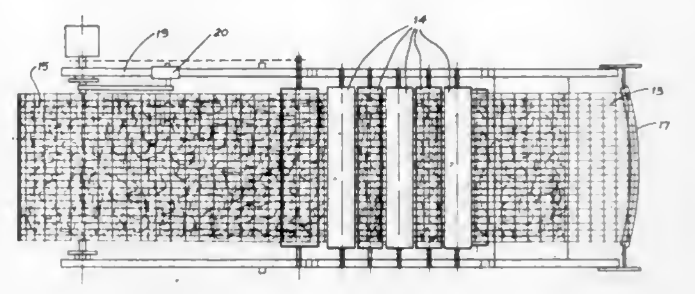
4,353,946
EROSION CONTROL MEANS

Geoffrey Bowers, "Mootawingee" Via Bowna, Australia, assignor to Seasonmakers Pty. (Australia) Lts, Beaconsfield, Australia

Filed Mar. 13, 1981, Ser. No. 243,338

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—109 **2 Claims**



1. A soil erosion control blanket, comprising a mat of wood-wool fibers retained in a coherent structure by means of a biodegradable mesh such that at least some of the fibres interlock with the mesh and others of said fibres.

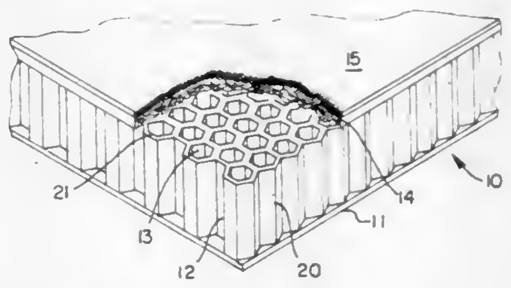
4,353,947
LAMINATED COMPOSITE STRUCTURE AND METHOD OF MANUFACTURE

Charles D. Northcutt, Midland, Tex., assignor to International Harvester Co., Chicago, Ill.

Filed Oct. 5, 1981, Ser. No. 308,642

Int. Cl.³ B32B *3/12, 5/12*

U.S. Cl. 428—116 **11 Claims**



1. A laminated composite structure comprising:

a bottom layer of high tensile strength woven fibers impregnated with a thermosetting resin;

a rigid cellular core having a plurality of interconnected walls defining cells open at the top face and at the bottom face of said core, said cells being substantially devoid of said resin, said bottom face of said core structure being operatively adhered to said bottom skin layer;

a reservoir layer comprising randomly oriented high tensile strength fiber reinforcing material impregnated with said resin disposed on and adhered to said top face of said core structure, said reservoir layer being sponge-like in the uncured, uncompressed state such that resin is absorbed and held for subsequent release during compression;

a top layer of high tensile strength woven fibers disposed above said reservoir layer, said reservoir layer releasing resin to impregnate said top fabric layer upon compression of said layers; and

all of said layers and core being compressed and cured into a laminated composite structure.

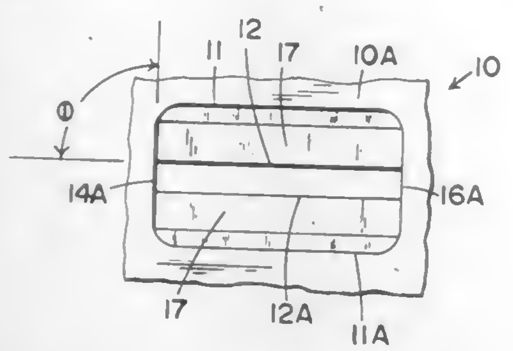
4,353,948
HOLE TECHNOLOGY

Roland Thoms, Mullheim, Fed. Rep. of Germany, assignor to Buckbee-Mears Company, St. Paul, Minn.

Filed May 12, 1980, Ser. No. 148,683

Int. Cl.^{3} H01L *7/50;* **B32B** *3/10*

U.S. Cl. 428—131 **10 Claims**



1. A member having a line of sight opening therein comprising:
an article having a first surface and a second surface;
a recess located in said first surface, said recess having side walls with said side walls and said first surface coacting to define an outline of a portion of a line of sight opening in said article;
an opening in said second surface, said opening defined by edges located in said second surface, said opening extending from said second surface into said recess so that a portion of said edges of said opening in said second surface forms an outline of a portion of said line of sight opening in said article, said line of sight opening comprising an opening partially bounded by said portion of edges of said recess in said first surface and partially bounded by said edges of the opening in said second surface.

6. The method of making line of sight openings in an article having two surfaces comprising the steps of:
forming a recess with side walls and a bottom in a first surface of an article with at least a portion of the side walls of the recess diverging away from said recess to provide an overhanging edge; and
forming an opening into the bottom of said recess from the opposite surface of said article.

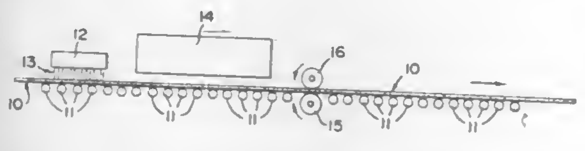
4,353,949
EMBOSSABLE COATING AND METHOD OF PRODUCING EMBOSSED COATED SUBSTRATE

Stanley C. Kyminas, St. Petersburg; Bernard J. Einhaus, Clearwater, and Stephen G. Hinds, Seminole, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Apr. 8, 1981, Ser. No. 252,120

Int. Cl.^{3} B05D *3/12*

U.S. Cl. 428—195 **51 Claims**



1. A method for producing a decorative design on a surface of a substrate comprising the steps of:
(a) applying to said surface of said substrate an embossable coating comprising a filler, a film-forming binder adapted to bind the filler particles together and to adhere said filler to said substrate, a moisture control agent, a release agent, and a liquid;
(b) drying said coating to remove a major portion of said liquid therefrom, the quantity of liquid retained by said coating being sufficient to make said coating pliable and readily impressible by an embossing means; and
(c) subjecting said pliable coating to pressure contact with said embossing means to impress a decorative design into said coating,
wherein the quantity of said moisture control agent is sufficient to promote controlled moisture evaporation from said coating and the quantity of said release agent is sufficient to render said coating cleanly separable from said embossing means.

11. The method of claim **1** wherein said liquid is water.

27. The method of claim **11** wherein said pliable coating is additionally subjected in step (c) to two or more color printings.

28. The method of claim **27** wherein said substrate is not substantially compressed by said embossing means.

30. The method of claim **1** wherein said substrate is not substantially compressed by said embossing means.

4,353,950
STAIN-RESISTANT COOKWARE MULTI-LAYER COATING SYSTEM COMPRISING PIGMENTS AND A TRANSLUSCENT OUTER LAYER

Eustathios Vassiliou, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 6, 1979, Ser. No. 55,478

Int. Cl.^{3} A47J *36/04, 37/10;* **B32B** *27/08, 27/20*

U.S. Cl. 428—195 **14 Claims**

1. A cookware article comprising a substrate coated with a heat-stable coating system comprising three layers, each layer containing a polymer stable at temperatures above 300° C., said layers including
a primer layer in direct contact with the substrate and which adheres the coating system to the substrate,
an intermediate layer in contact with the primer layer and containing pigments which mask the brown color of food stains that develop in the coating system during cooking, and
a light-transmitting topcoat layer in contact with the intermediate layer and containing mica or mica platelets coated with pigment, giving a sparkling appearance to the coating system.

11. The article of claim **1** containing an electrical resistance heat source.

12. The article of claim **11** in which the electrical heat source is in the form of a discrete pattern on the opposite side of the substrate from the coating system.

4,353,951
SPOT-WELDABLE BONDED CLAD METAL PLATE

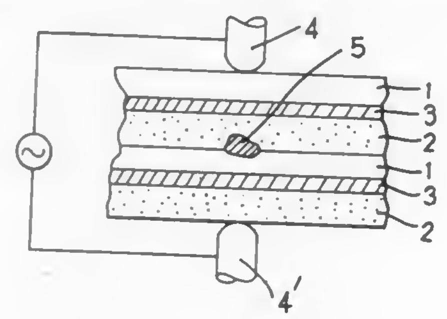
Teruo Yukitoshi, Amagasaki; Takao Hino, Osaka, and Yoshinobu Ohya, Amagasaki, all of Japan, assignors to Daicel Chemical Industries, Ltd. and Sumitomo Metal Industries, Ltd., both of Osaka, Japan

Filed Jun. 1, 1981, Ser. No. 269,291

Claims priority, application Japan, Jun. 4, 1980, 55-74387

Int. Cl.^{3} B32B *27/14*

U.S. Cl. 428—198 **8 Claims**



1. A laminated plate-form article capable of being welded to a like article, comprising:
a first, electrically conductive, metal sheet having a thickness of from 0.05 to 1.0 mm;
a second, electrically conductive, metal sheet having a thickness of at least 0.4 mm, said first and second sheets having mutually opposing surfaces;
an electrically conductive adhesive layer disposed between and bonded to said opposing surfaces of said sheets, said adhesive layer having a thickness of from 15 to 60 microns, said adhesive layer comprising a mixture of an adhesive and electrically conductive particles, said adhesive layer containing from 10 to 100 g/m^2 of said electrically conductive particles, said electrically conductive particles having a particle size in the range of from 0.5 to 1.5 times the thickness of said adhesive layer.

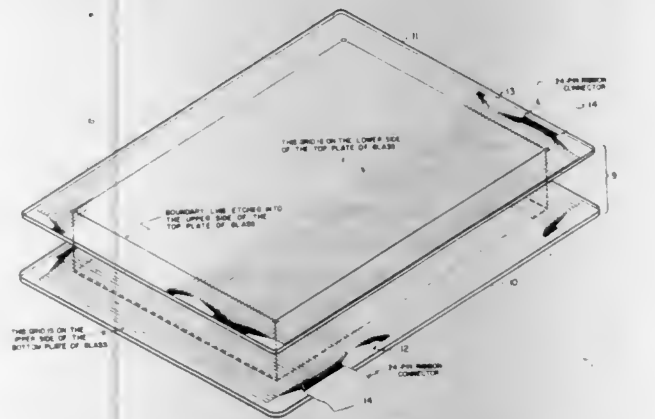
4,353,952
TRANSPARENT DIGITIZER PLATEN

Lawrence E. Brown; James L. Bauer, and Gerald W. Scheck, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 79,865, Sep. 28, 1979, Pat. No. 4,288,282. This application Apr. 27, 1981, Ser. No. 258,220

Int. Cl.^{3} B32B *3/00, 7/14;* **B60L** *1/02*

U.S. Cl. 428—201 **1 Claim**


11
24-PIN RIBBON CONNECTOR
13
14
THIS GRID IS ON THE LOWER SIDE OF THE TOP PLATE OF GLASS
BOUNDARY LINE ETCHED INTO THE UPPER SIDE OF THE TOP PLATE OF GLASS
9
10
THIS GRID IS ON THE UPPER SIDE OF THE BOTTOM PLATE OF GLASS
12
24-PIN RIBBON CONNECTOR
14

A DIGITIZING PLATEN CONSTRUCTED ACCORDING TO THE PRINCIPALS OF FIG 1

1. A transparent digitizer platen comprising:
a first transparent substrate;
a first metallic grid;
a first pattern of photopolymerized adhesive matching the first metallic grid, and attaching the first metallic grid to the first transparent substrate;
a second transparent substrate;
a second metallic grid;
a second pattern of photopolymerized adhesive matching the second metallic grid, and attaching the second metallic grid to the second transparent substrate;
a layer of transparent adhesive bonding the first and second transparent substrates together, and;
the first and second metallic grids being upon those surfaces of the first and second transparent substrates in contact with the transparent adhesive.

4,353,953
INTEGRAL COMPOSITE OF POLYCRYSTALLINE DIAMOND AND/OR CUBIC BORON NITRIDE BODY PHASE AND SUBSTRATE PHASE

Charles R. Morelock, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 974,496, Dec. 29, 1978, Pat. No. 4,247,304. This application Apr. 14, 1980, Ser. No. 139,805

Int. Cl.^{3} B32B *7/02, 9/04*

U.S. Cl. 428—213 **14 Claims**

1. A self-supporting integral composite consisting essentially of a polycrystalline body phase integrally bonded to a substrate supporting phase, said polycrystalline body phase consisting essentially of crystals selected from the group consisting of diamond, cubic boron nitride and mixtures thereof adherently bonded together by a bonding medium consisting essentially of silicon carbide and elemental silicon wherein the volume of said silicon carbide and said silicon each is at least about 1% by volume of said polycrystalline body phase, said crystals ranging in size from submicron up to about 2000 microns, the volume of said crystals ranging from about 1% by volume to about but less than 80% by volume of said polycrystalline body phase, said bonding medium being present in an amount ranging up to about 99% by volume of said polycrystalline body phase, said bonding medium being distributed at least substantially uniformly throughout said polycrystalline body phase, the portion of said bonding medium in contact with the surface of said crystals being silicon carbide, said polycrystalline body phase containing non-diamond elemental carbon phase in an amount ranging up to about 5% by volume of the polycrystalline body phase, said non-diamond elemental carbon phase having no significant deleterious effect on the mechanical properties of said polycrystalline body phase, said polycrystalline body phase being pore free or at least substantially pore-free, said substrate supporting phase consisting essentially of elemental non-diamond carbon, said substrate supporting phase having a thickness at least about twice the thickness of said polycrystalline body phase.

4,353,954
FLEXIBLE PRINTED CIRCUIT BASE BOARD AND METHOD FOR PRODUCING THE SAME

Sigenori Yamaoka; Akinobu Kusuhara, and Toshinaga Endo, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

PCT No. PCT/JP79/00150, § 371 Date Feb. 5, 1980, § 102(e) Date Feb. 5, 1980, PCT Pub. No. WO80/00117, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 13, 1979, Ser. No. 191,215

Claims priority, application Japan, Jun. 14, 1978, 53-70895

Int. Cl.^{3} H05K *1/00;* **B32B** *15/08, 27/34, 27/38*

U.S. Cl. 428—216 **16 Claims**

1. A method for producing a flexible printed circuit base board, characterized by
coating an organic solvent solution of a second heat-resistant resin consisting essentially of the reaction product of (1) a first heat-resistant resin having a molecular weight of at least about 5,000 and a heterocylic ring, selected from the group consisting of polyimide, polyesterimide, polyhydantoin, polyimidazopyrrolone, polybenzimidazole and polyparabanic acid imide, these having in their molecule groups reactive with epoxy group, with (2) an epoxy resin having at least two epoxy groups in the molecule, on a metal foil having good electrical conductivity and a thickness of 1 to 150μ; and
drying and curing the same to form a flexible cured film of said resin composition having a thickness of 0.5 to 300μ on said metal foil surface.

9. A flexible printed circuit base board consisting essentially of a metal foil having good electrical conductivity and a thickness of 1 to 150μ; and a flexible film of a cured resin consisting essentially of the reaction product of a heat-resistant resin having a molecular weight of at least about 5,000 and a heterocyclic ring, selected from the group consisting of polyimide, polyesterimide, polyhydantoin, polyimidazopyrrolone, polybenzimidazole and polyparabanic acid imide, these having in their molecule groups reactive with epoxy group, and an epoxy resin containing at least two epoxy groups in the mole-

cule, said film having a thickness of 0.5 to 300μ, said metal foil and said resin film being bonded directly to each other through no adhesive, and wherein said metal foil is selected from the group consisting of copper foil, aluminum foil, nicrome foil, nickel foil, and titanium foil.

4,353,955
POLYURETHANE FOAM - FABRIC COMPOSITE

John H. Cook, Livonia, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 12, 1981, Ser. No. 320,173

Int. Cl.^{3} B05D *3/00;* **B29C** *23/00, 5/00;* **B32B** *9/04*

U.S. Cl. 428—246 **18 Claims**

10. The composite material comprising
(a) a layer of fabric,
(b) a silicone surfactant coating on said fabric, and
(c) a layer of polyurethane foam affixed to said coated portion of said fabric.

11. The composite of claim **10** wherein said fabric is textile fabric reinforced vinyl.

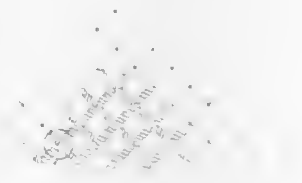
4,353,956
HELICAL NET

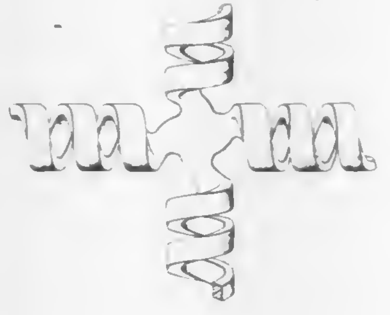
George S. Nalle, Jr., 401 Inwood Rd., Austin, Tex. 78746

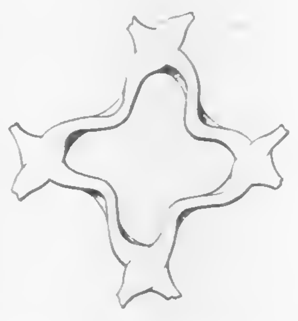
Filed Jun. 5, 1981, Ser. No. 270,659

Int. Cl.^{3} B32B *5/02, 7/10;* **D03D** *9/00*

U.S. Cl. 428—255 **9 Claims**







1. A net-like structure comprising at least two crossing layers, the first of said layers being a plurality of first helical filaments the axes of which are parallel and the second of said layers being a plurality of second helical filaments the axes of which are parallel but intersect the axes of said first helical filaments, said first and second helical filaments being fused together at each point of intersection.

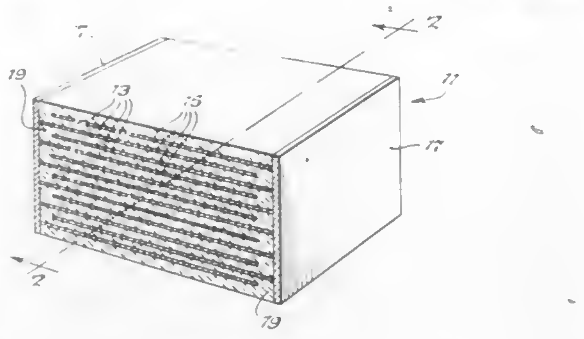
4,353,957
CERAMIC MATRICES FOR ELECTRONIC DEVICES AND PROCESS FOR FORMING SAME

Truman C. Rutt, Niagara Falls, and James A. Stynes, Lewiston, both of N.Y., assignors to Tam Ceramics Inc., Niagara Falls, N.Y.

Division of Ser. No. 536,274, Dec. 24, 1974, abandoned, which is a division of Ser. No. 400,243, Sep. 24, 1973, Pat. No. 3,879,645. This application Oct. 26, 1977, Ser. No. 845,497

Int. Cl.^{3} C04B *33/32;* **H05K** *1/00*

U.S. Cl. 428—292 **26 Claims**



1. A process for forming a unitary, ceramic body suitable for use in making a capacitor which comprises: providing a plurality of thin leaves of finely divided ceramic composition bonded with a thermally-fugitive bond, said ceramic composition forming a dense, dielectric layer when fired to sintering temperatures; forming a consolidated stack consisting of a plurality of said leaves having interposed between at least two of said leaves a thin layer which consists of thermally-fugitive material and a minor amount of granules selected from the class consisting of ceramic and metallic granules of such size as to extend substantially through said layer, said layer having a smaller area than that of the adjacent leaves and said leaves being so arranged and placed that major portions of the edges of the leaves adjacent said layer are in contact with each other with said layer extending to an edge region of said consolidated stack; and firing said consolidated stack under suitable conditions at temperatures sufficiently high to remove said thermally-fugitive materials and to sinter said ceramic composition, whereby to form an integral, monolithic, sintered ceramic body having a plurality of thin strata of dense dielectric material, substantial portions of the adjacent surfaces of at least two of said strata being separated to provide a space therebetween and being joined only at edge portions thereof and by at least one distinct pillar formed of material selected from the class of ceramic and metallic materials extending from the top to the bottom of said space, substantially all of said pillars being separate when there are a plurality thereof.

4,353,958
GREEN CERAMIC TAPES AND METHOD OF PRODUCING THEM

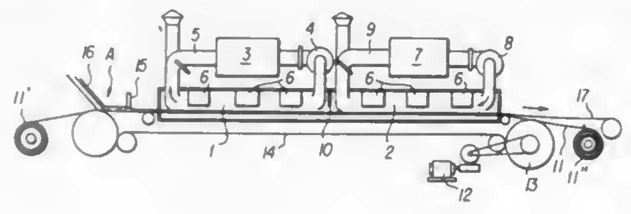
Katsubiko Kita; Junzo Fukuda, both of Nagoya; Hidemasa Ohmura, and Takeya Sakai, both of Wakayama, all of Japan, assignors to Narumi China Corporation, Nagoya and Kao Soap Co., Ltd., Toyko, both of, Japan

Filed Mar. 20, 1980, Ser. No. 122,852

Claims priority, application Japan, Feb. 22, 1979, 54-20300

Int. Cl.^{3} B32B *5/16;* **C04B** *35/10;* **C08K** *3/00*

U.S. Cl. 428—329 **22 Claims**



1. A green ceramic tape, comprising:

a fine ceramic powder and a water-compatible polyurethane binder in a solvent selected from the group consisting of water and mixtures of water with water soluble organic solvents, said binder being present in a proportion of 2 to 15 parts by weight per 100 parts by weight of said ceramic powder.

4,353,959
ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE HAVING AN ACRYLIC PRIMER LAYER CONTAINING A U.V. ABSORBING COMPOUND

Daniel R. Olson, Schenectady, N.Y., and John C. Goossens, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 21, 1979, Ser. No. 106,264

Int. Cl.^{3} B32B *27/08, 27/18, 27/20;* **G02B** *1/04*

U.S. Cl. 428—331 **24 Claims**

1. An improved coated polycarbonate article having improved durability of adhesion of the coating to the polycarbonate comprising a polycarbonate substrate having adhered thereto on at least one surface thereof (i) an adhesion promoting primer layer containing a thermoset acrylic polymer, and (ii) a top coat disposed on said primer layer comprised of a collodal silica filled thermoset organopolysiloxane; the improvement consisting of said primer layer containing from about 15 to about 75 weight percent of at least one ultraviolet radiation absorbing compound and from about 25 to about 85 weight percent of a thermoset acrylic polymer.

4,353,960
COMPOSITE AND CONJUGATE FILAMENTS

Hiroyuki Endo; Hiroshi Ohhira, and Tohru Sasaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 76,991, Sep. 19, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,766

Claims priority, application Japan, Sep. 21, 1978, 53-116130; Apr. 8, 1980, 55-46079

Int. Cl.^{3} D02G *3/00*

U.S. Cl. 428—373 **3 Claims**

1. A composite filament for use in in-water submerged services, said filament comprising a core and a sheath surrounding the latter, said core comprising one or a plurality of core filamentary elements(s) made of vinylidene fluoride resin and said sheath being composed of polyamide resin the composing ratio as measured in respective cross-sectional areas of said vinylidene fluoride resin and said polyamide resin being specified within the range from 1/99 to 40/60.

4,353,961
SHAPED ARTICLE FROM CROSSLINKED FLUOROCARBON POLYMER

Alan J. Gotcher, Sunnyvale, and Paul B. Germeraad, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 833,185, Sep. 14, 1977, Pat. No. 4,155,823, which is a continuation-in-part of Ser. No. 731,352, Oct. 12, 1976, abandoned. This application Feb. 2, 1979, Ser. No. 9,120

Int. Cl.^{3} C08J *3/28;* **B32B** *15/20*

U.S. Cl. 428—380 **16 Claims**

1. A shaped article comprising an irradiation crosslinked fluorocarbon polymer, said polymer having a melting point prior to crosslinking of at least 200°, said article having been subjected to at least one forming operation at a temperature in excess of the melting point of said polymer prior to being crosslinked and thereafter crosslinked by ionizing radiation at a dose level of up to about 30 megarads, said copolymer containing from at least about 4.0 to about 30.0 wt. % of cross-linking agent at the commencement of said radiation, and having an M100 at 320° of at least about 450 psi following radiation.

7. An article in accordance with claim **1** wherein said radiation crosslinked polymer is an insulating material.

8. An article in accordance with claim **7** wherein said article is a wire construction comprising at least one electrical conductor with at least one irradiation crosslinked ethylene-tetrafluoroethylene polymer insulating layer surrounding at least a portion of said conductor.

4,353,962
IN-FLIGHT ENCAPSULATION OF PARTICLES

Chester M. Himel, Athens, Ga., and Nathan F. Cardarelli, Akron, Ohio, assignors to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 149,982, May 15, 1980, Pat. No. 4,286,020, which is a continuation of Ser. No. 922,171, Jul. 5, 1978, abandoned. This application May 18, 1981, Ser. No. 264,822

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.^{3} B32B *5/16;* **B01J** *13/00;* **B29C** *6/00, 13/00*

U.S. Cl. 428—407 **37 Claims**

1. A process for the in situ encapsulation of particles between a spraying apparatus and an earth target, comprising the steps of:
(a) preparing a self-encapsulating polymer-containing dispersion;
said dispersion comprising by weight from about 0.1 percent to about 25 percent of a film-forming polymer capable of encapsulating a particle by coacervation, from about 35 percent to about 99 percent of a liquid, said liquid being a compound which will disperse said polymer, and from about 1 percent to about 40 percent of particles, or from about 0.01 percent to about 40 percent when said particle is a pheromone, said particle being soluble or dispersible in said solvent;
in situ encapsulating said soluble or dispersible particle by:
spraying into the earth's atmosphere said dispersion containing said soluble or dispersible particle from a spray apparatus, and immediately thereafter;
evaporating said solvent in said earth's atmosphere and
coacervating during the passage from said spraying apparatus to an earth target said polymer and said particle in said earth's atmosphere so that said polymer substantially encapsulates said particle; and
concurrently and directly applying said encapsulated particle to an earth target.

14. An in situ self-encapsulating polymer-containing formulation for concurrent and direct application to an earth target, comprising a self-encapsulating polymer-containing dispersion; said dispersion comprising by weight
from about 0.1 percent to about 25 percent of a film-forming polymer having a molecular weight greater than 300,000 and capable of encapsulating a particle by coacervation, from about 35 percent to about 99 percent of a liquid, and from about 1 percent to about 40 percent of a particle, or from about 0.01 to about 40 percent when said particle is a pheromone,
said particle being soluble or dispersible in said solvent;
said liquid being a compound in which said polymer is dispersible.

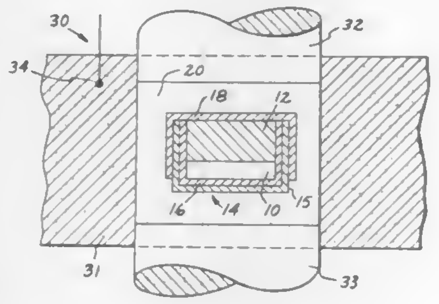
24. An encapsulated particle having been in situ encapsulated and concurrently and directly adhered to an earth target, comprising:
a particle system and a wall system, said wall system comprising a polymer film encapsulating said core system,
said polymer film having been made from a colloidal or an emulsion dispersion type polymer,
said particle and wall system having been made from a dispersion comprising by weight from about 0.1 percent to about 25 percent of a film-forming polymer having a molecular weight greater than 300,000 and capable of encapsulating a particle by coacervation, from about 35 percent to about 99 percent of a liquid, and from about 1

percent to about 40 percent of a particle, or from about 0.01 to about 40 percent when said particle is a pheromone,
said particle being soluble or dispersible in said solvent;
said liquid being a compound in which said polymer is dispersible.

4,353,963
PROCESS FOR CEMENTING DIAMOND TO SILICON-SILICON CARBIDE COMPOSITE AND ARTICLE PRODUCED THEREBY

Minyoung Lee, Schenectady, and Lawrence E. Szala, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1980, Ser. No. 217,271
Int. Cl.^{3} B32B *9/00;* **B24D** *3/02;* **C22C** *1/04;* **B32B** *9/04*
U.S. Cl. 428—408 **15 Claims**



1. In a process for cementing diamond particles together and bonding the cemented diamond particles to a substrate wherein an assembly comprising a volume of said diamond particles, said substrate, a silicon atom-yielding medium as the source of silicon atoms and containment means therefor is provided in a stabilized geometry and said assembly of stabilized geometry is hot-pressed at a temperature in excess of the melting point of said silicon atom-yielding medium and at a pressure sufficiently high to cause molten silicon atom-yielding medium to infiltrate the interstices between said diamond particles, said temperature and pressure simultaneously employed for the hot pressing having values below the diamond stable region of the phase diagram of carbon, the improvement comprising:
(a) employing a body of silicon-silicon carbide composite both as the substrate and as the primary source of silicon atoms to accomplish the cementing and bonding required and
(b) heating above about 1500° C.

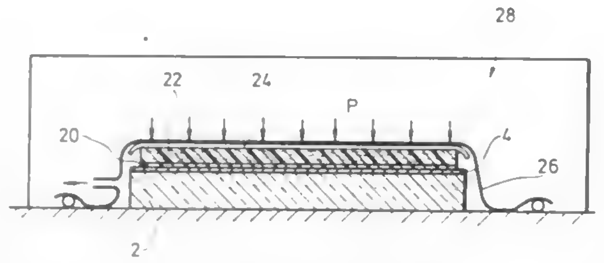
13. An article of manufacture comprising a base portion of densified silicon-silicon carbide composite material having silicon content of less than about 15 volume percent and a dense cemented polycrystalline diamond mass, said diamond mass being bonded to said silicon-silicon carbide composite.

4,353,964
PROCESS FOR THE MANUFACTURE OF A COMPOSITE FIBER COMPONENT

Wilhelm G. Grimm, Munich, and Rudolf Schindler, Riemerling, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 223,940
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000216
Int. Cl.^{3} B29D *11/00*
U.S. Cl. 428—408 **23 Claims**

1. A process for the manufacture of a composite heat hardenable fiber component having a high surface quality comprising coating the surface of a glass mold, having a smoothly worked surface, uniformly with a thin coating of a separating agent which can be detached from the mold surface, the thickness of the coating being not greater than the maximum surface roughness of the composite fiber component, applying the hardenable composite fiber material onto the coating, hardening the hardenable material and then removing the hardenable component and the coating of the separating agent from the surface of the glass mold.



4,353,965
ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE HAVING AN ACRYLIC PRIMER LAYER CONTAINING A U.V. ABSORBING COMPOUND

Daniel R. Olson, Schenectady, N.Y., and John C. Goossens, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 21, 1979, Ser. No. 106,263
Int. Cl.^{3} B32B *27/08, 27/18;* **G02B** *1/04*
U.S. Cl. 428—412 **8 Claims**

1. In an improved coated poycarbonate article having abrasion and chemical solvent resistance and exhibiting improved adhesion and weatherability of the coating to the polycarbonate substrate comprising a polycarbonate substrate having adhered thereto on at least one surface thereof (i) an adhesion promoting thermoset acrylic primer layer; and (ii) a top coat adherently disposed on said primer layer comprised of a thermoset organopolysiloxane; the improvement consisting of said primer layer consisting essentially of from about 25 to about 85 weight percent of at least one thermoset acrylic polymer and from about 15 to about 75 weight percent of at least one ultraviolet light screening compound.

4,353,966
COMPOSITE BONDING

Elias Snitzer, West Hartford, and James F. Bacon, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 12, 1980, Ser. No. 215,282
Int. Cl.^{3} B32B *17/12*
U.S. Cl. 428—428 **15 Claims**

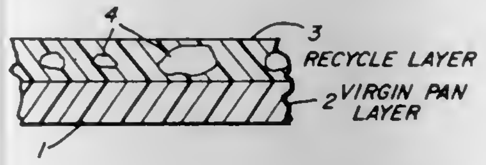
1. A process of bonding a plurality of thermally stable, high strength, graphite fiber reinforced glass matrix composite materials together comprising applying to the surface of at least one of the composite materials to be bonded, a mixture of a low softening point glass and a high softening point-low coefficient of thermal expansion material in such proportions that at bonding temperatures the constituents in the mixture interdiffuse to form a bond material with a bond strength greater than 7×10^3 psi (4.92×10^6 kgs per square meter).

10. A bonded composite material comprising a plurality of individual thermally stable high strength graphite fiber reinforced glass matrix composite components bonded together with a bond material comprising a mixture of low coefficient of thermal expansion high lead oxide content glaze, low coefficient of thermal expansion beta-spodumene, and colloidal silica, the bonded composite having a bond strength greater than 7×10^3 pounds per square inch (4.827×10^7 NT/M^2).

4,353,967
MULTILAYER POLYACRYLONITRILE FILM

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 143,581, Apr. 25, 1980, Pat. No. 4,287,147. This application Apr. 3, 1981, Ser. No. 250,807
Int. Cl.^{3} B32B *27/80, 5/16*
U.S. Cl. 428—520 **7 Claims**

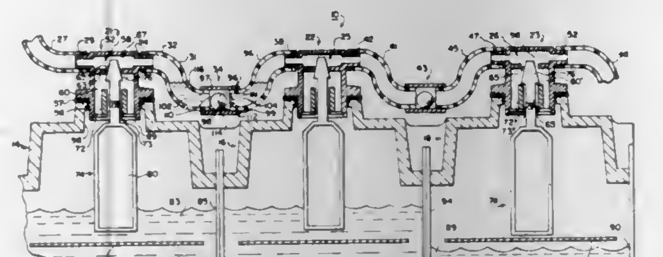


1. A multilayer oriented polyacrylonitrile film comprising a first layer of substantially homogeneous polyacrylonitrile homopolymer resin in contact with a second non-homogeneous polyacrylonitrile layer containing undissolved polyacrylonitrile resin particles.

4,353,968
BATTERY WATER-FILLING SYSTEMS AND CHECK VALVES THEREFOR

Robert E. Boyle, 2807 Mitchell, Woodridge, Ill. 60517

Filed Jul. 15, 1981, Ser. No. 283,522
Int. Cl.^{3} H01M *2/36*
U.S. Cl. 429—64 **10 Claims**

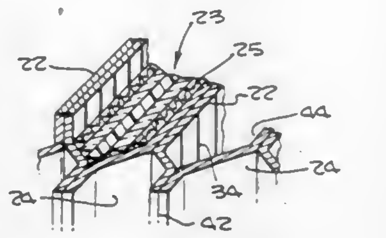


1. In combination with a system for filling a series of cells of a battery with an electrolyte liquid by distributing it to the cells via a series of cell valves individually associated with each one of the cells for admitting the liquid thereto and for shutting off the flow of liquid thereto when the liquid rises to desired levels therewithin, conduit means interconnecting the cells in fluid communication with a source of electrolyte liquid under pressure, the improvement which comprises:
a check valve being connected in fluid communication between two of said cells and including a housing having a substantially horizontal elongated chamber; said chamber having at its opposite ends inlet and outlet ports and having inlet and outlet valve seats, a heavy valve member captured within said chamber for engaging said seats; said ports being connected in fluid communication with said conduit means between two of said valve members for allowing operative flow of liquid through said valve from said inlet to said outlet; and for being urged forcibly into flow-blocking engagement with one of said valve seats by an explosive shock wave caused either upstream or downstream of said valve.

4,353,969
QUASI-BIPOLAR BATTERY CONSTRUCTION AND METHOD OF FABRICATING

Wally E. Rippel, Altadena, and Dean B. Edwards, Monrovia, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 79,476, Sep. 27, 1979, Pat. No. 4,275,130. This application Oct. 9, 1980, Ser. No. 195,513
Int. Cl.^{3} H01M *6/48*
U.S. Cl. 429—144 **22 Claims**



1. A battery construction comprising:
integral frameless biplate means including spaced biplate walls having top edge faces and oppositely directed side faces, side walls, and bottom walls defining a chamber therebetween,
lead stripes on both side faces, each stripe on one side face being connected at the top edge face with stripes on the other side face;
a separator-plate carrying active material on opposite faces thereof received within each chamber;
and means to compress and to retain said biplate means and separator-plates in assembled pressure relation.

4,353,970
METHOD AND APPARATUS FOR ELECTROSTATICALLY CHARGING A DIELECTRIC LAYER

Kurt Dryczynski, Hofheim; Günther Schädlich, and Roland Moraw, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,276
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849222
Int. Cl.^{3} G03G *13/02, 13/22*
U.S. Cl. 430—31 **17 Claims**

1. A method for electrostatically charging a dielectric layer to a predetermined potential by an AC electric field and a DC electric field, said method comprising steps of:
generating charge carriers around a common electrode by adjusting the AC electric field generated by an AC discharge electrode between said common electrode and said AC discharge electrode to ionize the atmosphere to its saturation value, said charge carriers being generated around said common electrode at a distance from the dielectric layer;
directing said charge carriers to said dielectric layer by a DC electric field generated exclusively by a DC discharge electrode, said DC discharge electrode being said common electrode and being disposed between said AC discharge electrode and said dielectric layer and thereby the charge carriers form a charging current to charge the surface of said dielectric layer, whereby said AC and DC electric fields act on said common electrode without influencing each other; and
modulating at least one of said electric fields during the charging of the dielectric layer.

16. The method according to claim 1, wherein prior to said generating step, said method includes the step of erasing residual charges in the dielectric layer by charging said dielectric layer to zero potential.

4,353,971

SQUARYLIUM DYE AND DIANE BLUE DYE CHARGE GENERATING LAYER MIXTURE FOR ELECTROPHOTOGRAPHIC LIGHT SENSITIVE ELEMENTS AND PROCESSES

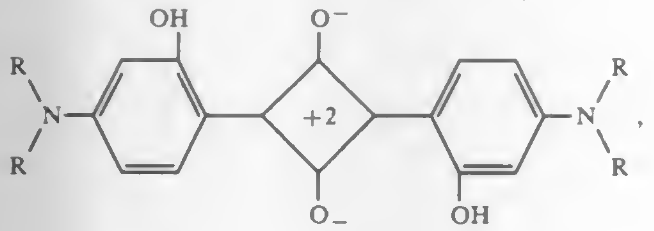
Mike S. H. Chang, Danbury, and Peter G. Edelman, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

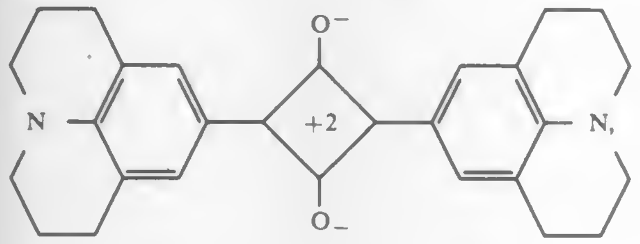
Filed Dec. 8, 1980, Ser. No. 214,320

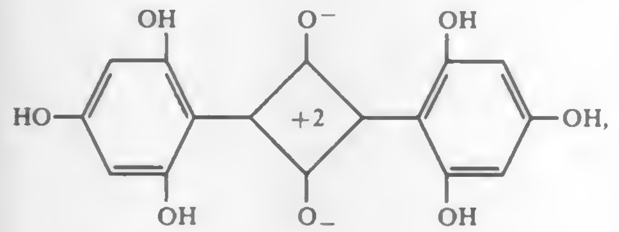
Int. Cl.³ G03G *5/06, 5/09*

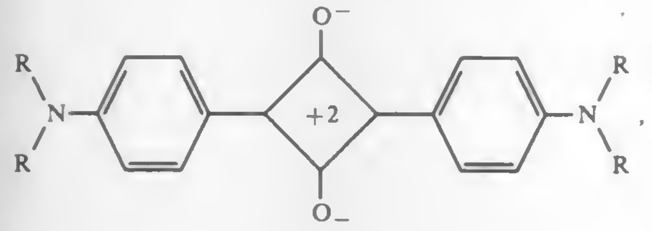
U.S. Cl. 430—58 **12 Claims**

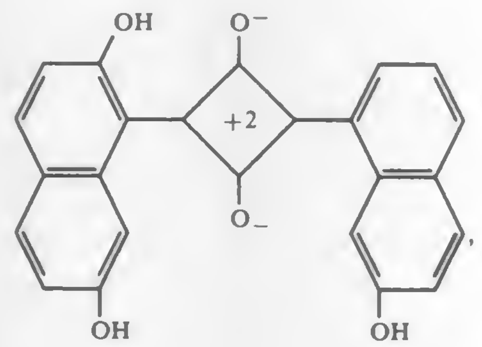
1. A photoconductive element which is extremely sensitive to exposure to light rays in the near-infrared region of the spectrum, said element comprising an electroconductive support, a charge-generating layer comprising a mixture of at least one squarylium dye and at least one diane blue dye in which the weight percent of squarylium dye relating to the total weight of said dye mixture ranges between about 0.05% and 50.0%, said squarylium dye being selected from the group consisting of:











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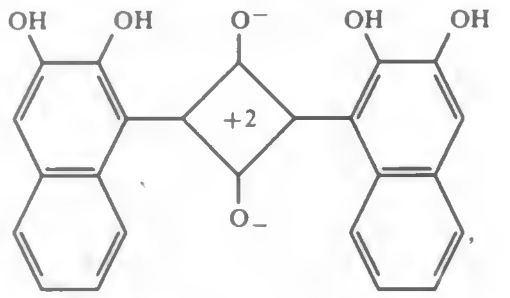

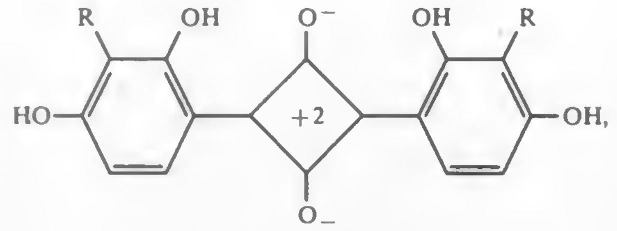

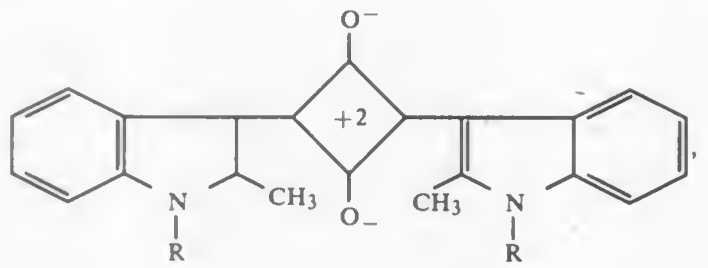

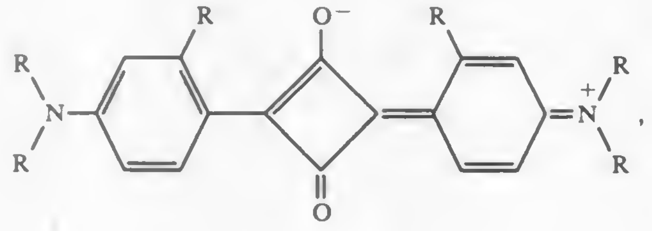

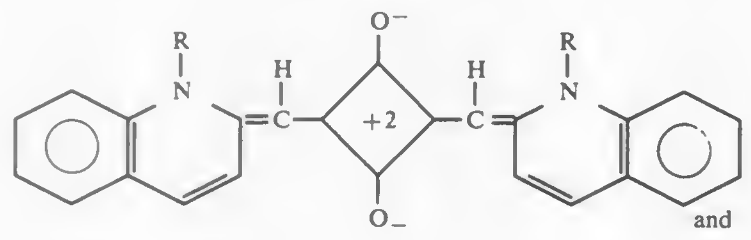

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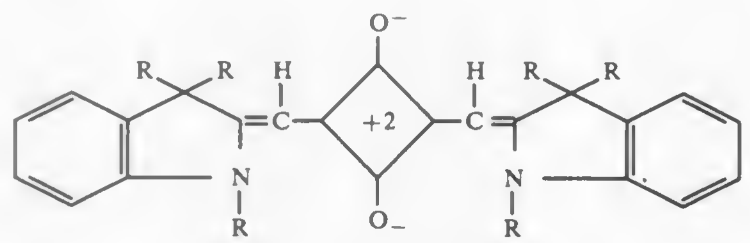


in which R is a methyl or ethyl radical, and a charge transport layer comprising a conventional organic chemical capable of transporting electrical charges generated by said charge generating layer in areas of said element exposed to said light rays.

4,353,972

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL COMPRISING POLYMERIC MORDANT LAYER

Günter Helling, Cologne; Kaspar Wingender; Wolfgang Himmelmann, both of Leverkusen, and Manfred Beck, Odenthal, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

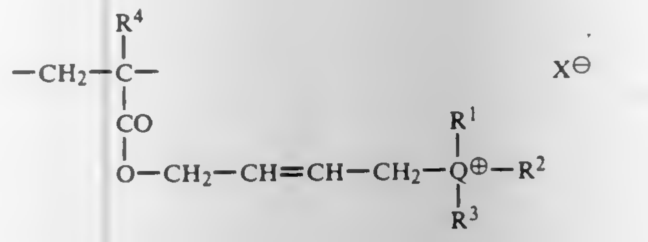
Filed Oct. 14, 1980, Ser. No. 196,632

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941818

Int. Cl.³ G03C *1/04*

U.S. Cl. 430—213 **6 Claims**

1. A photographic material comprising a layer support having coated thereon at least one image-receiving layer which contains a polymeric mordant for acidic dyes, in which the polymeric mordant is a polymer obtained by addition polymerisation of a mixture of monomers containing at least 10 mole % of a monomer that on addition polymerisation provides recurring structural units of formula I



(I)

in which

Q is a nitrogen or phosphorus atom;

R^1, R^2 and R^3 are the same or different and represent alkyl radicals of 1 to 12 carbon atoms or carbocyclic radicals selected from the group consisting of cycloalkyl, aralkyl and aryl radicals or two of the substituents R^1, R^2 and R^3 together with the Q complete a 5- or 6-membered heterocyclic ring.

R^4 represents hydrogen or methyl

$X^{\ominus}$ represents an anion.

4,353,973

USE OF OXALIC ACID OR AN ACID SALT THEREOF IN COLOR TRANSFER ASSEMBLAGES

Richard W. Wheeler, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,032

Int. Cl.³ G03C *1/40, 5/54, 7/00, 5/24*

U.S. Cl. 430—216 **35 Claims**

1. In a photographic assemblage comprising:

(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) a neutralizing layer comprising about 75 to about 150 meq./m² of acid, other than oxalic acid, for neutralizing an alkaline processing composition; and

(d) a timing layer located between said neutralizing layer and said dye image-receiving layer so that said alkaline processing composition must first permeate said timing layer before contacting said neutralizing layer;

the improvement wherein said neutralizing layer, a layer adjacent thereto, said timing layer, or a layer adjacent thereto contains about 1 to about 10 meq./m² of oxalic acid or an acid salt thereof.

4. The assemblage of claim **1** wherein said oxalic acid or acid salt thereof is present in said neutralizing layer.

4,353,974

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES AND PHOTOGRAPHIC MATERIALS USED IN THIS PROCESS

Terence C. Webb, Danbury; Patrick D. P. Thomas, Chelmsford, and William E. Long, Brentwood, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 23, 1981, Ser. No. 237,012

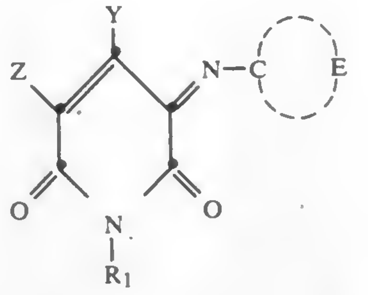
Claims priority, application United Kingdom, Feb. 28, 1980, 8006847

Int. Cl.³ G03C *5/54*

U.S. Cl. 430—218 **34 Claims**

1. A process for the production of a photographic image which comprises the steps of

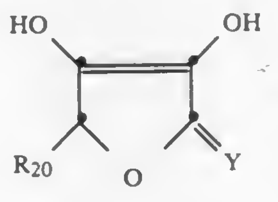
(a) imagewise exposing a photographic assembly which comprises at least during a silver halide developing step, in order optionally a supercoat layer, at least one silver halide emulsion layer, a layer containing a layer substantive hydroxypyridone azamethine compound of the formula



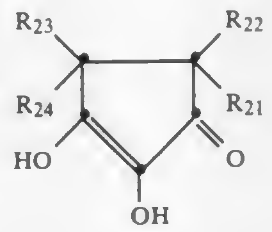
(1)

wherein R_1 is hydrogen, optionally substituted alkyl, aralkyl, cycloalkyl or aryl, or an optionally substituted heterocyclic radical or an amino group, Y is hydrogen, hydroxyl, cyano, $—COOR^1$, $—CONR^1R^2$ or $—COR^1$, optionally substituted alkyl, aralkyl, cycloalkyl, aryl or an optionally substituted heterocyclic radical, Z is hydrogen or is cyano, $—COOR^3$, $—CONR^3R^4$, $—SO_3H$, $—SO_3^-$ or $—COR^3$, where R^1, R^2, R^3 and R^4 each independently are hydrogen, optionally substituted alkyl, aralkyl, cycloalkyl or aryl or an optionally substituted heterocyclic radical, and E represents the atoms necessary to complete an optionally substituted heterocyclic or aromatic ring, and a support, there being optionally one or more interlayers between each of said components,

(b) treating the exposed photographic assembly with an aqueous alkaline processing bath so as to provide in the silver halide emulsion layer or layers a solution or dispersion of a silver halide developer compound selected from the group consisting of a polyhydroxypheonol, an aminoaniline an aminophenol, glycine, a 1-phenyl-3-pyrazolidinone, ascorbic acid or a compound of the formulae



or



wherein R_{20} is hydrogen, alkyl having 1 to 4 carbon atoms or phenyl, R_{21}, R_{22}, R_{23} and R_{24} are each hydrogen, methyl or ethyl and Y is —O— or —NH—, thereby to develop the latent silver image in the silver halide emulsion(s), and

(c) in the non-latent image areas allowing the silver halide developer to diffuse in a counter-imagewise manner from the silver halide emulsion layer(s) to the layer containing the compound of formula (1) and there to bleach the compound to form a photographic dye image.

4,353,975

DYE-DIFFUSION TRANSFER PROCESS

Wilhelmus Janssens, Aarschot, and Daniël A. Claeys, Mortsel, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 12, 1981, Ser. No. 292,248

Claims priority, application United Kingdom, Sep. 30, 1980, 8031433

Int. Cl.³ G03C *1/40, 1/10, 5/54*

U.S. Cl. 430—239 **11 Claims**

1. A process for the production of (a) dye image(s) by dye diffusion transfer comprising the steps of:

(1) image-wise photo-exposing a photographic colour material, which contains at least one alkali-permeable silver halide hydrophilic colloid layer which contains in operative contact therewith or therein a non-diffusing dye or

dye precursor compound that when contacted with an aqueous alkaline liquid remains immobile in an alkali-permeable colloid layer of said material and is capable of being reduced by a silver halide developing agent at a rate slower than the reduction of image-wise developable silver halide of said silver halide hydrophilic colloid layer and in reduced state under alkaline conditions is capable of releasing a diffusible dye or dye precursor moiety, and

(2) applying an aqueous alkaline liquid to said photoexposed material effecting development in the presence of a developing agent and effecting with said liquid diffusion-transfer of said diffusible dye or dye precursor moiety to a receiving layer,

characterized in that said liquid contains triisopropanolamine.

4,353,976

NOVEL SILVER COMPLEXING AGENTS

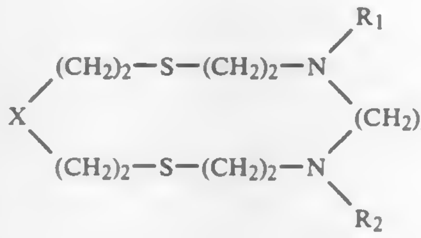
Stanley M. Bloom, deceased, late of Waban, Mass. (by Arlene N. Bloom, executrix), and Krishna G. Sachdev, Beacon, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 80,350, Oct. 1, 1979, Pat. No. 4,267,256. This application Oct. 30, 1980, Ser. No. 202,296

Int. Cl.^{3} G03C *5/54, 1/48*

U.S. Cl. 430—251 **9 Claims**

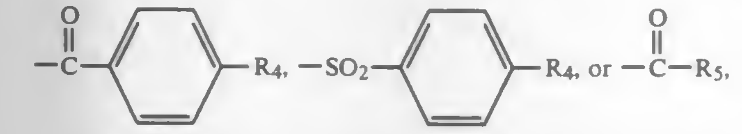
1. A photographic processing reagent comprising an aqueous alkaline solution containing a viscosity increasing polymer and at least one silver complexing compound which is represented by the formula



where

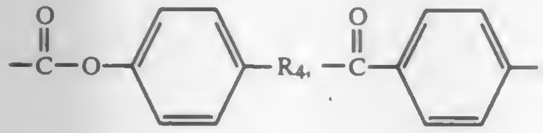
X is selected from the group consisting of oxygen, sulfur and $—NR_3$;

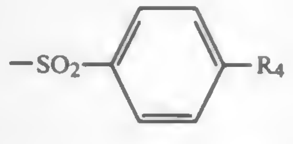
R_1 and R_2 are the same or diffferent and are H, alkyl, hydroxyalkyl, alkoxyalkyl,



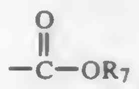
wherein R_4 is H, alkyl, alkoxy or $—NO_2$ and R_5 is H, alkyl, alkoxy or alkoxyalkyl; and

R_3 is H, alkyl, hydroxyalkyl, alkoxyalkyl,





or $—CH_2—CH{=}CH—R_6$, wherein R_6 is H, alkyl, cyano or



$$—\overset{O}{\overset{\|}{C}}—OR_7$$

wherein R_7 is H or alkyl.

4,353,977

METHOD FOR FORMING A PHOTOSENSITIVE SILVER HALIDE ELEMENT

Arthur M. Gerber, Boston; Warren D. Slafer, Arlington, and Vivian K. Walworth, Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,639

Int. Cl.^{3} G03C *1/02, 1/90, 11/22*

U.S. Cl. 430—256 **51 Claims**

1. A method for forming a photosensitive element comprising a support carrying photosensitive silver halide grains in a predetermined spaced array which comprises at least partially coalescing fine-grain silver halide in a plurality of depressions in a hydrophobic layer, superposing a hydrophilic layer and said hydrophobic layer, and thereafter separating said hydrophilic layer from said hydrophobic layer, whereby silver halide grains are retained on said hydrophilic layer in a pattern corresponding substantially to the pattern of said spaced depressions.

4,353,978

POLYMERIC BINDERS FOR AQUEOUS PROCESSABLE PHOTOPOLYMER COMPOSITIONS

Ernst Leberzammer, New Brunswick, and Leo Roos, New Shrewsbury, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 66,374, Aug. 14, 1979, Pat. No. 4,273,857, which is a continuation of Ser. No. 654,171, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 463,310, Apr. 23, 1974, abandoned. This application Jan. 16, 1981, Ser. No. 225,724

Int. Cl.^{3} G03C *5/00*

U.S. Cl. 430—302 **9 Claims**

1. A process for forming a photoresist on a surface comprising:

(1) applying to a surface the surface of a photopolymerizable layer on a film support, said photopolymerizable layer formed from a photopolymerizable composition containing 0.1 to 10% by weight of an organic radiation-sensitive free radical-generating photoinitiator system, 7.5 to 35% by weight of a nongaseous ethylenically unsaturated compound capable of forming a high polymer by free radical-initiated chain addition polymerization, and 30 to 92.4% by weight of polymeric binder wherein the binder is comprised of a mixture of from 15 or 60% by weight each of two free acid containing polymers which are insoluble in water at 85° F., the first polymer (A)
  (a) being film forming when cast from solution in volatile solvent onto copper after evaporation of the solvent, the film having (1) the thickness of 0.0003 to 0.0023 inch; (2) good adhesion to copper as measured by zero delamination in the scribe cross hatch test; and (3) complete solubility within five minutes to a spray of dilute aqueous alkali at 0.04 normal NaOH, 20 p.s.i., and 80°–85° F.;
  (b) having a molecular weight of at least 30,000; and
  (c) having an acid number of at least 20; and the second polymer (B)
    (1) having an acid number of at least 5; and
    (2) when in film form of 0.0003 to 0.0023 inch thickness, being insoluble for at least 5 minutes to a spray of dilute aqueous alkali at 0.04 normal NaOH, 20 p.s.i., and 80°–85° F.; then, in either order,

(2) exposing the layer, imagewise, to actinic radiation to form a polymeric image; and

(3) stripping the film support;

(4) washing away the unexposed areas of the photopolymerizable layer to form a resist image of polymeric material with an alkaline, aqueous solution; and

(5) permanently modifying the adjacent areas on said surface which are unprotected by the resist image by using a reagent capable of etching said areas or depositing a material on said areas.

4,353,979

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS

Sadatugu Terada; Hideaki Arai, both of Hachioji; Kenji Itoh, Hino; Hiroshi Sugita, Hachioji; Katsumi Matsuura, Akigawa, and Thuneo Wada, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,423

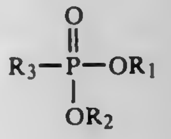
Claims priority, application Japan, Jul. 25, 1979, 54-95233

Int. Cl.^{3} G03C *7/00, 1/40*

U.S. Cl. 430—372 **8 Claims**

6. A process for incorporating an oil-soluble photographic additive into a hydrophilic colloidal solution for forming a photographic colloidal layer, comprising the steps of:

(a) dissolving the oil-soluble photographic additive in a high-boiling organic solvent having the general formula [I]:



$$R_3—\overset{O}{\overset{\|}{P}}\underset{OR_2}{\underset{|}{}}—OR_1 \qquad [I]$$

wherein R_1, R_2 and R_3 each represents an aliphatic or aromatic group, and a carbon atom of R_3 is bonded directly to the phosphorus atom, to obtain a first solution; and

(b) thereafter incorporating said first solution into said hydrophilic colloidal solution.

4,353,980

PROCESS FOR THE PRODUCTION OF PROTECTIVE LAYERS FOR PHOTOGRAPHIC MATERIALS

Günter Helling, Cologne, and Karl Fuhr, Krefeld, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,332

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948420

Int. Cl.^{3} G03C *1/00*

U.S. Cl. 430—532 **9 Claims**

1. A process for the production of protective layers for photographic materials by applying and subsequently irradiating a coating composition which contains an acrylic compound and a photoinitiator and which is hardenable by irradiation with light from the ultra-violet region of the spectrum, characterized in that a coating composition comprising

(A) at least one reaction product of a polyisocyanate, a hydroxy acrylate a polyol containing thio or dithio groups and optionally a polyol,

(B) at least one acrylic monomer containing at least two acrylic ester groups and

(C) at least one photoinitiator, either with or without a compound accelerating the photoreaction

is applied to at least one side of the photographic material and subsequently irradiated.

4,353,981

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toru Noda, Tokyo; Yoshinobu Ichihashi, Kitakami, and Massashi Kubbota, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,619

Claims priority, application Japan, Sep. 12, 1979, 54/116912; Oct. 9, 1979, 54/130426

Int. Cl.^{3} G03C *1/86*

U.S. Cl. 430—536 **11 Claims**

1. A silver halide photographic material in which a photographic layer composed of at least one silver halide emulsion layer is provided on a substrate prepared by coating a base web principally composed of natural pulp with a film-forming resin, wherein the silver halide photographic emulsion layer is one which has been produced by incorporating at least one of the water soluble rhodium compounds or water soluble iridium compounds at the time of formation and dispersion or at the time of physical aging of the silver halide or the silver halide photographic emulsion layer contains a water soluble gold compound; the natural pulp or a mixture of two or more different types of natural pulp used for the base web of said substrate is one which has been produced by performing an additional bleaching treatment with a peroxide or a boron hydride compound in an alkaline state after the conventional pump bleaching treatment and has a PC number of 2.0 or less, said PC number being defined by the following formula:

$$P = 100\left\{ \frac{(1-R)^2}{2R} - \frac{(1-Ro)^2}{2Ro} \right\}$$

wherein Ro=brightness (%)×(1)/(100) before the fading treatment, R=brightness (%)×1/100 after 18-hour fading treatment at 85° C. and 95% RH, and P is the post color (PC) number which indicates the degree (nondimensional number) of fading.

4,353,982

IMMUNOCHEMICAL ASSAY FOR CREATINE KINASE-MB ISOENZYME

Magdalena U. Gomez, Wayne, and Richard W. Wicks, Belleville, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 10, 1980, Ser. No. 139,042

Int. Cl.^{3} G01N *33/54;* **C12Q** *1/50;* **G01T** *1/00*

U.S. Cl. 435—7 **43 Claims**

1. A process for determining the amount of creatine kinase-MB isoenzyme in a biological fluid sample containing creatine kinase having subunit B or M or both, the process comprising:

(a) incubating the sample with
  (i) a first antibody raised in a first animal species, the first antibody capable of immuno-reactively binding selectively one of the B or M subunits of the creatine kinase in the sample;
  (ii) a second antibody raised in a second animal species, the second antibody capable of immunoreactively binding selectively as an immunoprecipitin with the first antibody; and
  (iii) a third antibody raised in an animal species other than the first animal species and labeled with a measurable label, the third antibody capable of immunoreactively binding selectively with the other of said M or B subunits

to provide as a precipitate a mixture of immuno-complexes containing labeled third antibody-creatine kinase-MB isoenzyme-first antibody-second antibody and creatine kinase isoenzyme-first antibody-second antibody;

(b) isolating the precipitate containing the immunocomplexes;

(c) measuring the amount of label in the precipitate; and

(d) comparing the amount of measured label to a standard curve thereby determining the amount of creatine kinase-MB isoenzyme in the biological fluid sample.

4,353,983

ANALYTICAL PROCESS AND MEANS FOR MEASURING THE AMOUNT OF HYDROGEN PEROXIDE IN AQUEOUS MEDIA AND OF ORGANIC SUBSTRATES GENERATING HYDROGEN PEROXIDE BY ENZYMATIC OXIDATION

Iqbal Siddiqi, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/EP79/00089, § 371 Date Jul. 15, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO80/01081, PCT Pub. Date May 29, 1980

PCT Filed Nov. 13, 1979, Ser. No. 205,325

Claims priority, application Switzerland, Nov. 15, 1978, 11718/78

Int. Cl.^{3} C12Q *1/60, 1/54, 1/28*

U.S. Cl. 435—11 **13 Claims**

1. A method of quantatively determining a constituent selected from the group which consists of hydrogen peroxide and peroxidase in an aqueous sample, said method comprising the steps of:

(a) mixing said sample with a reaction system selectively containing a known amonnt of peroxidase or hydrogen peroxide, respectively, and in excess of an organic fluorine compound in the form of a fluoroaniline, a fluoroanisole or a fluorophenol having at least one C—F bond cleaving on a peroxidase catalyzed oxidation by hydrogen peroxide whereby F^- ions are formed in the system;

(b) exposing the reaction system to an F^- selective electrode; and

(c) electrochemically measuring by said electrode the rate of formation of F^- ions liberated by the peroxidase catalyzed cleavage of said C—F bond.

4,353,984

COMPOSITION AND TEST PIECE FOR MEASURING GLUCOSE CONCENTRATION IN BODY FLUIDS

Shigeki Yamada, Jyoyo, and Takao Yamamoto, Kyoto, both of Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku, Kyoto, Japan

PCT No. PCT/JP80/00004, § 371 Date Sep. 2, 1980, § 102(e) Date Aug. 28, 1980, PCT Pub. No. WO80/01389, PCT Pub. Date Jul. 10, 1980

PCT Filed Jan. 4, 1980, Ser. No. 205,367

Claims priority, application Japan, Dec. 31, 1978, 53-164968

Int. Cl.^{3} G01N *33/66, 33/52*

U.S. Cl. 435—14 **11 Claims**

1. A diagnostic composition which comprises a glucose oxidase, a peroxidase, a N,N'-tetramethyldiaminophenylmethane and guaiac.

9. A test piece comprising a substrate supporting a diagnostic composition which comprises a glucose oxidase, a peroxidase, guaiac and a N,N'-tetramethyldiaminophenylmethane.

4,353,985

PROCESS FOR THE PREPARATION OF 11 β-HYDROXY STEROIDS

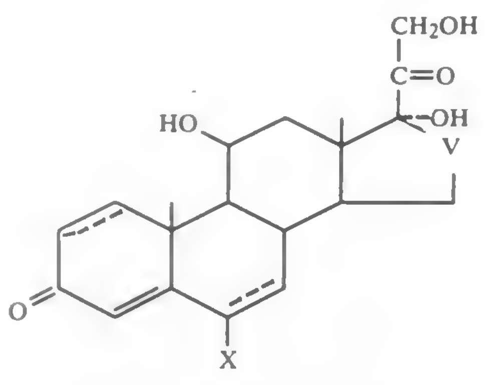
Karl Petzoldt; Klaus Annen; Henry Laurent, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 167,888

Int. Cl.^{3} C12P *33/08*

U.S. Cl. 435—59 **7 Claims**

1. A process for preparing an 11β-hydroxy steroid of the formula



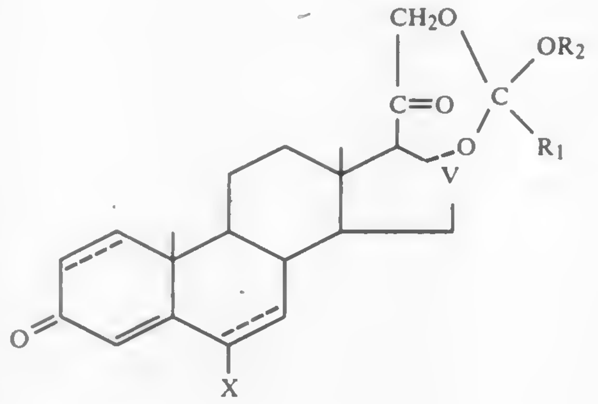
wherein

═══ represents a single bond or a double bond;

X is hydrogen, fluorine, chlorine or methyl; and

V is methylene, ethylene, ethylidene or vinylidene;

which comprises fermenting an 11-deoxy steroid of the formula



wherein

═══, X and V are as defined above;

R_1 is hydrogen or $C_{1\text{-}6}$-alkyl; and

R_2 is $C_{1\text{-}6}$-alkyl;

with a fungal culture of the genus Curvularia.

4,353,986

PROCESS FOR PRODUCING ANTIBIOTIC NANAOMYCIN E

Satoshi Omura, Tokyo; Haruo Tanaka, Machida; Itaru Takahashi, Kumamoto; Shinzo Ishii; Kazuyuki Mineura, both of Nagaizumi; Kunikatsu Shirahata, Machida, and Masaji Kasai, Fujisawa, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha and Kitasato Kenkyusho, both of Tokyo, Japan

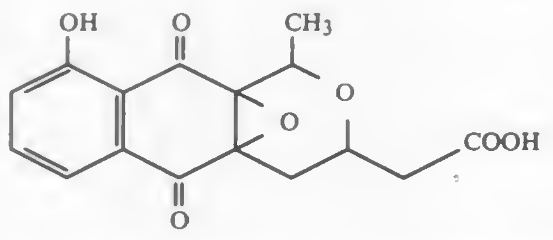
Division of Ser. No. 97,001, Nov. 23, 1979, Pat. No. 4,296,040, which is a continuation of Ser. No. 17,314, Mar. 5, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 276,432

Claims priority, application Japan, Mar. 7, 1978, 53-25041

Int. Cl.^{3} C12P *17/18, 17/06;* **C12R** *1/465*

U.S. Cl. 435—119 **4 Claims**

1. A process for producing a compound represented by the formula:



which comprises culturing the microorganism *Streptomyces rosa variant notoensis* in a medium under aerobic conditions to accumulate said compound in the fermented liquor and recovering same from the fermented liquor.

4,353,987

PROCESS FOR PREPARING GLYCERALDEHYDE FROM GLYCEROL WITH METHANOL DEHYDROGENASE

Holly J. Wolf, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 11, 1981, Ser. No. 272,625

Int. Cl.^{3} C12P *7/24*

U.S. Cl. 435—147 **9 Claims**

1. A process for preparing glyceraldehyde which comprises contacting glycerol with methanol dehydrogenase until a substantial amount of glyceraldehyde is produced, and recovering the glyceraldehyde.

4,353,988

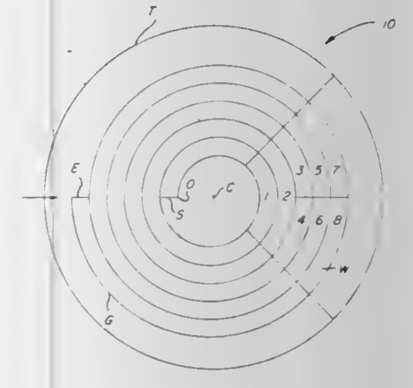
GRID FOR USE IN COUNTING COLONIES OF BACTERIA PRESENT IN DISCRETE AREAS OF A SPIRAL DEPOSITION PATTERN

Nancy L. Couse, 2164 Zang St., Golden, Colo. 80401, and Jeannette W. King, 2620 S. Race, Denver, Colo. 80210

Filed Nov. 12, 1980, Ser. No. 206,048

Int. Cl.^{3} C12M *1/00*

U.S. Cl. 435—287 **15 Claims**



1. For use in combination with a spirally-deposited solution containing steadily decreasing concentrations of a chemical whose effect upon sensitive bacteria is to be analyzed, the improved means for counting the latter which comprises a transparent underlay imprinted with indicia defining a spiral grid pattern having a beginning point and an end point closely approximating those of the deposition spiral when superimposed thereupon, said grid having at least two convolutions defined in terms of the inner and outer marginal edges thereof and having a clear space therebetween, adjacent convolutions sharing a common marginal edge, the width of the convolutions being constant and spanning at least three convolutions of the deposition spiral, the rate at which said grid convolutions diverge radially from the starting point thereof being greater than the corresponding rate of the deposition spiral such that the convolutions of the former cut across the convolutions of the latter at least twice between the beginning and the end thereof, and at least a portion of the convolutions of said grid spiral being segmented to define a plurality of discrete areas within which the bacteria present can be counted.

4,353,989

CHEMICAL SYNTHESIS APPARATUS FOR PREPARATION OF POLYNUCLEOTIDES

Robert Bender, Toronto, and Peter D. Duck, Ottawa, both of Canada, assignors to ens Bio Logicals Inc., Toronto, Canada

Filed Jan. 19, 1981, Ser. No. 226,132

Int. Cl.^{3} C12M *1/00*

U.S. Cl. 435—287 **9 Claims**

1. Apparatus for the step-wise synthesis of polynucleotides by sequential feed of appropriate nucleotide and other reagents to a polymer-nucleoside solid complex for reaction therewith, the apparatus comprising:

a reaction column for receiving the solid complex and conducting reactions therewith;

a solvent receiving reservoir upstream of said column;

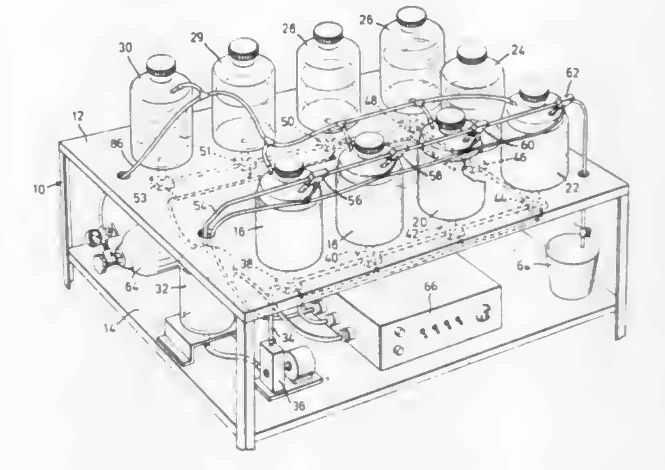
a fluid flow conduit extending from the solvent receiving reservoir to the reaction column;

a plurality of nucleotide reagent receiving reservoirs;

at least one reactant receiving reservoir;

a plurality of two-way valves serially arranged in said conduit, each one associated with the respective nucleotide reagent receiving reservoir or a respective reactant receiving reservoir;

each said valve having two exclusive and discreet flow paths therethrough and being disposable in a first position in which its first flow path is utilized to provide fluid communication from its respective associated reservoir to said conduit, and in a second position in which its second flow path is utilized to provide for flow of fluid from another, upstream reservoir through the valve in the downstream direction, and each said valve being biased towards its second said position;



pumping means for delivery of solvent and reagents to the reaction column via said conduit, said pumping means being located downstream of the valves.

4,353,990

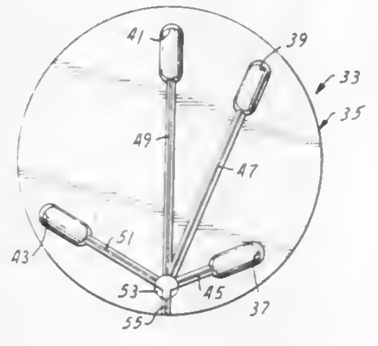
SANITATION INDICATOR

Wendell J. Manske, Birchwood, Minn., and Paul M. Hawkins, Burlington, Ky., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 9, 1981, Ser. No. 232,502

Int. Cl.^{3} C12M *1/00;* **G01D** *21/00;* **G01K** *11/00;* **C12M** *1/34*

U.S. Cl. 435—287 **17 Claims**



1. A device for monitoring and irreversibly displaying short term thermal energy input as a function of a selected time-temperature relationship, said device comprising, in combination:

(a) a dimensionally stable body member,

(b) at least one-fixed volume reservoir cavity, in said body means,

(c) a display means comprising a liquid-sorbent pad located remote from said reservoir cavity,

(d) a fixed-volume flow channel connecting each of said reservoir cavities and said display means, the dimensions

of said flow channel being such as to allow passage of said liquid therethrough,
(e) solid indicating material completely filling each of said reservoir cavities, said solid indicating material capable of changing to an expanded liquid phase at selected elevated temperatures, the volume of said indicating material being a function of temperature, the quantity of said indicating material in each flow cavity being sufficient to completely fill the reservoir cavity and connecting flow channel when in the liquid state,
(f) means for relieving pressure generated by expansion of the indicating material, and
(g) means covering said reservoir, flow channel and display means for rapidly conducting thermal energy from the surrounding environment to the indicating material,

whereby when said device is exposed to said selected elevated temperature said solid indicating material melts, expands into said flow channel and into said display means in response to and as a function of the thermal energy input.

4,353,991

GLASS COMPOSITION AND METHOD OF MANUFACTURE AND ARTICLE PRODUCED THEREFROM

John F. Van Ness, Pittsburgh, and G. Edward Donaldson, Gibsonia, both of Pa., assignors to Ferro Corporation, Cleveland, Ohio

Filed Apr. 13, 1981, Ser. No. 253,574
Int. Cl.^{3} C03C *7/00, 9/00*
U.S. Cl. 501—20 **25 Claims**

1. In a vehicle-suspended, fritted glass enamel composition, adaptable to be applied to, and fired to fusion on, a vitreous substrate at a temperature from about 1000° F. to 1400° F., during which firing said vehicle is driven off, the improvement, in suspended, dispersed combination therewith, of a pigmenting amount of particulate, mica-based pearlescent pigment capable of retaining its pearlescent quality during and following said firing to fusion, so as to impart a pearlescent, translucent luster to the final, fused glass enamel.

4,353,992

PROCESS FOR THE REGENERATION OF A SORBENT

Wilhelmus Pannekeet, Haarlem, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 18, 1980, Ser. No. 217,576
Claims priority, application Netherlands, Dec. 28, 1979, 7909337
Int. Cl.^{3} B01J *49/00*
U.S. Cl. 521—26 **9 Claims**

1. A process for regenerating an ion exchange resin sorbent which comprises washing said sorbent with an aqueous alkaline solution containing at least 20 meq/l. of an alkali metal hydroxide or alkaline earth metal hydroxide having an atomic number of at least 20, and at least one percent by weight of a monosaccharide or disaccharide.

4,353,993

FOAM COMPOSITIONS FOR SURFACE APPLICATION TO FIBROUS SUBSTRATES

Edward G. McCrossin, Portage, Mich., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 12, 1981, Ser. No. 262,864
Int. Cl.^{3} C08L *93/04*
U.S. Cl. 521—65 **10 Claims**

1. In a composition suitable for surface application to a fibrous substrate, said composition being a foam produced by the aeration of an aqueous solution containing from 0.1 to 5 weight percent of a water-soluble salt of rosin or fortified rosin, the improvement wherein said aqueous solution has a pH of at least 8 and contains 0.02 to 5 weight percent of at least one water-soluble, amine-containing synthetic, addition or condensation type polymeric material compatible with said salt, the weight ratio of said salt to said polymeric material being within the range of 1:1 to 25:1.

4,353,994

LOW-DENSITY, FURFURYL BENZYLIC PHENOLIC THERMOSETTING FOAM PRODUCT AND METHOD OF PREPARING SAME

Stuart B. Smith, Conyers, Ga., assignor to Thermoset AG, Switzerland

Continuation-in-part of Ser. No. 238,467, Feb. 26, 1981. This application Dec. 14, 1981, Ser. No. 330,572
Int. Cl.^{3} C08J *9/14*
U.S. Cl. 521—110 **15 Claims**

1. A method of preparing an ultralow-density thermosetting foam product composed substantially of closed cells and characterized by low friability, which method comprises: reacting a furfuryl compound, selected from the group consisting of a furfuryl-alcohol mnomer, a furfuryl-alcohol polymer or mixtures thereof, with a benzylic-ether phenolic-formaldehyde resole resin, the benzylic-ether resole resin having a mole ratio of formaldehyde to benzylic-ether phenol of from about 3:1 to 1:1, the reaction carried out in the presence of a sufficient amount of a blowing agent to form a low-density foam and a catalytic amount of a strong acid catalyst, to provide a thermosetting foam product having a foam density of less than about 0.5 pound per cubic foot.

4,353,995

NOVEL CATALYST SYSTEM FOR POLYURETHANE FOAMS

John F. Szabat; Gert F. Baumann, both of Pittsburgh, and Gaeta L. Copeland, Eighty Four, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 17,997, Mar. 7, 1979, Pat. No. 4,217,247. This application Dec. 26, 1979, Ser. No. 106,618
Int. Cl.^{3} C08G *18/14*
U.S. Cl. 521—125 **10 Claims**

1. In a process for the production of an isocyanate addition product comprising reacting an organic isocyanate with an active hydrogen containing compound, the improvement wherein the reaction is conducted in the presence of a catalyst composition comprising
(a) a tertiary amine,
(b) a tin compound capable of catalyzing the reaction between an isocyanate group and an active hydrogen atom, and
(c) a compound of the formula:

$$(\mathrm{R{-}COO})_2\mathrm{Me}$$

wherein Me represents calcium or barium, and
R represents a hydrocarbon group.

4,353,996

BIO-COMPATIBLE POROUS FIBRES AND MATERIALS FOR OCCLUDING BIOLOGICALLY INTERESTING SUBSTANCES, AND METHOD FOR THEIR MANUFACTURE

Walter Marconi, San Donato Milanese; Francesco Bartoli, Rome; Franco Morisi, San Giovanni in Persiceto, and Francesco Pittalis, Rome, all of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 885,195, Mar. 10, 1978, abandoned. This application Sep. 23, 1980, Ser. No. 189,817
Claims priority, application Italy, Mar. 22, 1977, 21482 A/77
Int. Cl.^{3} A61K *31/74*
U.S. Cl. 523—105 **5 Claims**

1. A bio-compatible synthetic fiber comprising a polymer selected from the group consisting of cellulosic polymers, esterified cellulosic polymers, etherified and nitrated cellulosic polymers, polyethylene, polyamides, vinyl chlorides, the polymers and copolymers of vinylidene chloride, styrene, vinylbutyrate and gamma methylglutamate, polymers and copolymers of acrylonitrile, butadiene and isoprene, acrylates and methacrylates, and vinyl esters, said polymer having occluded therein a bio-compatible platelet-aggregation preventing agent selected from the group consisting of 4,5-diphenyl-2-bis(2-hydroxyethyl) amino oxazole, 4,8-dipiperidino-2,6-diethanolaminopyrimido-(5,4d)-pyrimidine dicumarol, and derivatives of salicyclic acid.

4,353,997

COMPOSITIONS BASED ON WATER-CURABLE, SILANE MODIFIED COPOLYMERS OF ALKYLENE-ALKYL ACRYLATES

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, and a continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Apr. 2, 1981, Ser. No. 250,444
The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.
Int. Cl.^{3} C08K *3/10, 5/04, 5/16, 3/30*
U.S. Cl. 523—210 **29 Claims**

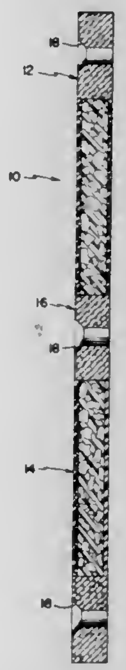
1. A water-curable composition comprising a water-curable, silane modified alkylene-alkyl acrylate copolymer, a mineral filler and a halogenated flame retardant additive wherein the mineral filler is present in an amount of about one to 100 percent by weight based on the weight of said copolymer and said halogenated flame retardant additive is present in an amount of about one to about 100 percent by weight based on the weight of said copolymer.

4,353,998

STRUCTURAL MATERIALS AND COMPONENTS

John Gagliani, and Raymond Lee, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 186,563, Sep. 12, 1980. This application Sep. 28, 1981, Ser. No. 306,363
Int. Cl.^{3} C08L *33/24*
U.S. Cl. 523—219 **19 Claims**



1. A process of making a blocking material or the like which comprises the steps of forming a polyimide precursor, blending glass microballoons with said precursor, and converting said precursor to a polyimide, said polyimide precursor containing three different primary diamines, one of said diamines being heterocyclic and having nitrogen in the ring, another of said diamines being a para- or meta-substituted aromatic diamine which is free of aliphatic moieties, the third of said diamines being aliphatic, and said precursor being prepared by dissolving the primary diamines and one or more tetracarboxylic acids or anhydrides thereof in essentially stoichiometric proportions in a lower alkyl alcohol or mixture of such alcohols.

4,353,999

PROCESS FOR THE PRODUCTION OF ALKALI METAL SILICATE-ORGANIC PLASTICS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 284,486, Jul. 17, 1981, Pat. No. 4,332,712, which is a continuation-in-part of Ser. No. 233,151, Feb. 10, 1981, Pat. No. 4,303,768, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 36,350, May 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Mar. 18, 1982, Ser. No. 359,609
Int. Cl.^{3} C08L *75/06;* **524** *3*
U.S. Cl. 524—3 **22 Claims**

1. The process for the production of polyurethane silicate product by the following steps:
(a) Mixing and reacting an aqueous alkali metal silicate solution in the amount of 100 parts by weight, a polymerable unsaturated organic compound in the amount of 5 to 100 parts by weight, a mono- or polycarboxylic acid compound in the amount of 1 to 10 parts by weight, an organic epoxide compound selected from the group consisting of ethylene oxide, propylene oxide, epichlorohydrin and mixtures thereof, in the amount of 1 to 50 parts by weight and a catalytic amount of an initiator, thereby
(b) producing an alkali metal silicate-organic plastic, then
(c) adding and reacting 50 to 200 parts by weight of an organic polyisocyanate or polyisothiocyanate, up to 10% by weight of a polyisocyanate initiator and up to 20% by weight of an emulsifier, percentage based on the weight of the reaction mixture, thereby
(d) producing a polyurethane silicate product.

4,354,000

RESILIENT PLASTIC WALL COATING FOR THE BUILDING INDUSTRY

Antonio Vecchiato, Treviso, Italy, assignor to Settef S.p.A., Treviso, Italy

Filed Apr. 2, 1981, Ser. No. 250,240
Claims priority, application Italy, Apr. 8, 1980, 85546 A/80
Int. Cl.^{3} C08K *5/05*
U.S. Cl. 524—388 **3 Claims**

1. A plastic elastic wall coating for the building industry for use on external and internal walls which comprises a paste of at least 15% by weight of thermoplastic acrylic resins in the form of an aqueous emulsion of 46–55% concentration, said paste additionally containing solid materials, said solid materials being inert siliceous materials, carbonates and inorganic pigments, at least 0.3% of synthetic or mineral fibers which are a member selected from the group consisting of fiberglass fibers, nylon fibers, acrylic fibers, polyvinyl chloride fibers, at least 0.3% of a water-repellant substance which is a wax or a silicone compound, at least 0.3% of an additive which is a member selected from the group consisting of bactericidal agents and fungicidal agents and at least 0.5% of an agent capable of causing the resin to set, which is ethylene glycol or propylene glycol or derivatives thereof, the amount of the said solid material being sufficient to obtain a semi-dense paste, said coating exhibiting high elasticity and resistance to changes in temperature and variations in climate.

4,354,001
RUBBER SLAB DIP

Tiong H. Kuan, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 212,788, Dec. 4, 1980, Pat. No. 4,331,738. This application Dec. 21, 1981, Ser. No. 332,689

Int. Cl.^{3} C08L *13/02*

U.S. Cl. 524—501 **3 Claims**

1. An aqueous composition of matter comprising a blend of two polymeric latices containing a minor amount by weight of a heat sensitizer sufficient to gel said composition on heating, (A) the polymer of one of said latices of said composition comprising a carboxylated copolymer of (1) at least 45% by weight of a monomer selected from the group consisting of styrene, vinyl toluene, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methylmethacrylate and ethylmethacrylate and mixtures thereof, (2) a copolymerizable monomer selected from the group consisting of acrylic acid, methacrylic acid, ethacrylic acid, maleic acid, fumaric acid, itaconic acid, citraconic acid, sorbic acid and crotonic acid and mixtures thereof in an amount of up to 10% by weight and (3) the balance, in an amount sufficient to provide some flexibility to and for vulcanization of the copolymer, a copolymerizable monomer selected from the group consisting of butadiene-1,3, isoprene, 2,3-dimethyl-butadiene-1,3, and piperylene and mixtures thereof, said copolymer of (A) having a glass transition temperature of not less than about −30° C., and (B) the polymer of the other of said latices of said composition consisting essentially of a copolymer of (1) from about 50 to 70% by weight of at least one acrylate selected from the group consisting of methyl acrylate and ethyl acrylate. (2) from about 25 to 40% by weight of at least one alkacrylate selected from the group consisting of methyl methacrylate, ethyl methacrylate and methyl ethacrylate and (3) from about 3 to 7% by weight of acrylamide, said copolymer of (B) having a glass transition temperature of not less than about +30° C., the parts by weight ratio of the copolymer of (A) to the copolymer of (B) being from about 50:50 to 85:15 on a dry basis.

4,354,002
NOVEL ALIPHATIC SULFOSILOXANE-SILICATE COPOLYMERS

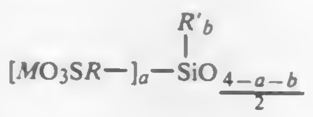
Pauls Davis, Gibraltar, and Joe C. Wilson, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 1, 1981, Ser. No. 249,916

Int. Cl.^{3} C08L *83/06*

U.S. Cl. 524—588 **4 Claims**

1. An aqueous composition containing a copolymer consisting essentially of 0.1 to 99.9 parts by weight of at least one group member derived from silicone sulfonates selected from the group consisting of aliphatic silicone sulfonates having the formula:



$$[MO_3SR-]_a-\overset{R'_b}{\overset{|}{\mathrm{Si}}}O_{\frac{4-a-b}{2}}$$

wherein M is a monovalent, divalent or trivalent cation; R is a divalent aliphatic hydrocarbon radical; R′ is an alkyl radical of from 1 to 8 carbon atoms; a has an average value of from 1 to 3; b has an average value of from 0 to 2 and the total average value of a+b is from 1 to 3; and

from 0.1 to 99.9 parts by weight of at least one silicate group derived from a water-soluble silicate represented by the formula:

$$[X_{1/d}O-]_e-SiO_{\frac{4-e}{2}}$$

wherein X is a cation that forms a water-soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium, and tetraorganoammonium cations; d is the valence of the cation represented by X and has a value of at least 1, and e has a value from 1 to 3 inclusive, said parts by weight of said groups in said copolymer being based upon 100 parts by weight of said copolymer.

4,354,003
SOLVENT DEWAXING WAXY HYDROCARBONS USING AN α-OLEFIN POLYMER-OLEFIN VINYL ACETATE COPOLYMER COMPOSITE DEWAXING AID

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa; Fumis Ohashi, and Tsutomu Naito, both of Oni, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 233,380, Feb. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 184,921, Sep. 8, 1980, abandoned, which is a continuation of Ser. No. 102,652, Dec. 12, 1979, abandoned, which is a continuation of Ser. No. 36,044, May 4, 1979, abandoned, which is a division of Ser. No. 926,811, Jul. 21, 1978, Pat. No. 4,192,733. This application Sep. 28, 1981, Ser. No. 305,919

Int. Cl.^{3} C08L *23/24, 23/08, 31/04*

U.S. Cl. 525—222 **1 Claim**

1. An improved dewaxing aid comprising a mixture of (A) an alpha-olefin homopolymer prepared from at least one alpha-olefin having from 10 to 25 carbon atoms or a copolymer made up of a monomer mixture comprising more than 50 wt.% of at least 2 C_{10} to C_{25} alpha-olefin monomers, said alpha olefin polymer having an average molecular weight of from between about 10,000 to 1,000,000, a molecular weight distribution exceeding the range of from about 10,000 to 1,000,000 but within the range of from about 2,000 to 3,000,000 and having a melt index greater than 1.8 g/10 min. and (B) an olefin-vinyl acetate copolymer having a vinyl acetate content of from about 15–40 wt.%, an average molecular weight of from about 50,000 to 1,000,000, a molecular weight distribution exceeding the range of from about 10,000 to 1,000,000 but within the range of from about 2,000 to 1,500,000, and a melt index greater than 2 g/10 minutes.

4,354,004
FILM COMPOSITIONS FROM OLEFIN POLYMER BLENDS

Patrick M. Hughes; Ananda M. Chatterjee, both of Houston, and Charles C. Hwo, Sugarland, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 28, 1981, Ser. No. 305,863

Int. Cl.^{3} C08L *23/20, 23/12, 23/06*

U.S. Cl. 525—240 **6 Claims**

1. A composition consisting essentially of an intimate blend of about 92 to 94% by weight of an isotactic butene-1-ethylene copolymer containing from about 0.5 to 10 mole percent ethylene, about 6 to 8% by weight of polypropylene, and about 0.02 to 1.5% by weight of high density polyethylene.

4,354,005
METHOD FOR CONTROLLING ADDUCT FORMATION IN PRODUCTION OF ACRYLONITRILE-BUTADIENE-STYRENE-ACRYLATE COPOLYMERS

Richard Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Oct. 9, 1981, Ser. No. 310,196

Int. Cl.^{3} C08F *257/02, 265/08*

U.S. Cl. 525—257 **47 Claims**

1. A process for producing an acrylonitrile-butadiene-styrene-acrylate copolymer comprising the steps of:

providing an aqueous suspension of styrene-acrylonitrile copolymer;

subjecting said suspension to a molecular-oxygen-containing gaseous atmosphere;

adding polymerization inhibitor containing acrylate monomer to said copolymer suspension;

replacing said molecular-oxygen-containing gaseous atmosphere with a substantially molecular-oxygen-free gaseous atmosphere;

adding a polymerization initator to the acrylate monomer containing copolymer suspension;

adding butadiene monomer to the arcylate monomer containing copolymer suspension; and

reacting the acrylate monomer and butadiene containing copolymer suspension to produce an acrylonitrile-butadiene-styrene-acrylate copolymer.

4,354,006
PROCESS FOR PRODUCING QUATERNARY AMMONIUM COMPOUNDS CONTAINING HALOHYDRIN FUNCTIONALITY

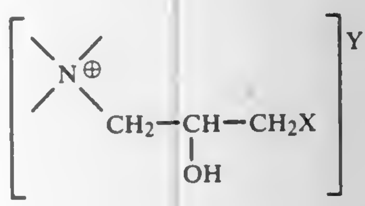
Ralph A. Bankert, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 30, 1980, Ser. No. 155,026

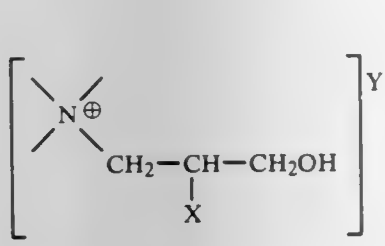
Int. Cl.^{3} C08F *8/18, 8/24*

U.S. Cl. 525—359.5 **8 Claims**

1. A process for producing a quaternary ammonium compound containing halohydrin functionality and having in its molecular structure at least one quaternary nitrogen group of the formula



or



where X and Y are halogen, which process comprises reacting an amino compound containing at least one tertiary amine group with at least one mole of allyl halide per mole of tertiary amine present in the amino compound to quaternize the tertiary amine group(s) and form allyl substituted quaternary ammonium halide group(s), and then reacting the resulting product with hypchalous acid until substantially all of the allyl substituents are converted to the corresponding halohydrin moieties.

4,354,007
PROCESS FOR PREPARING OXIDATIVELY-STABLE POLYMERS

Gerald Scott, 338 Station Rd., Knowle, Warwickshire, England

Division of Ser. No. 555,678, Mar. 5, 1975, Pat. No. 4,213,892. This application Jan. 14, 1980, Ser. No. 111,840

Claims priority, application United Kingdom, Mar. 6, 1974, 10086/74; Jul. 11, 1974, 30870/74

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.^{3} C08F *8/30, 8/42;* **C08L** *7/02*

U.S. Cl. 525—370 **25 Claims**

1. A process for preparing an oxidatively stable polymer which comprises reacting the polymer with an antioxidant selected from the group consisting of a chain-breaking antioxidant, a peroxide-decomposing antioxidant, an ultra-violet screening agent, a triplet quencher and a metal deactivator, said antioxidant rendering the polymer less susceptible to oxidative attack by chemically interrupting the autoxidation process by which the polymer is oxidatively degraded, the reaction between the polymer and the antioxidant being carried out in the presence of a free radical with the proviso that when the free radical is produced by a free radical generator, said generator produces free radicals at a temperature of 120° C. or below.

4,354,008
PRESSURE SENSITIVE, HOT MELT ADHESIVES

Martin M. Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed May 6, 1981, Ser. No. 260,968

Int. Cl.^{3} C08L *33/08*

U.S. Cl. 525—370 **14 Claims**

1. A pressure sensitive, hot melt adhesive composition, which possesses the reversible properties of strong cohesive strength at ambient temperature and desirable fluidity at hot melt application temperatures, said composition comprising the reaction product of:

(A.) a normally tacky random copolymer consisting essentially of:
  (a.) at least 40% by weight of at least one monomer selected from the group consisting of C_2 to C_8 alkyl esters of acrylic or methacrylic acid and mixtures thereof; and
  (b.) 0.5 to 10% by weight of a chelating comonomer selected from the group consisting of beta-hydroxypropyl acrylate or methacrylate esters of ortho-hydroxy aromatic acids and mixtures thereof; and
  (c.) 0 to 59.5% by weight of a copolymerizable comonomer which does not adversely affect said reversible properties, said monomer percentages totaling 100% by weight; and

(B.) at least one chelatable metallic salt of a transition metal having a valence greater than 1 and a coordination number greater than 2 and an inorganic or organic anion capable of forming a volatile by-product at or below said application temperature, said metallic salt present in an amount sufficient to provide said reversible properties by forming one or more chelates with said chelating comonomer.

4,354,009
CATALYST COMPOSITION FOR COPOLYMERIZING ETHYLENE

George L. Goeke, Belle Mead; Burkhard E. Wagner, Highland Park, and Frederick J. Karol, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 30, 1981, Ser. No. 288,336

Int. Cl.^{3} C08F *2/34, 10/02*

U.S. Cl. 526—125 **22 Claims**

1. A continuous process for producing ethylene copolymers containing at least 90 mol percent of ethylene and no more than 10 mol percent of one or more alpha olefins containing from 3 to 8 carbon atoms, said copolymers being produced in granular form and having a density of from 0.91 g/cm^3 to 0.96 g/cm^3,

which comprises contacting a mixture of ethylene and at least one alpha olefin containing from 3 to 8 carbon atoms, at a temperature of from 30° C. to 115° C. and a pressure no greater than 1000 psi, in a gas phase reaction zone, with particles of a catalyst system comprising a precursor composition having the formula

$$Mg_mTi(OR)_nX_p[ED]_q$$

wherein

R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, or COR′ wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms,

X is selected from the group consisting of Cl, Br, I, and mixtures thereof,

ED is an organic electron donor compound selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

m is 0.5 to 56,
n is 0, 1 or 2,
p is 2 to 116, and
q is 2 to 85,
said precursor composition being diluted with an inert carrier material and treated with from 0.1 mol to 3.0 mols of a hydrocarbyl aluminum dihalide compound per mol of electron donor in said precursor composition,
said hydrocarbyl aluminum dihalide compound having the formula

$RAlX_2$

wherein
R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms or OR′, wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, and
X is selected from the group consisting of Cl, Br, I, and mixtures thereof,
and said precursor composition being completely activated with from 10 mols to 400 mols of activator compound per mol of such precursor composition, said activator compound having the formula

$Al(R'')_dX'_eH_f$

wherein X′ is Cl or OR‴, R″ and R‴ are saturated hydrocarbon radicals containing from 1 to 14 carbon atoms, e is 0 to 1.5, f is 0 or 1, and $d+e+f=3$.

4,354,010
TRANSITION METAL COMPOUND

Alan B. Newton, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

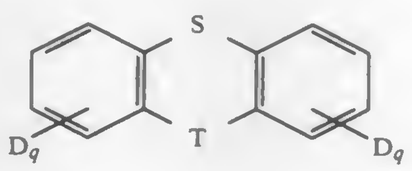
Continuation of Ser. No. 803,376, Jun. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,643, Apr. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 647,989, Jan. 9, 1976, abandoned. This application Sep. 24, 1980, Ser. No. 190,384

Claims priority, application United Kingdom, Jan. 9, 1975, 920/75; May 12, 1975, 19790/75; Oct. 29, 1975, 44634/75; May 7, 1976, 18786/76; Jun. 21, 1976, 25638/76; Jun. 21, 1976, 25639/76; Jun. 21, 1976, 25640/76

Int. Cl.^{3} C08F *4/64, 10/00*

U.S. Cl. 526—140 **32 Claims**

1. In a process of treating a transition metal compound in which a solid compound of a transition metal of Groups IVA to VIA of the Periodic Table is subjected to a grinding process in the presence of at least one sulphur-containing organic compound, the improvement which comprises effecting the grinding process in the presence of at least one sulphur-containing organic compound which is a sulphide compound of the formula



where
D or each D, is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group —NRR′;
T is —S—, —O—, or —CO—;
R is a hydrogen atom or a hydrocarbyl group;
R′ is a hydrocarbyl group; and
each q is, independently, an integer from 0 up to 4.

4,354,011
COPOLYMERS OF ETHYLENE AND ETHYLENICALLY UNSATURATED MONOMERS, PROCESS FOR THEIR PREPARATION AND DISTILLATE OIL CONTAINING SAID COPOLYMERS

Stephen Ilnyckyj, Kennington, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 947,813, Oct. 2, 1978, Pat. No. 4,230,811, which is a continuation of Ser. No. 461,621, Apr. 17, 1974, abandoned. This application Aug. 7, 1980, Ser. No. 176,209

The portion of the term of this patent subsequent to May 11, 1995, has been disclaimed.

Int. Cl.^{3} C08F *4/28, 110/02, 218/02*

U.S. Cl. 526—227 **3 Claims**

1. In a method of preparing an oil-soluble copolymer of ethylene and vinyl acetate useful as a middle distillate fuel oil flow improver for depressing the pour point of said oil and limiting the size of wax crystals that form on cooling said oil below its cloud point, by free radical initiation, wherein said copolymer has a number average molecular weight by Vapor Phase Osmometry in the range of 1,000 to 5,000 and consists essentially of about 3 to 20 molar proportions of ethylene per molar proportion of vinyl acetate, which method comprises copolymerizing said monomers in a liquid phase reaction in about 100 to 600 parts by weight of C_5 to C_{10} hydrocarbon solvent based upon 100 parts by weight of copolymer to be produced, at a temperature of about 200° to 270° F. under an ethylene pressure of about 700 to 3,000 psig. sufficient to maintain a liquid phase medium and to maintain the desired concentration of ethylene solution in the solvent, the improvement which comprises using about 0.1 to 5 parts by wt. of t-butyl peroxyacetate as initiator per 100 parts by wt. of copolymer to be produced.

4,354,012
ALIPHATIC DIENE BIS-IMIDE POLYMERS

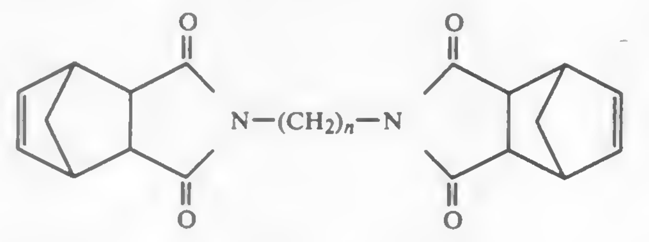
Daniel A. Scola, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 12, 1981, Ser. No. 273,139

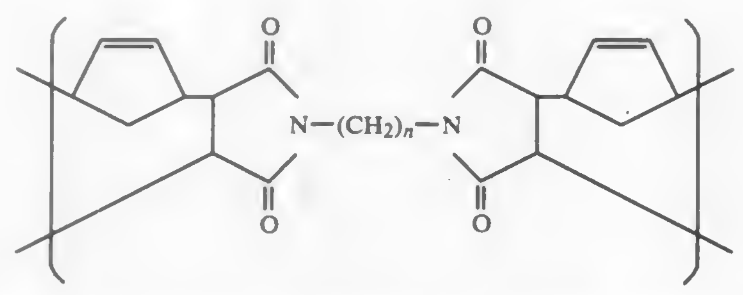
Int. Cl.^{3} C08F *26/06*

U.S. Cl. 526—259 **2 Claims**

1. A moisture resistant polyimide adhesive formed by polymerizing monomers of the formula:



to form a polymer with repeating units



where n is aobut 8 to about 20, and the polymer has a room temperature water immersion moisture absorption rate less than about 0.6% by weight for 24 hours and a tensile lap shear strength greater than about 1800 psi (1.24×10^7 NT/M^2), such properties imparted to the polymer with curing for less than about one hour.

4,354,013
PROCESS FOR PREPARING EPOXY-MODIFIED SILICONE RESINS

Hiroshi Kimura, Oota, Japan, assignor to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 224,973

Claims priority, application Japan, Jan. 22, 1980, 55-5314

Int. Cl.^{3} C08L *83/04;* **C08G** *77/08, 77/40*

U.S. Cl. 528—16 **11 Claims**

1. A process for preparing an epoxy-modified silicone resin which comprises reacting
(A) an organosilicon material containing substantially no hydroxyl groups directly bonded to silicon and having the formula:
$R^1{}_aSi(OR^2)_bO_{(4-a-b)/2}$

in which R^1 and R^2 are substituted or unsubstituted monovalent hydrocarbon groups, and a and b are in the ranges of $0\leqq a<3$, $0.001\leqq b\leqq 4$, and $a+b\leqq 4$,
with
(B) an epoxy compound containing at least one epoxy group and at least one hydroxyl group in a molecule,
in the presence of
(C) a catalytically effective amount of a chelate compound selected from the group consisting of aluminum chelates and zirconium chelates, under conditions effective to cause dealcoholation condensation reaction between the hydroxyl group of said epoxy compound and the OR^2 groups of said organosilicon material.

4,354,014
POWDERED COATING COMPOSITIONS HAVING GOOD STORAGE STABILITY AND PRODUCTION OF SAME

Elmar Wolf, and Rainer Gras, both of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,205

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929150

Int. Cl.^{3} C08G *18/80*

U.S. Cl. 528—45 **6 Claims**

1. Powdered coating compositions having good storage stability and particle size smaller than 0.25 mm, comprising the reaction product of polyesters which contain hydroxyl groups and melt between 40°-120° C., and ϵ-caprolactam partially blocked isophorondiisocyanate adducts, and catalysts, if necessary, and customary additives, wherein said isophoronediisocyanate adducts partially blocked with ϵ-caprolactam contain 0.1 to 1 mole of free NCO-groups per mole of adduct and are selected from the group consisting
adduct containing urea groups and having an NCO-content of 22-35% weight;
adduct containing biuret groups and having an NCO-content of 20-35% by weight;
adduct containing carbodiimide groups and having an NCO-content of 22-35% by weight and an adduct which contains urea and urethane groups and which comprises the reaction product of isophoronediisocyanate and 1-hydroxy-3-aminomethyl-3,5,5-trimethylcyclohexane.

4,354,015
PHOSPHONIUM BICARBONATE CATALYSTS FOR PROMOTING REACTION OF EPOXIDES WITH PHENOLS

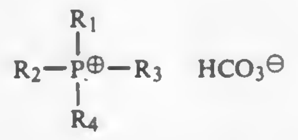
George A. Doorakian, Bedford; Lawrence G. Duquette, Maynard, both of Mass., and James L. Bertram, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 231,704, Feb. 5, 1981, abandoned, which is a continuation of Ser. No. 63,894, Aug. 3, 1979, abandoned. This application Oct. 21, 1981, Ser. No. 313,430

Int. Cl.^{3} C08G *59/68*

U.S. Cl. 528—89 **13 Claims**

1. In the process of preparing an epoxy resin by reacting
(a) a compound bearing an average of more than one vicinal epoxide group per molecule with
(b) a polyhydric phenol,
the improvement comprising conducting the reaction in the presence of a compound represented by the formula I



$$R_2-\overset{\displaystyle R_1\atop|}{\underset{|\atop\displaystyle R_4}{P^{\oplus}}}-R_3\quad HCO_3^{\ominus}\qquad\text{(I)}$$

or a derivative thereof formed in situ, wherein R_1-R_4 are each independently hydrocarbyl or inertly-substituted hydrocarbyl having up to 20 carbon atoms, the compound of formula I being present in an amount effective to prepare a resin having a weight average molecular weight at least 25 percent greater than that obtained with a like molar quantity of a $R_1R_2R_3R_4P^{\oplus}$ acetate salt or acetate/acetic acid complex under otherwise identical reaction conditions.

4,354,016
METHOD OF PREPARING POLYESTERS MODIFIED WITH TRIHYDROXYBENZOPHENONE

Robert B. Rashbrook, Hatfield, and Patrick J. Horner, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 28, 1980, Ser. No. 210,756

Claims priority, application United Kingdom, Dec. 10, 1979, 7942482

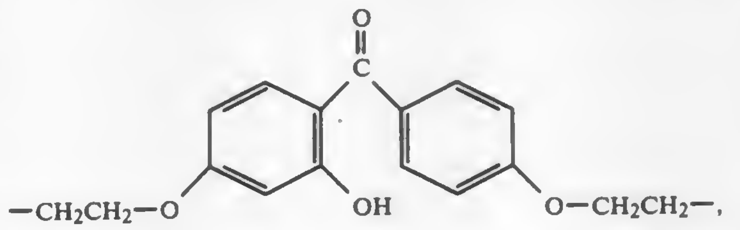
Int. Cl.^{3} C08G *63/66*

U.S. Cl. 528—128 **1 Claim**

1. A method of making a linear polyester which has as its repeating unit:

—O—Y—O—CO—X—CO—

wherein at least 80 mole % of the X groups represent p-phenylene and the remainder represent m-phenylene and at least 90% of the Y groups represent $—CH_2CH_2—$ and at least 0.1% of the Y groups represent esterification residues of the formula



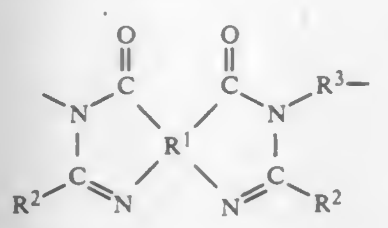
said method comprising polycondensing a glycol terephthalate precursor in the presence of 2,4,4′-trihydroxybenzophenone.

4,354,017
PROCESS FOR THE PRODUCTION OF POLYQUINAZOLONE-BASED POLYMERS

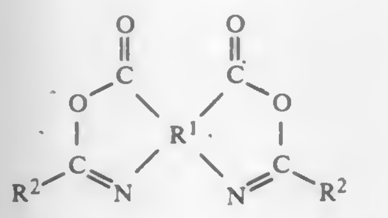
Masao Abe; Hisashi Ichinose, and Yuzuru Noda, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 25, 1981, Ser. No. 277,429
Claims priority, application Japan, Jun. 26, 1980, 55/86794
Int. Cl.^{3} C08G *69/40, 69/12*
U.S. Cl. 528—172 **16 Claims**

1. A process for producing a polyquinazolone-based polymer having, as a repeating unit, a bisquinazolone unit represented by formula (IIIa):


(IIIa)

wherein R^1 is a tetravalent aromatic group; R^2 is independently an alkyl group or an aromatic group; and R^3 is a divalent organic group; which comprises polymerizing nearly equimolar amounts of (a) a bisoxazinone represented by formula (I):


(I)

wherein R^1 and R^2 are the same as described above, and (b) a diamine represented by formula (IIa):

$$H_2N—R^3—NH_2 \tag{IIa}$$

wherein R^3 is the same as described above, in an aprotic polar organic solvent in the presence of a Lewis acid catalyst.

4,354,018
POLYESTERS OF 3-(PARA-HYDROXYPHENYL)PROPIONIC ACID

Hans-G. Elias, Midland, Mich., and Robert J. Warner, Racine, Wis., assignors to Michigan Molecular Institute, Midland, Mich.

Filed Feb. 1, 1982, Ser. No. 344,548
Int. Cl.^{3} C08G *63/06, 65/38*
U.S. Cl. 528—206 **8 Claims**

1. Resinous linear poly(oxy-1,4-phenylene-3-oxotrimethylene).

4,354,019
PROCESS FOR THE PRODUCTION OF ORGANIC ALKALI METAL SILICATE COMPOUNDS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 251,132, Apr. 6, 1981, Pat. No. 4,321,184, which is a continuation-in-part of Ser. No. 146,474, May 5, 1980, Pat. No. 4,273,908, which is a continuation-in-part of Ser. No. 889,932, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,073,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,628, Sep. 11, 1970, abandoned. This application Dec. 10, 1981, Ser. No. 329,283
Int. Cl.^{3} C08G *63/02*
U.S. Cl. 528—272 **11 Claims**

1. The process for the production of polyester alkali metal silicate compounds by the following steps:

(a) mixing and reacting oxidated silicon compound selected from the group consisting of hydrated silica, sodium silicate, patassium silicate, natural oxidated silicon compounds containing free silicic acid radicals and mixtures thereof, alkali metal compound selected from the group consisting of alkiali metal hydroxides selected from the group consisting of sodium hydroxide, potassium hydroxides, alkali metal carbonates selected from the group consisting of sodium carbonate, potassium and mixtures thereof in an aqueous solution and an organic compound which is attached to a substituent which will split off during the reaction is a substituted hydrocarbon which contains a substituent selected from the group consisting of halogen, acid sulfate, nitrate, acid phosphate, bicarbonate, formate, acetate, propionate, laurate, oleate, sterate, oxalate, acid malonate, acid tartrate, acid citrate and mixtures thereof thereby producing an organic metal silicate compound, then

(b) admixing 50 to 100 parts by weight of the organic alkali metal silicate compound with 50 to 100 parts by weight of an organic polycarboxylic acid compound and 50 to 100 parts by weight of an organic polyhydroxy compound and reacting the mixture thereby

(c) producing a polyester alkali metal silicate resinous product.

4,354,020
CONTINUOUS PREPARATION OF POLYCAPROLACTAM IN VERTICAL TUBULAR REACTOR

Rudi-Heinz Rotzoll, Limburgerhof; Paul Matthies, Heidelberg; Guenter Valentin, and Werner Hoerauf, both of Ludwigshafen, ali of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,591
Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918828
Int. Cl.^{3} C08G *69/16*
U.S. Cl. 528—323 **1 Claim**

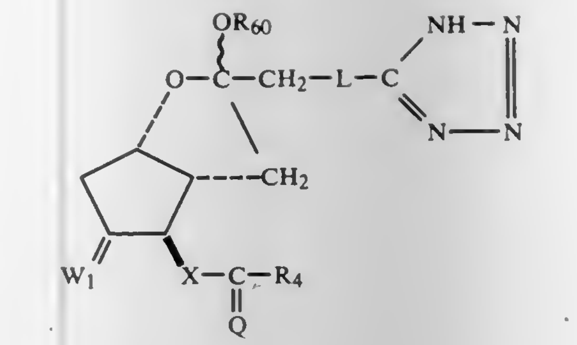
1. A process for the continuous preparation of polycaprolactam which comprises: passing ϵ-caprolactam and an initiating amount of water downwardly through a vertical tubular reactor, wherein the ϵ-caprolactam is partially polymerized with mechanical mixing at a temperature of from 245° to 260° C. in an upper mixing zone of the tubular reactor, said mixing zone being equipped with a mechanical stirrer and having a diameter which is 30 to 80% greater than that of the balance of the tubular reactor, circulating the partially polymerized caprolactam in melt form through a heat exchange zone located at a distance below the stirrer which is 0.3 to 1.5 times the diameter of said balance of the tubular reactor, in a lower part of the mixing zone, passing the melt through at least one additional heat exchange zone at a temperature of from 240° to 290° C., wherein the desired degree of polymerization is reached, and thereafter discharging poly-ϵ-caprolactam as a melt from the reactor tube.

4,354,021
2-DECARBOXY-2-TETRAZOLYL-6-ALKOXY-PGI$_1$ COMPOUNDS

Frank H. Lincoln, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 892,108, Mar. 31, 1978, Pat. No. 4,207,402. This application Aug. 30, 1979, Ser. No. 70,952
Int. Cl.^{3} C07D *405/06, 405/12*
U.S. Cl. 542—431 **1 Claim**

1. A compound of the formula



wherein L is
(1) $—(CH_2)_d—C(R_2)_2—$,
(2) $—CH_2—O—CH_2—Y—$, or
$—CH_2CH═CH—$,

wherein d is zero to 5, R_2 is hydrogen, methyl or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $—CH_2—$, or $—(CH_2)_2—$;

wherein
Q is oxo, $\alpha—H:\beta—H$, $\alpha—R_8:\beta—OH$, or $\alpha—OH:\beta—R_8$, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R_4 is
(1) $—C(R_5)(R_6)—C_gH_{2g}—CH_3$,
(2) $—C(R_5)(R_6)—Z—(Ph)$, or
(3) cis$—CH_2—CH═CH—CH_2CH_3$,

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_5R_6—$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_5R_6—$ and the (Ph);

wherein (Ph) is phenyl or phenyl substituent by (T)s,
wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;

wherein W_1 is $\alpha—OH:\beta—H$, $\alpha—H:\beta—OH$, oxo, methylene, $\alpha—H:\beta—H$, or $\alpha—CH_2OH:\beta—H$;

wherein R_{60} is straight-chain alkyl of one to 6 carbon atoms, inclusive; and

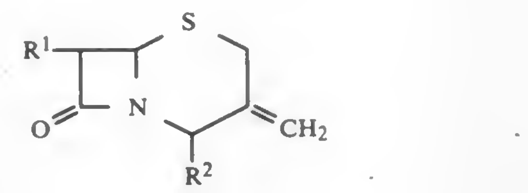
wherein X is
(1) trans$—CH═CH—$,
(2) cis$—CH═CH—$,
(3) $—C≡C—$, or
(4) $—CH_2CH_2—$.

4,354,022
PROCESS FOR PREPARING 3-METHYLENECEPHAM COMPOUNDS OR A SALT THEREOF

Takao Takaya, Kawanishi; Takashi Masugi, Ikeda; Toshiyuki Chiba, Osaka; Akiteru Yoshioka, Kyoto; Masayuki Kato, Mino; Ikuo Ueda, Toyonaka, and Masakazu Kobayashi, Ikeda, all of JPX, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

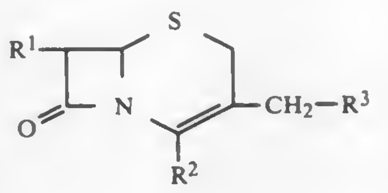
Filed Jun. 5, 1981, Ser. No. 270,876
Int. Cl.^{3} C07D *501/04*
U.S. Cl. 544—28 **8 Claims**

1. A new process for preparing 3-methylenecepham compounds of the formula:



wherein
R^1 is amino or a protected amino group, and
R^2 is a carboxy or a protected carboxy group, or a salt thereof,

which comprises reducing a compound of the formula:



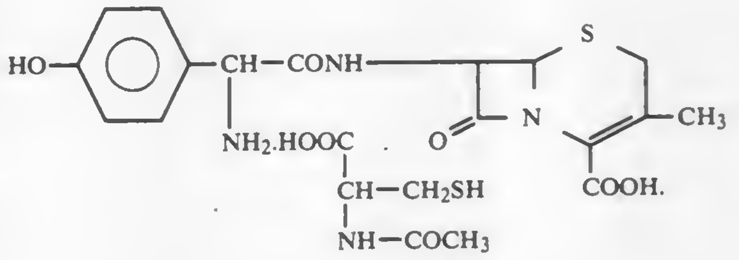
wherein
R^1 and R^2 are each as defined above, and
R^3 is halogen or heterocyclicthio which may have suitable substituent(s), or a salt thereof, with a combination of a metal selected from the group consisting of zinc, tin and iron, and an ammonium salt of an acid selected from the group consisting of ammonium halide, ammonium carbonate and ammonium acetate.

4,354,023
CEFADROXIL ACETYLCYSTEINATE SALT

Marco Falciani, and Renato Broggi, both of Milan, Italy, assignors to Dobfar S.p.A., Milan, Italy

Filed Mar. 4, 1981, Ser. No. 240,310
Int. Cl.^{3} C07D *501/22*
U.S. Cl. 544—030 **1 Claim**

1. Cefadroxil salt which is cefadroxil acetylcysteinate having formula:

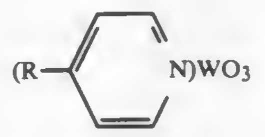


4,354,024
TUNGSTEN TRIOXIDE LAYERED COMPOUNDS

Jack W. Johnson, Fanwood, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

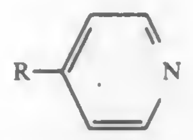
Filed Nov. 10, 1980, Ser. No. 205,104
Int. Cl.^{3} C07F *11/00*
U.S. Cl. 544—181 **9 Claims**

1. A composition of matter comprising layered compounds containing WO_3 and nitrogen donor Lewis bases, said layered compounds having the formula



wherein R is hydrogen; halogen; C_1–C_{20} aliphatic hydrocarbon; C_6–C_{10} aryl; C_7–C_{20} aralkyl; OR′ or SR′ where R′ is

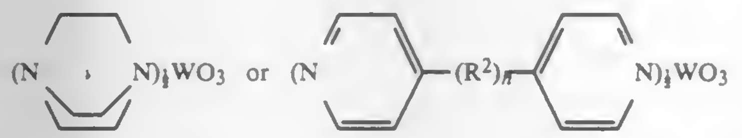
C_1–C_6 alkyl, the layered compounds being characterized in that



is covalently bound to a tungsten atom in the tungsten oxide layer.

2. A composition of matter comprising layered compounds containing WO_3 and nitrogen donor Lewis bases, said compounds having the formula LWO_3 where L is a Lewis base selected from the group consisting of pyridine, pyridazine, pyrimidine, pyrazine, triazine, and N-methyl imidazole, the layered compounds being characterized in that L is covalently bound to a tungsten atom in the tungsten oxide layer.

3. A composition of matter comprising bridged layered compounds containing WO_3 and nitrogen donor Lewis bases, said layered compounds having the formula



where n is 0 or 1 and R^2 is methylene or alkylene, alkenylene or alkynylene of 2–6 carbon atoms; C_6–C_{10} arylene; C_7–C_{14} aralkylene; oxygen or sulfur, the bridged layered compounds being characterized in that the nitrogen donor Lewis base is covalently bound to tungsten atoms in separate tungsten oxide layers.

4,354,025

N,N′-DISUBSTITUTED HEXAHYDROPYRIMIDINES

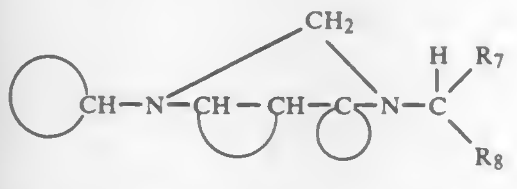
Neil E. S. Thompson, Creve Coenr, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 815,886, Jul. 15, 1977, Pat. No. 4,129,597. This application Jun. 16, 1978, Ser. No. 916,390

Int. Cl.^{3} C07D *235/02, 235/06*

U.S. Cl. 544—231 **4 Claims**

1. A compound of the formula



where R_7 is alkyl and R_8 is hydrogen or alkyl and where ◡ together with the carbon or carbon atoms to which it is shown attached indicates a cyclopentyl or cyclohexyl cycloalkyl ring or such a cycloalkyl ring substituted by alkyl, halo, alkoxy or phenyl.

4,354,026

3-CHLORO-6-(PYRIDINYL)-PYRIDAZINES

George Y. Lesher, Schodack, and William B. Dickinson, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 173,004, Jul. 28, 1980, Pat. No. 4,304,775, which is a continuation-in-part of Ser. No. 103,192, Dec. 13, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,229

Int. Cl.^{3} C07D *401/04*

U.S. Cl. 544—238 **2 Claims**

1. 3-Chloro-6-PY-pyridazine or pharmaceutically-acceptable acid-addition salt thereof, where PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

4,354,027

TRIAZOLOQUINOXALIN-4-ONES

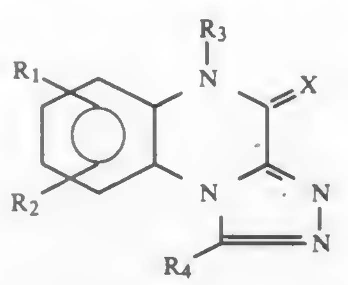
Bernard Loev, Scarsdale, N.Y.; John T. Suh, Greenwich, Conn.; Bruce E. Williams, Cottage Grove, Minn., and Vassil St. Georgiev, New Rochelle, N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed May 19, 1980, Ser. No. 151,220

Int. Cl.^{3} C07D *487/04, 241/44, 491/14;* **A61K** *31/495*

U.S. Cl. 544—346 **7 Claims**

1. An anti-hypertensive compound of the formula



wherein
- X is S or O;
- each of R_1 and R_2 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, sulfonamido, halogen, alkoxy, alkenyloxy, alkynyloxy, cyano, hydroxy, nitro, amino, alkylamino, alkanoylamino, carbalkoxyamino, methanesulfonyl, carboxy, carbalkoxy or trihalomethyl, or taken together, methylenedioxy, with the proviso that at least one of R_1 and R_2 is other than H;
- R_3 is hydrogen, alkyl, alkenyl, alkynyl, aryl, aralkyl, cycloalkyl or cycloalkyl-CH_2-;
- R_4 is hydrogen, alkyl, alkenyl, alkynyl, aryl, aralkyl, cycloalkyl, cycloalkyl-CH_2-, alkanoyl, or carbalkoxy;
- wherein the hydrocarbyl groups of R_1, R_2, R_3 and R_4 independently contain up to 7 carbon atoms when aliphatic and up to 10 carbon atoms when cycloalkyl or aromatic; and pharmaceutically acceptable acid addition salts thereof.

4,354,028

PIPERAZINE DERIVATIVES

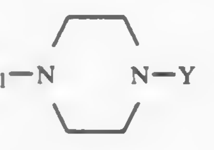
John Martin, Carmel, Ind.; George A. Doorakian, Bedford, and Lawrence G. Duquette, Maynard, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 114,022, Jan. 21, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,635

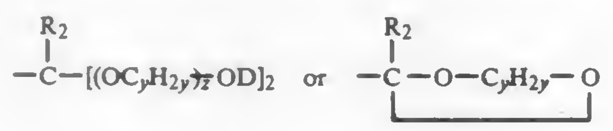
Int. Cl.^{3} C07D *405/04*

U.S. Cl. 544—374 **4 Claims**

1. A compound represented by the formula



where R_1 is hydrogen, C_{1-4} alkyl or hydroxyalkyl, or the radical Y; and Y independently each occurrence is selected from:



$$-\overset{R_2}{\overset{|}{C}}-[(OC_yH_{2y})_z OD]_2 \quad \text{or} \quad -\overset{R_2}{\overset{|}{C}}-O-C_yH_{2y}-O$$

where R_2 is hydrogen or methyl, D is hydrogen or C_{1-4} alkyl, y independently each occurrence is 2, 3 or 4 and z is 0, 1, 2, 3 or 4.

4,354,029

PREPARATION OF 2-SUBSTITUTED-2-OXAZOLINES WITH ORGANIC ZINC SALT CATALYSTS

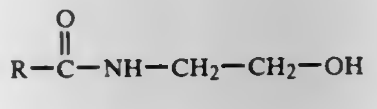
Mark E. Kaiser, Midland, Mich., and David L. Larson, Cookeville, Tenn., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 966,696, Dec. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 758,279, Jan. 10, 1977, abandoned, and Ser. No. 875,280, Feb. 6, 1978, abandoned. This application Nov. 30, 1981, Ser. No. 325,948

Int. Cl.^{3} C07D *263/12*

U.S. Cl. 548—239 **8 Claims**

1. A cyclodehydration process for making a 2-substituted-2-oxazoline comprising reacting by contacting in liquid phase a N-(2-hydroxyalkyl)carboxamide corresponding to the formula



$$R-\overset{O}{\overset{\|}{C}}-NH-CH_2-CH_2-OH$$

wherein R is alkyl of 1 to about 17 carbon atoms or phenyl, or a carboxylic acid/amine salt precursor of said N-(2-hydroxyalkyl)carboxamide with a small but catalytic amount of an organic zinc salt.

4,354,030

ISOXAZOLYLIMIDAZOLIDINONE HERBICIDES

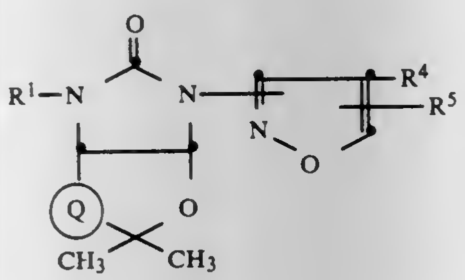
Kenneth W. Burow, Jr., Indianapolis, and Roger L. St. Clair, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 24, 1981, Ser. No. 334,410

Int. Cl.^{3} C07D *491/056, 491/22;* **A01N** *43/50*

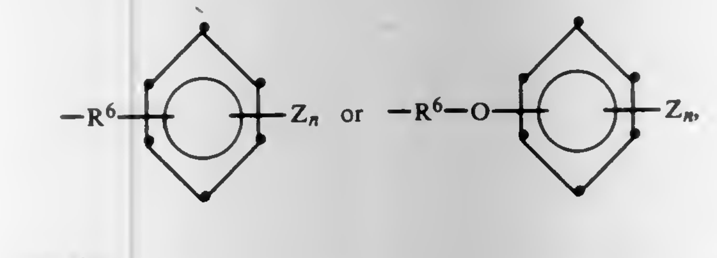
U.S. Cl. 548—247 **7 Claims**

1. A compound of the formula:



wherein:
- R^1 is C_1–C_6 alkyl or allyl;
- R^4 is hydrogen, C_1–C_6 alkyl, halo, cyano or nitro;
- R^5 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_7 cycloalkyl, C_1–C_3 alkyl-C_3–C_7 cycloalkyl, halo-C_1–C_6 alkyl, —R^6—O—R^7 or —R^6—S—R^7,

where
- R^6 is C_1–C_6 alkylene and
- R^7 is C_1–C_6 alkyl, or R^5 is:



wherein:

Z is nitro, halo, or R^7, and n is 0, 1, 2 or 3 provided that no more than two substituents shall be nitro.

4,354,031

SUBSTITUTED 3-AMINOPYRAZOLES

Peter Plath, Ludwigshafen; Bruno Wuerzer, Limburgerhof, and Wolfgang Rohr, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Atiengesellschaft, Fed. Rep. of Germany

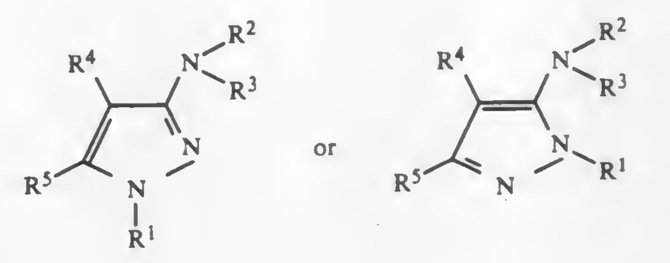
Division of Ser. No. 951,566, Oct. 16, 1978, Pat. No. 4,260,775. This application Aug. 25, 1980, Ser. No. 180,949

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747531

Int. Cl.^{3} C07D *231/38*

U.S. Cl. 548—362 **1 Claim**

1. A pyrazole of the formula



where
- R^1 is phenoxycarbonyl, lower alkanoyl substituted by halogen or methoxy or lower alkanoyl,
- R^2 is hydrogen or lower alkyl,
- R^3 is n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, 3-methyl-2-butyl, pentyl-2 or pentyl-3 or one of said groups substituted by lower alkoxy or is a 5-,6-, or 7-membered cycloalkyl,
- R^4 is methoxycarbonyl, and
- R^5 is hydrogen or methyl, and the agriculturally acceptable acid addition salts thereof.

4,354,032

ALKYL N-3-HALO-,N-3,5-DIHALOBENZOYL-N-ISOPROPYLAMINOACETATE HERBICIDES

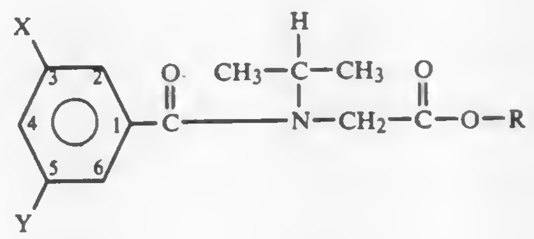
Walker A. Strong, Hudson, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 7, 1978, Ser. No. 931,705

Int. Cl.^{3} C07C *101/10*

U.S. Cl. 560—41 **8 Claims**

1. A compound graphically represented by the general formula:



wherein:
- X is chlorine, or bromine;
- Y is hydrogen, chlorine, or bromine; and
- R is an alkyl of up to four carbon atoms.

4,354,033

ANTHRANILIC ACID ESTERS

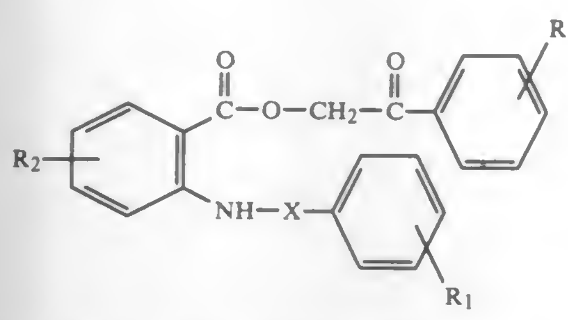
Nanduri Bhanumati, and Pralhad B. Sattur, both of Hyderabad, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Aug. 31, 1981, Ser. No. 298,247

Int. Cl.^{3} C07C *101/54;* **A61K** *31/245*

U.S. Cl. 560—48 **4 Claims**

1. Anthranilic acid esters having the general formula:



(I)

in which R_1, R_2 and R_3 represent any of hydrogen, chlorine, methoxy and methyl groups and X represents a straight or branched alkyl chain comprising 1 to 4 carbon atoms.

4,354,034

DIHALOPHENOXYPROPIONIC ACIDS AND THEIR DERIVATIVES, AND THEIR USE AS COTTON DESICCANTS

John E. Barton, Wokingham; David J. Collins, Crowthorne, and Donald W. Headford, Reading, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 15, 1979, Ser. No. 48,771

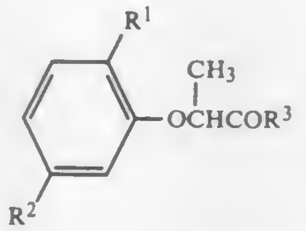
Claims priority, application United Kingdom, Jun. 30, 1978, 28420/78

The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.

Int. Cl.³ C07C *69/76*

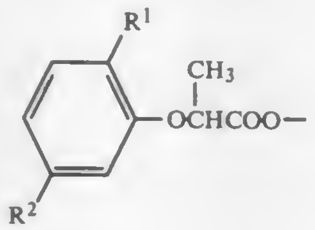
U.S. Cl. 560—62 **1 Claim**

1. A method of desiccating growing cotton plants, the method consisting essentially of the step of applying to the foliage of the plants, a cotton desiccating amount of a compound of general formula (II)



(II)

wherein one of R^1 and R^2 is bromine and the other is chlorine, bromine, iodine or trifluoromethyl; and R^3 is hydroxy; a group of general formula —OM wherein M is a cation; phenoxy optionally substituted with at least one substituent selected from the class consisting of halogen and C_{1-4} alkyl; C_{3-6} cycloalkoxy; C_{1-12} alkoxy optionally substituted with at least one substituent selected from the class consisting of chlorine, hydroxy, C_{1-4} alkoxy, di-(C_{1-4}alkyl)-amino, optionally chloro-, phenoxy- or methyl-substituted phenyl and a group of general formula (III):



(III)

wherein R^1 and R^2 are as defined above or C_{3-12} alkenyloxy.

4,354,035

PROCESS FOR ISOLATING ROSMARINIC ACID FROM PLANTS

Bruno Christ, Cologne, and Kurt Kesselring, Köttingen, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,657

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010040

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—75 **3 Claims**

1. Process for the isolation or rosmarinic acid from plants comprising starting from plants or parts of the plants of balmmint (*Melissa officinalis*), extracting the crushed plants or parts of the plants one to three times with 20 to 30 times the amount of water at 80° to 100° C. for 30 to 60 minutes with stirring, acidifying the extract of a pH of 2 to 2.5, thereafter extracting the acidified aqueous extracts with an organic solvent selected from the group consisting of the organic ethers, the higher alkanols immiscible with water and the esters of the aliphatic carboxylic acids, separating the solvent by evaporation, stirring the residue with water at 40° to 80° C. for 20 to 40 minutes, purifying the resulting solution and separating crystalline rosmarinic acid by reducing the volume of the solution and storing the solution at 2° to 8° C.

4,354,036

PREPARATION OF CARBOXYLIC ACID ESTERS

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 219,786, Dec. 24, 1980. This application May 28, 1981, Ser. No. 267,974

Int. Cl.³ C07C *67/38*

U.S. Cl. 560—233 **4 Claims**

1. In a process for the preparation of a carboxylic acid ester by reacting an olefin with carbon monoxide in the presence of an alcohol, the improvement which comprises carrying out said reaction in the presence of a catalyst comprising a molybdenum-nickel or a tungsten-nickel co-catalyst component, in the presence of a halide and in the presence of a promoter comprising an organo-phosphorus compound or an organonitrogen compound wherein the phosphorus and nitrogen are trivalent.

4,354,037

PROCESS FOR PREPARING BENZENECARBOXYLIC ACIDS

Isao Hirose, Tokyo; Kiyoshi Yamamoto, and Hiroyuki Okitsu, both of Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 164,674, Jun. 30, 1980, abandoned, which is a continuation of Ser. No. 18,030, Mar. 6, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 346,775

Claims priority, application Japan, Mar. 7, 1978, 53/24932

Int. Cl.³ C07C *51/16*

U.S. Cl. 562—416 **18 Claims**

1. A process for preparing an oxidation reaction mixture containing benzenecarboxylic acids, the content of the resulting terephthalic acid in said reaction mixture not exceeding 45% by weight, based on the total weight of the reaction mixture, which comprises oxidizing at least one aromatic hydrocarbon selected from the group consisting of p-xylene, p-toluic acid and methyl p-toluate with a molecular oxygen-containing gas in the liquid phase in the substantial absence of a lower aliphatic carboxylic acid as a solvent, said oxidation reaction being carried out in the presence of, as a catalyst,

(A) a cobalt compound soluble in the reaction system

(B) a manganese compound soluble in the reaction system, and

(C) a bromine compound soluble in the reaction system; wherein the cobalt compound (A) and the manganese

compound (B) are present in such a ratio and a concentration, calculated as cobalt metal and manganese metal, that

(1) the cobalt metal/manganese metal atomic ratio is from 99.50/0.5 to 50/50, and

(2) the total concentration of the cobalt metal and the manganese metal in the oxidation reaction system is from 150 ppm to 5,000 ppm, wherein the bromine compound (C) is present in the oxidation reaction system in such a ratio and a concentration, calculated as bromine, that

(3) the atomic ratio of bromine/cobalt metal + manganese metal does not exceed 1.5/1, and

(4) the total concentration of bromine in the oxidation reaction system is from 50 to 2,500 ppm.

4,354,038

PROCESS FOR THE PREPARATION OF 3-HYDROXYBENZOIC ACID

Ruthard Potthast, Leverkusen; Werner Mentzel, Cologne, and Horst-Dieter Kramer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

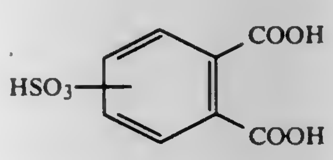
Filed Apr. 27, 1981, Ser. No. 257,676

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017983

Int. Cl.³ C07C *65/03*

U.S. Cl. 562—475 **12 Claims**

1. A process for the preparation of a 3-hydroxybenzoic acid alkali metal salt which comprises contacting a sulphophthalic acid of the formula



or a salt thereof with an alkali metal hydroxide in the form an alkali metal hydroxide solution having a strength of 43 to 50% by weight at a temperature in the range of 200° to 300° C. at a pressure of 10 to 30 bars.

4,354,039

CHLOROCITRIC ACIDS

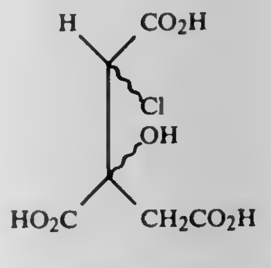
Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell; Francis A. Mennona, Nutley, and Ann C. Sullivan, Cedar Grove, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 973,504, Dec. 26, 1978. This application Sep. 21, 1981, Ser. No. 304,407

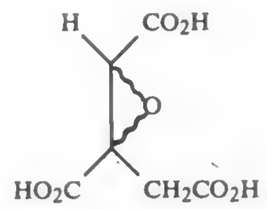
Int. Cl.³ C07C *59/245, 59/265*

U.S. Cl. 562—582 **10 Claims**

1. A process for the preparation of a chlorocitric acid of the formula



and stereoisomers and optical antipodes thereof which comprises the step of contacting an epoxyaconitic acid of the formula



and stereoisomers and optical antipodes thereof, with an alkali metal chloride or an alkaline earth metal chloride in an aqueous solvent in the presence of about one molar equivalent of hydrochloric acid at a reaction temperature of about 50° C. to 80° C.

4,354,040

PROCESS FOR SYNTHESIZING UREA

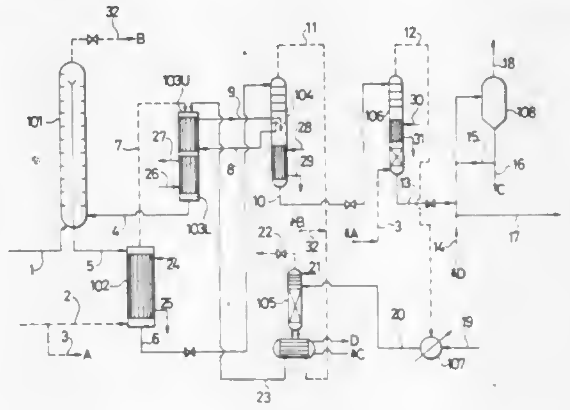
Shigeru Inoue, Kamakura; Hiroshi Ono, Fujisawa, and Hidetsugu Fujii, Mobara, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,302

Claims priority, application Japan, Sep. 12, 1980, 55-126043

Int. Cl.³ C07C *120/02*

U.S. Cl. 564—67 **4 Claims**



1. In a process for synthesizing urea including reacting in a urea synthesis zone ammonia and carbon dioxide at a urea synthesis pressure and temperature, separating from the resulting urea synthesis effluent unreacted materials as a gaseous mixture of ammonia and carbon dioxide, and absorbing the gaseous mixture in an absorbent to form an absorbate, recycling the absorbate together with the gaseous mixture to the urea synthesis zone, and obtaining urea from an aqueous urea solution resulting from the separation step of the unreacted materials, the improvement which comprises:

(a) maintaining the temperature and pressure in the urea synthesis zone at 170°-195° C. and 160–190 kg/cm^{2}G and maintaining the molar ratio of whole ammonia/whole carbon dioxide to be charged into the urea synthesis zone within 3.5–5.0;

(b) subjecting the urea synthesis effluent from step (a) to a stripping step by carbon dioxide in an amount at least 60% of the make-up carbon dioxide and at a pressure equal to the urea synthesis pressure and a temperature in the range of 170°-205° C. to decompose the unreacted materials and separate the same in the form of a gaseous mixture of ammonia and carbon dioxide, thereby lowering the total content of ammonia and carbon dioxide remaining in the urea synthesis effluent to 14–30% by weight;

(c) subjecting an effluent stream from step (b) to a high pressure decomposition under a pressure in the range of 12–25 kg/cm^{2}G to separate a part of the remaining ammonia and carbon dioxide by the condensation heat of the gaseous mixture separated in step (b), thereby lowering the total content of ammonia and carbon dioxide remaining in the effluent stream to 5–12% by weight;

(d) subjecting the effluent stream from step (c) successively to a low pressure decomposition, concentration and finishing steps;

(e) raising the pressure of an aqueous solution obtained by recovering ammonia and carbon dioxide separated in step (d), absorbing ammonia and carbon dioxide separated in step (c) in the thus-pressurized aqueous solution to form an absorbate and using absorption heat generated upon absorbing ammonia and carbon dioxide as a heat source for the concentration step through an indirect heat exchange;

(f) raising the pressure of the absorbate obtained in step (3) condensing into the thus-pressurized absorbate the gaseous mixture separated in step (b) to form a condensate, and using a part of the condensation heat generated upon the condensation of the gaseous mixture for carrying out step (c) as defined in the above and removing a part of the remaining condensation heat by generating steam so as to maintain the urea synthesis temperature at a predetermined temperature; and

(g) recycling the condensate and unabsorbed ammonia and carbon dioxide obtained in step (f) to the urea synthesis zone.

4,354,041

METHOD FOR DEACTIVATING CATALYST IN PREPARATION OF DIMETHYLFORMAMIDE FROM DIMETHYLAMINE AND CARBON MONOXIDE

Harold E. Bellis, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 3, 1980, Ser. No. 193,834

Int. Cl.^{3} C07C *102/00*

U.S. Cl. 564—123 **4 Claims**

1. In the process of catalytically preparing dimethylformamide by the reaction of dimethylamine and carbon monoxide in which an alkali metal methylate is used as the catalyst, a method for deactivating the catalyst at the end of the reaction, the method comprising bringing the catalyst into contact with enough of an alkyl formate whose alkyl group contains 1-3 carbon atoms to deactivate the catalyst.

4,354,042

PROCESS FOR MAKING N,N,N',N'-TETRAACETYLETHYLENEDIAMINE

Stephen J. Hannam, Clwyd, Wales; John S. Saynor, and Anthony D. Watling, both of Leeds, England, assignors to Warwick Chemical Limited, Leeds, England

Filed Dec. 8, 1980, Ser. No. 214,404

Claims priority, application United Kingdom, Jun. 27, 1980, 8021142

Int. Cl.^{3} C07C *102/00*

U.S. Cl. 564—144 **17 Claims**

1. A multicyclic process for making TAED which comprises, in each cycle, the step of reacting DAED with acetic anhydride, part at least of which is recovered from another cycle, and thereby forming a reaction mixture of TAED and acetic acid and anhydride and then distilling off acetic acid and working up the distillation residue to give substantially pure TAED, and in which the total volume, per unit volume of reaction mixture in this step, of distillate distilled from the reaction mixture in one cycle is more than the total volume, per unit volume of reaction mixture in this step, distilled from the reaction mixture in a preceding cycle.

4,354,043

NORBORNYL OXYACETALDEHYDE

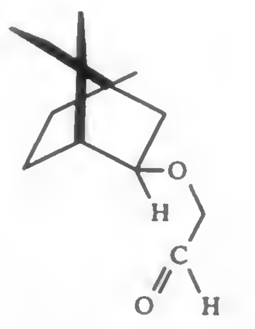
Robert P. Belko, Woodbridge; Richard M. Boden, Monmouth Beach, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,012

Int. Cl.^{3} C07C *47/115*

U.S. Cl. 568—445 **1 Claim**

1. The norbornyl oxyacetaldehyde having the structure:



4,354,044

METHOD FOR PREPARING METHACROLEIN

Atsushi Aoshima, Yokohama; Ryoichi Mitsui, and Hitoshi Nihei, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 20, 1981, Ser. No. 265,136

Claims priority, application Japan, May 24, 1980, 55/69435

Int. Cl.^{3} C07C *45/32, 45/29*

U.S. Cl. 568—479 **5 Claims**

1. A process for producing methacrolein by oxidizing isobutylene or tertiary butanol with molecular oxygen in the presence of a catalyst, characterized in that said catalyst has the general composition:

$$Mo_{12}Fe_aNi_bTe_cTl_dPb_fX_gO_h$$

wherein

a, b, c, d, f and g represent the number of atoms of the respective elements per 12 molybdenum atoms;

X represents at least one element selected from the group consisting of Cu, Nd and Sm;

a is a value of 0.2-6;

b is a value of 0.2-6;

a+b is a value of 1-10;

c is a value of 0.1-4;

d is a value of 0.1-3;

f is a value of 0.1-5;

g is a value of 0.1-5; and

h is the number of oxygen atoms for satisfying the valencies of the existing elements,

the reaction being carried out at a temperature of 200°-550° C. at a pressure of 0.5-10 atmospheres for 0.1 to 15 seconds at a space velocity of 100 to 5000 hr^{-1}.

4,354,045

PREPARATION OF FORMALDEHYDE

Franz Merger, Frankenthal, and Gerd Fouquet, Neustadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,822

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004436

Int. Cl.^{3} C07C *45/51, 45/65*

U.S. Cl. 568—487 **7 Claims**

1. A process for the preparation of formaldehyde by dehydrogenating methanol in the presence of a catalyst at an elevated temperature, wherein the reaction is carried out in the presence of a catalyst containing copper, zinc and tellurium, at from 300° to 750° C.

4,354,046

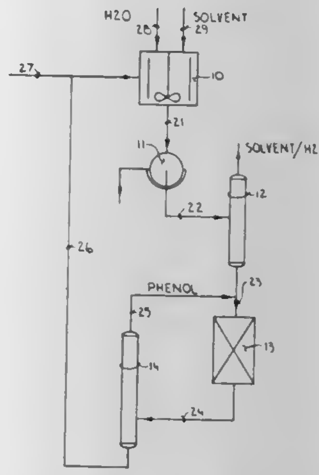
PROCESS FOR OBTAINING HIGH PURITY BISPHENOL A

Glen R. Ladewig, and Feng-Chih Chang, both of Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1981, Ser. No. 267,191

Int. Cl.^{3} C07C *37/84*

U.S. Cl. 568—724 **5 Claims**



1. In a purification process for 4,4' isopropylidene diphenol wherein the crude reaction product, or the mother liquor from a first crystallization thereof, is purified by dissolving in an organic liquid solvent and crystallized therefrom the improvement which comprises (1) mixing water and organic solvent together with said crude reaction product, in a crystallizer, wherein water is present in an amount of from 2 to 9% by weight based on said crude bisphenol, (2) heating said mixture to a temperature of about 80° to 100° C. sufficient to produce a single liquid phase, (3) reducing the temperature of said liquid phase to a lower temperature of about 60° to 80° C. and holding at that temperature for a time sufficient to begin crystallization, (4) reducing the temperature of said liquid phase further to an ambient temperature of about 20° to 35° C. to obtain the maximum yield of crystals of the said 4,4' product therefrom, (5) removing said solvent and water from the mother liquor from step 4, (6) mixing phenol with said mother liquor, (7) contacting the mixture of phenol and mother liquor at ambient temperature with a cation exchange resin in the acid form for a sufficient time to convert at least some of the impurities to the desired product, (8) removing phenol from said mixture, and (9) recycling the remainder to the crystallizer of step 1, and wherein the organic solvent in step 1 is benzene, toluene, xylene, methylene chloride, chloroform, ethylene dichloride or 1,1,1-trichloroethane and the entire process is accomplished under substantially atmospheric pressure.

4,354,047

NICKEL CATALYSTS FOR OXIDATIVE COUPLING OF PHENOLS

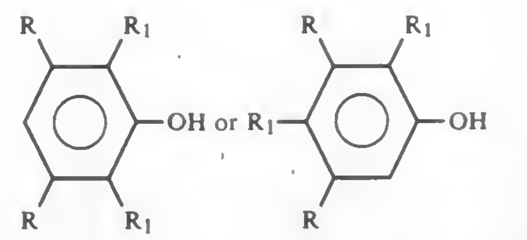
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1981, Ser. No. 266,556

Int. Cl.^{3} C07C *39/14*

U.S. Cl. 568—730 **12 Claims**

1. A process for preparing by an oxidation coupling reaction a carbon-carbon coupled condensation product of a substituted phenol of the formula



wherein each R is hydrogen, halogen or R_1, and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon and hydrocarbonoxy comprising contacting the substituted phenol with an oxygen-containing gas in the presence of a heterogeneous dehydrogenation catalyst comprising nickel in an oxidation state suitable for forming carbon-carbon oxidatively coupled reaction products.

4,354,048

COPPER CHROMITE CATALYSTS FOR OXIDATIVE COUPLING OF PHENOLS

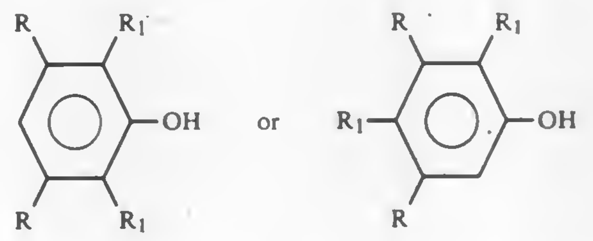
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1981, Ser. No. 266,558

Int. Cl.^{3} C07C *39/14*

U.S. Cl. 568—730 **10 Claims**

1. A process for preparing by an oxidation coupling reaction a carbon-carbon coupled condensation product of a substituted phenol of the formula



wherein each R is hydrogen, halogen or R_1, and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon and hydrocarbonoxy comprising contacting the substituted phenol with an oxygen-containing gas in the presence of a heterogeneous dehydrogenation catalyst comprising the oxides of copper and chrome present in an oxidation state suitable for forming carbon-carbon oxidatively coupled reaction products.

4,354,049

PROCESS FOR THE PRODUCTION OF AROMATIC HYDROCARBONS

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 11, 1981, Ser. No. 242,487

Claims priority, application United Kingdom, Mar. 15, 1980, 8008871

Int. Cl.^{3} C10G *49/08*

U.S. Cl. 585—415 **10 Claims**

1. A process for the production of aromatic hydrocarbons which process comprises contacting at elevated temperature and in the vapour phase a C_2 to C_{12} aliphatic hydrocarbon feedstock with a catalyst comprising a crystalline aluminosilicate having a silica to alumina molar ratio greater than 12:1 which has been modified by incorporation therein of aluminium either by exchange or impregnation.

ELECTRICAL

4,354,050

ELECTRIC CABLE JOINTS

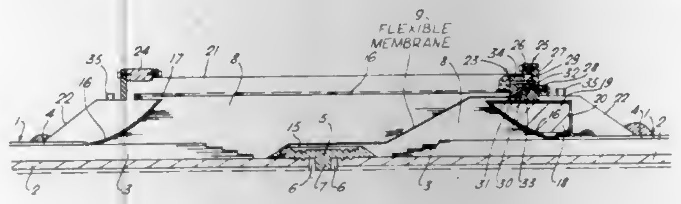
Brian Gregory, Dartford, England, assignor to BICC Public Limited Company, London, England

Filed Sep. 10, 1980, Ser. No. 185,944

Claims priority, application United Kingdom, Sep. 6, 1979, 7930994

Int. Cl.³ H02G *15/25*

U.S. Cl. 174—22 R **10 Claims**



1. A stop joint between two lengths of fluid-filled electric cable enclosed in a fluid-tight joint enclosure, in which joint the cable conductors are both electrically and mechanically connected by an elongate metal member and a laminated body of lappings of electrically insulating material is built up on the elongate metal member and on the cut back ends of the two cable lengths, wherein the barrier to flow of dielectric fluid from one to the other of the two cable lengths connected at the joint comprises the elongate metal member, a single sheet of fluid-impermeable insulating material incorporated in the laminated body, which sheet extends between and is sealed to the elongate metal member and to the fluid-tight enclosure to form a flexible membrane dividing the enclosure transversely into two parts.

4,354,051

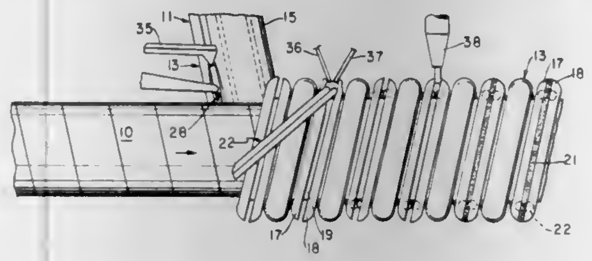
ELECTRICAL CURRENT-CARRYING FLEXIBLE HOSE AND METHOD OF MAKING SAME

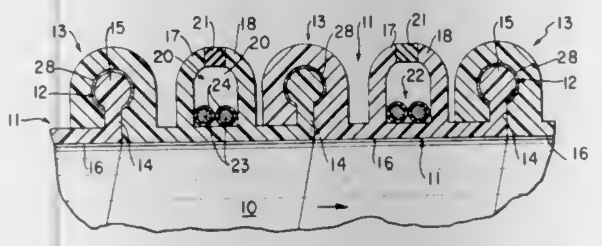
Thomas A. Kutnyak, Greenwood, S.C., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Apr. 15, 1981, Ser. No. 254,434

Int. Cl.³ A47L *9/24;* **F16L** *11/12, 11/16;* **B29D** *23/12*

U.S. Cl. 174—47 **11 Claims**





1. In an electrical current-carrying flexible hose wherein a strip is helically wound in tubular form with interlocking tongue and groove edge portions connecting adjoining convolutions, the improvement comprising:

(a) a hollow central selction on said strip between the tongue and groove edge portions,

(b) electrical conductor means disposed within said hollow central section,

(c) a longitudinal opening in said hollow central section through which said conductor means is inserted, and

(d) sealing means closing said opening.

7. A method of making an electrical current-carrying flexible hose which includes an extended strip having matching tongue and groove edge portions alongside a hollow central section in which a longitudinal opening is formed which comprises:

(a) advancing said strip toward an axially rotating and translating cylindrical mandrel surface,

(b) helically winding said strip about said mandrel surface in tubular form with the tongue and groove edge portions interlocked to connect adjoining convolutions with the longitudinal opening of the hollow central section directed outwardly,

(c) continuously laying at least one insulated electrical conductor in said hollow central section through said longitudinal opening, and

(d) closing said longitudinal opening with sealing means.

4,354,052

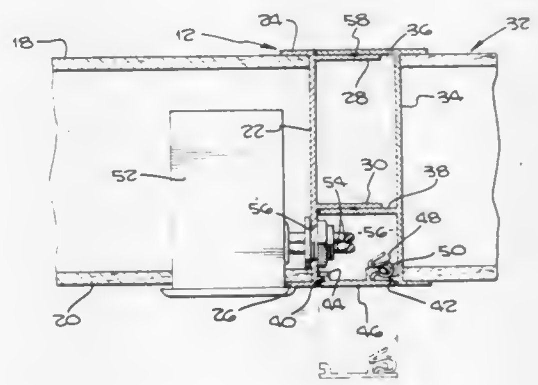
PATIO ENCLOSURE WITH ELECTRICAL CONDUIT HOUSING

Stanley J. Albany, Costa Mesa, and Robert Lizardi, Jr., Mission Viejo, both of Calif., assignors to C-Thru Aluminum Awning Co., Fullerton, Calif.

Filed Dec. 12, 1980, Ser. No. 215,672

Int. Cl.³ H02G *3/28*

U.S. Cl. 174—48 **3 Claims**



1. In a prefabricated patio enclosure,

modular wall panels having inner and outer sides and upper and lower and opposite vertical transverse frame members,

a vertical frame member of a first wall panel having a vertical web extending therefrom at an angle thereto and having a free vertical edge,

a vertical frame member of a second wall panel having a vertical web extending therefrom at an angle thereto and having a free vertical edge,

a vertical web of one of said wall panels comprising a spacer between adjacent vertical frame members of adjacent wall panels to maintain said adjacent vertical frame members of said adjacent wall panels in a fixed spaced relationship,

said vertical webs being spaced inwardly from one of said inner and outer sides of adjacent wall panels to define an elongated conduit housing having an open side of a width determined by the fixed spaced relationship between adjacent wall panels,

electrical conductor means in said housing,

and a closure strip closing the open side of said elongated conduit housing.

4,354,053

SPLICED HIGH VOLTAGE CABLE

Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Division of Ser. No. 874,104, Feb. 1, 1978, Pat. No. 4,226,251. This application Mar. 10, 1980, Ser. No. 128,970

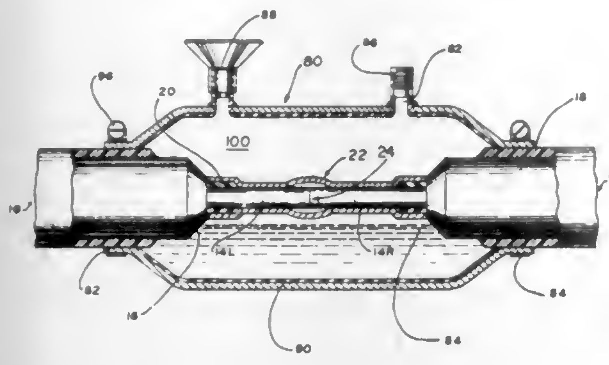
Int. Cl.³ H01B *7/02*

U.S. Cl. 174—84 R **11 Claims**

1. Spliced high voltage cable prepared from a splicing of two

insulation and conductor portions, said spliced cable comprising:

electrically and mechanically joined conductor portions, and,



a monolithic cured polymeric insulation splice prepared by the reaction of a castable mixture comprising a liquid polyolefin having addition polymer reactable sites, a chain extension agent reactive with said polyolefin's reactive sites, and a particulated solid saturated polyolefin with the two insulation portions.

4,354,054

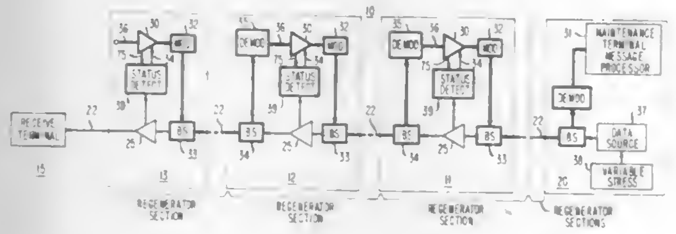
CABOOSE SIGNAL CONTROLLED REPORTING ARRANGEMENT FOR A REGENERATOR CHAIN

Jules A. Bellisio, Wall Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1981, Ser. No. 254,914

Int. Cl.³ H04J *3/08;* **H04B** *3/46*

U.S. Cl. 178—3 5 Claims



2. A status reporting arrangement for a digital transmission system (**10**) having a plurality of stations (**11, 12, 13**) arranged in a tandem configuration and arranged for reporting status information from the stations to a terminal (**20**), the system BEING CHARACTERIZED BY

a first station (**13**) including a reporting circuit (**30**) arranged for receiving (**36**) a train of received message signals followed by a received caboose signal;

means (**50**), included in the reporting circuit and responsive to received signals, for detecting and producing a first signal indicating the presence of the received caboose signal and for detecting and producing a second signal indicating the absence of the received caboose signal; and

means (**70, 80**), included in the reporting circuit (**30**) and responsive to the second level signal, for transmitting a message (**91**) from the first station with an appended caboose signal (**93**).

4,354,055

DEVICE FOR TELETYPEWRITERS FOR THE DEPOSIT OF SHEET-TYPE RECORDING MEDIA

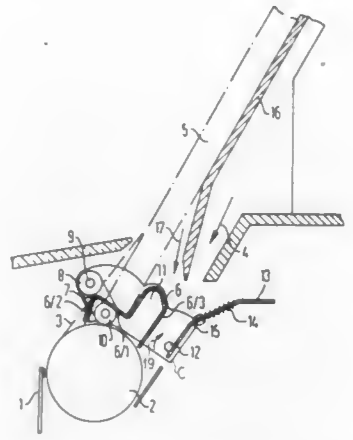
Peter Koller, Munich, and Ulrich Mayr, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,387

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007838

Int. Cl.³ H04L *15/24;* **B65H** *5/00*

U.S. Cl. 178—42 9 Claims



1. Apparatus for use in a printing device for depositing sheet-type recording media transported through a printing area over a platen into a deposit tray disposed above said platen having transport roller means arranged above said platen for seizing said recording medium after such has passed through said printing area and lifting such above a support wall serving as a lower ledge to said deposit tray, the improvement comprising a pivotably mounted carrier bracket in which said transport roller means and support wall are disposed in common, a stripper surface formed on said support wall for guiding said recording medium into engagement with said transport roller means, and a bias means disposed at said stripper surface for resiliently pressing said recording medium into frictional engagement with said transport roller means.

4,354,056

METHOD AND APPARATUS FOR SPEECH SYNTHESIS FILTER EXCITATION

George L. Brantingham, Lubbock, and Richard H. Wiggins, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,155

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SM 12 Claims

1. A speech synthesis system comprising:

voiced excitation means for generating voiced excitation speech signals;

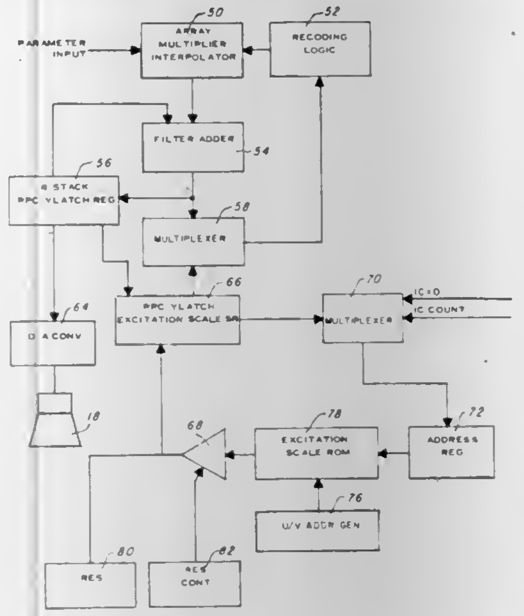
unvoiced excitation means for generating unvoiced excitation speech signals; said unvoiced excitation means comprising

digital storage means for storing at least two unvoiced excitation signals different from each other, and

random address generating means coupled to said digital storage means for randomly generating the address of each of said different unvoiced excitation signals;

filter means coupled to said voiced and unvoiced excitation means for selectively converting said voiced excitation signals and said unvoiced excitation signals into digital speech signals representative of human speech;

digital-to-analog converter means coupled to said filter means for converting said digital speech signals into analog signals representative of human speech; and



audio means coupled to said converter means for converting said analog signals into audible sound.

4,354,057

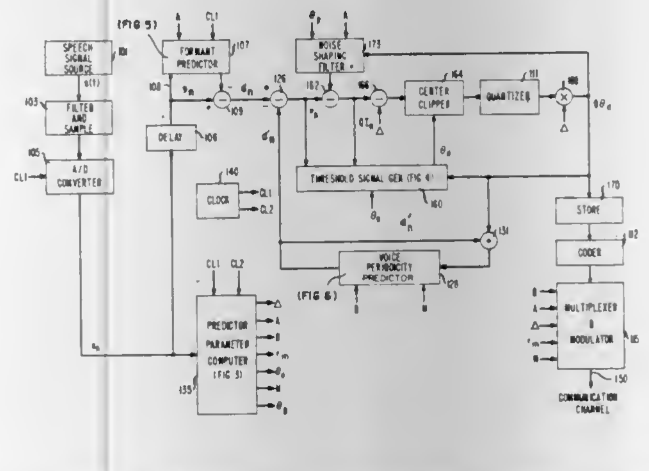
PREDICTIVE SIGNAL CODING WITH PARTITIONED QUANTIZATION

Bishnu S. Atal, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 8, 1980, Ser. No. 138,281

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SA 10 Claims



1. A predictive signal communication system comprising means for analyzing an input signal in successive time intervals to generate a set of prediction signals for each interval;

means jointly responsive to the input signal and the interval prediction signals for producing a predictive residual signal;

means for generating a quantized signal corresponding to said predictive residual signal;

and means for encoding said quantized signal;

characterized in that

said quantized signal generating means (**160, 164, 166, 111, 168**) comprises means (**160**) responsive to said interval prediction signals, said predictive residual signal and said quantized signal for producing an adaptively varying threshold level signal,

means (**164**) responsive to said adaptively varying threshold level signal for dividing said predictive residual signal into a first distinct portion below said threshold level signal and a second distinct portion at and above said threshold level signal, and

means (**111**) responsive to said first and second distinct portions for producing first and second sets respectively of quantized signals.

4,354,058

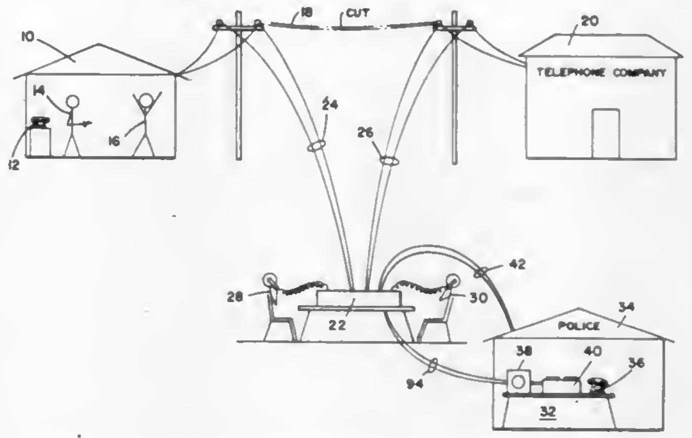
PORTABLE FIELD CONTROL UNIT FOR EMERGENCY TELEPHONE COMMUNICATIONS

Donald A. Chandler, Reno, and John W. Harper, Sparks, both of Nev., assignors to S.I.C., Inc., Havertown, Pa.

Filed Jun. 24, 1980, Ser. No. 162,415

Int. Cl.³ H04M *3/22*

U.S. Cl. 179—1 MN 6 Claims



1. An emergency communications unit, comprising:

(a) terminal means for connecting said unit to telephone lines connected either to a telephone network or directly to a telephone;

(b) monitor output means for connecting monitoring equipment to said unit;

(c) first and second operator set means;

(d) means for selectively connecting said first operator set means for bidirectional communication over a first plurality of said telephone lines including connections to said network and to said telephone, and said second operator set means for bidirectional communication over a second plurality of said telephone lines, at least one of said telephone lines being common to both of said pluralities; and

(e) means for connecting said monitor output means so as to enable monitoring of said first operator set means.

4,354,059

VARIABLE-DIRECTIVITY MICROPHONE DEVICE

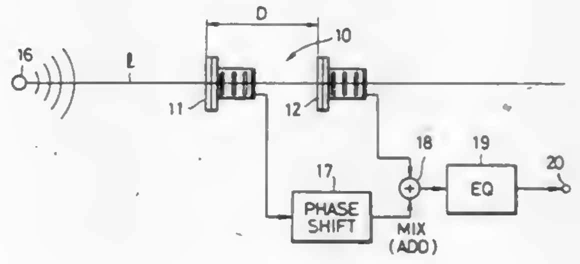
Yukinobu Ishigaki, Machida; Kaoru Totsuka, Tokyo; Makoto Yamamoto, Yokosuka, and Naotaka Miyaji, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 9, 1980, Ser. No. 185,516

Claims priority, application Japan, Sep. 11, 1979, 54-115664; Oct. 8, 1979, 54-139390[U]; Nov. 12, 1979, 54-145356; Nov. 12, 1979, 145357

Int. Cl.³ H04R *1/20*

U.S. Cl. 179—1 DM 7 Claims



1. A variable-directivity microphone device comprising:

a microphone unit having a plurality of microphones;

means in which the low-frequency range components of the output signal of one of said microphones of said microphone unit is resultingly added and mixed with the output signal of the other microphone and only the high-frequency range components are resultingly cancelled each other, said mixing means being capable of varying the mixing conditions; and

equalizer means for correcting the characteristic of said mixed signal.

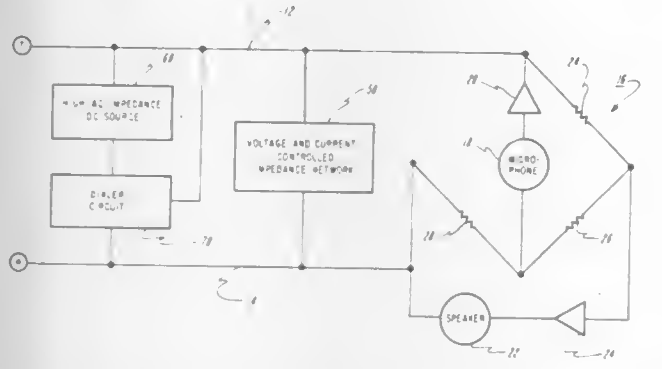
4,354,060
ELECTRONIC TELEPHONE

Frank Niertit, and Alvin R. Conner, both of Maitland, Fla., assignors to Stromberg-Carlson Corporation, Tampa, Fla.

Filed Jul. 26, 1979, Ser. No. 60,963

Int. Cl.^{3} H04M *1/00, 1/58*

U.S. Cl. 179—81 R **4 Claims**


HIGH AC IMPEDANCE DC SOURCE
DIALER CIRCUIT
VOLTAGE AND CURRENT CONTROLLED IMPEDANCE NETWORK
MICRO-PHONE
SPEAKER

1. An electronic telephone for use in a telephone network in which a D.C. power signal is supplied to the telephone from a central office over a pair of conductors and A.C. communication signals are coupled between the telephone and the central office over the same pair of conductors, said electronic telephone comprising:

transmit and receive solid-state amplifier means having sufficiently low D.C. resistance to be biased by said D.C. signal over said pair of conductors with substantially less than 4 volts D.C. and having sufficiently high A.C. impedance for transmitting A.C. communication signals over, and receiving A.C. communication signals from, said pair of conductors, said amplifier means being directly coupled to said conductors and said amplifier means including a transmitter section comprising a microphone and a first solid-state amplifier coupling said microphone to said pair of conductors and a receiver section comprising a speaker and a second solid-state amplifier coupling said speaker to said pair of conductors, said transmitter and receiver sections are connected in a Wien bridge arrangement, said Wein bridge being connected to differentiate between A.C. communication signals transmitted and received by said amplifier means for sidetone balance; and

a D.C. feedback circuit means having an input coupled across said pair of conductors and having an output coupled to said amplifier means for providing a stable reference voltage to said first and second solid-state amplifiers.

4,354,061
SENSING COIL IN HEARING AID

Yozo Marutake, Hino; Takayuki Kurita, Tachikawa, and Tatsuro Fukutome, Inagi, all of Japan, assignors to Rion Kabushiki Kaisha, Japan

Filed Dec. 1, 1980, Ser. No. 211,958

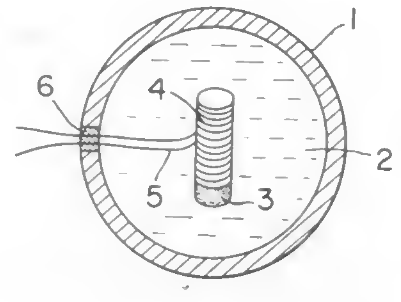
Claims priority, application Japan, Dec. 11, 1979, 54-171346[U]

Int. Cl.^{3} H04B *5/00;* **H04R** *25/00*

U.S. Cl. 179—82 **5 Claims**

1. A sensing coil unit in a hearing aid, which comprises:

a sealed container made of non-magnetic material, which is filled with a liquid; and



a sensing coil in the form of a cylinder one end of which is heavier than the other end, said sensing coil being floated in said liquid in said sealed container.

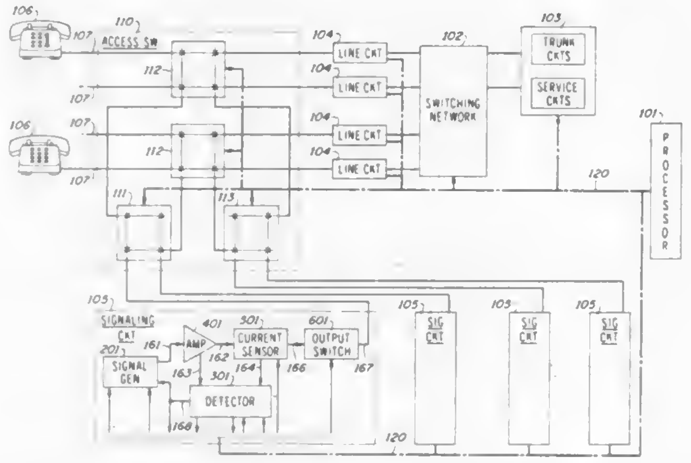
4,354,062
COMMUNICATION SYSTEM SIGNALING CIRCUIT

Harry E. Mussman, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1980, Ser. No. 117,281

Int. Cl.^{3} H04M *1/76, 19/02*

U.S. Cl. 179—84 A **13 Claims**



1. In a communication switching system comprising a plurality of subscriber lines, a circuit arrangement comprising a service circuit (**105**) and means (**111, 112**) for connecting said service circuit to said subscriber lines, characterized in that said service circuit comprises current sensing means (**501**) for generating a sensor output signal representative of the magnitude of current in a connected subscriber line, means (**333**) responsive to control signals defining a predetermined magnitude for generating a threshold signal having a magnitude corresponding to said predetermined magnitude, and comparator means (**340, 341, 342, 343, 344**) for generating an output signal when the magnitude of said sensor output signal is equal to or greater than the magnitude of said threshold signal.

4,354,063
TELEPHONE HANDSET WITH ILLUMINATED MAGNIFIER

James M. Kuka, P.O. Box 971, Reno, Nev. 89504

Filed Mar. 14, 1980, Ser. No. 130,253

Int. Cl.^{3} H04M *1/02, 1/22*

U.S. Cl. 179—103 **2 Claims**

1. A telephone handset, comprising a housing having a manually graspable portion providing a handle,

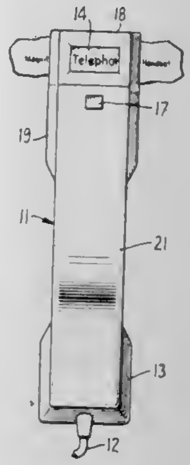
a receiving device mounted in said housing at one end of said handle,

a transmitting device mounted in said housing at the other end of said housing,

said housing having a portion extending beyond said transmitting device, and said portion being formed with an opening therethrough,

a magnifying lens mounted across said opening,

an electric light bulb mounted in said housing for illuminating the field of view of said lens,



a cable containing telephone wires connected to said transmitter and receiver, and

electrical wires for supplying electric current to said light bulb also contained in said cable.

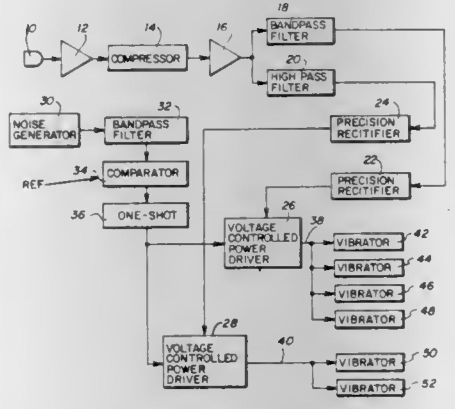
4,354,064
VIBRATORY AID FOR PRESBYCUSIS

Brian L. Scott, Denton, Tex., assignor to Scott Instruments Company, Denton, Tex.

Filed Feb. 19, 1980, Ser. No. 122,011

Int. Cl.^{3} H04R *25/00*

U.S. Cl. 179—107 BC **4 Claims**



1. Apparatus for providing tactile stimulation to enable persons having high frequency hearing impairment to distinguish between selected frequency differing speech components, comprising:

means for capturing an audio frequency sound to generate an audio signal;

a compressor responsive to the audio signal to limit the frequency and amplitude thereof;

a band pass filter connected to the output of said compressor for extracting a mid-frequency signal component of the audio signal;

a high pass filter connected to the output of said compressor for extracting a high frequency signal component of said audio signal;

means responsive to the output of the band pass filter to generate a first control voltage;

means responsive to the output of the high pass filter to generate a second control voltage;

means for generating a random noise bi-level signal;

a first voltage controlled power driver responsive to the random noise bi-level signal and the first control voltage to produce an output signal proportional in amplitude to selected components of the audio sound;

a second voltage controlled power driver responsive to the random noise bi-level signal and the second control voltage to produce an output signal proportional in amplitude to selected signal components of the audio sound, and

a transducer responsive to the output signal of said first voltage controlled power driver and the output signal of said second voltage controlled power driver, said transducer having at least two spatially distributed vibrators responsive to the output signal of the first power driver for producing an areal response and at least two or contiguous vibrators responsive to the output signal of the second power driver for producing a punctuate skin response.

4,354,065
MINIATURE HEARING AID

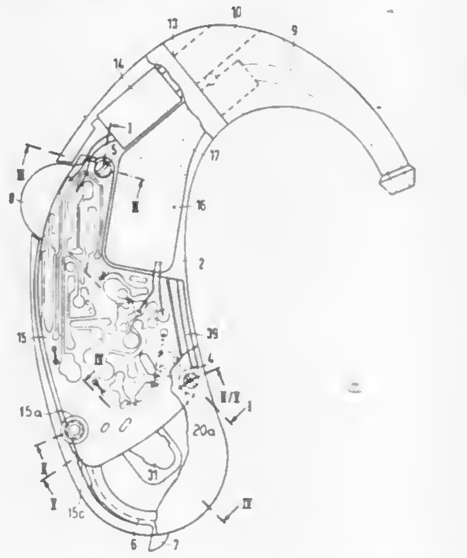
Gerhard Buettner, Grossenseebach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,766

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 7918029[U]

Int. Cl.^{3} H04R *25/02*

U.S. Cl. 179—107 H **4 Claims**



1. A miniature hearing aid device which is worn on the head, said device comprising a microphone, an ear piece receiver, a housing comprising first and second housing parts, an amplifier between said first and second housing parts of said housing, said amplifier being fastened in said housing, characterized in a plurality of plates in said housing, the amplifier having elements thereof arranged distributed on the plurality of plates, and opposite walls of the housing having spacer support projections supporting the plates in spaced superimposed relation, and characterized in that the projections provide ledges at the opposite walls of the housing parts having support surfaces for determining the position of the plates; in that the edges of the plates have recesses which allow the projections for the respective other plate to pass by; and in that the projections in the second housing part engage on the plates as counter-support to the projections of the first housing part when said second housing part is attached to the first housing part.

2. A miniature hearing aid device which is worn on the head, said device comprising a microphone, an ear piece receiver, a housing comprising first and second housing parts, an amplifier between said first and second housing parts of said housing, said amplifier being fastened in said housing, characterized in a plurality of plates in said housing, the amplifier having elements thereof arranged distributed on the plurality of plates, and opposite walls of the housing having spacer support projections supporting the plates in spaced superimposed relation, and characterized in that two plates have all of the elements of said amplifier distributed thereon, each housing part comprising a housing shell, three respective projections being present in each shell, the housing shells being of cooperating configuration to enclose said plurality of plates therebetween, at least

two pairs of the projections of the respective shells being aligned with each other and having aligned bores, and screw thread means extending through the aligned bores of the respective pairs of projections of the respective shells for securing the shells together with said plates supported by said projections within the enclosure formed by said shells.

3. A miniature hearing aid device which is worn on the head, said device comprising a microphone, an ear piece receiver, a housing comprising first and second housing parts, an amplifier between said first and second housing parts of said housing, said amplifier being fastened in said housing, characterized in a plurality of plates in said housing, the amplifier having elements thereof arranged distributed on the plurality of plates, and opposite walls of the housing having spacer support projections supporting the plates in spaced superimposed relation, and characterized in that the battery holder is seated between two plates carrying the amplifier so as to function as a spacer support.

4,354,066

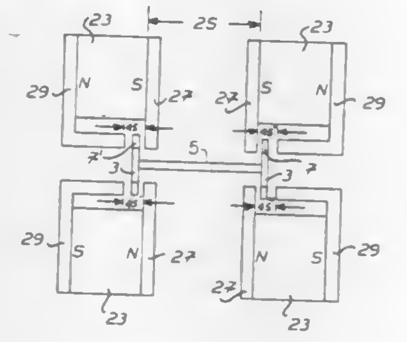
RIGID-DIAPHRAGM TRANSDUCER WITH PLURAL COILS

Robert W. Necoechea, 8609 DeSoto, Apt. 306, Canoga Park, Calif. 91304

Continuation-in-part of Ser. No. 42,837, May 29, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 186,942

Int. Cl.³ H04R *7/14*

U.S. Cl. 179—115.5 DV **31 Claims**



1. In an electroacoustic transducer, the combination comprising:

- A. drives means including at least two magnet assemblies each providing a pair of opposed magnetic gaps therein, said magnet assemblies being spaced from one another a distance to form an acoustical gap; and
- B. a diaphragm and coil support assembly arrangeable in the magnetic and acoustical gaps of the driver means and including:
  - (1) coil support means comprising a pair of elongated members spaced apart a distance greater than said acoustical gap;
  - (2) a spirally wound coil on each of said elongated members, the ends of said coils adapted to be coupled to electrical signal generating means; and
  - (3) a non-flexible non-planar diaphragm mounted on and arranged to extend between said elongated members, one of said elongated members being located in each of said pair of magnetic gaps and said diaphragm being located in said acoustical gap.

4,354,067

AUDIO-BAND ELECTROMECHANICAL VIBRATION CONVERTER

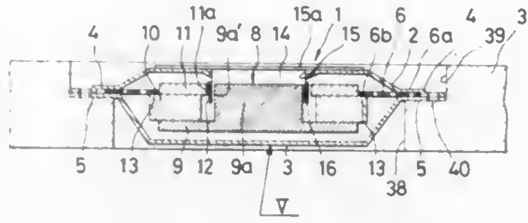
Kyota Yamada, and Akira Komatsu, both of Tokyo, Japan, assignors to Bodysonic Kabushiki Kaisha, Tokyo, Japan

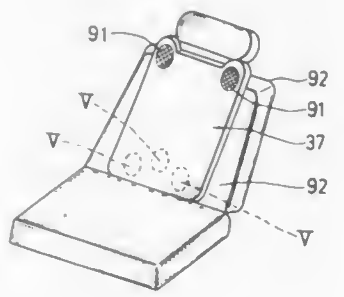
Filed Mar. 30, 1979, Ser. No. 25,501

Claims priority, application Japan, May 17, 1978, 53-58518; May 31, 1978, 53-65486; May 31, 1978, 53-65487; May 31, 1978, 53-65488; Jun. 22, 1978, 53-75580; Jul. 27, 1978, 53-103285[U]; Jul. 27, 1978, 53-103286[U]; Aug. 7, 1978, 53-96014; Oct. 5, 1978, 53-137134[U]; Nov. 20, 1978, 53-159887[U]; Dec. 26, 1978, 53-181743[U]

Int. Cl.³ H04R *1/00, 9/00*

U.S. Cl. 179—146 H **24 Claims**





1. Audio-band electromechanical vibration converter comprising:

- a flat hollow casing comprising upper and lower frames;
- a flat damper means which is held within said casing, its outer edge being attached to said casing and its middle portion being freely moveable in said casing;
- a yoke attached to the inner edge of said damper means which extends outside of the yoke, said yoke being held by said damper means within said casing such that said yoke can displace relative to said casing, said yoke having a magnetic pole and a magnetic gap which is formed on a plane containing said damper means; and
- a coil installed in said magnetic gap of said yoke, said coil being set on said plane; whereby a mechanical vibration is produced within said casing through relative displacement between said casing and said yoke, which results from magnetic interaction between the magnetic force developed in said coil and the magnetic force of said magnetic gap.

4,354,068

LONG TRAVEL ELASTOMER KEYBOARD

Anthony J. Sobol, III, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

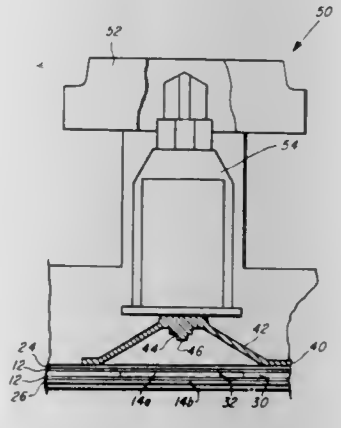
Filed Feb. 4, 1980, Ser. No. 118,284

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A **7 Claims**

1. A keyboard assembly comprising:

- a first substrate having first switch points,
- a second flexible substrate having conducting stripes and second switch points, said first and second switch points facing one another in opposed complementary relation,
- an insulating spacer between said first and second substrates having a plurality of apertures in alignment with said first and second switch points, and
- a third substrate positioned over said second substrate and having a dome over the locations of each of said first and second switch points to be deformed to provide travel and tactile feedback when a force is applied to a dome for deforming a portion of the second substrate into a spacer aperture for pressing switch points of the first and second substrates together through the insulating spacer aperture, characterized in that the second substrate is formed of a first selected material for receiving said conductive stripes and switch points thereon and has a first selected thickness permitting repeated flexing deformation of the second substrate to a first selected extent over a long service life, the insulating spacer has a selected limited thickness permitting said second substrate portion to be repeatedly deformed to said first selected extent to press first and second switch points together through said insulating spacer apertures throughout said long service life, and said third substrate is formed of a second, elastomeric material and has each dome thereof proportioned to be deformed to a relatively much greater extent to provide long travel and high tactile feedback when said force is applied to a dome for deforming a portion of the second substrate into a spacer aperture for pressing said switch points of the first and second substrates together through the insulating spacer aperture throughout said long service life.



4,354,069

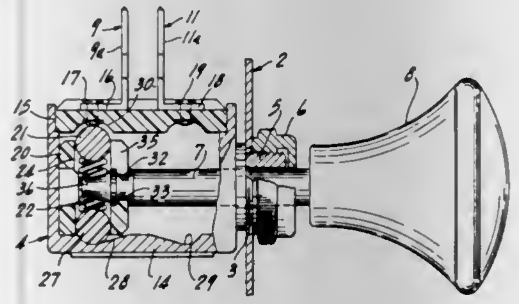
SLIDE SWITCH

Robert P. Ragen, Milwaukee, WI, assignor to Clum Manufacturing Co., Inc., Hartland, Wis.

Filed May 6, 1980, Ser. No. 147,202

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 R **11 Claims**



1. A push-pull switch unit comprising a mounting support having an elongated recess, a set of spaced electrical contact means secured in fixed position within said recess of said support and in spaced relation to each other, a contact roller means rotatably mounted and having an axis parallel to said recess and movable into and from said recess, resilient means urging said contact roller means outwardly toward said recess, and means to reciprocally move said support and said contact roller means relative to each other to move said roller means into said recess and thereby to selectively engage said fixed contact means and said roller means to electrically connect said spaced contact means and to move said roller means from said recess, a bridging contact carrier mounted to said support for reciprocal movement past said spaced contact means, an external operating member slidably supported on said support and secured to said carrier for reciprocally positioning said carrier and said roller means into engagement with said spaced electrical contact means, a latch roller means mounted in said carrier in alignment with said contact roller means, said resilient means urging said contact roller means outwardly of said carrier into engagement with said support and said latch roller means outwardly into engagement with said support, said support having latch means for releasably engaging said latch roller means to hold said carrier in a first position with said contact roller means engaging said spaced contact means and in a second position with said contact roller means spaced from said spaced contact means.

10. A switch unit comprising a support having a mounting means for securing said switch unit to another member, a set of spaced contact means secured in fixed position to said support in spaced relation to each other, a contact carrier unit movably mounted to said support and having bridging contact means for selection engagement with said spaced contact means, an actuator member connected to said carrier unit and extending from said carrier unit for manually positioning of said carrier unit, a snap-together fixed connection between said carrier unit and said actuator member and including a coupling opening defined by a wall member and a coupling pin member having a holding recess, one of said members including a resiliently mounted movable wall permitting effective enlargement of said opening and movement of the pin member into said opening of said wall and meshing of said holding recess and said wall member.

4,354,070

DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE

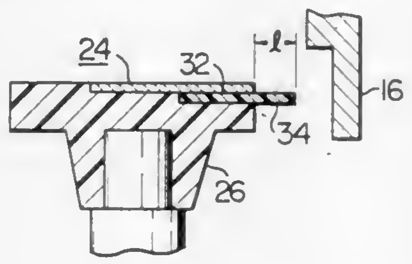
Masazumi Sone, Tokyo; Takao Miyashita, Mito, and Hiromitsu Nagae, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,484

Claims priority, application Japan, Mar. 12, 1980, 55-30341

Int. Cl.³ H01H *19/06, 1/00*

U.S. Cl. 200—19 R **5 Claims**

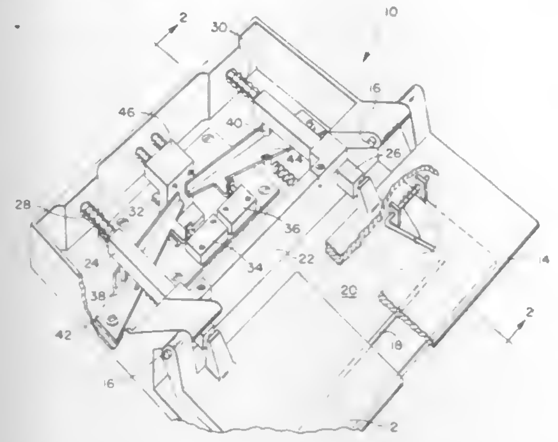


1. A distributor for internal combustion engine comprising:

- (a) a cam shaft located within a housing to rotate in synchronism with the revolution of an engine;
- (b) a cap detachably engaged with said housing;
- (c) a stationary electrode fastened to said caps the number of which is the same as that of cylinders of the engine;
- (d) a central terminal to which a high voltage is introduced from an ignition coil and which is secured to said cap;
- (e) an insulating base secured to said cam shaft;
- (f) a first electrode of conductive metal secured to said insulating base and which is in contact with a center carbon brush electrically connected to said central terminal; and
- (g) a second electrode electrically connected to said first electrode, secured to said insulating base to oppose said stationary electrode, and which is formed of the mixture of fine particles of conductive and resistive materials, the minimum length from the discharge end of said second electrode to the first contact between said first and second electrodes being selected to be 5 mm or above.

4,354,071
PLURAL PEDAL FOOT CONTROL

Helmut Pietschmann, Karlsbad, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.
Filed May 15, 1980, Ser. No. 150,057
Int. Cl.³ H01H *21/26*
U.S. Cl. 200—86.5 4 Claims

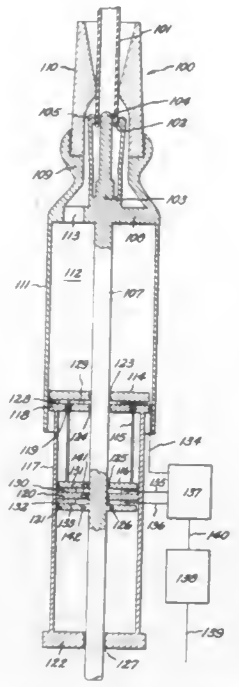


1. In a foot controller having plural pedals for actuating and controlling selected functions responsive to a user stepping on and depressing one or more of the pedals, the improvement comprising a system to provide each of said pedals with substantially the same tactile feel to the user whether the pedals are depressed singly or in combination comprising:
(a) a base (**20**) including means defining a generally horizontally oriented pivotal axis (**16**) spaced above said base;
(b) at least two, side-by-side foot pedals (**12, 14**) mounted to said base for movement about said pivotal axis;
(c) plural helper spring means (**24, 26, 28, 30**), one associated with each foot pedal for independently urging its associated pedal upwardly to a first position;
(d) a main spring (**18**) between said base (**20**) and pedals (**12, 14**) for urging said pedals upwardly about said pivotal axis (**16**) to said first position, said main spring being common to all of said pedals and being substantially stronger than said helper spring means so that depressing, singly, any one of said pedals against said main spring removes the bias of said main spring from each pedal not depressed; and
(e) each pedal not depressed being maintained at said first position by its associated helper spring means.

4,354,072
PYROLYTIC CARTRIDGE INTERRUPTION ASSISTANCE ACTUATOR FOR PUFFER BREAKER

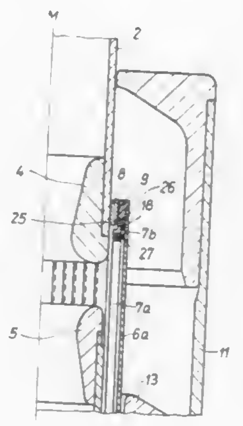
Heinz O. Noeske, Cherry Hill, N.J., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 22, 1979, Ser. No. 87,403
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A 11 Claims

1. A circuit breaker comprising:
a first main contact;
a second main contact affixed to an actuating rod and movable relative to said first main contact between a first position in which said first main contact is in abutment with said second main contact and a second position in which said first main contact and said second main contact are separated;
nozzle means surrounding said contacts;
an enclosed chamber for storing insulating gas, said chamber being in flow communication with said nozzle means;
current detection means connected to said first and second contacts for measuring a parameter of current flow through said contacts;
a first actuating means for moving said second contact relative to said first contact when opening is required during operation while the magnitude of current flow is below a predetermined level; and
a second actuating means for moving said second contact relative to said first contact when said parameter of current flow through said contacts detected by said current detection means indicates that rapid contact separation is required.



4,354,073
ELECTRIC GAS BLAST CIRCUIT BREAKER

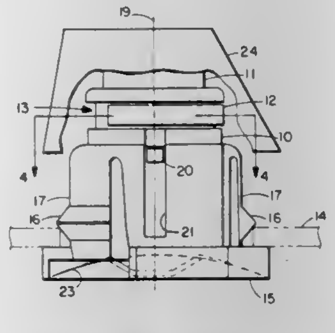
Ruediger Hess, and Heiner Marin, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 3, 1980, Ser. No. 126,206
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2908982
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A 8 Claims



1. An electric gas blast circuit breaker having two stationary contact pieces, a switching unit movable between closed and open positions for electrically bridging said contact pieces in the closed position and for electrically disconnecting said contact pieces in the open position whereby an arc develops when said switching unit is moved to the open position, and gas blast means for blasting a stream of gas through the arc when said switching unit is moved to the open position, said switching unit including a supporting body, a slide contact ring made of arc-resistant material slideably contacting one of said contact pieces in the closed position, said ring being mounted on said supporting body so as to be electrically insulated therefrom, and a plurality of elongated contact elements disposed in said supporting body at least some of said contact elements making direct contact with and electrically connecting said contact pieces when said switching unit is in the closed position, and means for electrically connecting as least one of said contact elements with said slide-contact ring when said switching unit is in the closed position and through all movement thereof into the open position.

4,354,074
ALTERNATE ACTION MECHANISM

Kenneth C. Aurand; Ralph J. Schneider, both of Freeport, and Gale R. Turner, Orangeville, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 1, 1981, Ser. No. 279,410
Int. Cl.³ H01H *13/56*
U.S. Cl. 200—153 J 13 Claims



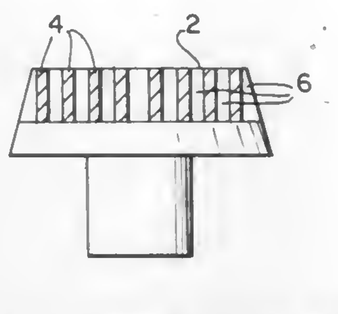
1. In an alternate action mechanism of the type having an inner member telescopingly mounted in an outer member for movement relative thereto along an axis between first and second terminal positions and biased toward the first terminal position, the inner member having a cam track adapted to cooperate with a cam follower carried by the outer member and constrained from movement relative thereto along the axis, cooperation of the cam track and cam follower being such that successive actuations of the inner member beyond the second terminal position alternately cause the inner member to be latched at and released from the second terminal position, movement of the inner member relative to the outer member requiring oscillation of the cam follower transverse to the axis, the improvement which comprises:
an annular channel in the outer member encircling the axis; and
a C-shaped collar having a pair of extremities and an inwardly projecting cam follower between the extremities, said collar being configured to be positioned in said annular channel and the extremities thereof being configured to cooperate with the outer member so as to bias the cam follower toward the axis so that the cam follower engages the cam track, whereby said collar is permitted to oscillate about the axis as required for the cam follower to follow the cam track.

4,354,075
ELECTRICAL CONTACT ELEMENT AND PROCESS FOR ITS MANUFACTURE

Dieter Stöckel, Birkenfeld, and Hans H. Kocher, Pforzheim-Dillweissenstein, both of Fed. Rep. of Germany, assignors to G. Rau, Pforzheim, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 22,358, Mar. 20, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,841
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813087
Int. Cl.³ H01H *1/02*
U.S. Cl. 200—262 7 Claims

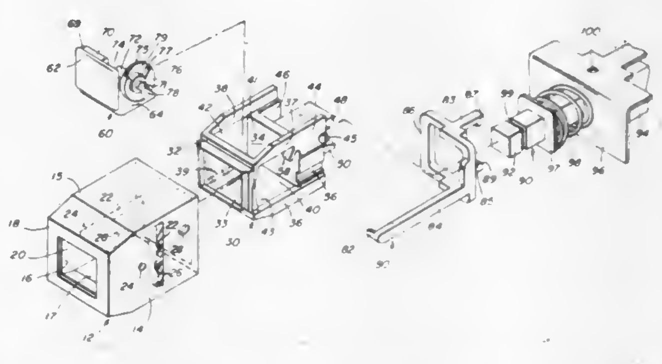
1. An electrical contact element formed of composite material which is resistant to metal migration during use including, in a major proportion by weight, at least copper and palladium which are soluble in each other, which are heterogeneously combined in said composite material, said composite material being a fiber composite material including said copper component in the form of a matrix and said palladium component in the form of a large number of uniformly extending fibers which are embedded and metallurgically bonded to said copper matrix and which extend substantially entirely through said matrix, said fibers and said matrix having been produced by joint plastic shaping of a bundle of copper coated palladium wires which are initially arranged in parallel orientation to each other, the diameter of said fibers being from 0.001 to 0.1 mm with the fibers substantially at right-angle to the contact surface in the finished product.

2. An electrical contact element formed of composite material which is resistant to metal migration during use including, in a major proportion be weight, at least silver and palladium which are soluble in each other, which are heterogeneously combined in said composite material, said composite material being a fiber composite material including said silver component in the form of a matrix and said palladium component in the form of a large number of uniformly extending fibers which are embedded and metallurgically bonded to said silver matrix and which extend substantially entirely through said matrix, said fibers and said matrix having been produced by joint plastic shaping of a bundle of silver coated palladium wires which are initially arranged in parallel orientation to each other, the diameter of said fibers being from 0.001 to 0.1 mm with the fibers substantially at right-angle to the contact surface in the finished product.



4,354,076
SWITCH POSITION INDICATOR

Kurt Lutzenberger, Arlington Heights, Ill., assignor to Switchcraft, Inc., Chicago, Ill.
Filed Sep. 8, 1980, Ser. No. 184,858
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—308 5 Claims



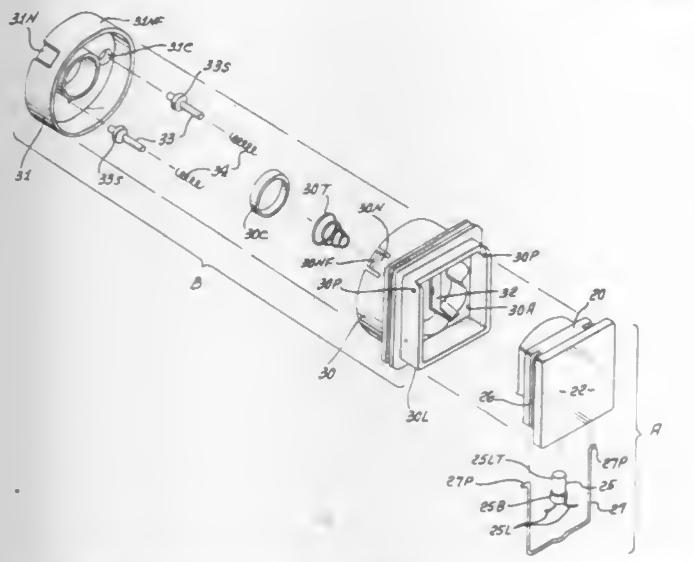
1. A button assembly for a control switch device having a reciprocally movable actuator extended from a relatively fixed body portion of the device, said button assembly comprising:
a housing having a window portion and having means attachable to said actuator for transmitting reciprocal movement of said actuator to said housing;
rotor means rotatably mounted to the housing for rotation about an axis fixedly disposed relative to said window portion of the housing, said rotor means including position indicating means having a plurality of portions disposed for rotation sequentially into alignment with said window portion of the housing in accordance with the rotation of said rotor means, said rotor means also including an end wall provided with a cam-surface means to permit rotation of said rotor means only in response to movements of said actuator signifying a change in operative condition of said switch device; and
motion convertor means disposed for connection to said fixed body portion of the control device and extended into

said housing, said motion convertor means including an eccentric arm disposed to engage said cam surface means for converting reciprocal movement of said actuator signifying a change in operative condition of said switch device into corresponding rotational movement of said rotor means and aligning a respective portion of said position indicating means with said window portion of the housing to indicate the position of said actuator relative to said fixed body portion of the control device.

4,354,077

PUSH-BUTTON PANEL ASSEMBLY INCLUDING AN INDIVIDUALLY LIGHTED PUSH-BUTTON SWITCH ASSEMBLY

Billy D. McMains, Garden Grove; Richard G. Mendoza, Downey, and Gerald L. Clark, Los Alamitos, all of Calif., assignors to Jay-El Products Incorporated, Gardena, Calif.
Filed Jun. 11, 1980, Ser. No. 158,566
Int. Cl.^{3} H01H *9/18*
U.S. Cl. 200—314 **10 Claims**

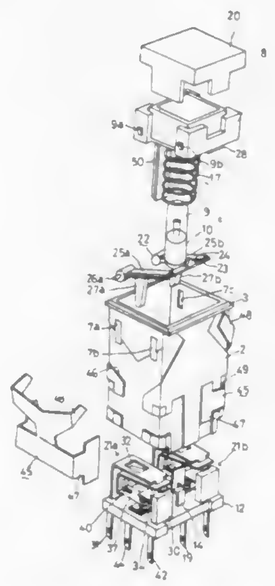


1. A push-button switch assembly for a keyboard comprising
a lamp capsule having a closed, hollow interior constructed and defined by an operating surface on one side thereof and a lamp mounting socket on the opposite side thereof for slidably receiving a wire lead lamp to permit the lamp to extend within the capsule interior for illuminating the hollow interior of the capsule,
a wire lead lamp having a light transmitting end and a non-light transmitting base portion, the base portion having the lamp wire leads extending outwardly therefrom and bent to extend outwardly from opposite sides of the base portion,
said lamp being slidably mounted in said mounting socket with only the bottom of the base portion being visible and with the wire leads overlying said opposite side of the lamp capsule,
housing means for the lamp capsule including a body portion having a lamp capsule receiving socket defined at one end thereof for slidably receiving the lamp capsule therein to permit only the operating surface to be exposed outside of the housing body portion when it is positioned within said socket to thereby close off said socket,
means for swingably mounting said lamp capsule to said housing body portion to permit the lamp capsule to be moved between an open and closed position relative to the capsule receiving socket and to expose said lamp when in the open position,
the capsule receiving socket for the body portion mounting a pair of wiping electrical contacts therein for inter-engagement with the lead wires of the lamp when the lamp capsule is in a closed position to provide an electrical conductive circuit for energizing the lamp,
the opposite end of the housing body portion slidably mounting an enclosed push-button base means for permitting relative movement between the body portion and the base means, said base means comprising a pair of resiliently mounted electrical contact pins having ends extending outside of the base means at the end opposite from the body portion, the outside of the body portion having an electrical conductive segment defined thereon in electrical conductive relationship with said wiping contacts and in electrical conductive relationship with said contact pins to permit the lamp to be continuously energized therethrough, said base means housing a resiliently mounted switch actuator secured to said housing body portion and adapted to be responsive to a force applied to the operating surface of the body portion to be moved therewith for transmitting a switch operating motion through said base means; the relative movement between the body portion and the base means for said housing placing said elements of the housing in a telescoped relationship.

4,354,078

ILLUMINATING TYPE PUSH BUTTON SWITCH

Sumio Yoshimura, Sekimachi, Japan, assignor to Sun Dengyosha Company, Limited, Tokyo, Japan
Filed Nov. 25, 1980, Ser. No. 210,392
Claims priority, application Japan, Feb. 13, 1980, 55-15575
Int. Cl.^{3} H01H *9/16, 9/02, 5/06*
U.S. Cl. 200—314 **7 Claims**



1. An illuminating type push button switch comprising:
a casing having a bottom plate;
microswitches mounted on said bottom plate;
a lamp socket supporting a lamp, said lamp socket being positioned laterally adjacent said microswitches and comprising a lamp support member at a position spaced upwardly from said bottom plate, a contact plate having a first end inclined inwardly toward said lamp support member and a second end connected to an external terminal, and a lamp bottom terminal contact plate disposed on said bottom plate directly beneath said lamp support member;
a push member mounted for heightwise movement relative to said casing; and
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member.

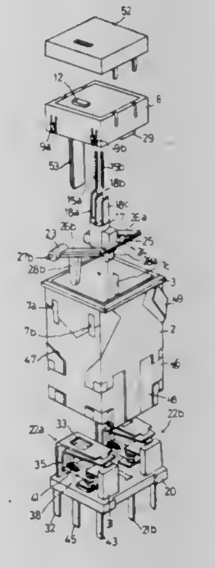
5. An illuminating type push button switch comprising:
a casing having a bottom plate;
microswitches mounted on said bottom plate;
a lamp socket supporting a lamp and positioned laterally adjacent said microswitches;
a push member mounted for heightwise movement relative to said casing; and
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member,

said actuator having a substantially ⊐-shaped configuration formed by a pair of side rods joined by a transverse rod, said actuator being mounted for vertical pivotal movement in said casing by means of shafts on said pair of side rods, said transverse rod having on the upper surface thereof a projection in abutment with said push member, whereby said heightwise movement of said push member causes said actuator to pivot vertically about said shafts, and said side rods having on lower surfaces operating members in abutment with said microswitches.

4,354,079

ILLUMINATING TYPE PUSH BUTTON SWITCH

Sumio Yoshimura, Tokyo, Japan, assignor to Sun Dengyosha Company, Limited, Tokyo, Japan
Filed Nov. 25, 1980, Ser. No. 210,393
Claims priority, application Japan, Feb. 13, 1980, 55-15574
Int. Cl.^{3} H01H *9/16*
U.S. Cl. 200—314 **7 Claims**



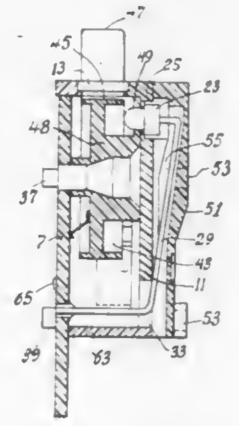
1. An illuminating type push button switch comprising:
a casing having fixedly positioned therein microswitches;
a push member mounted for heightwise movement relative to said casing;
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member;
a light emitting diode mounted on said push member and having terminals;
exterior terminals extending from said casing;
plural coil springs, one each of said coil springs being positioned between a said terminal of said light emitting diode and a respective said exterior terminal, such that downward movement of said push member causes said coil springs to electrically connect said terminals of said light emitting diode with respective said exterior terminals; and
spring support means for mounting said coil springs in said casing and having at least one guide plate means for preventing contact between said coil springs.

4. An illuminating type push button switch comprising:
a casing having a bottom plate;
microswitches mounted on said bottom plate;
a push member mounted for heightwise movement relative to said casing;
an actuator mounted on said casing to be operated by said push member and in abutment with said microswitches to achieve ON-OFF control of said microswitches in response to said heightwise movement of said push member;
each said microswitch comprising normally open and normally closed contacts mounted on said bottom plate in opposed relation with a predetermined vertical space therebetween, a fixed bed supported on said bottom plate, a substantially L-shaped common terminal having a first end extending through said bottom plate to the exterior of said casing and a second secured to said fixed bed, an L-shaped movable member extending along said common terminal and having a first end pivotally supported on said common terminal and a second end having formed therein a longitudinally extending notch and a laterally extending engaging groove, a conductive plate having at a first end thereof a pair of contacts positioned between said normally open and normally closed contacts and in a second end thereof a longitudinally extending notch, said second end of said conductive plate being fitted and engaged with said engaging groove of said movable member, and a coil spring having a first end secured to an innermost edge defining said notch of said conductive plate and a second end secured to said common terminal and extending through said notch in said movable member at a position thereof beneath said engaging groove;
a light emitting diode mounted on said push member and having terminals; and
plural coil springs, one each of said coil springs being positioned to electrically connect a respective said terminal of said light emitting diode with a respective exterior terminal upon downward movement of said push member.

4,354,080

LIGHTED CODING SWITCH

Guenter Murmann, Pegnitz, Fed. Rep. of Germany, assignor to Cherry Electrical Products Corporation, Waukegan, Ill.
Filed Nov. 5, 1980, Ser. No. 204,275
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 7931211[U]; Sep. 30, 1980, 8026144[U]
Int. Cl.^{3} H01H *9/00*
U.S. Cl. 200—316 **13 Claims**



1. A lighted coding switch, comprising:
an encoding wheel having a peripheral rim with symbols formed along its outside surface;
means for selectively rotating the encoding wheel;
a housing for retaining and rotatively supporting said encoding wheel, the housing including a back wall, a printed circuit board forming a front wall and peripheral side walls, one of said side walls having means for viewing a portion of the outside surface of the rim, the back wall having a light support aperture located adjacent to said means for viewing;
a light source for illuminating the viewed portion of the rim;
means for supporting the light source in said aperture and outside the area defined within the rim, so that the light source illuminates at least one symbol disposed within the viewed portion of the rim; and
means for conductively engaging the printed circuit board as the coding wheel rotates for defining electrical signals representative of illuminated symbols of the viewed portion of the rim.

4,354,081

PUSH-BUTTON OR KEYBOARD WITH DEPRESSABLE KEYS

Edouard Serras-Paulet, Casa Nostra Pech des Treilles, Puylaroque, France (82240)

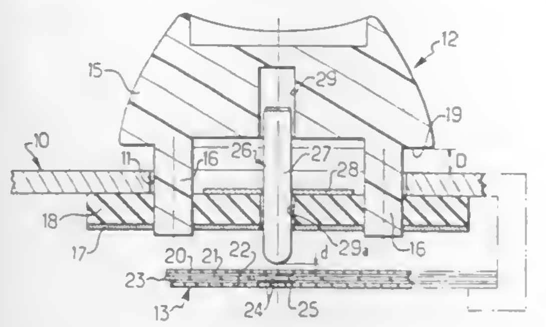
PCT No. PCT/FR79/00114, § 371 Date Jul. 22, 1980, § 102(e) Date Jul. 22, 1980, PCT Pub. No. WO80/01219, PCT Pub. Date Jun. 12, 1980

PCT Filed Nov. 28, 1979, Ser. No. 261,239

Claims priority, application France, Nov. 29, 1978, 78 33734

Int. Cl.^{3} H01H *13/00*

U.S. Cl. 200—340 **13 Claims**



1. A switch device comprising; an upper plate formed with a hole, a depressable key extending through said hole and being movable between a rest and a working position, return means provided on the lower end of the key and cooperating by megnetic attraction with the upper plate for returning the key from its working position to its rest position, a free piston guided within the device for reciprocal movement relative to the key and in the same direction as the key, a lower plate located under the upper plate at a distance therefrom, a switchable element carried by the lower plate and adapted to be actuated by the free piston when the key is depressed from its rest position, and magnetic means being provided on the key and the free piston and cooperating with each other for permanently exerting a magnetic attraction force on the free piston.

4,354,082

COOKING VESSEL FOR AN INDUCTION COOKING APPLIANCE

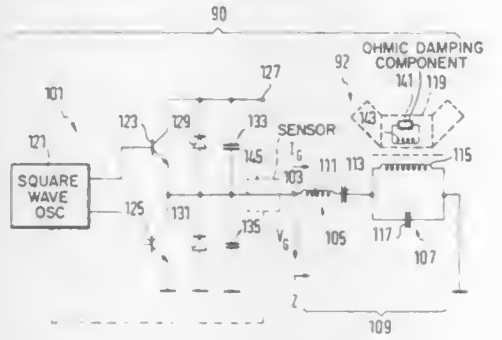
Rudy Tellert, Schweinfurt, and Wolfgang Fischer, Königsberg, both of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,306

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906912

Int. Cl.^{3} H05B *6/08, 6/12*

U.S. Cl. 219—10.49 R **17 Claims**



1. An induction cooking arrangement, comprising:

an induction cooking appliance, including a square wave voltage generator, a series resonant circuit whose resonant frequency is lower than the frequency of the third harmonic of the fundamental frequency of said square wave voltage generator, a parallel resonant circuit coupled in series with said series resonant circuit, the resonant frequency of said parallel resonant circuit being substantially equal to the fundamental frequency of said square wave voltage generator and smaller than the resonant frequency of said series resonant circuit, and

a cooking vessel including walls and a bottom, said bottom including an eddy current induction layer composed of a conductive, non-magnetic material coupleable to said parallel resonant circuit, the thickness of said eddy current induction layer for generation of a load phase displacement of approximately 20° to 40° between the square wave output voltage and the fundamental frequency component of the output current of said square wave voltage generator, the induction layer having one of a number of constructions with a specific electrical resistance less than 0.035×10^{-6} Ωm or more than 0.035×10^{-6} Ωm, and thinner than 0.2 mm for a construction whose specific electric resistance of the material of the eddy current induction layer is smaller than 0.035×10^{-6} Ωm, and thicker than 0.2 mm for a construction whose specific electric resistance is greater than 0.035×10^{-6} Ωm.

4,354,083

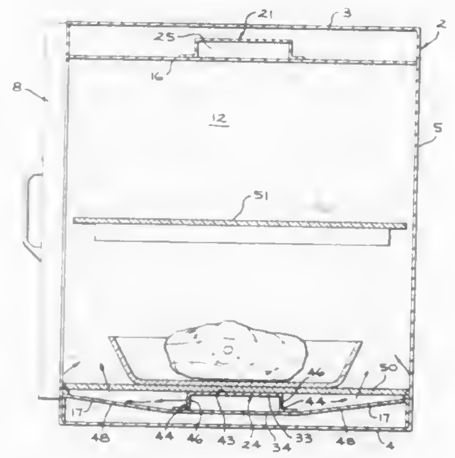
MICROWAVE OVEN WITH NOVEL ENERGY DISTRIBUTION ARRANGEMENT

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 5, 1980, Ser. No. 204,126

Int. Cl.^{3} H05B *6/72*

U.S. Cl. 219—10.55 F **10 Claims**



1. A microwave oven comprising a resonant cooking chamber, a support shelf within said cooking chamber for carrying an object to be heated, a rectangular waveguide located below said support shelf, said waveguide having a top wall, and side walls extending perpendicular to said top wall, the top wall of said waveguide spaced not more than a wavelength of the applied microwave energy from said support, first openings in said top wall for radiating microwave energy toward said shelf, second openings in said side walls, microwave energy reflecting means spaced from said second openings in said side walls for reflecting microwave energy passing through said side wall openings upwardly toward said shelf.

4,354,084

TWIN BAKING OVEN, PARTICULARLY BUILT-IN BAKING OVEN

Julius Husslein, Vachendorf, and Johann Klement, Traunreut, both of Fed. Rep. of Germany, assignors to Bosch Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

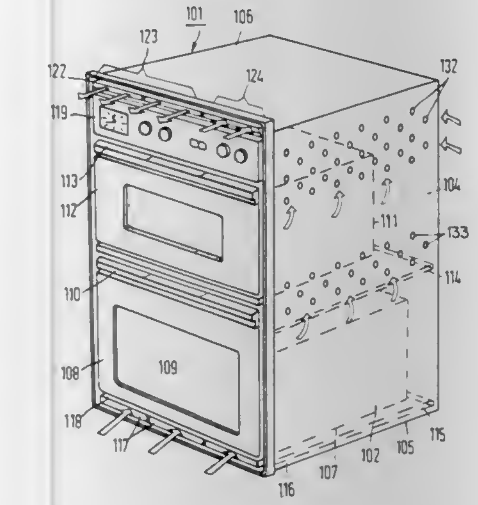
Filed Apr. 13, 1979, Ser. No. 12,127

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825461

Int. Cl.^{3} H05B *6/64*

U.S. Cl. 219—10.55 R **2 Claims**

1. In a double baking oven unit having two baking ovens disposed one above the other and enclosed in a common housing, one of the ovens being a microwave oven, and switching, control and operating devices for both of the ovens disposed in an upper space in the housing, cooling-air channels formed with inlet and outlet openings provided outside the two baking ovens, shielding plates thermally shielding the lower baking oven from the upper baking oven and from said cooling-air channels, said cooling-air inlet opening being located at a lower limit of the housing below the lower baking oven and below a shielding plate associated therewith, said cooling-air outlet opening as well as a blower being connected to a common exhaust channel disposed above the upper baking oven drawing air from said cooling-air inlet opening in the form of a first ventilating system, the upper baking oven being a microwave oven, and including a microwave generator with a blower therefor disposed in the upper space in the housing in addition to said blower connected to said exhaust channel, said blower associated with said microwave generator having a suction port disposed in direct vicinity of an additional cooling-air inlet opening of the housing and having an outlet port being in communication with said common exhaust channel through said microwave oven forming a second ventilating system, said suction port being disposed between said microwave oven and said additional cooling-air inlet opening for receiving air before it reaches said microwave oven.



4,354,085

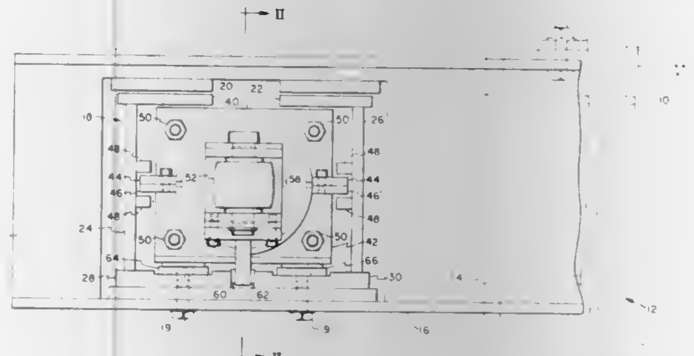
PIPE WELDER WITH IMPROVED SEAM SPREADER

Kenneth E. George, Jr., McKeesport, and Douglas E. Alexander, North Huntingdon, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 220,552

Int. Cl.^{3} B23K *9/32*

U.S. Cl. 219—59.1 **4 Claims**



1. In pipe seam welding apparatus, said apparatus including at least one weld head for joining opposite edges of the seam, an arbor having opposed faces against which opposite of the seam edges may be abutted to properly align them as they are closed preparatory to welding, a conveyor for transporting the pipe longitudinally onto the arbor, means for axially rotating the pipe prior to transport so as to properly align the seam edges with respect to the opposite faces of the arbor, and means for spreading the seam sufficiently to permit passage of the edges thereof onto the arbor, said spreader means including an elongated arm fixed in position adjacent but outward of an entry end of said arbor and extending axially in a transverse direction across the mid-point of the interior cross section of the pipe, and frictionless rollers mounted on opposite ends of the arm for contacting the interior pipe wall so as to spread the seam as the pipe is rolled thereover onto the arbor,

the improvement in said spreader means which comprises:

at least one fluid powered cylinder substituted axially for at least part of the length of said arm;

a bracket housing said cylinder, said cylinder being axially slidable back and forth therein so that equal forces are exerted against the pipe, thus preventing displacement of the seam from proper alignment with the arbor during spreading.

4,354,086

AUTOMATED CAN RESISTANCE WELDER

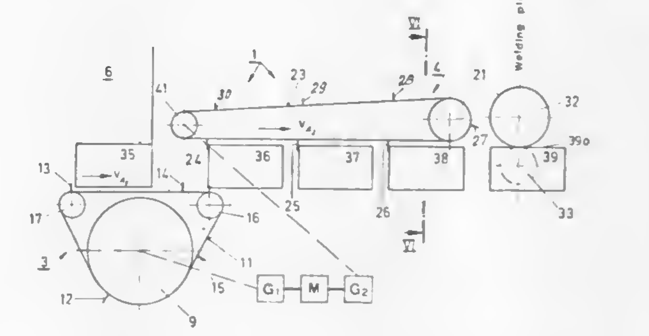
Paul Opprecht, Im hinteren Bernold, 8962 Bergdietikon, Switzerland

Continuation of Ser. No. 905,477, May 12, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 89,209

Claims priority, application Switzerland, Jun. 10, 1977, 7143/77

Int. Cl.^{3} B23K *11/16*

U.S. Cl. 219—64 **21 Claims**



1. A can body automated resistance welding machine, comprising:

means defining a roll former station for rolling blanks into can bodies moving in a predetermined direction of travel;

means defining a welding station including a pair of welding electrode rolls arranged downstream with regard to the direction of travel of the can bodies for welding the rolled can bodies;

two successively arranged driven transport systems defining first and second transport systems;

each of said transport systems comprising at least one endless revolving chain equipped with spaced entrainment members for engagement of the can bodies, the chain of the first transport system defining a first chain and the chain of the second transport system defining a second chain;

means mounting said first chain so as to pass through the roll former station;

first driving means for driving said first chain at a varying velocity represented by a first cyclic velocity curve such that said first chain periodically remains at least approximately stationary with a substantially zero velocity; and

second driving means for driving said second chain at a substantially sinusoidal velocity represented by a second, substantially sinusoidal velocity curve, said first and second velocity curves having a predetermined phase relationship whereby the rolled can bodies are transferred from the first chain to the second chain and experience a movement which is stabilizing for the can bodies.

4,354,087

WELDING POWDER FEED DEVICE

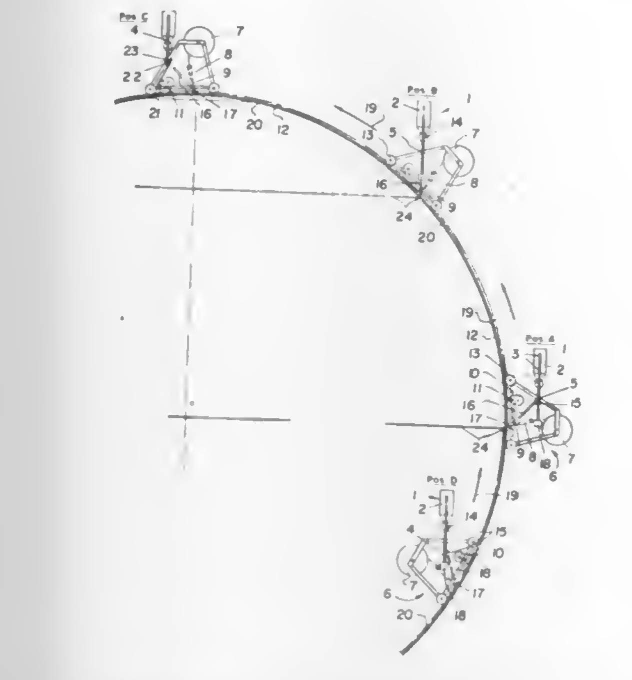
Hermann Osterlitz, Lengede, Fed. Rep. of Germany, assignor to Salzgitter AG, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,210

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936590

Int. Cl.³ B23K *9/18*

U.S. Cl. 219—73.2 **13 Claims**



1. In combination with a welding tractor for arc welding on vertical to horizontal curved surfaces of the type having a welding electrode, at least one welding powder vessel, and supply lines for powder application upon a weld zone and for covering the arc, an improved feed device for feeding granulated and powdery welding powders and additives comprising

at least one welding powder vessel for pivoting about a horizontal axis on the welding tractor,

means for holding the vessel such that the vessel is always held in a vertical position, independently of the angle of inclination of the welding tractor moving over the curved surfaces;

a supply conduit pivotably mounted on each welding powder vessel, a powder applicator in communication with said supply conduit for receiving welding powder, and surrounding said powder applicator being rigidly arrangd on the welding tractor and surrounding the welding electrode for applying the powder upon the weld area.

4,354,088

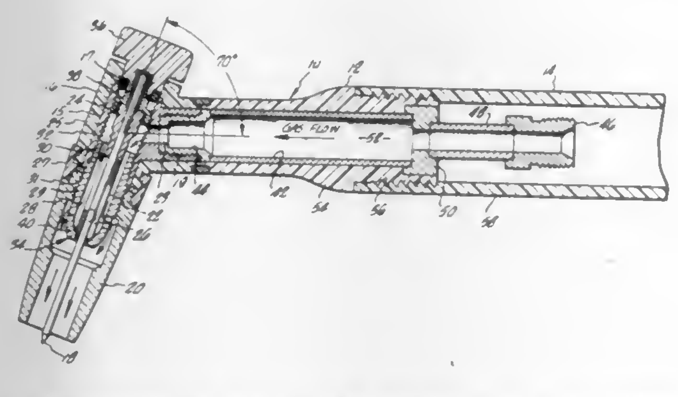
GAS SHIELDED WELDING TORCH

Richard B. Rehrig, 2812 Haven Way, Burbank, Calif. 91504

Continuation of Ser. No. 897,376, Apr. 18, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 161,736

Int. Cl.³ B23K *9/16*

U.S. Cl. 219—75 **5 Claims**



1. A welding torch of the gas shielded type comprising a body portion, a head portion threadably connected to said body portion and an electrode assembly carried by said head portion, said body portion having a central flow through conduit, a gas inlet in electrical and fluid communication with one end of said conduit and being adapted to be communicated with a supply of pressurized shielding gas, a gas outlet secured to the other end of said conduit in electrical and fluid communication therewith and defining threaded attachment means therein, said head portion including a central hollow tubular member defining a threaded bore portion for the mounting of said electrode assembly therein and a hollow threaded tubular connector portion extending radially from said bore portion, said connector portion being axially aligned with and threadably engaged with said attachment means on said gas outlet in electrical and fluid communication therewith and defining the sole electrical connection and physical securement between said head portion and said body portion such that said head portion can be threadably detached intact from said body portion by relative rotation between said head and body portions and a nozzle carried by said head portion for directing the flow of gas therefrom.

4,354,089

WELDING APPARATUS WITH FORWARD SHIFTABLE ELECTRODE TABLES

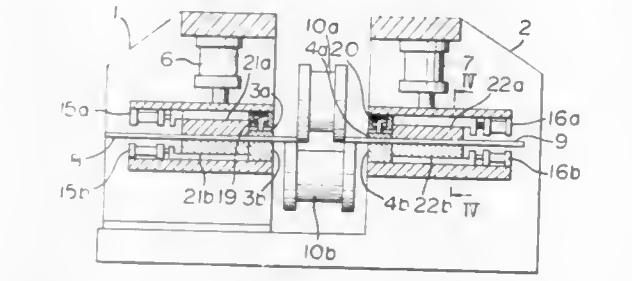
Hisashi Takahashi; Takao Kawanami, both of Tohkai; Keiji Sodeno, and Toshihiko Baba, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Continuation of Ser. No. 923,224, Jul. 10, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 96,198

Claims priority, application Japan, Jul. 12, 1977, 52-83457

Int. Cl.³ B23K *11/04*

U.S. Cl. 219—97 **5 Claims**



1. A welding apparatus which comprises:

a pair of clamping devices for clamping workpieces disposed with a specific gap and for shifting the workpieces to butt them in the welding operation; said specific gap being formed from a projecting portion extending outwardly from each of said workpieces and in the butting direction; said clamping devices remaining clamped onto said workpieces when the ends thereof are sheared by a shearing means to form said specific gap and throughout the remainder of said welding operation;

a pair of electrode tables which are respectively disposed in front of each of the clamping devices in the butting direction to feed a welding current through the workpieces when the workpieces are in a butting condition, said electrode tables being shifted relative to the clamping devices in the butting direction for the workpieces to adjust the distance between said electrode tables after the ends of the workpieces are sheared and to thereby reduce the length of said specific gap, and the clamping devices being more massive than the electrode tables to bear the greater part of the forces during the welding operation; said workpieces remaining stationary during the shifting movement of said electrode tables because of the clamping force of said pair of clamping devices, whereby the welding time period is reduced by eliminating a substantial amount of mechanical movement from the welding operation.

4,354,090

Z-BAR GUIDE APPARATUS AND METHOD OF BUTT WELDING

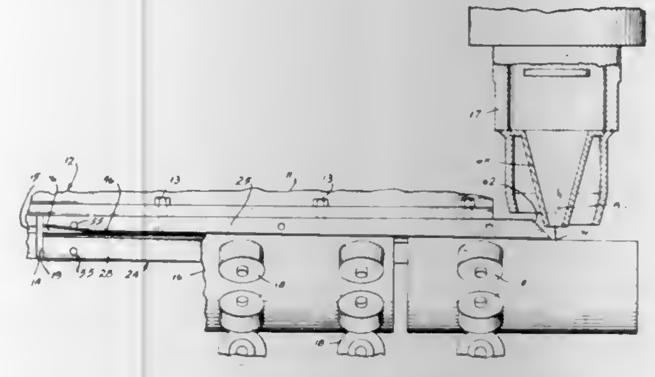
Carl J. Nilsen, Hopatcong, N.J., assignor to SWS Incorporated, Landing, N.J.

Continuation-in-part of Ser. No. 88,197, Oct. 23, 1979, Pat. No. 4,272,004. This application Feb. 10, 1981, Ser. No. 233,251

The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC **25 Claims**



1. A Z-Bar apparatus for guiding the edges of sheet material into intimate abutting edge-to-edge relationship with each other as the material is being moved to a welding zone adjacent thereto, comprising a Z-Bar having inlet and discharge ends, an elongated central guide member and elongated upper and lower guide bar means, said upper and lower guide bar means having first and second ends, said central guide member including upper and lower vertically offset portions connected by a generally vertically disposed interface, said offset portions having generally vertically aligned walls on opposite sides of said interface, means for mounting said upper and lower guide bar means on said walls of said upper and lower portions of said central guide member, respectively, said second ends of said upper and lower portions of said central guide member and said second ends of each of said upper and lower guide bars extending toward a welding apparatus, a first channel formed between said lower portion of said central guide member and said upper guide bar means, a second channel formed between said upper portion of said central guide member and said lower guide bar means, said first and second channels being in vertically spaced relationship with one another along at least a portion of the length of said central guide member and being of a size to slidably receive and guide the edges of the sheet material, at least one of said channels tapering relative to the other along its length so that said channels progressively converge vertically relative toward one another along said central guide member, said vertical interface between said upper and lower portions of said central guide member being continuously reduced in dimension along its length and terminating at a point spaced from said discharge end of said Z-Bar, said first and second channels converging into open communication along the length of said Z-Bar between said point at which said interface terminates and said discharge end of said Z-Bar so that the edges of the sheet material are brought into abutting edge-to-edge engagement within said Z-Bar, whereby the edges of the sheet material are in substantially abutting edge-to-edge engagement with one another as the sheet material is discharged from the Z-Bar apparatus into the welding zone.

4,354,091

PORTABLE AUXILIARY WARMING ROOM APPARATUS

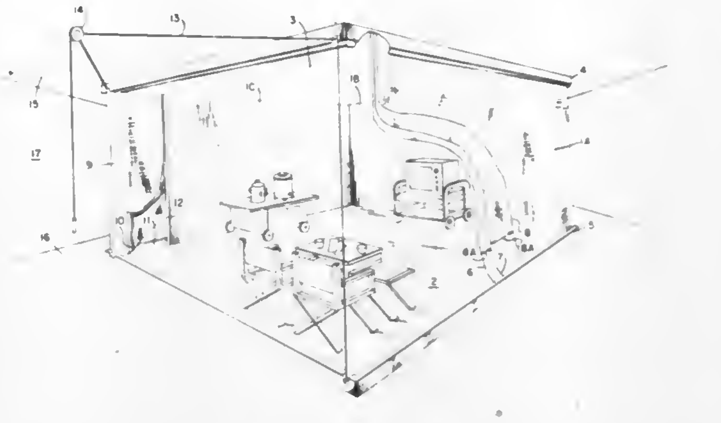
Claud N. Bain, 2846 Maple La., Fairfax, Va. 22030

Filed May 9, 1980, Ser. No. 148,442

Int. Cl.³ H05B *3/66*

U.S. Cl. 219—213 **26 Claims**

1. Portable auxiliary warming room apparatus comprising a frame for attachment to a fixed ceiling of a fixed room in a building, the frame being widely spaced from at least some of the fixed walls of the fixed room, electric blanket-like material flexible heating walls connected to the frame and hanging downward from the frame to a fixed floor of the fixed room, flexible heating means within the flexible walls, the flexible walls thus confining an auxiliary warming room spaced within the fixed room, the flexible walls further defining an engress and egress opening for permitting passage of a person between the fixed room and the auxiliary room, and an electric blanket-like flexible material flap connected to the frame above the opening and hanging downward for closing the opening, whereby a portable warming room with flexible heating walls is constructed within a fixed room of a building.



4,354,092

ELECTRIC HAIR CURLING IRON WITH RECHARGEABLE BATTERY POWER SUPPLY

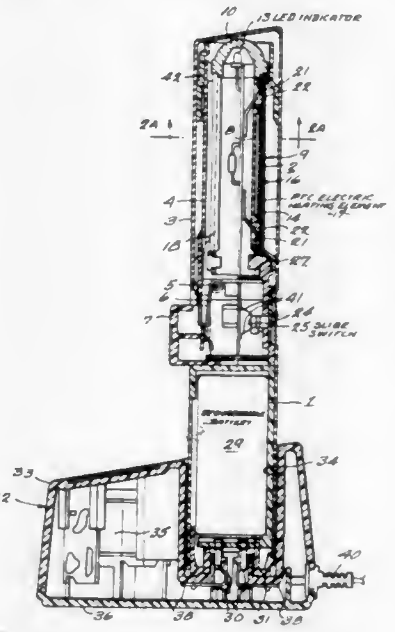
Keiji Manabe, Neyagawa; Tadanori Kawamura, Katano; Masao Fukunaga, Matsubara; Takeo Nishida, Osaka; Seishi Terakado, Toyonaka, and Toshiaki Nagakoshi, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 28, 1979, Ser. No. 80,773

Claims priority, application Japan, Oct. 5, 1978, 53-123162

Int. Cl.³ A45D *1/04;* H05B *1/02, 3/10*

U.S. Cl. 219—225 **12 Claims**



1. An electric hair iron comprising an elongated electrically heated ironing part for ironing the hair, said ironing part being disposed at the end of a handle part for manipulation of said ironing part,

characterized in that said handle part contains

a rechargeable storage battery therein and has electrical connecting means for electrically connecting said storage battery to a battery charger,

said ironing part comprising

an electric sheet heater of elongated tubular shape, said sheet heater including a layer of resistance material exhibiting a positive temperature coefficient of resistance whereby the temperature of the ironing part is automatically regulated, said tubular sheet heater forming the outside hair contacting surface of the ironing part, wherein said tubular sheet heater comprises a tubular metal substrate, the inner and outer surfaces of which are coated with electrical insulation, and having spaced electrodes on the inner electrical insulation, said layer of resistance material being formed on said electrodes,

an elongated longitudinally extending hair clip connected to said handle part so that said clip may pivot about an axis perpendicular to the axis of said ironing part for holding hair on said ironing part, and

means including a switch provided in said handle part for connection and disconnection of said storage battery to said heater.

4,354,093

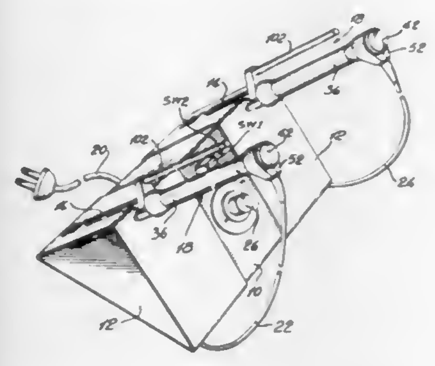
ELECTRICALLY HEATED HAIR CURLING INSTRUMENT AND TEMPERATURE CONTROL STAND THEREFORE

Jean-Claude Zago, 6286 Belleau St., Montreal, Quebec, Canada (H1P 1H6)

Filed May 19, 1980, Ser. No. 151,279

Int. Cl.^{3} H05B *1/02;* A45D *1/04, 2/36*

U.S. Cl. 219—225 **6 Claims**



1. A hair curling instrument comprising:
(a) an electrically-operated curling iron;
(b) a stand having means for supporting said curling iron when not in use;
(c) a temperature control box mounted on said stand;
(d) an electric cord for carrying electric power from the control box to the curling iron;
(e) said curling iron comprising a handle assembly, a detachable heating element mounted on the end of said handle assembly and a hair-clamping means pivotally mounted on said handle assembly;
(f) said handle assembly comprising a handle, a mandrel rotatably mounted within said handle, a plurality of slip rings secured to one end of said mandrel, means for connecting each wire of said electric cord to a different one of said rings, a first electrical connector member having a plurality of terminals secured to the other end of said mandrel, and means for electrically interconnecting each of said slip rings to a different terminal of said first connector member;
(g) said heating element comprising an open-ended hollow mandrel, two longitudinally-spaced heating coils electrically connected in series and mounted on said hollow mandrel, an outer heat-conducting tube covering said coils and having a closed end, a thermistor mounted on said mandrel between said heating coils and contacting the inside of said heat-conducting tube for measuring the temperature of said tube, a second electrical connector member having a plurality of terminals corresponding to the terminals of said first connector member and secured to the other end of said outer tube means for interconnecting said heating coils and said thermistor to different terminals of said second connector member, said second connector member having its terminals removably coupled to the corresponding terminals of said first connector member carried by said handle assembly;
(h) and a manually-adjustable temperature control circuit located in said control box, connected to said thermistor through wires of said power cord, said slip rings and first and second connector members and responsive to the temperature of the curling iron as measured by said thermistor for controlling the de-energization of the curling iron, depending on the type of hair being curled.

4,354,094

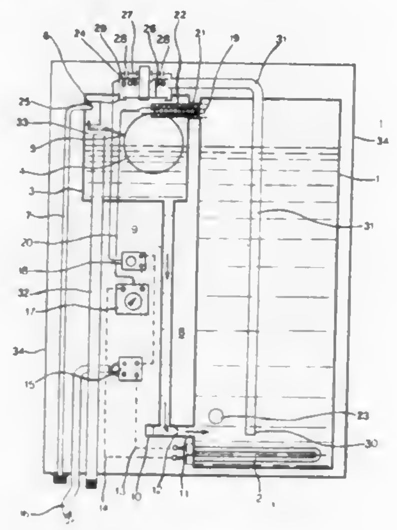
THERMOSTATICALLY CONTROLLED ELECTRIC CONTINUOUS WATER HEATING UNIT

Raymond D. Massey, Cambridge Park, and Leonard Newsam, Dulwich Hill, both of Australia, assignors to Zip Heaters (Aust.) Pty. Limited, New South Wales, Australia

Filed Nov. 12, 1980, Ser. No. 206,224

Int. Cl.^{3} H05B *1/02;* F24H *1/20*

U.S. Cl. 219—306 **7 Claims**



1. A continuous water heating unit comprising: a water heating tank containing an electric heating element near the bottom of said tank; a level control tank mounted alongside said heating tank, said level control tank incorporating a float actuable valve connected to a supply of water and arranged to maintain water in said level control tank within predetermined maximum and minimum level limits; a draw-off connection from said heating tank; a controlled flow connection between said level control tank and said water heating tank arranged to allow water to pass from said level control tank to said water heating tank at a controlled rate substantially equal to the boiling water heating rate of said element; a conduit communicating between said water heating tank and said level control tank above the maximum water level in said tanks; and a temperature control device including a temperature sensitive probe which is at least partially mounted in said conduit and is substantially surrounded by a gauze tube so as to direct steam from said water heating tank over said probe; said temperature control device being responsive to the temperature of water in said tank for supplying electricity to said heating element when the temperature of the water in said water heating tank is below boiling point and to cut the supply of electricity to said element when the temperature of the water in said water heating tank reaches boiling point.

4,354,095

INFRARED HEATING APPARATUS FOR HEATING WEB-LIKE MATERIAL

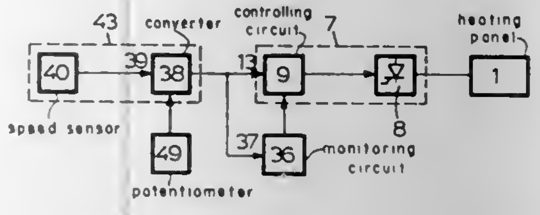
Jacob de Vries, Insulindeweg 10, 1462 MJ Middenbeemster, Netherlands

Filed Nov. 26, 1980, Ser. No. 210,382

Claims priority, application Netherlands, Apr. 2, 1980, 8001944

Int. Cl.^{3} H05B *1/02*

U.S. Cl. 219—388 **6 Claims**



1. Apparatus for use in heating a web-like material during its passage through a processing machine, said apparatus comprising at least one heating panel which faces a path of travel taken by a web-like material when passing through a processing machine, said panel is equipped with at least one short-to-medium-wave infrared-radiation producing element, a controlling circuit having means for varying the heat emission of the heating panel as a function of the magnitude of a control signal, a control means providing an output to the controlling circuit of the control signal, said control means comprising a sensor generating a signal corresponding to the rate of passage thereby of web-like material which signal is supplied to a first input of a control circuit, and a second input of the control circuit to which a manually operable adjusting device is connected for adjusting the rate of change of the control signal as a function of the signal corresponding to the rate of passage of web-like material.

4,354,096

HEATING ELEMENTS AND THERMOSTATS FOR USE IN THE BREEDING OF FISH FOR AQUARIA

Jean Claude Dumas, Auriol, France, assignor to Gloria S.A., Paris, France

Filed Jan. 28, 1981, Ser. No. 229,721

Claims priority, application France, Jan. 29, 1980, 80 01875

Int. Cl.^{3} H05B *3/36*

U.S. Cl. 219—523 **9 Claims**

1. In an electrical heating element useable in an aquarium, the improvement which comprises an electrical resistance containing conductive particles mixed with a hydrocarbonic polymer, said resistance having been shaped and subjected to a controlled thermal action to obtain a given electrical conduction of said mixture of conductive particles and polymer; and a coating of an electrically insulating material disposed in surrounding relation to said electrical resistance, said insulating material being a thermoplastic material which is heat-conductive and defines a waterproof and moldable coating.

4,354,097

ODOMETERS

Jean Menager, Luxembourg, Luxembourg, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

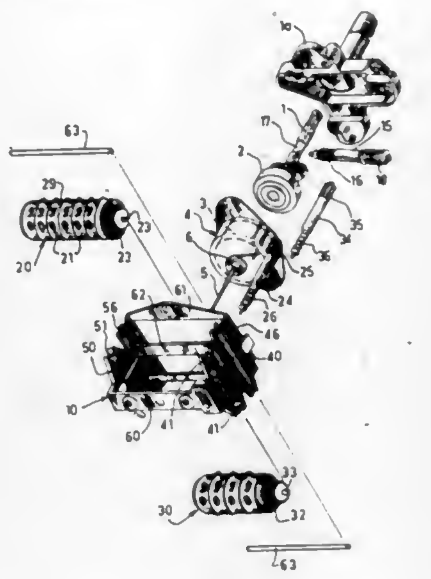
Filed Jul. 16, 1979, Ser. No. 57,889

Claims priority, application France, Jul. 20, 1978, 78 21522; Dec. 8, 1978, 78 34701

Int. Cl.^{3} G01C *22/00*

U.S. Cl. 235—96 **5 Claims**

1. An odometer for displaying the speed of a vehicle and the distance travelled, comprising an input shaft driven at a speed proportional to that of the vehicle, a speedometer unit connected to the input shaft, a mileage recording unit comprising a plurality of graduated drums mounted side by side on a common shaft and driven from the input shaft, a plurality of radially projecting stop lugs, and a frame for supporting said unit in rotation, characterized in that:
(a) the frame comprises two parallel walls provided with recesses for receiving the respective ends of the shaft of the mileage recording unit,



(b) wherein the frame comprises a bar extending between said walls parallel to said common shaft and providing stop means for the projecting stop lugs, and
(c) a locking element associated with the bar for immobilizing the stop lugs in their stop position, said element being force-fitted in recesses formed in said walls of the frame substantially in the plane of the bar.

4,354,098

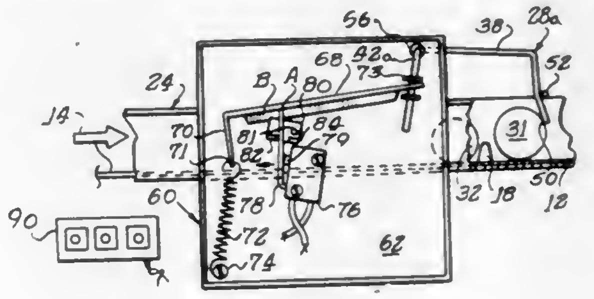
EGG COUNTER

William Peppler, Athens, Ga., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Nov. 3, 1981, Ser. No. 318,075

Int. Cl.^{3} G06M *7/00*

U.S. Cl. 235—98 B **16 Claims**



1. A counting apparatus comprising: signalling means for producing a detectable signal in response to passage of at least a portion of an object past a predetermined part of a predetermined path of travel, said signalling means being responsive to objects at least a portion of which is of a size over a predetermined range of sizes, and resetting means for resetting said signalling means following the production of each signal thereby so as to enable production of a further signal thereby in response to passage of a subsequent object past said predetermined part of said path of travel, said resetting means being responsive to a predetermined minimum incremental decrease in the size of the portion of said object at said predetermined part of said path of travel for resetting said signalling means, without regard for the actual size of the object or any portion thereof within said range of sizes.

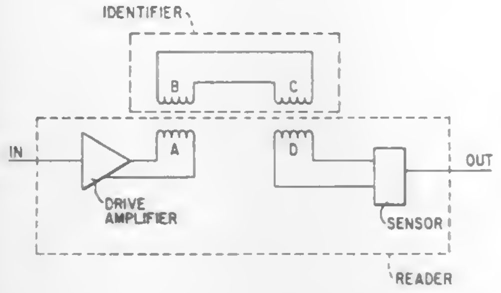
4,354,099
ELECTRONIC IDENTIFICATION SYSTEM

David J. Rayment, Surrey, and Hendrik R. Kruger, Richmond, both of Canada, assignors to Computrol Systems, Ltd., Vancouver, Canada

Filed Jun. 20, 1980, Ser. No. 161,515

Int. Cl.³ G06K *7/08*

U.S. Cl. 235—449 **12 Claims**



1. An electronic identification system, comprising:

(a) drive means for producing a first electromagnetic field at a first location, said drive means including a first electrical inductor about which said first electromagnetic field is induced in response to an applied current;

(b) detector means for producing an output signal upon detection of a second electromagnetic field at a second location where said first electromagnetic field has a negligible effect upon said detector means, said detector means including a second electrical inductor in which said output signal is induced when said second electromagnetic field surrounds said second inductor; and,

(c) identifier means for sensing said first electromagnetic field and for producing said second electromagnetic field in response to sensing of said first electromagnetic field, said identifier means including a third electrical inductor and a fourth electrical inductor connected in series with said third electrical inductor, and said identifier means being physically separable from said drive means and from said detector means.

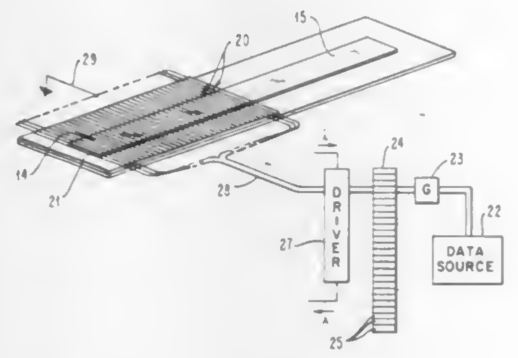
4,354,100
SCANNABLE READOUT DEVICE

James E. Rohen, Mint Hill, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,207

Int. Cl.³ G06K *7/08, 19/06*

U.S. Cl. 235—449 **6 Claims**



1. A scannable readout device for presenting data from a source in a form to be scanned by a magnetic hand-scanning device and wherein the improvement comprises

an elongated data transfer track portion comprising, along its length, a plurality of transversely oriented electrical conductors, and

driver circuit means responsive to data from said source and connected to said conductors for selectively applying current thereto in one direction or the other to provide a controlled flux pattern for scanning in sequence by said scanning device.

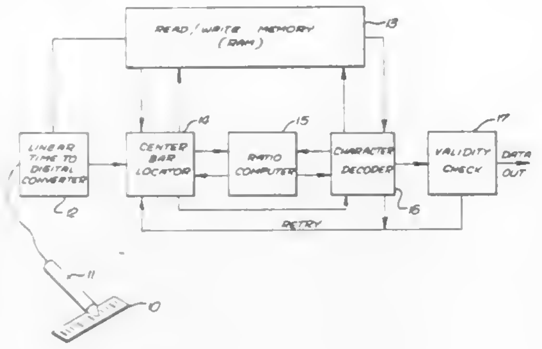
4,354,101
METHOD AND APPARATUS FOR READING AND DECODING A HIGH DENSITY LINEAR BAR CODE

Gerald P. Hester, Santa Ana, and Paul Sherer, Costa Mesa, both of Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.

Continuation of Ser. No. 13,804, Feb. 21, 1979, which is a continuation of Ser. No. 787,855, Apr. 15, 1977, abandoned. This application Apr. 22, 1980, Ser. No. 142,776

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—463 **60 Claims**



1. A method of reading a delta distance coded segment having coding modules of the type of the Universal Product Code including the steps of unambiguously decoding the information containing coding modules of the coded segment on the basis of measuring the relative widths of preselected coding modules exhibiting delta distance properties to obtain two primary ratios of the selected delta distances to thereby decode the segments, and

in the event a coded segment may not be unambiguously decoded by the first step, examining the ambiguously decoded segment for producing the ratio of the widths of a pair of preselected coding modules thereof that do not exhibit delta distance properties to define secondary ratios for unambiguously decoding the coded segment by the use of the two primary decoding ratios and one of the secondary ratios, the pair of preselected coding modules utilized in the second decoding step for defining a secondary ratio being selected from the coding modules utilized for the first decoding step in defining one of the primary ratios on the basis of the width relationships of a preselected one of the two primary ratios resulting from the first decoding step.

4,354,102
CURSOR APPARATUS FOR INTERACTIVE GRAPHIC DISPLAY SYSTEM

Richard H. Burns, North Hollywood; Michael R. Smith, Thousand Oaks; Irving J. Bell, Canoga Park, and Kenneth Crabtree, Saugus, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 13, 1980, Ser. No. 206,414

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **9 Claims**

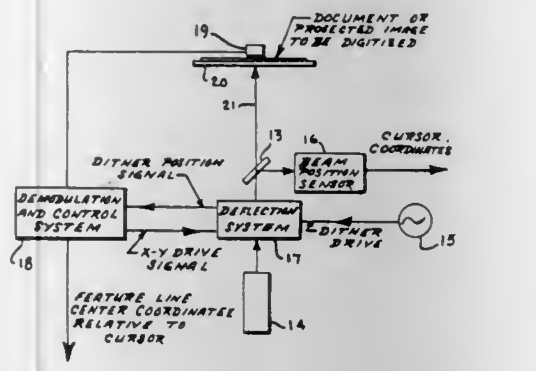
1. In an interactive graphic display system having a display screen with a projected or overlaid image, a steerable pointing laser, the beam thereof adapted to scanning said screen in response to a laser beam deflecton circuit, and laser beam position sensing and indicating means, the improvement residing in an interactive cursor system, said interactive cursor system comprising:

dither means for dithering said laser beam uniformly about its average position in discrete dither pattern,

a cursor element moveably positionable on the surface of said screen in intercepting relationship with said laser beam, said cursor element including laser beam detecting means, said laser beam detecting means having a geometric configuration functionally related to said dither pattern and producing a modulated output signal responsive to the direction and magnitude of any misalignment of the dither pattern therewith,

a demodulation circuit processing said modulated output signal and providing direction and magnitude error signals therefrom, and

a control circuit receiving said direction and magnitude error signals and centering said laser beam on said cursor element in response thereto.


19
DOCUMENT OR PROJECTED IMAGE TO BE DIGITIZED
20
21
13
16
CURSOR COORDINATES
DITHER POSITION SIGNAL
BEAM POSITION SENSOR
DEMODULATION AND CONTROL SYSTEM
DEFLECTION SYSTEM
DITHER DRIVE
15
18
X-Y DRIVE SIGNAL
17
FEATURE LINE CENTER COORDINATES RELATIVE TO CURSOR
14

4,354,103
OPTICAL FOCUSING DEVICE WITH TWO CONTROLS

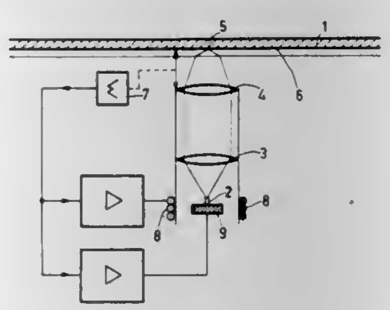
Kornelis A. Immink; Martinus P. M. Bierhoff, and Jacobus P. J. Heemskerk, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,117

Claims priority, application Netherlands, Jun. 27, 1980, 8003729

Int. Cl.³ G11B *7/08*

U.S. Cl. 250—201 **4 Claims**



1. An optical focusing device, comprising a radiation source, focusing means for focusing the radiation from the radiation source onto an object, detection means for detecting the focusing error and control means, which move the radiation source and/or the focusing means, or at least parts thereof, relative to the object so as to reduce the focusing error, which control means act both on a first part, which can be moved with a speed smaller than that corresponding to the desired control frequency of the device, and on a second part, which can be moved substantially faster than the first part, characterized in that the focusing error detection means direct a radiation beam along an optical path, which is substantially unaffected by displacements of the second part of the control means, and that the control signal thus generated by said detection means is applied to said first part in the sense of a negative feedback but to the second part of the control means in the sense of a forward control.

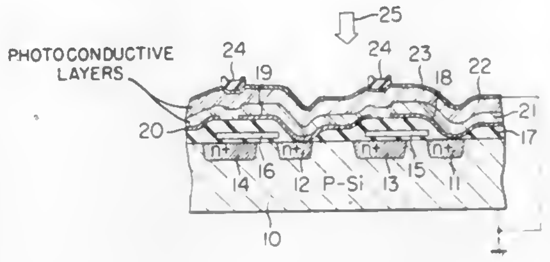
4,354,104
SOLID-STATE IMAGE PICKUP DEVICE

Takao Chikamura, Osaka; Shinji Fujiwara, Minoo, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 6, 1980, Ser. No. 147,276

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **7 Claims**



1. A solid-state image pickup device characterized by the provision of

(a) a substrate,

(b) at least two or more first electrodes of unit cells which are formed on said substrate and electrically isolated from each other,

(c) a photoconductive layer formed over said substrate and over said first electrodes,

(d) a second electrode formed over said photoconductive layer, and

(e) light shielding means formed above said substrate upon which falls the incident light.

4,354,105
CONTROL SYSTEM INCLUDING A TEMPERATURE-RESPONSIVE VARIABLE OPTICAL PARAMETER SENSOR

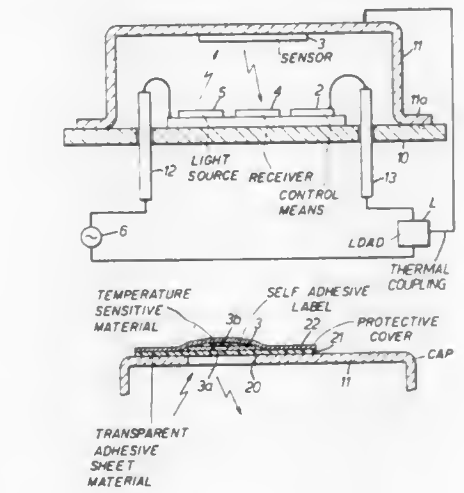
Ernst Spirig, P.O. Box 160, CH-8640 Rapperswil, Switzerland

Continuation of Ser. No. 58,118, Jul. 16, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,269

Claims priority, application United Kingdom, Jun. 21, 1979, 7921635

Int. Cl.³ G01J *5/28;* **G01K** *11/12;* **G01D** *5/30*

U.S. Cl. 250—231 R **6 Claims**



1. An electronic fuse, comprising

(a) a casing containing a chamber, and a window opening **(20)** communicating with said chamber;

(b) a semiconductor circuit mounted in said chamber, said circuit including a light-emitting device **(5)** and a photo-responsive device **(4)**;

(c) a temperature sensor means removably mounted on the external surface of said casing opposite said window opening,

(1) said sensor means including

(a) a self-adhesive label layer (3) mounted over said window, said label layer containing a transparent second opening (3*a*); and

(b) a temperature-sensitive element (3*b*) mounted opposite said second opening;

(2) said sensor means being arranged to receive light radiated to it from said light emitting device and to reflect said light to said photo-responsive device, said sensor means having a light-reflective characteristic which varies with temperature;

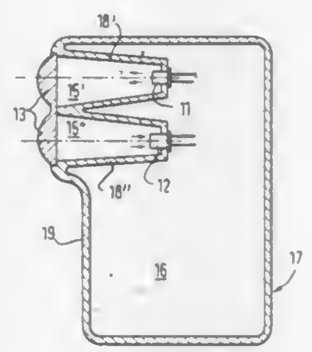
(d) an electrical load, said sensor means being arranged to sense the temperature of said load;

(e) a source of electrical power; and

(f) control means (2) electrically connected with said photo-responsive device for controlling the supply of electrical power to said load in such a manner that a change in the light-reflective characteristic of said sensor means at a predetermined temperature causes cessation of the supply of electrical power to the load.

4,354,106
LIGHT BARRIER APPARATUS

Arthur Walter, Waldkirch, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany
Filed Mar. 3, 1980, Ser. No. 126,236
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2910064
Int. Cl.³ G01D *21/04*
U.S. Cl. 250—239 16 Claims



1. Light barrier apparatus comprising a housing having at least first and second chambers and a removable cover plate with said first chamber being separated by fixed wall means of said housing from said second chamber and hermetically sealed relative to both said second chamber and the atmosphere, said cover plate permitting access to said second chamber but not said first chamber; optically transparent window means defining at least part of an external wall of said first chamber; photoelectric converter means comprising at least one of a photoelectric transmitter for generating a first beam of light for subsequent propagation across a region to be monitored by said light barrier apparatus and a photoelectric receiver for receiving a second beam of light passing across said region to said light barrier apparatus and electronic components associated with said photoelectric converter means and wherein said electronic components are located in said second chamber and said photoelectric converter means is located in said first chamber.

4,354,107
DETECTOR ARRAY MODULE-STRUCTURE AND FABRICATION

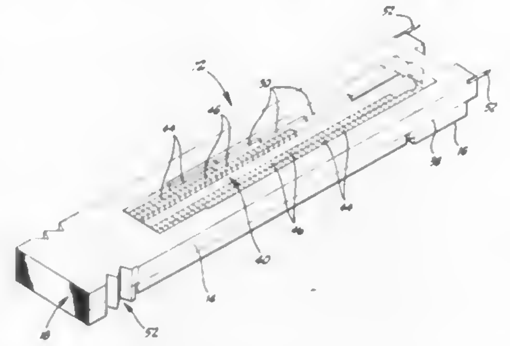
John C. Carson, Corona Del Mar, and Paul F. Dahlgren, Newport Beach, both of Calif., assignors to Irvine Sensors Corporation, Costa Mesa, Calif.
Division of Ser. No. 855,242, Nov. 28, 1977, Pat. No. 4,304,624. This application Nov. 14, 1980, Ser. No. 206,994
Int. Cl.³ H01J *5/02*
U.S. Cl. 250—239 5 Claims

1. A photo-detector mosaic array module one end of which provides a detector-element mosaic area located on the focal plane of the detector array, which module comprises:

a first sub-module comprising a plurality of thin layers extending perpendicular to the focal plane and secured together, with detector-connected lead circuitry between such layers;

said first sub-module having open space within the cubic space defined at one end by the focal plane area, thereby providing a component well for electronic components within such cubic space;

a second sub-module comprising a plurality of thin layers extending perpendicular to the focal plane and secured together, with detector-connected lead circuitry between such layers;



said second sub-module having open space within the cubic space defined at one end by the focal plane area, thereby providing a component well for the electronic components within such cubic space;

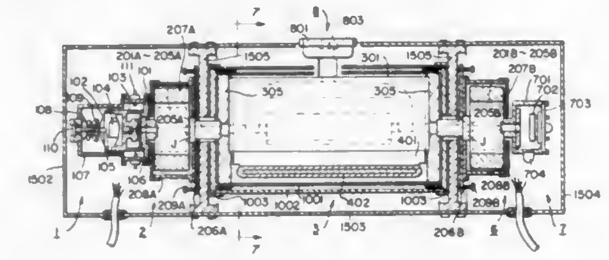
said first and second sub-modules being secured together to form the module;

a first set of electronic components located within the component well provided in the first sub-module; and

a second set of electronic components located within the component well provided in the second sub-module.

4,354,108
ATOMIC BEAM DEVICE

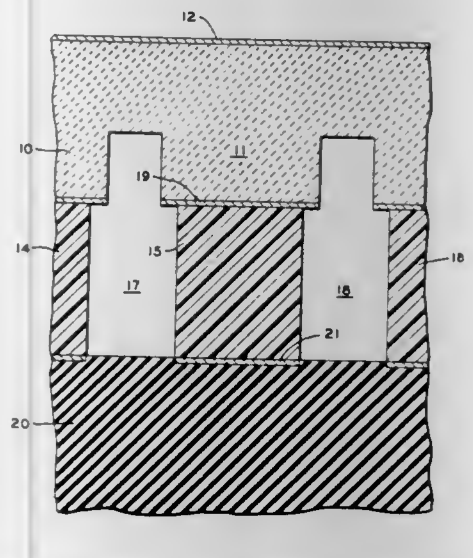
Jiro Toyama, Akashi; Hiromi Takaoka, Kobe, and Kyoji Kariya, Kakogawa, all of Japan, assignors to Fujitsu Limited, Japan
PCT No. PCT/JP78/00018, § 371 Date Jul. 8, 1979, § 102(e) Date Jun. 25, 1979, PCT Pub. No. WO79/00281, PCT Pub. Date May 31, 1979
PCT Filed Nov. 2, 1978, Ser. No. 112,632
Claims priority, application Japan, Nov. 8, 1977, 52-1343390
Int. Cl.³ H01S *1/00*
U.S. Cl. 250—251 6 Claims



1. An atomic beam device of the type including a first state selection magnet part; a high frequency transition part; and a second state selection magnet part sequentially arranged along an atomic beam path in a vacuum envelope extending from an atomic beam generator to a detector, wherein the improvement comprises: said high frequency transition part comprises a rigid metal block forming a portion of the vacuum envelope, and said first and second state selection magnet parts are coaxially supported by said metal block at either end thereof.

4,354,109
MOUNTING FOR PYROELECTRIC DETECCTOR ARRAYS

William J. White, Chelmsford; Jeffrey C. Gelpeg, Peabody; Donald E. Marshall, Jr., Harvard, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 108,759, Dec. 31, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 254,845
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—349 9 Claims



1. Apparatus for processing infrared signals, comprising:

a pyroelectric detector array including a plurality of detector elements;

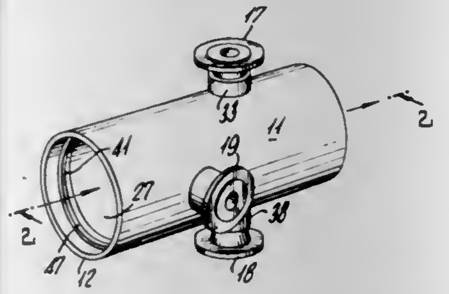
a plurality of electrically conductive epoxy polymer mounting means having two ends and attached at one end to said array to provide individual electrical contact for each of said detector elements;

circuit means attached to the other end of said mounting means for processing electrical signals from said array; and

means included in said mounting means for providing electrical conductivity between said array and said circuit means sufficient to enable the interoperation thereof while in addition providing thermal isolation so that said array has an improved thermal responsivity.

4,354,110
CHAMBER FOR MEASURING GAMMA RAY EMISSIONS

Albert P. Richter, Jr., Houston, and Ronald L. Campsey, Alief, both of Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Jul. 28, 1980, Ser. No. 172,748
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—358.1 4 Claims



1. In combination with a chamber for making measurements using irradiation with neutrons and gamma radiation emissions detection, said chamber having iron walls for containing a fluid to be measured, the improvement comprising

cross pipe means comprising a pair of diametrically extending pipes for locating a neutron source and a detector in said fluid,

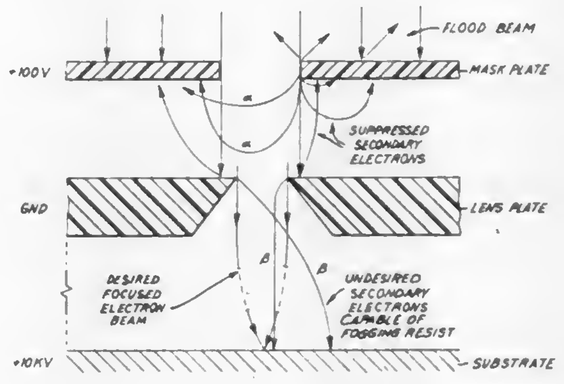
said pipes being perpendicular to one another and spaced apart to permit said fluid to be measured to flow in between,

said cross pipe means having iron walls, and

means for covering all said iron walls with a layer of boron carbide-epoxy mixture covered by epoxy-glass.

4,354,111
SCREEN LENS ARRAY SYSTEM

Norman Williams, New Hope, Pa., and George R. Koch, Los Altos, Calif., assignors to Veeco Instruments Incorporated, Melville, N.Y.
Filed Mar. 10, 1981, Ser. No. 242,391
Int. Cl.³ H01J *37/00*
U.S. Cl. 250—396 R 19 Claims


FLOOD BEAM
+100V
MASK PLATE
α
α
SUPPRESSED SECONDARY ELECTRONS
GND
LENS PLATE
β
β
DESIRED FOCUSED ELECTRON BEAM
UNDESIRED SECONDARY ELECTRONS CAPABLE OF FOGGING RESIST
+10KV
SUBSTRATE

1. A screen lens array system comprising:

a. a first plate having a first and second group of apertures therein;

b. a second plate having a first and second group of apertures therein;

c. said first plate and said second plate being maintained at different potentials in a predetermined spaced-apart relationship;

d. wherein the first group of apertures in said first and second plates are normally aligned and the second group of apertures in said first and second plates are normally misaligned; and

e. said first and second plates being capable of relative movement therebetween to cause said normally aligned apertures in said first and second plates to become misaligned and said normally misaligned apertures in said first and second plates to become aligned.

4,354,112
X-RAY CINE RADIOGRAPHY APPARATUS

Kosaku Nishio, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Nov. 28, 1980, Ser. No. 211,439
Int. Cl.³ H05G *1/30*
U.S. Cl. 378—99 3 Claims

1. An X-ray cine radiography apparatus comprising:

X-ray tube means for radiating X-rays toward an object under examination;

means for converting the X-rays transmitted through the object into a visual image;

cine camera means for picking up the visual image;

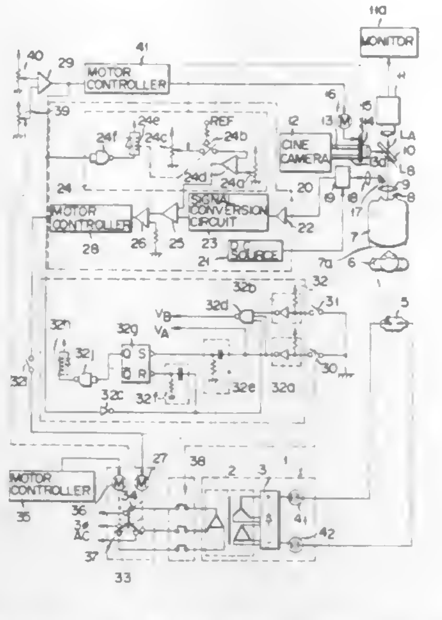
photoelectric converting means for detecting a brightness of the visual image to produce an electric signal;

means for setting an upper limit tube voltage of said X-ray tube means;

means for detecting a signal corresponding to an actual tube voltage of said X-ray tube means;

means for comparing the output signal of said tube voltage detecting means with that of said setting means and for producing an enabling signal when the former recited output signal exceeds the latter recited output signal;

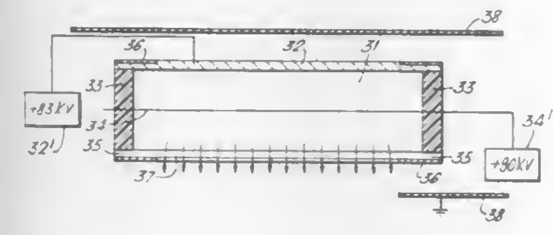
means for controlling quantity of light of the visual image picked up by said cine camera means in accordance with the enabling signal of said comparing means, and



means for adjusting the actual tube voltage in response to the output signal of said controlling means and the electric signal of said photoelectric converting means.

4,354,113
ION SOURCES

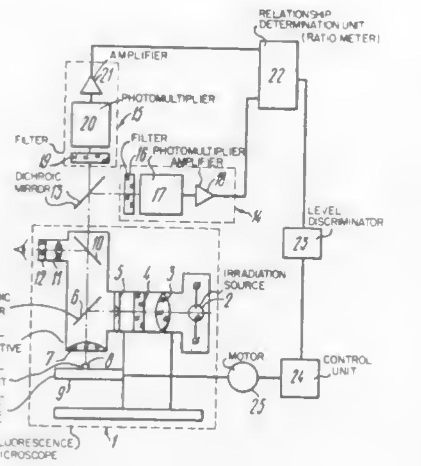
Philip D. Goode, Didcot; Michael J. Poole, Abingdon, and Gordon W. Proctor, Didcot, all of England, assignors to United Kingdom Atomic Energy Authority, London, England
Continuation-in-part of Ser. No. 23,745, Mar. 26, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,308
Claims priority, application United Kingdom, Apr. 5, 1978, 13310/78
Int. Cl.^{3} H01J *27/00*
U.S. Cl. 250—423 R **10 Claims**



1. An ion source comprising a chamber including an electrically conducting cylindrical tube having a longitudinal exit slit formed therein, the thickness of the wall of the chamber being sufficient to ensure that, in use, there is a substantially electric field free region within the exit slit, two parallel anode wires extending the length of the chamber in the central region thereof and being symmetrically disposed with respect to the longitudinal axis of the chamber and the exit slit, and a mask positioned at each end of the exit slit so as to have an edge in the electric field free region within the exit slit, the separation of the opposing edges of the masks defining the width of the ion beam emitted by the source.

4,354,114
APPARATUS FOR INVESTIGATION OF FLUORESCENCE CHARACTERISTICS OF MICROSCOPIC OBJECTS

Valery N. Karnaukhov, mikroraion "AB", dom 7, kv. 67; Valery A. Yashin, mikroraion "AB", dom 6, kv. 100; Vladimir I. Kulakov, mikroraion "V", dom 26, kv. 30; Vasily M. Vershinin, mikroraion "AB", dom 3, kv. 52, and Vladimir V. Dudarev, mikroraion "G", dom 26, kv. 75, all of Puschino Moskovskoi oblasti, U.S.S.R.
Filed Oct. 9, 1979, Ser. No. 82,809
Int. Cl.^{3} G01N *21/38;* G01J *1/58*
U.S. Cl. 250—458.1 **3 Claims**



1. Apparatus for investigation of fluorescence characteristics of microscopic objects and for distinguishing between modified and unmodified objects, comprising:

a fluorescence microscope having an amplitude modulated irradiation source and a movable stage which carries a microscopic object emitting fluorescent radiation under the action of said irradiation source;

a beam-splitting plate having an interference coating, adapted to reflect a short-wave component of said fluorescent radiation and to pass a long-wave component of said fluorescent radiation, said plate being located in the path of said fluorescent radiation;

a first recording channel to register a respective component of said fluorescent radiation from said microscopic object said channel being located in the path of the fluorescent radiation reflected from said beam-splitting plate, said channel having an output;

a second recording channel to register a corresponding component of said fluorescent radiation, said channel being located in the path of said fluorescent radiation passed by said beam-splitting plate, said channel having an output;

means for determining a relationship between said components, said means comprising a cathode-ray tube having its horizontal deflection plates coupled to the output of said first recording channel, and having its vertical deflection plates coupled to the output of said second recording channel;

a level discriminator comprising

a light-sensitive detector having an input which is connected to the screen of said cathode-ray tube, and an output forming a signal which is indicative of the presence of a modified microscopic object;

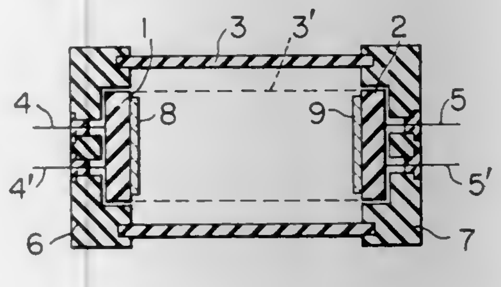
said light-sensitive detector being fixed on the screen of said cathode-ray tube in a movable relation to said screen at a point which determines the boundary of presence of modified microscopic objects when the detector is intersected with a luminous line corresponding to said relationship between said components of said fluorescent radiation from the object;

a control unit having an input and an output, whose input is coupled to the output of said light-sensitive detector;

means for stopping said stage in compliance with a signal from said control unit when a modified object is detected, said means comprising an electric motor having an input coupled to the output of said control unit and an output coupled to said stage.

4,354,115
PHOTOCOUPLING DEVICE

Terunori Warabisako, Tokyo, and Shigeo Shiono, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 28, 1980, Ser. No. 211,125
Claims priority, application Japan, Nov. 30, 1979, 54-154380
Int. Cl.^{3} H01L *31/16, 31/04*
U.S. Cl. 250—551 **14 Claims**



1. A photo-coupler for electricity-light-electricity conversion comprising:

(1) a light emitting part;

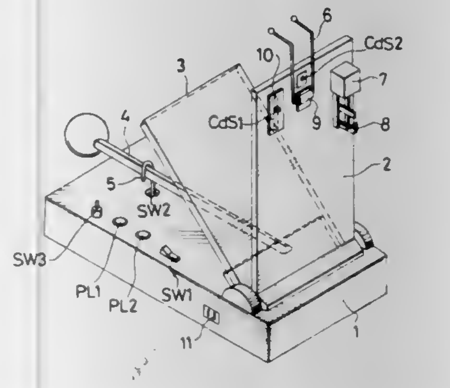
(2) a photosensing device comprising a plurality of photosensing elements electrically connected in series in a light receiving surface of an insulating substrate, said photosensing elements being radially arrayed in said light receiving surface; and

(3) a light guiding means optically coupling said light emitting part and said photosensing device,

whereby light is emitted from said light emitting part and directed through said light guiding means to said photosensing device to generate a photoelectric conversion output.

4,354,116
AUTOMATIC ISOLATOR OF BLOOD PLASMA

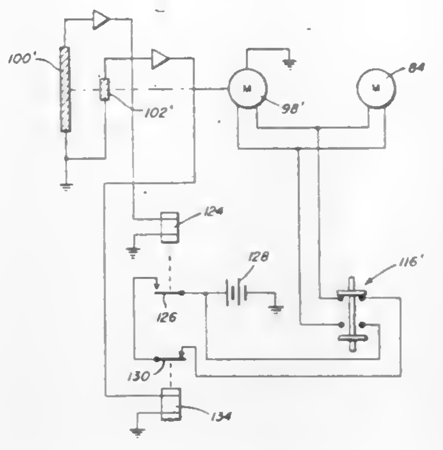
Shinjiro Tsukamoto, No. 5-31, Utsubohonmachi 3-chome, Nishi-ku, Osaka, Osaka-fu, and Masahiro Ugawa, No. 10-12, Hanjo 2-chome, Minoo, Osaka-fu, both of Japan
Filed Sep. 11, 1980, Ser. No. 186,087
Claims priority, application Japan, Sep. 17, 1979, 54-119597
Int. Cl.^{3} G01N *15/06*
U.S. Cl. 250—576 **4 Claims**



1. An isolator of blood plasma comprising a blood bag having an outlet tube, a photosensor for detecting the border between blood plasma and blood cells in said bag by the change of transmittance of visible light, and which have been separated by centrifugal apparatus, and means responsive to said photosensor for closing said tube so as to stop the outflow of blood plasma.

4,354,117
SOLAR ENERGY CONVERSION PLANT

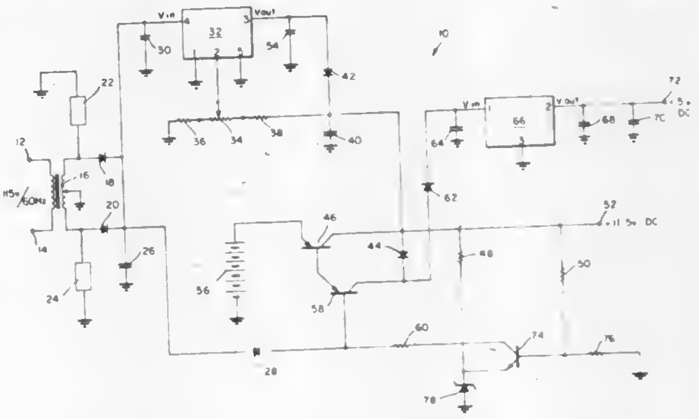
Frank W. Abernathy, 1518 Riverbend Rd., Columbus, Ohio 43223
Filed Nov. 4, 1980, Ser. No. 204,071
Int. Cl.^{3} F03G *7/02*
U.S. Cl. 290—1 R **5 Claims**



1. In a system for converting solar energy, a solar energy collector having a parabolic reflector concentrating solar radiation at a focal axis therein, and solar tracking means connected to the parabolic reflector for movement thereof to positions collecting maximum available solar energy, including servomotor means connected to the reflector for angular movement thereof about perpendicular axes substantially intersecting at said focal axis, the improvement comprising lens means for transmitting solar energy along a collimated beam movable about a fixed tracking axis, first cell means for generating signal energy in response to reception of said solar energy in all positions thereof, second cell means for generating signal energy in response to reception of said solar energy transmitted by the lens means in a tracking position, tracking motor means connected to the cell means for angular movement thereof about said tracking axis, and relay means connected to the cell means for controlling energization of the servomotor means in response to said generation of signal energy.

4,354,118
BATTERY BACKUP SUPPLY CONTROL MEANS AND METHOD

William H. Spencer, Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 30, 1981, Ser. No. 230,265
Int. Cl.^{3} H02J *9/00*
U.S. Cl. 307—66 **23 Claims**

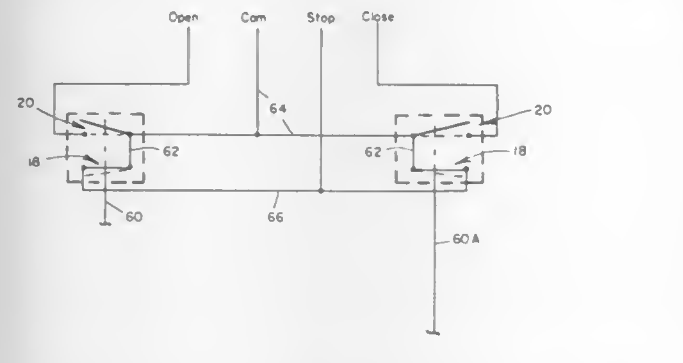


1. An apparatus for automatically connecting and disconnecting a battery supply from an electrical load, the apparatus comprising:

first means for connecting the battery supply to the electrical load when the potential of a power source drops below a first predetermined value; and

second means for disconnecting the battery supply from the electrical load when the potential of the battery supply drops below a second predetermined value, including a first transistor having an emitter, base and collector, with the collector of the first transistor resistively connected to the first means, operative to provide a conductive path between the first means and ground potential when the base-emitter junction of the first transistor is forward biased and forward biasing means connected to the base of the first transistor, operative to forward bias the base-emitter junction of the first transistor until the potential of the battery supply drops below the second predetermined value.

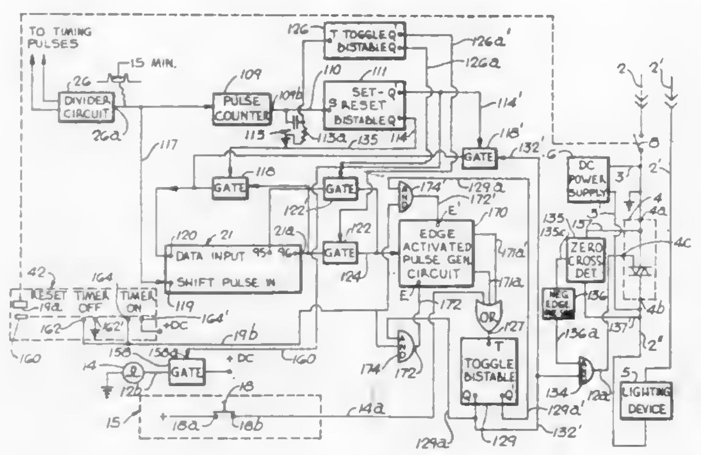
4,354,119
CONTROL STATION FOR OVERHEAD MOUNTING
Neil J. Driscoll, 2456 Argonne Way, Medford, Oreg. 97501
Filed Nov. 3, 1980, Ser. No. 203,725
Int. Cl.³ H01H *17/26*
U.S. Cl. 307—115 **5 Claims**



1. In a control device for overhead mounting and operative to control related equipment,
- an enclosure for the device and adapted to receive electrical wiring for connection to the device,
- terminal block means fixedly mounted in the enclosure,
- first stationary contact means on the terminal block means and second stationary contact means on the terminal block means spaced from the first stationary contact means,
- first flexible electrical current conductive finger means carrying other electrical contact means in operative relation to said first stationary contact means,
- second flexible electrical current conductive finger means carrying other electrical contact means in operative relation to said second stationary contact means,
- bar means engaging the first flexible finger means and the second flexible finger means,
- lever means pivotally movable relative to the enclosure and connected to the bar means intermediate the flexible finger means whereby movement of the lever means moves the bar means and induces concurrent movement of the flexible finger means and the carried other electrical contact means in operative relation with the stationary contact means,
- cord means connected to the lever means and depending from the enclosure to provide movement for the lever means by operator pulling of the cord means,
- and fixed barrier means in the enclosure to separate the lever means from electrical wiring in the enclosure during operation.

4,354,120
DAILY VARIABILITY TIMER
Louis W. Schornack, Niles, Ill., assignor to Dynascan Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 22,453, Mar. 21, 1979. This application Apr. 16, 1981, Ser. No. 254,617
Int. Cl.³ H01H *43/06;* G04C *23/08*
U.S. Cl. 307—132 E **11 Claims**

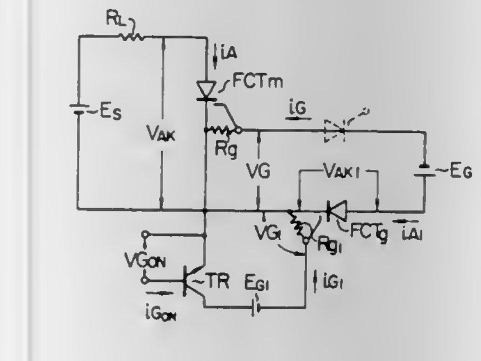
1. In an electrical 24-hour repeat cycle timer for operating an electrical controlled means between opposite control conditions over a repeating 24-hour cycle according to a program set by the user selecting particular contiguous or spaced hourly or fractional hourly basic timing intervals over each 24-hour cycle where said controlled means may be in either of said conditions, said timer including electrical storage means having individual fixed or changing storage locations respectively associated with said basic timing intervals and in which storage locations a coded marker is placed as a result of said programming so that together the markers in the storage locations indicate the timing pattern in which said controlled means may be operated into either of said conditions, system timing means for identifying in real time the beginning of said basic timing intervals occurring during each 24-hour cycle; accessing means for sequentially accessing said storage locations and the markers therein in the same sequential order that said markers were placed therein during said programming, said accessing means being responsive to periodic signals from said system timing means so that a different storage marker may be accessed in synchronism with the beginning of said basic timing intervals, and control means for operating said controlled means in accordance with the coding of the markers accessed by said accessing means; the improvement comprising program readout offsetting means for establishing during successive 24-hour cycles shifted storage location accessing patterns so that at least the times during which said controlled means is initially operated from one to the other of said conditions will be shifted relative to one another during said successive 24-hour cycles, said readout offsetting means comprising means for displacing the storage locations of the storage means accessed during one of said successive cycles from those accessed during the next one of said cycles during identical timing intervals.

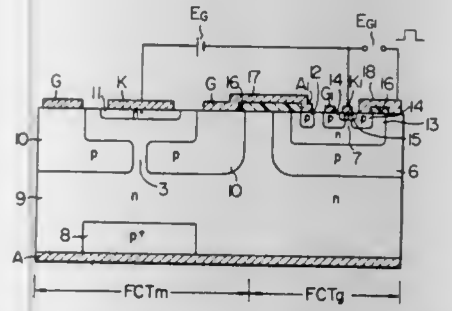


4,354,121
FIELD CONTROLLED THYRISTOR CONTROL CIRCUIT WITH ADDITIONAL FCT IN REVERSE BIAS CIRCUIT
Yoshio Terasawa, Katsuta; Kenji Miyata, Hitachi; Saburo Oikawa, Hitachi; Susumu Murakami, Hitachi; Masahiro Okamura, Hitachi, and Takuzo Ogawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 14,587, Feb. 23, 1979, abandoned. This application Jul. 10, 1981, Ser. No. 284,794
Claims priority, application Japan, Feb. 23, 1978, 53-19064
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—252 C **15 Claims**

1. A field controlled thyristor (FCT) circuit comprising:
- (a) a first FCT which comprises a semiconductor substrate including a first emitter region of one conductivity type, a base region of said one conductivity type adjacent to said first emitter region, a second emitter region of opposite conductivity type to said one conductivity type and adjacent to said base region, and a gate region of said opposite conductivity type formed in said base region to provide a channel in said base region to form a current path between said first and second emitter region directly via said base region, a gate electrode connected to said gate region, a first main electrode connected to said first emitter region, and a second main electrode connected to said second emitter region, the first and the second main electrodes being provided for connection in series to a power source and a load;
- (b) a first biasing means connected between said first main electrode and said gate electrode of said first FCT to apply a continuous reverse-bias to a junction formed between said first emitter region and said gate region in said semiconductor substrate of said first FCT for preventing a load current from flowing from said power source to said load through said first emitter region, said beam region including said channel, and said second emitter region of said first FCT by pinching off said channel with a depletion layer formed in said base region by said reverse-bias throughout a period when said reverse-bias is continuously applied to said first FCT so that said channel is continuously pinched off with said depletion layer;
- (c) at least one second FCT

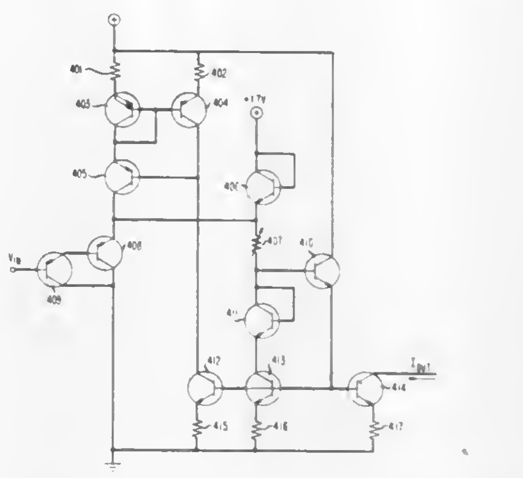
which comprises a semiconductor substrate including a first emitter region of one conductivity type, a base region of said one conductivity type adjacent to said first emitter region, a second emitter region of opposite conductivity type to said one conductivity type and adjacent to said base region, and a gate region of said opposite conductivity type formed in said base region to provide a channel in said base region to form a current path between said first and second emitter region directly via said base region, a gate electrode connected to said gate region, a first main electrode connected to said first emitter region, and a second main electrode connected to said second emitter region, which the first and the second main electrodes are connected in series with said first biasing means, said first main electrode of said first FCT and said gate electrode of said first FCT; and





- (d) a gate control means connected between said first main electrode of said second FCT and said gate electrode of said second FCT, to apply a continuous reverse-bias to a junction formed between said first emitter region and said gate region in said semi-conductor substrate of said second FCT to pinch off said channel of said second FCT with a depletion layer formed in said base region for preventing said junction of the first FCT from being applied with said reverse-bias by said first biasing means throughout a period when said channel of said second FCT is pinched off so that said load current flows through said first FCT throughout a period when said reverse-bias by said gate control means is applied to said second FCT.

4,354,122
VOLTAGE TO CURRENT CONVERTER
Milton L. Embree, Reading, Pa., and William G. Garrett, Canton Township, Wayne County, Mich., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 8, 1980, Ser. No. 176,346
Int. Cl.³ H03K *3/36*
U.S. Cl. 307—261 **4 Claims**

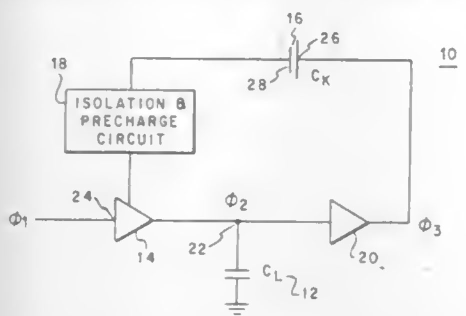


1. A voltage to current converter circuit having a high input impedance and zero temperature coefficient for providing an accurate output current from an input voltage, said circuit comprising:
- an input circuit for accepting applied voltages, including first and second transistors arranged to provide a high input impedance,
- third and fourth mirror connected transistors arranged as an output current mirror and having commonly connected base electrodes,
- an impedance connected between the emitter electrode of said second transistor and said fourth transistor,
- fifth and sixth mirror connected transistors connected respectively to the emitter of said second transistor and to the collector of said third transistor to ensure that the current flow through said input circuit equals the current flow through said output current mirror,
- means, including a seventh transistor for compensating for the base to emitter voltage drop of said first transistor, said compensating transistor having its base connected to said impedance and its emitter connected to said base of said fourth transistor, said fourth transistor functioning to compensate for the base to emitter voltage drop of said second transistor,
- an output circuit including an eighth transistor having its base electrode connected to said commonly connected base electrodes of said output current mirror, and
- clamping means responsive to said input voltage for providing an output current whenever said input voltage decreases below a predetermined threshold.

4,354,123
HIGH VOLTAGE CLOCK GENERATOR
Sargent S. Eaton, Jr., Colorado Springs, Colo., assignor to Mostek Corporation, Carrollton, Tex.
Filed Aug. 13, 1979, Ser. No. 66,148
Int. Cl.³ H03K *4/24*
U.S. Cl. 307—475 **8 Claims**

1. A high voltage clock generator comprising:
- a first clock generator to charge a load capacitance to a first voltage level;
- a bootstrap capacitance having a base plate and a top plate;
- an isolation and precharge circuit to charge the top plate of

the bootstrap capacitance at a time prior to driving the load capacitance to a second voltage level; and



a second clock generator to drive the base plate of the bootstrap capacitance such that the load capacitance is driven to the second voltage level.

4,354,124
DIGITAL PHASE COMPARATOR CIRCUIT

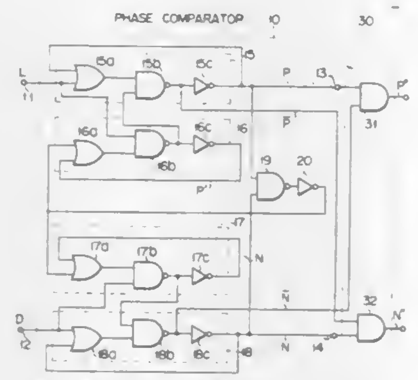
Takeshi Shima, Sagamihara, and Ken-ichi Torii, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 10, 1980, Ser. No. 158,310

Claims priority, application Japan, Jun. 19, 1979, 54-76265

Int. Cl.^{3} H03K *13/32, 5/26*

U.S. Cl. 307—522 **4 Claims**



1. A digital phase comparator circuit comprising:

a digital phase comparator including first and second input terminals, first and second output terminals and a plurality of logic gates having a propagation delay time and interconnected between said first and second input terminals on one hand and said first and second output terminals on the other hand, said phase comparator being so arranged as to produce, when there is a phase difference between the waveforms of input signals applied to said first and second input terminals, an output pulse signal corresponding to said phase difference at either one of said first and second output terminals; and

an undesired pulse removing circuit connected to said first and second output terminals of said phase comparator for removing undesired pulse output signals simultaneously produced at said first and second output terminals during a transition period of internal state of said phase comparator due to the propagation delay times of said logic gates included in said phase comparator and including a first gate means receiving an output signal at said first output terminal and an inversion signal of an output signal at said second output terminal, and a second gate means receiving the output signal at said second output terminal and an inversion signal of the output signal at said first output terminal.

4,354,125
MAGNETICALLY COUPLED ARRANGEMENT FOR A DRIVING AND A DRIVEN MEMBER

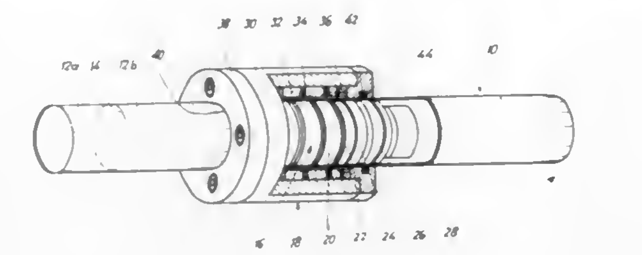
Kurt Stoll, Lenzhalde 72, D-7300 Esslingen, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,999

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922444

Int. Cl.^{3} H02K *49/00*

U.S. Cl. 310—103 **7 Claims**



1. In an arrangement having a hollow cylindrical tube and driving and driven members movable thereon for conveying articles, the improvement comprising wherein said tube is made of a nonmagnetic material, wherein said driving member is a piston movably mounted on the inside of said tube, said piston having a piston body and plural axially spaced, first permanent annular magnets encircling said piston body, said piston further including first means spacing said first permanent magnets in said axial spaced relation, the radially peripheral surface of said magnets being oriented close to the internal wall surface of said tube, said piston further including plural guide ring means encircling said piston body and slidingly engaging said internal wall and first sealing rings located axially outside said guide rings for wiping said internal wall as said piston moves along said tube to thereby cause any impurities that may be present in said tube to be pushed along said tube so that said first annular magnets will be free of interference from said impurities, wherein said driven member includes a cylindrical sleeve made of a magnetizable material and encircles said tube, said sleeve having plural axially spaced second permanent annular magnets affixed thereto and in magnetically attracting relation to said first permanent annular magnets and second means spacing said second permanent annular magnets in said axially spaced relation, the radially inner surface of said magnets being oriented close to the external surface of said tube, said sleeve having end face means with second sealing rings located axially outside said second permanent annular magnets for wiping the external wall surface of said tube as said driven member is moved along said tube in response to a driving movement of said piston to thereby cause any impurities that may be present on said tube to be pushed along said tube so that said second permanent annular magnets will be free of interference from said impurities.

4,354,126
DYNAMOELECTRIC MACHINE WITH A PERMANENT MAGNET ROTOR HAVING LAMINATED POLES

William W. Yates, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1980, Ser. No. 186,882

Int. Cl.^{3} H02K *21/12*

U.S. Cl. 310—156 **6 Claims**

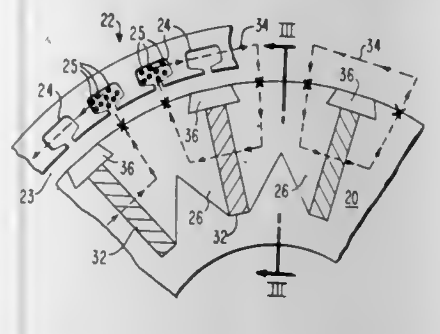
1. A dynamoelectric machine comprising:

a stator and a rotor in a mutually inductive rotation with an air gap therebetween;

said rotor comprising a core of a plurality of stacked laminations including magnetic laminations and non-magnetic structural laminations interspersed among said non-magnetic laminations as one proceeds longitudinally through said core;

said rotor core having a plurality of permanent magnets extending therethrough producing a plurality of magnetic flux paths circumferentially disposed about the periphery of said core, said plurality of permanent magnets each having a rectangular cross-section and each having major surfaces oriented in a substantially radial plane;

each of said permanent magnets being secured against radially outward movement by a wedge extending longitudinally through said core at the outer periphery thereof, said wedges being of non-magnetic material and mechanically locked in place within said laminations while said radially outer edges of said laminations between wedges are exposed;



a plurality of bead welds extending longitudinally over the surface of said core to secure said laminations into a unit while minimizing the surface area of said core that is shielded from the air gap.

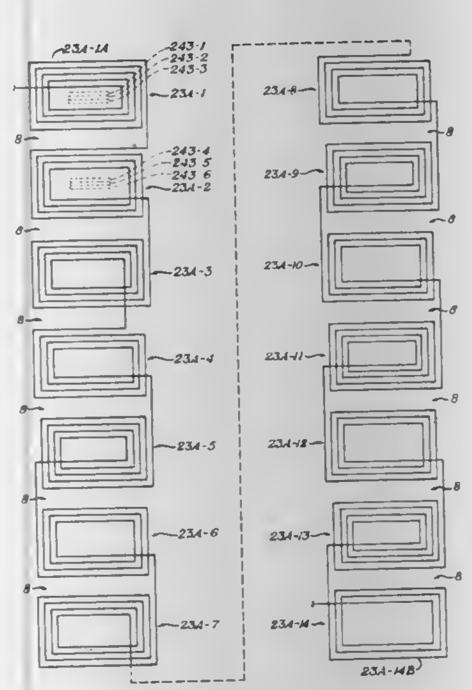
4,354,127
ALTERNATOR WINDING

Lebern W. Stroud, 3237 Gerome, Forth Worth, Tex. 76118

Filed Jul. 28, 1980, Ser. No. 172,826

Int. Cl.^{3} H02K *3/00*

U.S. Cl. 310—198 **1 Claim**



1. An alternator of the type having an annular stationary stator with a rotor concentrically located therein, comprising:

an annular structure formed of ferro-magnetic material defining an annular stator core having forty-two segments with adjacent segments being separated by a slot such that there are forty-two slots which extend in a direction parallel to the axis of said stator core, and

a three phase stator winding connected in a delta configuration,

each phase comprising a winding having fourteen coils extending around said stator core on the inside thereof,

each of said coils of each phase winding comprising a plurality of turns of wire encircling three segments,

said fourteen coils of each phase winding having a plurality of turns located in fourteen of said slots such that said fourteen slots for each phase respectively has the following number of turns located therein 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8,

said fourteen coils of each phase winding respectively having the following number of turns at one edge 5, 3, 5, 3, 5, 3, 5, 3, 5, 3, 5, 3, 5, 3,

said fourteen coils of each phase winding respectively having the following number of turns at the other edge 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 3,

each of said phase windings being formed of 14 A.W.G. electrically conductive wire.

4,354,128
DYNAMO ELECTRIC MACHINE BRUSH ASSEMBLY

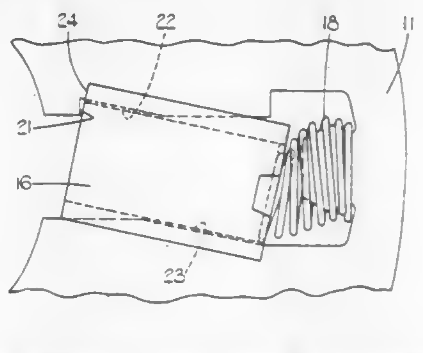
Anthony J. Chew, Stirchley; Graham M. Leeder, Sutton Coldfield, and Thomas W. Pickford, Walsall, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 25, 1980, Ser. No. 172,217

Claims priority, application United Kingdom, Aug. 10, 1979, 7927909

Int. Cl.^{3} H01R *39/38*

U.S. Cl. 310—242 **11 Claims**



1. A brush assembly comprising a substantially flat electrically insulating plate having therein an aperture within which, in use, the commutator of an associated dynamo electric machine rotates, first and second closed ended slots in the plate, each slot having a pair of longitudinal edges leading into said aperture, said slots each having an open end communicating with said aperture and extending outwardly from said aperture, first and second brushes slidably received in said first and second slots respectively, and first and second compression springs urging said first and second brushes along the length of their respective slots towards said aperture, each of said brushes being formed on opposite sides with longitudinally extending grooves within which the longitudinal edges of said slots are received slidably to mount said brushes in said slots, said plate end each brush having respective surfaces which are interengageable when the brush is retracted against the action of the respective compression spring and tilted relative to the plate so that mutual engagement of said respective surfaces serves to latch the brush in a retracted position such that the brush will not impede the insertion of a commutator into said aperture.

4,354,129
ABSORBER FOR PIEZOELECTRIC SURFACE ACOUSTIC WAVE DEVICE

Hideharu Ieki, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 16, 1980, Ser. No. 140,857

Claims priority, application Japan, Apr. 28, 1979, 54/52874

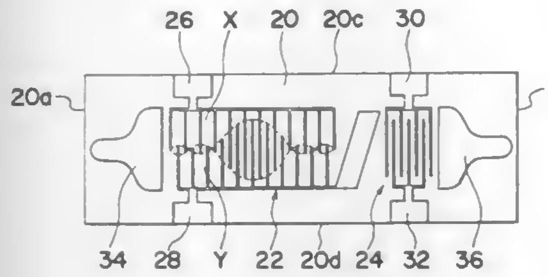
Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—313 C **8 Claims**

1. A surface acoustic wave device, comprising:

a substrate formed of a material capable of propagating acoustic waves along a surface of the substrate;

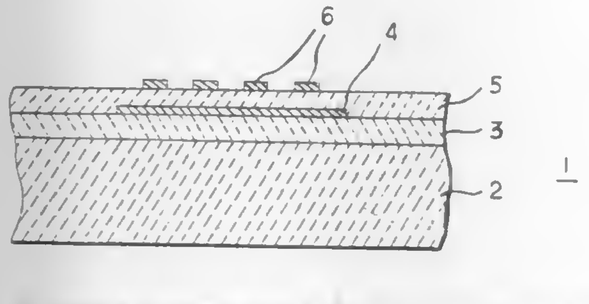
transducer means deposited on said surface and including a pair of electrodes arranged in the shape of combs having interdigitated teeth, said teeth overlapping each other by varying amounts so as to cause said transducer means to launch, along a path extending in a first direction on said surface, acoustic waves having a continually varying nonuniform energy distribution as measured along a line extending in a second direction perpendicular to said first direction between a first point having a substantially zero energy level to a second point having a substantially zero energy level; and



absorber means deposited on said surface along said path for absorbing acoustic waves propagating along said path towards said absorber means, said absorber means being made of absorbent material, the length of said absorber means as measured along said first direction being longer at areas where acoustic waves having a relatively high energy propagate than the length of said absorber means as measured along said first direction at areas where acoustic waves having a relatively low energy propagate.

4,354,130
SURFACE ACOUSTIC WAVE DEVICE USING A MULTI-LAYER SUBSTRATE INCLUDING αAL_2O_3, SIO AND ZNO

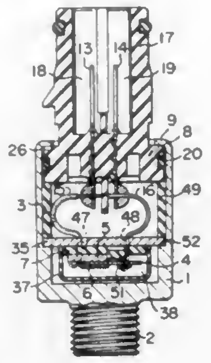
Shusuke Ono, Takatsuki; Tsuneo Mitsuyu, Hirakata; Osamu Yamazaki, Suita, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Dec. 5, 1980, Ser. No. 213,732
Claims priority, application Japan, Dec. 19, 1979, 54-166104
Int. Cl.^{3} H01L *41/08*
U.S. Cl. 310—313 A **16 Claims**



1. A surface acoustic wave device comprising a multi-layered substrate, in which said multi-layered substrate comprises at least, in the following order, an α-Al_2O_3 single crystal base made of a single crystal having an (0112) crystallographic plane or a crystallographically equivalent plane, an intermediate silicon oxide layer, a metal film, a piezoelectric zinc oxide layer and an interdigital electrode, the thickness of said metal film being very much smaller than λ and said zinc oxide layer having a layer thickness which ranges from 0.8/k to 3.7/k, where k is a wave constant equal to $2\pi/\lambda$, λ being the wavelength of said surface acoustic wave.

4,354,131
SENSOR WITH CROSS-BASE MOUNTING PLATE

Kiyokane Kaji, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Jun. 24, 1980, Ser. No. 162,499
Claims priority, application Japan, Aug. 15, 1979, 54-104302
Int. Cl.^{3} H01L *41/10*
U.S. Cl. 310—328 **5 Claims**



1. A sensor for sensing vibration of a body, comprising:

an outer hollow tubular sensor casing having a stepped bore providing a shoulder portion, a first end of which is open and a second end of which is closed, said closed end being provided on the outside side thereof with a protuberance for connection to said body;

a cross base plate mounted across the inner space in said outer hollow tubular sensor casing and supported by said shoulder portion;

a vibration sensor element for producing an electrical output signal, mounted on the side of said cross base plate remote from said first open end of said outer hollow tubular sensor casing;

a unitary end connector housing closing member including a lower body cover plate portion which closes said first open end of said outer hollow tubular sensor casing firmly mounted thereto, and a connector contact element protective outer shell portion extending outwardly from said lower body cover plate portion through said open end of said outer hollow tubular sensor casing defining a cavity space;

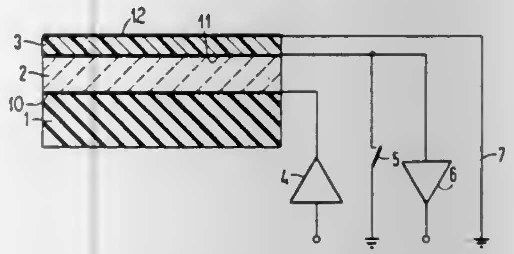
a tubular spacing means for spacing said cover plate portion of said closing member from said cross base plate so as to provide an intermediate space therebetween;

at least one electrically conducting lead wire having an inner end portion connected to said vibration sensor element for receiving a sensor output electrical signal therefrom and an outer end portion passing substantially in an airtight manner through said cross base plate; and

an electrical connector element extending through said cover plate portion of said connector housing into said cavity space defined by said connector contact element protective outer shell portion and connected to said outer end portion of said at least one electrically conducting lead wire on the side of said cover plate portion of said closing member remote from said connector contact element protective outer shell portion within said intermediate space.

4,354,132
ULTRASONIC TRANSDUCER WITH A PLASTIC PIEZOELECTRIC RECEIVING LAYER AND A NON PLASTIC TRANSMITTING LAYER

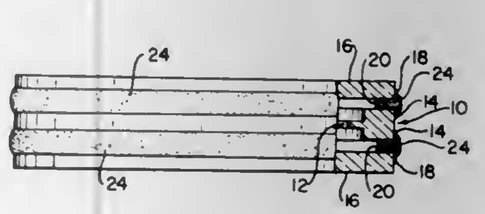
Jacques Borburgh, Poxdorf, and Ingmar Feigt, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Feb. 28, 1980, Ser. No. 125,371
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2914031
Int. Cl.^{3} H01L *41/08*
U.S. Cl. 310—334 **15 Claims**



1. An ultrasonic transducer comprising a transmitting layer comprising piezoelectric material having a relatively high dielectric constant and a relatively high acoustic impedance, a receiving layer comprising piezoelectric material having a relatively low dielectric constant and a relatively low acoustic impedance, wherein the layers are interconnected in a laminar manner, and support means having the transmitting layer adjacent thereto and having the receiving layer in front of the transmitting layer such that acoustic waves generated by the transmitting layer are transmitted to body tissue under examination via the receiving layer, said receiving layer comprising a piezoelectric plastic film having an inner electrode means located between the transmitting layer and the receiving layer and having an outer electrode means at the front of the receiving layer, said receiving layer having an acoustic impedance which is relatively close to the acoustic impedance of body tissue in comparison to the acoustic impedance of said transmitting layer, and the transmitting layer having an acoustic impedance which is relatively high in comparison to the acoustic impedance of body tissue.

4,354,133
HERMETICALLY SEALED CONTAINER

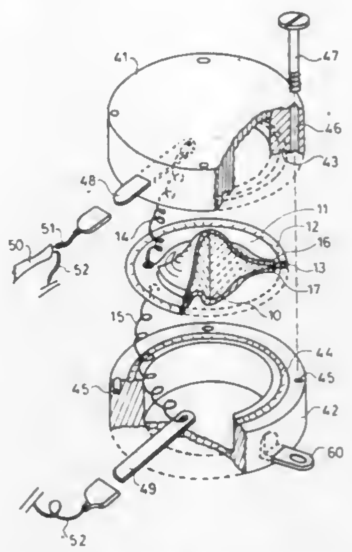
John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 29, 1980, Ser. No. 182,540
Int. Cl.^{3} C25D *11/00;* H01J *5/00*
U.S. Cl. 310—344 **5 Claims**



1. An improved hermetically sealed ceramic container for enclosing a crystal resonator comprising a receptacle having at least one opening with said crystal resonator mounted therein; a closure element covering each said opening; an aluminum seal between said closure element and said receptacle, said aluminum seal peripherally surrounding said opening and hermetically sealing said closure element to said receptacle; and a sealing deposit of an aluminum oxide anodizing coating applied to the outer surface of said aluminum seal.

4,354,134
PIEZOELECTRIC ACCELERATION PICKUP WITH A POLYMER TRANSDUCER MEMBER

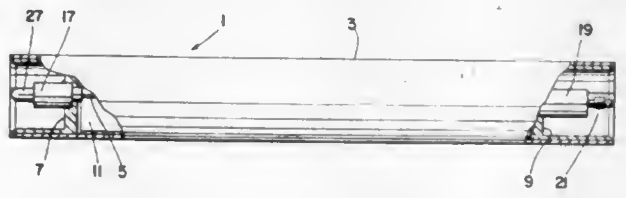
Francois Micheron, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jun. 26, 1980, Ser. No. 163,191
Claims priority, application France, Jun. 29, 1979, 79 16897
Int. Cl.^{3} H01L *41/22*
U.S. Cl. 310—800 **8 Claims**



1. An acceleration pickup incorporating a polymer transducer member which has piezoelectric properties after undergoing an appropriate treatment, at least in the polymer material regions between two conductive electrodes at the terminals of which a voltage develops which is displaceable and related to the displacement of a seismic mass subject to an acceleration to be detected, wherein the seismic mass is constituted by at least one predetermined region of the polymer material, wherein said transducer member has the configuration of a film obtained by moulding said polymer material, said film having an excrescence in at least one predetermined region of its surface and said excrescence constitutes the seismic mass, said two conductive electrodes being applied to each side of said film forming said transducer member, and wherein the transducer member has a revolution structure with respect to an axis perpendicular to the plane of said film, said excrescence being in the form of a central dome with the same revolution axis.

4,354,135
GEIGER-MUELLER TUBE WITH NICKEL COPPER ALLOY CATHODE

Nicholas Mitrofanov, Cleveland, and Arthur C. Lucas, Chagrin Falls, both of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio
Filed May 14, 1980, Ser. No. 149,778
Int. Cl.^{3} H01J *47/08*
U.S. Cl. 313—93 **3 Claims**



1. In a Geiger-Mueller radiation detector including a sealed chamber defined by a cylindrical cathode and two end caps, a wire anode disposed within said chamber concentrically with respect to said cathode and a gaseous mixture confined in said chamber and comprising predominantly an inert gas and minor amounts of an ionizing gas and a halogen quenching gas, the improvement comprising the use of a cathode consisting of an alloy containing between 60 and 70% nickel and between 35

and 25% copper and having a thin layer of platinum electrodeposited on the interior surface thereof.

4,354,136

IGNITION PLUG FOR INTERNAL COMBUSTION ENGINE

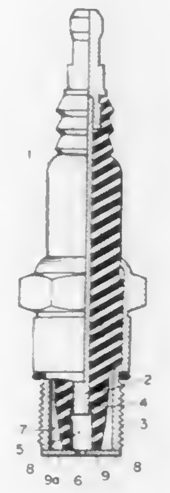
Kyugo Hamai, Yokosuka; Meroji Nakai, Yokosuka; Ryuzaburo Maruyama, Fujisawa, and Yasuhiko Nakagawa, Kamakura, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 22, 1980, Ser. No. 123,690

Claims priority, application Japan, Mar. 8, 1979, 54-27132; Nov. 5, 1979, 54-153557[U]

Int. Cl.^{3} H01T *13/20*

U.S. Cl. 313—139 **9 Claims**



9. An ignition plug for an internal combustion engine, comprising:

an electrically conductive plug body having a cylindrical lower portion which is externally threaded for engagement with an engine cylinder head;

an insulating member received within the lower portion of said plug body and entending upwardly therefrom, the lower portion of said insulating member being shaped to define a plasma generating chamber;

a first electrode extending through said insulating member along the longitudinal axis thereof, with the lower end of said first electrode protruding into said plasma generating chamber;

a second electrode spaced from said first electrode and extending from said plug body externally across said plasma generating chamber, said second electrode cooperating with said plug body and said insulating member to define an annular chamber surrounding said plasma generating chamber; and

first and second operating sections in said second electrode communicating respectively with said plasma generating chamber and said annular chamber.

4,354,137

INCANDESCENT LAMP HAVING SEAL-ANCHORED FILAMENT MOUNT, AND METHOD OF MAKING SUCH LAMP

Jack Martin, Paramus, and Elam Pitkjaan, Cedar Grove, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 15, 1980, Ser. No. 168,999

Int. Cl.^{3} H01K *1/18*

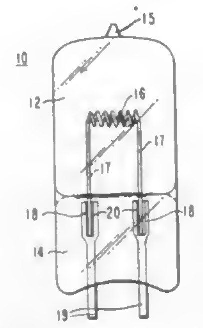
U.S. Cl. 313—222 **11 Claims**

1. In an electric incandescent lamp that has a glass envelope which is terminated at one end by an hermetic seal of fused glass, the improvement comprising the combination of;

a refractory wire filament having a coiled body and a pair of uncoiled leg portions the ends whereof are substantially disposed in side-by-side relationship, and

a pair of lead-in wires that have flattened end portions which are fastened to the ends of the filament leg portions by a welded juncture or a brazed junction and thus form electrical junctures that are devoid of separate interconnecting conductor members,

the uncoiled leg portions of said filament being of such length that at least a part of each of the electrical junctures is embedded in the fused-glass seal so that said leg portions are securely anchored in the seal and thus serve as electrical-connector members and the sole mechanical-support means for the coiled body of the filament,



the lead-in wires being of such length that the free ends thereof protrude from the sealed end of the envelope.

4,354,138

TELEVISION CAMERA TUBE WITH ELECTROSTATIC FOCUSING AND MAGNETIC DEFLECTION

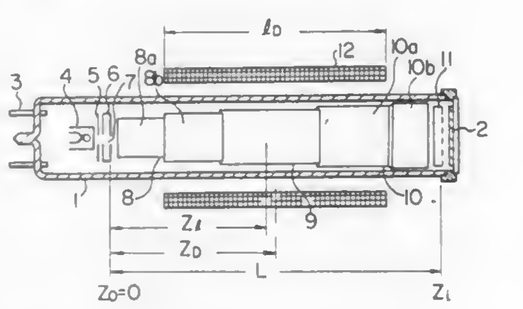
Masanori Maruyama, Kokubunji; Masashi Mizushima, Shizuoka; Masakazu Fukushima, Kokubunji; Satoru Miyamoto, and Hideyuki Sakai, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,995

Claims priority, application Japan, Oct. 3, 1979, 54/126843

Int. Cl.^{3} H01J *31/00, 31/26*

U.S. Cl. 313—440 **3 Claims**



1. In a camera tube with electrostatic focusing and magnetic deflection comprising a beam current control section having an electron beam limiting diaphragm, a focusing lens section including three cylindrical electrodes, a mesh electrode, and a magnetic deflection coil, the improvement in that the length of said magnetic deflection coil in the direction of the tube axis is 0.18–0.40 times the distance from said electron beam limiting diaphragm of said beam current control section to said mesh electrode.

4,354,139

LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP

Willem L. Konijnendijk; Robert C. Peters, and Petrus J. M. Willemsen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

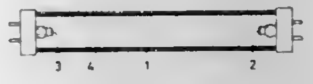
Filed Apr. 7, 1980, Ser. No. 137,890

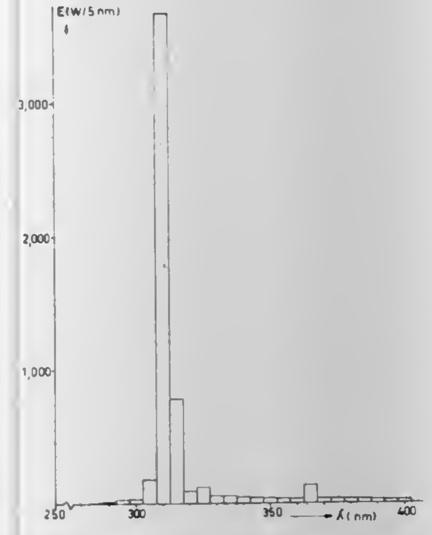
Claims priority, application Netherlands, Jul. 3, 1979, 7905161

Int. Cl.^{3} C09K *11/46*

U.S. Cl. 313—486 **8 Claims**

1. A low-pressure mercury vapour discharge lamp for radiation purposes having a discharge tube made of glass with selective transmission, the tube being coated on the inside with a luminescent layer, characterized in that the luminescent layer contains a luminescent material which has the characteristic line emission of gadolinium at 312 nm, and that the discharge tube is made of glass having an absorption edge located between 260 and 280 nm, the tube having at 312 nm a transmission of at least 80%.





4,354,140

LIGHT-EMITTING SEMICONDUCTOR

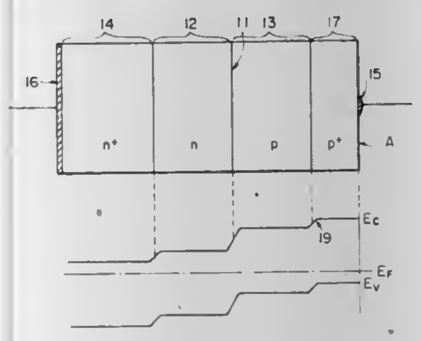
Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed May 28, 1980, Ser. No. 154,057

Claims priority, application Japan, May 28, 1979, 54-66679; May 28, 1979, 54-66680

Int. Cl.^{3} H01L *33/00*

U.S. Cl. 313—499 **22 Claims**



1. A light-emitting semiconductor device for radiating incoherent light, comprising:

a semiconductor substrate;

a first semiconductor layer disposed on said substrate and having a first conductivity type and a first net impurity concentration;

a second semiconductor layer disposed on said first semiconductor layer to act as a dominant luminescent layer and having a second conductivity type opposite to said first conductivity type and a second net impurity concentration and forming a pn junction with said first semiconductor layer, said second conductivity type being constituted by shallow impurities which are atoms different from those in the first semiconductor layer; and

a third semiconductor layer disposed on said second semiconductor layer and having said conductivity type and a third net impurity concentration and substantially a same composition as that of the second semiconductor layer,

said third net impurity concentration being at least about e times said second net impurity concentration where e is the value of the base of natural logarithms for forming an effective potential barrier for minority carriers in said second semiconductor layer,

the third net impurity concentration being about $2\times10^{19}cm^{-3}$ as substantially an upper limit value not inducing many defects at the interface of said second and third semiconductor layers when the second conductivity type is p type and about $7\times10^{18}cm^{-3}$ as substantially an upper limit value not inducing many defects at the interface of said second and third semiconductor layers when the second conductivity is n type.

4,354,141

ELECTRIC FLASH DEVICE FOR CAMERA

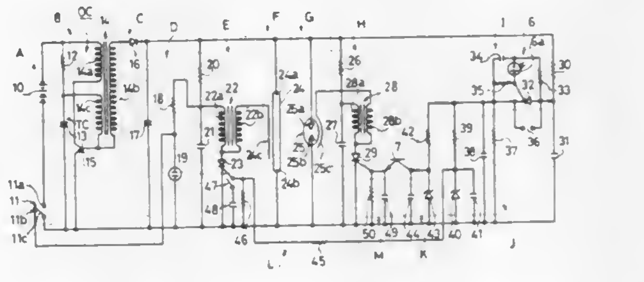
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,418

Claims priority, application Japan, Jun. 22, 1979, 54-078013

Int. Cl.^{3} H05B *41/32*

U.S. Cl. 315—241 P **16 Claims**



1. An electric flash device for a camera comprising a first flash unit built into said camera, and having a first flashing member including a first flash tube, and a second flash unit mountable on said camera and having a second flashing member including a second flash tube, and a flash control circuit arrangement for controlling flash operation of said second flash unit in synchronization with the flashing operation of the first flash unit, said flash control circuit arrangement comprising a power source circuit for providing an electric charge, an electric charge storing circuit for storing said electric charge from said power source circuit, trigger signal generating means for triggering said second flash tube of the second flashing member, flash operation starting means activated by a flash light from said first flash unit and for activating said trigger signal generating circuit, and flashing operation selecting means for selectively setting the flash operation of said second flash tube of said second flash unit such that the second flash tube flashes when said first flash tube in the camera flashes.

4,354,142

CIRCUIT ARRANGEMENT FOR THE PULSED ILLUMINATION OF A STROBOSCOPE RING

Alfred Seitz, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,353

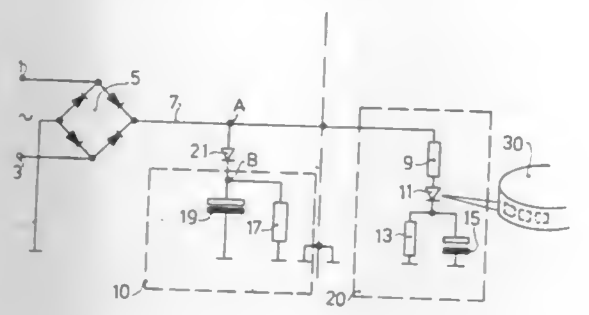
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 2916623

Int. Cl.^{3} H05B *37/00*

U.S. Cl. 315—241 S **3 Claims**

1. A circuit arrangement for pulsed illumination of a stroboscopic ring used for a record player comprising an alternating voltage source, means connected to said alternating voltage source for providing a pulsating direct voltage, a series circuit connected to said means and including a first resistor, a light emitting diode, and a parallel circuit of a second resistor and a capacitor, a stroboscope ring receiving periodic light pulses from said light emitting diode to produce stroboscopic images,

and a smoothing circuit connected in parallel with said series circuit, said smoothing circuit including a diode for isolating said smoothing circuit from said pulsating direct voltage and a second parallel circuit of a load and second capacitor.



4,354,143
EQUIPMENT TO CORRECT ABERRATIONS OF A CATHODE RAY BEAM

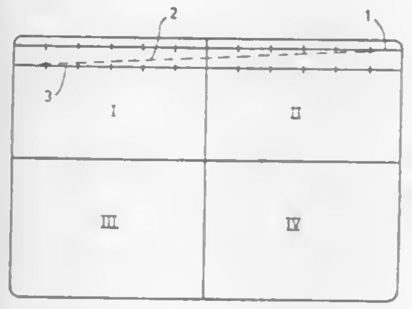
Ian D. Judd, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,146

Claims priority, application United Kingdom, Dec. 15, 1979, 7943294

Int. Cl.^{3} H01J *29/70, 29/76*

U.S. Cl. 315—368 **5 Claims**



1. Cathode ray tube equipment including correction means for correcting an aberration of a cathode ray beam as the beam is scanned across the screen, said correction means being responsive to correction signals, characterized by a digital store arranged in operation to store finite differences of functions defining the correction signals and digital calculating apparatus which in operation derives cyclicy, successive correction signals by summing appropriate finite differences.

4,354,144
TRANSMISSIONLESS DRIVE SYSTEM

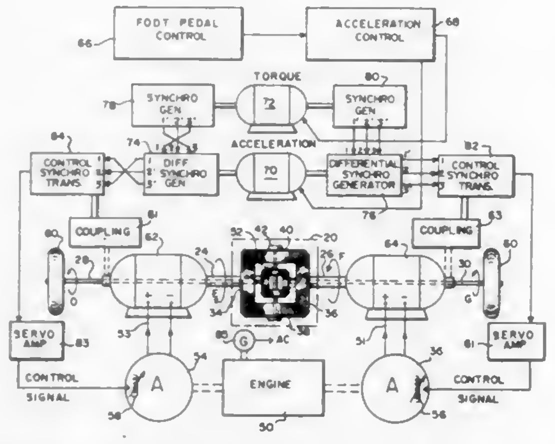
Milton E. H. McCarthy, 359 Warwick Ave., Ormond Beach, Fla. 32074

Continuation-in-part of Ser. No. 171,797, Jul. 24, 1981. This application Feb. 1, 1982, Ser. No. 344,682

Int. Cl.^{3} H02P *1/16*

U.S. Cl. 318—13 **16 Claims**

1. A vehicle driving system comprising:
- a mechanical differential means having a first input shaft for being driven at a rotational speed of $\pm\omega_{S1}$, a second input shaft for being driven at a rotational speed of $\pm\omega_{S2}$, and an output shaft, said differential means for driving said output shaft at a rotational speed $\omega_S=\frac{1}{2}(\pm\omega_{S1}\pm\omega_{S2})$ where the algebraic sign indicates direction of rotation;
- a first controllable speed drive motor connected to said first input shaft for rotation thereof;
- a second controllable speed drive motor connected to said second input shaft for rotation thereof;
- a first power source connected to said first drive motor, said first power source including control means for controlling the speed of said first drive motor;
- a second power source connected to said second drive motor, said second power source including control means for controlling the speed of said second drive motor;
- first rpm comparison means connected to said first drive motor for sensing the rpm ω_{M1} thereof and having an input for receiving an rpm reference signal ω_{R1}, said comparison means for producing a first output error signal proportional to $\omega_{R1}-\omega_{M1}$ at an output thereof, said output connected to said control means of said first power source whereby said first drive motor, said first power source, and said first comparison means forming a first closed loop servo system;
- second rpm comparison means connected to said second drive motor for sensing the rpm ω_{M2} thereof and having an input for receiving an rpm reference signal ω_{R2}, said second comparison means for producing a second output error signal proportional to $\omega_{R2}-\omega_{M2}$ at an output thereof, said output connected to said control means of said second power source whereby said second drive motor, said second power source, and said comparison means forming a second closed loop servo system;



- torque reference means for producing a selectable torque rpm reference signal ω_T;
- acceleration reference means for producing a selectable acceleration rpm reference signal ω_A;
- first calculation means connected to said torque reference means and said acceleration reference means for calculating said rpm reference signal ω_{R1} from the algebraic sum of ω_T and ω_A, said first calculation means having an output for said sum connected to said input of said first rpm comparison means; and
- second calculation means connected to said torque reference means for calculating said rpm reference signal ω_{R2} from the algebraic difference of ω_T and ω_A, said second calculation means having an output for said difference connected to said input of said second rpm comparison means;
- whereby said output shaft rotates at a rotational speed ω_S equal to the rpm represented by acceleration rpm reference signal ω_A.

4,354,145
ELECTRONICALLY COMMUTATING MOTOR

Johannes H. H. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

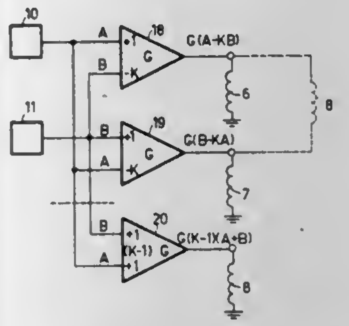
Filed Nov. 17, 1980, Ser. No. 207,541

Claims priority, application Netherlands, Dec. 12, 1979, 7908926

Int. Cl.^{3} H02K *29/02*

U.S. Cl. 318—254 **11 Claims**

1. An electric machine having electronic commutation comprising, a rotor which at least partly comprises a permanent magnetic material, which rotor co-operates with at least two stationarily arranged stator coils, at least two magneto-sensitive Hall elements arranged on a common substrate for supplying signals which vary substantially sinusoidally with the rotor position in order to energize the stator coils as a function of the rotor position via an energizing circuit, the magneto-sensitive elements being arranged at angular spacings around the rotor axis which are smaller than the phase difference ϕ which is necessary between the energizing signals for the stator coils in order to obtain a correct energization of said stator coils, and the energizing circuit includes a combining circuit for linearly combining the signals supplied by the at least two magneto-sensitive elements so as to obtain at least two energizing signals having a mutual phase difference which is substantially equal to ϕ.



4,354,146
DRIVE APPARATUS

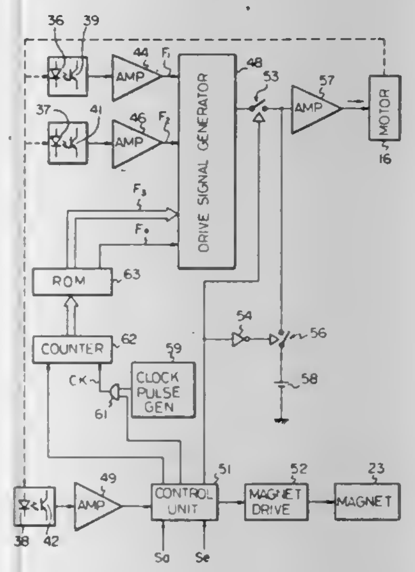
Shigemoto Tenmyo, and Hiroshi Koide, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,823

Claims priority, application Japan, Jun. 12, 1979, 54-73074

Int. Cl.^{3} H02P *5/06*

U.S. Cl. 318—341 **4 Claims**



1. A drive apparatus for moving an object at a command speed which is a predetermined function of time including a motor for moving the object, command signal generator means for generating a periodic digital command signal having an instantaneous period corresponding to the command speed and feedback signal generator means for generating a periodic digital feedback signal having an instantaneous period corresponding to an actual speed of the object, characterized by comprising:
- memory means for receiving the command and feedback signals in combination as an address input, the memory means storing in addresses thereof digital drive signals having magnitudes which are predetermined in accordance with a phase difference between the respective command and feedback signals; and
- drive means for energizing the motor in accordance with a magnitude of the drive signal addressed in the memory means.

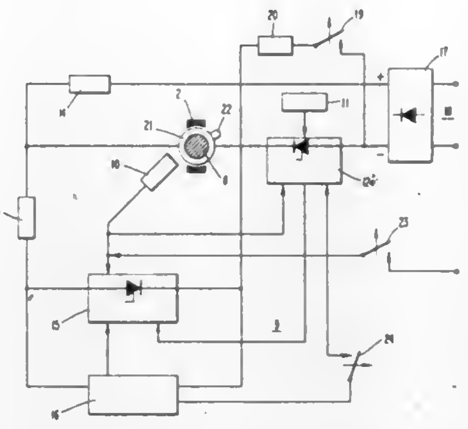
4,354,147
DRIVE AND CONTROL ARRANGEMENT FOR A MECHANICAL ECCENTRIC PRESS

Hans-Jürgen Klaussner, Streblgasse 24, CH-8472, Seuzach, Switzerland

Filed Aug. 15, 1980, Ser. No. 178,448

Int. Cl.^{3} H02P *3/12*

U.S. Cl. 318—363 **5 Claims**



1. In a mechanical eccentric press including a ram which is moved between a top dead center position and a bottom dead center position by means of a d.c. electric motor having a drive shaft that is connected to the ram by an eccentric mechanism and a connecting rod, and means for automatically deactivating the motor as a function of the angular position of its shaft after the ram has reached bottom dead center, a device for actuating and controlling the motor, comprising:
- a limit switch that is adjustably positioned on said shaft so as to be actuated at an adjustable point during the rotation of said shaft after the ram reaches bottom dead center;
- a braking sequence circuit that is operable to short-circuit the armature of the motor through a braking resistance upon actuation of said limit switch, to thereby brake the motor; and
- a starting sequence circuit for automatically interrupting a braking operation performed by said braking sequence circuit a predetermined time period after actuation of said limit switch.

4,354,148
APPARATUS FOR CHARGING RECHARGEABLE BATTERY

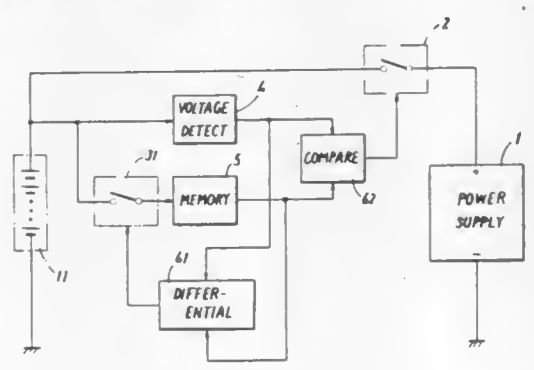
Kinya Tada, Kobe, and Kenji Oyamada, Yawata, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Apr. 9, 1980, Ser. No. 138,590

Claims priority, application Japan, Apr. 18, 1979, 54/48138; Apr. 18, 1979, 54/48139; Aug. 7, 1979, 54/100996; Aug. 8, 1979, 54/101637; Aug. 11, 1979, 54/102676

Int. Cl.^{3} H02J *7/04*

U.S. Cl. 320—20 **33 Claims**



1. An apparatus for charging a rechargeable battery having a charging voltage characteristic exhibiting a peak value shortly before said rechargeable battery reaches a fully

charged state and thereafter exhibiting a gradually decreasing charge until said fully charged state is reached, said apparatus comprising:

charging voltage source means for supplying an electric current for charging said rechargeable battery,

means coupled to said rechargeable battery for providing a voltage associated with the terminal voltage of said rechargeable battery as it is being charged,

voltage memory means responsive to said charging voltage characteristic of said rechargeable battery and based on said associated voltage obtained from said voltage providing means for storing at the time of the peak of said battery charging voltage characteristic a first voltage which is less than said associated voltage by a predetermined voltage and for maintaining said first voltage after the peak of the battery charging characteristic has passed and said associated voltage decreases,

stored voltage control means for controlling said voltage being provided from said associated voltage providing means to said voltage memory means to limit the voltage stored by said voltage memory means to said first voltage,

comparing means for comparing said stored voltage in said voltage memory means and said associated voltage obtained from said voltage providing means after said peak of said charging voltage characteristic of said rechargeable battery is passed, and

control means responsive to the output of said comparing means for controlling said electric current supplied from said charging voltage source means to said rechargeable battery.

4,354,149

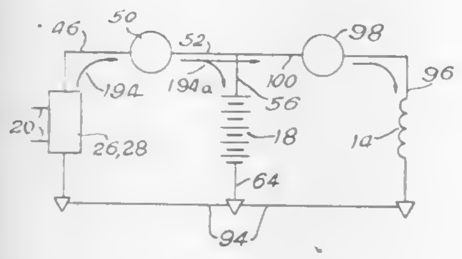
BATTERY CHARGE SYSTEM

Joseph A. Armond, and Gabriel R. Buky, both of c/o Electro-Matic Products Co., 2235 N. Knox Ave., Chicago, Ill. 60639

Filed Sep. 11, 1980, Ser. No. 186,509

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—40 **10 Claims**



1. A battery charge system, comprising

a magnet adapted to hold a load,

a battery,

an electrical power source,

circuitry operably interconnecting the magnet, battery and power source, and including an SCR,

a power transformer deriving power from the source and operable, when connected with the battery, for charging the battery,

a control transformer deriving power from the source,

valve means interposed between the power transformer and the battery,

means for sensing minimum voltage level of the battery,

means for sensing maximum voltage of the battery, and

means controlled by the minimum voltage sensing means and operative for turning on the SCR and thereby connecting the power source and the battery, and controlled by the maximum voltage sensing means and operative for turning off the SCR and thereby disconnecting the power source from the battery.

4,354,150

ELECTRICAL GENERATOR

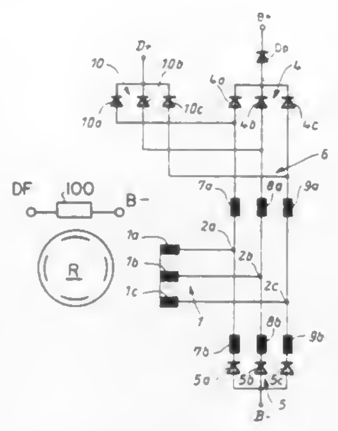
Wolfgang Kofink, Aichwald, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,718

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920863

Int. Cl.³ H02P *9/10*

U.S. Cl. 322—63 **6 Claims**



1. An electrical generator system, in particular for use with a slip ringless three-phase a-c generator suitable for motor vehicles and the like having

a three-phase armature winding (**1**);

a rotor (R);

at least one exciter winding (**100**) providing field excitation power;

a full-wave three-phase bridge rectifier (**6**, **4**, **5**);

an exciter rectifier (**10**) connected to the armature winding and supplying excitation current for the exciter winding (**100**);

and a compound winding (*7a*, *7b*; *8a*, *8b*; *9a*, *9b*) positioned to provide additional excitation field and connected to have load current flowing therethrough,

wherein the compound winding is composed of at least two compound winding components (*7a*, *7b*; *8a*, *8b*; *9a*, *9b*), which compound winding components are connected between a terminal of one phase winding of the armature winding and respective terminals of one phase of the branches of the rectifier bridge (**6**) in which said one branch carries less than the entire load current.

4,354,151

VOLTAGE DIVIDER CIRCUITS

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,942

Int. Cl.³ G05F *1/613*

U.S. Cl. 323—225 **14 Claims**

1. A voltage divider comprising:

a complementary symmetry inverter comprised of a first P-channel insulated-gate field-effect transistor (IGFET) and a first N-channel IGFET, each IGFET having a gate electrode, and source and drain electrodes defining the ends of a conduction path;

first and second power terminals for the application therebetween of an operating voltage to be divided, the voltage to be applied to said first terminal being positive relative to the voltage to be applied to said second terminal;

means connecting the source electrode of said first P-IGFET to said first power terminal and means connecting the source electrode of said first N-IGFET to said second power terminal;

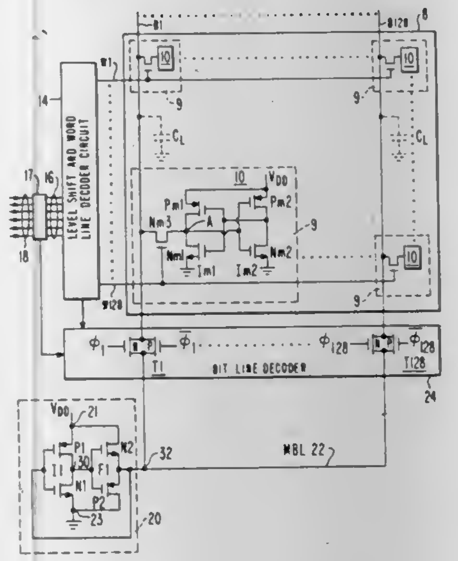
a complementary symmetry voltage follower stage comprising first and second output transistors of P and N conductivity type, respectively, each output transistor having an input and an output and a control electrode;

means connecting the drain electrodes of said first and second IGFETs to the control electrodes of said first and second output transistors;

means for applying relatively positive and relatively negative operating potentials to the output electrodes of said first and second output transistors, respectively;

means connecting said input electrodes of said first and second output transistors to an output terminal for producing thereat a voltage which is a portion of the potential applied between said first and second power terminals; and

negligible impedance means connecting said output terminal to the gate electrodes of said first and second IGFETs for feeding back the voltage at said output terminal to said gate electrodes of said first and second IGFETs and for biasing said inverter in the linear portion of its transfer characteristic.



4,354,152

METHOD FOR AUTOMATIC CONTROL OF THE VOLTAGE OF AN ELECTROSTATIC FILTER AT THE BREAKDOWN LIMIT

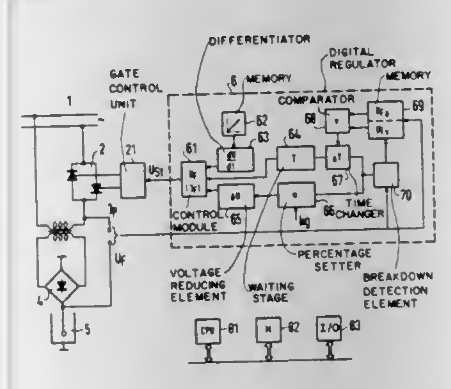
Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 213,093

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949664

Int. Cl.³ B03C *3/68*

U.S. Cl. 323—241 **7 Claims**



7. In a electrostatic filter which is fed from an a-c voltage source via a rectifier, a transformer and a final control element, apparatus for automatic control at the breakdown limit, comprising a microcomputer supplying a set control voltage to the control element, said microcomputer programmed to compute from the measured and stored filter values and data the required reduction of the filter voltage or filter current at breakdown and the waiting time until the next increase of the filter voltage such that, after each breakdown, the voltage or current is reduced by a percentage of the breakdown voltage or current which is dependent on the breakdown frequency during a preceding fixed period of time, and the waiting time to a new voltage increase is shortened if the measured voltage amplitude at breakdown has increased relative to the measured voltage amplitude at the preceding breakdown, and lengthened if the measured voltage amplitude at breakdown has decreased relative to the measured voltage amplitude at the preceding breakdown.

4,354,153

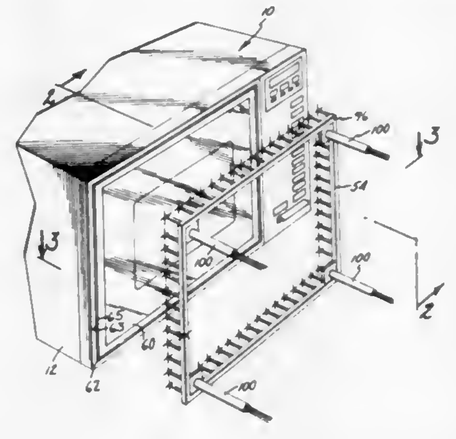
MICROWAVE OVEN LEAKAGE DETECTOR AND METHOD OF USING SAME TO TEST DOOR SEAL LEAKAGE

Ronald R. Lentz, Wayzata, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 19, 1979, Ser. No. 95,690

Int. Cl.³ G01R *21/04;* **H05B** *9/06*

U.S. Cl. 324—95 **25 Claims**



1. A method for determining the maximum possible power density of microwave leakage from a microwave oven in the region of the microwave oven door comprising the steps of:

(A) arranging a plurality of microwave sensitive antennae in a linear array, said array having a configuration corresponding to at least one edge of the circumference of said oven door, each of said antennae being spaced from each adjacent antenna a predetermined spacing distance, said spacing distance being equal to or less than the beamwidth corresponding to the highest mode of standing wave resonant energy in the oven whereby the narrowest beam of energy leaking from any aperture along said door edge of an oven being tested will be sensed by at least one of said antennae;

(B) positioning an oven to be tested adjacent to said array by:

  i. paralleling said oven door edge at a predetermined distance to said array, and

  ii. orienting said oven door edge to said array at a predetermined angle relative to the direction of maximum energy propagation from said oven door edge;

(C) measuring the microwave power density sensed by each antenna, and

(D) determining from said measurements the maximum possible power density of leakage at any point along said array.

4,354,154

MEASURING TRANSFORMER FOR HIGH-VOLTAGE SWITCH-GEAR WITH METAL ENCAPSULATION

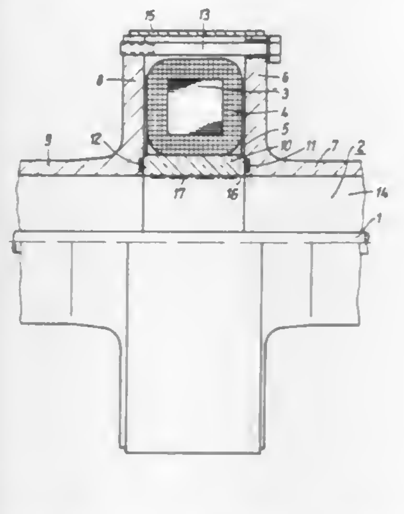
Heinz Schiemann, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 552,939, Feb. 25, 1975, abandoned. This application Mar. 26, 1979, Ser. No. 23,774

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1975, 2409990

Int. Cl.^{3} G01R *15/04;* H01F *40/06*

U.S. Cl. 324—126 **13 Claims**



1. A measuring transformer for use with a high voltage switch-gear having an inner conductor, metal encapsulation surrounding said inner conductor and forming an inner chamber, and outwardly extending flanges formed by said metal encapsulation at a joint thereof for retaining said transformer, comprising:

- means, including an insulating tube, forming sealing and insulating spacing means, said means being determinative of the spacing of said flanges from each other and forming with said flanges a ring-shaped cavity, outside said inner chamber, said means sealing off said inner chamber of said encapsulation;
- a first conductive layer on the side of said tube facing toward said inner conductor, said layer forming a capacitor with said inner conductor;
- a second conductive layer on the side of said tube facing away from said inner conductor, said second conductive layer forming a capacitor with said first conductive layer on the side of said tube facing toward said inner conductor;
- at least one iron core and a secondary winding disposed thereon, said core being disposed within said cavity and forming a current transformer with said inner conductor; and
- mean for rigidly coupling said sealing and insulating spacing means and said flanges, in a sealing manner.

4,354,155

CIRCUIT ARRANGEMENT FOR MONITORING A CURRENT-CONSUMING LOAD

Volker Speidel, Schalksmühle; Eduard Bergmann, Ludenscheid; Klaus Kassner, Bochum, and Werner-Ernst Berginski, Werdohl-Eveking, all of Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Fed. Rep. of Germany

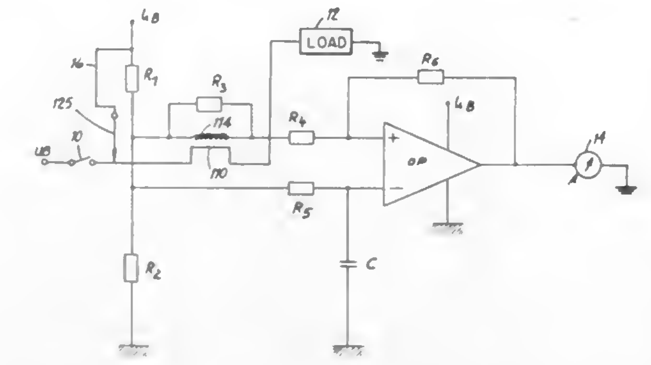
Filed Sep. 27, 1979, Ser. No. 79,600

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842470; Feb. 19, 1979, 2906263

Int. Cl.^{3} G01R *31/02, 19/15*

U.S. Cl. 324—133 **12 Claims**

1. A device for monitoring DC current conducted to a grounded load from a supply voltage source through a conductor about which a magnetic field is established by said current, comprising measuring coil means physically arranged in parallel with the conductor and operatively positioned within said magnetic field for sensing changes in current conducted to the load, an operational amplifier having non-inverting and inverting input terminals, an output terminal and a feedback resistance connected between the output terminal and the non-inverting input terminal, a grounded capacitor connected to the inverting input terminal, a series resistor connecting the measuring coil means output to the non-inverting input terminal, an electrical fault indicator connected to the output terminal, and voltage divider means interconnected between the source and ground for regulating voltages applied to the measuring coil means and the inverting input terminal of the operational amplifier, said measuring coil means having its input connected to said voltage divider, and said operational amplifier having its inverting input terminal connected to said voltage divider through a resistor.



4,354,156

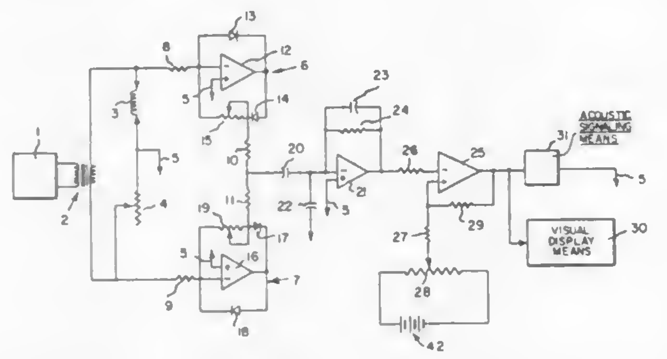
DEVICE FOR DETECTING FERROMAGNETIC MATERIALS

Stanley P. Kennedy, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation of Ser. No. 841,449, Oct. 12, 1977. This application May 5, 1980, Ser. No. 146,778

Int. Cl.^{3} G01N *27/72*

U.S. Cl. 324—228 **6 Claims**



1. Apparatus for detecting small rapidly moving ferromagnetic objects comprising:

(a) a source of alternating current;

(b) an inductive sensing coil having a magnetic field, powered by said source of alternating current;

(c) a balancing impedance in series connection with said inductive sensing coil, said balancing impedance being adjusted in a manner such that voltage amplitudes across said inductive sensing coil and said balancing impedance are approximately equal in the absence of ferromagnetic material in said coil's magnetic field;

(d) first and second means for rectifying electrical signals, said first means half-wave rectifying a signal appearing across said inductive sensing coil, and said second means half-wave rectifying a signal appearing across said balancing impedance, said first and second rectifying means simultaneously producing half-wave rectified signals of oppposite polarity.

(e) summing means joining the simultaneous outputs of said first and second rectifying means and producing an electrical signal proportional to the algebraic sum of the signals produced by said first and second rectifying means;

(f) means for sensing a rapidly repetitive change in the electrical signal produced by said summing means in response exclusively to the rapid passage of ferromagnetic objects in succession through said coil's magnetic field;

(g) a band-pass filter for blocking DC voltage interposed between the junction of said summing means and said means for sensing a change in the electrical signal produced by said summing means; and

(h) means for indicating the sensed change in said electrical signal whereby the number of said objects may be counted.

4,354,157

METHOD OF AND DEVICE FOR DETERMINING A NUCLEAR SPIN DENSITY DISTRIBUTION IN A PART OF A BODY

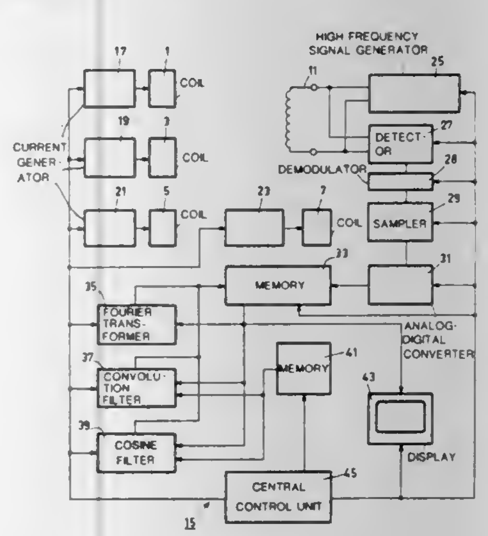
Louis F. Feiner, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,692

Claims priority, application Netherlands, Jun. 27, 1979, 7904986

Int. Cl.^{3} G01N *27/00*

U.S. Cl. 324—312 **6 Claims**



1. A method of determining a nuclear spin density distribution in a part of a body, comprising the following steps:

a. the generating of a stationary and uniform magnetic field,

b. the excitation of nuclear spins in a preselected slice so that the nuclear spins in this slice are oriented transversely of the direction of the uniform field,

c. the subsequent observation and periodic sampling of a free induction signal which is generated by the nuclear spins situated in the slice, the nuclear spins being influenced by at least two gradient magnetic fields whose field directions extend in the direction of the uniform magnetic field, the directions of the field gradients being perpendiculr with respect to each other, a first one of said gradient magnetic fields being stationary and the second field being amplitude modulated as a function of the time, a number of $N \cdot M$ samples being taken during a measuring period T,

d. the Fourier transformation of the number of samples in order to obtain nuclear spin density data concerning a nuclear spin density distribution at points which are situated on rows and columns in the selected slice, the rows extending parallel to the gradient direction of the modulated magnetic field, a resolution of the nuclear spin density distribution in the selected slice in the direction of a row being determined by the intensity and the frequency of the modulated field and in the direction of a column by the measuring period T and the intensity of the stationary gradient magnetic field,

characterized in that the data obtained from the Fourier transformation, concerning a spin density distribution at points in each row, are convoluted with a weighting function in order to determine a nuclear spin density characteristic number having an index n, said weighting function comprising:

(a) the value 1 for the nuclear spin density data having the index 2n for $|2n| \leqq N$,

(b) the value $(-1)^{n-n'}/(N \cdot \sin \{(n-n'+\frac{1}{2}) \cdot \pi/N\})$ and $(-1)^{n-n'}/(N \cdot \tan \{(n-n'+\frac{1}{2}) \cdot \pi/N)$ for the nuclear spin data with an index $2n'-1$ for $|2n'-1| < N$, N being odd and even, respectively,

(c) the value 0 for the nuclear sin density data having the index $2n' \neq 2n$, n' and n being real and integer variables for the measured nuclear spin density data and the nucelar spin density characteristic numbers, respectively, N being the maximum number of nuclear spin density characteristic numbers in a row.

4,354,158

CIRCUIT ARRANGEMENT FOR GENERATING A SAMPLING PULSE TRAIN FOR A PERIODIC SIGNAL

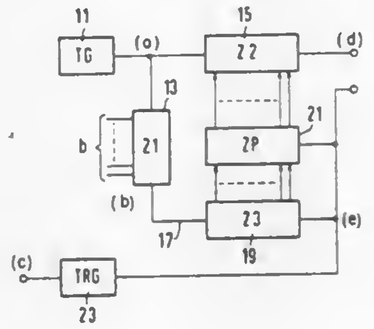
Bayati, Abutorab, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,383

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840065

Int. Cl.^{3} H03K *3/64*

U.S. Cl. 328—75 **3 Claims**



1. A circuit arrangement for generating a sampling pulse sequence for a periodic signal comprising:

(a) a clock pulse generator;

(b) a first presettable backward counter which acts as a first frequency reducer, having the output of said clock pulse generator as an input, said first presettable backward counter having a step down ratio equal to a number of sampling points uniformly distributed over the period T of the signal and providing carry output pulses.

(c) a second presettable backward counter which acts as a second frequency reducer, having the output of said clock generator as an input and furnishing the sampling pulse sequence at its output;

(d) a forward counter having the carry output pulses of said first presettable backward counter as inputs;

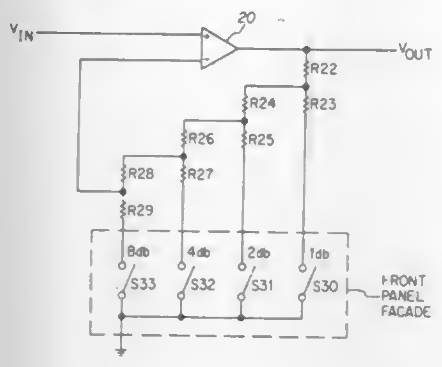
(e) an intermediate storage device, bit outputs of said forward counter being connected to the bit inputs of said intermediate storage device and bit outputs of the intermediate storage device connected to setting inputs of said second presettable backward counter so as to set the step down ratio of said second presettable backward counter; and

(f) means to provide a reset input to said forward counter and a carry control input to said intermediate storage device for each period T of the signal.

4,354,159
PRESCRIPTION ATTENUATOR HAVING CASCADED L-PAD SECTIONS

Ian A. Schorr, Chicago, and Mark J. Beegle, Lisle, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 2, 1981, Ser. No. 230,215
Int. Cl.^{3} H03H *11/24, 7/24*
U.S. Cl. 330—86 **6 Claims**

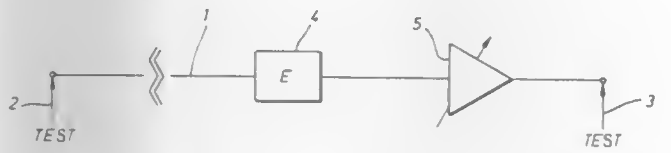


1. A prescription attenuator network, comprising a plurality of cascaded L-pad attenuator sections, each said section having a series and shunt impedance and a single switch with values selected so that the section input impedance is larger than the output impedance of the preceding section and the input impedance of each section is larger than the input impedance of the previous section in the network, and each attenuator section further includes an input and output terminal having connected therebetween said series impedance, and said shunt impedance is connected between said section output terminal and said switch so that upon activation thereof series impedance current is diverted away from subsequent attenuator sections to thereby produce a desired section attenuation, and multiple attenuator section activations produce a corresponding increase in the overall network attenuation.

4,354,160
AMPLITUDE EQUALIZER

Lyle R. Pierce, Portland, Oreg., assignor to Kentrox Industries, Inc., Portland, Oreg.

Filed Jul. 1, 1980, Ser. No. 165,072
Int. Cl.^{3} H03F *3/68*
U.S. Cl. 330—107 **1 Claim**



1. An amplitude equalizer circuit, comprising:

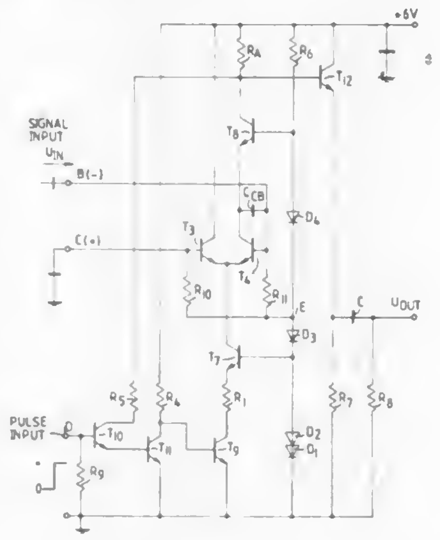
(a) circuit input and circuit output terminals;
(b) a filter section connected to the circuit input terminal;
(c) an adjustable-gain amplifier section connected to the circuit output terminal;
(d) an adjustable-ratio mixer section connected between said filter section and said amplifier section, said mixer section also being connected to the circuit input terminal, said mixer section including adjustable resistor-divider means having a range of settings, the output of said mixer section at one extreme of said setting range being independent of the output of said filter section, said resistor-divider means including:
  (i) first and second resistors with a node between them, the other side of said first resistor being connected to said circuit input terminal, and the other side of said second resistor being connected to the input of said amplifier section;
  (ii) a potentiometer connected to said node between the first and second resistors and having an adjustable wiper contact;
  (iii) a third resistor connected between said wiper contact and the output of said filter section,

the output voltage of said mixer section being constant and independent of the potentiometer setting, for a given constant input voltage at a single predetermined frequency.

4,354,161
H.F. BROADBAND AMPLIFIER

Günter Hasch, Heilbronn, and Willy Minner, Schwaigern, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,864
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908741
Int. Cl.^{3} H03F *3/45*
U.S. Cl. 330—254 **15 Claims**



1. In an HF broadband amplifier switchable by an external control command between amplification and attenuation, comprising a differential amplifier input stage including two transistors and receiving an a.c. input signal, a voltage divider circuit for setting the potential at the differential amplifier and connected between the poles of the supply voltage, a bypass or discharge current circuit through which the d.c. current maintaining the d.c. voltage present at an operating resistor flows in the switched off condition of the differential amplifier, the improvement comprising an additional transistor having its collector-emmiter path connected in a collector current circuit of at least one said transistor of said differential amplifier for attenuating the a.c. signal present at said amplifier input stage in the switched off condition, and wherein said operating resistor lies in the collector current circuit in which said additional transistor is connected, said additional transistor is connected between said operating resistor and the collector of said at least one transistor of said differential amplifier, the base of said additional transistor is operated in base connection and switched to a reference potential of low resistance in HF terms to reduce the capacitative coupling between the input and output of said amplifier circuit, and said bypass or discharge circuit is connected to a connection point between said operating resistor and said additional transistor.

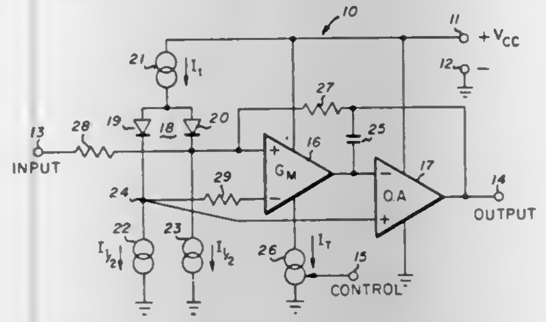
4,354,162
WIDE DYNAMIC RANGE CONTROL AMPLIFIER WITH OFFSET CORRECTION

John W. Wright, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 9, 1981, Ser. No. 232,757
Int. Cl.^{3} H03F *1/34*
U.S. Cl. 330—260 **4 Claims**

1. A control amplifier circuit having a frequency response that can be varied in response to a control voltage, said circuit comprising:

a variable transconductance amplifier having a differential input;
means responsive to said control voltage for varying the current in said transconductance amplifier;
a pair of back to back diodes coupled in series across said differential input;

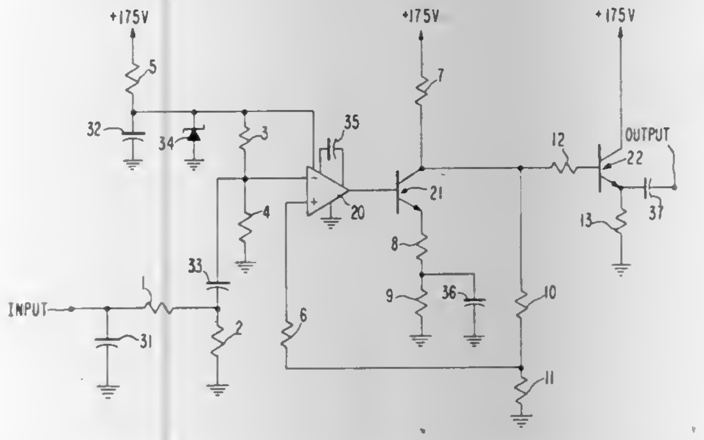


means for forward biasing said diodes whereby the linearity of said amplifier is enhanced;
negative feedback means coupled to the noninverting input of said amplifier to limit the gain thereof; and
a resistor coupled in series with the inverting input of said amplifier whereby the offset introduced into said amplifier by said means for varying is compensated.

4,354,163
HIGH VOLTAGE BUFFER AMPLIFIER

David S. Kato, Fountain Valley, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Apr. 30, 1980, Ser. No. 145,109
Int. Cl.^{3} H03F *1/34, 3/68*
U.S. Cl. 330—293 **12 Claims**



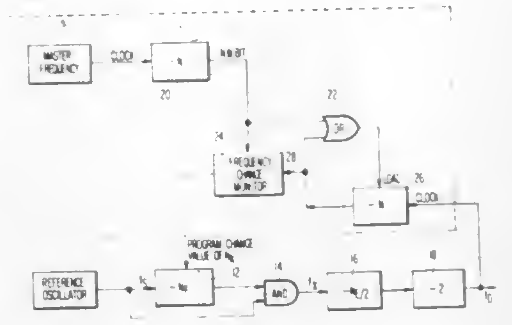
1. An amplifier circuit comprising, in combination:

an input impedance matching stage isolated from remaining portions of said circuit;
a first amplification stage connected to said impedance matching stage, comprising, in series, an operational amplifier and a transistor;
a feedback loop connected between an output of said transistor and an input of said operational amplifier, said feedback loop consisting solely of resistive components; and
a second amplification stage connected to said first amplification stage, said second stage comprising an emitter follower transistor network, wherein said second stage is isolated from said operational amplifier.

4,354,164
DIGITAL PHASE LOCK LOOP FOR TIM FREQUENCY

Shanti S. Gupta, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,671
Int. Cl.^{3} H03L *7/08*
U.S. Cl. 331—1 A **8 Claims**

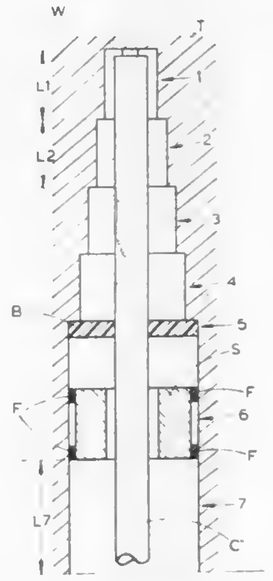


1. A digital phase-lock loop for effecting programmed changes in the desired output frequency f_D of a frequency synthesizer, said output frequency being derived from a reference frequency f_S comprising; means defining a synchronizing pulse occurring at a first frequency representative of a predetermined period of a master frequency, means defining a second frequency representative of said output frequency, means for counting bits of said output frequency occurring between a one synchronizing pulse and a subsequent synchronizing pulse to a fixed number and providing an output pulse, and a frequency change monitor to compare the correlation of the output pulse with a synchronizing pulse, and to effect a programmed frequency change of said output frequency f_D in said means defining a second frequency in accordance with a predetermined digital logic relationship if and only if, said second frequency differs from said first frequency.

4,354,165
TIME-DELAY-TRIGGERED TRAPATT OSCILLATOR HAVING DELAY LINE WITH PROGRESSIVELY INCREASING IMPEDANCE

Robert Davies; Barrie H. Newton, both of Copthorne, and Peter L. Booth, Reigate, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,892
Claims priority, application United Kingdom, Jul. 16, 1979, 7924638
Int. Cl.^{3} H03B *9/14*
U.S. Cl. 331—96 **4 Claims**



1. A time-delay-triggered TRAPATT ocillator arrangement comprising a TRAPATT diode electrically-connected across one end of a length of delay line, said delay line having a

progressively increasing impedance followed by a step decrease in impedance, as distance from the diode increases, said step decrease forming a trigger element for the diode.

4,354,166

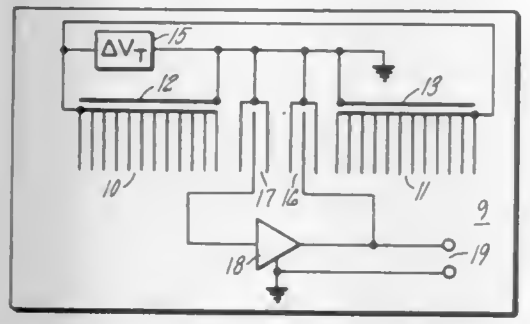
CARRIER CONCENTRATION CONTROLLED SURFACE ACOUSTIC WAVE RESONATOR AND OSCILLATOR

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 23, 1980, Ser. No. 199,871

Int. Cl.^{3} H01L *41/04;* H03B *5/32;* H03H *9/25, 9/42*

U.S. Cl. 331—107 A **3 Claims**



1. An improved carrier concentration controlled, surface acoustic wave, variable reflector resonator comprising:

a piezoelectric and semiconductive substrate;

a pair of arrays of reflector elements disposed on opposite sides of a transducer region on a surface of said substrate; and

an acoustoelectric transducer disposed on said surface of said substrate between said reflector arrays; characterized by:

the reflector elements in each of said arrays being connected together and forming a segmented rectifying contact with said substrate;

an ohmic connection to said substrate formed near each of the reflective elements of each of said arrays; and

means for impressing variable voltage between said reflector arrays and said ohmic contacts for altering the concentration of carriers beneath and between said reflector elements, whereby variations in said voltage after the potential and velocity of the surface acoustic wave at the surface of said substrate, thereby to control the resonant frequency of said resonator.

4,354,167

MULTI-SUBSCRIBER DIFFERENTIATION AND DISTRIBUTION SWITCHING SYSTEM HAVING INTERCHANGEABLE DIFFERENTIATING CIRCUITS

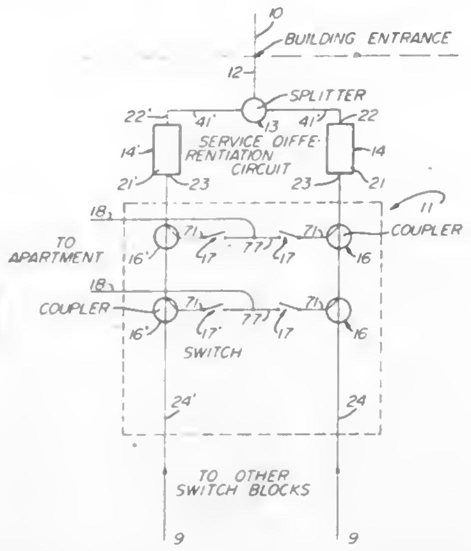
Gerard Terreault, Pointe Claire, and Yves Deflandre, Pierrefonds, both of Canada, assignors to 501 Centre de Recherche Industrielle du Quebec, Quebec, Canada

Filed Dec. 8, 1980, Ser. No. 214,281

Int. Cl.^{3} H03H *7/46*

U.S. Cl. 333—103 **6 Claims**

1. A differentiation and distribution switching system for connecting selected ones of a plurality of subscriber lines for receiving a desired signal, said system comprising at least two differentiation circuits, one of said differentiation circuits permitting passage of a first selected signal portion of a composite signal connected to its input, the other of said differentiation circuits permitting passage of a second selected signal portion of said composite signal, said composite signal being received from a main distribution line and connected to a splitter circuit to connect to an input of each said two differentiation circuits, and a switching circuit having a plurality of couplers connected to an output line of said differentiation circuits with a switch connected to each said couplers and an associated one of said subscriber lines whereby to connect a signal on said output line of said differentiation circuits to selected ones of said subscriber lines, each said differentiation circuit having a detachable support whereby to be easily interchanged without alteration to said switching circuit.



4,354,168

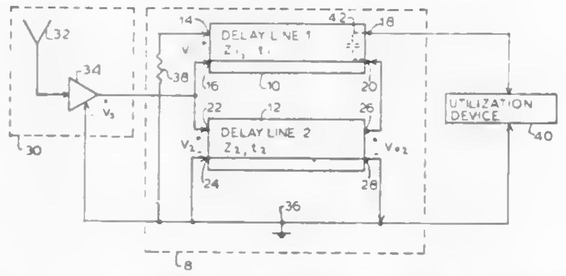
DELAY LINE CANCELER

Victor K. Fay, Sunnyvale, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Sep. 4, 1980, Ser. No. 183,914

Int. Cl.^{3} H01P *1/20, 1/212, 9/00*

U.S. Cl. 333—156 **8 Claims**



1. A delay line canceler for coupling a source of pulse signals to a device for utilizing the pulse signals and for converting all pulse signals having a time domain pulse width in excess of a selected pulse width to a pulse signal having the selected pulse width, and said delay line canceler comprising:

first transmission line means including a first input terminal coupled to the source for application of the pulse signals and for developing a first wave signal along said first transmission line means, a second input terminal, impedance means for coupling said second input terminal to ground, a first output terminal, and a second output terminal coupled to the device;

second transmission line means including a third input terminal coupled to the source for application of the pulse signals and for developing a second wave signal along said second transmission line means, a fourth input terminal coupled to ground, a third output terminal coupled to said first output terminal for summing the outputs of said first and said second transmission line means, and a fourth output terminal coupled to ground, said third output terminal being responsive to said second wave signal for developing a voltage with respect to said fourth output terminal having the same polarity as the voltage of the pulse signals applied to said third input terminal, said second output terminal being responsive to said first wave signal for developing a voltage with respect to said first output terminal having the opposite polarity as the voltage of the pulse signals applied to said first input terminal.

4,354,169

SWITCHED-CAPACITOR FILTER CIRCUIT HAVING AT LEAST ONE SIMULATED INDUCTANCE HAVING CONTROLLED SWITCHES, CAPACITORS, AND AN AMPLIFIER

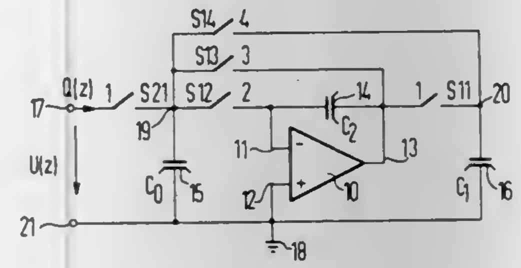
Josef Nossek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 7, 1981, Ser. No. 223,032

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001969

Int. Cl.^{3} H03H *11/48*

U.S. Cl. 333—173 **5 Claims**



1. In a switched-capacitor filter circuit which may be adapted to simulate a single-sided inductor or a parallel resonance circuit having a resonance frequency greater than one-sixth of the filter circuit sampling frequency or a parallel resonance circuit having a resonance frequency which is less than said sampling frequency, said filter circuit having an operational amplifier with a feedback capacitor interconnected between an output and an inverting input thereof, said amplifier also having a non-inverting input connected to a reference potential, said filter circuit operated by first, second, third, and fourth cyclically sequential clock phases having non-overlapping duty times and identical periods, and said filter circuit further having first and second input terminals, the improvement comprising:

a first switch which is closed during said second clock phase and which is interconnected between the inverting input of said amplifier and a first circuit node;

a first capacitor interconnected between said first circuit node and said second input terminal and the reference potential;

a second switch which is closed during said fourth clock phase and which is interconnected between said first circuit node and a second circuit node;

a second capacitor interconnected between said second circuit node and the reference potential;

a third switch which is closed during said first clock phase and which is interconnected between the output of said operational amplifier and said second circuit node;

a fourth switch which is closed during said third clock phase if said filter circuit is to simulate a single-sided inductor or a parallel resonance circuit having a resonance frequency which is less than one-sixth of said sampling frequency, said fourth switch otherwise always remaining open, said fourth switch being interconnected between the output of said operational amplifier and said first circuit node; and

a fifth switch which is closed during said first clock phase and which is interconnected between the first input terminal and said first circuit node.

4,354,170

THERMOSTAT WITH POSITIVE OFF ELEMENT

Gerard H. Risacher, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Mar. 31, 1980, Ser. No. 135,897

Int. Cl.^{3} H01H *37/52*

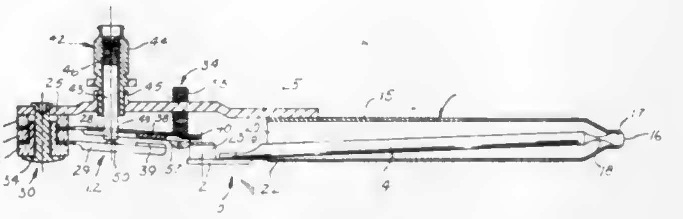
U.S. Cl. 337—334 **12 Claims**

1. An improved thermostat of the type having

a base;

a switch on said base including a first contact arm attached at one end to the base and a second contact arm attached at one end to the base, the first and second contact arms being spring-biased with a contact portion of each contact arm being resiliently urged toward engagement with a contact portion of the other arm, engagement of said contact portions closing said switch;

a variable control means which engages the second contact arm and moves the second contact arm laterally against its spring bias to a position corresponding to a desired thermal condition; and



a temperature-responsive assembly mounted to the base and including a projecting member which moves in response to the changes in thermal conditions, the projecting member engaging the first contact arm to move it against its spring bias out of contact with the second contact arm in response to a thermal condition exceeding the desired condition set by the variable control means;

wherein the improvement comprises

positive-off means on the base and having a portion which engages the first contact arm when the variable control means is set in an extreme position to hold the first contact arm away from the second contact arm.

4,354,171

ELEVATOR POSITION DETECTOR DEVICE

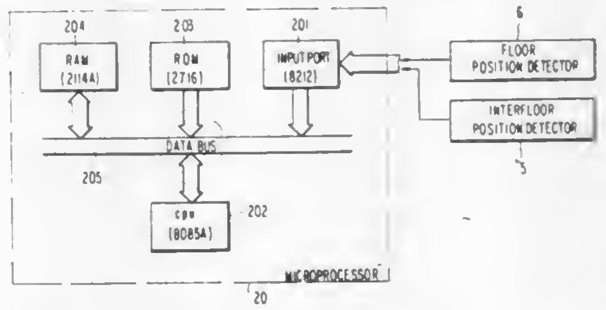
Masayuki Yoshida, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,506

Claims priority, application Japan, Nov. 5, 1979, 54-143135

Int. Cl.^{3} B66B *3/02*

U.S. Cl. 340—21 **3 Claims**



1. An elevator position detector device, comprising:

an elevator car for travelling in either an upward or downward direction within a hoistway and selectively stopping at floor landings,

interfloor position marking means disposed in said hoistway in an intermediate zone between adjacent floors,

floor level position marking means disposed in said hoistway at a position to mark the level of a landing floor,

at least one first detector for detecting said elevator car passing said interfloor position marking means,

at least one second detector for detecting said elevator car when it is located at said floor level position marking means, and

position detecting means for generating and storing a car position signal in response to output signals of said first and second detectors, and for modifying said car position signal only after said first and second detectors have detected said elevator car passing said interfloor position marking means and said elevator car at said floor level position marking means in the stated order.

4,354,172

SYSTEM OF GENERATING SYNCHRONIZING SIGNALS IN A NAVIGATIONAL LIGHT GROUP

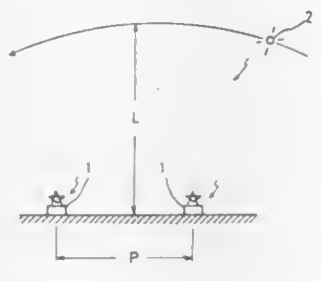
Isaburo Takeyasu, Takarazuka; Koichi Nagamachi, Kobe, and Yuji Sato, Kawanishi, all of Japan, assignors to Zeni Lite Buoy Co., Ltd., Ikeda, Japan

Filed Aug. 5, 1980, Ser. No. 175,420

Claims priority, application Japan, Aug. 14, 1979, 54-104197

Int. Cl.³ G08G *3/00*

U.S. Cl. 340—29 **9 Claims**



1. A navigation light adapted for synchronous operation with other lights of like kind in a group, comprising:

means for receiving radio signals transmitted from an orbital satellite and for extracting from such radio signals a special signal;

a lamp;

means for flashing the lamp in response to a flash signal; and

means for generating a flash signal in response to the special signal.

4,354,173

ARRANGEMENT FOR OBTAINING AN INDICATION OF EFFICIENCY OF OPERATION OF A MOTOR VEHICLE

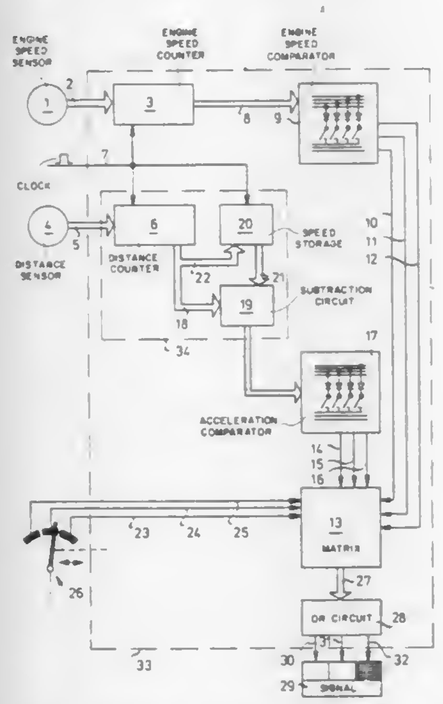
Peter Kuhn, Villingen-Schwenningen; Max Kolar, Aalen; Robert Weber, Brigachtal, and Siegfried Koch, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Jul. 8, 1980, Ser. No. 166,796

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928318

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—52 F **5 Claims**



1. An arrangement for obtaining an indication concerning the economy of operation of a motor vehicle, comprising a plurality of sensors for detecting different vehicle operating factors, including at least a first sensor for detecting engine speed, a second sensor for detecting distances travelled by the vehicle, and a third sensor for detecting the position of the engine throttle; means associated with each of said sensors for transmitting information corresponding to the operating factors detected by said sensors, said transmitting means including an acceleration measuring device coupled to said second sensor for determining the acceleration of the vehicle; means coupled to said transmitting means for forming operating condition values corresponding to the information provided by said transmitting means, said forming means including a first comparator which includes means for selectively fixing a first set of threshold values to provide first output signals in accordance with the engine speed detected by said first sensor, wherein said first output signals each correspond to a certain speed range determined by said first set of threshold values, a second comparator including means for selectively fixing a second set of threshold values to provide second output signals in accordance with the acceleration of the vehicle determined by said acceleration device so that said second output signals each correspond to an acceleration range determined by said second set of threshold values wherein said acceleration range is selected at least from among a set of ranges including $-b<a<+b, a>b$ and $a<-b$ wherein a is the vehicle acceleration and b is a certain positive value; combining means coupled to said forming means for combining and evaluating the operation condition values in accordance with a predetermined evaluation pattern wherein the combined operating condition values are rated, said combining means including a matrix for encoding said first and said second sets of output signals and the output of said third sensor into a combined code word and means for according one of a number of ratings to different groups of combined code words; and at least one signal transmitter for providing a number of signalling conditions each of which corresponds to a different group of equally rated combined code words.

4,354,174

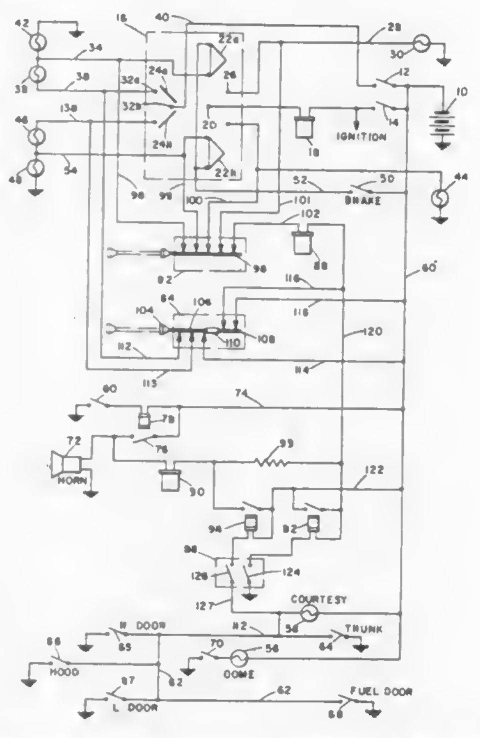
ANTI-THEFT DOOR ACTUATED HAZARD LIGHT AND HORN CIRCUITS FOR AUTOMOBILES

William A. Heidman, Jr., 4604 Robbins, San Diego, Calif. 92122

Filed Apr. 14, 1980, Ser. No. 139,789

Int. Cl.³ B60Q *1/46;* **B60R** *25/10*

U.S. Cl. 340—63 **13 Claims**



1. In combination with the wiring system of an automobile having a battery with a positive terminal and a negative terminal, the negative terminal of the battery being connected to a ground, at least one ignition switch having a first side connected to the positive terminal of the battery, a pair of left and right forward turn signal lamps, a pair of left and right rear turn signal lamps, a pair of left and right rear brake lamps, a turn signal switch assembly, a flasher, a brake light switch, a plurality of conductors interconnecting the lamps, ignition switch, brake light switch, flasher and turn signal switch assembly to permit selective flashing of the left or right turn signal lamps and selective simultaneous illumination of both of the brake lamps, the wiring system further including a horn, and at least one interior light having a first terminal connected to the positive terminal of the battery and a second terminal connectable to the ground by the closing of any one of a plurality of automobile body mounted switches through the opening of a corresponding one of a plurality of structural access panels of the automobile, the improvement comprising:

an anti-theft switch;

a bypass switch;

an arming switch; and

means for interconnecting the anti-theft switch, the bypass switch, and the arming switch with the battery, the flasher, the turn signal lamps, the brake lamps, the turn signal switch assembly, the horn and the interior light so that when the ignition switch is open, closing the anti-theft switch and the bypass switch without closing the arming switch will cause intermittent flashing of the turn signal lamps and the brake lamps to provide a hazard mode, and closing the anti-theft switch and the arming switch without closing the bypass switch and thereafter opening of any one of the structural access panels will result in intermittent blasting of the horn and flashing of the turn signal lamps and the brake lamps to provide an anti-theft mode.

4,354,175

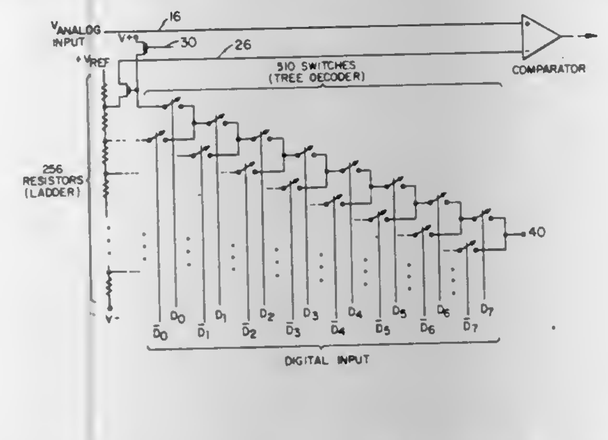
ANALOG/DIGITAL CONVERTER UTILIZING A SINGLE COLUMN OF ANALOG SWITCHES

Ira L. Goldstein, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed May 1, 1980, Ser. No. 145,550

Int. Cl.³ H03K *13/11*

U.S. Cl. 340—347 AD **3 Claims**



1. A method for converting an analog signal to a digital voltage level comprising:

inputting high and low reference voltages to a series resistor ladder network having incremental levels;

comparing the analog signal and the center incremental voltage level of the resistor ladder network;

selecting an incremental level midway between the center incremental level and the high reference voltage or the low reference voltage depending on whether the analog signal voltage level is greater or lesser, respectively, than the center incremental voltage level;

comparing the analog signal to the selected incremental voltage level;

repeating the selection of an incremental voltage level and comparison of the analog signal and selected incremental voltage level until the incremental voltage levels are exhausted whereby the incremental voltage level nearest the analog signal to voltage level is determined;

precharging with a voltage level a gate terminal of a plurality of series field effect transistors coupled between each incremental voltage level and a comparator such that each of the field effect transistors is in the off state;

removing the precharging voltage at the gates of the plurality of series field effect transistors when a decode tree, coupled to the gates of the plurality of field effect transistors, enables one of the plurality of series field effect transistors; and

holding the unselected series field effect transistors off by the remnants of the precharge voltage held by the respective gate capacitances.

4,354,176

A-D CONVERTER WITH FINE RESOLUTION

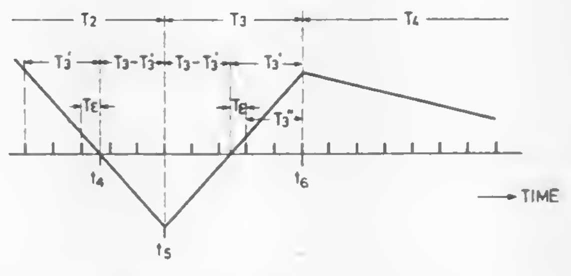
Hiroshi Aihara, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushikikaisha, Tokyo, Japan

Filed Aug. 14, 1980, Ser. No. 178,028

Claims priority, application Japan, Aug. 27, 1979, 54-109565

Int. Cl.³ H03K *13/02, 13/20*

U.S. Cl. 340—347 NT **17 Claims**



1. An A-D converter comprising:

an integrator;

first supply means for supplying the integrator with an analog input signal to be converted by integration during a first integration period from a predetermined level to obtain an integrated output corresponding to the magnitude of the analog input signal;

a first reference signal source for providing a first reference voltage of opposite polarity than that of said analog input signal;

a clock pulse source for generating clock pulses;

second supply means for supplying, in synchronism with the clock pulses, the integrator with said first reference signal, for integration for a second integration period terminating with the Mth clock pulse after the integrator output passes said predetermined level, where M is a non-zero positive integer;

a second reference signal source for providing a second reference signal of the same magnitude as the first reference signal but opposite in polarity;

third supply means for supplying, in synchronism with the clock pulses, the integrator with said second reference signal, for integration for a third integration period, said third integration period being selected to end on the Nth clock pulse after the integrator output again crosses said predetermined level, N being larger than one;

fourth supply means for supplying, in synchronism with the clock pulses, the integrator with a third reference signal of the same polarity as said first reference signal for causing the output of said integrator to change at a rate of an integral fraction of the integration rate of the integrator during said second integration period, until the integrator output reaches said predetermined level, thus defining a fourth integration period;

a one-directional counter for selectively counting the clock pulses during said second and third integration period, said counter having plural counting stages each corresponding to a respective bit of the count of said clock pulses;

zero dead band control means for interrupting the counting operation of the counter selectively in said second and third integration periods by a count number corresponding to a period of time that is twice as long as said third integration period, and

means for switching,-for said fourth integration period, the counting stage of the counter supplied with the clock pulses to a counting stage of one lower order than for said counting during said second integration periods.

4,354,177

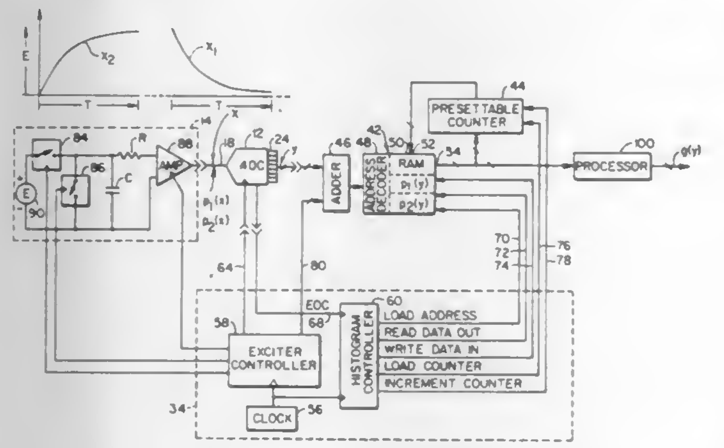
METHOD AND APPARATUS FOR CALIBRATING AN ANALOG-TO-DIGITAL CONVERTER FOR A DIGITAL-TO-ANALOG CONVERTER TEST SYSTEM

Edwin A. Sloane, Los Altos, Calif., assignor to Fairchild Camera & Instr. Corp., Mountain View, Calif.

Continuation-in-part of Ser. No. 264,928, May 18, 1981, which is a continuation-in-part of Ser. No. 204,979, Nov. 7, 1980. This application Jul. 31, 1981, Ser. No. 288,965

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 CC 12 Claims



1. A method for obtaining a transfer characteristic of an analog-to-digital converter under test, said analog-to-digital converter having an analog input and a digital output, said method comprising the steps of:

exciting said analog-to-digital converter input with a first analog signal of a first known function, said first known function having a first amplitude probability density function;

detecting digital output signals at said analog-to-digital converter output as values unique to selected combinations of output bits;

counting the number of occurrences of each selected output bit combination in response to said first analog signal thereby to produce a first measured histogram, said histogram being proportional to a second amplitude probability density function characterizing said transfer characteristic of said analog-to-digital converter under test; and

integrating the ratio of said second amplitude probability density function from said first measured histogram to said first amplitude probability density function of said first analog signal over the range of values for said transfer characteristic in order to obtain said transfer characteristic.

4,354,178

ELECTRODYNAMIC BALANCE FOR A DETECTION

Lambert R. Janssen, 262 Ave. F. Roosevelt B.10, 1050 Brussels, Belgium

Filed Oct. 19, 1979, Ser. No. 86,482

Claims priority, application Belgium, Oct. 26, 1979, 46650

Int. Cl.³ G08B *13/18*

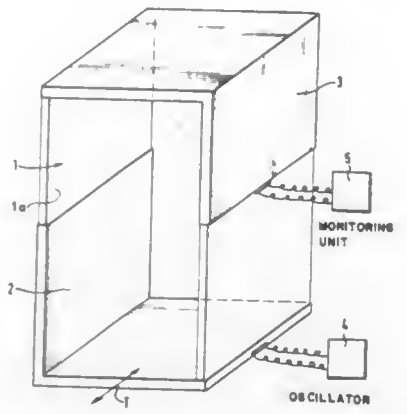
U.S. Cl. 340—572 **4 Claims**

1. An electrodynamic balance for systems of detection of ferrous or non-ferrous metallic objects having a gate frame defining a direction of advance for the objects to pass therethrough, comprising

a first loop means for transmitting electromagnetic waves,

a second loop means for receiving said electromagnetic waves,

both said loop means being cooperatively mounted diagonally opposite each other on said gate frame for creating a fixed magnetic field which is oblique transversely to said direction of advance and which is substantially constant at each point, respectively, between both said loop means under any orientation and position, respectively, of the objects in the magnetic field, wherein



the gate frame is three-dimensionally rectangular,

each of said loop means is formed in an L-shape and has a vertex, said vertices facing away from each other, said loop means are inverted relative to each other and one of said loop means is higher than the other and said loop means are disposed in diagonally opposite corners of the gate frame.

4,354,179

DEVICE CONTROLLED BY INCLINATION OF THE HEAD OF A DRIVER PREVENTING HIS FALLING ASLEEP

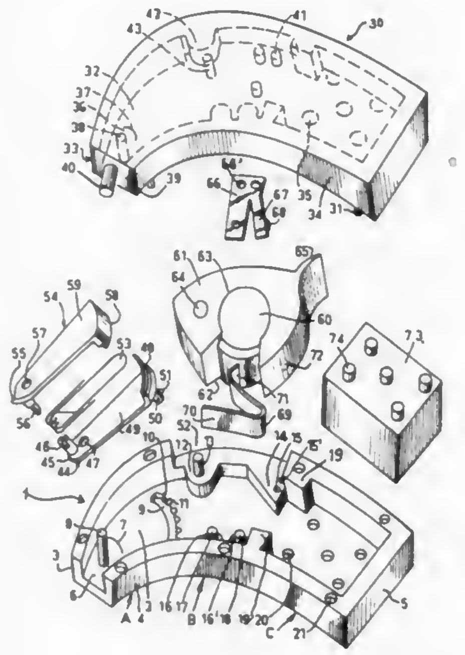
Jean-Claude Fourcade, 5 square Jasmin, F-78150, Le Chesnay, France

Filed Apr. 7, 1980, Ser. No. 137,910

Claims priority, application France, Apr. 5, 1979, 79 08647

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—575 11 Claims



1. A device controlled by the inclination of the head of a driver to prevent the driver from falling asleep, said device comprising detector means for detecting the position of the driver's head, warning means operatively connected to said detector means to receive a warning signal therefrom and adapted to emit an audible warning on receiving such signal, and a battery support for supporting a battery serving to power said device, said detector means, warning means and battery support all being housed within a housing and wherein said housing is adapted to match the contour of the ear, said detector means being adapted to pivot relative to said device by movement of finger means extending to the exterior of said housing.

4,354,180

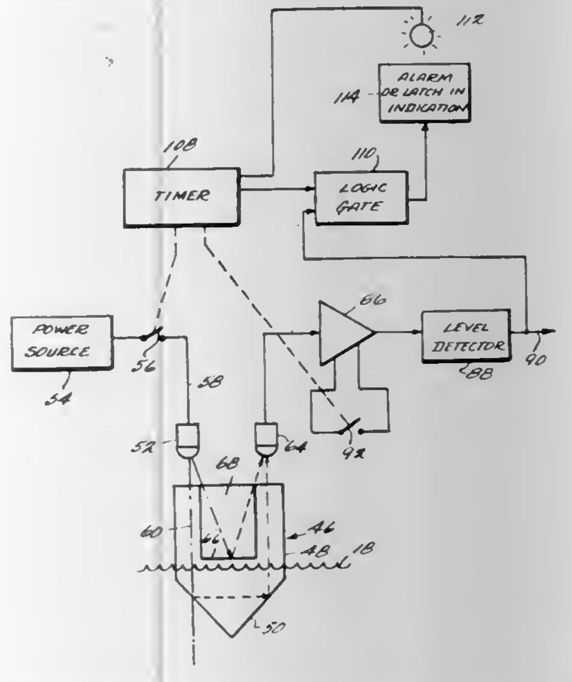
ELECTRO-OPTICAL LIQUID LEVEL SENSOR

Robert C. Harding, Dallas, Tex., assignor to Genelco, Inc., Dallas, Tex.

Filed Dec. 19, 1980, Ser. No. 218,454

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—619 **11 Claims**



1. A fail-safe self-checking electro-optical low liquid level sensor, comprising:

a probe including a transparent body having an index of refraction larger than that of the dry medium above the liquid to be sensed but not appreciably larger than that of the liquid and also having an exterior surface area causing internal reflection therefrom, to a location for sensing by an electro-optical transducer, of a light beam shined on said surface area from the interior of said body when said surface area is immersed in the dry medium but causing exit of the beam from said body through said surface area when the latter is immersed in the liquid, and said body being provided with optically reflective means for intercepting a portion of said beam and constantly reflecting such portion to said location irrespective of whether said exterior surface area is immersed in the dry medium or in the liquid.

4,354,181

VAPOR LAMP INDICATING DEVICE

Barry L. Spletzer, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed Nov. 3, 1980, Ser. No. 202,916

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—642 **11 Claims**

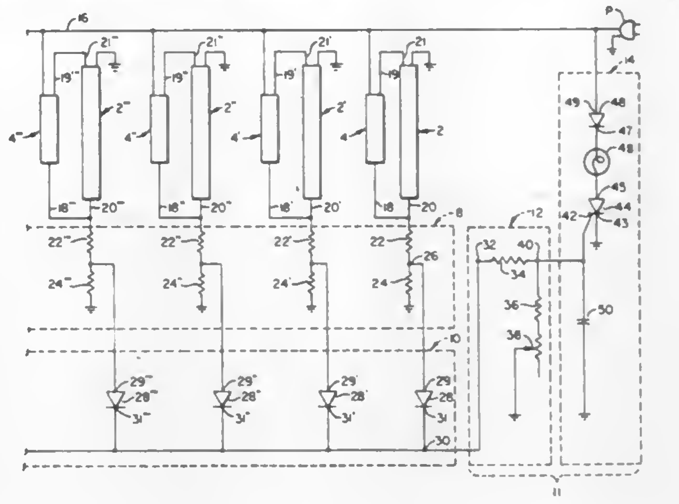
1. A vapor lamp assembly for use with a source of electricity comprising:

a plurality of current limiting ballast devices electrically connected to the electricity source;

a plurality of vapor lamps each having a first terminal supplied an electric potential through a respective current-limiting ballast device;

a plurality of means, each communicating with a respective first terminal of a like number of said vapor lamps, for producing a plurality of first signals proportional to the electric potential of its respective ballast device;

means for summing said first signals from said plurality of first signal producing means to produce a second signal at the output of said summing means; and



a trigger circuit means coupled to said summing means output responsive to the level of said second signal for alerting an operator when said second signal is above a first predetermined level to indicate the presence of an inoperative lamp.

4,354,182

MONITORING EQUIPMENT FOR THE ELECTRICAL SUPPLY SYSTEM IN A MOTOR VEHICLE

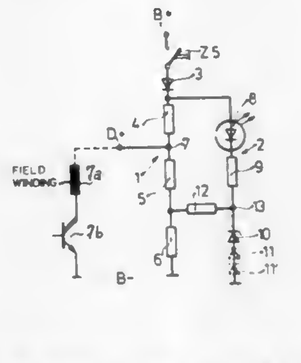
Wunibald Frey, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,227

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926705

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—650 **12 Claims**



1. A malfunction indicator for a vehicle having an electrical system comprising a battery having a positive (B+) and negative (B−) output terminal, switch means (ZS) connected to said positive output terminal, a generator, and voltage regulator means having a regulator input (D+) connected to said generator, comprising

indicator means (**8**), for furnishing a visual indication in response to at least a minimum voltage applied thereto, said indicator means having a first terminal connected to said switch means and a second terminal;

a reference voltage source (**10**) connected between said second terminal of said indicator means and said negative output terminal of said battery for maintaining said second terminal at said reference voltage, said reference voltage source and said indicator means thereby forming a series circuit;

voltage divider means (**4,5,6**) comprising a plurality of series-connected resistors connected in parallel with said series circuit, said voltage divider means having a voltage divider tap (**7**); and

means for connecting said voltage divider tap to said regulator input, whereby said indicator means furnishes said visual indication when the voltage at said regulator input and therefore at said voltage divider tap is substantially greater than or substantially less than the normal operating voltage at said regulator input.

4,354,183
LUBRICATION MONITORING SYSTEMS

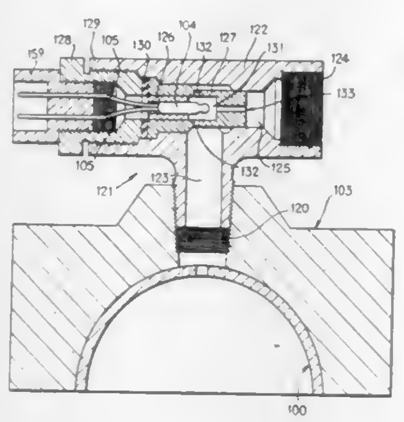
Michael W. Weeks, and Thomas C. Brandram, both of Plymouth, England, assignors to Interlube Systems Ltd., Great Britain

Filed Mar. 8, 1979, Ser. No. 18,831

Claims priority, application United Kingdom, Mar. 13, 1978, 09802/78

Int. Cl.^{3} G08B *19/00*

U.S. Cl. 340—682 **19 Claims**



1. A bearing assembly including:

a lubricated bearing,

an assembly interposed in the lubricant flow path at or adjacent the bearing, the assembly comprising a housing defining a chamber, first passage means extending from the chamber to a first port for connection to a lubricant supply and second passage means extending from the chamber to a second port connected to the lubricant flow path through the bearing, the first passage means being so narrow that lubricant in the chamber is substantially thermally isolated from the lubricant upstream of the chamber, and

a thermistor located in the chamber,

wherein the thermistor is connected in an electrical circuit in the self-heating mode to respond to a deleterious change in the flow of lubricant along the path.

4,354,184
DISPLAY SYSTEM FOR LOCALIZING REGIONS IN A MIXED TEXT & PICTURE DISPLAY

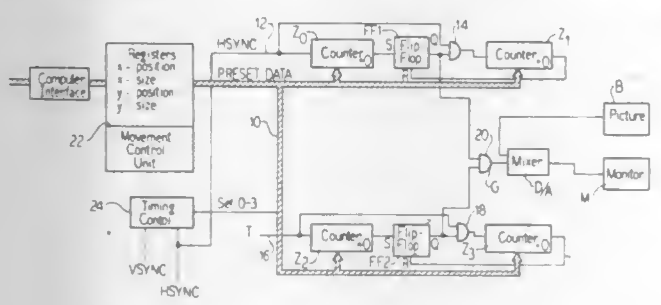
Walter Woborschil, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,232

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939489

Int. Cl.^{3} G09G *1/16*

U.S. Cl. 340—709 **15 Claims**



1. A system for the localization of a region of a display device for displaying a mixed text-picture, comprising means for scanning the region to be localized, means for generating a cursor signal during scanning of such region, means for moving the position of said cursor in two dimensions in the picture of said display device, means for mixing said cursor signal with picture information so that a rectangular cursor area appears with a different brightness than the information which is presented normally, means responsive to a data input for controlling the length and width of said cursor area, whereby the size and shape of said cursor can be modified by modifying said data input, and means for periodically changing the data input to progressively alter the length and width of said cursor area.

4,354,185
DISPLAY SYSTEM FOR LOCALIZING REGIONS IN A MIXED TEXT AND PICTURE DISPLAY

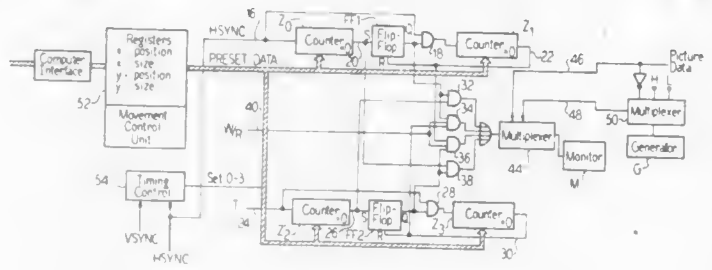
Walter Worborschil, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,234

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939458

Int. Cl.^{3} G09G *1/16*

U.S. Cl. 340—709 **17 Claims**



1. A system for localizing a region of a display device for displaying a mixed text-picture with two brightness levels comprising means for scanning the region to be localized, means for generating a signal representative of an open frame formed by at least two non-parallel lines, means for moving the position of said cursor in two dimensions in the picture of said display device, means for mixing said cursor signal with picture information, means including a data input for controlling the size of said cursor by controlling the length of said lines, whereby the size of said cursor can be modified by modifying said data input, and means for periodically changing the data input for progressively reducing the size of said cursor.

4,354,186
PICTURE DISPLAY DEVICE FOR DISPLAYING A BINARY SIGNAL GENERATED BY A PICTURE SIGNAL GENERATOR AS A BINARY INTERLACED TELEVISION PICTURE

Hermanus H. H. Groothuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

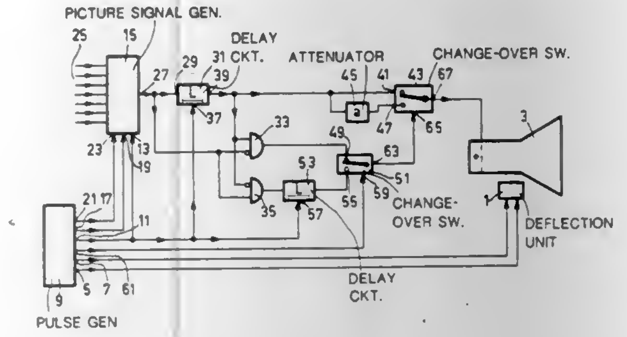
Filed Jan. 21, 1980, Ser. No. 113,884

Claims priority, application Netherlands, Feb. 13, 1979, 7901119

Int. Cl.^{3} G09G *1/16*

U.S. Cl. 340—728 **3 Claims**

1. A picture display device for displaying a binary picture signal generated by a picture signal generator as a twofold interlaced television picture, this picture signal generator generating the same signal pattern in the two consecutive fields of a picture, characterized in that the picture display device comprises a detection circuit for detecting signals corresponding to vertical brightness transients between lines in each field and a circuit for attenuating, in response to a signal supplied by the detection circuit and to a signal of half the field frequency, the brighter picture signal at the occurrence of said vertical brightness transients, whereby the value of the attenuated picture signal is located between the binary values of the two relevant picture signals thereby reducing the visibility of vertical jitter of the brightness transients having the picture frequency in a picture displayed by the picture display device.



4,354,187
ELECTROCHROMIC DISPLAY DEVICE

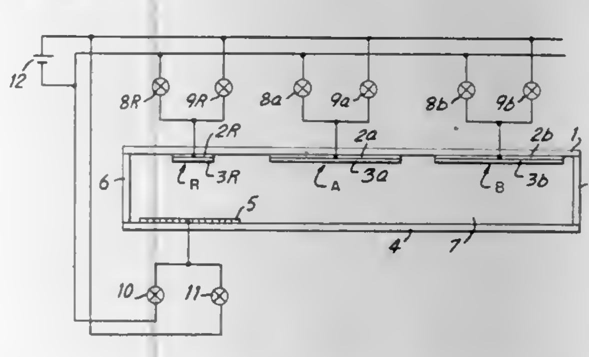
Junichi Tabata, and Noboru Kaneko, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,318

Claims priority, application Japan, Jul. 17, 1979, 54-090737

Int. Cl.^{3} G09G *3/16*

U.S. Cl. 340—763 **4 Claims**



1. An electrochromic display device comprising:

a display electrode group comprised of transparent electrodes have electrochromic layers formed on the transparent electrodes and being divided into a coloration display electrode and a bleaching display electrode;

a counter electrode;

a refresh electrode operable to maintain the coloration degree of the coloration display electrode at a constant level and connected to receive electric charge from the counter electrode;

means for applying a voltage between the refresh electrode and the counter electrode till the current flow between the refresh electrode and the counter electrode is saturated;

means for applying a voltage between the coloration display electrode and the bleaching display electrode to change the display state; and

means for applying a voltage between the refresh electrode and the coloration display electrode.

4,354,188
DEVICE FOR DIVIDING A RECURRENT INPUT SIGNAL BY A NON-INTEGER DIVISOR F, NOTABLY BY $F=N-\frac{1}{2}$

Henri W. Schneider, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,285

Claims priority, application Netherlands, Mar. 16, 1979, 7902111

Int. Cl.^{3} G09G *1/00*

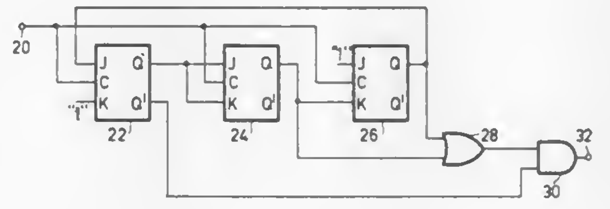
U.S. Cl. 340—814 **7 Claims**

1. An electrical circuit for the display of image data stored in a memory on a display screen of a television receiver, comprising a generator circuit for generating a periodic alternating voltage and a synchronization circuit for deriving synchronization signals for line and frame synchronization, required for the television receiver, from the period alternating voltage, characterized in that the synchronization circuit comprises at least one device for dividing a recurrent input signal; said device for dividing a recurrent input signal which alternately comprises a sequence of alternating first and second edges, a first edge being followed every time by a first interval and a second edge being followed every time by a second interval, said device comprising for division by a non-integer divisor $f=N-\frac{1}{2}$:

a first connection for the input signal;

a second connection for an output signal;

a counter circuit comprising n dynamic bistable elements, each of which includes a clock signal input, at least one data signal input, and at least one data signal output, 2^n being larger than $2N-1$, and 2^{n-1} being smaller than $(2N-1)$, at least one first bistable element being responsive to said first edges and at least one data signal output of each of said bistable elements being coupled to a signal input of at least one other bistable element, wherein the clock signal input of said first bistable element is directly connected to said first connection without intermediate logic means, at least one second bistable element being responsive exclusively to said second edges in that its clock signal input is directly connected to said first connection without intermediate logic means, that said first and second bistable elements are JK-flipflops, the counter circuit completing a cycle of $4N-2$ counter positions during $4N-2$ successive first and second intervals, wherein during one cycle all counter positions are mutually different during first intervals and all counter positions are mutually different during second intervals, a cycle exhibiting at least two pairs of mutually equal counter positions, at least one of said pairs occurring during a directly successive pair of a first and a second interval; the connection for the input signal being coupled to an output of the generator circuit and the connection for the output signal being capable of supplying an output signal which is an integer multiple of the line synchronization signal as well as of the frame synchronization signal.



4,354,189
SWITCH AND LOCK ACTIVATING SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 849,785, Nov. 9, 1977, Pat. No. 4,189,712. This application Feb. 15, 1980, Ser. No. 121,894

Int. Cl.^{3} H04Q *9/00*

U.S. Cl. 340—825.31 **10 Claims**

1. An electrically operated lock system comprising in combination:

first means for locking and unlocking an access gate,

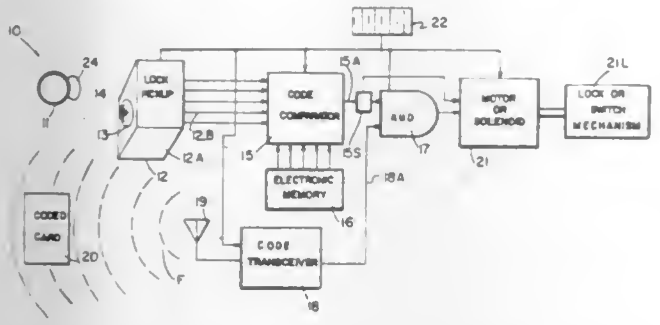
second means for operating said first means to cause said first means to unlock said gate,

said second means including electrically controllable means and a short wave pick-up operatively connected to said electrically controllable means,

third means including a portable short wave code generating and transmitting means adapted to be carried by a person seeking to open said access gate,

fourth means connected to said pick-up of said second means and operable for electrically detecting short wave codes generated by said third means, said fourth means being

- operable to activate said second means to control the operation of said first means,
- said first, second and fourth means being supported on a common support, and



- said third means being automatically operable when carried to a given range of said fourth means to generate a short wave code receivable by said pick-up and detectable by said fourth means for causing said fourth means to generate a control signal for controlling said second means to unlock said gate.

4,354,190

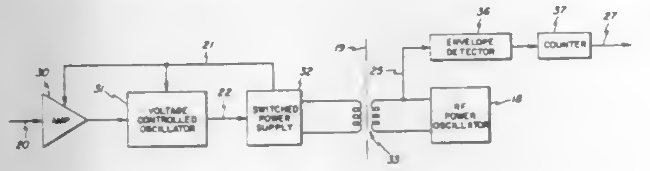
ROTOR MEASUREMENT SYSTEM USING REFLECTED LOAD TRANSMISSION

John M. Reschovsky, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,422

Int. Cl.^{3} G08C *19/16*

U.S. Cl. 340—870.18 7 Claims



1. Apparatus for obtaining physical measurement data from a body moving with respect to a stationary observer, comprising:

- at least one sensor means disposed on said moving body for providing an output signal indicative of at least one such physical measurement;
- an electrical energy source fixed with respect to said observer for supplying a radio frequency power signal;
- means reactively coupling said radio frequency signal to said moving body for supplying operating power to an electrical load thereon;
- means disposed on said moving body and responsive to said sensor output signal to effect corresponding changes in said electrical load causing amplitude variations in said radio frequency power signal;
- detector means fixed with respect to said observer and responsive to said radio frequency power signal for detecting said amplitude variations due to said load changes to provide an output signal characterizing said physical measurement, said load changes being reflected through said reactive coupling means.

4,354,191

GROUND-SPEED DOPPLER RADAR FOR VEHICLES

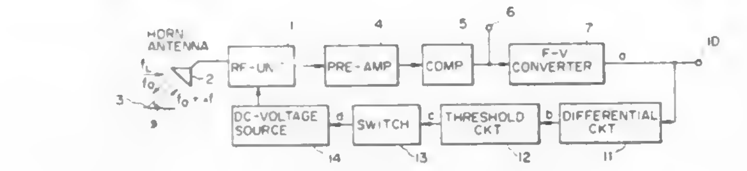
Akira Matsumura, Yokosuka; Yoichi Kaneko, Tokorozawa; Kenji Sekine, Hinode, and Akira Endo, Katsuta, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa and Hitachi, Ltd., Tokyo, both of, Japan

Filed Jul. 14, 1980, Ser. No. 168,158

Claims priority, application Japan, Jul. 27, 1979, 54-94882

Int. Cl.^{3} G01S *13/58*

U.S. Cl. 343—7.5 12 Claims



1. In a Doppler radar system wherein the speed of an object is detected from a frequency shift of microwaves emitted from an antenna carried by the object and reflected from a stationary surface; the improvement comprising a detecting circuit which detects a differential factor of the frequency shift, a threshold circuit which discriminates whether or not the output of said detecting circuit lies within a certain range of values, and a control circuit which varies the frequency of the microwaves emitted from the antenna on the basis of an output of said threshold circuit indicating that the output of said detecting circuit lies within said certain range of values.

4,354,192

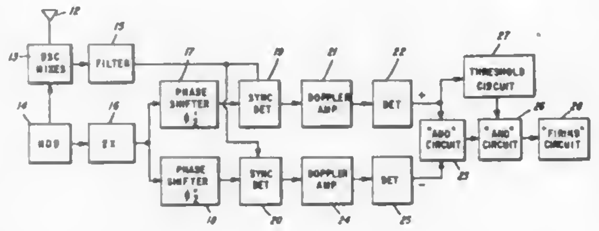
RADIO RANGING

Hans W. Kohler, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 6, 1966, Ser. No. 578,938

Int. Cl.^{3} G01S *13/32*

U.S. Cl. 343—14 13 Claims



1. In a continuous wave, frequency modulated ranging system for measuring the distance between two bodies by transmitting a signal from one body and receiving the echo signal from the other body, means for detecting the strength of the received signal, means for obtaining a function of the received signal having a detectable characteristic occurring at a plurality of predetermined specific ranges between said bodies, and means for detecting the simultaneous occurrence of said characteristic and a received signal strength of a predetermined value to indicate the occurrence of a predetermined range between said two bodies.

4,354,193

COLLAPSIBLE ANTENNA SUPPORT APPARATUS AS WELL AS A KIT FOR AND METHOD OF ASSEMBLING THE APPARATUS

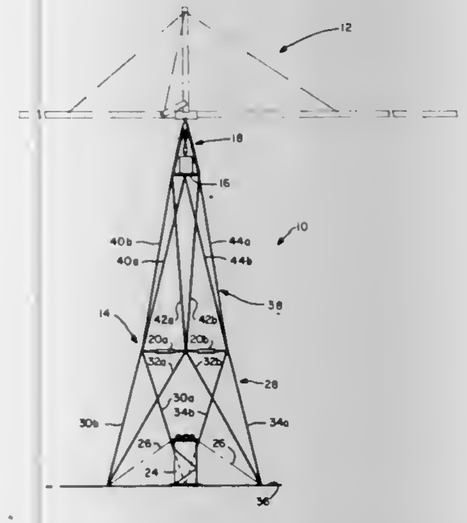
William L. Werner, Cupertino, Calif., assignor to Granger Associates, Santa Clara, Calif.

Filed Jun. 9, 1980, Ser. No. 157,448

Int. Cl.^{3} H01Q *3/02*

U.S. Cl. 343—882 11 Claims

1. A collapsible apparatus for supporting an antenna or other such device at a predetermined orientation with the horizontal, said apparatus comprising: a plurality of straight structural members; means for supporting the ends of said structural members so as to form a support matrix which has a base end adapted for mounting to the ground or a like support structure and which is movable between a first collapsed position and a second extended position relative to its base end; means for moving said matrix between said collapsed and extended positions; and means adapted for connection with said antenna or other such device for supporting the latter, said antenna support means being connected with said matrix of structural members for vertical movement between a lowered position and a raised position relative to said base end as said matrix moves between its collapsed and extended positions such that an antenna or other such device connected to and supported by said support means at said predetermined orientation remains at said orientation throughout said vertical movement; said support matrix including a bottom arrangement of three A-frames, each of which is formed of two of said structural members that together define an apex and base, the latter being located in a specific fixed horizontal plane, and a top arrangement of three A-frames, each of which is formed of two of said structural members that together define an apex and base, the latter being located in a horizontal plane which is vertically movable between a lowered position and a raised position relative to the base end of said matrix as the latter moves between its collapsed and extended position, and wherein said structural member supporting means includes first means for pivotally supporting the base of each of said bottom A-frames about a pivot axis in said fixed plane, second means for pivotally supporting the base of each of said top A-frames about a pivot axis in said vertically movable plane, and third means for pivotally connecting together the apex of each of said bottom A-frames with the apex of a respective one of said top A-frames.



4,354,194

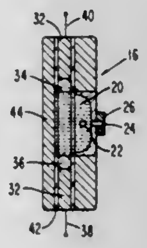
WIDEBAND INK DROP GENERATOR

Joseph C. Barteck, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,089

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—75 19 Claims



1. In a fluid jet drop generator including a fluid supply line connected to a source of pressurized fluid, an ink supply cavity for accepting the pressurized fluid, a nozzle plate with orifices for generating capillary streams from the ink supply cavity, and a signal input connected to a perturbation signal source, the improvement comprising:

- a pair of perturbation means spaced diametrically to form side walls of the ink supply cavity;
- said perturbation means being in contact with the pressurized fluid and operable to generate a reinforceable pressure zone therein; and
- an elongated nozzle wafer having a plurality of linear orifices thereon disposed so that the center of said orifices is positioned on the pressure zone.

4,354,195

INK JET RECORDING APPARATUS

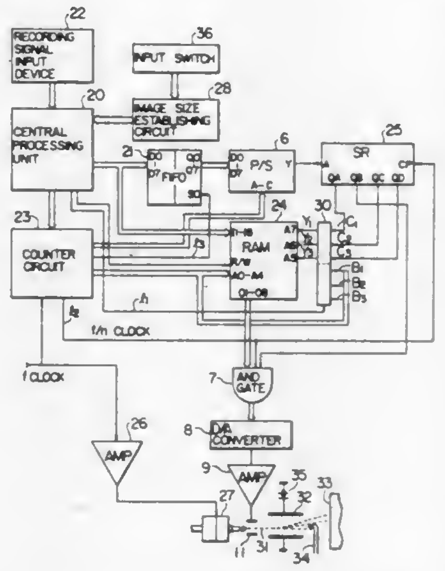
Hideyuki Oomori; Shinji Matsuoka, and Mitsuhiro Nakagaki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,694

Claims priority, application Japan, Dec. 11, 1979, 54/159743

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—75 7 Claims



1. An ink jet recording apparatus having a recording head for emitting a train of ink droplets towards a recording surface, in which an image is recorded by scanning the recording surface with the train of ink droplets in two directions, one being a direction of a relative movement between the recording head and the recording surface, the other being a direction substantially perpendicular to the one direction, the apparatus comprising:

- means for generating a plurality of groups of unit video data, each of said unit video data groups containing staircase waveform data associated with the scanning in said other direction;
- means for storing said plurality of unit video data groups;
- means for generating a clock signal having a predetermined repetition frequency;
- means for sequentially generating m binary signals (m: positive integer) representative of an image to be recorded, said binary signals being in a timed relation with said clock signal, the scanning operation in said other direction being effected m times for said image to be recorded;
- means for sequentially selecting i unit video data (i: integer) among those stored in said storing means to form a series of controlled charge amount data for each scanning operation in said other direction on said recording surface, the values of said sequentially selected unit video data being stepwise monotonously changed;
- means for creating a logical product of said clock signal, said selected unit video data and said binary signal; and
- means for generating an image signal from the output of said logical product creating means for giving charges to said train of ink droplets.

4,354,196

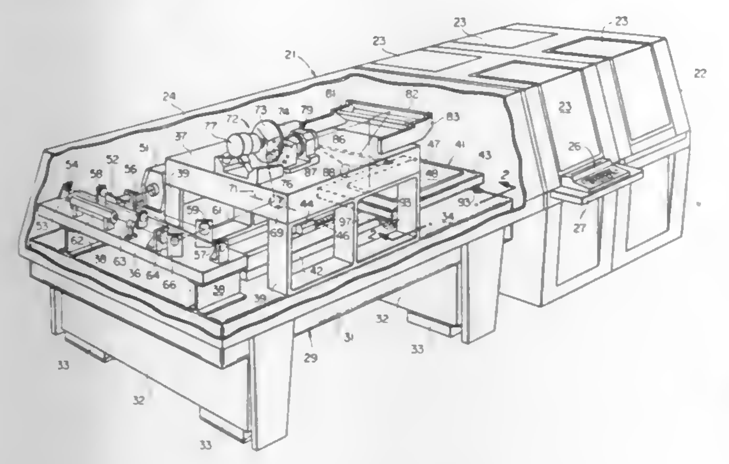
LASER ENGRAVING SYSTEM WITH MASSIVE BASE TABLE AND SYNCHRONIZATION CONTROLS

Don B. Neumann, Laguna Beach; Lyle K. Norton, Santa Ana, and Eric V. Olson, Long Beach, all of Calif., assignors to Eocom Corporation, Irvin, Calif.

Division of Ser. No. 42,133, May 24, 1979. This application Mar. 19, 1981, Ser. No. 245,697

Int. Cl.^{3} H04N *1/22*

U.S. Cl. 346—108 **6 Claims**



1. In a system for forming an image of printed circuit artwork on an output medium: a massive base table comprising a stone slab having a highly polished upper surface, a carriage assembly for holding the output medium, means mounting the carriage assembly on the surface of the base table for movement in a first direction along said surface, a laser mounted on the base table for generating a writing beam, means for modulating the writing beam in accordance with the artwork to be imaged on the output medium, an optical table comprising a second stone slab rigidly mounted on the base table, optical means mounted on the optical table for directing the writing beam along a predetermined path toward the output medium, a scanning table comprising a third stone slab rigidly mounted on the base table, and scanning means mounted on the scanning table in the path of the beam for deflecting said beam across the output medium in a direction perpendicular to the first direction.

4,354,197

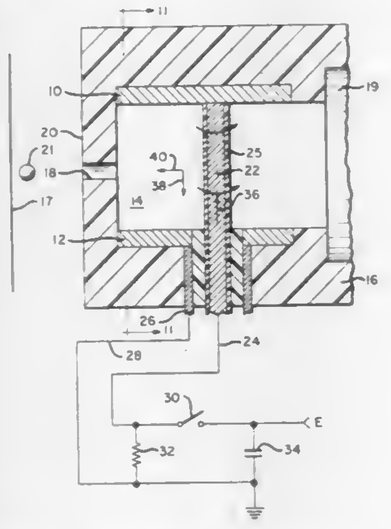
INK JET PRINTER DRIVE MEANS

Peter H. Reitberger, Munich, Fed. Rep. of Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Oct. 3, 1980, Ser. No. 193,570

Int. Cl.^{3} G01D *15/18*

U.S. Cl. 346—140 R **18 Claims**



1. Apparatus for producing characters on record media in dot matrix form comprising a

body portion having an inlet, an ink chamber within said body portion and containing fluid under pressure, a

pair of metallic electrodes adjacent said chamber and spaced to accommodate said fluid therebetween, an

outlet of said body portion forming an aperture of reduced diameter from that of said inlet,

electrical conducting means extending through said chamber and connected with one of said electrodes for receiving current and insulated from the other electrode and producing an azimuthal magnetic field in said fluid for generating a force in the direction of said aperture, and

means connected with said electrical conducting means and with the other electrode for switching operation of said conducting means whereby discharge of current between said electrodes in said magnetic field is transmitted to the ink fluid for producing pressure waves therein and causing ejection of ink from the aperture in droplet form.

4,354,198

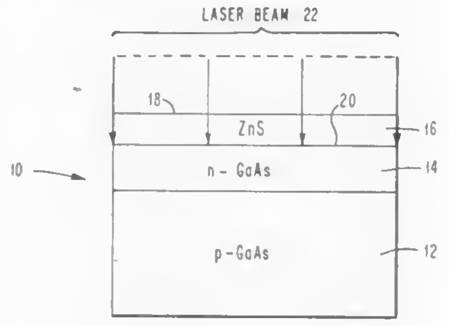
ZINC-SULPHIDE CAPPING LAYER FOR GALLIUM-ARSENIDE DEVICE

Rodney T. Hodgson, Ossining; George D. Pettit, Mahopac; Thomas O. Sedgwick, Briarcliff, and Jerry M. Woodall, Bedford Hills, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1980, Ser. No. 154,700

Int. Cl.^{3} H01L *29/161*

U.S. Cl. 357—16 **2 Claims**



1. A semiconductor device body of a group III–V semiconductor having at least one surface with a first lattice structure, and a group II–VI semiconductor having a second lattice structure different from said first lattice structure in an annealed condition on said at least one surface functioning as a passivating layer for said body.

4,354,199

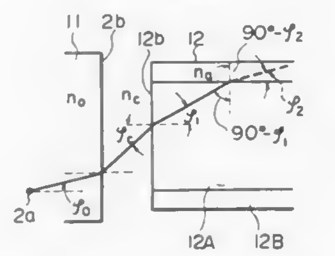
SEMICONDUCTOR LIGHT-EMITTING DEVICE

Osamu Hasegawa; Kenji Yano, both of Kawasaki, and Koichi Kaneda, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 29, 1980, Ser. No. 182,587

Int. Cl.^{3} H01L *31/12, 33/00*

U.S. Cl. 357—19 **21 Claims**



1. A semiconductor light-emitting device comprising:

a semicondutor substrate,

a $Ga_{1-x}Al_xAs$ crystal layer formed by epitaxial growth on said semiconductor substrate, wherein the x value in said crystal layer is gradually decreased as said epitaxial growth progresses,

a light-emitting portion formed where said x value is minimum in said crystal layer, and

a light-launching surface at a side surface of said crystal layer, whereby a light ray emitted from said light-emitting portion is bent in accordance with the distribution of said x value to reach said light-launching surface, said semiconductor substrate comprising a groove formed on said semiconductor substrate.

4,354,200

AMPLITUDE MODULATOR CIRCUIT FOR MODULATING A VIDEO SIGNAL ON A CARRIER SIGNAL

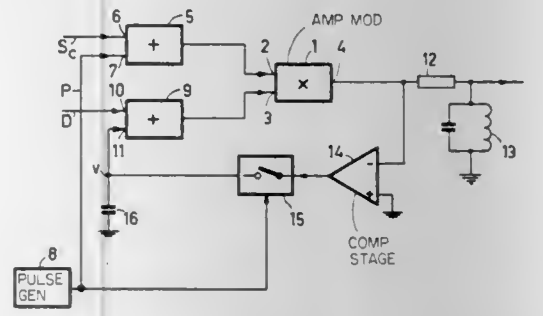
Henricus W. G. Haenen, and Robertus S. N. M. Huesken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,941

Claims priority, application Netherlands, Dec. 20, 1979, 7907177

Int. Cl.^{3} H04N *5/40*

U.S. Cl. 358—23 **17 Claims**



1. An amplitude modulator circuit for modulating a video signal having periodically occurring reference signal portions on a carrier signal, comprising a modulator having a carrier input terminal for receiving the carrier signal, a modulation input terminal for receiving the video signal and an output terminal for supplying the amplitude modulated signal obtained, said amplitude modulator circuit further comprising a control loop which is coupled to the output terminal of the modulator and includes a sampling circuit which is active during reference signal intervals, said control loop generating a direct current compensation signal to be added to the video signal, characterized in that the signal at the modulation input terminal of the modulator has a value for which the signal at the output terminal of the modulator is substantially independent of the signal at the carrier input terminal of the modulator during the period of time in which the sampling circuit is active, and that the circuit also comprises an adder stage connected to the output terminal, and a second control loop which includes a second sampling circuit which is active during reference signal intervals, said second control loop generating a second direct current compensation signal to be added to the signal at the output terminal of the modulator, the first control loop being connected to the output terminal of the adder stage.

4,354,201

TELEVISION SYSTEM WITH ACCESS CONTROL

Claude Sechet, Rennes, France; Gerard Babonneau, 14, rue Theodore Botrel, 35830 Betton, France, and Louis C. Guillou, Saint Erblon, France, assignors to Etablissement Public de Diffusion Dit: Telediffusion de France, Montrouge and Gerard Babonneau, Betton, both of, France

Filed Jun. 11, 1980, Ser. No. 158,499

Claims priority, application France, Jun. 15, 1979, 79 15400

Int. Cl.^{3} H04N *7/16;* **H04K** *1/04*

U.S. Cl. 358—122 **5 Claims**

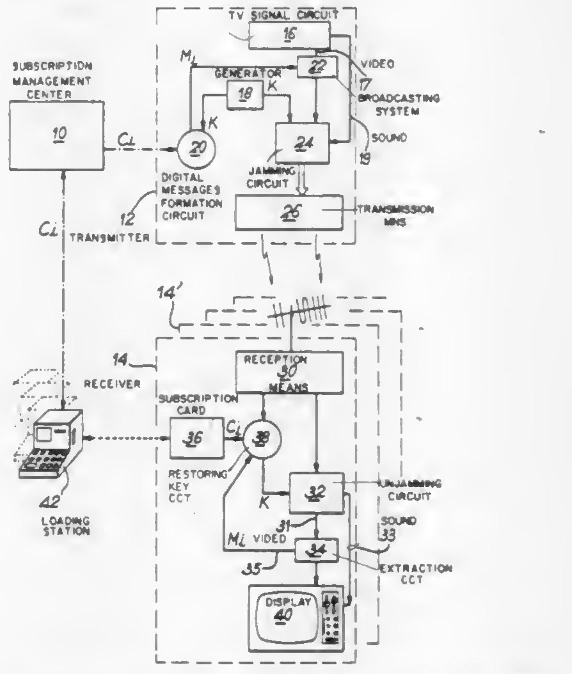
1. A television system with access control constituted by a transmitter and receivers, the transmitter comprising a circuit for the formation of a video signal organized in lines and fields and a sound signal, a transmission means for said signals and a jamming circuit using a service key K, said jamming circuit receiving the video and/sound signal and supplying jammed video and/sound signals which are then transmitted to the transmission means, each receiver comprising a reception means for the transmitted signals, means for the display of a picture and for the restoration of sound and an unjamming circuit connected to the reception means and working with said service key K, said unjamming circuit supplying unjammed video and optionally sound signals which are then transmitted to the means for the display of the picture and the restoration of the sound, wherein it also comprises:

(A) a subscription management center comprising means for generating a plurality of digital signals constituting subscription keys C_i changing in random manner at relatively long intervals of approximately one month;

(B) in the transmitter:

  (a) a generator of a digital signal constituting the the service key K which changes in random manner at relatively short intervals of approximately a few minutes,

  (b) a circuit for the formation of digital messages M_i obtained from the subscription keys C_i and the service key K by an algorithm parametered by the subscription keys, i.e. $Mi=F_{C_i}(K)$, said circuit supplying the same number of messages as there are subscription keys and these messages change with the service key,



  (c) a data broadcasting system able to insert messages Mi in the field blanking intervals of the video signal, jamming not affecting the messages contained in the field blanking interval;

(C) in each receiver:

  (a) a subscription card on which is entered a signal corresponding to at least one of the subscription keys C_i,

  (b) a circuit for the extraction of the data contained in the signal received and which restores the messages Mi,

  (c) a circuit for the restoration of the service key receiving on the one hand messages Mi supplied by the preceding circuit and on the other hand the subscription key Ci supplied by the subscription card, said circuit performing an algorithm $K=G_{C_i}(Mi)$ which makes it possible to restore the signal corresponding to the service key K used in the transmitter;

(d) at least one subscription card loading station which is connected to the subscription management center from which it receives the signals corresponding to the different subscription keys Ci generated by the center, each station being able to temporarily receive the subscription cards and write therein one of the subscription keys Ci.

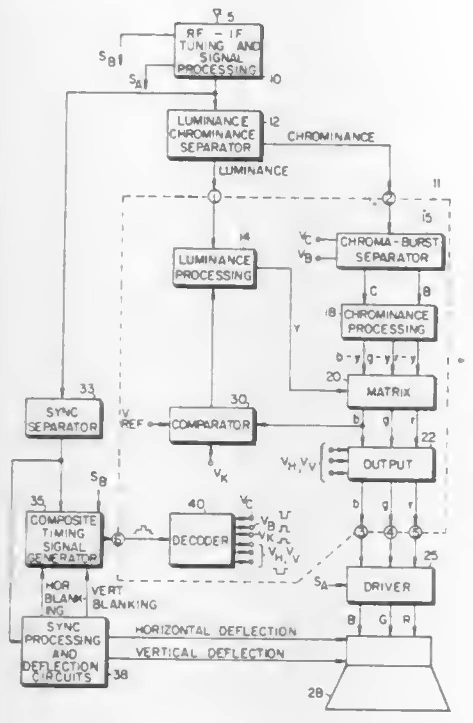
4,354,202
TELEVISION RECEIVER ON-SCREEN ALPHANUMERIC DISPLAY

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,787

Int. Cl.^{3} H04N *5/22*

U.S. Cl. 358—183 **11 Claims**



1. In a system including a signal channel for processing image representative video signals; a kinescope for providing a picture display in response to applied image representative signals; and a kinescope driver stage with an input for receiving said video signals from said channel and an output for supplying amplified video signals to said kinescope; alphanumeric display control apparatus comprising:
- means for providing a first control signal representative of auxiliary alphanumeric information to be displayed by said kinescope during intervals within picture intervals of said video signal;
- means for providing a second control signal for blanking video signal inputs to said kinescope driver stage during blanking intervals encompassing said alphanumeric display intervals, to then preclude passage of video signals from said channel to said input of said driver stage; and
- means for coupling said first control signal to said kinescope driver stage independent of said video channel, with a sense and magnitude for unblanking said output of said driver stage so that said kinescope then displays said alphanumeric information in accordance with said first control signal.

4,354,203
LENS CONTROL MECHANISM FOR TELEVISION CAMERA

Naoki Koyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

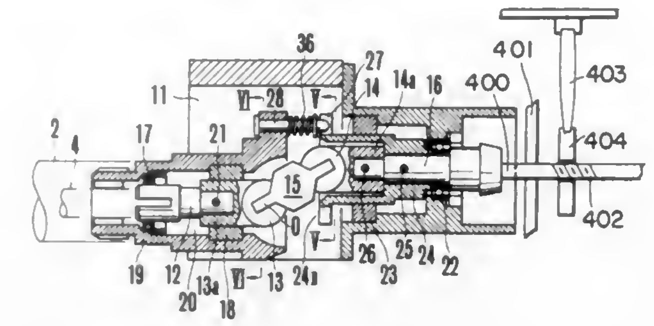
Filed May 15, 1980, Ser. No. 150,064

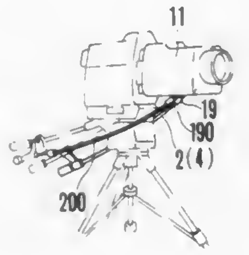
Claims priority, application Japan, May 21, 1979, 54-61518

Int. Cl.^{3} H04N *5/26;* **G03B** *3/00*

U.S. Cl. 358—227 **4 Claims**

1. A television camera comprising
- a lens having a movable lens member;
- means for moving said movable lens member;
- a rotatable flexible shaft;
- a rotatable connection mechanism having one end connected with said flexible shaft and another end connected to said moving means, said rotatable connection mechanism transferring rotative motion of said rotatable flexible shaft to said means for moving said movable lens member so as to effect movement thereof, said connection mechanism having a rotation position for storage and a rotation position for operation; and
- stop means for rendering said moving means inoperative when said connection mechanism is at said rotation position for storage.





4,354,204
AUTOMATIC FOCUSING CONTROL DEVICE

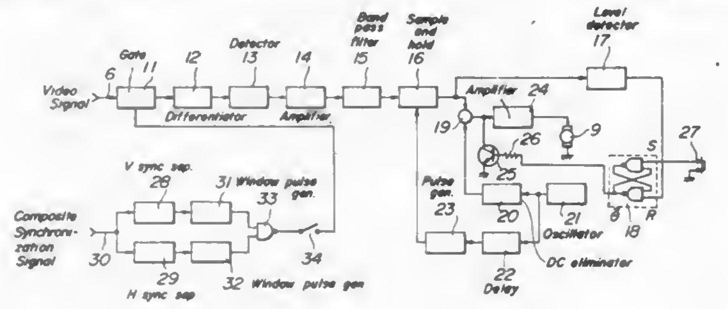
Kenji Kimura, 2951 Ishikawa-cho, Hachioji City, Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,085

Claims priority, application Japan, Feb. 18, 1980, 55-19456

Int. Cl.^{3} H04N *5/26*

U.S. Cl. 358—227 **5 Claims**



1. An automatic focusing control system comprising an optical system, means for modulating a focal length by a modulating signal, means for sensing an output signal corresponding to the focal length from an image signal obtained from the modulating means, means for sensing a focusing error signal from the output signal and the modulating signal, and means for controlling or adjusting the focal length by superimposing the error signal upon the modulating signal.

4,354,205
ATTACHABLE, IMAGE-MODIFYING SCREEN FOR TELEVISION IMAGES

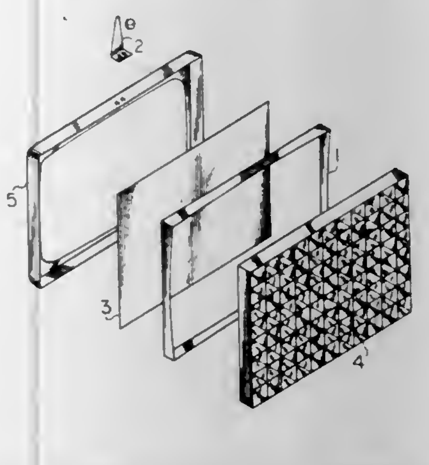
George F. Lowe, 3435 Army St.; Peter A. Gutkin, 170 Capp St., both of San Francisco, Calif. 94110, and Charles C. Wehrenberg, 72 Kissling, San Francisco, Calif. 94103

Filed Oct. 6, 1980, Ser. No. 194,235

Int. Cl.^{3} H04N *5/72*

U.S. Cl. 358—250 **6 Claims**

1. A real-time video image modifying device said modification being the hundredfold reduction of video resolution relative to the source television and said device comprising: a molded plastic housing said housing having an open forward end and an open back end; a flexible hanger strap attached to the top of said housing and arranged to allow said device to be hung in front of the screen of a television; a flat translucent but not transparent screen mounted in said housing and arranged to diffuse light through said forward end opening; a deep lattice formed from slats having highly reflective surfaces, said slats being spaced apart a distance greater then several pixels, said lattice being mounted behind said translucent screen inside of said housing and interlocked with said housing; a flexible collar surrounding the periphery of said lattice and said collar held between said lattice and said housing when said lattice is glued into said housing.



4,354,206
TELEVISION RECEIVER

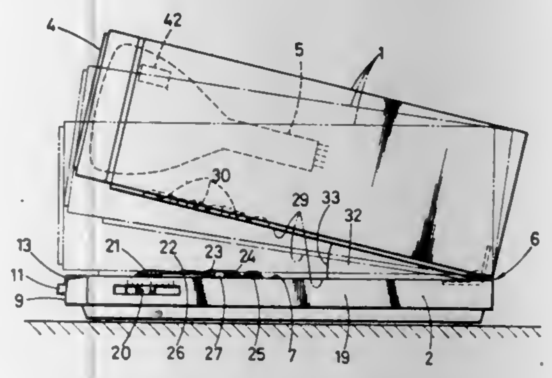
Yoshinobu Nameki, Kawagoe, and Shin Miyashita, Higashimurayama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,390

Claims priority, application Japan, Feb. 18, 1980, 55-19250[U]

Int. Cl.^{3} H04N *5/64, 5/655*

U.S. Cl. 358—254 **7 Claims**



1. A television receiver comprising:
- a main body including a television screen disposed on a front surface thereof;
- a base for mounting said main body thereon;
- supporting means for rotatably supporting said main body relative to said base;
- main control means for mainly controlling said receiver, at least one of said main control means being disposed on a front end surface of said base; and
- sub-control means disposed on a top surface of said base for supplementally controlling said receiver, said sub-control means being concealed by said main body when said main body is horizontally supported on said base, while said sub-control means being exposed to be operable when said main body is rotated upward.

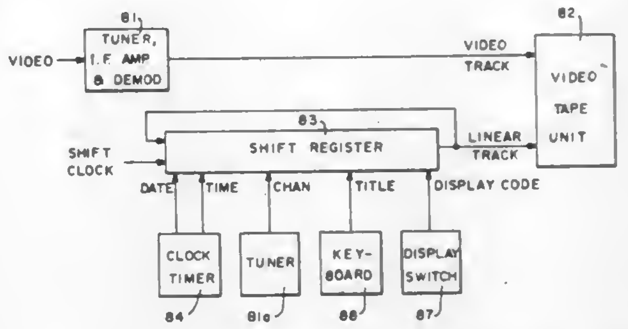
4,354,207
SYSTEM FOR IDENTIFYING AND LOCATING RECORDED ANALOG INFORMATION

Gilman D. Chesley, 22431 Starling Dr., Los Altos, Calif. 94022

Filed Mar. 12, 1979, Ser. No. 19,471

Int. Cl.^{3} H04N *5/78;* **G11B** *15/18;* **H04N** *5/76*

U.S. Cl. 360—9.1 **10 Claims**



1. In a system for monitoring analog information recorded on a serial access read/write medium for display on the screen of a video display device: means for recording identifying information on the medium in position to be transcribed concurrently with the analog information, means for transcribing the identifying information concurrently with the analog information to provide an identifying signal for the information as said information is transcribed, means for recording a display command signal on the medium where a display of the identifying information is desired, and means responsive to the display command signal for presenting the identifying signal to the video display device to provide a display of the identifying information with the analog information on the video screen.

4,354,208
MAGNETIC RECORDING MEDIUM AND DIGITAL STORAGE DEVICE INCLUDING SAME

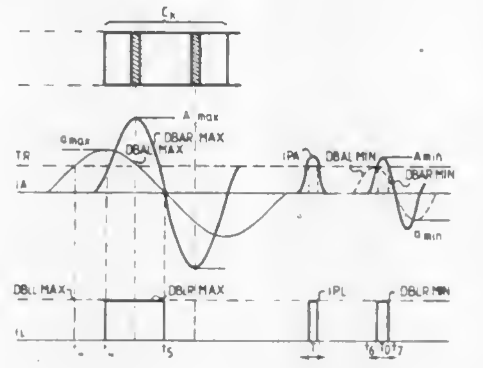
M. Christian Maury, Velizy, France, assignor to Compagnie International Pour l'Informatique, Paris, France

Filed Sep. 17, 1979, Ser. No. 76,332

Claims priority, application France, Oct. 19, 1978, 78 29847

Int. Cl.^{3} G11B *5/09*

U.S. Cl. 360—40 **10 Claims**

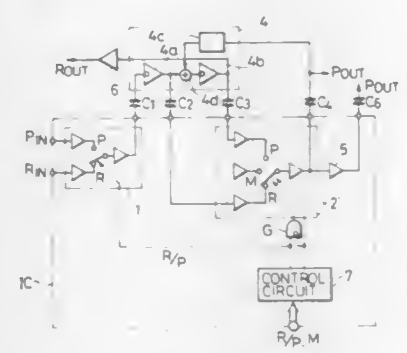


1. A digital storage device comprising a magnetic storage medium including a plurality of elongated, substantially parallel magnetic tracks, adjacent ones of said tracks having abutting elongated edges, each of said tracks including a plurality of elongated cells of substantially the same length, the cells of adjacent tracks being longitudinally aligned, each of said cells representing a binary bit, the binary bits having first and second values respectively having N_1 and N_2 magnetic polarity transitions, where N_1 differs from N_2 and includes the number zero, the transitions occurring in each cell for binary bits having the same value occurring at the same relative place within the cell, and a magnetic head for reading the magnetic transitions positioned to straddle a pair of adjacent tracks simultaneously, the tracks being adapted to be moved longitudinally relative to the head, multiple successive cells along the lengths of the first and second abutting tracks providing only information to enable the head to be positioned to centrally straddle

the abutting tracks, aligned head positioning cells of the first and second tracks having differing numbers of said transitions to represent the first and second binary values, the even and odd numbered head positioning cells of the first track respectively representing the first and second binary values, the odd and even numbered head positioning cells of the second track respectively representing the first and second binary values.

4,354,209
RECORDING/PLAYING CIRCUIT

Tetsuo Sato, Fussa, and Yasuo Kominami, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 3, 1981, Ser. No. 231,369
Claims priority, application Japan, Mar. 5, 1980, 55-26547
Int. Cl.^{3} G11B *15/12, 5/02*
U.S. Cl. 360—61 **7 Claims**



1. A recording/playing circuit comprising:

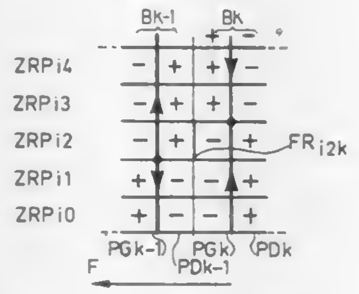
a noise reduction circuit which includes a pre-amplifier, a combining network, an inverter circuit and a side chain;

a switching circuit which includes first, second and third input positions and an output terminal, said first input position being coupled to an output of said pre-amplifier of said noise reduction circuit, said second input position being coupled to an output of said inverter circuit of said noise reduction circuit, said output terminal being coupled to said side chain of said noise reduction circuit, and said third input position being connected to a muting circuit; and

a control circuit for controlling said switching circuit to transmit to said output terminal of said switching circuit selectively one of the electric signals applied to the first, second and third input positions of said switching circuit.

4,354,210
MAGNETIC STORAGE MEDIUM

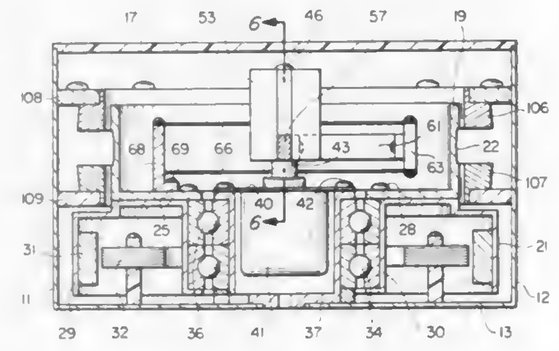
Jacques Droux, Montfermeil, France, assignor to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull, Paris, France
Filed Feb. 16, 1979, Ser. No. 13,796
Claims priority, application France, Feb. 17, 1978, 78 04498
Int. Cl.^{3} G11B *21/10*
U.S. Cl. 360—77 **13 Claims**



1. A magnetic recording medium in which data are written in binary code and carried by a plurality of tracks, the medium containing at least one sub-set of data items each of which is defined by a magnetization sense change and disposed along adjoining tracks, the items in the sub-set being read by at least one magnetic transducer which straddles two adjoining tracks, the improved medium comprising a magnetization sense change representing each data item in the sub-set being positioned to always occupy the same position in any track, two identically located magnetization sense changes of two adjoining tracks representing two data items of the two adjoining tracks defining information having a first significance, two different magnetization sense changes of two adjoining tracks representing two data items of the two adjoining tracks defining information having a second significance.

4,354,211
MAGNETIC TAPE APPARATUS

Paul A. Gilovich, Saratoga, and James S. Toreson, Mountain View, both of Calif., assignors to Microcomputer Systems Corporation, Sunnyvale, Calif.
Filed May 19, 1980, Ser. No. 151,394
Int. Cl.^{3} G11B *5/08*
U.S. Cl. 360—84 **8 Claims**



1. A magnetic tape apparatus comprising a drum, means for supporting and rotating said drum, at least one transducer mounted to rotate with said drum and extending past the surface of said drum through a slot formed in said drum, means comprising a take-up means for presenting a selected length of tape to said drum so that the transducer scans along longitudinal tracks as it rotates past said tape, means for moving said transducer longitudinally along said slot so that it moves along a plurality of laterally spaced tracks formed along said tape, said means including a leafspring assembly including a pair of leafsprings with their major surfaces disposed perpendicular to the direction of travel of said head whereby said springs can flex to permit movement of the head along said slot but are rigid to prevent lateral movement of the head.

4,354,212
MAGNETIC HEAD AND METHOD OF PRODUCTION THEREOF

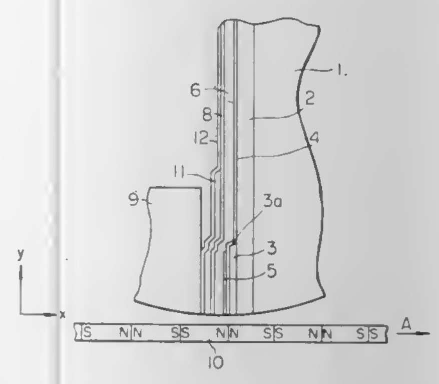
Norimoto Nouchi, Katano; Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 8, 1980, Ser. No. 166,808
Claims priority, application Japan, Jul. 11, 1979, 54-88496
Int. Cl.^{3} G11B *5/12, 5/30*
U.S. Cl. 360—113 **6 Claims**

1. A magnetic head, comprising:

a magnetoresistive element, said magnetoresistive element being composed of a magnetoresistive film having first and second opposite surfaces;

first and second hard permanent magnet films each having first and second surfaces located adjacent the first and second surfaces respectively of said magnetoresistive element, said permanent magnet films having magnetic charges for together generating a DC bias magnetic field in said magnetoresistive film; and

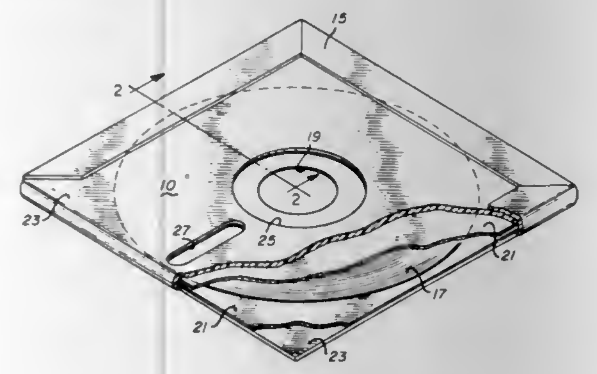
at least first and second intermediate non-magnetic films, said first intermediate non-magnetic film being interposed between the first surface of said magnetoresistive element and the first surface of said first permanent magnet film



and said second intermediate non-magnetic film being interposed between the second surface of said magnetoresistive element and the second surface of said second permanent magnet film.

4,354,213
SELF-LUBRICATING LINER

Lawrence G. Martinelli, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.
Filed Jun. 2, 1980, Ser. No. 155,434
Int. Cl.^{3} G11B *5/016, 23/02, 5/72*
U.S. Cl. 360—133 **6 Claims**



1. An improved floppy disk assembly of the type having a circular disk of magnetic recording material enclosed within an envelope formed from material fabricated by bonding together a layer of porous, fibrous, low-friction, anti-static material and a layer of solid material, wherein the improvement comprises employing porous, fibrous, low-friction, anti-static liner material into which a lubricant, identical to that compounded into the coating of the circular disk of flexible material, has been compounded.

4,354,214
MOTOR PROTECTION CIRCUIT

John F. Walton, 6853 Strata St., McLean, Va. 22101
Filed Sep. 11, 1979, Ser. No. 74,516
Int. Cl.^{3} H02H *7/08*
U.S. Cl. 361—23 **16 Claims**

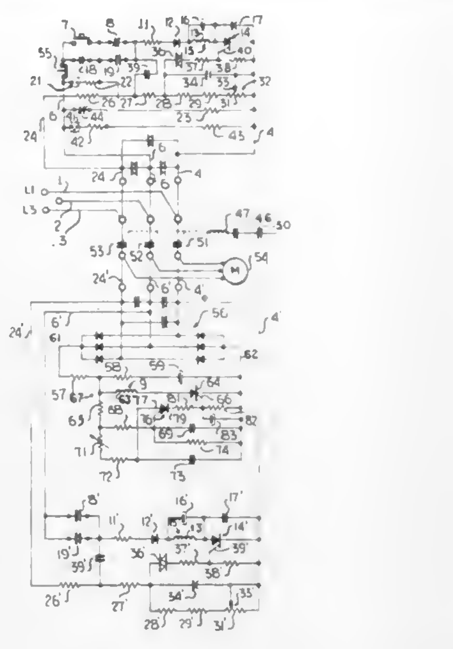
1. Apparatus for protecting an electrical motor connectable to an electric power source through a switchable circuit breaker means comprising:

a first protection circuit having first protection means for sensing a first plurality of electrical parameters at the power source detrimental to the motor and first operation means for causing the circuit breaker to switch to an open condition disconnecting the motor from the power source,

said first operation means being actuatable upon the sensing by the first detection circuit of a malfunction of any one of said first plurality of electrical parameters, and

a second protection circuit comprising second detection means for sensing a second plurality of parameters on the side of the circuit breaker connected to the motor detrimental to the motor,

second operation means for causing the circuit breaker to

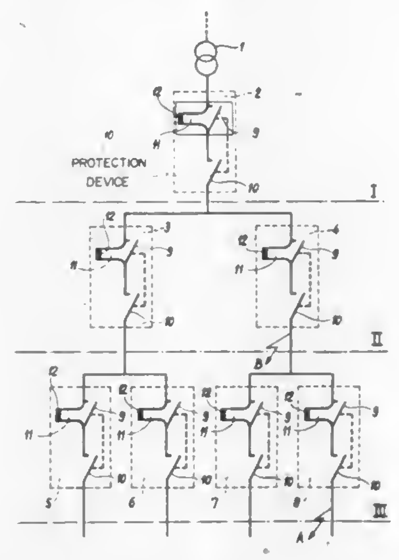


switch to an open condition and disconnect the motor from the power source,

said second operation means being actuatable upon the sensing by said second detection circuit of any one of said detrimental second plurality of electrical parameters.

4,354,215
SELECTIVE SAFETY DEVICE FOR THE PROTECTION OF A POWER DISTRIBUTION SYSTEM

Derk van der Scheer, Goor, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands
Filed Jun. 11, 1980, Ser. No. 158,618
Claims priority, application Netherlands, Jun. 11, 1979, 7904563
Int. Cl.^{3} H02H *3/00*
U.S. Cl. 361—63 **6 Claims**



1. A selective safety device for the protection of successive power levels in a power distribution system, comprising:

a current limiting switch in each of said power levels and including a current limiting quick-switching contact, said current limiting switch being positioned at the power supply side in each one of said different power levels and that current limiting switch immediately in front of a fault being switched off upon occurrence of a fault;

a resistor connected across each of said quick-switching contacts and being serially connected in the interrupted circuit upon the opening action of said quick-switching contact;

a slow-switching contact serially connected with each of said quick-switching contacts and being coupled with said quick-switching contact to be opened after opening of the quick-switching contact with a presettable delay time, said delay time being dependent upon the power level in which said slow-switching contact is connected;

delay time means for establishing said delay time and being immediately reset in an initial condition upon re-closing of the current limiting quick-switching contact;

said resistor including at least two serially connected resistance conductors connected in parallel across said quick-switching contact and which are gradually introduced in the interrupted circuit by the arc formed between the resistance conductors upon opening of a quick-opening switching contact.

4,354,216

DETECTOR DEVICE FOR OVERCURRENTS AND THE LOSS OF ONE OR TWO PHASES

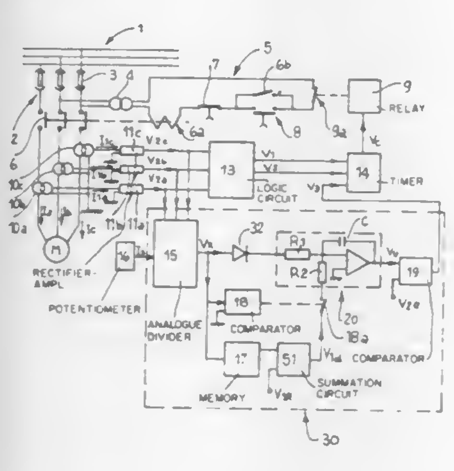
Ideo Volta, Zola Predosa, Italy, assignor to La Puntimatic S.n.C. di Musiani Franco & C., Bologna, Italy

Filed Aug. 29, 1980, Ser. No. 182,589

Claims priority, application Italy, Sep. 3, 1979, 3487 A/79

Int. Cl.^{3} H02H *3/24*

U.S. Cl. 361—92 **4 Claims**



1. A detector device for detecting overcurrents and the loss of one or two phases of a power supply line of an electrically operated device, and for interrupting the supply of power to said electrically operated device upon detecting the overcurrents or the loss of said one or two phases, said device comprising:

first electric means, one for each phase of said power supply line, and having an output for providing an output signal proportional to a peak value of current of said each phase;

detector means connected to said first electric means for detecting the loss of said one or two phases, and having an output for providing a first electric output signal when and so long as the peak value of current of at least one of the phases in the power supply line is below a predetermined valve, and for providing a second electric output signal when and so long as the peak value of current in all the phases in the power supply line is below said predetermined value;

second electric means having an input connected to the output of the said first electric means, and having an output for providing a third electric output signal when and so long as the peak value of current in any one of the phases in the power supply line attains a predetermined level; and

time delay means connected to the output of the said detector means and to the output of the second electric means for issuing a deenergization signal to deenergize the electrically operated device in response to provision of said first and third electric output signals, and for inhibiting issuance of said deenergization signal in response to, and a predetermined delay time after, provision of said second electric output signal.

4,354,217

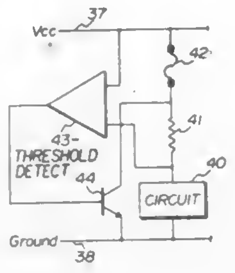
AUTOMATIC POWER DISCONNECT SYSTEM FOR WAFER SCALE INTEGRATED CIRCUITS

Michael J. Mahon, Austin, Tex., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 7, 1980, Ser. No. 166,477

Int. Cl.^{3} H02H *5/04*

U.S. Cl. 361—104 **7 Claims**



1. An integrated circuit structure comprising:

a crystalline substrate having a plurality of functional circuits formed on the surface thereof; and

a pair of power supply conductors on said surface and provided for connection to each of said functional circuits;

each of said function circuits including a power disconnect circuit coupled in series with said functional circuit between said respective power supply conductors, said power disconnect circuit including a power disconnect means to disrupt the current supplied to said function circuit in response to an increase in that current;

said power disconnect circuit including a fuse and a resistor coupled in series between said functional circuit and one of said power supply conductors, a threshold detection amplifier coupled in parallel with said fuse and resistor, said fuse being coupled to said one of said conductors, and a gate coupled to the output of said threshold detection amplifier, said gate being coupled between said fuse and other of said power supply conductors such that a current through said fuse and resistor which exceeds a given threshold places said gate in a conducting condition to form an electrical path from said fuse to the other of said power supply conductors.

4,354,218

PROCESS AND APPARATUS FOR MULTI-POLAR MAGNETIZATION OF ANNULAR PERMANENT MAGNETS

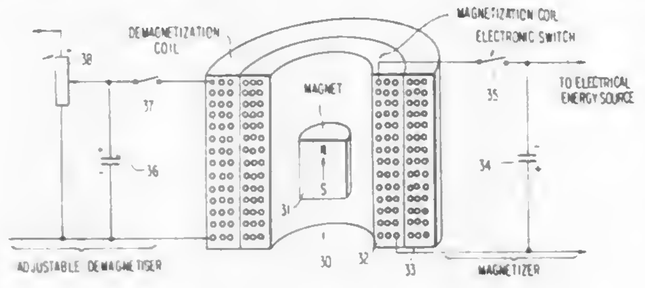
Erich A. Steingroever, Flensburger Strasse 33, 5300 Bonn, and Dietrich Steingroever, An der Schanz 2, 5000 Köln 60, both of Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,615

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907898

Int. Cl.^{3} H01F *7/00*

U.S. Cl. 361—147 **19 Claims**



1. Apparatus for the magnetization to saturation and adjustable demagnetization to a desired value of permanent magnets, comprising separate magnetization and demagnetization coils, each of said coils being electrically isolated from each other and being wound upon the same coil form, and circuit means comprising impulse electrical charging means connected with one of said coils for magnetizing a permanent magnet to saturation with a predetermined polarity, said circuit means also including impulse electrical charging means connected with the other of said coils for subsequently partially demagnetizing said permanent magnet, the force of demagnetization being opposite to the direction of magnetization.

4,354,219

CAPACITANCE SENSING DEVICE

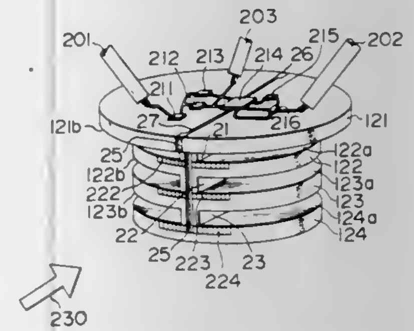
Sigeyuki Akita, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 1, 1981, Ser. No. 249,863

Claims priority, application Japan, Apr. 4, 1980, 55/46144[U]

Int. Cl.^{3} H01G *7/00*

U.S. Cl. 361—284 **3 Claims**



1. A capacitance sensing device comprising:

a plurality of electrical insulating bases arranged to face each other;

electrical insulating support means for partly supporting and firmly holding said insulating bases in layers arranged at predetermined spaces so that said insulating bases have facing and non facing surfaces;

at least first and second electrode films deposited on the facing surfaces of said electrical insulating bases to establish a capacitance therebetween;

first and second conductors electrically connected respectively to said first and second electrode films and extending to the same non-facing surface of one of said electrical insulating bases;

electric circuit elements electrically connected to said first and second conductors and formed on said nonfacing surface of one of said electrical insulating bases to which surface said conductors are extending, thereby generating an electric signal corresponding to the capacitance between said first and second electrode films; and

refrigerant inlet means for shielding said nonfacing surface having said electric circuit elements formed thereon and introducing a medium to be detected between said first and second electrode films.

4,354,220

GAS INSULATED POWER SWITCH-GEAR APPARATUS

Kazuaki Oishi, Hitachi, and Seizo Nakano, Mito, both of Japan, assignors to Hatachi, Ltd., Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 168,779

Claims priority, application Japan, Jul. 20, 1979, 54-91525

Int. Cl.^{3} H02B *1/20*

U.S. Cl. 361—341 **7 Claims**

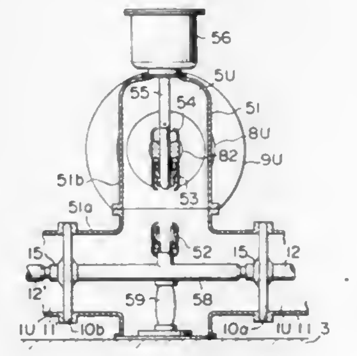
1. A gas insulated power switch-gear apparatus comprising:

three main bus bars having axes extending in a predetermined first direction in a first horizontal plane, each of said main bus bars including a sheath filled with an insulating gas and a main conductor arranged within said sheath;

three feeding bus bars having axes extending in a second direction perpendicular to said first direction in a second horizontal plane of a level different from said first horizontal plane, each of said feeding bus bars including a sheath filled with an insulating gas and a feeder conductor arranged within said sheath;

a plurality of gas insulated circuit breakers having axes extending in said second direction and electrically connected with said feeding bus bars respectively; and

a plurality of gas insulated disconnecting switches each arranged between a corresponding one of said feeding bus bars and a corresponding one of said main bus bars, each of said gas insulated disconnecting switches being inserted into an interrupted point of said main bus bar and having an axis aligned with the axis of said main bus bar and a diameter substantially the same as that of the sheath of the main bus bar, each of said gas insulated disconnecting switches further including a sheath having a first sheath portion with the ends thereof connected mechanically with interrupted halves of the sheath of the main bus bar and a second sheath portion communicating with said first sheath portion and having an axis extending in a third direction perpendicular to said first and second horizontal planes, at least one insulating spacer inserted between said first sheath portion and the main bus bar sheath, at least one of the ends of said first sheath portion for defining a gas section, a fixed contactor having an axis coincident with the axis of said second sheath portion and electrically connected with a main conductor, said fixed contactor being arranged within said first sheath portion, a collector having an axis coincident with the axis of said second sheath portion and electrically connected with said feeder conductor, said collector being secured within said second sheath portion, and a movable contactor having an axis coincident with the axis of said collector and normally electrically connected with said collector, said movable contactor being movable in said third direction for effecting electrical connection or disconnection with said fixed contactor.



4,354,221

GUIDANCE LIGHT FOR AIRPORT RUNWAYS

Marcel E. Hoffmann, Lasne, Belgium, assignor to Societe Anonyme des Etablissements Adrien de Backer, Brussels, Belgium

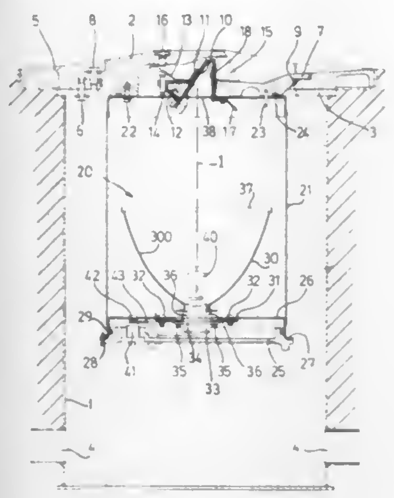
Filed Nov. 7, 1980, Ser. No. 204,873

Int. Cl.^{3} F21V *7/00*

U.S. Cl. 362—300 **6 Claims**

1. A guidance light for airport runway comprising a casing in which are mounted a light source and an optical system to direct light along a path which includes a given axis, said optical system including a reflector having an internal concave reflecting surface facing said light source and being formed as a surface of revolution about said axis, said reflecting surface being configured so as to reflect light from said source onto said axis along a continuous segment thereof such that each

point reflects light onto said segment at a distance from its end nearest to the light source which is proportional to the arcuate



length of the reflecting surface between said point and the intersection of said surface and said axis.

4,354,222

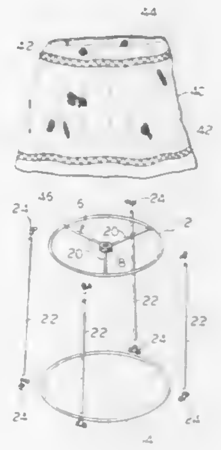
KNOCK-DOWN LAMP SHADE

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Continuation of Ser. No. 919,757, Jun. 28, 1978, abandoned. This application Jun. 13, 1980, Ser. No. 159,083

Int. Cl.^{3} F21V *1/06*

U.S. Cl. 362—352 3 Claims



1. A knock-down lamp shade comprising
(a) a knock-down frame composed of upper and lower integral and completely closed ring members with a plurality of peripherally spaced rib members extending therebetween,
(b) a flexible skirt-like cover adapted to be spread from a flattened condition for sliding over the exterior of said frame in surrounding and substantially tightly form-fitting relation thereto,
(c) said upper ring member including a spider member having a central member and a plurality of spaced radially positioned arms, each affixed at one end to said central member and at the other end to the periphery of said upper ring member, and
(d) a plurality of discrete clamping members for positioning at each end of said rib members for interconnecting the latter with said ring members, each clamping member having vertical medial clamping means for releasably engaging said last-mentioned end, and a pair of branched horizontally disposed clamping means extending transversely from said first-mentioned clamping means for releasably engaging the portions of said ring members adjacent to and on the opposite sides of said rib members.

4,354,223

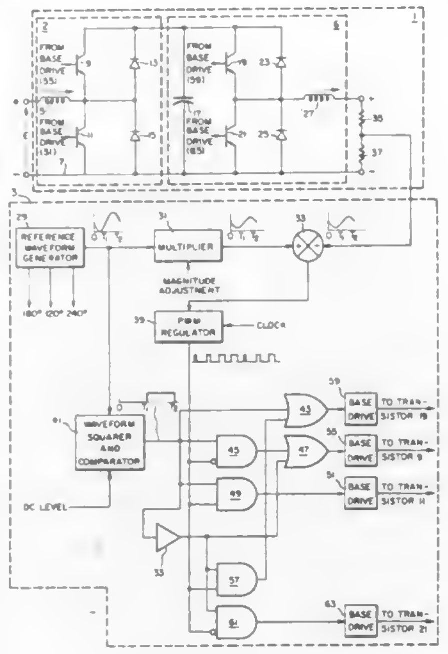
STEP-UP/STEP DOWN CHOPPER

Fred G. Turnbull, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,664

Int. Cl.^{3} H02M *7/00*

U.S. Cl. 363—124 **7 Claims**



1. A chopper circuit comprising:
a step-up dc-dc chopper portion capable of bidirectional power flow and providing a variable dc output voltage;
a step-down dc-dc chopper portion capable of bidirectional power flow and providing a variable dc output voltage, said step-down chopper portion coupled in series with said step-up chopper portion, the series combination of choppers receiving input power from an external dc power source;
means for generating a signal representative of the desired output voltage waveform; and
means for controlling the switching of said step-up chopper portion to follow said desired output voltage waveform when the magnitude of said desired waveform is greater than said external dc power source voltage and for controlling the switching of said step-down chopper portion to follow said desired output waveform when the magnitude of the desired output waveform is less than the external dc power source voltage.

4,354,224

MANIPULATION-VARIABLE SEPARATED TYPE SYSTEM CONTROL METHOD AND APPARATUS

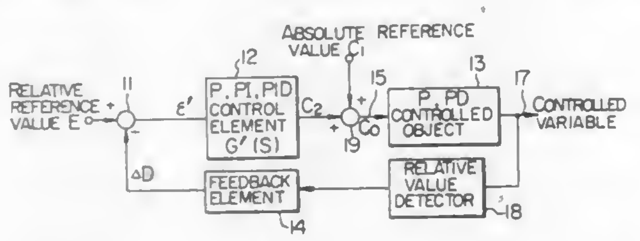
Takao Sato, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,798

Claims priority, application Japan, Apr. 25, 1979, 54-50351

Int. Cl.^{3} G05B *11/18, 11/42*

U.S. Cl. 364—183 **9 Claims**



6. A manipulation-variable separated type modified feedback control system comprising:
(a) an object being controlled or a controlled object;
(b) control element means having a transfer function for a proportional operation, an integral operation and a derivative operation either singly or in combination;
(c) feedback means for feeding back a physical quantity detected from the controlled object;
(d) relative value detecting means provided at the controlled object for detecting a relative change deviated from a reference value for the controlled variable of the controlled object;
(e) first adder means with one input for receiving a relative value output from the detecting means through the feedback means and another input for receiving a relative reference value for the controlled variable, for generating a deviation between the two inputs;
(f) first setting means for setting the relative reference value;
(g) second adder means with one input for receiving an output from said control element means connected to receive the deviation output of the first adder means and another input for receiving an absolute reference value, for generating an output representative of a totalized manipulation variable obtained from superposition of the two inputs irrespective of detection of disturbance; and
(h) second setting means (C_1) for setting the absolute reference value for the manipulation variable,
whereby the absolute reference value (C_1) for the manipulation variable and the change (C_2) of the manipulation variable determined by the deviation from the relative reference value for the controlled variable are established to satisfy at least the relation which is $C_1 >> C_2$ and the total manipulation variable is the sum of divisions C_1 and C_2.

4,354,225

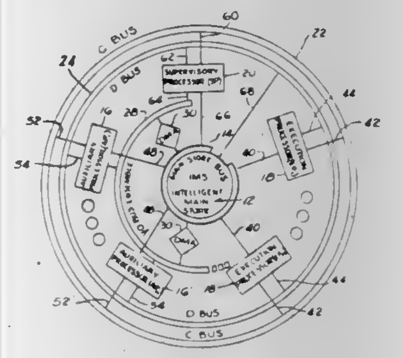
INTELLIGENT MAIN STORE FOR DATA PROCESSING SYSTEMS

Gideon Frieder, Williamsville; David T. Hughes, Amherst; Mark H. Kline; John T. Liebel, Jr., both of Williamsville; David P. Meier, Orchard Park, and Edward A. Wolff, Tonawanda, all of N.Y., assignors to Nanodata Computer Corporation, Buffalo, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,648

Int. Cl.^{3} G06F *13/00, 15/16*

U.S. Cl. 364—200 21 Claims



1. In combination with a plurality of heterogeneous data processors having different memory address and data structures, said processors being operatively connected to main store bus means common to all of said processors, an active intelligent main store comprising:
(a) memory means for storing a plurality of data words and error correcting bits associated with each word;
(b) control means operatively connected to said memory means, said control means including means for providing timing and control information to said memory means for reading and writing said memory means, means for providing physical addresses and data to said memory means, and means for providing error detection and correction responsive to the physical data and addresses presently available in said address and data providing means;
(c) a multiplicity of function means each being separate from said processors and each being operatively connected to said control means and operatively connected to said main store bus means, each of said function means operating substantially at main store speed, said function means including means for functionally mapping arbitrary portions of the signals on said main store bus into physical data and address information required by said control means, said functional mapping including data mapping and memory management functions such as virtual to physical address translation and memory protection, said memory protection being performed as a function of said address information required by said control means, said function means further including means for reserving portions of said memory means in response to said main store bus signals, said main store bus signals being interpreted by said reserving means to provide information to reservation algorithms associated with said function means such as base and field length reservation; and
(d) each of said function means implementing diverse virtual to physical address translation methods, memory protection methods and data mapping methods thereby allowing each of said function means to interpret said main store bus signals as different address and data structures, said function means being selected by said processors through said main store bus means.

4,354,226

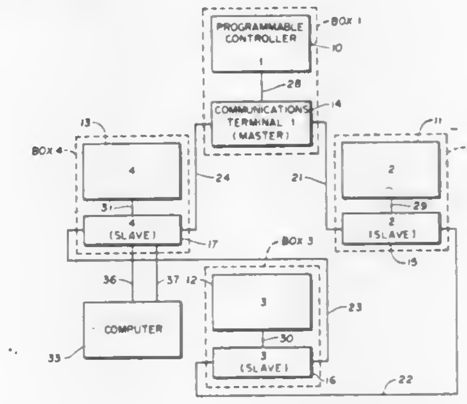
COMMUNICATION TERMINAL FOR INTERCONNECTING PROGRAMMABLE CONTROLLERS IN A LOOP

Charles E. Flickinger, Dousman, and Richard C. Born, Wauwatosa, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 14, 1978, Ser. No. 960,598

Int. Cl.^{3} G06F *3/00*

U.S. Cl. 364—200 15 Claims



1. A terminal for providing real time intercommunication of digital data between an associated programmable controller and N other programmable controllers, each of which is associated with a similar terminal, said terminals interconnected in at least one closed loop by transmission of N+1 frames of serial digital data which continuously circulate around said loop, each of said frames being identified with one and only one of said other programmable controllers, each of said frames being updated with information from the N other terminals in the loop as it makes one complete cycle of the loop and each of said frames updating the programmable controller with which it is identified when received by the terminal associated therewith, said terminal comprising, in combination:
receiving means connected to said loop for receiving therefrom input frames of digital data containing one or more data bytes of information relating to programmable controllers in said loop;
transmitting means connected to said loop for transmitting output frames of digital data thereto;
first buffer memory means for storing a frame of data;
first control means connected to said receiving means and first buffer memory means for transferring data from said receiving means to said first buffer memory means;

second buffer memory means connected to said associated programmable controller for delivering to said associated programmable controller bytes of stored data received from the frame of serial digital data associated with the terminal and which were originated by other programmable controllers thereto, the delivery of said stored data being under control of said associated programmable controller;

third buffer memory means connected to said associated programmable controller for receiving bytes of updated information therefrom for transmission to said other programmable controllers in frames associated with said other programmable controllers;

second control means connected to said first and second buffer memory means for transferring bytes of data for said associated programmable controller from said first buffer memory means to said second buffer memory means when the received input frame of digital data is identified with said associated programmable controller;

third control means connected to said first and third buffer memory means for transferring bytes of data for said other programmable controllers from said third buffer memory means to said first buffer memory means when the received input frame of digital data is not identified with said associated programmable controller; and

fourth control means connected to said first buffer memory means and said transmitting means for transferring data from said first buffer memory means to said transmitting means for transmission of N output frames not identified with said associated programmable controller, said output frames corresponding to said input frames updated with information for N other programmable controllers, said fourth control means transmitting an output frame identified with said associated programmable controller to be updated by said other terminals.

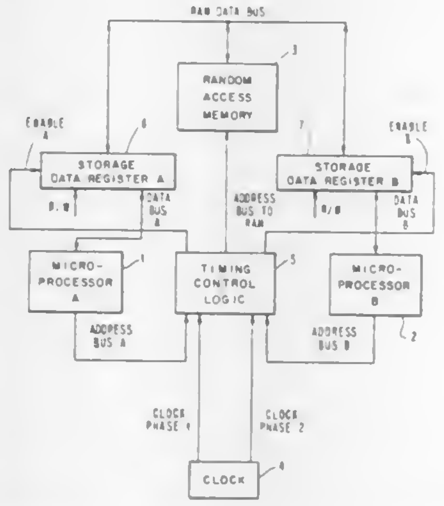
4,354,227

FIXED RESOURCE ALLOCATION METHOD AND APPARATUS FOR MULTIPROCESSOR SYSTEMS HAVING COMPLEMENTARILY PHASED CYCLES

Daniel O. Hays, Jr.; Andrew W. Maholick, both of Raleigh, and William N. Mize, Cary, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,840
Int. Cl.^{3} G06F *9/46, 13/00*

U.S. Cl. 364—200 **2 Claims**



1. In a complementarily phased clock cycle driven multiprocessor system having N independent processors divided into Q groups of two processors per group where N is even and into Q+1 groups including a single group of one processor if N is odd, and said system having a common clocking means for sequentially supplying to said groups of processors a stream of cyclic clock signals, each cycle of said cyclic clock having two phases and each group of processors being provided with one clock cycle in sequence before any said group receives another said clock cycle, and wherein each said processor in a group executes or accesses data in interleaved fashion with the other said processor in said group with one said processor executing on one said phase of said clock cycle while the other said processor accesses data on said phase, and in which said one processor accesses data on said other phase of said clock cycle while said other processor executes data;

and said system further having certain fixed resources to be shared by said processors, said processors contending for the exclusive use thereof; and

said system having control means for granting exclusive use of a fixed resource to one or another of said contending processors, said control means including at least a control register for storing data and means for storing in said register indication of the current state of availability of each said fixed resource, an improved method of controlling the allocation of said fixed resources to an individual processor's use, comprising individual steps executed serially by each said processor within said stream of cyclic clock signals of:

accessing the current contents of said control register for said shared resource;

examining the contents of said control register to determine the availability of said resource;

setting the contents of said control register to a unique digital code assigned to the particular said processor contending for usage of said resource upon said processor's next clock cycle if said examining step indicates availability exists for said resource;

waiting for one cycle of said system clock to pass without operations involved in gaining access to control by said processor taking place during which time the other said processor in said group in which said processor is classed may access, examine or set the contents of said control register; and

comparing after said waiting step said unique digital code assigned to said particular processor contending for usage of said resource with the existing content of said control register;

acquiring control when using said fixed resource only if a true comparison exists between said processor's unique code and the contents resident in said control register; and

setting said control register to indicate current availability of said resource when said processor completes the task for which said resource was utilized.

4,354,228

FLEXIBLE PROCESSOR ON A SINGLE SEMICONDUCTOR SUBSTRATE USING A PLURALITY OF ARRAYS

Victor S. Moore, Deerfield Beach; Wayne R. Kraft, Coral Springs; Joseph C. Rhodes, Jr., Boca Raton, and William L. Stahl, Jr., Coral Springs, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,711
Int. Cl.^{3} G06F *7/00*

U.S. Cl. 364—200 **34 Claims**

1. A processor fabricated on a single semiconductor substrate comprising:

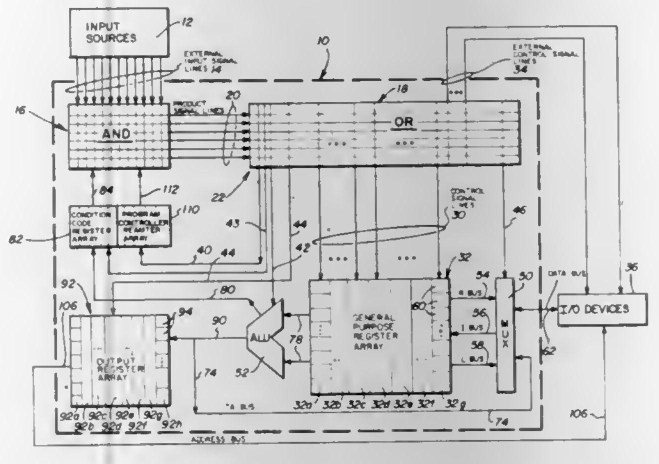
AND array means for receiving program instructions from input sources external of the processor and for generating product signals;

OR array means interconnected to said AND array means for receiving said product signals and for generating a plurality of control signals;

register means for receiving ones of said plurality of control signals and for transferring data between the processor and data sources external of the processor;

arithmetic and logic unit means interconnected to said register means and said OR array means, for executing operations on data received from said register means in accordance with ones of said plurality of control signals and for generating output data;

control register means interconnected to said OR array means and said AND array means for receiving ones of said plurality of control signals for controlling execution of said program instructions within said AND array means and;



output register means interconnected to receive said output data and ones of said plurality of control signals for buffering said output data between said arithmetic and logic unit means and said data sources external of the processor under control of ones of said plurality of control signals.

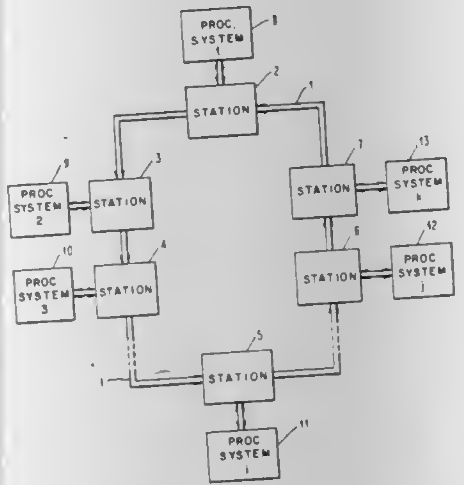
4,354,229

LOOP INITIALIZATION MECHANISM FOR A PEER-TO-PEER COMMUNICATION SYSTEM

Jonathan B. Davis, Boca Raton; Charles S. Lanier, Delray Beach; Daniel T. W. Sze, Boca Raton, and Leonard Weiss, Hollywood, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1980, Ser. No. 129,052
Int. Cl.^{3} G06F *15/16*

U.S. Cl. 364—200 **15 Claims**



1. In a serial loop data communication system including a plurality of stations serially interconnected by way of a communications link, said stations being further characterized with respect to any selected station as preceding stations that are upstream on said link from said selected station or succeeding stations that are downstream from said selected station, said stations operating on a peer-to-peer basis, and each of said stations being designated by a uniquely identifiable address code, said stations transmitting and receiving message frames including synchronization characters for transfer of information in the form of messages from one station to another, said frames being categorized as available or unavailable, each station transmitting only on frames that are marked as available or that have an address code equal to the station address code and each station marking frames transmitted by it as unavailable if the station has inserted information in said frames and each station further marking frames transmitted by it as available if the station has no information to transfer, and each of said stations incorporating a modem for handling link related functions, such as information coding, and modulation, and the like, a loop initialization system for achieving synchronized frame transmission around the loop for all stations upon system start or after loss of frame synchronization on the loop by defining one of said stations as a temporary master station to create available message frames for use in establishing synchronized operation of said system and comprising at each station:

synchronization means including synchronization circuitry at each modem responsive to synchronization characters transmitted on said communications link for establishing synchronization of said station with other stations in said system and for detecting an out of sync condition such as upon start up of said system or upon unsuccessful modem synchronization efforts exceeding a given time period, said synchronization means being operable to reset the related modem synchronization circuitry and to transmit unavailable frames including a sync character and a code violation character followed by the address of its related station and all byte fields of consecutive frames at a local modem clock rate;

means for locally receiving at any station an address code transmitted from the preceding station in said loop;

means for comparing the received address code with the address code of the related receiving station;

means for transmitting the address code received from the preceding station to the next succeeding station in said loop if the value of the received address code is less than that of the receiving station;

means for transmitting the local address code of the receiving station to the next succeeding station in said loop if the value of the received address code is greater than that of the receiving station; and

mode means operable upon the related modem receiving from the preceding station an address code corresponding to the address code of the receiving station for a predetermined minimum number of times to set the respective modem to a temporary master state with respect to all other modems in said system, all other modems thereby being conditioned to a slave state and to continue generation by said temporary master modem of unavailable message frames including synchronization characters over said communications link for use by all other modems in a slave state to achieve synchronization.

4,354,230

SYNCHRONIZED, FAIL-OPERATIONAL, FAIL-SAFE MULTI-COMPUTER CONTROL SYSTEM

Richard D. Murphy, Monroe, and Douglas H. Clelford, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 938,583, Aug. 31, 1978. This application May 19, 1980, Ser. No. 151,489
Int. Cl.^{3} G06F *15/16, 9/46*

U.S. Cl. 364—200 **3 Claims**

1. A multi-computer processing control system including a plurality of computer systems, each of said computer systems comprising:

a central processing unit (CPU) operating under a program of instructions and having interrupt handling capability for running a plurality of asynchronous, unrelated programs;

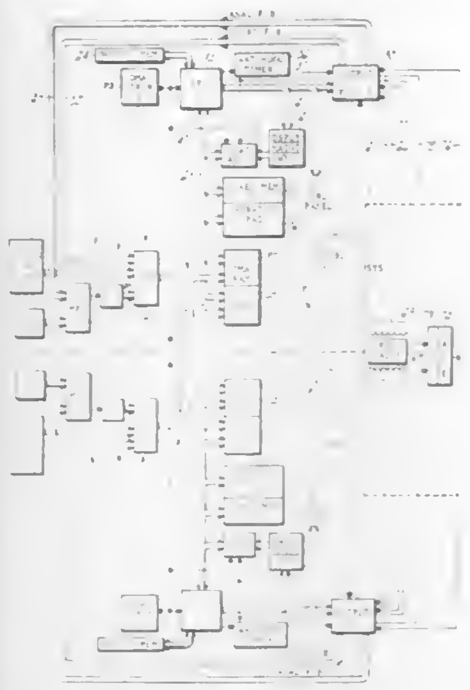
a plurality of memory devices;

a plurality of input sources for providing data to said computer system in response to which said computer system contributes to the control of said process;

a data link to another one of said computer systems;

a direct memory access controller for communicating data between said input sources, at least one memory of the related computer system and, over said data link, at least one memory of said another one of said computer systems; and

a master clock means for providing a variety of clock signals for the control of the related computer system and a series of real time interrupt commands for interrupting said CPU, the master clock means of said computer system being interconnected with the master clock means of said another one of said computer systems for recognizing the first to be generated, specific one of said real interrupt command of any of the interconnected master clock means, in all of said computer systems to, said computer system and said other computer systems each interrupting the related CPU in response to said first to be generated real time interrupt command thereby synchronizing said computer system, said master clock means being connected to said direct memory access controller to synchronize said direct memory access controller with the related CPU of said computer system.



4,354,231

APPARATUS FOR REDUCING THE INSTRUCTION EXECUTION TIME IN A COMPUTER EMPLOYING INDIRECT ADDRESSING OF A DATA MEMORY

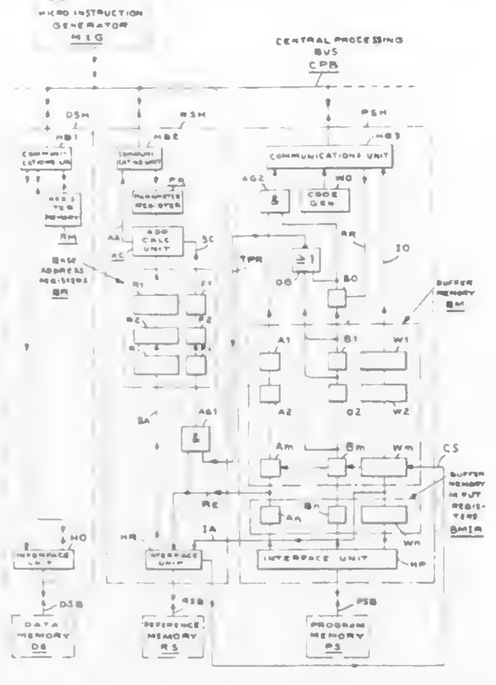
Karl-Johan V. Carlsson, Solna, and Hans O. S. Kjoller, Västerhaninge, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 97,178, Nov. 26, 1979, abandoned, which is a continuation of Ser. No. 877,255, Feb. 13, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,260

Int. Cl.^{3} G06F *9/30*

U.S. Cl. 364—200 **5 Claims**

1. In a computer under control of instructions from a program memory and employing indirect addressing of a data memory included in the computer, where an absolute address to the data memory is derived in an address processing means from a base address which is read from a reference memory in correspondence to an input address to the reference memory and from at least one address parameter which has been stored in a register memory in connection with the execution of an instruction read from the program memory, appartaus for reducing the instruction execution time comprising a buffer memory means for sequentially and temporarily storing in an execution queue instructions read from said program memory, a read-out means for reading base addresses from said reference memory in correspondence to said input address and a read signal, the input address as well as the read signal being derived from an instruction just supplied to said execution queue if the instruction is of a first type which concerns writing or reading in said data memory, a registration means for giving an indication that an instruction which is of a second type that places address parameters in the register memory has been supplied from the output of said buffer memory, a first activation means for initiating transfer of said at least one address parameter from said register memory to said address processing means if said indication is present in said registration means and the instruction being in turn for feed-out to the output of said buffer memory means is of said first type and for removing said indication in the registration means when said transfer has been executed, and a second activation means connected to said address processing means and responsive to a base address which is being read out from said reference memory to said address processing means for initiating the calculation of said absolute address when simultaneously none of the instructions stored ahead of said instruction just supplied to said buffer memory means is of said second type and no indication is present in said registration means.



4,354,232

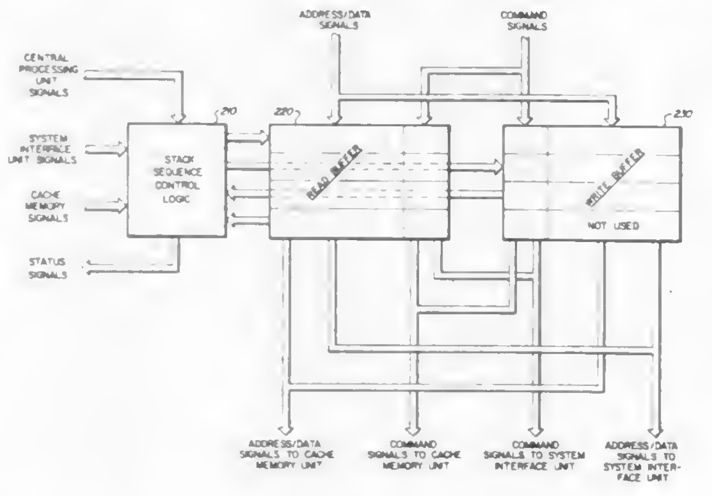
CACHE MEMORY COMMAND BUFFER CIRCUIT

Charles P. Ryan, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation of Ser. No. 861,228, Dec. 16, 1977, abandoned. This application Sep. 11, 1980, Ser. No. 186,362

Int. Cl.^{3} G06F *13/00*

U.S. Cl. 364—200 **5 Claims**


ADDRESS/DATA SIGNALS
COMMAND SIGNALS
CENTRAL PROCESSING UNIT SIGNALS
SYSTEM INTERFACE UNIT SIGNALS
CACHE MEMORY SIGNALS
STATUS SIGNALS
210
220
230
STACK SEQUENCE CONTROL LOGIC
READ BUFFER
WRITE BUFFER
NOT USED
ADDRESS/DATA SIGNALS TO CACHE MEMORY UNIT
COMMAND SIGNALS TO CACHE MEMORY UNIT
COMMAND SIGNALS TO SYSTEM INTERFACE UNIT
ADDRESS/DATA SIGNALS TO SYSTEM INTERFACE UNIT

1. In a computer system which includes a central processing unit (CPU), a high speed cache memory unit, and a system interface unit (SIU) for controlling command and data transfer between a lower speed main memory and either said CPU or said cache memory unit, a cache memory cammand buffer circuit for allowing said cache memory unit and said SIU to operate independent of each other and for ensuring that commands to said cache memory unit and to said SIU are executed in proper sequence, said cache memory command buffer circuit comprising:

a read buffer for storing read signals from said CPU to said cache memory unit or to said SIU, said read signals including command, data, and address signals;

a write buffer for storing write signals from said CPU to said cache memory unit or to said SIU, said write signals including command, data, and address signals; and

a sequence control circuit connected to said read and writer buffers and receiving signals from said CPU, said SIU, and said cache memory unit, said sequence control circuit including means for storing said read signals from said CPU into said read buffer and said write signals from said CPU into said write buffer and outputting said read and write signals from said buffers to said cache memory unit and to said SIU in the proper sequence and without interrupting the operation of either said cache memory unit or said SIU.

4,354,233

ROTARY DRILL AUTOMATIC CONTROL SYSTEM

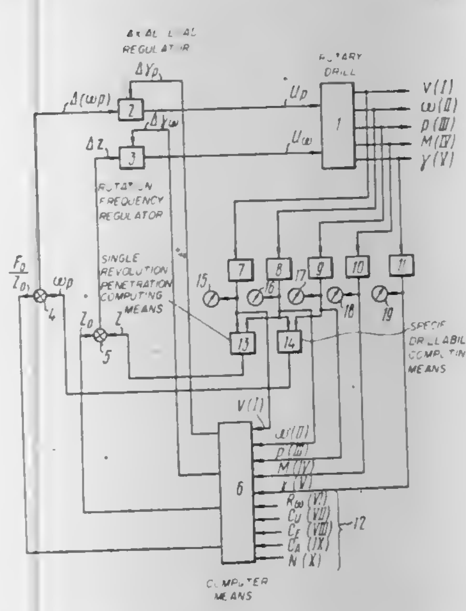
Alexei A. Zhukovsky, ulitsa K. Tsetkin, 32, kv. 43; Vladimir D. Butkin, ulitsa K. Tsetkin, 30-a, kv. 77, and Mikhail I. Kulachek, prospekt Pobedy, 155, kv. 134, all of Chelyabinsk, U.S.S.R.

Filed Jun. 25, 1980, Ser. No. 162,805

Claims priority, application U.S.S.R., May 3, 1972, 1779660; Feb. 7, 1977, 2451473

Int. Cl.^{3} G06F *15/46;* **G06G** *7/48;* **E21C** *1/10*

U.S. Cl. 364—420 **13 Claims**


AXIAL LOAD REGULATOR
ROTARY DRILL
ROTATION FREQUENCY REGULATOR
SINGLE REVOLUTION PENETRATION COMPUTING MEANS
SPECIFIC DRILLABILITY COMPUTING MEANS
COMPUTER MEANS
V(I)
ω(II)
p(III)
M(IV)
γ(V)
12

1. A system for automatic control of a drilling rig utilizing a rotary drilling tool, comprising:

a drilling rate transducer connected to one of the outputs of said drilling rig;

a transducer of rotation frequency of said drilling tool, connected to a second one of the outputs of said drilling rig;

a transducer of axial load on said drilling tool, connected to a third one of the outputs of said drilling rig;

transducer of torque applied to said drilling tool, connected to a fourth one of the outputs of said drilling rig;

a transducer of vibration speed of said drilling tool, connected to a fifth one of the outputs of said drilling rig;

a unit for computing the value of penetration of said drilling tool per single revolution thereof connected to said drilling rate transducer and to said drilling tool rotation frequency transducer;

a unit for computing the current value of specific drillability of the rock being drilled, connected to said drilling tool rotation frequency transducer and to said drilling tool axial load transducer;

computer means designed for computing the optimum value of said specific drillability of the rock being drilled and the optimum value of penetration of said drilling tool per single revolution thereof, as well as for computing a signal for adjustment of the drilling tool rotation frequency and drilling tool axial load, said computer means comprising a first input connected to said drilling rate transducer, a second input connected to said drilling tool rotation frequency transducer, a third input connected to said drilling tool axial load transducer, a fourth input connected to said drilling tool torque transducer, a fifth input connected to said drilling tool vibration speed transducer, a sixth input to which is applied a signal proportional to the drilling tool motor potential, a seventh input to which is applied a signal proportional to the drilling tool cost value, an eighth input to which is applied a signal proportional to the cost of electric energy consumed by the drilling rig, a ninth input to which is applied a signal proportional to the cost of the drilling rig depreciation and service personnel wages, and a tenth input to which is applied a signal proportional to the power consumed by the drilling rig;

a first comparison element having one input connected to said unit for computing the current value of specific drillability and another input connected to one of the outputs of said computer means from which is supplied a signal proportional to the optimum value of specific drillability of the rock being drilled;

second comparison element having one input connected to said unit for computing the current value of drilling tool penetration and another input connected to a second output of said computer means from which is supplied a signal proportional to the optimum value of drilling tool penetration per single revolution thereof;

a drilling tool rotation frequency regulator having one input connected to the output of said second comparison element and another input connected to a fourth output of said computer means, the output of said regulator being connected to a second input of the drilling rig.

4,354,234

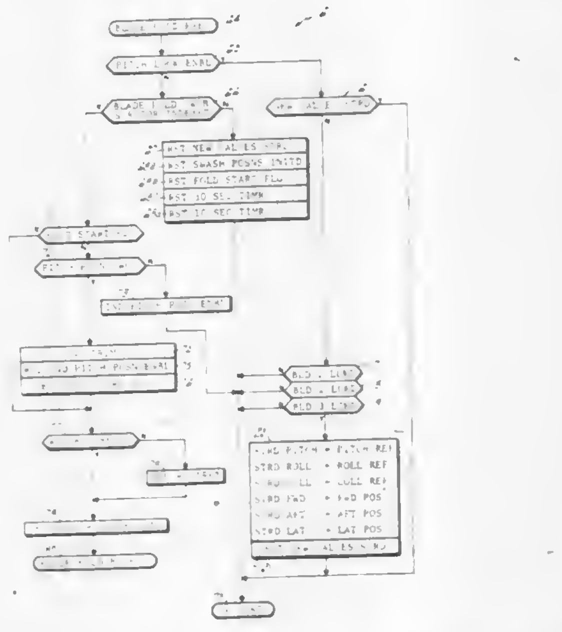
AUTOMATIC LOCK-POSITIONING OF FOLDABLE HELICOPTER BLADES

Roderick A. MacLennan, Stratford, and William J. Mulvey, North Haven, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 10, 1980, Ser. No. 195,808

Int. Cl.^{3} G06F *15/20;* **B64C** *27/50*

U.S. Cl. 364—424 **3 Claims**



1. A helicopter having foldable main rotor blades, the pitch angles of which are positionable by push rods in dependence upon the vertical position and tilt of a swash plate cooperating with said push rods, said blades being lockable at specific pitch angles as a prerequisite to folding, said swash plate being positioned by a plurality of servos, each of said servos being sepa-

rately operable in response to corresponding outputs of a mixer, the mixer in turn receiving inputs from pitch, roll and collective channels, each of said channels including an electrically operated trim actuator for providing a corresponding input to said mixer in response to a related trim command signal from signal processing means, characterized by:

a position detector for each of said servos, each position detector providing a servo position signal indicative of the position of a corresponding one of said servos; and

said signal processing means comprising means for storing a plurality of pitch, roll and collective reference signals related to predetermined positions of said servos at which rotor blade pitch angle is correct for locking, and for providing trim command signals to said pitch, roll and collective trim actuators in respective response to said pitch, roll and collective reference signals, thereby to cause said mixer to drive said servos substantially to said predetermined positions as indicated by corresponding ones of said servo position signals.

4,354,235

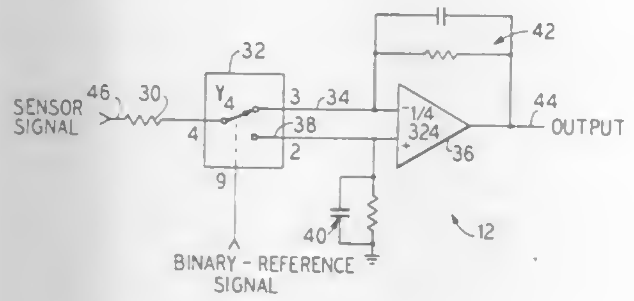
GUIDANCE SYSTEM DETECTOR CIRCUIT

Thomas R. Blakeslee, Woodside, Calif., assignor to Portec, Inc., Oak Brook, Ill.

Filed Jun. 30, 1980, Ser. No. 164,077

Int. Cl.^{3} G06J *1/00;* G06G *7/18;* H03K *5/00*

U.S. Cl. 364—424 **10 Claims**



1. A detector circuit for receiving an alternating current input signal and for generating therefrom a direct current output signal whose magnitude is proportional to the amplitude of the input signal, the circuit comprising

means for generating a binary signal which is true during minus half cycles of the input signal and is false during positive half cycles of the input signal,

differential amplifier means having an output terminal, a first, noninverting input terminal and a second, inverting input terminal,

first signal integrating means connected to the first input terminal of the differential amplifier means for time integrating signals applied thereto,

second signal integrating means connected between the output terminal and the second input terminal, and

switch means controlled by the binary signal for supplying the positive half cycles of the input signal to the first input terminal and the negative half cycles to the second input terminal,

whereby the direct current level of the output of the differential amplifier will rise as the amplitude of the input signal increases just enough to keep the voltages on the first and second input terminals equal so that the voltage at the output terminal is proportional to the amplitude of the sensor signal.

4,354,236

SYSTEM FOR CONTROLLING THE HYDRAULIC PRESSURE DURING A SHIFT OPERATION OF AN AUTOMATIC, VARIABLE SPEED TRANSMISSION

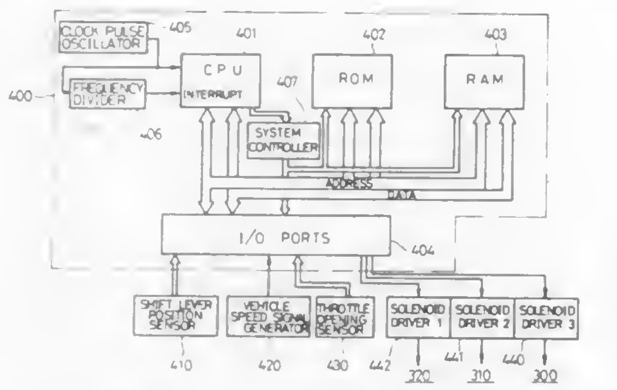
Nobuaki Miki; Mutsumi Kawamoto, both of Nagoya; Hiroyuki Amano, Chiryu; Tsuneo Hida, Toyokawa, and Tsuyoshi Yoshida, Toyota, all of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Aichi, Japan

Filed Jan. 24, 1980, Ser. No. 114,936

Claims priority, application Japan, Feb. 14, 1979, 54-16482

Int. Cl.^{3} B60K *41/08, 41/22;* G06F *15/20*

U.S. Cl. 364—424.1 **5 Claims**



1. A system for controlling an automatic variable speed transmission including an hydraulic circuit having a plurality of oil pressure control valves and flow path switching means for selectively engaging or disengaging clutches and brakes of the transmission, one or more shift controlling solenoid valves and at least one pressure controlling solenoid valve, said system comprising electronic control means responsive to shift lever position, vehicle speed and throttle opening and having memory means with gear ratio change reference data for providing control signals to said solenoid valves to thereby control the operation of the transmission wherein:

said electronic control means controls the hydraulic pressure in the hydraulic control circuit by performing a repeated energization and deenergization of said pressure controlling solenoid valve for a given time interval which is dependent on the shift mode during a shift operation.

4,354,237

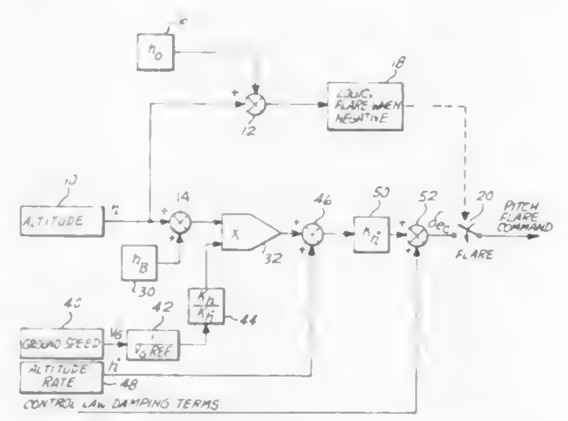
METHOD AND APPARATUS FOR PRODUCING AN AIRCRAFT FLARE PATH CONTROL SIGNAL

Antonius A. Lambregts, Renton, and Rolf Hansen, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 24, 1980, Ser. No. 162,451

Int. Cl.^{3} G06G *7/78;* G05D *1/12*

U.S. Cl. 364—428 **2 Claims**



1. Apparatus for producing an aircraft flare path control signal comprising:

means for producing a signal h representative of aircraft altitude;

means for producing a signal V_G representative of aircraft groundspeed;

means for producing a signal $\dot h$ representative of aircraft altitude rate;

computer means for producing a pitch control surface command signal δ_{ec} according to the relationship:

$$\delta_{ec}=K_{\dot h}\{\dot h+V_G[(K_h/K_{\dot h})/V_{G\,REF}](h+h_B)\}$$

where $K_{\dot h}$, K_h, $V_{G\,REF}$ and h_B are constants selected for a given system configuration; and

control means for actuating the aircraft control surfaces to track said command signal δ_{ec} whereby aircraft landing flare distance is substantially unaffected by the aircraft's relative groundspeed.

4,354,238

METHOD OF CONTROLLING AIR-FUEL RATIO OF INTERNAL COMBUSTION ENGINE SO AS TO EFFECTIVELY MAINTAIN THE AIR FUEL RATIO AT A DESIRED AIR-FUEL RATIO OF $\lambda=1$

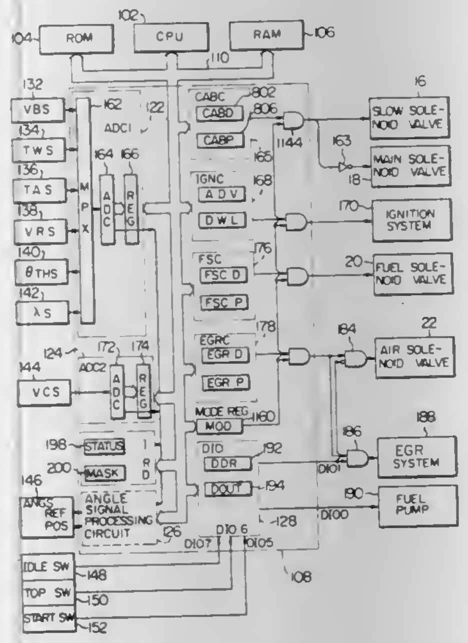
Toshio Manaka; Takeshi Atago; Toshio Ishii, and Yasunori Mouri, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,481

Claims priority, application Japan, Jul. 2, 1979, 54-82659

Int. Cl.^{3} F02B *3/04;* F02D *35/00*

U.S. Cl. 364—431.05 **32 Claims**



1. In an air-fuel ratio control system for an internal combustion engine which includes a plurality of sensors for detecting operating conditions of said engine, an oxygen sensor for detecting oxygen concentration in the exhaust gas from said engine, actuator means for supplying fuel to said engine, central processing means for executing digital operations, random access memory means for storing outputs from said central processing means, read-only memory means adapted to cooperate with said random access memory means, and input/output means coupled to said plurality of sensors for fetching data concerning the operating conditions of said engine detected by said sensors and supplying said data to said central processing means on one hand and on the other hand adapted to receive output signals from said central processing means and supply engine control signals to said actuator means; improvement residing in a method for controlling said air-fuel ratio to be effectively maintained at a desired air-fuel ratio of $\lambda=1$, comprising:

a step of performing a feedback control for maintaining said air-fuel ratio effectively maintained at a desired air-fuel ratio of $\lambda=1$ on the basis of the output from said oxygen sensor in response to the absence of a set signal for commanding interruption of said feedback control at a predetermined area in said random access memory means;

a step of performing a map control for maintaining said air-fuel ratio to be effectively maintained at a desired air-fuel ratio of $\lambda=1$ on the basis of map data read out from said read-only memory means in which said map data has been previously stored in correspondence to operation parameters of said engine, when said set signal is set at said area of said random access memory means;

a first step for clearing the set state of said set signal in response to a significant change in the engine operation appearing during said map control period; and

a second step for setting said set signal.

8. A method of operating a processor-controlled apparatus for controlling the operation of an internal combustion engine having an air-fuel mixture supply system for supplying an air-fuel mixture to said engine, and an exhaust sensor for sensing a prescribed characteristic of exhaust gas emitted from said engine, comprising the steps of:

(a) storing, in memory, a predetermined data map of prescribed data values associated with air-fuel ratios of said air-fuel mixture for a plurality of values of selected engine conditions;

(b) retrieving, from said memory, respective data values in accordance with sensed values of said selected engine conditions and controlling said air-fuel ratio of said air-fuel mixture in accordance with said retrieved data values; and

(c) in response to the occurrence of a prescribed engine operation condition, interrupting step (b) and controlling said air-fuel ratio of said air-fuel mixture in accordance with the sensed prescribed characteristic of exhaust gas emitted from said engine, wherein

step (c) comprises the steps of:

(c1) monitoring the output of said exhaust sensor and producing an exhaust feedback control signal in accordance therewith, and

(c2) controlling said air-fuel mixture on the basis of said exhaust feedback control signal produced in step (c1), and further including the step of:

(d) in response to the occurrence of a predetermined engine operation condition, interrupting step (c) and reinitiating (b), and wherein the reinitiated step (b) comprises the steps of:

(b1) retrieving, from said memory, respective data values in accordance with sensed values of said selected engine conditions;

(b2) modifying said retrieved data values in accordance with said exhaust feedback control signal produced in step (c1), and

(b3) controlling said air-fuel ratio of said air-fuel mixture in accordance with said modified data values.

4,354,239

FUEL INJECTION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hidetoshi Kanegae, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 12, 1980, Ser. No. 129,729

Claims priority, application Japan, Mar. 15, 1979, 54-29386

Int. Cl.^{3} F02M *51/00;* F02B *3/04;* F02D *5/02*

U.S. Cl. 364—431.05 **6 Claims**

1. A fuel injection control system for an internal combustion engine with a fuel injection valve, the system including a microcomputer which calculates a value of fuel injection time duration Ti based on detected operating parameters of the engine including crank angle position, said system comprising:

(a) means for generating a first injection signal to open said injection valve in response to a detected predetermined crank angle position;

(b) means for producing clock pulse signals having a period Tc, said period Tc being a small fraction of the fuel injection time duration Ti;

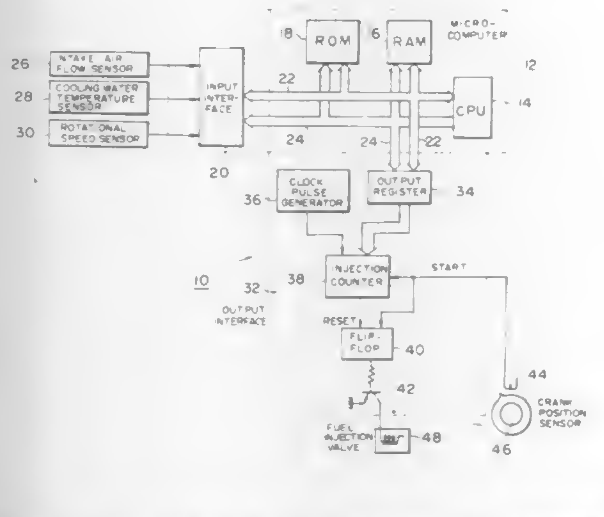
(c) a counter;

(d) said microcomputer including a CPU, a data memory storage for storing data and a program memory storage for storing a control program for controlling said calculation and causing said CPU to

(i) compare the calculated value Ti with a plurality of limit values to determine one of a plurality of ranges for Ti, each range having an upper limit value of Ti,

(ii) generate a set value signal (OR) indicative of the calculated value of Ti,

(iii) generate a clock control signal (CR) corresponding to said determined range for Ti, said clock control signal indicative of said clock period, Tc, wherein for each of said ranges of Ti, the ratio of the upper limit value of Ti to the value Tc is approximately equal to the largest count value within the capacity of said counter;



(e) said clock pulse signal producing means including means responsive to said clock control signal for adjusting the period Tc of said clock pulse signals in dependence upon said clock control signal;

(f) said counter connected to receive said clock pulse signals for counting same and connected to receive said set value signal (OR) for setting said counter to said set value indicative of said calculated value Ti;

(g) said counter operative to start counting said clock pulse signals upon opening of said fuel injection value and generating a second injection signal when the number of counted clock pulse signals reaches said set value, and

(h) means responsive to said second injection signal for closing said injection valve.

4,354,240

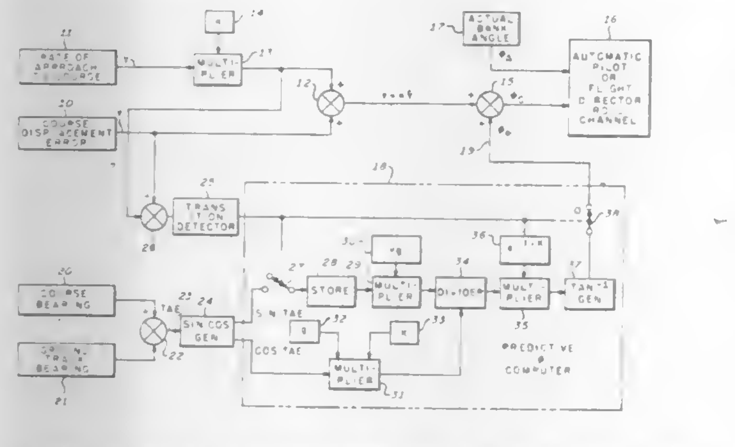
FLIGHT PATH TRANSITION CONTROL APPARATUS WITH PREDICTIVE ROLL COMMAND

Edmond E. Olive, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,213

Int. Cl.³ G05D *1/08;* **B64C** *13/16*

U.S. Cl. 364—434 **17 Claims**



1. Apparatus for controlling an aircraft to execute a capture maneuver of a predetermined course along an exponential transition curve comprising

means for generating a control law signal representative of said exponential transition curve,

means for generating a predictive roll attitude signal representative of aircraft roll attitude for maintaining said aircraft on said exponential transition curve,

means for combining said control law signal and said predictive roll attitude signal to provide a roll attitude command signal for controlling said aircraft to execute said exponential transition curve,

transition detector means for providing a capture maneuver initiation signal in accordance with initiation of said capture maneuver, and

means for switchably coupling said predictive roll attitude signal to said means for combining said control law signal and said predictive roll attitude signal in accordance with said capture maneuver initiation signal.

4,354,241

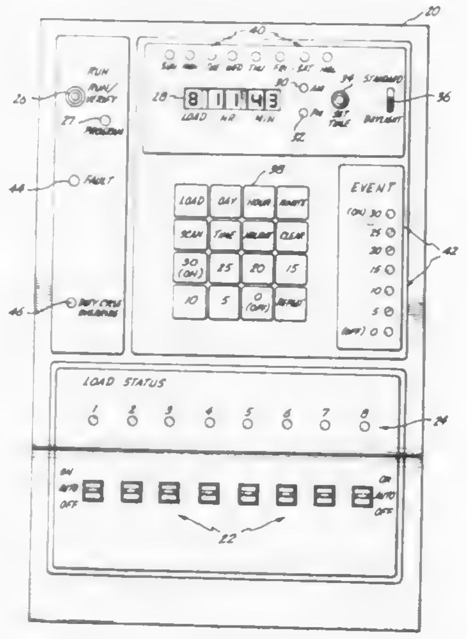
PROGRAMMABLE ELECTRONIC REAL-TIME LOAD CONTROLLER PROVIDING FOR ADAPTATION OF LOAD CONTROL IN RESPONSE TO VARYING ENVIRONMENTAL CONDITIONS

Lawrence J. Barello, Seattle, Wash., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Dec. 27, 1979, Ser. No. 107,554

Int. Cl.³ H02J *13/00;* **G06F** *15/56*

U.S. Cl. 364—492 **46 Claims**



1. An electronic controller for controlling the energization states of a plurality of electrical loads, said controller comprising:

a plurality of load control circuits, each said load control circuit being adapted to be interconnected with a load, and having a load-on state when its load is to be on, and a load-off state when its load is to be off;

clock means for determining real-time;

sensor means for sensing at least one environmental temperature at a facility at which the plurality of electrical loads are located;

event memory means storing a time schedule for real-time control of the plurality of electrical loads;

program memory means storing a set of program instructions; and,

program means responsive to said set of stored program instructions for:

obtaining said time schedule from said event memory means;

obtaining a sensed environmental temperature from said sensor means;

modifying said time schedule in accordance with said sensed environmental temperature;

obtaining real-time from said clock means; and,

placing said load control circuit for each load in said load-on and said load-off states by comparing said real-time with said modified time schedule.

4,354,242

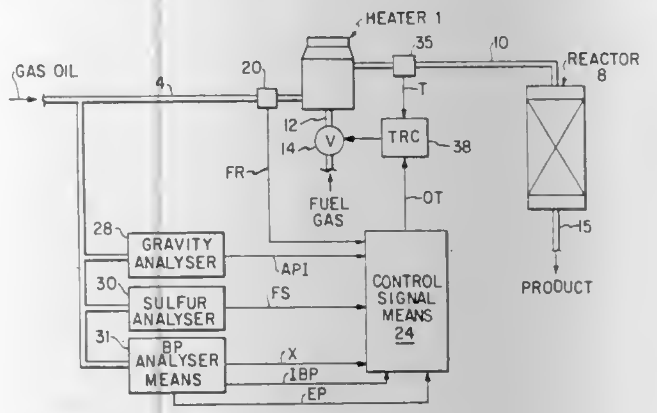
FEEDSTOCK TEMPERATURE CONTROL SYSTEM

Charles A. Ganster, Houston, and Gerald V. Nelson, Nederland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,725

Int. Cl.³ C10G *21/00;* **G06F** *15/46*

U.S. Cl. 364—501 **11 Claims**



1. A control system for controlling the temperature of gas oil being fed to a reactor in a hydrotreating unit comprising heater means receiving the gas oil for heating the gas oil in accordance with a control signal DT corresponding to a desired temperature for the gas oil entering the reactor and providing the heated gas oil to the reactor, gravity analyzer means for sensing the API gravity of the gas oil and providing a signal API corresponding thereto, sulfur analyzer means for sensing the sulfur content of the gas oil and providing a corresponding signal FS, boiling point analyzer means for sensing the 50% boiling point temperature, the initial boiling point temperature and the end point temperature of the gas oil and providing corresponding signals X, IBP and EP, respectively, flow rate means for sensing the flow rate of the gas oil and providing a signal FR representative thereof, and control signal means connected to the heater means, to the gravity analyzer means, to the sulfur analyzer means, to the boiling point analyzer means and to the flow rate means for providing control signal DT in accordance with signals API, FS, X, IBP, EP and FR, said control signal means includes MW computer means connected to the boiling point analyzer means and to the gravity analyzer means for providing a signal MW corresponding to the molecular weight of the gas oil in accordance with signals X and API, SF computer means connected to the boiling point analyzer means for providing a signal SF corresponding to a sulfur factor of the gas oil which is at the estimated distillation temperature at which half of the sulfur in the feedstock is distilled overhead, subtracting means connected to the boiling point analyzer means for subtracting signal IBP from signal EP to provide signal R corresponding to the temperature range of the gas oil, ALHSV signal means connected to the flow rate means and receiving a direct current voltage CAT.VOL. corresponding to the catalyst volume of the reactor in barrels for providing a signal ALHSV corresponding to the actual liquid hourly space velocity of the gas oil in accordance with signal FR and the voltage CAT VOL, A signal means connected to the MW computer means, to the SF computer means, to the subtracting means, to the sulfur analyzer means and to the gravity analyzer means for providing a signal A corresponding to a feedstock correlating parameter in accordance with signals MW, SF, R, FS and API, CT signal means connected to the A signal means for providing signals CT95, CT90, CT80 and CT70, corresponding to the correction temperature for 95%, 90%, 80% and 70% desulfurization, respectively, RT signal means connected to the CT signal means for providing signals RT95, RT90, RT80 and RT70 corresponding to the reciprocal temperatures for 95%, 90%, 80% and 70% desulfurization, respectively, in accordance with signals CT95, CT90, CT80, and CT70, sulfur signal means for providing a signal DPS corresponding to the desired product sulfur content and a signal DDS corresponding to a percent desulfurization necessary to achieve the desired product sulfur content in accordance with signal FS, K signal means connected to the sulfur analyzer means for providing signals K95, K90, K80 and K70, corresponding to reaction rate constants for 95%, 90%, 80% and 70% desulfurization, respectively, in accordance with signal FS, slope and intercept signal means connected to the RT signal means, to the sulfur signal means and to the K signal means for providing signals m and b corresponding to the slope and intercept, respectively, of a straight line approximating the kinetic relationship between the reaction rate constant and the reciprocal temperatures in accordance with signals DDS, RT95, RT90, RT80, RT70, K95, K90, K80 and K70, Z signal means connected to the ALHSV signal means and to the sulfur signal means for providing a signal Z corresponding to a reaction rate constant for the desired product sulfur content in accordance with signals ALHSV and DPS, and temperature signal means connected to the slope and intercept signal means and to the Z signal means for providing signal DT in accordance with signals m, b, and Z.

4,354,243

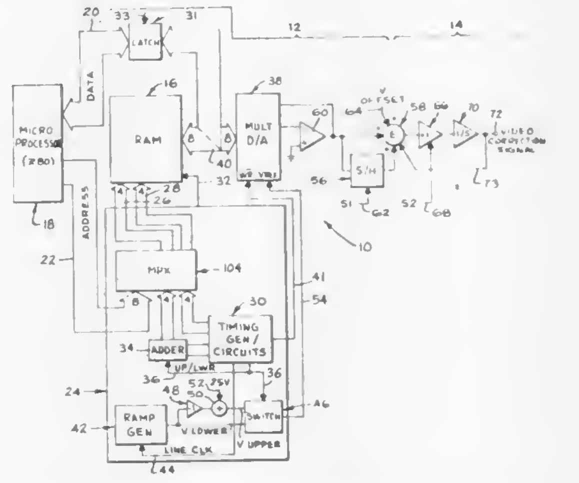
TWO DIMENSIONAL INTERPOLATION CIRCUIT FOR SPATIAL AND SHADING ERROR CORRECTOR SYSTEMS

John O. Ryan, Cupertino, and Joseph L. Corkery, San Carlos, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 11, 1980, Ser. No. 139,512

Int. Cl.³ G06F *15/353;* **H04N** *5/38*

U.S. Cl. 364—515 **23 Claims**



1. A circuit for interpolating between values taken from two spaced rows of data points to define an interpolated output, comprising;

means for providing a selected stream of two sets of upper and lower data words corresponding to data from respective upper and lower rows of points disposed above and below a line therebetween;

multiplying means including a D/A converter for generating a selected sequence of product voltages by multiplying a selected data word of a row with a voltage indicative of the position of the line between the rows, wherein the sequence of product voltages define an interleaved sequence of the upper and lower data words and two voltage levels;

summing means for adding given voltages in the product voltage sequence to provide a final sequence of vertically interpolated voltages;

said summing means including a sample/hold circuit coupled to the multiplying means to delay selected ones of the product voltages, a junction for receiving the undelayed and delayed sequence of product voltages, a negative waveform of the interpolated output, and a DC offset voltage;

said summing means generating a difference voltage indicative of what the instantaneous value of the interpolated output should be; and

means for horizontally interpolating between the final sequence of voltages to define the interpolated output.

4,354,244

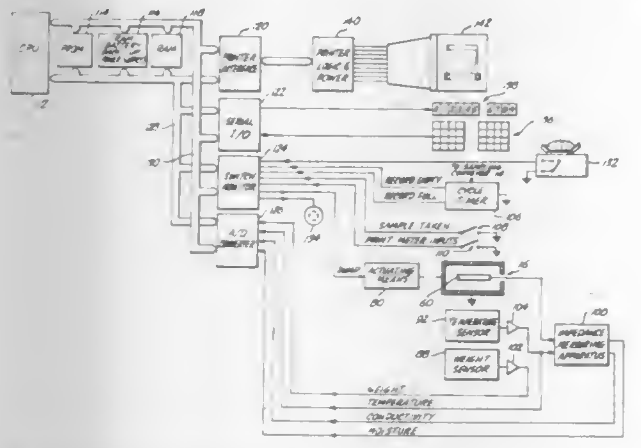
METHOD AND APPARATUS FOR DETERMINING THE MOISTURE CONTENT OF PARTICULATE MATERIAL THAT MAY CONTAIN AN UNKNOWN AMOUNT OF MOISTURE IN A FROZEN STATE

Christopher S. Miller, Seattle; Daniel F. Pope, Issaquah, and Jon V. Hokanson, Everett, all of Wash., assignors to Eur-Control M&D, U.S.A., Inc., Bellevue, Wash.

Filed Feb. 25, 1980, Ser. No. 124,339

Int. Cl.^{3} G06G *7/58*

U.S. Cl. 364—556 **94 Claims**



1. A method for detecting the presence of frozen moisture in a sample of particulate material, said method comprising the steps of:

determining a moisture percentage for the sample by measuring the electrical impedance thereof;

measuring the wet bulk density and temperature of the sample;

determining an electronic oven dry percentage for the sample from said moisture percentage based on electrical impedance;

determining a density oven dry percentage for the sample from said measured wet bulk density; and,

detecting the presence of frozen moisture if said measured temperature is below a predetermined value and if said electronic oven dry percentage differs from said density oven dry percentage in a predetermined manner.

4,354,245

CYCLIC OR PERIODIC ANALOG SIGNAL PROCESSING CIRCUIT

Francois E. Delegue, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Aug. 6, 1980, Ser. No. 175,877

Claims priority, application France, Aug. 10, 1979, 79 20521

Int. Cl.^{3} G06J *1/00*

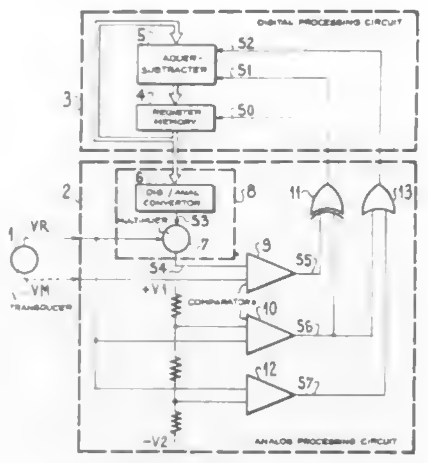
U.S. Cl. 364—606 **7 Claims**

1. A cyclic analog signal processing circuit, intended for processing signals from a plurality n of linvars, each linvar supplying an induced signal V_{Mi} proportional to the displacement to be measured and to the reference signal V_{Ri} supplying the transducer, said circuit comprising:

multiplexer means for successively transmitting the analog signals of the transducers, supplying the induced signal V_{Mi} by a first output and the reference signal of the corresponding transducer by a second output;

a memory for successively storing the digital values V_{Mi}/V_{Ri} representative of the respective displacements of the transducers, said memory being relooped on itself across an adder-subtracter circuit;

a multiplier for multiplying the reference signal V_{Ri} of the second output by the corresponding value V_M/V_R extracted from the memory and being converted in analog form in a digital-analog conversion circuit;



control means comprising a differential comparator with a digital output for comparing the output of the multiplier with the induced signal V_{Mi} of the first output and for supplying a binary control signal; and

a circuit for the incrementation and decrementation control of the adder-subtracter circuit as a function of the state of said binary control signal.

4,354,246

KEY INPUT INDICATING TONE GENERATING APPARATUS FOR SMALL-SIZED ELECTRONIC DEVICES

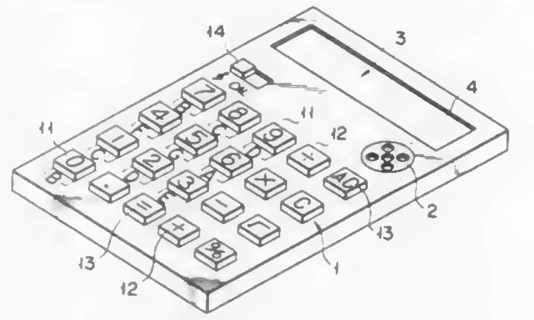
Hidetaka Fujisawa, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,737

Claims priority, application Japan, Dec. 21, 1978, 53-157961

Int. Cl.^{3} G06F *3/16*

U.S. Cl. 364—709 **9 Claims**



1. A key input indicating tone generating apparatus for small-sized electronic devices, comprising:

a key input section having a plurality of groups of keys;

judging means coupled to the key input section for judging a key depressed and determining the group of keys to which the depressed key belongs;

frequency control means coupled to said judging means;

an oscillator for generating signals having a given frequency;

frequency forming means coupled to the oscillator and to the frequency control means for selectively generating signals of predetermined frequency and signals of different frequencies, using at least the given frequency signals from the oscillator; and

sound generating means coupled to the frequency forming means and responsive to a single frequency signal from the frequency forming means, for generating tones of different pitches as a function of the frequency of the signal received from the frequency forming means;

said frequency control means controlling the frequency forming means to cause the frequency forming means to generate said signals of different frequencies when it is judged by the judging means that at least one key of a first group are depressed and to cause said frequency forming means to generate said signals of predetermined frequency when it is judged by the judging means that at least one key of a second group is depressed;

whereby said sound generating means generates a plurality of tones of respective different pitches when keys of the first group are depressed and tones of the same pitch when keys of the second group are depressed.

4,354,247

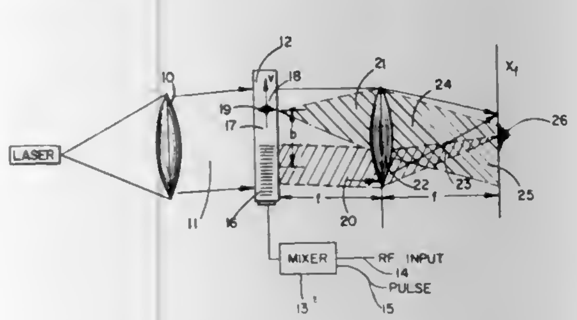
OPTICAL COSINE TRANSFORM SYSTEM

Shi-Kay Yao, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 29, 1980, Ser. No. 154,359

Int. Cl.^{3} G06F *7/56;* **G02F** *1/11*

U.S. Cl. 364—713 **10 Claims**



1. An optical signal processing system comprising:

means for providing an information containing input signal;

a source for emitting a beam of radiation;

collimation means in the path of said beam;

acoustic-optical modulation means disposed in the path of said collimated beam and functioning to modulate at least two spatially spaced-apart portions of said beam with different signals, to produce first and second spatially separated modulated beams, one of said signals being said information containing input signal and another of said signals being a predetermined reference signal;

Fourier transform lens means disposed in the path of said first and second modulated beams; and

detector means disposed in the path of said first and said second beams and spaced apart from said Fourier transform lens means at the focal plane thereof for detecting the resulting optical intensity distribution of the interaction of said first and said second modulated beams, said resulting distribution representing a predetermined transfer function of said information containing signal.

4,354,248

PROGRAMMABLE MULTIFREQUENCY TONE RECEIVER

David R. L. Conger, Palo Alto, Calif.; Ira A. Gerson, Hoffman Estates, and Richard E. White, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 28, 1979, Ser. No. 98,093

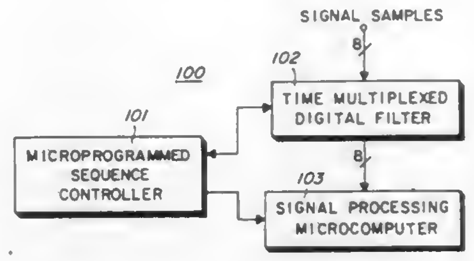
Int. Cl.^{3} G06F *15/31*

U.S. Cl. 364—724 **51 Claims**

1. Apparatus for filtering an input signal comprised of digitally coded samples, said filtering apparatus comprising:

digital filter means responsive to a filter start signal for receiving each digitally coded sample of the input signal and performing an M-order filtering operation selected by select signals, where M is an integer number greater than one; said digital filter means providing an output signal and a filter done signal upon completion of the selected M-order filtering operation; and

sequence control means responsive to each digitally coded sample for generating a sequence of control signals including filter start signals and select signals for successively applying the sample to the digital filter means and enabling the digital filter means to perform K cascaded M-order filtering operations, where K is an integer number greater than one, the sequence of control signals further including a halt signal after each filter start signal, and the sequence control means being disabled by the halt signal and subsequently re-enabled by the filter done signal.


SIGNAL SAMPLES
8
100
102
TIME MULTIPLEXED DIGITAL FILTER
101
MICROPROGRAMMED SEQUENCE CONTROLLER
8
103
SIGNAL PROCESSING MICROCOMPUTER

4,354,249

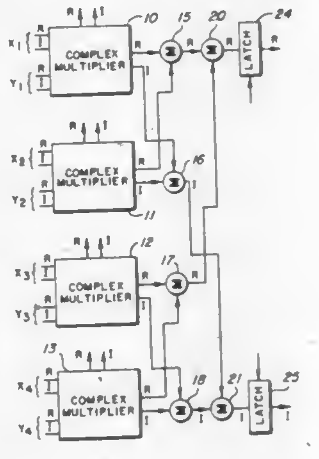
PROCESSING UNIT FOR MULTIPLYING TWO MATHEMATICAL QUANTITIES INCLUDING AT LEAST ONE COMPLEX MULTIPLIER

Thomas M. King, Mesa, and Sam M. Daniel, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 24, 1980, Ser. No. 132,963

Int. Cl.^{3} G06F *7/52*

U.S. Cl. 364—754 **6 Claims**



1. A digital processing unit for multiplying two N-component mathematical quantities, X and Y, wherein each component is represented by an m bit digital word representative of a real portion and an m bit digital word representative of an imaginary portion, said unit comprising:

(a) N complex multipliers each having an X input and a Y input, each input having m leads adapted to receive the real portion in parallel and m leads adapted to receive the imaginary portion in parallel, and an output having at least $m+1$ leads for the real portion and at least $m+1$ leads for the imaginary portion;

(b) real portion summing means connected to the $m+1$ leads for the real portion at the output of each of said N complex multipliers for providing a real output component including at least $m+2$ parallel bits representative of the sum of the real portions from each of said complex multipliers; and

(c) imaginary portion summing means connected to the $m+1$ leads for the imaginary portion at the output of each of said N complex multipliers for providing an imaginary output component including at least $m+2$ parallel bits representative of the sum of the imaginary portions from each of said complex multipliers.

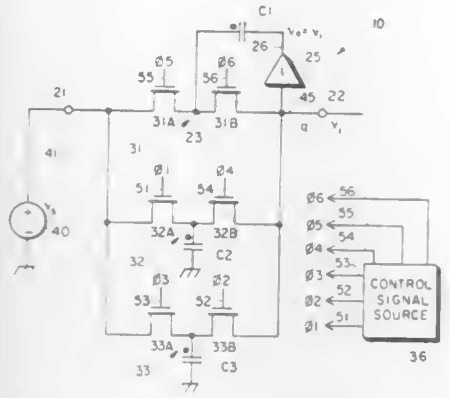
4,354,250
SWITCHED-CAPACITOR SOURCE RESISTOR SIMULATION CIRCUIT

Man S. Lee, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Aug. 11, 1980, Ser. No. 177,026

Int. Cl.^{3} G06G *7/48*

U.S. Cl. 364—802 **15 Claims**



1. An integrated switched capacitor circuit for simulating a source resistor comprising:

- a first node for electrical connection to the output terminal of a voltage source that is associated with a ground reference potential;
- a second node;
- first and second capacitor means C1 and C2, each having a pair of terminals;
- voltage follower means having an input terminal electrically connected to said second node, which is adapted for connection to external circuitry, and having an output terminal electrically connected to one terminal of C1;
- first means electrically connecting one terminal of C2 to ground;
- first switch means periodically operative in first and second non-overlapping switch states for periodically electrically connecting the other terminal of C1 to said first and second nodes for charging and discharging C1, respectively; said first switch means being operative in each of said first and second switch states once during each T second time interval, where T is the difference between times of termination of adjacent first switch states and $f = 1/T$ is the sampling frequency for C1; and
- second switch means periodically operative in third and fourth non-overlapping switch states for periodically connecting the other terminal of C2 to said first and second nodes for charging and discharging C2, respectively; said second switch means being operative for terminating a third switch state at a first time for causing C2 to sample the voltage at said first node, for causing C2 to hold the sampled voltage, and for subsequently operating in a fourth state for discharging C2;
- said circuit simulating a source resistor across said nodes when said first node is connected to the output terminal of a voltage source.

4,354,251
DEVICE FOR TESTING PROGRAMS FOR NUMERICAL CONTROL OF MACHINE TOOLS

Friedrich-Wilhelm Hellwig, Hemhofen, and Christian Seeliger, Grossenbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

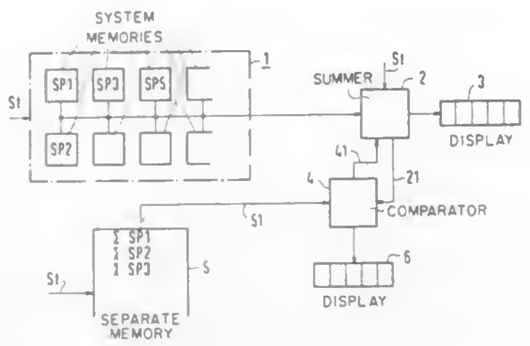
Filed Mar. 6, 1980, Ser. No. 127,574

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913999

Int. Cl.^{3} G06F *11/16, 11/32, 3/14*

U.S. Cl. 364—900 **3 Claims**

1. A device for testing the system program of a numerical control in a machine tool, said system program being for the internal control of the command cycle and being permanently stored in a plurality of system semiconductor memories, comprising: an additional semiconductor memory in which a word sum of the information permanently stored in each of said system semiconductor memories is individually stored for each system semiconductor memory; means for taking new word sums of each system semiconductor memory; means for comparing each new word sum with the corresponding sum stored in the said additional memory; and display means for indicating which memory is defective, in the event there is a difference between said new sum and the corresponding stored sum in said additional memory.



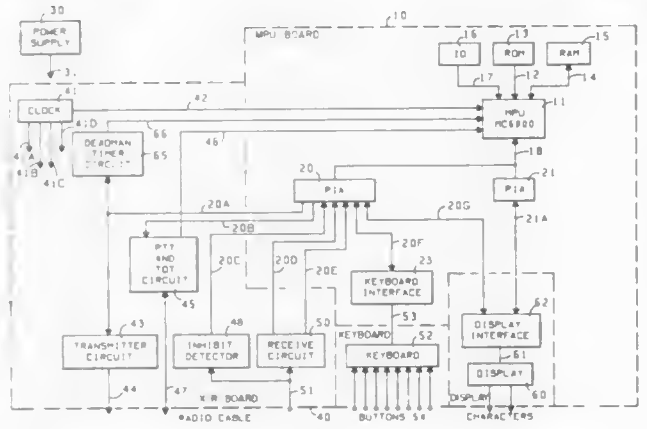
4,354,252
PROGRAMMABLE DIGITAL DATA TERMINAL FOR MOBILE RADIO TRANSCEIVERS

James A. Lamb, Hoffman Estates; Johnny E. Blankenship, Schaumburg; George E. Dykas, Vernon Hills; William Milleker, Chicago, and Kenneth W. Hamilton, Rolling Meadows, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 837,255, Sep. 27, 1977, abandoned. This application Feb. 2, 1981, Ser. No. 230,828

Int. Cl.^{3} G06F *15/40*

U.S. Cl. 364—900 **17 Claims**



1. A radio frequency digital data transmission system for communicating digital messages between a base station and a plurality of mobile stations, where the mobile stations each include a radio transceiver and a programmable data terminal coupled thereto for receiving and transmitting digital messages, wherein the programmable data terminal of each mobile station comprises:

- means for generating a data clock signal;
- means coupled to the radio transceiver for receiving in response to the data clock signal, successive bits of digital messages transmitted from the base station;
- keyboard means including a transmit key and a plurality of alphanumeric keys;
- display means including a plurality of display elements for visually displaying digital messages applied thereto;
- means coupled to the radio transceiver for transmitting in response to the data clock signal, successive bits of digital messages applied thereto; and
- processing means including a compose memory, a next message memory, a read-only memory for storing a control program and peripheral-interface-adapter means for interfacing the processing means to the data clock signal generating means, receiving means, keyboard means, display means and transmitting means; the processing means receiving a digital message entered from the keyboard means, storing the entered digital message in the compose memory, and applying the entered digital message to the display means; and the processing means further having an interrupt input coupled to the clock signal and being responsive to each predetermined logical state change of the clock signal for, under control of the control program, storing in the next message memory successive bits of a digital message received by the receiving means, and, when the transmit key is activated, applying successive bits of a digital message stored in the compose memory of the transmitting means.

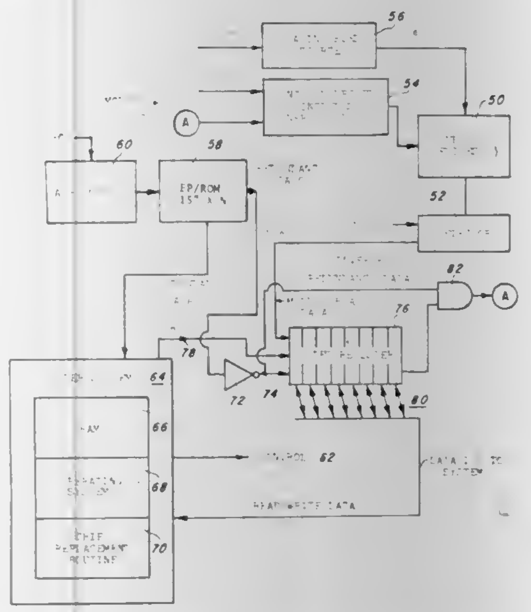
4,354,253
BUBBLE REDUNDANCY MAP STORAGE USING NON-VOLATILE SEMICONDUCTOR MEMORY

Rex A. Naden, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1976, Ser. No. 752,947

Int. Cl.^{3} G11C *19/08*

U.S. Cl. 365—15 **15 Claims**



9. A magnetic domain memory system comprising:

- a thin magnetic film capable of supporting magnetic domains;
- means defining a major path on said magnetic film on which magnetic domains may be propagated;
- a plurality of minor storage loops in each of which magnetic domains may be propagated and disposed on said magnetic film adjacent to said major propagation path, one or more of said minor storage loops being inoperable;
- means for transferring said magnetic domains between said major propagation path and said minor storage loops;
- means on said film for storing information as to the locations of inoperable minor storage loops thereon;
- control means operably associated with said film to impart movement to said magnetic domains in said film for propagating said magnetic domains along said major path and said minor storage loops in a data processing operation;
- an erasable non-volatile memory element operably associated with said information storing means for recording the locations of said one or more inoperable minor storage loops, and said erasable non-volatile memory element being electrically coupled to said control means for providing signals thereto effective to inhibit the use of any inoperable minor storage loops on said film; and
- further including a volatile random access memory element for storing and updating locations of said inoperable minor storage loops.

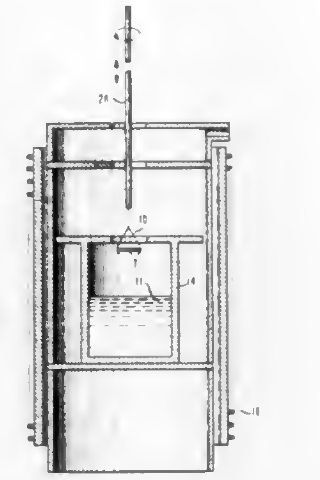
4,354,254
DEVICES DEPENDING ON GARNET MATERIALS

Stuart L. Blank; Ernst M. Gyorgy, both of Madison; Roy C. LeCraw, Westfield, and Lars C. Luther, Basking Ridge, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 7, 1980, Ser. No. 204,899

Int. Cl.^{3} H01F *1/37*

U.S. Cl. 365—33 **10 Claims**



1. A device comprising (1) an epitaxial layer of garnet material having a uniaxial magnetic anisotropy of magnitude greater than 7000 ergs/cm^3 which due to a growth-induced component is capable of supporting a single wall magnetic domain (2) means for producing and means for maintaining in said garnet said single wall magnetic domain (3) means for propagating said single wall domain in said garnet and (4) means for detecting the presence of said single wall magnetic domain, such that said garnet material comprises a composition nominally represented by the formula $\{A\}_3[B]_2(C)_3O_{12}$, wherein said composition includes sufficient iron ions to produce a magnetic moment in said garnet characterized in that B also includes a magnetic anisotropy producing member of the group consisting of Co^{2+} and an ion having 5d or 4d electrons wherein the number of said electrons is 1, 2, 4 or 5, and A includes a typical combination capable of producing a magnetic anisotropy, said typical combination represented by A being $X_{3-y}Z_y$ where X is the magnetic rare earth ion of highest mole fraction in A, Z is the remaining composition of A, and $0.1 < y < 2.9$, said anisotrpoy producing member in B producing a uniaxial magnetic anisotropy which is complementary to the uniaxial magnetic anisotropy produced by said typical combination in A.

4,354,255
RANDOM ACCESS MEMORY WITH VOLATILE AND NON-VOLATILE STORAGE

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1980, Ser. No. 144,922

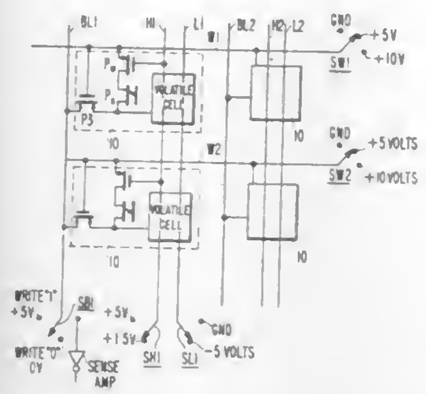
Int. Cl.^{3} G11C *11/40, 9/00*

U.S. Cl. 365—154 **7 Claims**

1. The combination comprising:

- a volatile binary storage element having first and second power terminals for the application of an operating potential therebetween and having first and second input output (I/O) points;
- a bit line, and a word line;
- a gating transistor having a conduction path and a control electrode; means connecting said conduction path of said gating transistor between one of said I/O points and said bit line; and means connecting said control electrode to said word line;
- a non-volatile storage element which can be programmed to either one of two conductive states; and

a switch means, coupled to said non-volatile storage element, responsive to a given potential difference applied between said word line and one of said first and second

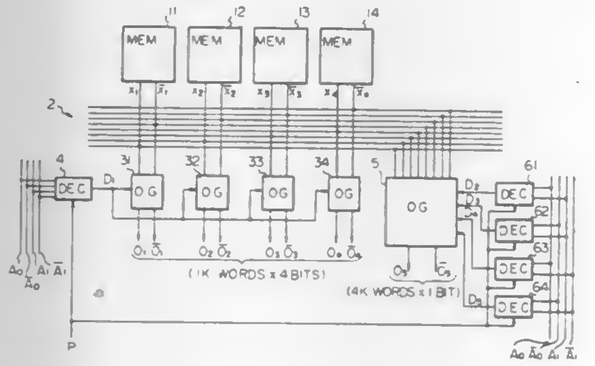


power terminals for selectively connecting said non-volatile storage element in circuit with said volatile binary storage element between said word line and one of said first and second input-output points.

4,354,256
SEMICONDUCTOR MEMORY DEVICE

Kiyoshi Miyasaka, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 30, 1980, Ser. No. 145,346
Claims priority, application Japan, May 4, 1979, 54/54915
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 10 Claims

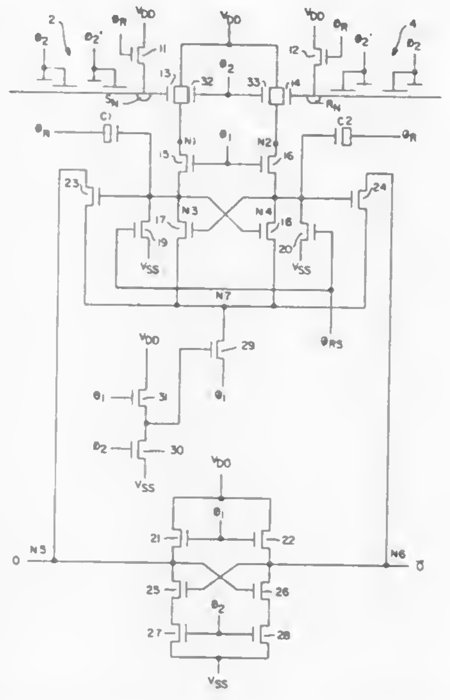


1. A semiconductor memory device comprising:
N memory cell arrays, each of said arrays including a plurality of memory cells,
a plurality of address lines for selectively addressing individual memory cells of said arrays,
a group of output gates of a first kind respectively corresponding to said memory cell arrays and operable when selectively enabled for simultaneously producing in parallel a corresponding plurality of 1-bit output signals selected from said respective N memory cell arrays by said address lines,
a gate of a second kind common to all of said memory cell arrays and operable when selectively enabled for producing a particular 1-bit output signal selected from said N memory cell arrays by said address lines,
a first decoder circuit for simultaneously enabling said output gates of said first kind,
N other decoder circuits for enabling said gate of said second kind,
a power supply terminal and a ground terminal,
means for selectively applying relatively higher and lower potentials to said power supply terminal,
said first decoder circuit and said N other decoder circuits respectively including means connected to said power supply terminal and responsive to said relatively higher and lower potentials thereof, selectively, for enabling said group of output gates of said first kind and disabling said gate of said second kind, and for disabling said output gates of said first kind and enabling said output gate of said second kind,
said N memory cell arrays, said output gates of said first and said second kinds, said first decoder circuit, said N other decoder circuits, and said selective potential applying means being formed on a common semiconductor substrate.

4,354,257
SENSE AMPLIFIER FOR CCD MEMORY

Ramesh C. Varshney, and Kalyanasundaram Venkateswaran, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 23, 1980, Ser. No. 152,638
Int. Cl.³ G11C *13/00, 7/00*
U.S. Cl. 365—219 10 Claims



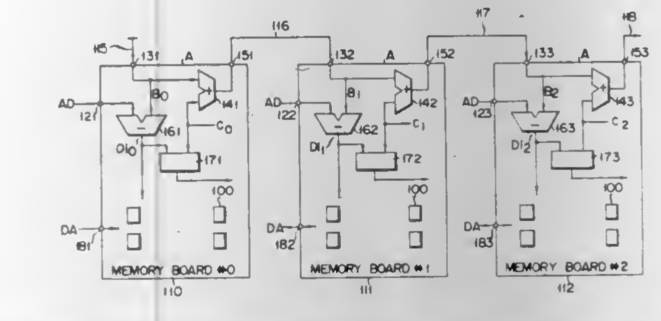
1. A sense amplifier for use with a charge coupled device having a sense node and a reference node comprising
first means for setting said sense node and said reference node to a first voltage potential,
second means for transferring a stored charge and a reference charge potential to said sense node and said reference node, respectively,
differential voltage comparator means including cross-coupled transistors responsive to voltage on said node and said reference node whereby one of said transistors is rendered more conductive than the other of said transistors,
first and second output voltage terminals,
means for charging said output terminals,
discharge means operably connected with said first and second output terminals and responsive to the conduction of said cross coupled transistors for selectively discharging one of said output terminals, and
capacitive means coupled directly to said cross-coupled transistors and said discharge means for enhancing the selective discharge of one of said output terminals.

4,354,258
MEMORY BOARD AUTOMATICALLY ASSIGNED ITS ADDRESS RANGE BY ITS POSITION

Fumitaka Sato, Ome, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 11, 1980, Ser. No. 120,469
Claims priority, application Japan, Feb. 16, 1979, 54-16015
Int. Cl.³ G11C *8/00*
U.S. Cl. 365—230 12 Claims

1. A memory board in which a plurality of memory locations are arranged thereon by mounting a plurality of memory chips, comprising:
(A) first terminals for receiving address information for specifying one of said memory locations;
(B) second terminals for receiving start address information corresponding to the first memory location of those memory locations;
(C) means for supplying memory capacity information representing a capacity of the plurality of memory locations;
(D) addition means for adding the start address information to the memory capacity information;

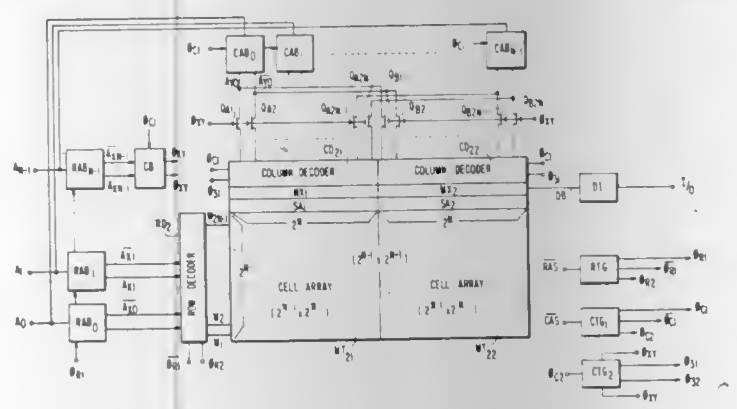


(E) third terminals through which the output information of said addition means is outputted;
(F) subtraction means for subtracting the start address information from the address information; and
(G) means for producing a selection signal for selecting a memory board when the information (the address information—the start address information) outputted from the subtraction means is given by the following expression:
0≦(the address information—the start address information-)<the memory capacity information.

4,354,259
SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED COLUMN SELECTION STRUCTURE

Shoji Ishimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,182
Claims priority, application Japan, Apr. 4, 1979, 54-40674
Int. Cl.³ G11C *8/00*
U.S. Cl. 365—230 8 Claims

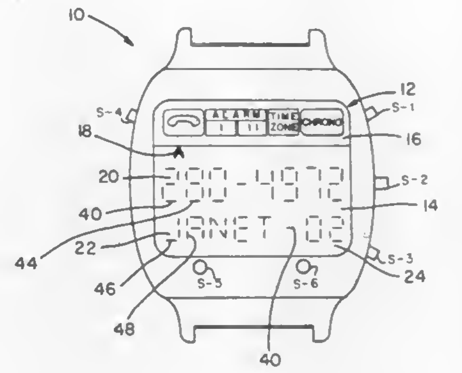


4. A memory circuit comprising a first memory cell array; a second memory cell array, each of said arrays including a plurality of memory cells arrayed in rows and columns; means for electrically connecting rows of said first memory cell array to rows of said second memory cell array; means for receiving a plurality of address signals; first column selecting means for selecting columns of said first memory cell array; second column selecting means for selecting columns of said second memory cell array independently of said first column selecting means; a first column address signal transfer means coupled to said first column selecting means; a second column address signal transfer means coupled to said second column selecting means; means for supplying column address signals to said first and second column address signal transfer means; and means for activating a selected one of said first and second column address signal transfer means.

4,354,260
PERSONAL DATA BANK SYSTEM

Carmine S. Planzo, 15 Av. Eugene Pittard, 1206 Geneve, Switzerland

Continuation-in-part of Ser. No. 31,408, Jul. 27, 1979, abandoned. This application Aug. 28, 1980, Ser. No. 182,023
Int. Cl.³ G04B *47/00, 23/02;* G09F *9/30*
U.S. Cl. 368—10 14 Claims



1. An apparatus capable of generating, storing and recalling data in the form of an array of alphanumeric characters, comprising:
display means capable of displaying said data in an array of alphanumeric characters in a plurality of distinct positions;
storage means connected to said display means for storing the data therein;
first and second switch means;
set control logic means, said set control logic means being connected to said display means and said first and second switch means, said set control logic means capable of generating a fixed sequence of data signals, each data signal corresponding to an alphanumeric character, such that upon initially actuating said first switch means said set control logic means continuously generates said sequence of data signals, with the characters corresponding to said data signals being displayed in a first position of said display means, and such that upon reactuation of said first switch means (1) the most recently displayed character is retained in said first position on said display means, and (2) said sequence of characters is then displayed in a second position on said display means, and with the subsequent repeated actuation of said first switch means resulting in a desired array of characters being selected and retained in said remaining distinct positions of said display means, after which said second switch may be actuated storing said desired array in said storage means; and
recall means connected to said set control logic means for retrieving said desired array from said storage means and displaying said array on said display means.

4,354,261
CIRCUIT ARRANGEMENT AND METHOD FOR MULTI-ADDRESS SWITCHING OPERATIONS

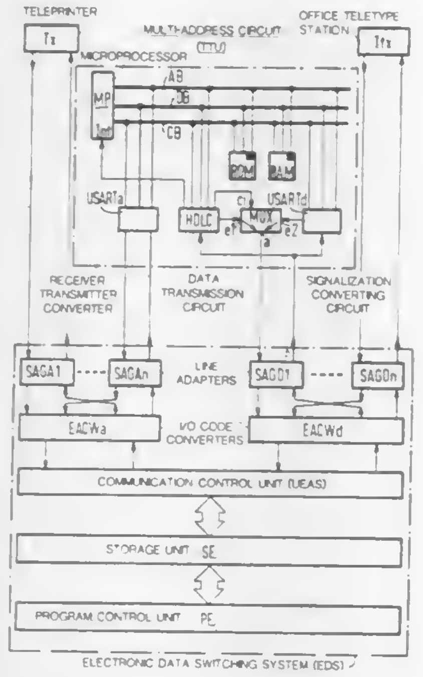
Rolf Hagen, Unterhaching; Diethard Linck, Munich, and Joerg Pappenberger, Rosenheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 129,396
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 2912825
Int. Cl.³ H04J *3/16;* H04L *5/22*
U.S. Cl. 370—42 11 Claims

1. A circuit arrangement for multi-address switching operations of a message composed of digital encoded signals between a calling data terminal and a variety of called data termi-

nals operating with different data transmission procedures including signalling, data format and data transmission rate, said circuit arrangement adapted for use with an electronic data switching system and comprising in combination:

(a) at least two interface circuits each having an external interface input, an external interface output, an internal interface input, an internal interface output and an interface control terminal, and each having input/output converting networks connected to said interface inputs and outputs, each of said external interface inputs being adapted for connection with respective output means of the electronic data switching system for receiving digital signals from one type of data terminal and each of said external interface outputs being adapted for connection with respective input means of the electronic data switching system for transmitting digital signals to said type of data terminal;


TELEPRINTER
MULTI-ADDRESS CIRCUIT (TTU)
OFFICE TELETYPE STATION
MICROPROCESSOR
MP
AB
DB
CB
USART
HDLC
RECEIVER TRANSMITTER CONVERTER
DATA TRANSMISSION CIRCUIT
SIGNALIZATION CONVERTING CIRCUIT
SAGA1
SAGAn
LINE ADAPTERS
SAGD1
SAGDn
EACWa
I/O CODE CONVERTERS
EACWd
COMMUNICATION CONTROL UNIT (UEAS)
STORAGE UNIT SE
PROGRAM CONTROL UNIT PE
ELECTRONIC DATA SWITCHING SYSTEM (EDS)

(b) storage means for storing the message being sent from the calling data terminal and including data information to be transmitted and identification information of the called data terminals, said storage means having a storage input, a storage output and a storage control terminal, said internal interface input and said storage input being connected in parallel to said storage output and said internal interface output respectively; and

(c) control means for controlling the input/output operations of said storage means such that said data information is sent out in sequence to each of the called data terminals one after another by means of a separate line connection across the respective interface circuit assigned to the currently called type of data terminal and with a data transmission procedure associated with the currently called type of data terminal.

4,354,262

LOGIC SYSTEM FOR CONTROLLING A MODULAR MULTIPLEX CONNECTION UNIT IN A TIME-DIVISION SWITCHING EXCHANGE

Jean Guezou, Lannion; Bernard LeDieu, Perros Guirec, and Jean-Pierre Martin, Pleumeur Bodou, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

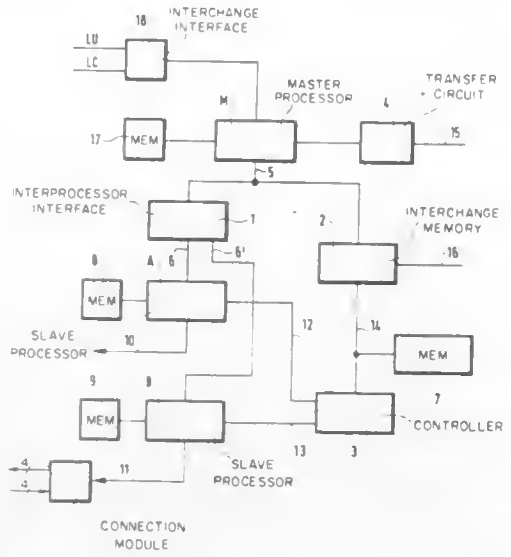
Filed May 5, 1980, Ser. No. 146,853

Claims priority, application France, May 4, 1979, 79 11321

Int. Cl.^{3} H04Q *11/04*

U.S. Cl. 370—58 **6 Claims**

1. A logic system for controlling a modular multiplex connection unit including a plurality of connection modules in a time-division exchange, the logic system comprising at least one subsystem including a master processor (M), two slave processors (A, B) each controlling half the connection modules and each connected to a separate memory (8, 9), an interchange memory (2) connected to a common memory (7) and to the slave processors via a bus interface controller (3) and to the master processor, an interprocessor interface (1) connected to the master processor and to each slave processor, and an interchange interface (18) connected to the master processor and to markers and a monitoring unit of a switching centre.



4,354,263

COMPUTER-COMMUNICATIONS CONCENTRATOR FOR TRANSMISSION AND SWITCHING OF PACKETIZED DATA

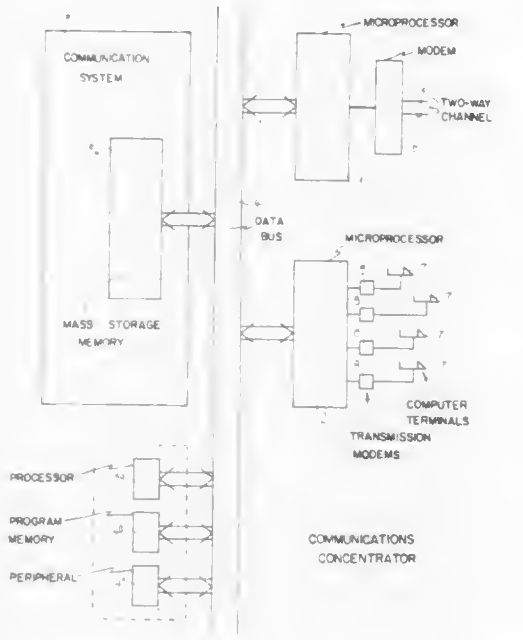
Herve Bordry, 15, rue Jean Richepin; Herve Layec, 50 rue Papu, both of 35000 Rennes, and Jean-Claude L'Hostis, L'Erable, 35230 Saint-Herblon, all of France

Filed Jun. 11, 1980, Ser. No. 158,568

Claims priority, application France, Jun. 13, 1979, 79 15742

Int. Cl.^{3} H04J *3/00;* H04Q *11/04*

U.S. Cl. 370—94 **3 Claims**



1. A computer-communications concentrator for establishing connections between a multiplicity of asynchronous computer-communications terminals and a two-way computer-communication channel from a data packet switching and transmission network, comprised of one processing unit means operating asynchronously and being connected to the computer-communication terminals, one X25 normalized function processing unit means connected to the two-way computer-communication channel, said concentrator being characterized in that between the two processing units means, a communication system comprised of one memory unit means having a first

part for storing each packet transmitted in one or the other direction, a second part comprised of forward and return cell pairs, each cell being provided with means to store a packet header during a transfer into the communication system, each local header containing the address of the packet stored in the first part of the memory unit means, its length, and the type of packet stored there, the interpretation of the stored packet being used to determine in the processing unit which reads it, the appropriate processing to be done for the packet at hand, each link between a terminal and the two-way channel making use of a set of selected pairs of cells, each packet being stored in a location which is available from the first part of the processing unit which introduces this packet into the memory, inserting a local header in the corresponding outgoing cell from the associated cell pair, and transferring this header into the return cell of the other pair from the set associated with the unit which will output the packet from the memory unit when this cell is available, as indicated by the packet information.

4,354,264

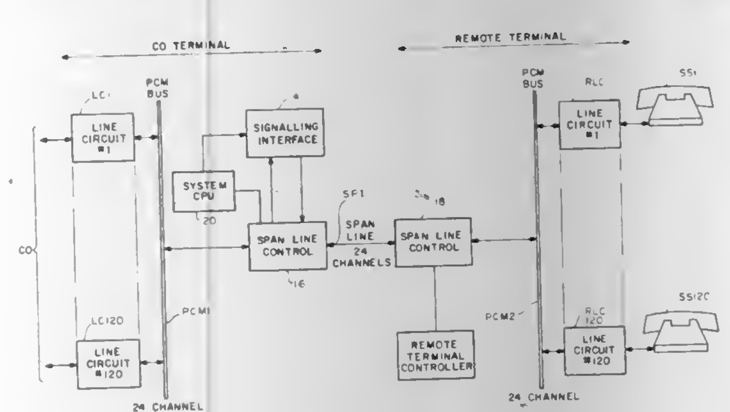
DIGITAL RING CONTROL SYSTEM FOR DIGITAL MULTIPLEXER

Walter K. Wurst, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,736

Int. Cl.^{3} H04J *3/12*

U.S. Cl. 370—110 **7 Claims**



1. A ringing control system for use on a subscriber digital multiplex network for intercommunication of ringing signals of any of a plurality of types from an exchange over a multiple channel digital span line to a line to be rung at a remote terminal, comprising a line circuit for each line at said exchange, means in each line circuit for producing binary signals in response to alternating current ringing signals received from the exchange, means in each line circuit for temporarily storing binary signals produced, means in each line circuit for transmitting stored binary signals as digital words representative of ringing signals over a time division channel allocated to the line of the respective line circuit, a signaling interface common to plural lines of said exchange, said interface receptive of digital words from the line circuits for verifying received words as representative of actual ringing signals and recoding the words for transmission over a multiple channel span line to the remote terminal, a line circuit in said remote terminal individual to each of the lines, and means in each of said terminal line circuits for receiving recoded words from the span line, and means in each terminal line circuit for decoding words directed to that terminal line circuit from the span line for causing the generation of ringing signals consistent with the type of signal received from the exchange.

4,354,265

METHOD AND AN APPARATUS FOR TRANSFERRING DIGITAL INFORMATION IN A TELEPHONE SYSTEM

Karl F. L. Nyberg, and Kjell S. Josefsson, both of Tyresö, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

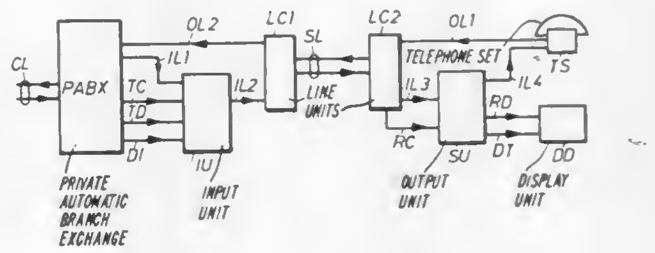
PCT No. PCT/SE78/00098, § 371 Date Aug. 22, 1979, § 102(e) Date Jul. 31, 1979, PCT Pub. No. WO79/00422, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 19, 1978, Ser. No. 154,417

Claims priority, application Sweden, Dec. 22, 1977, 7714644

Int. Cl.^{3} H04J *3/12;* H04M *11/06*

U.S. Cl. 370—111 **5 Claims**



1. In a telephone system of the type wherein the amplitude values of speech signals are transmitted in digital form, apparatus for transmitting additional digital information without disturbing a speech communication in progress comprising: at the sending side, an input means having a first input for receiving the digital speech signals, a second input for receiving the additional digital information and an output for delivering the digital speech signals interleaved with the additional digital information; at the receiving side, an output means having an input for receiving the digital speech signals interleaved with the additional digital information, a first output for delivering the digital speech signals as well as replacement signals instead of the interleaved additional digital information, said replacement signals in principle reproducing that amplitude value which was transmitted immediately prior to the additional digital information, and a second output for delivering the additional digital information; said input means comprising a first control means for, in dependence on the fact that the additional digital information is available on said second input, generating a first control signal having a duration corresponding to the transmission time for the additional digital information, a first data register means for storing the additional digital information, and a first gating means for, in the absence of said first control signal, forwarding the digital speech signals from said first input to said output and, in the presence of said first control signal, instead feeding the additional information from said first data register; and said output means comprising a second data register for successive intermediate storing of digital speech signals arriving at said input being interleaved with said additional information, said register being connected to said other output, a second control means for generating, in dependence on the fact that there is the additional digital information in said second data register, a second control signal having a duration corresponding to the transmission time for the additional digital information, a signal generator means for generating the replacement signals, and a second gating means for forwarding, in the absence of said control signal, the successive intermediate stored digital speech signals from said other data register to said first output and for feeding, in the presence of said other control signal, the replacement signals from said signal generator means to said first output at the same time as the additional digital information is fed from said second data register to said other output.

4,354,266

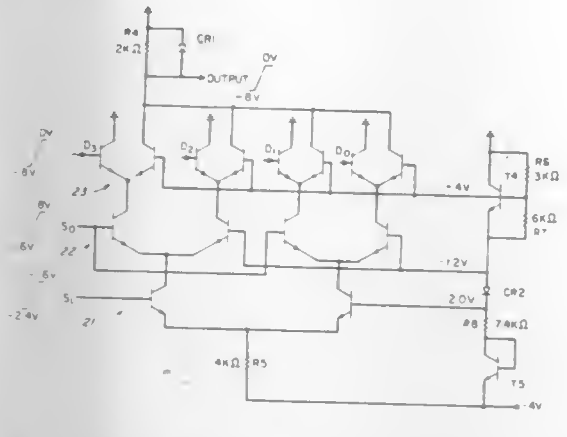
MULTIPLEXOR WITH DECODING

Michael Cooperman, Framingham, Mass., and Christopher W. Kapral, San Carlos, Calif., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 31, 1979, Ser. No. 90,159

Int. Cl.^{3} H04J *3/02*

U.S. Cl. 370—112 **8 Claims**



1. A multiplexor comprising
three sets of transistor elements, each transistor element having three electrodes;
the first of said sets including a pair of transistor elements having their first electrodes connected together, the second electrode of one of the transistor elements of the pair being connected to a first point of fixed potential, and the second electrode of the other of the transistor elements of the pair being connected to a first select input terminal;
the second of said sets including two pairs of transistor elements, the first electrodes of the transistor elements of the first pair being connected together and to the third electrode of the one transistor element of the first set, the first electrodes of the transistor elements of the second pair being connected together and to the third electrode of the other transistor element of the first set, the second electrodes of one of the transistor elements of each of the two pairs being connected together and to a second point of fixed potential, and the second electrodes of the other of the transistor elements of each of the two pairs being connected together and to a second select input terminal;
the third of said sets including four pairs of transistor elements, the first electrodes of the transistor elements of the first pair being connected together and to the third electrode of the one transistor element of the first pair of the second set, the first electrodes of the transistor elements of the second pair being connected together and to the third electrode of the other transistor element of the first pair of the second set, the first electrodes of the transistor elements of the third pair being connected together and to the third electrode of the one transistor element of the second pair of the second set, the first electrodes of the transistor elements of the fourth pair being connected together and to the third electrode of the other transistor element of the second pair of the second set, the second electrodes of one of the transistor elements of each of the four pairs being connected together and to a third point of fixed potential, the second electrodes of the other transistor elements of each of the four pairs being individually connected to separate data input terminals, the third electrodes of the one transistor elements of the four pairs being connected together to an output terminal and through a resistance and a diode in parallel to a first source of reference potential, the third electrodes of the other transistor elements of the four pairs being connected directly to said first source of reference potential; and
a resistance connected directly to the first electrodes of the pair of transistor elements of the first set and directly to a second source of reference potential.

4,354,267

DATA TRANSMISSION SYSTEM UTILIZING LOOP TRANSMISSION LINES BETWEEN TERMINAL UNITS

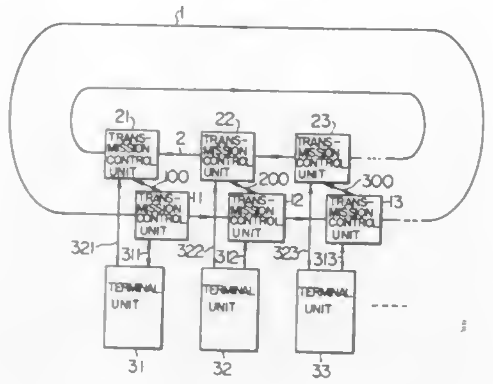
Kinji Mori, Sagamihara; Hirokazu Ihara, and Makoto Nohmi, both of Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,632

Claims priority, application Japan, Sep. 10, 1979, 54-115300

Int. Cl.^{3} G06F *11/20;* **H04J** *3/14*

U.S. Cl. 371—11 **8 Claims**


1
21
22
23
TRANS-MISSION CONTROL UNIT
TRANS-MISSION CONTROL UNIT
TRANS-MISSION CONTROL UNIT
2
100
200
300
11
12
13
TRANS-MISSION CONTROL UNIT
TRANS-MISSION CONTROL UNIT
TRANS-MISSION CONTROL UNIT
321
311
322
312
323
313
TERMINAL UNIT
TERMINAL UNIT
TERMINAL UNIT
31
32
33

1. A data transmission system comprising:
a first loop transmission line for transferring data in a first direction;
a second loop transmission line for transferring data in a second direction which is opposite to said first direction;
a plurality of first transmission control units connected in said first loop transmission line;
a plurality of second transmission control units connected in said second loop transmission line;
a plurality of bypass lines each coupling one of said first transmission control units to one of said second transmission control units so as to form a pair and for transferring data bidirectionally therebetween; and
a plurality of terminal units for exchanging data with each other through said first and second loop transmission lines, each of said terminal units being connected to a corresponding pair of said first and second transmission control units,
said first and second transmission control units each including:
first interface means for transferring and receiving data to and from its associated loop transmission line,
second interface means for transferring and receiving data to and from its associated bypass line,
third interface means for transferring and receiving data to and from its associated terminal unit, and
data processing means for receiving data from said first, second and third interface means and for selectively sending out the received data to said first, second and third interface means.

4,354,268

INTELLIGENT TEST HEAD FOR AUTOMATIC TEST SYSTEM

Thomas J. Michel, Hialeah, and Richard H. Finger, Hollywood, both of Fla., assignors to Santek, Inc., Hollywood, Fla.

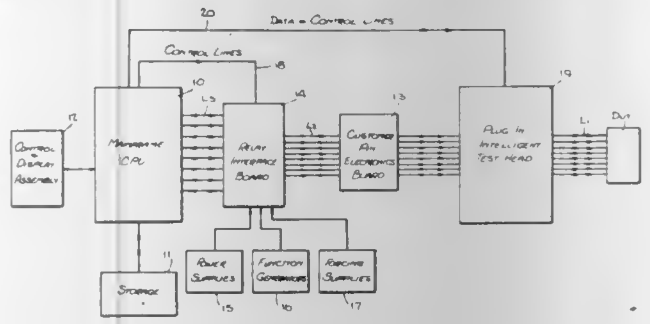
Filed Apr. 3, 1980, Ser. No. 136,929

Int. Cl.^{3} G01R *15/12;* **G06F** *11/22*

U.S. Cl. 371—20 **4 Claims**

1. In combination with a computer-controlled test system for carrying out certain standard tests on integrated circuits and other micro-electronic devices, said computer-controlled test system being provided with a main frame computer having a predetermined operative language and a pin electronics board for linking a device under test to the computer through a relay interface which acts to couple selected testing sources to the device which are appropriate to the normal test capabilities of the computer-controlled test system; an intelligent test head which is adapted to be plugged into the computer-controlled test system to render it capable of executing special tests which the system cannot otherwise perform; said test head, when plugged in, being interposed between the device under test and the pin electronics board of the computer-controlled test system, said test head comprising:

(A) a microprocessor under the control of said main frame computer and a translator through which the output data of said microprocessor is fed into said main frame computer whereby the output data entered into the computer is translated into said operative language to enable evaluation of this data by the computer for processing therein;



(B) firmware connected to said microprocessor and provided with a memory having stored therein test functions, timing and sequencing instructions appropriate to said special tests;
(C) a group of separate testing sources for carrying out said special tests; and
(D) switching means controlled by said microprocessor in accordance with the instruction supplied by said firmware to connect sources selected from said group to said device under test to carry out said special tests, and means to supply the output of said device resulting from the special tests in digital terms to the input of the microprocessor.

4,354,269

APPARATUS FOR THE PROCESSING OF AN INFORMATION STREAM WITH THE AID OF AN ERROR-CORRECTING CONVOLUTIONAL CODE AND APPARATUS FOR THE DETECTION OF AN ERROR STILL IRREMEDIABLE IN THIS PROCESSING

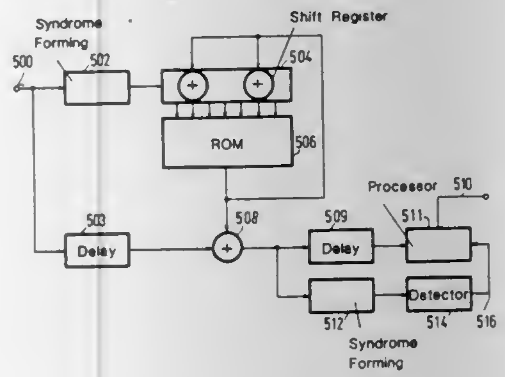
Lodewijk B. Vries, and Matthijs A. Diepeveen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,050

Claims priority, application Netherlands, Sep. 26, 1979, 7907141

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—43 **6 Claims**



1. Apparatus for the reception of a stream of binary code elements which form a sequence of n-tuples of an (n, k, p, u) error-correcting convolutional code, wherein k/n is the coding efficiency, p is the encoding constraint length, and u>p is the decoding constraint length, which apparatus comprises:
first-syndrome forming means (**220, 222, 224, 226**) for forming a sequence of (n−k)-tuples of syndrome elements in synchronism with the reception of n-tuples of code elements;
a logic unit (**250**) having first storage means (**228–241**) for storing a progressing sequence of u (n−k)-tuples of syndrome elements, and for forming, in synchronism with the reception of the n-tuples of code elements, a further sequence of j-tuples of correction elements (**f1**) at a first output, wherein j=k for a systematic code and j=n for a non-systematic code;
a correction apparatus (**250**) having second storage means (**206–218**) for storing at least the information containing part of the sequence of n-tuples of code elements during a time corresponding to at least u bit cells and for bitwise adding this thereafter modulo-2 to the corresponding j-tuple of correction elements;
a feedback connection (**242–248**) for supplying said sequence of j-tuples of correction elements to said logic unit for updating the (n−k)-tuples of syndrome elements stored therein so as to compensate these for the effects of the correction executed on said sequence of n-tuples of code elements;
modified-syndrome (**252**) forming means for forming at a second output, after the correction by means of said j-tuple of correction elements, an element of a sequence composed of (n−k)-tuples of modified-syndrome elements formed as based on the corrected sequence of n-tuples of code elements, where a first signal value of an (n−k)-tuple of modified syndrome elements indicates that a correct correction can have taken place, but all other values thereof that no correct connection can have taken place;
signalling means (**254–264**) connected to said second output for, upon receiving a predetermined amount of said other values, generating an unreliability signal;
characterized in that said first storage means constitute an address register to a read-only memory (**250**) having a plurality of separately addressable word locations and being contained in said logic unit, in that said modified-syndrome forming means comprise at least part of said read-only means co-addressable by outputs from said first storage means, and in that said signalling means comprise third storage means for storing a further sequence of said modified-syndrome (n−k)-tuples, and OR-ing means (**264**) for OR-ing a predetermined number of said other signal values for thereby producing said unreliability signal.

4,354,270

SELF-MONITORING SYSTEM FOR SUPERVISING CONGRUENCE BETWEEN CONTROL SIGNALS

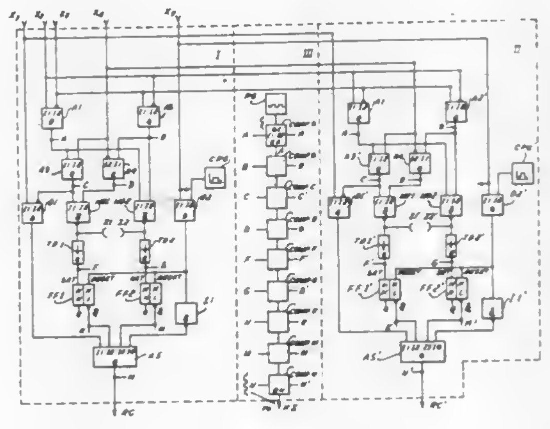
Alfred Nuding, Aalen, Fed. Rep. of Germany, assignor to Herion-Werke KG, Fellbach, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,894

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854779

Int. Cl.^{3} G06F *11/16*

U.S. Cl. 371—68 **8 Claims**



1. A self-monitoring system for supervising congruence

between and non-congruence between at least two control signals, comprising:

- a plurality of identical logic networks connected in parallel with each other and operating independently of each other, the networks each having
  - a plurality of inputs equal in number to the number of signals between which congruence is to be monitored,
  - a single final output, and
- intermediate outputs; and
- a malfunction monitor connected to all outputs of all networks and comparing each output of each network to all corresponding outputs of all other networks in a manner that like intermediate outputs are only compared with each other and final outputs are compared only with each other, the malfunction monitor operating in a manner that when all like outputs are in like states, the monitor indicates such likeness, and otherwise indicates any lack of likeness and additionally indicates all outputs where such lack of likeness exists.

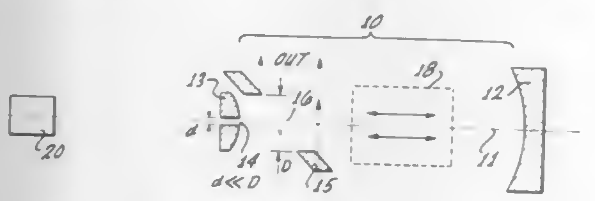
4,354,271
FREQUENCY-CONTROLLED, UNSTABLE OPTICAL RESONATOR

John F. Hon, Tarzana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 28, 1980, Ser. No. 176,330

Int. Cl.^{3} H01S *3/08*

U.S. Cl. 372—19 **10 Claims**



1. In an unstable optical resonator, having a concave reflector, a convex reflector facing the concave reflector on a common axis, and a scraper mirror, having an aperture and being traversed by the axis, the improvement of frequency-selective means located outside the optical cavity defined by said reflectors and serving to reflect only radiation of preselected frequency in beams directly on or very nearly on the axis and having an effective aperture significantly smaller than the aperture of the scraper mirror.

4,354,272
SOLID CRYSTAL LASER EMISSION DEVICE WITH AN IMPROVED EXTERNAL COOLING CIRCUIT

Hans-Peter Schwob, Uetendorf, and Peter Soppelsa, Thierachern, both of Switzerland, assignors to Lasag S.A., Switzerland

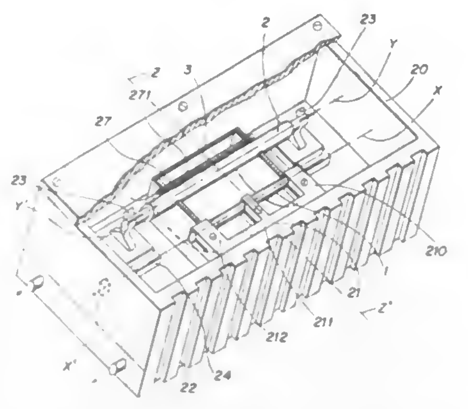
Continuation-in-part of Ser. No. 91,399, Nov. 6, 1979. This application Jul. 14, 1980, Ser. No. 168,497

Claims priority, application Switzerland, Oct. 31, 1979, 9757/79

Int. Cl.^{3} H01S *3/04*

U.S. Cl. 372—36 **6 Claims**

1. A solid crystal laser emission device comprising in a pumping cavity, an optical emission crystal and a gas discharge tube parallel with axes of symmetry, a cooling circuit for cooling the emission crystal and a cooling circuit for the gas discharge tube, wherein the crystal cooling circuit comprises at least a thermal conductor in contact with the crystal and placed approximately in a plane perpendicular to the longitudinal axis of symmetry of the crystal, the discharge tube cooling circuit comprises at least a thermal conductor in contact with the body of said discharge tube, each thermal conductor further being in contact with at least a dissipating wall of said pumping cavity, said crystal cooling circuit substantially comprising a set of three metal clamps having a longitudinal axis of symmetry perpendicular to the longitudinal axis of the crystal, the metal clamps encompassing said crystal approximately in its median zone and in its extremities respectively.



4,354,273
ADPCM SYSTEM FOR SPEECH OR LIKE SIGNALS

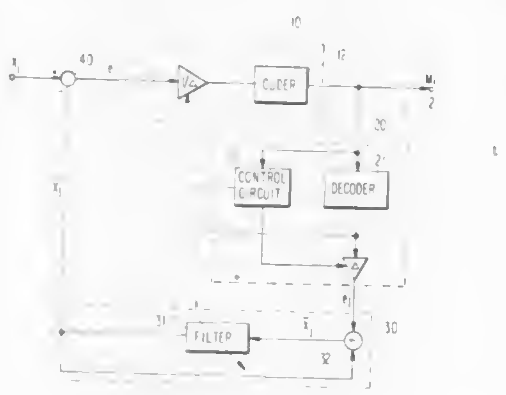
Takashi Araseki, and Kazunori Ozawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 156,990

Claims priority, application Japan, Jun. 12, 1979, 54-74122; Jun. 12, 1979, 54-74123

Int. Cl.^{3} H04B *15/00*

U.S. Cl. 375—27 **9 Claims**



1. An ADPCM system for speech or like signals comprising:

an ADPCM transmitter including a subtractor for receiving an input signal X_j and predicted value and producing an output e_j corresponding to the difference therebetween; a transmit adaptive quantizer for dividing the subtractor output e_j by a normalization coefficient Δ which adaptively varies and for supplying as a transmitter output a quantized result of the quotient (e_j/Δ) of said division in coded form; a transmit adaptive inverse quantizer for decoding the output of said transmit adaptive quantizer and for providing a transmit adaptive inverse quantizer output $\hat{e}_j$ obtained by multiplying said decoded output by said normalization coefficient; and a transmit adaptive predictor having a transmit digital filter, said digital filter having coefficients and providing said predicted value in accordance with said filter coefficients and in response to the output of said transmit adaptive inverse quantizer, the coefficients of said digital filter being corrected in accordance with a filter control signal dependent upon said decoded output; and

an ADPCM receiver including a receive adaptive inverse quantizer for providing a second decoded output obtained by decoding the output of said transmitter and for providing a receive inverse quantizer output obtained by multiplying said second decoded output by said adaptively varying normalization coefficient; and a receive adaptive predictor having a receive digital filter, said receive digital filter having filter coefficients and providing a predicted value in response to said receive inverse quantizer output, the coefficients of said receive digital filter being corrected in accordance with a control signal dependent upon said second decoded output.

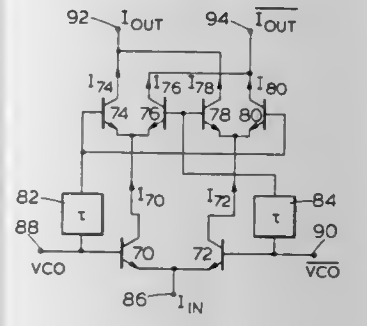
4,354,274
DIGITAL SIGNAL TRANSMISSION SYSTEM

John B. Hughes, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,508

Int. Cl.^{3} H03D *3/24*

U.S. Cl. 375—120 **6 Claims**



1. A phase-locked-loop clock extractor for extracting a clock frequency of N/2 cycles per second from a transmitted pulse-code-modulated (PCM) data signal of N bits per second, the clock extractor comprising a voltage controlled oscillator (VCO) for generating a clock signal of the desired frequency, a circuit connected to receive the transmitted data signal and produce a pulse signal on each transition of the data signal from one logic level to another and vice versa, a phase detector for comparing the VCO output with the pulse signal produced by said circuit and means connected to the phase detector for producing a control signal which is used for adjusting the frequency generated by the VCO, the phase detector comprising a first switching circuit operable on each half cycle of the VCO frequency to route said pulse signal to second and third switching circuits, each of the second and third switching circuits having first and second outputs, means for delaying the VCO output, each of the second and third switching circuits being operable on each half cycle of the VCO frequency which has been delayed by a predetermined amount compared with the VCO frequency applied to the first switching circuit by said means for delaying the VCO output to produce pulse trains on their first and second outputs, the pulses in each pulse train comprising complementary parts of the corresponding pulses routed to the second and third switching circuits by the first switching circuit, means for combining corresponding first parts of the pulses appearing on the first output of the second and third switching circuits to form a first output signal (IOUT) and means for combining corresponding second parts of the pulses appearing on the second output of the second and third switching circuits to form a second output signal (I_{OUT}), said first and second output signals being used by said means connected to the phase detector to produce the control signal.

4,354,275
APPARATUS FOR COMMUNICATING RECEIPT OF TRANSMITTED MESSAGES

Bernard Bouyssounouse, and Chantal Bouyssounouse, both of 840 Hamilton Ave., Palo Alto, Calif. 94301

Continuation of Ser. No. 896,314, Apr. 14, 1978, Pat. No. 4,162,449. This application May 21, 1979, Ser. No. 40,639

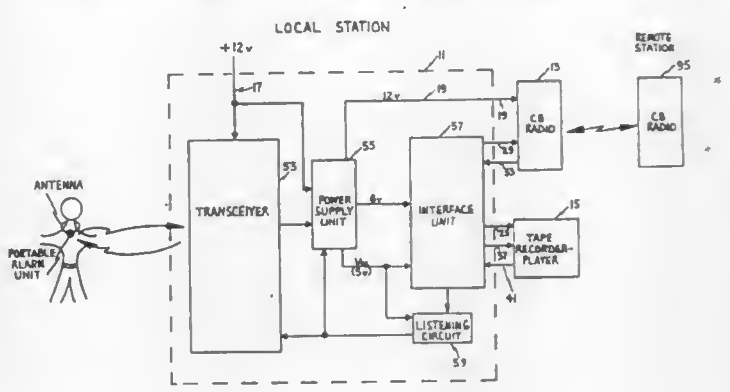
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.

Int. Cl.^{3} H04B *1/00*

U.S. Cl. 455—54 **7 Claims**

1. In a communication system including a portable unit capable of transmitting a signal, a player unit capable of playing a pre-recorded emergency message, and a CB radio capable of communicating with a listener at a remote CB radio station, an apparatus comprising:

- receiver means for producing a signal in response to receiving a signal from the portable unit;
- power supply means, coupled to the receiver means and to the CB radio, for receiving the signal produced by the receiver means, providing power, and activating the CB radio;
- interface means, coupled to the power supply means, to the CB radio and to the player unit, for activating the player unit to play the emergency message and the CB radio to transmit the emergency message in response to activation by the power supply means, for deactivating the player unit to stop playing the emergency message and the CB radio to stop transmitting the emergency message during a listening period in response to a selected signal from the player unit, and for receiving an acknowledgement signal representing a replay received by the CB radio from the listener; and
- listening circuit means, coupled to the interface means and to the power supply means, for causing the interface means to deactivate the CB radio to stop transmitting the emergency message in response to receipt during the listening period by the interface means of the acknowledgement signal indicating receipt by the listener of the transmitted emergency message.



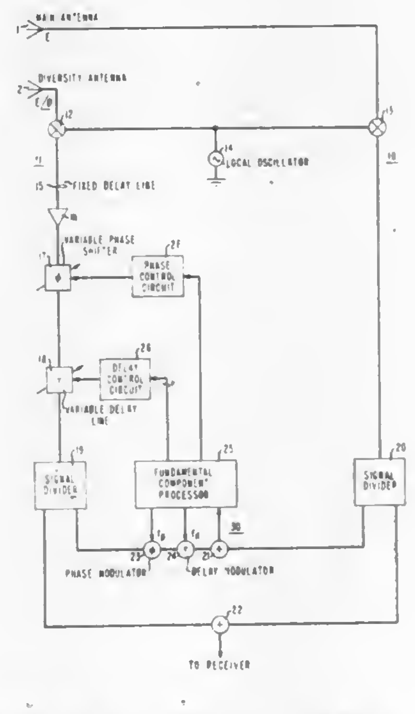
4,354,276
EQUALIZING SIGNAL COMBINER

Peter D. Karabinis, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1980, Ser. No. 190,353

Int. Cl.^{3} H04B *7/08*

U.S. Cl. 455—139 **5 Claims**

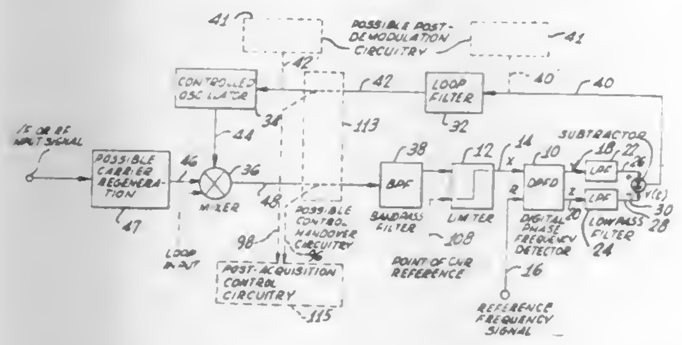


1. An equalizing signal combiner comprising:
first and second signal paths (10, 11);

signal combining means (21, 22) coupled (19, 20) to said two wavepaths (10, 11) for combining the signals therein;
means (23) for phase modulating the signal in one of said signal paths to produce a fundamental component of amplitude variation in the combined signal;
signal processing means (25) for sensing said fundamental signal components in two selected portions (Δ_1, Δ_2) of the frequency spectrum of said combined signal;
and means (17) for varying the relative phase of the signals in said two wavepaths in response to the fundamental component of the weaker of said two signal components so as to minimize the amplitude dispersion of the combined signal within said frequency spectrum.

4,354,277
SIGNAL ACQUISITION SYSTEM

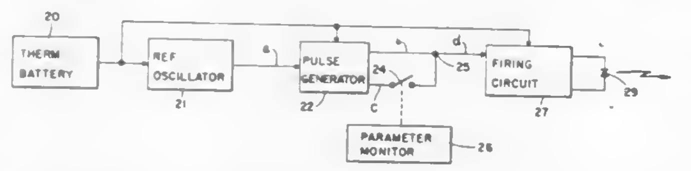
John E. Crackel, Carson, and William J. Stieritz, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Nov. 23, 1979, Ser. No. 97,088
Int. Cl.³ H04B *1/26;* **H03L** *7/00;* **H03D** *3/02*
U.S. Cl. 455—259 **22 Claims**



1. A signal acquisition system for tuning to a desired communication signal, the exact frequency of which is unknown, in a noisy environment, said system comprising:
signal input means, for receiving a wide band of input signals, including possible signal and noise components at various frequencies in the band;
mixing means, for translating in a frequency all of the components of the band of input signals through a controllable frequency difference, to produce a translated band of input signals;
controlled oscillator means, for supplying a frequency-controlled signal to said mixing means to translate the band of input signals;
bandpass filter means to obtain a selected bandwidth of frequencies from the translated band of input signals, the selected bandwidth being very wide compared with the bandwidth of the desired communication signal;
limiter means, to limit the amplitude of the controlled signal to said mixer, to control the amount through which the band of input signals is translated;
a bandpass filter, to obtain a selected bandwidth of frequencies from the translated band of input signals for further processing, the selected bandwidth being very wide compared with the bandwidth of the desired carrier signal;
a limiter, for limiting the amplitude of the translated and selected band of input signals to a relatively small value;
a digital phase-frequency detector having one input supplied by the limited input signals, and another provided by a reference frequency signal, and providing two output signals, of which only one is active at any time, to indicate the higher frequency input signal or the phase difference when the frequencies are equal;
means for combining the output signals of said digital phase-frequency detector to yield a signed analog control signal indicative of the frequency of phase difference between the reference frequency signal and any dominant frequency component of the limited input signals, the control signal being applied to control the frequency of said controlled oscillator, to translate in frequency a selected bandwidth of frequencies automatically toward the desired carrier signal; and
a low-pass loop filter to filter out rapidly varying components of the analog control signal;
wherein said digital phase-frequency detector is practically insensitive to a flat and balanced noise spectrum and will lock onto the desired carrier signal provided the carrier signal power exceeds the out-of-balance noise power over a selected frequency band.

4,354,278
LASER TELEMETRY

Lee K. Clark, Santa Ana, and Michael C. Peron, Diamond Bar, both of Calif., assignors to Northrop Corporation, Hawthorne, Calif.
Filed Dec. 10, 1980, Ser. No. 214,970
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—617 **10 Claims**



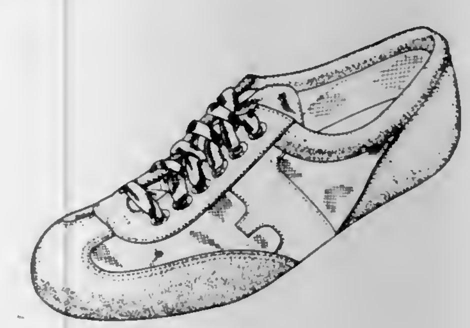
1. A telemetry system in a vehicle adapted to be launched, comprising:
(a) means defining an aperture in the rear of said vehicle for passage of a laser beam therethrough;
(b) laser means in said vehicle and means for projecting a beam from said laser through said aperture;
(c) means for pulsing said laser at a first frequency when said system is energized with operating power in the absence of a desired vehicle parameter condition; and
(d) means for pulsing said laser at a second frequency when said system is energized with said operating power in the presence of said parameter condition.

DESIGNS

OCTOBER 12, 1982

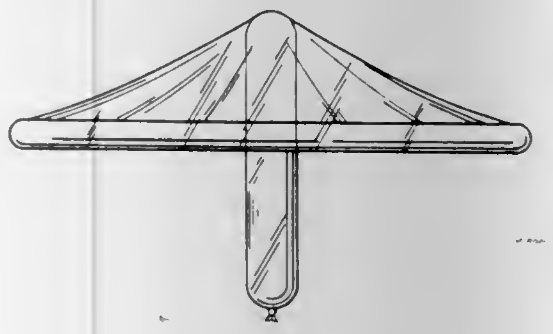
266,455
SHOE UPPER

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Division of Ser. No. 877,359, Feb. 13, 1978. This application Apr. 28, 1980, Ser. No. 144,269
The portion of the term of this patent subsequent to Oct. 7, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—326



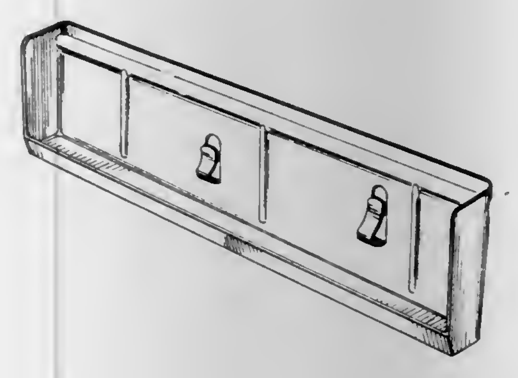
266,456
INFLATABLE UMBRELLA

Harry Strickler, Bahnweg 119, 8606 Meizen, Switzerland
Filed May 27, 1980, Ser. No. 153,196
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—5



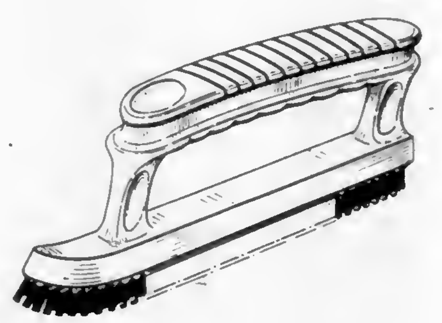
266,457
ARTICLE CARRIER FOR TRUCK CABS

Thomas K. Johnson, Box 917, Safford, Ariz. 85546
Filed Jun. 2, 1980, Ser. No. 155,407
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D3—40



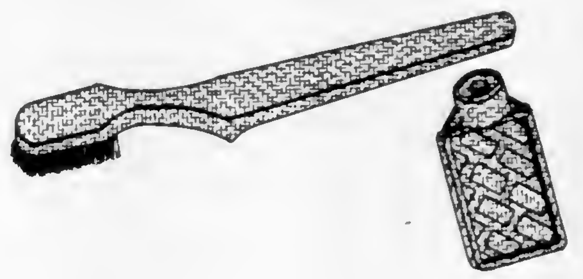
266,458
SCRUBBING BRUSH

Patricia Gonsalves, 2912 Oslo Crescent, Mississauga, Ontario, Canada
Filed Oct. 15, 1980, Ser. No. 197,125
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—03



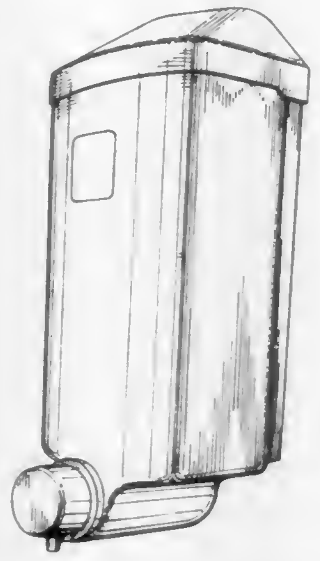
266,459
TOOTHBRUSH AND TOOTHPASTE TUBE CAP SET

Channing Cassett, New York, N.Y., assignor to Valdor International Cosmetics Ltd., New York, N.Y.
Filed Sep. 11, 1980, Ser. No. 186,724
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18



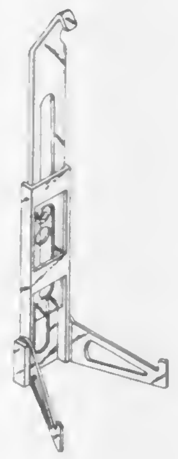
266,460
DISPENSER

Francis J. Rice, Milford, England, assignor to Appor Limited, Derby, England
Filed Mar. 31, 1981, Ser. No. 249,327
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



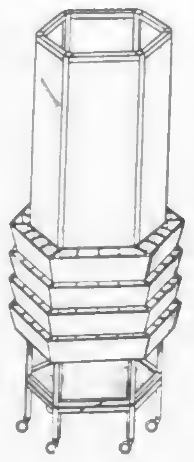
266,461
ADJUSTABLE PLATE HOLDER

James A. Helzer, Cheyenne, Wyo., assignor to Unicover Corporation, Cheyenne, Wyo.
Filed Sep. 11, 1980, Ser. No. 186,728
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—142



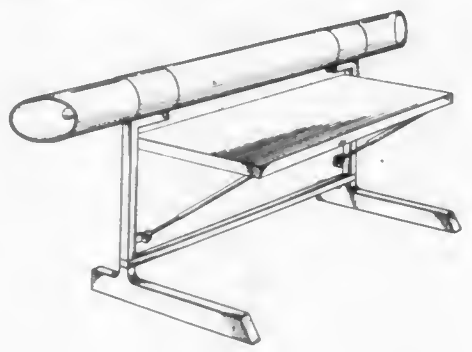
266,462
COMBINED ADVERTISING DISPLAY STAND AND BROCHURE HOLDER

Michael J. Edwards, 21 Earle St., Cremorne, New South Wales 2090, Australia
Filed Apr. 2, 1980, Ser. No. 136,606
Claims priority, application Australia, Nov. 12, 1979, 79-541
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146



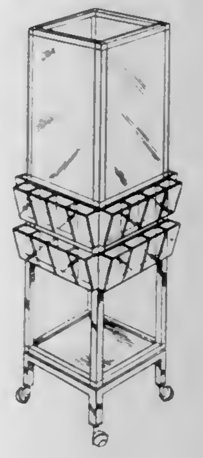
266,463
COMBINED DESK AND LAMP THEREFOR

Russell M. Scott, 13205 Barbara Ann St., #18, North Hollywood, Calif. 91605
Filed Mar. 20, 1980, Ser. No. 132,334
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—156



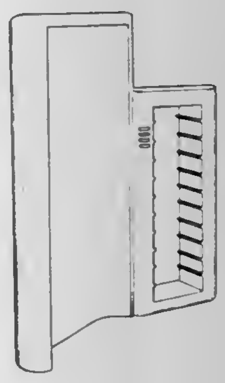
266,464
COMBINED ADVERTISING DISPLAY STAND AND BROCHURE HOLDER

Michael J. Edwards, 21 Earle St., Cremorne, New South Wales 2090, Australia
Filed Apr. 2, 1980, Ser. No. 136,607
Claims priority, application Australia, Oct. 23, 1979, 79-352
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



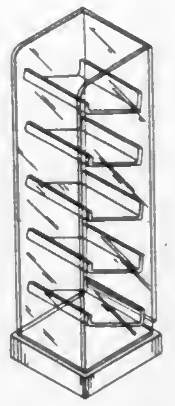
266,465
HOUSING FOR HAIRDRESSER'S MIRROR AND STORAGE SHELVES

Peter C. Cordony, and Mark H. Cordony, both of 42 George St., Parramatta, New South Wales, Australia (2150)
Filed Feb. 27, 1980, Ser. No. 125,073
Claims priority, application Australia, Sep. 3, 1979, 78,887
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



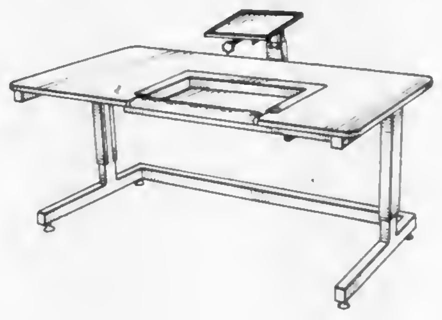
266,466
SHELF DISPLAY UNIT

Russell K. Winter, Crownsville; Nedim Savas, Wheaton; Joseph H. Snively, Bethesda, and Thomas D. Harvey, Silver Spring, all of Md., assignors to Russell William Ltd., Columbia, Md.
Filed Apr. 9, 1980, Ser. No. 138,689
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



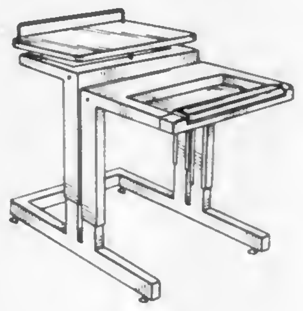
266,467
COMBINED DESK AND AUXILIARY SHELF FOR A DATA TERMINAL

Jorma Ylänkö, Kulloo, Finland, assignor to Vaasanmylly Oy, Turku, Finland
Filed Sep. 17, 1979, Ser. No. 76,276
Claims priority, application Finland, Mar. 16, 1979, 170/79
Term of patent 7 years
Int. Cl. D06—*04*
U.S. Cl. D6—188

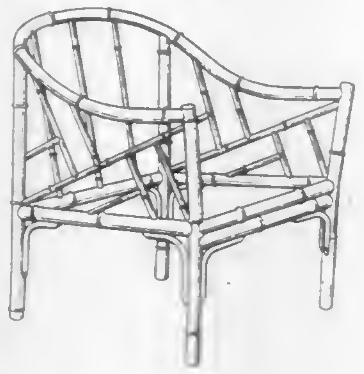


266,468
DESK FOR A DATA TERMINAL

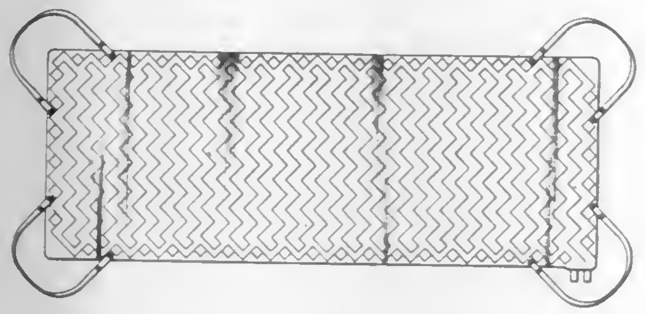
Jorma Ylänkö, Kulloo, Finland, assignor to Vaasanmylly Oy, Turku, Finland
Filed Sep. 17, 1979, Ser. No. 76,277
Claims priority, application Finland, Mar. 16, 1979, 172/79
Term of patent 7 years
Int. Cl. D06—*04*
U.S. Cl. D6—188



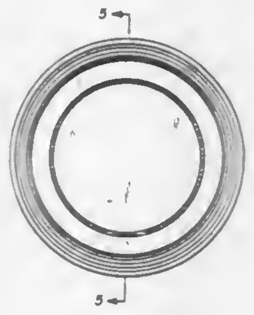
266,469
CHAIR
Gregory D. Bergquist, Mountain Brook, and John A. Jones, Trussville, both of Ala., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Oct. 1, 1980, Ser. No. 192,749
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—191



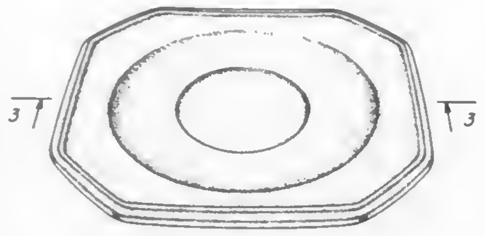
266,470
PATIENT TREATMENT MATTRESS WITH INFLATABLE CHANNELS
Clifford E. Gammons, Indianapolis, Ind.; Kenneth L. Pagel, Manitowoc, and Barry N. Jackson, De Pere, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Jul. 22, 1980, Ser. No. 171,075
Term of patent 14 years
Int. Cl. D6—*09*; D24—*01*
U.S. Cl. D6—204

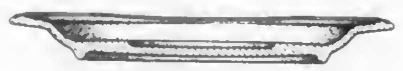


266,471
PICTURE FRAME
Donald F. Symington, 161 Union St., Almonte, Ontario, Canada (K0A 1A0)
Filed Sep. 24, 1980, Ser. No. 190,551
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235

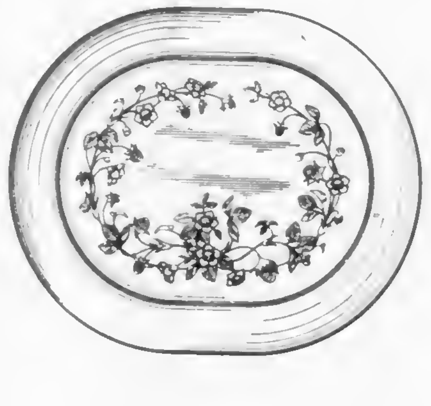


266,472
SAUCER
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.
Filed Aug. 12, 1980, Ser. No. 177,719
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1

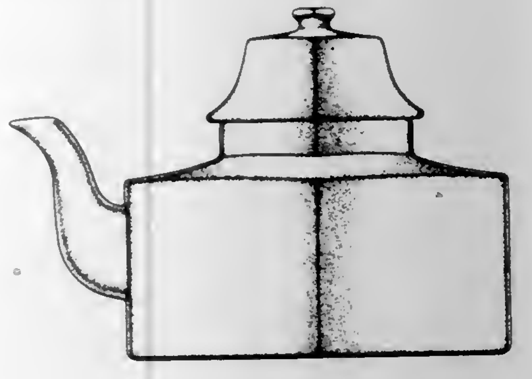


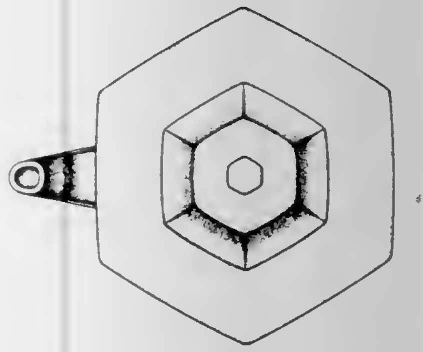


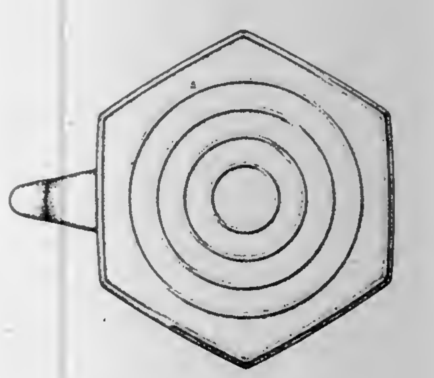
266,473
PLATTER OR THE LIKE
Loretta H. Moskal, Glen Riddle, Pa., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 17, 1980, Ser. No. 197,921
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



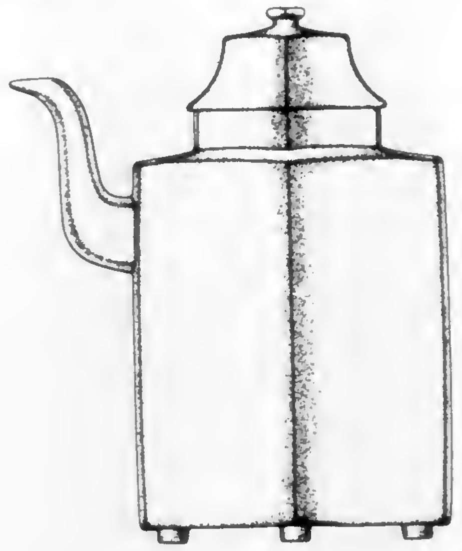
266,474
KETTLE
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.
Filed Aug. 12, 1980, Ser. No. 177,413
Term of patent 14 years
Int. Cl. D7—*02, 01*
U.S. Cl. D7—59

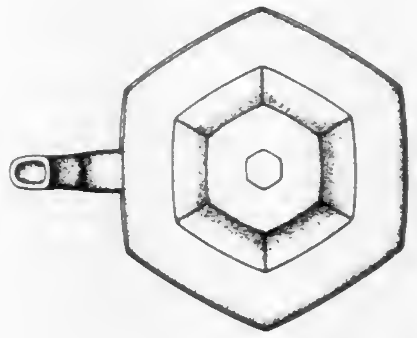


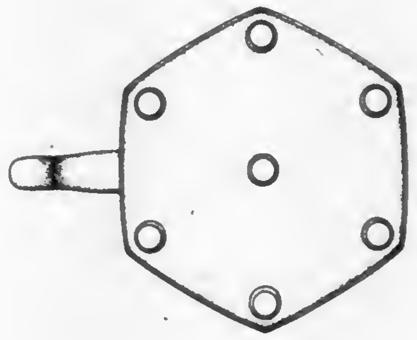




266,475
TEAPOT
Walter Everhan, Klettenberg, Fed. Rep. of Germany, assignor to American Commercial Incorporated, Gardena, Calif.
Filed Aug. 12, 1980, Ser. No. 177,416
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—59







266,476

DOUGH-SCRAPER

Harry W. Thomasson, Paarp, Sweden, assignor to Osmos Plast AB, Helsingborg, Sweden

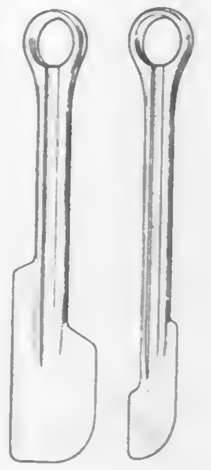
Filed Jul. 22, 1980, Ser. No. 171,206

Claims priority, application Sweden, Jan. 28, 1980, 80-0169

Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—102



266,477

WOOD TONGS

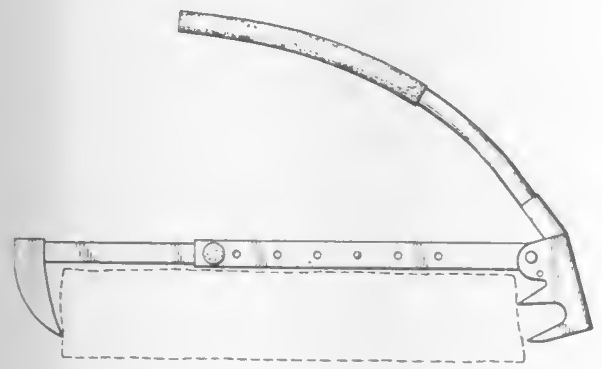
Michael J. Raysik, Rte. 2, Warrensburg, Mo. 64093

Filed Aug. 21, 1980, Ser. No. 179,958

Term of patent 14 years

Int. Cl. D7—*08*

U.S. Cl. D7—209



266,478

CUTTING TOOL

Roy V. Bladen, 74B Brigantine Dr., Birkenhead, Auckland, New Zealand

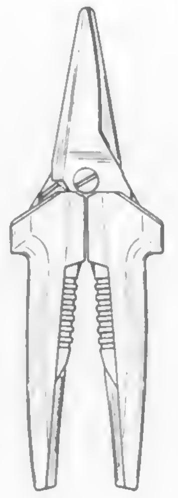
Filed Mar. 25, 1980, Ser. No. 133,679

Claims priority, application New Zealand, May 10, 1979, 16281

Term of patent 14 years

Int. Cl. D8—*03*

U.S. Cl. D8—5



266,479

MULTIPURPOSE TOOL

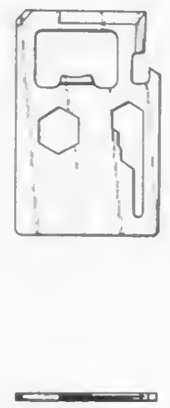
Shinichi Hayakawa, Seki, Japan, assignor to Hayakawa Industry Co., Ltd., Seki, Japan

Filed Sep. 23, 1980, Ser. No. 190,041

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D8—17



266,480

PULL TAB REMOVER

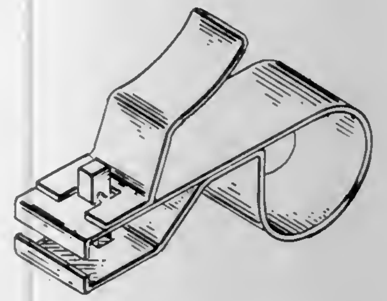
Paul F. Reel, 836 Adams St., NW., Warren, Ohio 44482

Filed May 5, 1980, Ser. No. 146,628

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D8—40



266,481

SLIDER HOLDER

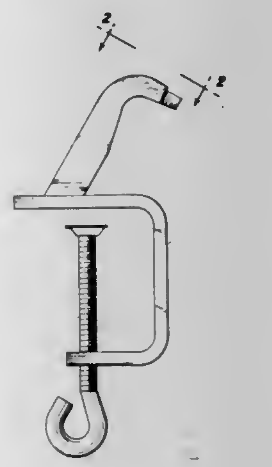
Evan E. Davies, Condell Park, Australia, assignor to Talon, Inc., Meadville, Pa.

Filed Jun. 21, 1979, Ser. No. 50,949

Term of patent 14 years

Int. Cl. D8—*99*

U.S. Cl. D8—73



266,482

COMBINED SHELF BRACKET AND WALL SUPPORT

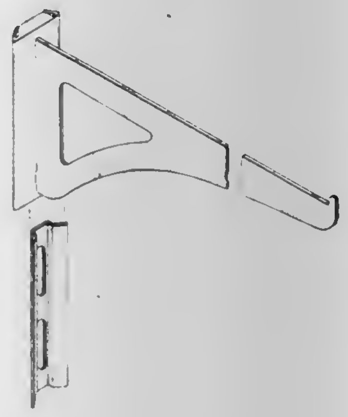
Leonard Goldstein, 660 Berriman St., Brooklyn, N.Y. 11208

Filed Feb. 19, 1980, Ser. No. 122,556

Term of patent 14 years

Int. Cl. D8—*08*

U.S. Cl. D8—381



266,483

MARINE SLIDE

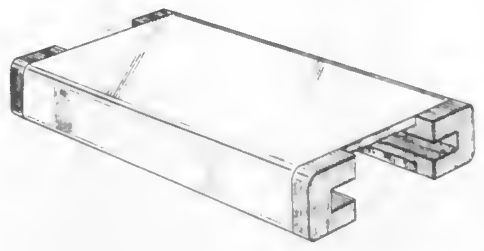
Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Filed Jan. 14, 1980, Ser. No. 111,765

Term of patent 14 years

Int. Cl. D8—*08*

U.S. Cl. D8—382



266,484

BUNDLING TIE

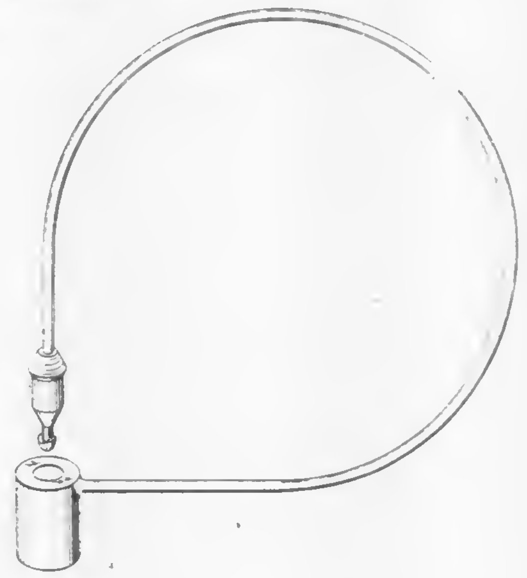
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 929,592, Jul. 31, 1978. This application May 12, 1980, Ser. No. 149,226

Term of patent 14 years

Int. Cl. D9—*06*

U.S. Cl. D8—394



266,485

PACKAGING CONTAINER OR SIMILAR ARTICLE

Richard Guerette, Senneville, Canada, assignor to Arnoldware-Rogers (Canada) Ltee, Rawdon, Canada

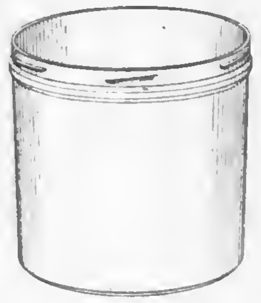
Filed Mar. 11, 1980, Ser. No. 129,221

Claims priority, application Canada, Oct. 4, 1979, 04-10-79-14

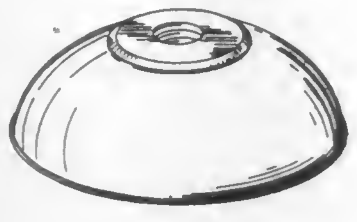
Term of patent 14 years

Int. Cl. D9—*03*

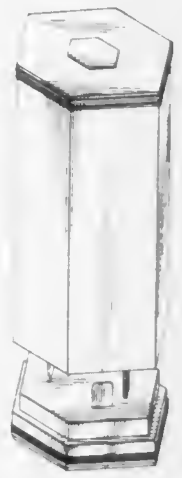
U.S. Cl. D9—349



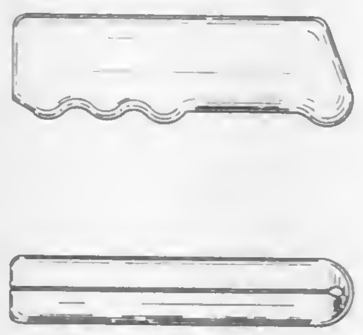
266,486
FUEL CONTAINER
William R. Lütz, Chamblee, Ga., assignor to Conceptual Factors, Inc., Atlanta, Ga.
Filed May 31, 1979, Ser. No. 44,112
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—352



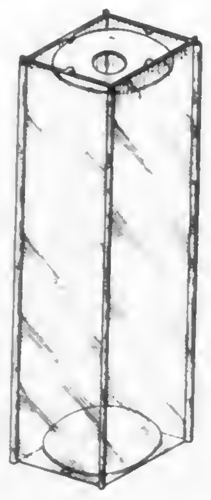
266,487
PACKAGING CONTAINER FOR A BOTTLE OR THE LIKE
Serge Mansau, Neuilly sur Seine, France, assignor to Lever Brothers Company, New York, N.Y.
Filed Jan. 28, 1980, Ser. No. 116,171
Claims priority, application United Kingdom, Aug. 28, 1979, 991330
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—430



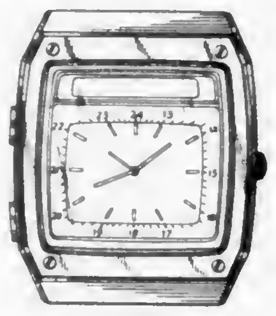
266,488
HANDLE FOR SHOPPING BAG OR SIMILAR ARTICLE
Willie J. Marshall, P.O. Box 8201, St. Louis, Mo. 63156
Filed Aug. 6, 1979, Ser. No. 63,918
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—434



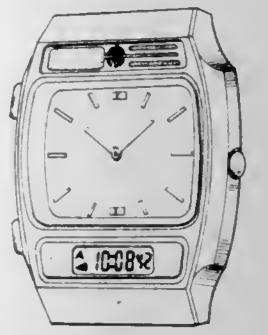
266,489
MODULAR PACKAGING CONTAINER FOR A BOTTLE
Harvard Toback, New York, N.Y., assignor to Robert D. Brody and Norma Matalon, both of New York, N.Y.
Filed Sep. 27, 1979, Ser. No. 79,389
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—455



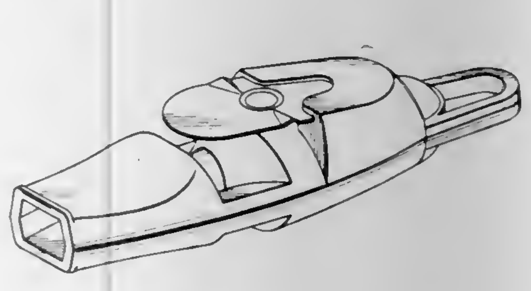
266,490
WRIST WATCH
Koichi Takahashi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Aug. 28, 1980, Ser. No. 182,271
Claims priority, application Japan, May 1, 1980, 55-17342
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



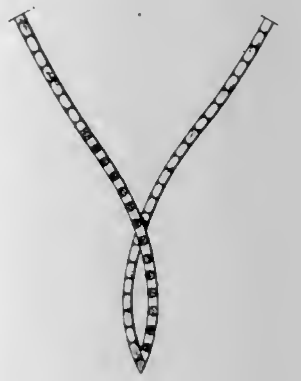
266,491
WRIST WATCH
Tadao Abe, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Sep. 29, 1980, Ser. No. 192,050
Claims priority, application Japan, Apr. 16, 1980, 55-15118
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—39



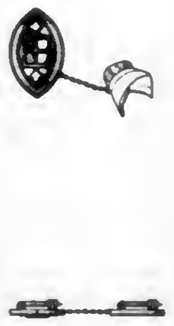
266,492
COMBINED WHISTLE AND CRICKET NOISE MAKER FOR USE AS A DIVERS SIGNAL ABOVE AND BELOW THE WATER SURFACE
Karl E. Oppermann, Sr., and Karl E. Oppermann, Jr., both of 4919 Loch Lomond, Houston, Tex. 77096
Filed Mar. 3, 1980, Ser. No. 126,863
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—119



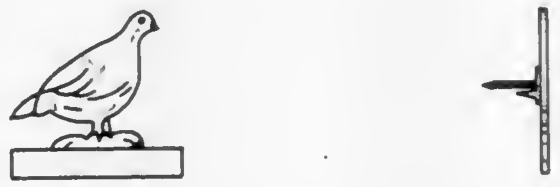
266,493
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,768
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



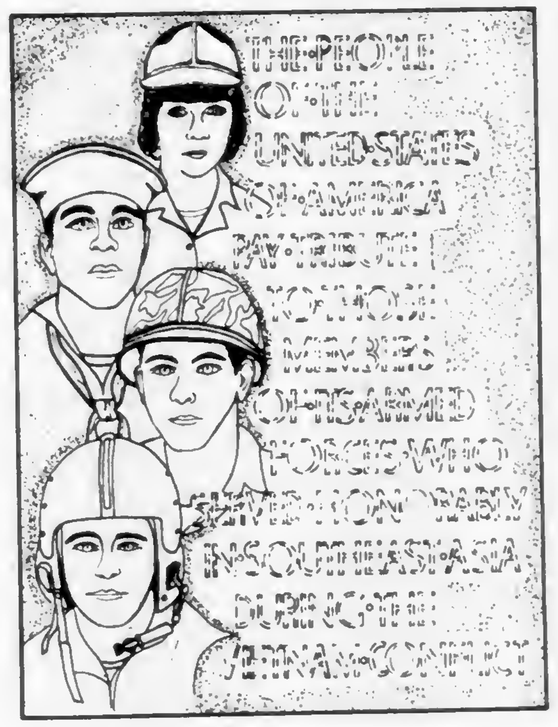
266,494
JEWELRY PIN
Evelyn A. Martin, 2920 Dean Blvd., Minneapolis, Minn. 55416
Filed May 29, 1980, Ser. No. 154,231
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—41



266,495
LAPEL PIN
Maurice Past, R.R. 2, Dubuisson, Val d'Or, Prov. of Quebec, Canada (J9P 4N7)
Filed May 23, 1980, Ser. No. 152,702
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—58



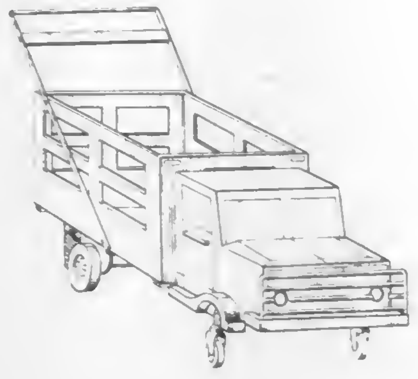
266,496
MEMORIAL PLAQUE
Lewis J. King, Jr., Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 7, 1979, Ser. No. 92,158
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—136



266,497
BABY CARRIAGE

Manuel de Jesus Veliz Villalta, 5619 E. 10th St., Kansas City, Mo. 64127
Filed Jan. 25, 1980, Ser. No. 115,216
Term of patent 14 years
Int. Cl. D12—*12*

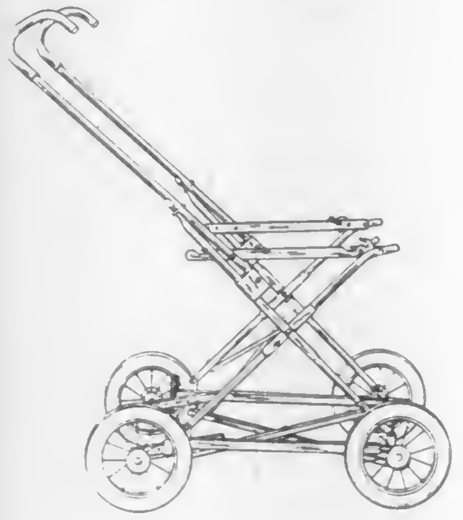
U.S. Cl. D12—128



266,498
COLLAPSIBLE PERAMBULATOR FRAME

Giuseppe Perego, Via De Gasperi, 20043-Arcore Milano, Italy
Filed Jan. 31, 1980, Ser. No. 117,121
Claims priority, application Italy, Aug. 9, 1979, 22325/79[U]
Term of patent 14 years
Int. Cl. D12—*12*

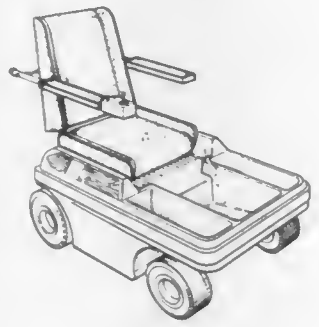
U.S. Cl. D12—128



266,499
INVALID CHAIR

Brent L. Twitchell, 3451 W. 4400 South, Granger, Utah 84120, and Kendel S. Twitchell, 1569 Shenandoah Cr., Murray, Utah 84107
Filed Nov. 15, 1979, Ser. No. 94,376
Term of patent 14 years
Int. Cl. D12—*12*

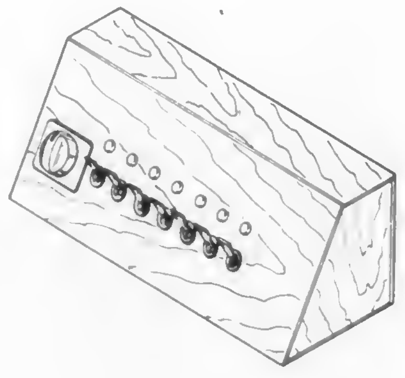
U.S. Cl. D12—131



266,500
PORTABLE CONTROL SYSTEM CONSOLE OR SIMILAR ARTICLE

D. Craig Garbe, 689 Enchanted Way, Pacific Palisades, Calif. 90272
Filed Nov. 30, 1978, Ser. No. 964,835
Term of patent 3½ years
Int. Cl. D13—*03*

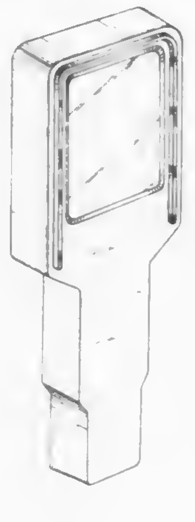
U.S. Cl. D13—12



266,501
ELECTRONIC HAND CONTROL UNIT FOR ADJUSTABLE BED

Thomas Stefanik, Middlesex, N.J., assignor to Michael Pascal, North Plainfield, N.J.
Filed Feb. 19, 1980, Ser. No. 122,652
Term of patent 14 years
Int. Cl. D13—*03*

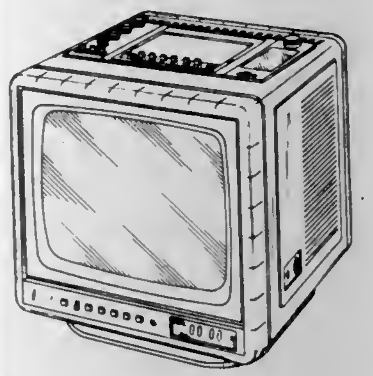
U.S. Cl. D13—38



266,502
COMBINED TELEVISION RECEIVER, RADIO RECEIVER, CASSETTE RECORDER AND CLOCK

Gerard J. Heijnen, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 25, 1980, Ser. No. 143,662
Claims priority, application Benelux, Oct. 29, 1979, 54159-00
Term of patent 14 years
Int. Cl. D14—*01, 03;* D10—*01*

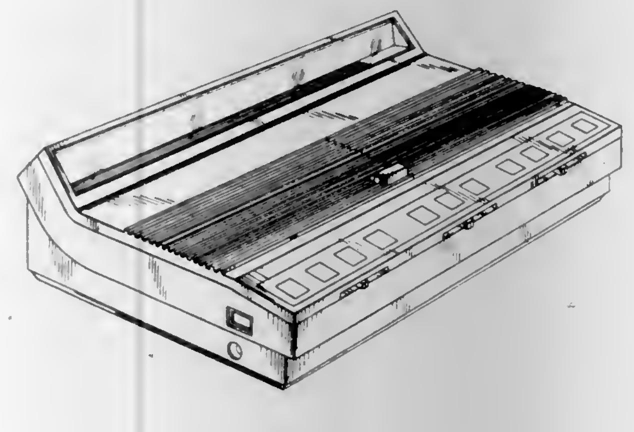
U.S. Cl. D14—5



266,503
TAPE RECORDING MACHINE

Arthur J. Pulos, Fayetteville, and Michael Cridland, Manlius, both of N.Y., assignors to Dictaphone Corporation, Rye, N.Y.
Filed May 16, 1980, Ser. No. 150,313
Term of patent 14 years
Int. Cl. D14—*01*

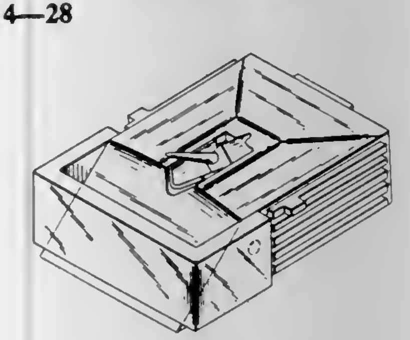
U.S. Cl. D14—6



266,504
PHONOGRAPH STYLUS

Tsugikuma Minamizono, Numazu, Japan, assignor to The Astatic Corporation, Conneaut, Ohio
Filed Apr. 23, 1980, Ser. No. 142,963
Term of patent 14 years
Int. Cl. D14—*01*

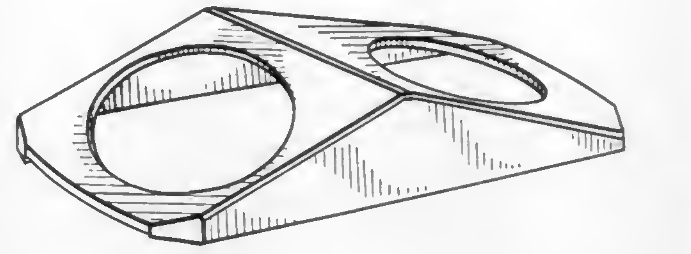
U.S. Cl. D14—28



266,505
LOUDSPEAKER MOUNTING

Jack R. Saidel, Flossmoor, Ill., assignor to Electronic Industries, Inc., Harvey, Ill.
Filed May 30, 1980, Ser. No. 154,794
Term of patent 7 years
Int. Cl. D14—*01*

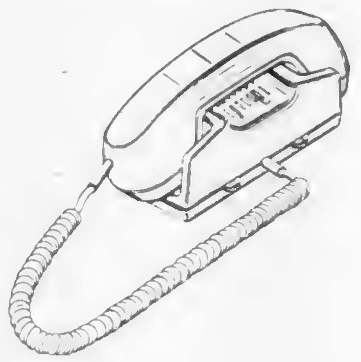
U.S. Cl. D14—37



266,506
VEHICULAR TELEPHONE SET OF SIMILAR ARTICLE

Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1980, Ser. No. 144,637
Claims priority, application Japan, Nov. 8, 1979, 54-046619
Term of patent 14 years
Int. Cl. D14—*03*

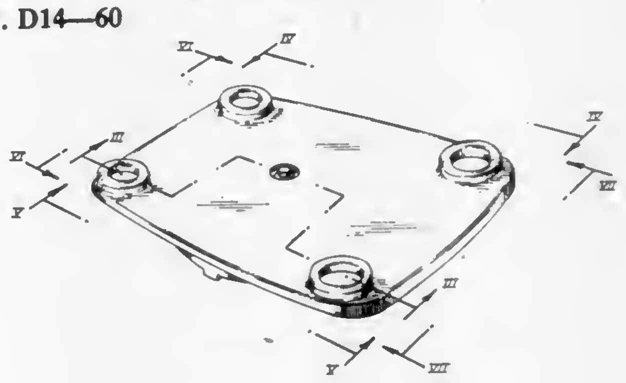
U.S. Cl. D14—53



266,507
ROTATABLE TELEPHONE SUPPORT

Robert A. Cavanagh, 7/22 St. Hilliers Rd., Auburn, New South Wales 2144, Australia
Filed Apr. 7, 1980, Ser. No. 137,657
Claims priority, application Australia, Oct. 15, 1979, 79,269
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—60

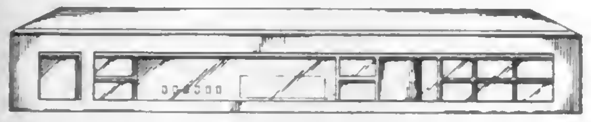


266,508
TUNER

Jun-Ichi Yamamoto; Toshihito Nomura, and Noboru Keitoku, all of Tokyo, Japan, assignors to Pioneer Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1980, Ser. No. 173,408
Claims priority, application Japan, Jan. 31, 1980, 55-2848
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—71

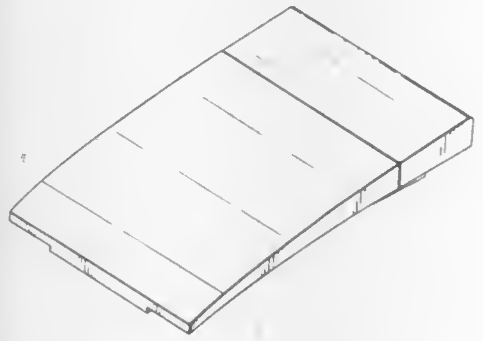


266,509
HOUSING FOR AN INTERCOM OR SIMILAR BUSINESS MACHINE

Eric J. Marshall, 5 Carlton Gardens, London, SW1, England

Filed Feb. 25, 1980, Ser. No. 124,647
Claims priority, application United Kingdom, Aug. 28, 1979, 991324
Term of patent 14 years
Int. Cl. D14—*02, 03;* D18—*01*

U.S. Cl. D14—92

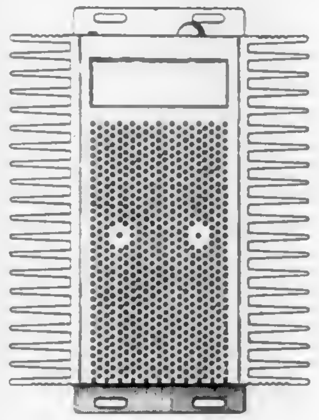


266,510
AMPLIFIER

Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1979, Ser. No. 42,070
Claims priority, application Japan, Jan. 22, 1979, 54-1892
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—96

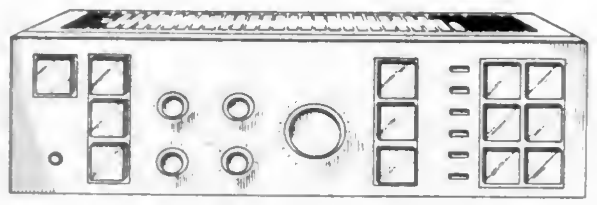


266,511
AMPLIFIER

Jun-Ichi Yamamoto, and Noboru Keitoku, both of Tokyo, Japan, assignors to Pioneer Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1980, Ser. No. 173,652
Claims priority, application Japan, Jan. 31, 1980, 55-2847
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—96

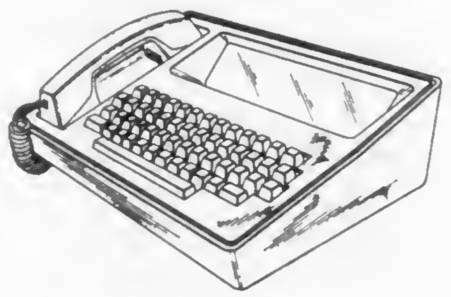


266,512
MULTIPLE MODE COMMUNICATION TERMINAL

Gerard A. Furbershaw, Santa Clara; Stephen B. Albert, Menlo Park, and Dale W. Gruye, Portola Valley, all of Calif., assignors to Quadri Netics International Technology, Inc., Walnut Creek, Calif.

Filed Apr. 23, 1980, Ser. No. 143,815
Term of patent 14 years
Int. Cl. D14—*02, 03*

U.S. Cl. D14—101

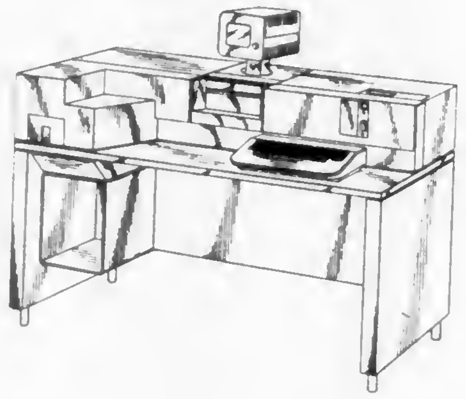


266,513
CHECK PROCESSING TERMINAL

Daniel Richelet, Vence, and Gilbert Pedinielli, Nice, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,226
Claims priority, application France, Jul. 6, 1979, 79 77719
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—103

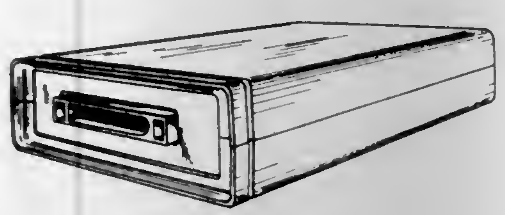


266,514
MEMORY CARTRIDGE FOR ELECTRONIC PRINTER CONTROL

Clifford S. Fernalld, Jr., Xenia, and Charlie H. Hill, Jr., Dayton, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 14, 1980, Ser. No. 168,966
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—114

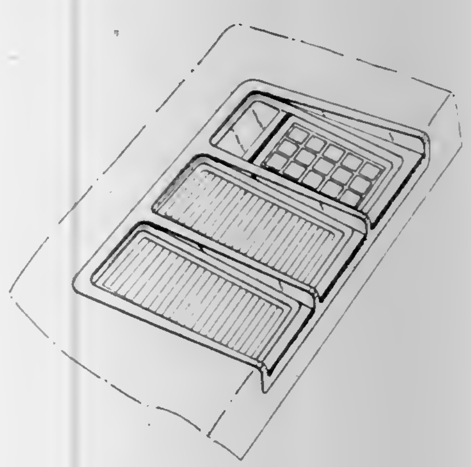


266,515
COMBINED SHELF INDEX AND KEYBOARD FOR A FILE RETRIEVAL SYSTEM

Roy Kanitz, Belpre, Ohio, assignor to Kardex Systems, Inc., Marietta, Ohio

Filed Jul. 11, 1980, Ser. No. 152,568
Term of patent 14 years
Int. Cl. D14—*02*

U.S. Cl. D14—115

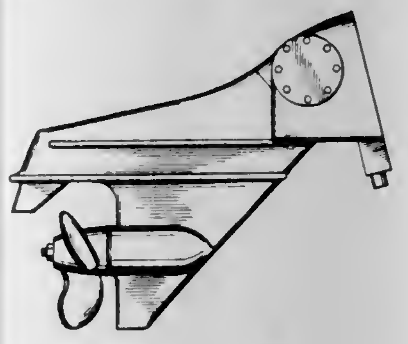


266,516
OUTBOARD UNIT OF AN INBOARD-OUTBOARD DRIVE FOR WATERCRAFT

Elmer C. Kiekhaefer, 2408 Cypress Gardens Rd., Winter Haven, Fla. 33880

Filed Aug. 24, 1979, Ser. No. 69,603
Term of patent 14 years
Int. Cl. D15—*01*

U.S. Cl. D15—4

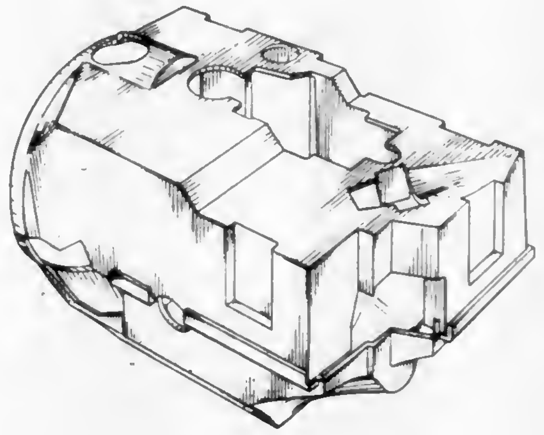


266,517
FUEL PUMP ANTI-TAMPER ENCLOSURE

Donald L. Werst, 4515 Snow Mountain Rd., Yakima, Wash. 98908; Richard L. Roberts, 914 S. Pines, Spokane, Wash. 98202; Michael A. Hudson, 136 Roza Vista Dr.; Robert C. Ray, 3014 Butterfield Rd., both of Yakima, Wash. 98901, and John O. Holloway, 14203 NW. Science Park Dr., Portland, Oreg. 97229

Filed Apr. 4, 1980, Ser. No. 137,504
Term of patent 14 years
Int. Cl. D15—*01*

U.S. Cl. D15—5

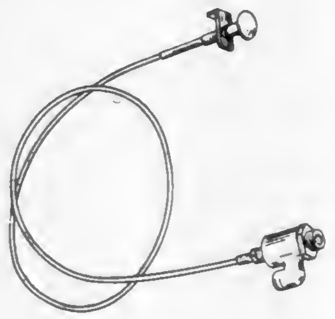


266,518
REMOTE CONTROL OIL SUMP DRAIN VALVE

Warner O. Harris, 2nd Floor, No. 35, Chen Hsing St., Shih Pai Rd., Tienmou, Taipei (112), Taiwan

Filed May 27, 1980, Ser. No. 153,431
Term of patent 14 years
Int. Cl. D15—*01*

U.S. Cl. D15—5

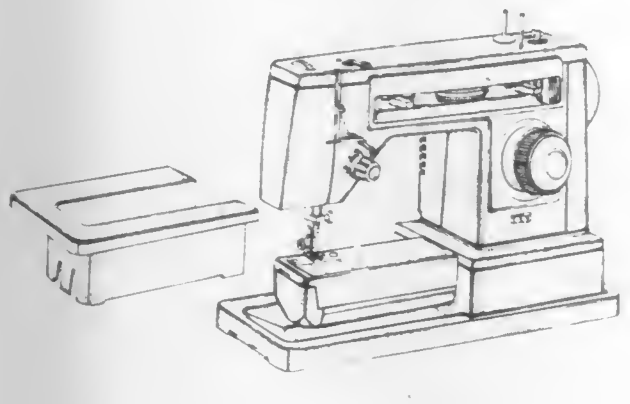


266,519

COMBINED SEWING MACHINE AND WORK SUPPORT EXTENSION

Donald M. Genaro, Haworth, N.J., and Cristian J. Felix, Flushing, N.Y., assignors to The Singer Company, Stamford, Conn.
Filed Oct. 12, 1979, Ser. No. 84,348
Term of patent 14 years
Int. Cl. D15—*06*

U.S. Cl. D15—68

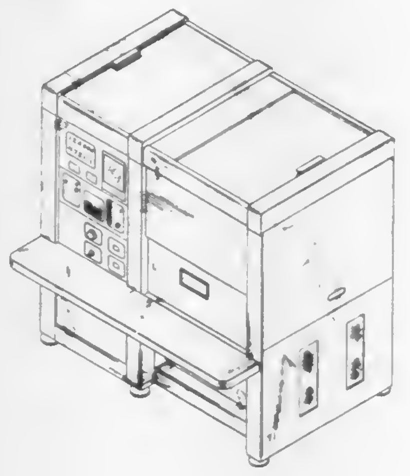


266,520

MATERIAL MACHINING DEVICE ENCLOSURE

Simon L. Engel, Sunnyvale, Calif., assignor to HDE Systems, Inc., Sunnyvale, Calif.
Filed Aug. 20, 1979, Ser. No. 67,877
Term of patent 14 years
Int. Cl. D15—*09*

U.S. Cl. D15—122

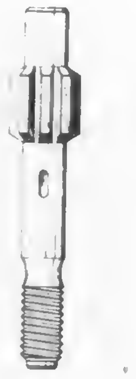


266,521

SHANK ADAPTER FOR A ROCK DRILLING MACHINE

Gosta C. Gustafsson, Norberg, Sweden, assignor to Fagersta AB, Fagersta, Sweden
Filed Apr. 29, 1980, Ser. No. 144,853
Claims priority, application Sweden, Nov. 2, 1979, 79-2431
Term of patent 14 years
Int. Cl. D15—*09*

U.S. Cl. D15—138

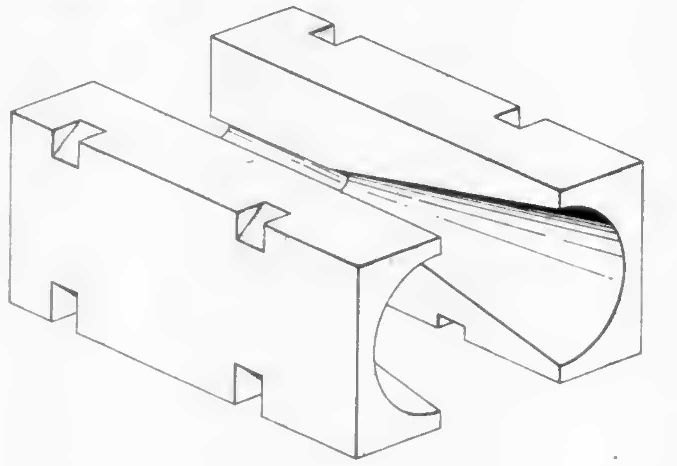


266,522

TAPE FOLDER

Daniel A. Norris, Dallas, and Frank L. Sweet, Carrollton, both of Ga., assignors to Southwire Company, Carrollton, Ga.
Filed Apr. 14, 1980, Ser. No. 139,928
Term of patent 14 years
Int. Cl. D15—*99*

U.S. Cl. D15—145

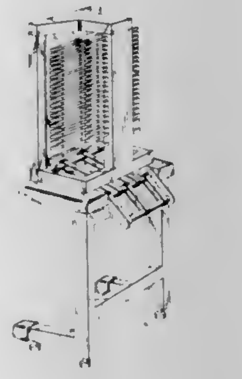


266,523

SORTER FOR USE WITH A COPYING MACHINE

Shigeki Yasutani, Kashiwa, and Kunio Hara, Chiba, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 12, 1980, Ser. No. 148,703
Claims priority, application Japan, Nov. 20, 1979, 54-48396
Term of patent 14 years
Int. Cl. D16—*03*

U.S. Cl. D16—32

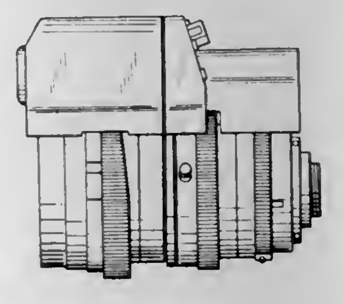


266,524

AUTOMATIC FOCUSING LENS

Hiroshi Matsushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 27, 1980, Ser. No. 163,417
Term of patent 14 years
Int. Cl. D16—*05*

U.S. Cl. D16—134

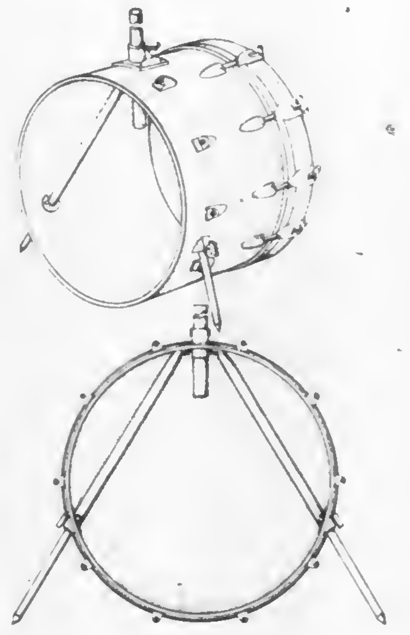


266,525

BASS DRUM

Lawrence J. Kelly, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Feb. 29, 1980, Ser. No. 126,023
Term of patent 14 years
Int. Cl. D17—*04*

U.S. Cl. D17—22

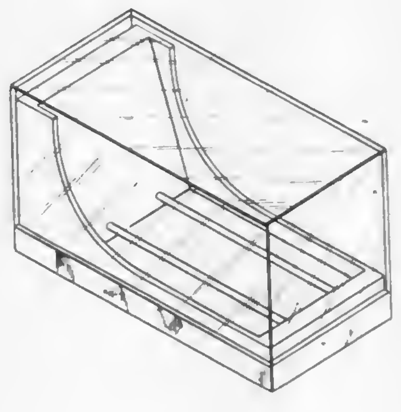


266,526

PHOTOGRAPH STORAGE AND DISPLAY CASE

Robert E. Raine, 196 Third St., Stoughton, Mass. 02072
Filed Apr. 25, 1980, Ser. No. 143,884
Term of patent 14 years
Int. Cl. D19—*02*

U.S. Cl. D19—76



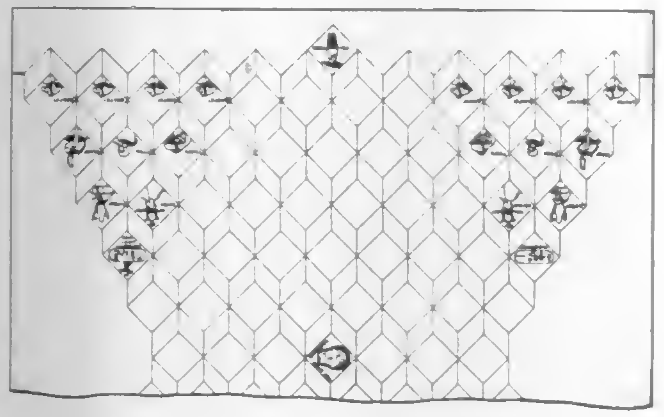
266,527

BOARD GAME

Robert L. Trist, Corner William & Patrick Sts., Laidley, Queensland, Australia

Filed Jan. 16, 1980, Ser. No. 112,454
Claims priority, application Australia, Jul. 18, 1979, 78451
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—30



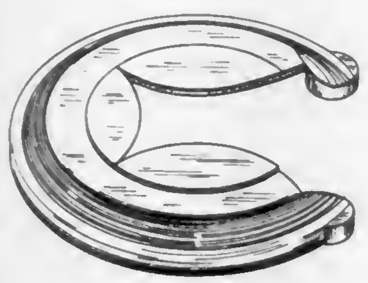
266,528

AERIAL TOY

Mark S. Bayless, Rte. 2, Napoleon, Ohio 43545

Filed May 31, 1979, Ser. No. 44,118
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—86



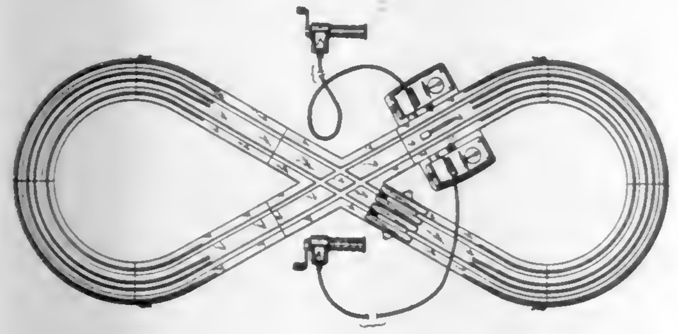
266,529

TOY RACING GAME TRACK

Eiji Aoki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Feb. 27, 1980, Ser. No. 125,220
Claims priority, application Japan, Aug. 30, 1979, 54-36223
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D21—143



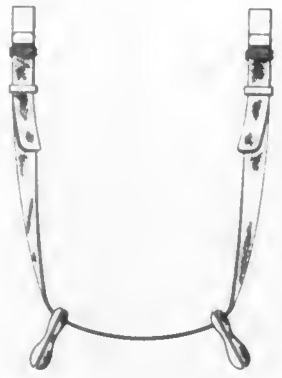
266,530

PHYSICAL EXERCISER

Jean-Pierre M. Lafont, 6, rue du Centre, Neuilly-sur-Seine (Hants-de-Seine), France

Filed Apr. 2, 1979, Ser. No. 26,183
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D21—198



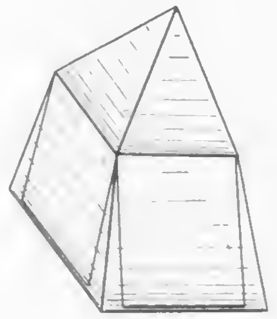
266,531

TENT FOR USE WITH TRAILER OR THE LIKE

Roger J. Murphy, 1473 Keeler Dr., Irving, Tex. 75060

Filed May 29, 1980, Ser. No. 154,213
Term of patent 14 years
Int. Cl. D21—*04*

U.S. Cl. D21—253



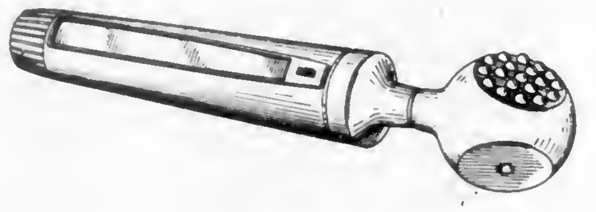
266,532

MANUALLY HELD BODY MASSAGER

Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,838
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D24—41



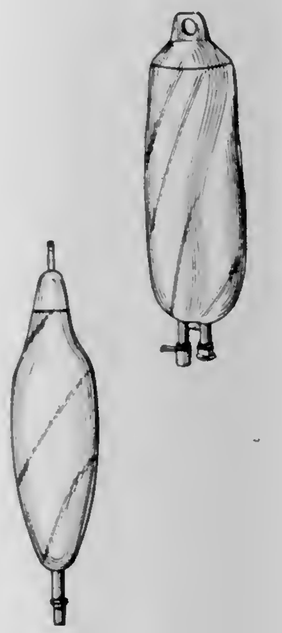
266,533

COLLAPSIBLE SOLUTION CONTAINER FOR MEDICAL LIQUIDS

Thomas D. Wilson, Wyoming, Minn., and William G. Scott, Carpentersville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 9, 1979, Ser. No. 83,007
Term of patent 14 years
Int. Cl. D24—*04*

U.S. Cl. D24—58



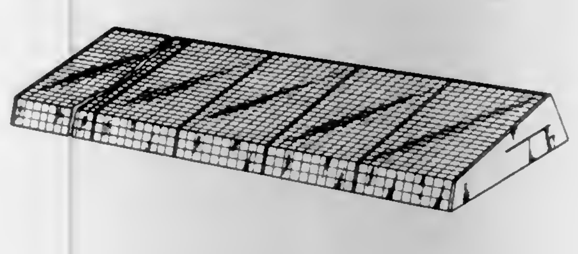
266,534

GREENHOUSE

Walter A. Johanson, 341 Irvine, St. Paul, Minn. 55102

Filed Oct. 31, 1980, Ser. No. 202,718
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D25—15



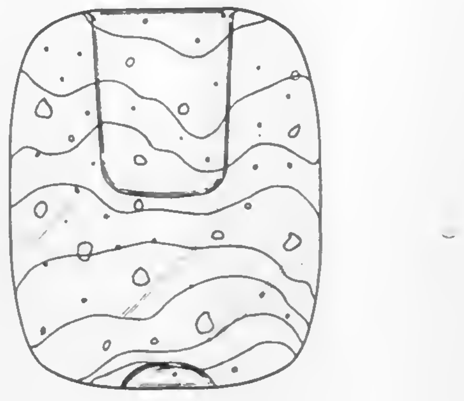
266,535

COMBINATION CANDLESTICK AND BOWL

Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Nov. 13, 1979, Ser. No. 93,824
Claims priority, application Finland, May 18, 1979, 331/79
Term of patent 14 years
Int. Cl. D26—*01;* D7—*01*

U.S. Cl. D26—10



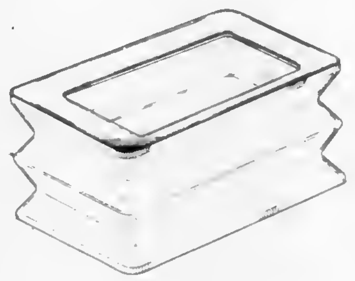
266,536

FOOT COVER FOR AUTOMOBILE AUXILIARY LIGHT

Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,304
Term of patent 14 years
Int. Cl. D26—*06*

U.S. Cl. D26—113



266,537

COMBINED CONTAINER AND APPLICATOR FOR HAIR DYE

Evan R. Kahn, 257 NE. 192nd St., North Miami Beach, Fla. 33179

Filed Mar. 13, 1980, Ser. No. 130,105
Term of patent 14 years
Int. Cl. D28—*03*

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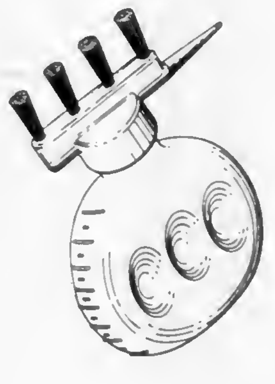

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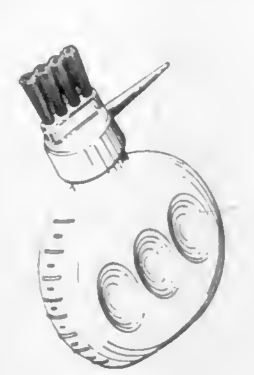

266,539
BOX FOR TRANSPORTING FISH

Göran S. Larson, Gothenburg, Sweden, assignor to Fiskladan Packing AB, Sweden

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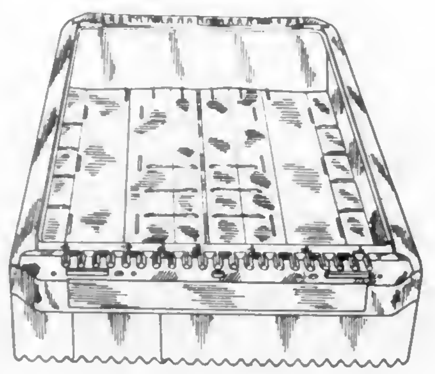
U.S. Cl. D34—40



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- Bell, Ralph M., to Bell and Rodhouse Engineering, Inc. Two stage flush valve assembly. 4,353,138, Cl. 4-326.000.
- Bell and Rodhouse Engineering, Inc.: *See—*
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- Bell Telephone Laboratories, Incorporated: *See—*
  - Atal, Bishnu S., 4,354,057, Cl. 179-1.0SA.
  - Bellisio, Jules A., 4,354,054, Cl. 178-3.000.
  - Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., 4,354,254, Cl. 365-33.000.
  - Embree, Milton L.; and Garrett, William G., 4,354,122, Cl. 307-261.000.
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  - Karabinis, Peter D., 4,354,276, Cl. 455-139.000.
  - Mussman, Harry E., 4,354,062, Cl. 179-84.00A.
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- Beloit Corporation: *See—*
  - Beucker, Albert W., 4,353,296, Cl. 100-121.000.
- Bender, Robert; and Duck, Peter D., to ens Bio Logicals Inc. Chemical synthesis apparatus for preparation of polynucleotides. 4,353,989, Cl. 435-287.000.
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  - Colpaert, James J., 4,353,438, Cl. 188-79.5GC.
  - Parks, Kevin, 4,353,660, Cl. 403-132.000.
  - Putt, James B., 4,353,209, Cl. 60-547.00B.
  - Ritsema, Irving R., 4,353,439, Cl. 188-79.5GE.
  - Roberts, James K.; and Johannesen, Donald D., 4,353,437, Cl. 188-79.5GE.
  - Roberts, James K., 4,353,441, Cl. 188-328.000.
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  - Correa, Flavio D., 4,353,442, Cl. 188-330.000.
- Beneke, Wolfgang, to Trutzschler GmbH & Co. KG. Electric pressure switch. 4,353,148, Cl. 19-105.000.
- Bennett, James H., Jr. Hand held power machine with oscillating tool. 4,353,422, Cl. 172-41.000.
- Benning, Vernon A., to M.L. Aviation Company Limited. Restraining device. 4,353,528, Cl. 254-360.000.
- Bentler, James S. Bicycle storage and travel case. 4,353,464, Cl. 206-335.000.
- Berginski, Werner-Ernst: *See—*
  - Speidel, Volker; Bergmann, Eduard; Kassner, Klaus; and Berginski, Werner-Ernst, 4,354,155, Cl. 324-133.000.
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  - Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,353,921, Cl. 424-273.00R.
- Berman, Richard M., to Delta Scan, Inc. Apparatus for producing images on radiation sensitive recording mediums. 4,353,628, Cl. 354-5.000.
- Bertolacini, Ralph J.: *See—*
  - Pellet, Regis J.; Bertolacini, Ralph J.; and Lysholm, Donna L., 4,353,814, Cl. 252-441.000.
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  - Doorakian, George A.; Duquette, Lawrence G.; and Bertram, James L., 4,354,015, Cl. 528-89.000.
- Berz, Wolfgang, to Gimag Aktiengesellschaft. Granular bed filter device including a regenerative granular bed cleaning apparatus. 4,353,722, Cl. 55-294.000.
- Bes, Francis. Cycle freewheel assembly and cycle wheel therefor. 4,353,447, Cl. 192-64.000.
- Besik, Ferdinand. Method and an apparatus for biological treatment of waste waters. 4,353,800, Cl. 210-605.000.
- Bessho, Nagayasu: *See—*
  - Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.
- Bethlehem Steel Corporation: *See—*
  - Vander Voort, George F., 4,353,743, Cl. 75-124.000.
  - Vander Voort, George F., 4,353,756, Cl. 148-143.000.
- Beucker, Albert W., to Beloit Corporation. Use of anisotropic rubber for venta-nip rolls. 4,353,296, Cl. 100-121.000.
- Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, to Merrell Toraude et Compagnie. Preparation of fluorinated methyl aminoalkanoic acids and novel process intermediates. 4,353,828, Cl. 260-326.0NS.
- Bhanumati, Nanduri; and Sattur, Pralhad B., to Council of Scientific & Industrial Research. Anthranilic acid esters. 4,354,033, Cl. 560-48.000.
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  - Parr, David T., 4,353,619, Cl. 350-96.210.
- BICC Public Limited Company: *See—*
  - Gregory, Brian, 4,354,050, Cl. 174-22.00R.
- Bickel, Hans; and Kump, Wilhelm, to Ciba-Geigy Corporation. Substituted rifamycins. 4,353,826, Cl. 260-239.30P.
- Bickford, Allan M. Carbon dioxide absorber. 4,353,366, Cl. 128-205.120.
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  - Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.
- Bierhoff, Martinus P. M.: *See—*
  - Immink, Kornelis A.; Bierhoff, Martinus P. M.; and Heemskerk, Jacobus P. J., 4,354,103, Cl. 250-201.000.
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  - Hagner, Willi; Thaer, Andreas; and Bigar, Francis, 4,353,618, Cl. 350-91.000.
- Billot, Michel: *See—*
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- Bilton, John: *See—*
  - Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, 4,353,542, Cl. 271-294.000.
- Bio-Energy Systems, Inc.: *See—*
  - Zinn, Michael F., 4,353,352, Cl. 126-426.000.
- Bionaz, Jean E., to Societe Anonyme Francaise du Ferodo. Transmission with hydraulic coupling device and locking clutch suitable for a motor vehicle. 4,353,444, Cl. 192-3.290.
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  - Harter, James L.; and Biro, Joseph E., 4,353,411, Cl. 165-48.00R.
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- Bitsch, Harald; and Knaack, Karl, to Mannesmann DeMag A.G. Mounting for a driven wheel. 4,353,606, Cl. 308-189.00R.
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  - Quittkat, Wolfram, 4,353,750, Cl. 106-100.000.
- Black & Decker Inc.: *See—*
  - Overbury, Douglas G.; and Overy, Colin, 4,353,163, Cl. 30-123.400.
  - Simpson, Frank F., 4,353,425, Cl. 173-109.000.
- Black, Robert B. Energy conversion system. 4,353,348, Cl. 126-91.00R.
- Blader, Ralph W.: *See—*
  - Harris, Richard L., 4,353,399, Cl. 144-2.00R.
- Blakeslee, Thomas R., to Portec, Inc. Guidance system detector circuit. 4,354,235, Cl. 364-424.000.
- Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., to Bell Telephone Laboratories, Incorporated. Devices depending on garnet materials. 4,354,254, Cl. 365-33.000.
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  - Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.

Bledsoe, Gordon G.: *See—*
  Weaver, David A.; and Bledsoe, Gordon G., 4,353,515, Cl. 242-86.700.
Block, Jacob: *See—*
  Green, Peter C.; and Block, Jacob, 4,353,804, Cl. 252-8.50A.
Bloom, Arlene N., executrix: *See—*
  Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,353,976, Cl. 430-251.000.
Bloom, Stanley M., deceased (by Bloom, Arlene N., executrix); and Sachdev, Krishna G., to Polaroid Corporation. Novel silver complexing agents. 4,353,976, Cl. 430-251.000.
Blount, David H. Process for the production of alkali metal silicate-organic plastics. 4,353,999, Cl. 524-3.000.
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Bock, Klaus-Detlef; and Baum, Horst, to Hoechst Aktiengesellschaft. Pesticidal compositions. 4,353,897, Cl. 424-200.000.
Boden, Richard M.: *See—*
  Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,354,043, Cl. 568-445.000.
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  Yamada, Kyota; and Komatsu, Akira, 4,354,067, Cl. 179-146.00H.
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  Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, 4,353,895, Cl. 424-182.000.
Boeing Company, The: *See—*
  Bogart, Patrick M., 4,353,519, Cl. 248-72.000.
  Lambregts, Antonius A.; and Hansen, Rolf, 4,354,237, Cl. 364-428.000.
  Rudolph, Peter K. C., 4,353,517, Cl. 244-216.000.
Bogart, Patrick M., to Boeing Company, The. Support attachment for structural stringers. 4,353,519, Cl. 248-72.000.
Bohm, Leslie E.: *See—*
  Jackson, W. Shaun; and Bohm, Leslie E., 4,353,490, Cl. 224-32.00A.
Boise Cascade Corporation: *See—*
  Woerz, Stephen E.; and Canup, Travis K., 4,353,761, Cl. 156-69.000.
Boles, Charles L.: *See—*
  Flanigan, Richard J.; and Boles, Charles L., 4,353,400, Cl. 144-117.00R.
Bone, David P., to Quaker Oats Company, The. Refrigerator pourable and stable pancake batters for preparing stable pancakes and method for preparing. 4,353,932, Cl. 426-532.000.
Bookelmann, Theodorus F. I.: *See—*
  Munnichs, Cornelis M.; and Bookelmann, Theodorus F. I., 4,353,870, Cl. 422-129.000.
Booth, Peter L.: *See—*
  Davies, Robert; Newton, Barrie H.; and Booth, Peter L., 4,354,165, Cl. 331-96.000.
Borburgh, Jacques; and Feight, Ingmar, to Siemens Aktiengesellschaft. Ultrasonic transducer with a plastic piezoelectric receiving layer and a non plastic transmitting layer. 4,354,132, Cl. 310-334.000.
Bordry, Herve; Layec, Herve; and L'Hostis, Jean-Claude. Computer-communications concentrator for transmission and switching of packetized data. 4,354,263, Cl. 370-94.000.
Bore, Pierre; and De Labbey, Arnaud, to L'Oreal. Evaluation of the state of change of keratin fibers. 4,353,708, Cl. 23-230.00B.
Borgstrom, Alan D.: *See—*
  Siebens, Larry N.; and Borgstrom, Alan D., 4,353,611, Cl. 339-92.00R.
Bormida, John, Jr. Retrofittable energy conserving damper. 4,353,349, Cl. 126-112.000.
Born, Richard C.: *See—*
  Flickinger, Charles E.; and Born, Richard C., 4,354,226, Cl. 364-200.000.
Bosch-Siemens Hausgerate GmbH: *See—*
  Dienemann, Wolfgang, 4,353,223, Cl. 62-442.000.
  Husslein, Julius; and Klement, Johann, 4,354,084, Cl. 219-10.55R.
Bostedt, Jan. Continuous casting machine. 4,353,407, Cl. 164-468.000.
Bostian, Clarence L., Jr. Method of preparation of fibers and fibers obtained therefrom. 4,353,509, Cl. 241-24.000.
Bouda, Francis J. Method and apparatus for continuously attaching elastic strands to disposable absorbent products. 4,353,762, Cl. 156-164.000.
Bouygues, Pierre A.; and Delcoustal, Jean-Marie, to Delle-Alsthom. Drainage device. 4,353,387, Cl. 137-203.000.
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  Bouyssounouse, Bernard; and Bouyssounouse, Chantal, 4,354,275, Cl. 455-54.000.
Bowers, Geoffrey, to Seasonmakers Pty. (Australia) Lts. Erosion control means. 4,353,946, Cl. 428-109.000.
Bowman, James L., to Long-Lok Fasteners Corporation. Apparatus and method of forming self-locking fastener. 4,353,941, Cl. 427-287.000.
Boyce, William A., to Macaster Controls, Inc. Programmable steering control apparatus for motor vehicles. 4,353,568, Cl. 280-94.000.
Boyle, Robert E. Battery water-filling systems and check valves therefor. 4,353,968, Cl. 429-64.000.
Braid, Milton, to Mobil Oil Corporation. Lubricants and fuels containing boroxarophenanthrene compounds. 4,353,807, Cl. 252-49.600.
Brandley, Reinard W. Device for transferring loads between adjoining concrete slabs. 4,353,666, Cl. 404-60.000.
Brandram, Thomas C.: *See—*
  Weeks, Michael W.; and Brandram, Thomas C., 4,354,183, Cl. 340-682.000.
Brant, Alberto: *See—*
  Re, Luciano; Brant, Alberto; and Bassignani, Luciano, 4,353,825, Cl. 260-239.100.
Brantingham, George L.; and Wiggins, Richard H., to Texas Instruments Incorporated. Method and apparatus for speech synthesis filter excitation. 4,354,056, Cl. 179-1.0SM.
Brenholt, David L., to Donaldson Company, Inc. Transport vehicle accessory. 4,353,587, Cl. 296-15.000.
Brent, Albert: *See—*
  Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Breton, Jean-Jacques; and Malicet, Philippe, to Vallourec, Societe Anonyme. Method for manufacture of seamless metal tubing by continuous rolling. 4,353,238, Cl. 72-209.000.
Brice, Ralph E. Ski binding. 4,353,575, Cl. 280-614.000.
Bricmont & Associates, Inc.: *See—*
  Bricmont, Francis H., 4,353,690, Cl. 432-234.000.
Bricmont, Francis H., to Bricmont & Associates, Inc. Apparatus to anchor skids for a reheat furnace. 4,353,690, Cl. 432-234.000.
Bridges, Byron K. Vibrating dental tool device and method. 4,353,696, Cl. 433-125.000.
Bridgestone Tire Company, Limited: *See—*
  Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.
Brigand, Gerard: *See—*
  Kragen, Horst; and Brigand, Gerard, 4,353,805, Cl. 252-8.55D.
Brink, Gerhard: *See—*
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Bristol, James A.: *See—*
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British Petroleum Company Limited, The: *See—*
  Ball, William J.; and Stewart, David G., 4,354,049, Cl. 585-415.000.
British Railways Board: *See—*
  Pollard, Maurice G.; and Illingworth, Robert, 4,353,309, Cl. 105-136.000.
Brockhaus, Ernst, to Ed. Scharwachter GmbH & Co. KG. Butt hinge. 4,353,146, Cl. 16-387.000.
Brocklehurst, Charles E., to Opelika Manufacturing Corporation. Sheet production system with hem expander. 4,353,316, Cl. 112-262.300.
Brodie, Edwin T.: *See—*
  Burche, Ioan A.; and Brodie, Edwin T., 4,353,402, Cl. 152-209.00R.
Broggi, Renato: *See—*
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Brother Industries, Ltd.: *See—*
  Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.
Brothers, Warren S.; and Kallfelz, Albert J., to Carrier Corporation. Heat transfer surface and method of manufacture. 4,353,234, Cl. 72-98.000.
Brouwer, Cornelis, to Rotaque (Proprietary) Limited. Bottom discharge hopper rail car. 4,353,312, Cl. 105-241.200.
Brown, George. Thermostat. 4,353,500, Cl. 236-34.500.
Brown, George. Fusible aquatic device that will override the failure of a defective thermostat or the like within a motor. 4,353,501, Cl. 236-34.500.
Brown, Kenneth G. Cog wheel railway. 4,353,308, Cl. 105-29.00R.
Brown, Lawrence E.; Bauer, James L.; and Scheck, Gerald W., to Hewlett-Packard Company. Transparent digitizer platen. 4,353,952, Cl. 428-201.000.
Brown, Russell L. Impact absorbing handrail and end cap. 4,353,529, Cl. 256-59.000.
Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, to BASF Aktiengesellschaft. Cationic dyes. 4,353,833, Cl. 260-386.000.
Bruening, Robert A., to Chicago Bridge & Iron Company. Floating roof metallic shoe secondary seal. 4,353,477, Cl. 220-224.000.
Brunelle, Daniel J., to General Electric Company. Method for removing polyhalogenated hydrocarbons from nonpolar organic solvent solutions. 4,353,793, Cl. 208-262.000.
Brunswick Corporation: *See—*
  Neufeld, Henry L., 4,353,514, Cl. 242-84.20A.
Bryant, Cal L.: *See—*
  Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., 4,353,199, Cl. 56-10.200.
Bryant, Mark K. Crampon binding. 4,353,172, Cl. 36-7.600.
Buckau-Walther AG: *See—*
  Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, 4,353,718, Cl. 55-112.000.
Buckbee-Mears Company: *See—*
  Thoms, Roland, 4,353,948, Cl. 428-131.000.
Budliger, Jean-Pierre: *See—*
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Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Labyrinth seal. 4,353,559, Cl. 277-53.000.
Buergin, Rodney G.: *See—*
  Pearson, Robert J.; and Buergin, Rodney G., 4,353,192, Cl. 52-281.000.
Buettner, Gerhard, to Siemens Aktiengesellschaft. Miniature hearing aid. 4,354,065, Cl. 179-107.00H.

Builders Concrete, Inc.: *See—*
  Sluys, Wesley W., 4,353,320, Cl. 114-267.000.
Buky, Gabriel R.: *See—*
  Armond, Joseph A.; and Buky, Gabriel R., 4,354,149, Cl. 320-40.000.
Bunker Ramo Corporation: *See—*
  Ayer, George E., 4,353,372, Cl. 128-640.000.
Burbank, Max B.: *See—*
  Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
Burche, Ioan A.; and Brodie, Edwin T., to Bandag Incorporated. Slitted tire tread. 4,353,402, Cl. 152-209.00R.
Burkett, Howard E.: *See—*
  Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., 4,353,436, Cl. 187-9.00R.
Burley, David R.: *See—*
  Rickelton, William A.; Robertson, Allan J.; and Burley, David R., 4,353,883, Cl. 423-139.000.
Burns, Alonzo M., Jr.; and Gilbert, Woodrow P., to Milliken Research Corporation. Process for producing sculptured pile fabric. 4,353,706, Cl. 8-114.600.
Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, to United States of America, Air Force. Cursor apparatus for interactive graphic display system. 4,354,102, Cl. 250-201.000.
Burow, Kenneth W., Jr.; and St. Clair, Roger L., to Eli Lilly and Company. Isoxazolylimidazolidinone herbicides. 4,354,030, Cl. 548-247.000.
Burroughs Corporation: *See—*
  Mahon, Michael J., 4,354,217, Cl. 361-104.000.
Burton, George W.; and Davis, Eugene F., to Johnsen & Jorgensen (Plastics) Limited. Closures for containers. 4,353,472, Cl. 215-211.000.
Buschfeld, Herbert R., to G. Siempelkamp GmbH & Co. Press plate for platen presses. 4,353,416, Cl. 165-168.000.
Bush, Eric L.: *See—*
  Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., 4,353,938, Cl. 427-214.000.
Bussco Engineering, Inc.: *See—*
  Deters, Paul M., 4,353,610, Cl. 339-19.000.
Bustin, Franz, to Mobil Oil Corporation. Free-standing thermoplastic bag construction. 4,353,497, Cl. 229-55.000.
Butkin, Vladimir D.: *See—*
  Zhukovsky, Alexei A.; Butkin, Vladimir D.; and Kulachek, Mikhail I., 4,354,233, Cl. 364-420.000.
Butler Manufacturing Company: *See—*
  Barello, Lawrence J., 4,354,241, Cl. 364-492.000.
Butterfield, Ted; Emory, Lyle J.; and Filicicchia, Daniel, to Spraying Systems Company. Nozzle with pre-orifice metering restriction. 4,353,508, Cl. 239-590.300.
Buzas, Andre. Indolo(2,3-a)quinolizidines, useful in increasing femoral and vertebral blood flow. 4,353,911, Cl. 424-258.000.
Byrd, Philip G. Machine for flattening the internal bead of welded tubing. 4,353,236, Cl. 72-193.000.
C-Thru Aluminum Awning Co.: *See—*
  Albany, Stanley J.; and Lizardi, Robert, Jr., 4,354,052, Cl. 174-48.000.
C. Uyemura & Co., Ltd.: *See—*
  Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,353,933, Cl. 427-8.000.
Cabot Stellite Europe Limited: *See—*
  Crook, Paul, 4,353,742, Cl. 75-122.000.
Cacioni, Renato. Combination controlled fluid pressure actuated door lock. 4,353,230, Cl. 70-275.000.
Cadbury Schweppes PLC: *See—*
  Jeans, Edward L., 4,353,252, Cl. 73-293.000.
Cagle, Bunyan B. Solid fuel furnace. 4,353,351, Cl. 126-193.000.
Caldwell, Richard L., to Mobil Oil Corporation. Well logging to determine the nature and extent of mud filtrate penetration. 4,353,248, Cl. 73-152.000.
California Institute of Technology: *See—*
  Rippel, Wally E.; and Edwards, Dean B., 4,353,969, Cl. 429-144.000.
Callahan, George E. Device for measuring the density of fluids. 4,353,253, Cl. 73-454.000.
Calspan Corporation: *See—*
  Schneider, Clayton J., Jr., 4,353,259, Cl. 73-653.000.
Cameron Iron Works, Inc.: *See—*
  Miller, Henry W., 4,353,420, Cl. 166-382.000.
Campsey, Ronald L.: *See—*
  Richter, Albert P., Jr.; and Campsey, Ronald L., 4,354,110, Cl. 250-358.100.
Canada Cycle and Motor Company Limited: *See—*
  Paquet, Benoit, 4,353,173, Cl. 36-44.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
  Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
Canon Kabushiki Kaisha: *See—*
  Ito, Fumio; Ito, Tadashi; Nakamoto, Soichi; and Isobe, Yasuo, 4,353,630, Cl. 354-29.000.
  Knechtel, Wilhelm, 4,353,638, Cl. 355-8.000.
  Koyama, Naoki, 4,354,203, Cl. 358-227.000.
  Saito, Syuichiro; and Uchidoi, Masanori, 4,353,632, Cl. 354-133.000.
  Tokumitsu, Jun; and Minoura, Kazuo, 4,353,617, Cl. 350-6.800.
Canter, Nathan H.; Robbins, Max L.; and Baker, Edward G., to Exxon Research and Engineering Company. Polymer-microemulsion complexes for the enhanced recovery of oil. 4,353,806, Cl. 252-8.55D.
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Carey, Richard D., to Dayco Corporation. Coating method. 4,353,942, Cl. 427-434.300.
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  Carlow, Arthur, 4,353,613, Cl. 339-119.00C.
Carl Still GmbH & Co. KG, Firma: *See—*
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Carlsson, Karl-Johan V.; and Kjoller, Hans O. S., to Telefonaktiebolaget L M Ericsson. Apparatus for reducing the instruction execution time in a computer employing indirect addressing of a data memory. 4,354,231, Cl. 364-200.000.
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Carre, Jean-Jacques; and Riquart, Christian, to Societe Anonyme D.B.A. Braking corrector for double braking circuit. 4,353,599, Cl. 303-22.00R.
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  Brothers, Warren S.; and Kallfelz, Albert J., 4,353,234, Cl. 72-98.000.
Carson, John C.; and Dahlgren, Paul F., to Irvine Sensors Corporation. Detector array module-structure and fabrication. 4,354,107, Cl. 250-239.000.
Carsten, Earl D. Fuel/air metering apparatus. 4,353,848, Cl. 261-69.00R.
Carver, Herman C. Fishing tool to retrieve cables from wells. 4,353,585, Cl. 294-86.100.
Caser, Gustavo, to General Engineering Radcliffe 1979 Limited. Process and plant for vulcanizing a continuous length of curable material. 4,353,861, Cl. 264-561.000.
Casio Computer Co., Ltd.: *See—*
  Fujisawa, Hidetaka, 4,354,246, Cl. 364-709.000.
Caslavsky, Vera B.; and Gron, Poul, to Forsyth Dental Infirmary for Children. Fluoride preparations containing surface-active agents. 4,353,892, Cl. 424-52.000.
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Castellanos, Rafael. Portable personal ash receiver. 4,353,379, Cl. 131-231.000.
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  Smith, Gary L.; Smith, Delbert E.; Catterson, Floyd D.; and Dooley, Ronald G., 4,353,565, Cl. 280-80.00B.
CECA S.A.: *See—*
  Kragen, Horst; and Brigand, Gerard, 4,353,805, Cl. 252-8.55D.
Celotex Corporation, The: *See—*
  Kyminas, Stanley C.; Einhaus, Bernard J.; and Hinds, Stephen G., 4,353,949, Cl. 428-195.000.
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  Leenders, Leon G., 4,353,863, Cl. 376-251.000.
Centro Ricerche Fiat S.p.A.: *See—*
  Panagin, Romano, 4,353,313, Cl. 105-397.000.
Centronics Data Computer Corp.: *See—*
  Shiurila, John, 4,353,654, Cl. 400-124.000.
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  Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,353,757, Cl. 148-172.000.
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Chang, Mike S. H.; and Edelman, Peter G., to Pitney Bowes Inc. Squarylium dye and diane blue dye charge generating layer mixture for electrophotographic light sensitive elements and processes. 4,353,971, Cl. 430-58.000.
Chapman, Eugene K., to Amca International Corporation. Dies for making thread-forming fasteners. 4,353,233, Cl. 72-88.000.
Chartrand, Joseph A.; and Perreault, Irenee. Gas scrubber. 4,353,845, Cl. 261-3.000.
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  Hughes, Patrick M.; Chatterjee, Ananda M.; and Hwo, Charles C., 4,354,004, Cl. 525-240.000.
Chemed Corporation: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
Wolf, Elmar; and Gras, Rainer, 4,354,014, Cl. 528-45.000.
Cheng, Shang-I. Integrated gasification process. 4,353,713, Cl. 48-202.000.
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Murmann, Guenter, 4,354,080, Cl. 200-316.000.
Chesley, Gilman D. System for identifying and locating recorded analog information. 4,354,207, Cl. 360-9.100.
Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., to Lucas Industries Limited. Dynamo electric machine brush assembly. 4,354,128, Cl. 310-242.000.
Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, to Hitachi, Ltd. Coating method. 4,353,937, Cl. 427-130.000.
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Bruening, Robert A., 4,353,477, Cl. 220-224.000.
Chikamura, Takao; Fujiwara, Shinji; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Solid-state image pickup device. 4,354,104, Cl. 250-211.00J.
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Mukoyama, Yoshiyuki; Chikazumi, Nobutoshi; and Sugitani, Hatuo, 4,353,801, Cl. 210-635.000.
Child, Edward T.: *See—*
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Childs, Michael E., to UOP Inc. Multifunctional gasoline additives. 4,353,711, Cl. 44-63.000.
Chilko, Robert J., to Aluminum Company of America. Apparatus for conveying particulate material by spring expansion and contraction. 4,353,485, Cl. 222-243.000.
Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, to Kawasaki Steel Corporation. Bottom tuyeres in an oxygen top-blown converter. 4,353,533, Cl. 266-265.000.
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Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
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Peppler, William, 4,354,098, Cl. 235-98.00B.
Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., to Sperry Corporation. Stone detector for harvesting machines. 4,353,199, Cl. 56-10.200.
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Christian, David R.: *See—*
Hoekstra, Gerald B.; and Christian, David R., 4,353,418, Cl. 166-259.000.
Christman, Ross D., to Superpressure, Inc. Pressure limiting device. 4,353,684, Cl. 417-388.000.
Christopher, Donald S.: *See—*
Stock, Arthur J.; and Christopher, Donald S., 4,353,427, Cl. 177-50.000.
Ciba-Geigy AG: *See—*
Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., 4,353,974, Cl. 430-218.000.
Ciba-Geigy Corporation: *See—*
Bickel, Hans; and Kump, Wilhelm, 4,353,826, Cl. 260-239.30P.
Ehrenfreund, Josef, 4,353,925, Cl. 424-322.000.
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Goschke, Richard; and Ferrini, Pier G., 4,353,918, Cl. 424-270.000.
Hess, Hans; and Voellmy, Carlo, 4,353,887, Cl. 424-15.000.
Martin, Henry, 4,353,736, Cl. 71-105.000.
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Janssens, Wilhelmus; and Claeys, Daniel A., 4,353,975, Cl. 430-239.000.
Clark, Earl A. Stirling cycle engine and fluid pump. 4,353,683, Cl. 417-379.000.
Clark, Gerald L.: *See—*
McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., 4,354,077, Cl. 200-314.000.
Clark, Lee K.; and Peron, Michael C., to Northrop Corporation. Laser telemetry. 4,354,278, Cl. 455-617.000.
Clark, Robin D., to Syntex (U.S.A.) Inc. 9-(Arylalkyl or aroylalkyl)-1-oxa-4,9-diazaspiro(5.5)undecan-3-ones. 4,353,900, Cl. 424-248.540.
Clark, Robin D., to Syntex (U.S.A.) Inc. 9-(1,4-Benzodioxan-2-ylalkyl and hydroxyalkyl)-1-oxa-4,9-diazaspiro[5.5]undecan-3-ones. 4,353,901, Cl. 424-248.570.
Clark, William F. Vapor seal for floating roof tank. 4,353,478, Cl. 220-224.000.
Cleary, Edward N. G., to United States of America, Energy. Primary zone air proportioner. 4,353,205, Cl. 60-39.120.
Cleary, Michael T.; and Kulprathipanja, Santi, to UOP Inc. Process for separating a monoethanoid fatty acid. 4,353,838, Cl. 260-419.000.
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Clelford, Douglas H.: *See—*
Murphy, Richard D.; and Clelford, Douglas H., 4,354,230, Cl. 364-200.000.
Clinicon International GmbH: *See—*
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Clinipad Corporation, The: *See—*
Hunter, Elisa; and Gandy, Susan, 4,353,367, Cl. 128-213.00A.
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Clum Manufacturing Co., Inc.: *See—*
Ragen, Robert P., 4,354,069, Cl. 200-16.00R.
Colburn, Theodore R.; and Smith, Bruce M., to United States of America, Health & Human Services. Activity monitor for ambulatory subjects. 4,353,375, Cl. 128-782.000.
Colgate-Palmolive Company: *See—*
Scott, George V., 4,353,890, Cl. 424-49.000.
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Barton, John E.; Collins, David J.; and Headford, Donald W., 4,354,034, Cl. 560-62.000.
Collonia, Harald, to VDO Adolf Schindling A.G. Control of the traveling speed of a motor vehicle. 4,353,339, Cl. 123-350.000.
Colpaert, James J., to Bendix Corporation, The. Actuator assembly for a drum brake having an extendible assembly. 4,353,438, Cl. 188-79.5GC.
Colt Industries Operating Corp.: *See—*
Wakeman, Russell J., 4,353,338, Cl. 123-339.000.
Colville, Hume W. Sawing apparatus. 4,353,275, Cl. 83-488.000.
Commonwealth Scientific and Industrial Research Organization: *See—*
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Communications Satellite Corporation: *See—*
Gupta, Shanti S., 4,354,164, Cl. 331-1.00A.
Compagnie des Lampes: *See—*
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Maury, M. Christian, 4,354,208, Cl. 360-40.000.
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Computrol Systems, Ltd.: *See—*
Rayment, David J.; and Kruger, Hendrik R., 4,354,099, Cl. 235-449.000.
Comte, Pierre, to Societe d'Exploitation Clairitex. Umbrella locking sleeve. 4,353,659, Cl. 403-24.000.
Conger, David R. L.; Gerson, Ira A.; and White, Richard E., to Motorola, Inc. Programmable multifrequency tone receiver. 4,354,248, Cl. 364-724.000.
Conner, Alvin R.: *See—*
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Conroy, Inc.: *See—*
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Container Corporation of America: *See—*
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Container Technologies, Inc.: *See—*
Schneiter, John W.; and Hogan, Lawrence R., 4,353,488, Cl. 222-501.000.
Cook, John H., to BASF Wyandotte Corporation. Polyurethane foam - fabric composite. 4,353,955, Cl. 428-246.000.
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Coons, Harold E., Jr.: *See—*
Harrell, Robert E.; Harrell, Tedd L.; and Coons, Harold E., Jr., 4,353,647, Cl. 355-85.000.
Cooperman, Michael; and Kapral, Christopher W., to GTE Laboratories Incorporated. Multiplexor with decoding. 4,354,266, Cl. 370-112.000.
Copeland, Gaeta L.: *See—*
Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., 4,353,995, Cl. 521-125.000.
Corey, Dennis J., to Rexnord Inc. Piloted flexible coupling. 4,353,704, Cl. 464-72.000.
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Correa, Flavio D., to Bendix do Brasil Equipamentos Para Autoveiculos LTDA. Brake shoe and brake assembly for automotive vehicles. 4,353,442, Cl. 188-330.000.
Cosden Technology, Inc.: *See—*
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Cosman, Eric R. Longitudinally, side-biting, bipolar coagulating, surgical instrument. 4,353,371, Cl. 128-303.170.
Coste, Camille: *See—*
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Couse, Nancy L.; and King, Jeannette W. Grid for use in counting colonies of bacteria present in discrete areas of a spiral deposition pattern. 4,353,988, Cl. 435-287.000.
Covi, Christian; and Poll, Martin, to D. Swarovski & Co. Process for making single ornament stones coated with heat-activated adhesive. 4,353,765, Cl. 156-212.000.
Cowgill, Charles F. Paint applicator holder. 4,353,476, Cl. 220-85.00D.
Crabtree, Kenneth: *See—*
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Crackel, John E.; and Stieritz, William J., to TRW Inc. Signal acquisition system. 4,354,277, Cl. 455-259.000.
Craft, James A., to International Business Machines Corporation. Ribbon feed mode shift mechanism. 4,353,658, Cl. 400-232.000.
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Tomlinson, Harvard L.; and Crain, Stephen F., 4,353,482, Cl. 222-1.000.
Crawford, Russell C., III. Coffee filter with flow diverter. 4,353,484, Cl. 222-189.000.
Crepin, Roger. Firing turret for a vehicle, and vehicle including such a turret. 4,353,283, Cl. 89-37.00G.
Crook, Paul, to Cabot Stellite Europe Limited. Cobalt-containing alloys. 4,353,742, Cl. 75-122.000.
Crossland, William A.; and Morrissy, Joseph H., to ITT Industries, Inc. Aligning liquid crystal layers. 4,353,943, Cl. 428-1.000.
Crouch, William B.: *See—*
Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
Crumbliss, Robert T., to Spencer Wright Industries, Inc. Method and apparatus for tufting high and low pile in the same row of stitching. 4,353,317, Cl. 112-266.200.
Cser, Gyula; and Spinnler, Fritz, to Autoipari Kutato Intezet. Conduit system for introducing intake gases in internal combustion engines. 4,353,211, Cl. 60-605.000.
Cummins Engine Company, Inc.: *See—*
Sweetland, Roger D., 4,353,332, Cl. 123-41.860.
Curwen, Peter W.; and Dorman, Richard A., to Mechanical Technology Incorporated. Resonant piston compressor having improved stroke control for load-following electric heat pumps and the like. 4,353,220, Cl. 62-228.000.
Cutler-Hammer, Inc.: *See—*
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Cziptschirsch, Kurt, to Gebr. Happich GmbH. Sun visor for vehicles. 4,353,591, Cl. 296-97.00H.
Cziptschirsch, Kurt, to Gebr. Happich GmbH. Sun visor with illuminated mirror. 4,353,592, Cl. 296-97.00B.
D. Gottlieb & Co.: *See—*
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D. Swarovski & Co.: *See—*
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Daar, Horst: *See—*
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Daicel Chemical Industries, Ltd.: *See—*
Koga, Kunio; and Kishimoto, Ryoichi, 4,353,784, Cl. 203-16.000.
Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, 4,353,951, Cl. 428-198.000.
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Daly, James M.: *See—*
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Damke, Otto; and Reutter, Hubert F., to Lohmann GmbH & Co. KG. Spool body for holding a plaster bandage. 4,353,510, Cl. 242-118.320.
Dani, Mahesh J., to Dunmore Corporation. Light and heat reflecting surface. 4,353,766, Cl. 156-233.000.
Daniel, Sam M.: *See—*
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Daroczi nee Csuka, Istvanne: *See—*
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Daugny, Daniel: *See—*
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Davies, Michael J.: *See—*
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Davies, Robert; Newton, Barrie H.; and Booth, Peter L., to U.S. Philips Corporation. Time-delay-triggered TRAPATT oscillator having delay line with progressively increasing impedance. 4,354,165, Cl. 331-96.000.
Davis, Eugene F.: *See—*
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Davis, James H.: *See—*
Belmonte, Mark S.; Davis, James H.; and Williams, David A., 4,353,391, Cl. 137-565.000.
Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, to International Business Machines Corporation. Loop initialization mechanism for a peer-to-peer communication system. 4,354,229, Cl. 364-200.000.
Davis, Pauls; and Wilson, Joe C., to BASF Wyandotte Corporation. Novel aliphatic sulfosiloxane-silicate copolymers. 4,354,002, Cl. 524-588.000.
Davis, Robert A.: *See—*
Beer, Frederick W.; Davis, Robert A.; Kresak, Fedor P.; and Kuev, Conio C., 4,353,196, Cl. 53-451.000.
Dayco Corporation: *See—*
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de Jager, Jan, to S. C. Johnson & Son, Inc. Electrolytic silver tarnish removal method. 4,353,786, Cl. 204-144.000.
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Delcoustal, Jean-Marie: *See—*
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Delegue, Francois E., to Thomson-CSF. Cyclic or periodic analog signal processing circuit. 4,354,245, Cl. 364-606.000.
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d'Elloy, Xavier. Nautical propulsion device. 4,353,703, Cl. 440-21.000.
Delta Scan, Inc.: *See—*
Berman, Richard M., 4,353,628, Cl. 354-5.000.
DeMarco, Alexander H. Knee braces. 4,353,362, Cl. 128-80.00C.
Demers, Edward A.: *See—*
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Dempf, Dominik: *See—*
Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.
Demuth, Robert; and Wuest, Anton, to Rieter Machine Works Ltd. Flat cleaning system for a card. 4,353,149, Cl. 19-107.000.
Dennison, Marshall T.: *See—*
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Denton, William H.: *See—*
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Teutsch, Jean G.; and Deraedt, Roger, 4,353,899, Cl. 424-243.000.
Dery, Tibor; and Madocsay, Attila. Apparatus for the determination and the digital display of the position of root treating means in the tooth. 4,353,693, Cl. 433-27.000.
Deter, Christhard; Schaller, Wolfgang; Schonfeld, Rudolf; and Haak, Klaus. Input-output device for photographic film materials. 4,353,538, Cl. 271-3.000.
Deters, Paul M., to Bussco Engineering, Inc. Electrical conducting strip. 4,353,610, Cl. 339-19.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Apparatus for producing ensemble tone in an electric musical instrument. 4,353,279, Cl. 84-1.240.
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  - Vries, Lodewijk B.; and Diepeveen, Matthijs A., 4,354,269, Cl. 371-43.000.
- Dingwall, Andrew G. F., to RCA Corporation. Voltage divider circuits. 4,354,151, Cl. 323-225.000.
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  - Wilkinson, Richard L., 4,353,767, Cl. 156-245.000.
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  - Falciani, Marco; and Broggi, Renato, 4,354,023, Cl. 544-030.000.
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- Dorman, Richard A.: *See—*
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  - Loup, Ronald L., 4,353,394, Cl. 137-625.650.
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- Driscoll, Neil J. Control station for overhead mounting. 4,354,119, Cl. 307-115.000.
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  - Dani, Mahesh J., 4,353,766, Cl. 156-233.000.
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  - Kennedy, Stanley P., 4,354,156, Cl. 324-228.000.
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  - Romanauskas, William A., 4,353,795, Cl. 209-155.000.
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  - DuBois, Grant E., 4,353,889, Cl. 424-48.000.
- Dynascan Corporation: *See—*
  - Schornack, Louis W., 4,354,120, Cl. 307-132.00E.
- E. J. Brooks Company: *See—*
  - Moberg, Sigurd M., 4,353,583, Cl. 292-320.000.
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  - Spaller, Albert E., Jr.; Stockbridge, Bruce W.; and Meredith, Thomas D., Jr., 4,353,492, Cl. 226-11.000.
  - Wheeler, Richard W., 4,353,973, Cl. 430-216.000.
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- Ebbeler, Robert E., to Chemed Corporation. Cleaner for anti-graffiti system. 4,353,745, Cl. 106-2.000.
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  - Brockhaus, Ernst, 4,353,146, Cl. 16-387.000.
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- Edwards, Dean B.: *See—*
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  - Moorey, Ernest J., 4,353,256, Cl. 73-597.000.
- Eli Lilly and Company: *See—*
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  - Knapp, Gerald W., 4,353,578, Cl. 280-781.000.
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  - DeFord, Emerson L., 4,353,281, Cl. 84-384.000.
- Emerson, Reynolds L. Sigmoidoscope. 4,353,358, Cl. 128-4.000.
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- ens Bio Logicals Inc.: *See—*
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  - Himel, Chester M.; and Cardarelli, Nathan F., 4,353,962, Cl. 428-407.000.
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  - Erikson, Keith W.; and Erikson, Kenneth W., 4,353,264, Cl. 74-441.000.
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- Erwin Sick GmbH Optik-Elektronik: *See—*
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- Estkowski, Michael H. Seed marker tabs. 4,353,183, Cl. 47-56.000.
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- Etablissements Francois Salomon & Fils: *See—*
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  - Moreau, Pierre A.; and Sauvestre, Jean C., 4,353,305, Cl. 102-519.000.
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- Evans, Aida L. Medicated ear rods and earring construction. 4,353,370, Cl. 128-269.000.
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- Ex-Cell-O Corporation: *See—*
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  - Ilnyckyj, Stephen, 4,354,011, Cl. 526-227.000.
  - Johnson, Jack W.; and Jacobson, Allan J., 4,354,024, Cl. 544-181.000.
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- F M Machine Company: *See—*
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- Falzoni, Gianluigi, to Fiat Auto S.p.A. Drive transmission unit incorporating expansible-pulley stepless speed changer. 4,353,270, Cl. 74-689.000.
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- Farr, Glyn P. R., to Lucas Industries Limited. Skid sensing means for hydraulic anti-skid braking systems. 4,353,440, Cl. 188-181.00A.
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- Farymann Diesel GmbH: *See—*
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- Faulin, Antonio. Ski binding structure. 4,353,574, Cl. 280-613.000.
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- Feight, Ingmar: *See—*
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- Feiner, Louis F., to U.S. Philips Corporation. Method of and device for determining a nuclear spin density distribution in a part of a body. 4,354,157, Cl. 324-312.000.
- Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Heating arrangement for revolving bodies whose diameter varies during production thereof by build-up welding. 4,353,689, Cl. 432-225.000.
- Ferrante, Jose. Dosifying containers for granulated products, pulverulent products, etc. 4,353,487, Cl. 222-500.000.
- Ferrante, Peter L.: *See—*
  - Polhemus, Marlan H.; and Ferrante, Peter L., 4,353,470, Cl. 211-126.000.
- Ferrini, Pier G.: *See—*
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- Ferris Manufacturing Corp.: *See—*
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- Ferro Corporation: *See—*
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  - Giugiaro, Giorgetto; and Mantovani, Aldo, 4,353,588, Cl. 296-37.100.
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- Filicicchia, Daniel: *See—*
  - Butterfield, Ted; Emory, Lyle J.; and Filicicchia, Daniel, 4,353,508, Cl. 239-590.300.
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- Finger, Richard H.: *See—*
  - Michel, Thomas J.; and Finger, Richard H., 4,354,268, Cl. 371-20.000.
- Fink, Allen H., to UOP Inc. Power recovery process using recuperative heat exchange. 4,353,811, Cl. 252-417.000.
- Finney, Roy P.; and Lynch, Henry W., to Medical Engineering Corporation. Penile erectile system. 4,353,360, Cl. 128-79.000.
- Firth, Donald, to Tosco Corporation. Hydrostatic retort seal. 4,353,558, Cl. 277-30.000.

- Fischer, Wolfgang: *See—*
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- Fisher, Laren D., to Bally Manufacturing Corporation. Electronic random delay generator for game devices or the like. 4,353,554, Cl. 273-143.00R.
- Fishter, Robert E.; Lada, Henry; and Manty, Brian A., to United Technologies Corporation. Chemical milling of high tungsten content superalloys. 4,353,780, Cl. 156-664.000.
- Fisli, Tibor S.: *See—*
  - Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., 4,353,615, Cl. 350-3.710.
- Fitz, Forest G., Jr.: *See—*
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- Flam, Frederick H. Duplicate bridge scoring system. 4,353,555, Cl. 273-148.00R.
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- Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., to Three Rivers Development Corporation. Radiation and electric current cooking of meat. 4,353,929, Cl. 426-243.000.
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- Fleischer, Helmut: *See—*
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  - Mumma, Harold J.; and Reed, Michael E., 4,353,455, Cl. 198-384.000.
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  - Hosler, John F.; and White, Paul W., 4,353,686, Cl. 425-83.100.
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  - Steidinger, Ronald L., 4,353,328, Cl. 119-20.000.
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- Francotyp GmbH: *See—*
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  - Raquet, Erwin; and Klatt, Richard, 4,353,586, Cl. 295-7.000.
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  - Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, 4,353,217, Cl. 60-693.000.
- Fuji Koeki Corporation: *See—*
  - Takematsu, Yoshiyuki, 4,354,141, Cl. 315-241.00P.
- Fuji Photo Film Co., Ltd.: *See—*
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  - Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
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  - Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, 4,353,817, Cl. 524-232.000.
- G. A. Serlachius Oy: *See—*
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  - Stockel, Dieter; and Kocher, Hans H., 4,354,075, Cl. 200-262.000.
- G. Siempelkamp GmbH & Co.: *See—*
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- Gall, John C., to Sears, Roebuck and Co. Knock-down lamp shade. 4,354,222, Cl. 362-352.000.
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- Ganster, Charles A.; and Nelson, Gerald V., to Texaco Inc. Feedstock temperature control system. 4,354,242, Cl. 364-501.000.
- Garabedian, Armen. Process for making a stress-free plastic article. 4,353,855, Cl. 264-126.000.
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- Garrett, Richard H. Turbocharger control valve. 4,353,210, Cl. 60-602.000.
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  - Cziptschirsch, Kurt, 4,353,591, Cl. 296-97.00H.
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  - Geer, Mary W.; and Geer, Charles W., deceased, 4,353,621, Cl. 350-145.000.
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  - Harding, Robert C., 4,354,180, Cl. 340-619.000.
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  - Giulie, Joseph D.; and Sabo, Michael K., 4,353,776, Cl. 156-555.000.
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  - Brunelle, Daniel J., 4,353,793, Cl. 208-262.000.
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  - Mark, Victor, 4,353,830, Cl. 260-326.860.
  - Morelock, Charles R., 4,353,953, Cl. 428-213.000.
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  - Solomon, Harvey D., 4,353,755, Cl. 148-136.000.
  - Staats, James E., 4,354,083, Cl. 219-10.55F.
  - Taylor, William R.; and Gonia, Richard J., 4,353,518, Cl. 248-60.000.
  - Turnbull, Fred G., 4,354,223, Cl. 363-124.000.
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  - Caser, Gustavo, 4,353,861, Cl. 264-561.000.
- General Tire & Rubber Company, The: *See—*
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  - Spletzer, Barry L., 4,354,181, Cl. 340-642.000.
- Gerhart, Fritz: *See—*
  - Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,353,828, Cl. 260-326.0NS.
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  - Gotcher, Alan J.; and Germeraad, Paul B., 4,353,961, Cl. 428-380.000.
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  - Conger, David R. L.; Gerson, Ira A.; and White, Richard E., 4,354,248, Cl. 364-724.000.
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  - Kachur, Nicholas W.; and Tomburo, Anthony F., 4,353,475, Cl. 215-223.000.
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  - Berz, Wolfgang, 4,353,722, Cl. 55-294.000.
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- Glory Kogyo Kabushiki Kaisha: *See—*
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  - MacDonald, Gene W., 4,353,850, Cl. 264-25.000.
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  - Ruip, Terrence M., 4,353,403, Cl. 152-353.00R.
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  - Olson, Daniel R.; and Goossens, John C., 4,353,959, Cl. 428-331.000.
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- Grant, Charles L.: *See—*
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- Gras, Rainer: *See—*
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  - Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
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- Gries, Josef: *See—*
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  - Kyung, Jai H.; Grimm, Robert A.; and Holehouse, Joseph G., 4,353,841, Cl. 260-453.00P.
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  - Bankert, Ralph A., 4,354,006, Cl. 525-359.500.
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  - Noritake, Yutaka; Kajitani, Ikuo; and Hirayama, Yutaka, 4,353,873, Cl. 422-179.000.
- Honda, Tetsuzo: *See—*
  - Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, 4,353,730, Cl. 71-29.000.
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  - Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., 4,354,074, Cl. 200-153.00J.
  - DiDomizio, Robert A., Jr., 4,353,525, Cl. 251-174.000.
  - Gelpey, Jeffrey C.; Marshall, Donald E., Jr.; and White, William J., 4,354,109, Cl. 250-349.000.
- Honeywell Information Systems Inc.: *See—*
  - Ryan, Charles P., 4,354,232, Cl. 364-200.000.
- Honkanen, Erkki J.: *See—*
  - Kaila, Juhani O. W.; Honkanen, Erkki J.; Alberty, Joachim E.; and Hukki, Jaakko J., 4,353,914, Cl. 424-267.000.
- Honkawa, Yoshinori: *See—*
  - Fujisawa, Nobuhiko; and Honkawa, Yoshinori, 4,353,297, Cl. 101-77.000.
- Horner, Michael; and Nissen, Axel, to BASF Aktiengesellschaft. 4-(2,5-Dihydroxyphen-1-yl)-crotonic acid and its derivatives, and the preparation of these compounds. 4,353,836, Cl. 260-410.500.
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  - Rashbrook, Robert B.; and Horner, Patrick J., 4,354,016, Cl. 528-128.000.
- Horvath, Gabor: *See—*
  - Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
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  - Flanigan, Richard J.; and Boles, Charles L., 4,353,400, Cl. 144-117.00R.
- Houghton, William E.: *See—*
  - Spendlow, Harry C., Sr.; and Houghton, William E., 4,353,524, Cl. 251-145.000.
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  - Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, 4,353,895, Cl. 424-182.000.
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  - Haenen, Henricus W. G.; and Huesken, Robertus S. N. M., 4,354,200, Cl. 358-23.000.
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- Huignard, Jean-Pierre: *See—*
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- Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Diazepine derivatives. 4,353,827, Cl. 260-239.30P.
- Hunter, David O., to Westinghouse Electric Corp. Compound angle wedges for coupling ultrasound into a curved surface object. 4,353,258, Cl. 73-644.000.
- Hunter, Elisa; and Gandy, Susan, to Clinipad Corporation, The. Container for sterilizing a flexible tube. 4,353,367, Cl. 128-213.00A.
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  - Doumaux, Arthur R., Jr.; Downey, James M.; Henry, Joseph P.; and Hurt, John M., 4,353,843, Cl. 260-466.000.
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- Ichinose, Hisashi: *See—*
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  - Kuckhermann, Gustav, 4,353,770, Cl. 156-308.400.
- Ieki, Hideharu, to Murata Manufacturing Co., Ltd. Absorber for piezoelectric surface acoustic wave device. 4,354,129, Cl. 310-313.00C.
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- Illy, Ernesto. Coffee machine. 4,353,293, Cl. 99-283.000.
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  - Barton, John E.; Collins, David J.; and Headford, Donald W., 4,354,034, Cl. 560-62.000.
  - Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,353,746, Cl. 106-89.000.
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- Inoue, Satoru: *See—*
  - Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,353,916, Cl. 424-270.000.
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- Interlube Systems Ltd.: *See—*
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- International Business Machines Corporation: *See—*
  - Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
  - Barteck, Joseph C., 4,354,194, Cl. 346-75.000.
  - Craft, James A., 4,353,658, Cl. 400-232.000.
  - Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, 4,354,229, Cl. 364-200.000.
  - Fineman, Jonathan P.; and Kieny, Leonard A., Jr., 4,353,778, Cl. 156-644.000.
  - Hays, Daniel O., Jr.; Maholick, Andrew W.; and Mize, William N., 4,354,227, Cl. 364-200.000.
  - Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.
  - Judd, Ian D., 4,354,143, Cl. 315-368.000.
  - Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., 4,354,228, Cl. 364-200.000.
  - Rohen, James E., 4,354,100, Cl. 235-449.000.
  - Schaefer, John O., 4,353,657, Cl. 400-208.000.
  - Zimmerman, Lee T., 4,353,653, Cl. 400-70.000.
- International Flavors & Fragrances Inc.: *See—*
  - Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,354,043, Cl. 568-445.000.
- International Harvester Company: *See—*
  - Gagliani, John; and Lee, Raymond, 4,353,998, Cl. 523-219.000.
  - Northcutt, Charles D., 4,353,947, Cl. 428-116.000.
- International Standard Electric Corporation: *See—*
  - Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., 4,353,938, Cl. 427-214.000.
  - Wurst, Walter K., 4,354,264, Cl. 370-110.000.
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- Inukai, Yukio: *See—*
  - Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.
- Inventive Technology International, Inc.: *See—*
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- IRT Corporation: *See—*
  - Lukens, Herbert R., Jr.; and Williams, Colin B., 4,353,886, Cl. 424-1.000.
- Irvine Sensors Corporation: *See—*
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- Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, to Victor Company of Japan, Ltd. Variable-directivity microphone device. 4,354,059, Cl. 179-1.0DM.
- Ishii, Katsuya: *See—*
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- Ishii, Satoru: *See—*
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- Ishii, Shinzo: *See—*
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- Ishii, Toshio: *See—*
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- Ishikawa Seisakusho Ltd.: *See—*
  - Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, 4,353,397, Cl. 139-435.000.
- Ishimoto, Shoji, to Nippon Electric Co., Ltd. Semiconductor memory device having improved column selection structure. 4,354,259, Cl. 365-230.000.

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Iwasa, Yamahiro, to Asahi Chemical Research Laboratory Co., Ltd. Power conductive coating mixed with copper powder. 4,353,816, Cl. 252-512.000.

Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, to Nippon Mining Company Limited. Method and apparatus for automatically punching the tuyeres of a converter. 4,353,530, Cl. 266-45.000.

J. R. Wauford and Company, Consulting Engineers, Inc.: *See—*

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Spears, A. Barry, 4,353,251, Cl. 73-215.000.

Jackson, W. Shaun; and Bohm, Leslie E. Pannier mounting system for cycles. 4,353,490, Cl. 224-32.00A.

Jacob, Adir, to LFE Corporation. Selective plasma polysilicon etching. 4,353,777, Cl. 156-643.000.

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Jammet, Pierre. Toilet seat. 4,353,137, Cl. 4-237.000.

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Janssen, Lambert R. Electrodynamic balance for a detection. 4,354,178, Cl. 340-572.000.

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Jantzen, Steven L., to ACF Industries, Incorporated. Railway car center plate assembly. 4,353,311, Cl. 105-199.00C.

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Jeans, Edward L., to Cadbury Schweppes PLC. Liquid level sensor. 4,353,252, Cl. 73-293.000.

Jeffrey, Erank R.; and Shanks, Howard R., to United States of America, Energy. RF Sputtering for preparing substantially pure amorphous silicon monohydride. 4,353,788, Cl. 204-192.00S.

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Jenkins, Oliver J., Jr.; and Mayfield, Charles W., to Youngstown Steel Door Company, The. Door repair method and repair section therefor. 4,353,187, Cl. 49-501.000.

Jenkinson, Charles. Exercising apparatus. 4,353,547, Cl. 272-130.000.

Jennings, Hugh F. Rotatable sign. 4,353,179, Cl. 40-479.000.

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Johnson, Burton R. Three dimensional educational toy model subdivision. 4,353,699, Cl. 434-72.000.

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Jordan, Armin, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for positioning a workpiece. 4,353,170, Cl. 33-174.0TA.

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Judd, Ian D., to International Business Machines Corporation. Equipment to correct aberrations of a cathode ray beam. 4,354,143, Cl. 315-368.000.

Junkas, Ronald J.; and Kyes, Robert W. Fishing box. 4,353,182, Cl. 43-54.50R.

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Kaila, Juhani O. W.; Honkanen, Erkki J.; Alberty, Joachim E.; and Hukki, Jaakko J., to Orion-yhtyma Oy. Antitussive anilides. 4,353,914, Cl. 424-267.000.

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Kaiser, Klaus: *See—*

Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.

Kaiser, Mark E.; and Larson, David L., to Dow Chemical Company, The. Preparation of 2-substituted-2-oxazolines with organic zinc salt catalysts. 4,354,029, Cl. 548-239.000.

Kaiser Steel Corporation: *See—*

Williamson, Calvin C., 4,353,235, Cl. 72-130.000.

Kaji, Kiyokane, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sensor with cross-base mounting plate. 4,354,131, Cl. 310-328.000.

Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, to Bridgestone Tire Company, Limited. Golf ball. 4,353,557, Cl. 273-227.000.

Kajitani, Ikuo: *See—*

Noritake, Yutaka; Kajitani, Ikuo; and Hirayama, Yutaka, 4,353,873, Cl. 422-179.000.

Kakitani, Yohtaro: *See—*

Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.

Kalberer, Heinz: *See—*

Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, 4,353,939, Cl. 427-238.000.

Becker, Reinhold; Kalberer, Heinz; and Regner, Richard, 4,353,940, Cl. 427-238.000.

Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, to Mobil Tyco Solar Energy Corporation. Displaced capillary dies. 4,353,757, Cl. 148-172.000.

Kallfelz, Albert J.: *See—*

Brothers, Warren S.; and Kallfelz, Albert J., 4,353,234, Cl. 72-98.000.

Kaman Aerospace Corporation: *See—*

Kaman, Charles W., II, 4,353,862, Cl. 264-571.000.

Kaman, Charles W., II, to Kaman Aerospace Corporation. Method for making sound board. 4,353,862, Cl. 264-571.000.

Kaminaka, Nobuyuki: *See—*

Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,354,212, Cl. 360-113.000.

Kamiya, Kazuhiro: *See—*

Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.

Kanai, Hideo; Shinagawa, Akihiro; Yamazaki, Takahiko; and Itai, Reiichi, to Japan Carlit Co., Ltd., The. Insoluble anode for generating oxygen and process for producing the same. 4,353,790, Cl. 204-290.00F.

Kanai, Kenji: *See—*

Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,354,212, Cl. 360-113.000.

Kanazawa, Kuniyoshi. Oil brake device for use in bicycles. 4,353,570, Cl. 280-283.000.

Kandarian, Ernest, to Fresno Bag Co., Inc., a part interest. Wire tying fixture. 4,353,295, Cl. 100-8.000.

Kane, James: *See—*

Gale, Michael T.; and Kane, James, 4,353,622, Cl. 350-162.0SF.

Kaneda, Koichi: *See—*

Hasegawa, Osamu; Yano, Kenji; and Kaneda, Koichi, 4,354,199, Cl. 357-19.000.

Kanegae, Hidetoshi, to Nissan Motor Company, Limited. Fuel injection control system for an internal combustion engine. 4,354,239, Cl. 364-431.050.

Kaneko, Kazuyoshi; and Suzuki, Katsumi, to Kabushiki Kaisha Morita Seisakusho; and Kazuyoshi Kaneko. Headrest control device for a treatment chair. 4,353,595, Cl. 297-408.000.

Kaneko, Makoto: *See—*

Adachi, Takeshi; Suzuki, Hideo; and Kaneko, Makoto, 4,353,278, Cl. 84-1.010.

Kaneko, Noboru: *See—*

Tabata, Junichi; and Kaneko, Noboru, 4,354,187, Cl. 340-763.000.

Kaneko, Tamaki: *See—*

Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.

Kaneko, Yoichi: *See—*

Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, 4,354,191, Cl. 343-7.500.

Kao Soap Co., Ltd.: *See—*

Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.

Kapral, Christopher W.: *See—*

Cooperman, Michael; and Kapral, Christopher W., 4,354,266, Cl. 370-112.000.

Karabinis, Peter D., to Bell Telephone Laboratories, Incorporated. Equalizing signal combiner. 4,354,276, Cl. 455-139.000.

Karayannis, Nicholas M.; and Skryantz, John S., to Standard Oil Company (Indiana). Catalyst for polymerization of alpha-olefins. 4,353,813, Cl. 252-429.00B.

Kariya, Kyoji: *See—*

Toyama, Jiro; Takaoka, Hiromi; and Kariya, Kyoji, 4,354,108, Cl. 250-251.000.

Karl Schmidt GmbH: *See—*

Grothe, Klaus, 4,353,266, Cl. 74-552.000.

Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V. Apparatus for investigation of fluorescence characteristics of microscopic objects. 4,354,114, Cl. 250-458.100.

Karol, Frederick J.: *See—*

Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,354,009, Cl. 526-125.000.

Karpenko, Anatole N., to Anchor/Darling Valve Company. Swing check valve with internally balanced disc. 4,353,390, Cl. 137-527.800.

Karrakussoglu, Stefanos. Orthodontic appliance. 4,353,692, Cl. 433-16.000.

Kasai, Masaji: *See—*

Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.

Kashkai, Chingiz M. O. Gas-liquid analyzer. 4,353,789, Cl. 204-195.00R.

Kassai, Ferenc: *See—*

Almasi, Istvan; Kassai, Ferenc; and Erdelyi, Attila, 4,353,292, Cl. 98-50.000.

Kassner, Klaus: *See—*

Speidel, Volker; Bergmann, Eduard; Kassner, Klaus; and Berginski, Werner-Ernst, 4,354,155, Cl. 324-133.000.

Kato, David S., to Ford Aerospace & Communications Corporation. High voltage buffer amplifier. 4,354,163, Cl. 330-293.000.

Kato, Masayuki: *See—*

Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.

Kato, Yoshiki: *See—*

Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, 4,353,937, Cl. 427-130.000.

Katz, Lawrence E.; and Gay, Walter A., to Olin Corporation. Selected 2-trichloromethyl-4-pyrimidinyl carbonates and their use as fungicides. 4,353,908, Cl. 424-251.000.

Kaufman, Robert J.: *See—*

Franz, John E.; and Kaufman, Robert J., 4,353,731, Cl. 71-88.000.

Kavanaugh, Mark A.: *See—*

Hoffman, Robert K.; and Kavanaugh, Mark A., 4,353,290, Cl. 91-461.000.

Kawaguchi, Hiroshi: *See—*

Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, 4,353,796, Cl. 209-240.000.

Kawaguchi, Takeyuki: *See—*

Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*

Deutsch, Ralph, 4,353,279, Cl. 84-1.240.

Kawamoto, Frank T.: *See—*

Nelson, Craig E.; and Kawamoto, Frank T., 4,353,395, Cl. 137-861.000.

Kawamoto, Mutsumi: *See—*

Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, 4,354,236, Cl. 364-424.100.

Kawamura, Tadanori: *See—*

Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.

Kawanami, Takao: *See—*

Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*

Sato, Masato; and Yamashita, Masanobu, 4,353,847, Cl. 261-36.00A.

Kawasaki Steel Corporation: *See—*

Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.

Kayser-Roth Hosiery, Inc.: *See—*

Shields, Harper; and Farrell, Roscoe M., 4,353,227, Cl. 66-146.000.

Shields, Harper; and Farrell, Roscoe M., 4,353,228, Cl. 66-157.000.

Kazuyoshi Kaneko: *See—*

Kaneko, Kazuyoshi; and Suzuki, Katsumi, 4,353,595, Cl. 297-408.000.

Kefalas A/S: *See—*

Perregaard, Jens K., 4,353,910, Cl. 424-256.000.

Keller Companies, Inc.: *See—*

Keller, Robert R., 4,353,353, Cl. 126-429.000.

Keller, Robert R., to Keller Companies, Inc. Low temperature solar furnace and method. 4,353,353, Cl. 126-429.000.

Keller, Wolfgang; and Weiss, Wolfgang, to Bayer Aktiengesellschaft. Rotary tube reactor for the thermal treatment of material. 4,353,874, Cl. 422-193.000.

Kelly, Joseph B.: *See—*

Slabach, John C., Jr.; and Kelly, Joseph B., 4,353,728, Cl. 65-273.000.

Kendall, Kevin: *See—*

Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,353,746, Cl. 106-89.000.

Birchall, James D.; and Kendall, Kevin, 4,353,747, Cl. 106-89.000.

Birchall, James D.; Kendall, Kevin; and Howard, Anthony J., 4,353,748, Cl. 106-89.000.

Kennedy, Alvin B., Jr. Drilling fluid gas and solids removal system. 4,353,719, Cl. 55-170.000.

Kennedy, Stanley P., to Du Pont de Nemours, E. I., and Company. Device for detecting ferromagnetic materials. 4,354,156, Cl. 324-228.000.

Kentrox Industries, Inc.: *See—*

Pierce, Lyle R., 4,354,160, Cl. 330-107.000.

Keogh, Michael J., to Union Carbide Corporation. Compositions based on water-curable, silane modified copolymers of alkylene-alkyl acrylates. 4,353,997, Cl. 523-210.000.

Kep Enterprises: *See—*

Poggemiller, Erhard; and Sweet, Ralph, 4,353,423, Cl. 172-260.500.

Kesselring, Kurt: *See—*

Christ, Bruno; and Kesselring, Kurt, 4,354,035, Cl. 560-75.000.

Kettlestrings, John S. Toy-like instrument for drawing circles. 4,353,166, Cl. 33-27.00C.

Kieny, Leonard A., Jr.: *See—*

Fineman, Jonathan P.; and Kieny, Leonard A., Jr., 4,353,778, Cl. 156-644.000.

Kienzle Apparate GmbH: *See—*

Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.

Kierstead, Richard W.: *See—*

Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,354,039, Cl. 562-582.000.

Kiesel, Donald F. Seismically actuated valve release structure. 4,353,383, Cl. 137-45.000.

Kikuchi, Hideo: *See—*

Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.

Kimura, Hiroshi, to Toshiba Silicone Co., Ltd. Process for preparing epoxy-modified silicone resins. 4,354,013, Cl. 528-16.000.

Kimura, Kenji. Automatic focusing control device. 4,354,204, Cl. 358-227.000.

Kinder, Leon. Spraying apparatus. 4,353,505, Cl. 239-167.000.

King, Jeannette W.: *See—*

Couse, Nancy L.; and King, Jeannette W., 4,353,988, Cl. 435-287.000.

King, Thomas M.; and Daniel, Sam M., to Motorola Inc. Processing unit for multiplying two mathematical quantities including at least one complex multiplier. 4,354,249, Cl. 364-754.000.

Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, to Toyo Engineering Corporation; and Mitsui Toatsu Chemicals, Incorporated. Granulating process. 4,353,730, Cl. 71-29.000.

Kirby, Robert A., to Exxon Production Research Company. Recoil reducing system for gas guns. 4,353,431, Cl. 181-118.000.

Kishii, Toru, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for surface stress measurement of glass coating and transparent plastic product. 4,353,649, Cl. 356-33.000.

Kishimoto, Ryoichi: *See—*

Koga, Kunio; and Kishimoto, Ryoichi, 4,353,784, Cl. 203-16.000.

Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, to Narumi China Corporation; and Kao Soap Co., Ltd. Green ceramic tapes and method of producing them. 4,353,958, Cl. 428-329.000.

Kitamura, Satoru: *See—*

Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, 4,353,397, Cl. 139-435.000.

Kitasato Kenkyusho: *See—*

Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.

Kiuchi, Yasuhiro: *See—*

Nishiyama, Masanobu; and Kiuchi, Yasuhiro, 4,353,142, Cl. 15-144.00R.

Kizawa, Yoshihiro: *See—*

Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, 4,353,217, Cl. 60-693.000.

Kjoller, Hans O. S.: *See—*

Carlsson, Karl-Johan V.; and Kjoller, Hans O. S., 4,354,231, Cl. 364-200.000.

Klaschka, John T.; and Davies, Michael J., to United Kingdom Atomic Energy Authority. Heat pipes and thermal siphons. 4,353,415, Cl. 165-104.210.

Klatt, Richard: *See—*

Raquet, Erwin; and Klatt, Richard, 4,353,586, Cl. 295-7.000.

Klaussner, Hans-Jurgen. Drive and control arrangement for a mechanical eccentric press. 4,354,147, Cl. 318-363.000.

Klement, Johann: *See—*

Husslein, Julius; and Klement, Johann, 4,354,084, Cl. 219-10.55R.

Kline, Mark H.: *See—*

Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.

Klingamon, Lon C. Portable hand stamp storage and display device. 4,353,468, Cl. 211-39.000.

Klingberg, Peter: *See—*

Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, 4,353,718, Cl. 55-112.000.

Knaack, Karl: *See—*

Bitsch, Harald; and Knaack, Karl, 4,353,606, Cl. 308-189.00R.

Knapp, Gerald W., to Elite Enterprises Inc. Automobile frame conversion unit. 4,353,578, Cl. 280-781.000.

Knechtel, Wilhelm, to Canon Kabushiki Kaisha. Copying apparatus. 4,353,638, Cl. 355-8.000.

Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, to Xerox Corporation. Sheet collection apparatus and sorters incorporating same. 4,353,542, Cl. 271-294.000.

Knight, William R.: *See—*

Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.

Knorr, Fritz J.: *See—*

Harris, Joel M.; and Knorr, Fritz J., 4,353,242, Cl. 73-23.100.

Kobayashi, Masakazu, to Kyowa Vacuum Engineering, Ltd. Vacuum apparatus. 4,353,222, Cl. 62-268.000.

Kobayashi, Masakazu: *See—*

Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.

Koblenzer, Heinz, to Langbein-Pfanhauser Werke AG. Apparatus for the treating of articles. 4,353,323, Cl. 118-61.000.

Koch, George R.: *See—*

Williams, Norman; and Koch, George R., 4,354,111, Cl. 250-396.00R.

Koch, Klaus: *See—*

Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, 4,353,895, Cl. 424-182.000.

Koch, Siegfried: *See—*

Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.

Kocher, Hans H.: *See—*

Stockel, Dieter; and Kocher, Hans H., 4,354,075, Cl. 200-262.000.

Kocks Technik GmbH & Company: *See—*

Holthoff, Helmut, 4,353,513, Cl. 242-82.000.

Koehring Company, The: *See—*

Salani, Chittaranjan, 4,353,261, Cl. 74-87.000.

Kofink, Wolfgang, to Robert Bosch GmbH. Electrical generator. 4,354,150, Cl. 322-63.000.

Koga, Kunio; and Kishimoto, Ryoichi, to Daicel Chemical Industries, Ltd. Method of recovery of acetic acid. 4,353,784, Cl. 203-16.000.

Kogane, Mikio; and Yamazaki, Seiichi, to Fuji Photo Film Co., Ltd. Negative film carrier. 4,353,645, Cl. 355-75.000.

Kohler, Hans W., to United States of America, Army. Radio ranging. 4,354,192, Cl. 343-14.000.

Koide, Hiroshi: *See—*

Tenmyo, Shigemoto; and Koide, Hiroshi, 4,354,146, Cl. 318-341.000.

Kojima, Hiroaki, to Minolta Camera Kabushiki Kaisha. Device for cleaning optical fiber tube incorporated in image forming apparatus. 4,353,636, Cl. 355-1.000.

Kolakowski, Thomas A.; and Vishnevsky, Constantine, to TRW Inc. Casting method. 4,353,405, Cl. 164-122.200.

Kolar, Max: *See—*

Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.

Kolibas, James A., to Nordson Corporation. Apparatus for the stripping of the inside seam of a can body moving at a high speed. 4,353,326, Cl. 118-696.000.

Kolkmann, Ingeborg. Hair curler. 4,353,380, Cl. 132-40.000.

Koller, Peter; and Mayr, Ulrich, to Siemens Aktiengesellschaft. Device for teletypewriters for the deposit of sheet-type recording media. 4,354,055, Cl. 178-42.000.

Kolling, Heinrich: *See—*

Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,353,913, Cl. 424-263.000.

Komatsu, Akira: *See—*

Yamada, Kyota; and Komatsu, Akira, 4,354,067, Cl. 179-146.00H.

Kominami, Yasuo: *See—*

Sato, Tetsuo; and Kominami, Yasuo, 4,354,209, Cl. 360-61.000.

Komine, Kikuji: *See—*

Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.

Konijnendijk, Willem L.; Peters, Robert C.; and Willemsen, Petrus J. M., to U.S. Philips Corporation. Low-pressure mercury vapor discharge lamp. 4,354,139, Cl. 313-486.000.

Konishiroku Photo Industry Co., Ltd.: *See—*

Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.

Konrath, Karl: *See—*

Straubel, Max; Konrath, Karl; and Brink, Gerhard, 4,353,340, Cl. 123-365.000.

Koppe, Robert G. Pouch forming and filling apparatus. 4,353,198, Cl. 53-570.000.

Kotthaus, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method for fabricating gears with generated tooth flanks. 4,353,671, Cl. 409-26.000.

Koufos, James. Securing and clamping device. 4,353,537, Cl. 269-266.000.

Kovar, Josef; and Suchy, Milos, to Ustav pro vyzkum motorvych vozidel. Suspension of vehicles for rugged terrain. 4,353,428, Cl. 180-7.00R.

Kowa Company, Ltd.: *See—*

Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.

Koyama, Naoki, to Canon Kabushiki Kaisha. Lens control mechanism for television camera. 4,354,203, Cl. 358-227.000.

Kracik, Jiri: *See—*

Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, 4,353,368, Cl. 128-214.00R.

Kraft, Wayne R.: *See—*

Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., 4,354,228, Cl. 364-200.000.

Kragen, Horst; and Brigand, Gerard, to CECA S.A. Enhanced oil recovery. 4,353,805, Cl. 252-8.55D.

Krakow, Heinz: *See—*

Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.

Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., to Xerox Corporation. Dynamic mounting for holographic spinners. 4,353,615, Cl. 350-3.710.

Kramer, Franz: *See—*

Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.

Kramer, Horst-Dieter: *See—*

Potthast, Ruthard; Mentzel, Werner; and Kramer, Horst-Dieter, 4,354,038, Cl. 562-475.000.

Krause, Dieter, to Siemens Aktiengesellschaft. Device for removing the lacquer from waveguides. 4,353,382, Cl. 134-113.000.

Kresak, Fedor P.: *See—*

Beer, Frederick W.; Davis, Robert A.; Kresak, Fedor P.; and Kuev, Conio C., 4,353,196, Cl. 53-451.000.

Kriebich, Willard H.: *See—*

Gilleo, Kenneth B.; and Kriebich, Willard H., 4,353,858, Cl. 264-268.000.

Krocker, Robert E.: *See—*

Saunders, James F.; and Krocker, Robert E., 4,353,409, Cl. 165-2.000.

Krosnick, Andrew. Paddle ball racket with adjustment for flexing. 4,353,550, Cl. 273-67.00R.

Kruger, Hendrik R.: *See—*

Rayment, David J.; and Kruger, Hendrik R., 4,354,099, Cl. 235-449.000.

Krumhansl, Mark U. Heating and cooling system. 4,353,412, Cl. 165-59.000.

Krynski, Edward P., to D. Gottlieb & Co. Drop target assembly for pinball game. 4,353,553, Cl. 273-121.00R.

Kuan, Tiong H., to General Tire & Rubber Company, The. Rubber slab dip. 4,354,001, Cl. 524-501.000.

Kubbota, Massashi: *See—*

Noda, Toru; Ichihashi, Yoshinobu; and Kubbota, Massashi, 4,353,981, Cl. 430-536.000.

Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, to Mitsubishi Mining & Cement Co., Ltd. Apparatus for digging and transporting soil and sand, stones and rocks, minerals and the like. 4,353,796, Cl. 209-240.000.

Kubota, Hitoshi: *See—*

Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.

Kubota, Ltd.: *See—*

Isoyama, Mitsunori; Takeda, Susumu; and Nakai, Masatoshi, 4,353,388, Cl. 137-240.000.

Kuchar, James F.: *See—*

Mehrens, Douglas W.; and Kuchar, James F., 4,353,846, Cl. 261-4.000.

Kuckhermann, Gustav, to Icoma Packtechnik GmbH. Method for welding the inner layers of multi-layer paper sacks. 4,353,770, Cl. 156-308.400.

Kuev, Conio C.: *See—*

Beer, Frederick W.; Davis, Robert A.; Kresak, Fedor P.; and Kuev, Conio C., 4,353,196, Cl. 53-451.000.

Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, to Kienzle Apparate GmbH. Arrangement for obtaining an indication of efficiency of operation of a motor vehicle. 4,354,173, Cl. 340-52.00F.

Kuka, James M. Telephone handset with illuminated magnifier. 4,354,063, Cl. 179-103.000.

Kukulak, Eduard: *See—*

Griesheimer, Willi; and Kukulak, Eduard, 4,353,335, Cl. 123-185.00P.

Kulachek, Mikhail I.: *See—*

Zhukovsky, Alexei A.; Butkin, Vladimir D.; and Kulachek, Mikhail I., 4,354,233, Cl. 364-420.000.

Kulakov, Vladimir I.: *See—*

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Lee, Richard M., to Westinghouse Electric Corp. Apparatus for removing NOx and for providing better plant efficiency in combined cycle plants. 4,353,206, Cl. 60-39.18B.

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- Leeder, Graham M.: *See—*
  - Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., 4,354,128, Cl. 310-242.000.
- Leenders, Leon G., to Centre d'Etude de l'Energie Nucleaire, C.E.N. Method for localizing a leaking rod in a nuclear fuel assembly. 4,353,863, Cl. 376-251.000.
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  - Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,353,904, Cl. 424-250.000.
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- Leicht, John R.: *See—*
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- Leitner, Gordon F., to Water Services of America, Inc. Heat exchanger tube cleaning. 4,353,414, Cl. 165-95.000.
- Lemelson, Jerome H. Switch and lock activating system and method. 4,354,189, Cl. 340-825.310.
- Lenke, Dieter: *See—*
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- Lentz, Ronald R., to Litton Systems, Inc. Microwave oven leakage detector and method of using same to test door seal leakage. 4,354,153, Cl. 324-95.000.
- Leonard, Ronald J., to Baxter Travenol Laboratories, Inc. Hydrophobic diffusion membranes for blood having wettable surfaces. 4,353,799, Cl. 210-321.300.
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  - Speidel, Volker; Bergmann, Eduard; Kassner, Klaus; and Berginski, Werner-Ernst, 4,354,155, Cl. 324-133.000.
- Lerco Corporation: *See—*
  - Haley, Ernest K., 4,353,457, Cl. 198-774.000.
- Lersmacher, Bernhard, to U.S. Philips Corporation. Method of solid-state pyrolysis of organic polymeric substances. 4,353,782, Cl. 201-25.000.
- Lesher, George Y.; and Dickinson, William B., to Sterling Drug Inc. 3-Chloro-6-(pyridinyl)-pyridazines. 4,354,026, Cl. 544-238.000.
- Lesowsky, Joseph. Wall anchor. 4,353,673, Cl. 411-38.000.
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  - McFadyen, Robert C., 4,353,480, Cl. 221-63.000.
- Levy, Michael A. Penetrating topical medicament. 4,353,896, Cl. 424-195.000.
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  - Jacob, Adir, 4,353,777, Cl. 156-643.000.
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  - Hasch, Gunter; and Minner, Willy, 4,354,161, Cl. 330-254.000.
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  - Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.
- Lienerth, Aladar: *See—*
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  - Scott-Jackson, Dennis G.; and Lim, Hui C., 4,353,705, Cl. 474-158.000.
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- Linquist, Wayne; and Pearson, Vernon, to Ex-Cell-O Corporation. Draw punch. 4,353,164, Cl. 30-360.000.
- Lipshield, Eugene C., to Orscheln Co. Brake cable operating apparatus including anchor plate spacer. 4,353,265, Cl. 74-501.00R.
- Little, Roger G.: *See—*
  - Armini, Anthony J.; and Little, Roger G., 4,353,160, Cl. 29-572.000.
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  - Lentz, Ronald R., 4,354,153, Cl. 324-95.000.
- Liu, Gordon Y. T. Waterbike. 4,353,321, Cl. 114-283.000.
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  - Albany, Stanley J.; and Lizardi, Robert, Jr., 4,354,052, Cl. 174-48.000.
- Lockformer Company, The: *See—*
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- Loctite Corporation: *See—*
  - Argazzi, Dennis J., 4,353,325, Cl. 118-683.000.
- Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, to USV Pharmaceutical Corporation. Triazoloquinoxalin-4-ones. 4,354,027, Cl. 544-346.000.
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  - Damke, Otto; and Reutter, Hubert F., 4,353,510, Cl. 242-118.320.
- Lomas, David A.; and Thompson, Gregory J., to UOP Inc. Fluid catalyst regeneration process. 4,353,812, Cl. 252-417.000.
- Lombardo, Richard S. R. Vehicle throttle control. 4,353,443, Cl. 192-3.00T.
- Lomnes, Randy K.: *See—*
  - Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
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  - Bowman, James L., 4,353,941, Cl. 427-287.000.
- Long, William E.: *See—*
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- Lonnemo, Kurt R., to Sperry Corporation. Power transmission. 4,353,289, Cl. 91-420.000.
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  - Bore, Pierre; and De Labbey, Arnaud, 4,353,708, Cl. 23-230.00B.
- Lotoski, John G. D., to Sea Trec Enterprises, Ltd. Quick-coupling link. 4,353,203, Cl. 59-85.000.
- Loup, Ronald L., to Double A Products Co. Solenoid operated directional valve with detent mechanism. 4,353,394, Cl. 137-625.650.
- Lovell, James B., to American Cyanamid Co. Amidino hydrazone . $C_{17}H_{29-35}$ COOH insect and fire ant bait formulations. 4,353,907, Cl. 424-251.000.
- Lovercheck, Susan L. Frozen dessert product. 4,353,927, Cl. 426-101.000.
- Lovett, Bruce E. Lockable removable decorative and protective panels for vehicles. 4,353,584, Cl. 293-1.000.
- Lowe, Frederick G., to UOP Inc. Vehicle seats. 4,353,594, Cl. 297-307.000.
- Lowe, George F.; Gutkin, Peter A.; and Wehrenberg, Charles C. Attachable, image-modifying screen for television images. 4,354,205, Cl. 358-250.000.
- Lucas, Arthur C.: *See—*
  - Mitrofanov, Nicholas; and Lucas, Arthur C., 4,354,135, Cl. 313-93.000.
- Lucas Industries Limited: *See—*
  - Chew, Anthony J.; Leeder, Graham M.; and Pickford, Thomas W., 4,354,128, Cl. 310-242.000.
  - Farr, Glyn P. R., 4,353,440, Cl. 188-181.00A.
  - Mowbray, Dorian F., 4,353,336, Cl. 123-198.00B.
- Lukens, Herbert R., Jr.; and Williams, Colin B., to IRT Corporation. Method for detecting organic vapors. 4,353,886, Cl. 424-1.000.
- Luker, Charles E., to Sunbeam Plastics Corporation. Load bearing closure. 4,353,474, Cl. 215-220.000.
- Lummus Company, The: *See—*
  - Van Meteren, Johannes, 4,353,162, Cl. 29-727.000.
- Luther, Lars C.: *See—*
  - Blank, Stuart L.; Gyorgy, Ernst M.; LeCraw, Roy C.; and Luther, Lars C., 4,354,254, Cl. 365-33.000.
- Lutzenberger, Kurt, to Switchcraft, Inc. Switch position indicator. 4,354,076, Cl. 200-308.000.
- Luzzana, Massimo. Method and apparatus for the determination of substances in biological solutions by differential pH measurement. 4,353,867, Cl. 422-68.000.
- Lyakhevich, Genrickh D.; and Sokolovsky, Alexandr E. Method of making a suspension of a filler for rubber mixtures. 4,353,752, Cl. 106-309.000.
- Lynch, Henry W.: *See—*
  - Finney, Roy P.; and Lynch, Henry W., 4,353,360, Cl. 128-79.000.
- Lysholm, Donna L.: *See—*
  - Pellet, Regis J.; Bertolacini, Ralph J.; and Lysholm, Donna L., 4,353,814, Cl. 252-441.000.
- M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
  - Schuster, Georg, 4,353,300, Cl. 101-365.000.
- M.L. Aviation Company Limited: *See—*
  - Benning, Vernon A., 4,353,528, Cl. 254-360.000.
- Macaster Controls, Inc.: *See—*
  - Boyce, William A., 4,353,568, Cl. 280-94.000.
- MacDonald, Gene W., to GMSG, Inc. Method of making a bowling ball. 4,353,850, Cl. 264-25.000.
- Machinefabriek G. J. Nijhuis B.V.: *See—*
  - Nijhuis, Johan W., 4,353,147, Cl. 17-1.00E.
- MacLennan, Roderick A.; and Mulvey, William J., to United Technologies Corporation. Automatic lock-positioning of foldable helicopter blades. 4,354,234, Cl. 364-424.000.
- MacMillan Bloedel Limited: *See—*
  - Schilling, Walter W., 4,353,401, Cl. 144-193.00A.
- Macnabb, Thomas C. Underwater swimming goggles and masks with gravity-operated wipers. 4,353,134, Cl. 2-428.000.
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  - Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., 4,353,257, Cl. 73-623.000.
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  - Dery, Tibor; and Madocsay, Attila, 4,353,693, Cl. 433-27.000.

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  - Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
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- Maezawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Calendar display device. 4,353,178, Cl. 40-107.000.
- Magic Mold Corporation: *See—*
  - Glickman, Joel I., 4,353,663, Cl. 403-230.000.
- Magnuson, Roland A., to PACCAR Inc. Recoil force correction for elevation in automatic weapons employing soft recoil. 4,353,285, Cl. 89-42.00B.
- Magyar Aluminiumipari Troszt: *See—*
  - Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.
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  - Hays, Daniel O., Jr.; Maholick, Andrew W.; and Mize, William N., 4,354,227, Cl. 364-200.000.
- Mahon, Michael J., to Burroughs Corporation. Automatic power disconnect system for wafer scale integrated circuits. 4,354,217, Cl. 361-104.000.
- Mahoney, Kenneth J. Basketball goal assembly. 4,353,548, Cl. 273-1.50R.
- Maida, Osamu, to Nippon Kogaku K.K. Camera with motor drive device. 4,353,633, Cl. 354-173.000.
- Maier, Hermann F. L., to U.S. Philips Corporation. Leadthrough for electric conductors. 4,353,623, Cl. 350-391.000.
- Maier, William H.: *See—*
  - Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, 4,353,794, Cl. 208-321.000.
- Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, to Robert Bosch GmbH. Diaphragm pressure regulator. 4,353,385, Cl. 137-115.000.
- Maldonado, Paul: *See—*
  - Faure, Alain; Maldonado, Paul; Husson, Jean-Francois; and Coste, Camille, 4,353,729, Cl. 71-11.000.
- Malicet, Philippe: *See—*
  - Breton, Jean-Jacques; and Malicet, Philippe, 4,353,238, Cl. 72-209.000.
- Maloblocki, Richard, to Amtec Development Company. Electronic control system for pneumatic-hydraulic pump dredge. 4,353,174, Cl. 37-58.000.
- Malosh, James B.: *See—*
  - Ahner, Walter D.; and Malosh, James B., 4,353,688, Cl. 432-217.000.
- Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Electric hair curling iron with rechargeable battery power supply. 4,354,092, Cl. 219-225.000.
- Manabe, Toshikatsu: *See—*
  - Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, 4,353,808, Cl. 252-301.40P.
- Manaka, Toshio; Atago, Takeshi; Ishii, Toshio; and Mouri, Yasunori, to Hitachi, Ltd. Method of controlling air-fuel ratio of internal combustion engine so as to effectively maintain the air fuel ratio at a desired air-fuel ratio of $\lambda=1$. 4,354,238, Cl. 364-431.050.
- Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, to Rieter Machine Works Ltd. Method of and apparatus for maintaining substantially constant a quantity of opened fibrous material. 4,353,667, Cl. 406-29.000.
- Mannesmann Aktiengesellschaft: *See—*
  - Hiersig, Heinz M., 4,353,269, Cl. 74-682.000.
- Mannesmann DeMag A.G.: *See—*
  - Bitsch, Harald; and Knaack, Karl, 4,353,606, Cl. 308-189.00R.
- Mannesmann Tally Corporation: *See—*
  - Talbot, Kevin J., 4,353,262, Cl. 74-108.000.
- Mansfield, Dennis L.: *See—*
  - Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,353,924, Cl. 424-317.000.
- Manske, Wendell J.; and Hawkins, Paul M., to Minnesota Mining and Manufacturing Company. Sanitation indicator. 4,353,990, Cl. 435-287.000.
- Mantovani, Aldo: *See—*
  - Giugiaro, Giorgetto; and Mantovani, Aldo, 4,353,588, Cl. 296-37.100.
- Manty, Brian A.: *See—*
  - Fishter, Robert E.; Lada, Henry; and Manty, Brian A., 4,353,780, Cl. 156-664.000.
- Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, to Snamprogetti, S.p.A. Bio-compatible porous fibres and materials for occluding biologically interesting substances, and method for their manufacture. 4,353,996, Cl. 523-105.000.
- Margison, Elwood R., to United Conveyor Corporation. Drag bucket apparatus for separating pieces of solid material from a liquid in a receiving tank. 4,353,674, Cl. 414-323.000.
- Margraf, Adolf. Contact compartment for removing noxious gaseous components from a gas stream. 4,353,720, Cl. 55-262.000.
- Marin, Heiner: *See—*
  - Hess, Ruediger; and Marin, Heiner, 4,354,073, Cl. 200-148.00A.
- Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, to Texaco Inc. Start-up method for partial oxidation process. 4,353,712, Cl. 48-197.00R.
- Mark, Victor, to General Electric Company. Process for the preparation of substituted amidines. 4,353,830, Cl. 260-326.860.
- Marshall, Donald E., Jr.: *See—*
  - Gelpey, Jeffrey C.; Marshall, Donald E., Jr.; and White, William J., 4,354,109, Cl. 250-349.000.
- Martin, Archer J. P., to Quadrex Corporation. Flexible diaphragm controlled valve. 4,353,243, Cl. 73-23.100.
- Martin, Brice E.: *See—*
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  - Quatrini, Lucretia R.; Vogt, Martin C.; and Martin, Brice E., 4,353,881, Cl. 423-58.000.
- Martin, Bruce S. Apparatus for holding and positioning a measuring tape. 4,353,167, Cl. 33-137.00R.
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- Martinelli, Lawrence G., to Verbatim Corporation. Self-lubricating liner. 4,354,213, Cl. 360-133.000.
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  - Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.
- Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
  - Neitz, Alfred, 4,353,334, Cl. 123-179.00H.
- Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,353,818, Cl. 524-458.000.
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  - Sohl, Gordon; Masters, John R.; and Leicht, John R., 4,353,656, Cl. 400-157.300.
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- Matsukawa, Hiroharu: *See—*
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  - Oomori, Hideyuki; Matsuoka, Shinji; and Nakagaki, Mitsuhiro, 4,354,195, Cl. 346-75.000.
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  - Chikamura, Takao; Fujiwara, Shinji; and Fukai, Masakazu, 4,354,104, Cl. 250-211.00J.
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  - Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.
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  - Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, 4,354,020, Cl. 528-323.000.

- Maury, M. Christian, to Compagnie International Pour l'Informatique. Magnetic recording medium and digital storage device including same. 4,354,208, Cl. 360-40.000.
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  - Birr, Christian; and Stollenwerk, Ulrich, 4,353,821, Cl. 260-112.50R.
- Mayberry, Sherry A. Utility brush. 4,353,144, Cl. 15-246.000.
- Mayer, Udo: *See—*
  - Bruder, Horst; Degen, Hans-Juergen; Feichtmayr, Franz; Grychtol, Klaus; and Mayer, Udo, 4,353,833, Cl. 260-386.000.
- Mayfield, Charles W.: *See—*
  - Jenkins, Oliver J., Jr.; and Mayfield, Charles W., 4,353,187, Cl. 49-501.000.
- Mayr, Ulrich: *See—*
  - Koller, Peter; and Mayr, Ulrich, 4,354,055, Cl. 178-42.000.
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- McCain, William T., to United States of America, Army. Articulation joint roll stabilizer. 4,353,572, Cl. 280-492.000.
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  - Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., 4,353,615, Cl. 350-3.710.
- McCarthy, Milton E. H. Transmissionless drive system. 4,354,144, Cl. 318-13.000.
- McCrossin, Edward G., to Hercules Incorporated. Foam compositions for surface application to fibrous substrates. 4,353,993, Cl. 521-65.000.
- McFadden, Russell T., to Dow Chemical Company, The. Fast curing polyepoxide coating compositions with good pot life. 4,353,819, Cl. 523-454.000.
- McFadyen, Robert C., to Lever Brothers Company. Closure for a dispenser container. 4,353,480, Cl. 221-63.000.
- McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., to Jay-El Products Incorporated. Push-button panel assembly including an individually lighted push-button switch assembly. 4,354,077, Cl. 200-314.000.
- McSpadden, John T., to Inventive Technology International, Inc. Dental tool. 4,353,698, Cl. 433-164.000.
- MDS Mannesmann Demag Sack GmbH: *See—*
  - Wetter, Jacob, 4,353,286, Cl. 91-5.000.
- Mechanical Technology Incorporated: *See—*
  - Curwen, Peter W.; and Dorman, Richard A., 4,353,220, Cl. 62-228.000.
- Medical Engineering Corporation: *See—*
  - Finney, Roy P.; and Lynch, Henry W., 4,353,360, Cl. 128-79.000.
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- Mehrens, Douglas W.; and Kuchar, James F. Filter assembly for evaporative cooler pumps. 4,353,846, Cl. 261-4.000.
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  - McMains, Billy D.; Mendoza, Richard G.; and Clark, Gerald L., 4,354,077, Cl. 200-314.000.
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  - Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,354,039, Cl. 562-582.000.
- Mentzel, Werner: *See—*
  - Potthast, Ruthard; Mentzel, Werner; and Kramer, Horst-Dieter, 4,354,038, Cl. 562-475.000.
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  - Spaller, Albert E., Jr.; Stockbridge, Bruce W.; and Meredith, Thomas D., Jr., 4,353,492, Cl. 226-11.000.
- Merger, Franz; and Fouquet, Gerd, to BASF Aktiengesellschaft. Preparation of formaldehyde. 4,354,045, Cl. 568-487.000.
- Merkert, Rodney F., to Union Carbide Corporation. Process for producing a vanadium silicon alloy. 4,353,744, Cl. 75-134.00V.
- Merkle, Gerd H. Retraction mechanism for dental units and the like. 4,353,695, Cl. 433-78.000.
- Merlo, Armando M., to Merlo, Armando M.; and Balsamo, Angelo. Color photography print with exposure data and means for making. 4,353,641, Cl. 355-38.000.
- Merrell Toraude et Compagnie: *See—*
  - Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,353,828, Cl. 260-326.0NS.
- Mertzweiller, Guy: *See—*
  - Pierrel, Michel; and Mertzweiller, Guy, 4,353,531, Cl. 266-120.000.
- Messerschmitt-Bolkow-Blohm G.m.b.H.: *See—*
  - Engl, Ernst, 4,353,389, Cl. 137-375.000.
  - Grimm, Wilhelm G.; and Schindler, Rudolf, 4,353,964, Cl. 428-408.000.
  - Groeber, Josef, 4,353,772, Cl. 156-433.000.
  - Mohrenstein-Ertel, Michael; and Albrecht, Helmut, 4,353,433, Cl. 181-207.000.
- Metatech Corporation: *See—*
  - Perlin, Alfred R., 4,353,250, Cl. 73-161.000.
- Meyers, Richard G., to National Telephone Supply Company, The. Shield connector. 4,353,612, Cl. 339-95.00R.
- Michel, Thomas J.; and Finger, Richard H., to Santek, Inc. Intelligent test head for automatic test system. 4,354,268, Cl. 371-20.000.
- Micheron, Francois, to Thomson-CSF. Piezoelectric acceleration pickup with a polymer transducer member. 4,354,134, Cl. 310-800.000.
- Michigan Molecular Institute: *See—*
  - Elias, Hans-G.; and Warner, Robert J., 4,354,018, Cl. 528-206.000.
- Microcomputer Systems Corporation: *See—*
  - Gilovich, Paul A.; and Toreson, James S., 4,354,211, Cl. 360-84.000.
- Midorikawa, Minoru, to Nissan Motor Co., Ltd. Catalytic converter. 4,353,872, Cl. 422-179.000.
- Mihashi, Yutaka: *See—*
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- Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, to Aisin-Warner Kabushiki Kaisha. System for controlling the hydraulic pressure during a shift operation of an automatic, variable speed transmission. 4,354,236, Cl. 364-424.100.
- Mikulich, Henry V.; and Lehmann, Richard P., to Lake Shore, Inc. Bunker for tunnel boring. 4,353,676, Cl. 414-512.000.
- Milbauer, Nathaniel A. Portable jacket for treatment and protection of injured body members. 4,353,359, Cl. 128-66.000.
- Milleker, William: *See—*
  - Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.
- Miller, Christopher S.; Pope, Daniel F.; and Hokanson, Jon V., to Eur-Control M&D, U.S.A., Inc. Method and apparatus for determining the moisture content of particulate material that may contain an unknown amount of moisture in a frozen state. 4,354,244, Cl. 364-556.000.
- Miller, Henry W., to Cameron Iron Works, Inc. Wellhead apparatus and method of running same. 4,353,420, Cl. 166-382.000.
- Miller, Roy W.; and Mutyala, Bhaskara R., to Pullman Incorporated. Box car corner post arrangement. 4,353,314, Cl. 105-410.000.
- Milliken Research Corporation: *See—*
  - Burns, Alonzo M., Jr.; and Gilbert, Woodrow P., 4,353,706, Cl. 8-114.600.
- Millner, Rudolf: *See—*
  - Seliger, Ewald; Dudar, Klaus; Stohr, Gunter; Millner, Rudolf; and Banse, Wilhelm, 4,353,928, Cl. 426-238.000.
- Minematsu, Hiroyoshi: *See—*
  - Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.
- Mineura, Kazuyuki: *See—*
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- Minner, Willy: *See—*
  - Hasch, Gunter; and Minner, Willy, 4,354,161, Cl. 330-254.000.
- Minnesota Mining and Manufacturing Company: *See—*
  - Forte, Mark R.; and Sonstegard, David A., 4,353,135, Cl. 3-1.911.
  - Manske, Wendell J.; and Hawkins, Paul M., 4,353,990, Cl. 435-287.000.
  - Seemann, Ronald W., 4,353,463, Cl. 206-220.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Kojima, Hiroaki, 4,353,636, Cl. 355-1.000.
  - Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, 4,353,648, Cl. 355-133.000.
  - Yuasa, Yoshio, 4,353,629, Cl. 354-23.00D.
- Minoura, Kazuo: *See—*
  - Tokumitsu, Jun; and Minoura, Kazuo, 4,353,617, Cl. 350-6.800.
- Mir, Leon; and Zahka, Joseph, to Abcor, Inc. Apparatus for and process of removal of solvent vapors. 4,353,715, Cl. 55-22.000.
- Mitchell, Ernest M., to Mitchell, Rodney M. Multiple hole gauging tool. 4,353,169, Cl. 33-173.000.
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- Mitsubishi Denki Kabushiki Kaisha: *See—*
  - Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.
  - Yamanaka, Kenichi; Mihashi, Yutaka; and Sogo, Toshio, 4,353,754, Cl. 148-1.500.
  - Yoshida, Masayuki, 4,354,171, Cl. 340-21.000.
- Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
  - Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
- Mitsubishi Mining & Cement Co., Ltd.: *See—*
  - Kubo, Masaaki; Onodera, Yasutaka; Kawaguchi, Hiroshi; and Sibata, Masaharu, 4,353,796, Cl. 209-240.000.
- Mitsubishi Paper Mills, Ltd.: *See—*
  - Noda, Toru; Ichihashi, Yoshinobu; and Kubbota, Massashi, 4,353,981, Cl. 430-536.000.
- Mitsubishi Rayon Company, Ltd.: *See—*
  - Nakashima, Atushi; Edamatu, Michisuke; and Kushi, Kenji, 4,353,934, Cl. 427-57.000.
- Mitsui, Ryoichi: *See—*
  - Aoshima, Atsushi; Mitsui, Ryoichi; and Nihei, Hitoshi, 4,354,044, Cl. 568-479.000.
- Mitsui Toatsu Chemicals, Inc.: *See—*
  - Inoue, Shigeru; Ono, Hiroshi; and Fujii, Hidetsugu, 4,354,040, Cl. 564-67.000.
  - Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, 4,353,730, Cl. 71-29.000.

  - Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.
- Mitsuyu, Tsuneo: *See—*
  - Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, 4,354,130, Cl. 310-313.00A.
- Miyaji, Naotaka: *See—*
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- Miyamoto, Satoru: *See—*
  - Maruyama, Masanori; Mizushima, Masashi; Fukushima, Masakazu; Miyamoto, Satoru; and Sakai, Hideyuki, 4,354,138, Cl. 313-440.000.
- Miyasaka, Kiyoshi, to Fujitsu Limited. Semiconductor memory device. 4,354,256, Cl. 365-189.000.
- Miyashita, Shin: *See—*
  - Nameki, Yoshinobu; and Miyashita, Shin, 4,354,206, Cl. 358-254.000.
- Miyashita, Takao: *See—*
  - Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.
- Miyata, Kenji: *See—*
  - Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
- Mize, William N.: *See—*
  - Hays, Daniel O., Jr.; Maholick, Andrew W.; and Mize, William N., 4,354,227, Cl. 364-200.000.
- Mizuno, Hiroshi: *See—*
  - Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, 4,353,648, Cl. 355-133.000.
- Mizuno, Kenji: *See—*
  - Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.
- Mizushima, Masashi: *See—*
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- Mobay Chemical Corporation: *See—*
  - Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., 4,353,995, Cl. 521-125.000.
- Moberg, Sigurd M., to E. J. Brooks Company. Seal of the padlock type. 4,353,583, Cl. 292-320.000.
- Mobil Oil Corporation: *See—*
  - Braid, Milton, 4,353,807, Cl. 252-49.600.
  - Bustin, Franz, 4,353,497, Cl. 229-55.000.
  - Caldwell, Richard L., 4,353,248, Cl. 73-152.000.
  - Hungerford, Gordon P., 4,353,967, Cl. 428-520.000.
- Mobil Tyco Solar Energy Corporation: *See—*
  - Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,353,757, Cl. 148-172.000.
- Moertel, George B., to American Thread. Forming articles with slide fasteners and attached sewing guides. 4,353,760, Cl. 156-66.000.
- Mohlenbrock, William. Roller ski training device. 4,353,566, Cl. 280-87.04A.
- Mohrenstein-Ertel, Michael; and Albrecht, Helmut, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Damping covering. 4,353,433, Cl. 181-207.000.
- Molina, Antonio F. Freewheel flywheel transmission system. 4,353,569, Cl. 280-217.000.
- Mollstatter, Walter, to Zinser Textilmaschinen GmbH. Exhaust system for removing airborne particles from the vicinity of textile machinery. 4,353,721, Cl. 55-283.000.
- Monsanto Company: *See—*
  - Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,353,924, Cl. 424-317.000.
  - Franz, John E.; and Kaufman, Robert J., 4,353,731, Cl. 71-88.000.
- Moore, James M.: *See—*
  - Arnold, Everett L.; and Moore, James M., 4,353,489, Cl. 222-570.000.
- Moore, Victor S.; Kraft, Wayne R.; Rhodes, Joseph C., Jr.; and Stahl, William L., Jr., to International Business Machines Corporation. Flexible processor on a single semiconductor substrate using a plurality of arrays. 4,354,228, Cl. 364-200.000.
- Moore, William H.; and Jorgensen, Donald R. Method of mixing chemically bonded foundry sand by vibratory action. 4,353,651, Cl. 366-2.000.
- Moorey, Ernest J., to Electricity Council, The. Non-contact measurement of physical properties of continuously moving metal strip. 4,353,256, Cl. 73-597.000.
- Moraw, Roland; and Schadlich, Gunther, to Hoechst Aktiengesellschaft. Device for removing developer liquid from a recording material. 4,353,639, Cl. 355-10.000.
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  - Dryczynski, Kurt; Schadlich, Gunther; and Moraw, Roland, 4,353,970, Cl. 430-31.000.
- Morcov, Paul. Pressure regenerator. 4,353,864, Cl. 376-402.000.
- Moreau, Pierre A.; and Sauvestre, Jean C., to Etat Francais represente par le Delegue General pour l'Armement. Kinetic-energy projectile. 4,353,305, Cl. 102-519.000.
- Morelock, Charles R., to General Electric Company. Integral composite of polycrystalline diamond and/or cubic boron nitride body phase and substrate phase. 4,353,953, Cl. 428-213.000.
- Morgan, Donald F. Knee engaging ski. 4,353,573, Cl. 280-606.000.
- Morgan, Thomas K., Jr.: *See—*
  - Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,353,921, Cl. 424-273.00R.
- Mori, Kinji; Ihara, Hirokazu; and Nohmi, Makoto, to Hitachi, Ltd. Data transmission system utilizing loop transmission lines between terminal units. 4,354,267, Cl. 371-11.000.
- Mori, Toshihito: *See—*
  - Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.
- Moringiello, Donald C.: *See—*
  - Dulberger, Michael D.; Hibner, David H.; and Moringiello, Donald C., 4,353,604, Cl. 308-184.00A.
- Morisi, Franco: *See—*
  - Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, 4,353,996, Cl. 523-105.000.
- Morita, Katuhiro: *See—*
  - Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.
- Moriya, Muneo: *See—*
  - Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
- Morris, Glenn H. Push button safety cap for containers. 4,353,473, Cl. 215-220.000.
- Morrissy, Joseph H.: *See—*
  - Crossland, William A.; and Morrissy, Joseph H., 4,353,943, Cl. 428-1.000.
- Moser, Robert: *See—*
  - Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, 4,353,667, Cl. 406-29.000.
- Moss, Robert J. Toothed belt drive transmission for pumping units. 4,353,445, Cl. 192-4.00R.
- Mostek Corporation: *See—*
  - Eaton, Sargent S., Jr., 4,354,123, Cl. 307-475.000.
  - Goldstein, Ira L., 4,354,175, Cl. 340-347.0AD.
- Motorola, Inc.: *See—*
  - Conger, David R. L.; Gerson, Ira A.; and White, Richard E., 4,354,248, Cl. 364-724.000.
  - King, Thomas M.; and Daniel, Sam M., 4,354,249, Cl. 364-754.000.
  - Lamb, James A.; Blankenship, Johnny E.; Dykas, George E.; Milleker, William; and Hamilton, Kenneth W., 4,354,252, Cl. 364-900.000.
- Mouri, Yasunori: *See—*
  - Manaka, Toshio; Atago, Takeshi; Ishii, Toshio; and Mouri, Yasunori, 4,354,238, Cl. 364-431.050.
- Mowbray, Dorian F., to Lucas Industries Limited. Fuel pumping apparatus. 4,353,336, Cl. 123-198.00B.
- MSI Data Corporation: *See—*
  - Hester, Gerald P.; and Sherer, Paul, 4,354,101, Cl. 235-463.000.
- Muck, Karl-Friedrich; Post, Lothar; and Westen, Hannes, to Hoechst Aktiengesellschaft. Process and embedding system for embedding tissue samples. 4,353,856, Cl. 264-240.000.
- Muetterties, Andrew J.; Genese, Joseph N.; and Seberg, Charles H., to Abbott Laboratories. Venipuncture device. 4,353,369, Cl. 128-214.400.
- Muhlemann, Hans-Rudolf: *See—*
  - Guggenheim, Bernhard; and Muhlemann, Hans-Rudolf, 4,353,891, Cl. 424-50.000.
- Mukoyama, Yoshiyuki; Chikazumi, Nobutoshi; and Sugitani, Hatuo, to Hitachi Chemical Company, Ltd. Special solvent column for GPC and GPC method using the same. 4,353,801, Cl. 210-635.000.
- Mulvey, William J.: *See—*
  - MacLennan, Roderick A.; and Mulvey, William J., 4,354,234, Cl. 364-424.000.
- Mumma, Harold J.; and Reed, Michael E., to FMC Corporation. Article handling apparatus. 4,353,455, Cl. 198-384.000.
- Munnichs, Cornelis M.; and Bookelmann, Theodorus F. I., to Stamicarbon, B.V. Installation for protecting of reactors. 4,353,870, Cl. 422-129.000.
- Munson, Bruce H. Towing device for use in the surf. 4,353,307, Cl. 104-183.000.
- Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, to Ricoh Co., Ltd. Automatic control system for offset printing machine. 4,353,299, Cl. 101-144.000.
- Murakami, Susumu: *See—*
  - Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
- Murata Manufacturing Co., Ltd.: *See—*
  - Ieki, Hideharu, 4,354,129, Cl. 310-313.00C.
- Murmann, Guenter, to Cherry Electrical Products Corporation. Lighted coding switch. 4,354,080, Cl. 200-316.000.
- Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Synchronized, fail-operational, fail-safe multi-computer control system. 4,354,230, Cl. 364-200.000.
- Muschelknautz, Edgar; and Juse, Rudolf, to Bayer Aktiengesellschaft; and Erdolchemie Gesellschaft. Device and process for cooling liquids containing solids. 4,353,781, Cl. 159-2.00R.
- Mussman, Harry E., to Bell Telephone Laboratories, Incorporated. Communication system signaling circuit. 4,354,062, Cl. 179-84.00A.
- Mutyala, Bhaskara R.: *See—*
  - Miller, Roy W.; and Mutyala, Bhaskara R., 4,353,314, Cl. 105-410.000.
- Myers, Garrett R., to Myers, Marian B. Remote controlling. 4,353,502, Cl. 236-47.000.
- Myers, Marian B.: *See—*
  - Myers, Garrett R., 4,353,502, Cl. 236-47.000.

Naden, Rex A., to Texas Instruments Incorporated. Bubble redundancy map storage using non-volatile semiconductor memory. 4,354,253, Cl. 365-15.000.
Nagae, Hiromitsu: *See—*
  Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.
Nagahama, Takashi: *See—*
  Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.
Nagai, Yoji: *See—*
  Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.
Nagakoshi, Toshiaki: *See—*
  Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.
Nagamachi, Koichi: *See—*
  Takeyasu, Isaburo; Nagamachi, Koichi; and Sato, Yuji, 4,354,172, Cl. 340-29.000.
Nagaoka, Shinji: *See—*
  Takazawa, Yuzuru; and Nagaoka, Shinji, 4,353,631, Cl. 354-51.000.
Nagel, Erich: *See—*
  Bartel, Siegfried; Biedermann, Ernst; Nagel, Erich; and Kramer, Franz, 4,353,646, Cl. 355-76.000.
Nagy, Laszlo, to F M Machine Company. Sailing craft mainsail and auxiliary propulsion means therefor. 4,353,702, Cl. 440-8.000.
Naito, Tsutomu: *See—*
  Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.
Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, to Furukawa Electric Co., Ltd., The. Polyethylene base resin composition having highly filled with an inorganic material. 4,353,817, Cl. 524-232.000.
Nakagaki, Mitsuhiro: *See—*
  Oomori, Hideyuki; Matsuoka, Shinji; and Nakagaki, Mitsuhiro, 4,354,195, Cl. 346-75.000.
Nakagawa, Mitsuru: *See—*
  Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, 4,353,727, Cl. 65-36.000.
Nakagawa, Shigeyoshi: *See—*
  Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.
Nakagawa, Yasuhiko: *See—*
  Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.
Nakai, Masatoshi: *See—*
  Isoyama, Mitsunori; Takeda, Susumu; and Nakai, Masatoshi, 4,353,388, Cl. 137-240.000.
Nakai, Meroji: *See—*
  Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.
Nakamoto, Soichi: *See—*
  Ito, Fumio; Ito, Tadashi; Nakamoto, Soichi; and Isobe, Yasuo, 4,353,630, Cl. 354-29.000.
Nakamura, Kaoru; and Funabashi, Akira, to Aisin Seiki Kabushiki Kaisha. Master cylinder reservoir and cover fastening means. 4,353,479, Cl. 220-301.000.
Nakamura, Minoru, to Glory Kogyo Kabushiki Kaisha. Coin packaging apparatus capable of separately discharging proper coin packages and stray coins. 4,353,195, Cl. 53-54.000.
Nakamura, Shozo: *See—*
  Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.
Nakanishi Dental Manufacturing Co.: *See—*
  Nakanishi, Takasuke, 4,353,697, Cl. 433-126.000.
Nakanishi, Kyoji: *See—*
  Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.
Nakanishi, Takasuke, to Nakanishi Dental Manufacturing Co. Dental handpiece and a connecting means thereof. 4,353,697, Cl. 433-126.000.
Nakano, Masaki: *See—*
  Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, 4,353,808, Cl. 252-301.40P.
Nakano, Seizo: *See—*
  Oishi, Kazuaki; and Nakano, Seizo, 4,354,220, Cl. 361-341.000.
Nakashima, Atushi; Edamatu, Michisuke; and Kushi, Kenji, to Mitsubishi Rayon Company, Ltd. Dip-coating method. 4,353,934, Cl. 427-57.000.
Nalle, George S., Jr. Helical net. 4,353,956, Cl. 428-255.000.
Nameki, Yoshinobu; and Miyashita, Shin, to Sony Corporation. Television receiver. 4,354,206, Cl. 358-254.000.
Nanodata Computer Corporation: *See—*
  Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.
Narumi China Corporation: *See—*
  Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.
Naruo, Masaki: *See—*
  Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.
Nassau Recycle Corporation: *See—*
  Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,353,559, Cl. 277-53.000.
National Semiconductor Corporation: *See—*
  Wright, John W., 4,354,162, Cl. 330-260.000.
National Starch and Chemical Corporation: *See—*
  Skoultchi, Martin M., 4,354,008, Cl. 525-370.000.
National Telephone Supply Company, The: *See—*
  Meyers, Richard G., 4,353,612, Cl. 339-95.00R.
NCR Corporation: *See—*
  Reitberger, Peter H., 4,354,197, Cl. 346-140.00R.
Necoechea, Robert W. Rigid-diaphragm transducer with plural coils. 4,354,066, Cl. 179-115.5DV.
Neitz, Alfred, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Method of and apparatus for starting an air-compressing four-stroke cycle internal combustion engine. 4,353,334, Cl. 123-179.00H.
Nelson, Bennie C., Jr.; and Gardner, Jeffrey M., to Container Corporation of America. Stackable tray. 4,353,496, Cl. 229-34.00R.
Nelson, Craig E.; and Kawamoto, Frank T., to Tescom Corporation. Cutting and welding torch valve apparatus. 4,353,395, Cl. 137-861.000.
Nelson, Gerald V.: *See—*
  Ganster, Charles A.; and Nelson, Gerald V., 4,354,242, Cl. 364-501.000.
Nelson, H. Lee. Solar collector. 4,353,357, Cl. 126-450.000.
Nelson and Johnson: *See—*
  Ciciora, John A., 4,353,263, Cl. 74-337.000.
Neu, Hermann: *See—*
  Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.
Neufeld, Henry L., to Brunswick Corporation. Back support housing and reel body assembly. 4,353,514, Cl. 242-84.20A.
Neulinger, Franz: *See—*
  Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.
Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., to Eocom Corporation. Laser engraving system with massive base table and synchronization controls. 4,354,196, Cl. 346-108.000.
Neumeyer, John L., to Northeastern University. N-Haloalkyl nor apomorphines and method of inactivating dopamine receptor sites and enhancing dopaminergic activity therewith. 4,353,912, Cl. 424-258.000.
Newsam, Leonard: *See—*
  Massey, Raymond D.; and Newsam, Leonard, 4,354,094, Cl. 219-306.000.
Newton, Alan B., to Imperial Chemical Industries Limited. Transition metal compound. 4,354,010, Cl. 526-140.000.
Newton, Barrie H.: *See—*
  Davies, Robert; Newton, Barrie H.; and Booth, Peter L., 4,354,165, Cl. 331-96.000.
Nicolai, Walter. Method and apparatus for indicating losses of stored materials. 4,353,245, Cl. 73-49.200.
Nielsen, Poul W., to F. L. Smidth & Co. Rotary kiln. 4,353,687, Cl. 432-80.000.
Niertit, Frank; and Conner, Alvin R., to Stromberg-Carlson Corporation. Electronic telephone. 4,354,060, Cl. 179-81.00R.
Nihei, Hitoshi: *See—*
  Aoshima, Atsushi; Mitsui, Ryoichi; and Nihei, Hitoshi, 4,354,044, Cl. 568-479.000.
Nihon Nejimawashi Co., Ltd.: *See—*
  Fujimoto, Kaoru, 4,353,239, Cl. 72-391.000.
Nijhuis, Johan W., to Machinefabriek G. J. Nijhuis B.V. Apparatus for stunning animals to be slaughtered, such as pigs. 4,353,147, Cl. 17-1.00E.
Nilsen, Carl J., to SWS Incorporated. Z-bar guide apparatus and method of butt welding. 4,354,090, Cl. 219-121.0LC.
Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, to Mitsui Toatsu Chemicals, Incorporated; and Toyo Engineering Corporation. Granulation process. 4,353,709, Cl. 23-313.0FB.
Nippon Elanco Kabushiki Kaisha: *See—*
  Yamamoto, Taizo, 4,353,456, Cl. 198-397.000.
Nippon Electric Company, Ltd.: *See—*
  Araseki, Takashi; and Ozawa, Kazunori, 4,354,273, Cl. 375-27.000.
  Ishimoto, Shoji, 4,354,259, Cl. 365-230.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  Adachi, Takeshi; Suzuki, Hideo; and Kaneko, Makoto, 4,353,278, Cl. 84-1.010.
Nippon Kogaku K.K.: *See—*
  Maida, Osamu, 4,353,633, Cl. 354-173.000.
  Nohda, Masao; and Umemura, Izumi, 4,353,625, Cl. 351-13.000.
Nippon Mining Company Limited: *See—*
  Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, 4,353,530, Cl. 266-45.000.
Nippon Seiko Kabushiki Kaisha: *See—*
  Chiba, Moichi; and Suzuki, Toshio, 4,353,605, Cl. 308-187.200.
Nippon Soken, Inc.: *See—*
  Akita, Sigeyuki, 4,354,219, Cl. 361-284.000.
Nippon Steel Corporation: *See—*
  Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, 4,354,089, Cl. 219-97.000.
Nippondenso Co., Ltd.: *See—*
  Nonogaki, Masayuki; Ishii, Katsuya; and Hirasawa, Nobumasa, 4,353,224, Cl. 62-515.000.

Nishida, Takeo: *See—*
  Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.
Nishikawa, Seiji: *See—*
  Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
Nishio, Kosaku, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray cine radiography apparatus. 4,354,112, Cl. 378-99.000.
Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, to Fuji Electric Co., Ltd. Direct contact type multi-stage steam condenser system. 4,353,217, Cl. 60-693.000.
Nishiyama, Masanobu; and Kiuchi, Yasuhiro, to Duskin Franchise Kabushiki Kaisha. Mop carrier and a rotary suppressor therein. 4,353,142, Cl. 15-144.00R.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Light-emitting semiconductor. 4,354,140, Cl. 313-499.000.
Nissan Motor Company: *See—*
  Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.
Nissan Motor Company, Ltd.: *See—*
  Ebihara, Sakae, 4,353,345, Cl. 123-575.000.
  Hamai, Kyugo; Nakai, Meroji; Maruyama, Ryuzaburo; and Nakagawa, Yasuhiko, 4,354,136, Cl. 313-139.000.
  Kanegae, Hidetoshi, 4,354,239, Cl. 364-431.050.
  Matsumura, Akira; Kaneko, Yoichi; Sekine, Kenji; and Endo, Akira, 4,354,191, Cl. 343-7.500.
  Midorikawa, Minoru, 4,353,872, Cl. 422-179.000.
  Sone, Masazumi; Miyashita, Takao; and Nagae, Hiromitsu, 4,354,070, Cl. 200-19.00R.
  Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,353,342, Cl. 123-493.000.
  Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.
Nissen, Axel: *See—*
  Horner, Michael; and Nissen, Axel, 4,353,836, Cl. 260-410.500.
Nitto Electric Industrial Co., Ltd.: *See—*
  Abe, Masao; Ichinose, Hisashi; and Noda, Yuzuru, 4,354,017, Cl. 528-172.000.
Niwa, Makoto: *See—*
  Hiraoka, Shunji; Niwa, Makoto; and Ishii, Satoru, 4,353,680, Cl. 415-219.00R.
Nix, Norbert: *See—*
  Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.
Noda, Toru; Ichihashi, Yoshinobu; and Kubbota, Massashi, to Mitsubishi Paper Mills, Ltd. Silver halide photographic material. 4,353,981, Cl. 430-536.000.
Noda, Yuzuru: *See—*
  Abe, Masao; Ichinose, Hisashi; and Noda, Yuzuru, 4,354,017, Cl. 528-172.000.
Noeske, Heinz O., to General Electric Company. Pyrolytic cartridge interruption assistance actuator for puffer breaker. 4,354,072, Cl. 200-148.00A.
Noguchi, Isamu: *See—*
  Nakae, Hiroyuki; Noguchi, Isamu; and Hasebe, Morikuni, 4,353,817, Cl. 524-232.000.
Nohda, Masao; and Umemura, Izumi, to Nippon Kogaku K.K. Eye-refractometer device. 4,353,625, Cl. 351-13.000.
Nohmi, Makoto: *See—*
  Mori, Kinji; Ihara, Hirokazu; and Nohmi, Makoto, 4,354,267, Cl. 371-11.000.
Nomura, Noboru: *See—*
  Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, 4,354,212, Cl. 360-113.000.
Nonogaki, Masayuki; Ishii, Katsuya; and Hirasawa, Nobumasa, to Nippondenso Co., Ltd. Evaporator. 4,353,224, Cl. 62-515.000.
Nordson Corporation: *See—*
  Kolibas, James A., 4,353,326, Cl. 118-696.000.
Noritake, Yutaka; Kajitani, Ikuo; and Hirayama, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Support apparatus for catalyst block. 4,353,873, Cl. 422-179.000.
Norris, Thomas R. Fluid blow-off muffler. 4,353,434, Cl. 181-258.000.
North American Car Corporation: *See—*
  Anderson, Arthur I., 4,353,668, Cl. 406-90.000.
Northcutt, Charles D., to International Harvester Co. Laminated composite structure and method of manufacture. 4,353,947, Cl. 428-116.000.
Northeastern University: *See—*
  Neumeyer, John L., 4,353,912, Cl. 424-258.000.
Northern Engraving Corporation: *See—*
  Gilleo, Kenneth B.; and Kriebich, Willard H., 4,353,858, Cl. 264-268.000.
Northrop Corporation: *See—*
  Clark, Lee K.; and Peron, Michael C., 4,354,278, Cl. 455-617.000.
Northwestern University: *See—*
  Goldberg, Erwin, 4,353,822, Cl. 260-112.50R.
Norton, Lyle K.: *See—*
  Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., 4,354,196, Cl. 346-108.000.
Norton, Willard S. Method of straightening and reinforcing structural members. 4,353,194, Cl. 52-742.000.
Nossek, Josef, to Siemens Aktiengesellschaft. Switched-capacitor filter circuit having at least one simulated inductance having controlled switches, capacitors, and an amplifier. 4,354,169, Cl. 333-173.000.
Nouchi, Norimoto; Kanai, Kenji; Kaminaka, Nobuyuki; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Magnetic head and method of production thereof. 4,354,212, Cl. 360-113.000.
Novak, Peter; and Gasser, Hermann, to Rieter Machine Works Ltd. Manual apparatus for threading-in textile apparatus. 4,353,202, Cl. 57-279.000.
Novatec, Inc.: *See—*
  O'Connor, Arthur H.; and Rossman, Robert A., 4,353,152, Cl. 128-689.000.
Nozaki, Takao; and Ito, Takashi, to Fujitsu Limited. Method of manufacturing semiconductor device. 4,353,936, Cl. 427-94.000.
NRM Corporation: *See—*
  Yuhas, Gerald J., 4,353,771, Cl. 156-403.000.
Nuding, Alfred, to Herion-Werke KG. Self-monitoring system for supervising congruence between control signals. 4,354,270, Cl. 371-68.000.
Nyberg, Karl F. L.; and Josefsson, Kjell S., to Telefonaktiebolaget L M Ericsson. Method and an apparatus for transferring digital information in a telephone system. 4,354,265, Cl. 370-111.000.
Occidental Oil Shale, Inc.: *See—*
  Ricketts, Thomas E., 4,353,598, Cl. 299-2.000.
O'Connor, Arthur H.; and Rossman, Robert A., to Novatec, Inc. Pulse rate monitor. 4,353,152, Cl. 128-689.000.
Odor, Gyula: *See—*
  Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.
Oesterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg: *See—*
  Anger, Anton, 4,353,522, Cl. 249-144.000.
Offterdinger, Hermoff F. Runner wheel assembly. 4,353,186, Cl. 49-420.000.
Ogawa, Takuzo: *See—*
  Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Ohashi, Fumis: *See—*
  Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.
Ohhira, Hiroshi: *See—*
  Endo, Hiroyuki; Ohhira, Hiroshi; and Sasaki, Tohru, 4,353,960, Cl. 428-373.000.
Ohmura, Hidemasa: *See—*
  Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.
Ohtake, Masayuki: *See—*
  Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.
Ohya, Yoshinobu: *See—*
  Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, 4,353,951, Cl. 428-198.000.
Oiji, Yoshimasa: *See—*
  Takizawa, Hiroshi; Oiji, Yoshimasa; and Hirayama, Tatsuyuki, 4,353,923, Cl. 424-285.000.
Oikawa, Saburo: *See—*
  Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Oishi, Kazuaki; and Nakano, Seizo, to Hatachi, Ltd. Gas insulated power switch-gear apparatus. 4,354,220, Cl. 361-341.000.
Oka, Tateki: *See—*
  Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, 4,353,648, Cl. 355-133.000.
Okamura, Masahiro: *See—*
  Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, 4,354,121, Cl. 307-252.00C.
Okitsu, Hiroyuki: *See—*
  Hirose, Isao; Yamamoto, Kiyoshi; and Okitsu, Hiroyuki, 4,354,037, Cl. 562-416.000.
Okoshi, Nobuhiko: *See—*
  Oyamada, Akira; Fujii, Shin; Okoshi, Nobuhiko; Ambe, Satoshi; and Nakagawa, Shigeyoshi, 4,353,854, Cl. 264-63.000.
Okuzawa, Tugio: *See—*
  Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.
Olin Corporation: *See—*
  Capuano, Italo A.; Carr, Lawrence P.; and Turley, Patricia A., 4,353,741, Cl. 75-109.000.
  Gay, Walter A.; and Twohig, Elizabeth A., 4,353,920, Cl. 424-270.000.
  Katz, Lawrence E.; and Gay, Walter A., 4,353,908, Cl. 424-251.000.
  Pryor, Michael J., 4,353,408, Cl. 164-503.000.
Olive, Edmond E., to Sperry Corporation. Flight path transition control apparatus with predictive roll command. 4,354,240, Cl. 364-434.000.
Olson, Daniel R.; and Goossens, John C., to General Electric Company. Abrasion resistant silicone coated polycarbonate article having an acrylic primer layer containing a U.V. absorbing compound. 4,353,959, Cl. 428-331.000.
Olson, Daniel R.; and Goossens, John C., to General Electric Company. Abrasion resistant silicone coated polycarbonate article having an acrylic primer layer containing a U.V. absorbing compound. 4,353,965, Cl. 428-412.000.

- Olson, Eric V.: *See—*
  - Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., 4,354,196, Cl. 346-108.000.
- Olsson, Erik A. Process and apparatus for the manufacture of annular work pieces for subsequent conversion into finished products. 4,353,494, Cl. 228-143.000.
- Olympus Optical Co., Ltd.: *See—*
  - Yonekubo, Ken, 4,353,624, Cl. 350-453.000.
- Omark Industries, Inc.: *See—*
  - Silvon, Kay, 4,353,277, Cl. 83-833.000.
- Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of rolling strip. 4,353,237, Cl. 72-205.000.
- Omote, Hidetaro: *See—*
  - Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, 4,353,397, Cl. 139-435.000.
- Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, to Kyowa Hakko Kogyo Kabushiki Kaisha; and Kitasato Kenkyusho. Process for producing antibiotic nanaomycin E. 4,353,986, Cl. 435-119.000.
- Ono, Hiroshi: *See—*
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- Pater, Walter E., to PPG Industries, Inc. Slotted support logs for sheet shipping containers. 4,353,466, Cl. 206-453.000.
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  - Gauthier-Lafaye, Jean; and Perron, Robert, 4,353,844, Cl. 260-549.000.
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- Richter, Albert P., Jr.; and Campsey, Ronald L., to Texaco Inc. Chamber for measuring gamma ray emissions. 4,354,110, Cl. 250-358.100.
- Richter, George N.: *See—*
  - Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
- Rickelton, William A.; Robertson, Allan J.; and Burley, David R., to American Cyanamid Company. Selective extraction of cobalt(II) from aqueous solutions with phosphinic acid extractants. 4,353,883, Cl. 423-139.000.
- Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method of blasting pillars with vertical blastholes. 4,353,598, Cl. 299-2.000.
- Ricoh Co., Ltd.: *See—*
  - Ikeda, Sunao; Kaneko, Tamaki; Hibi, Kunio; Okuzawa, Tugio; Kakitani, Yohtaro; and Kikuchi, Hideo, 4,353,543, Cl. 271-306.000.
  - Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, 4,353,299, Cl. 101-144.000.
  - Tenmyo, Shigemoto; and Koide, Hiroshi, 4,354,146, Cl. 318-341.000.
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  - Rice, Leonard L.; Freel, Marlin J.; Paquin, Gregory J.; and Burkett, Howard E., 4,353,436, Cl. 187-9.00R.
- Rieter Machine Works Ltd.: *See—*
  - Demuth, Robert; and Wuest, Anton, 4,353,149, Cl. 19-107.000.
  - Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, 4,353,667, Cl. 406-29.000.
  - Novak, Peter; and Gasser, Hermann, 4,353,202, Cl. 57-279.000.
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  - Marutake, Yozo; Kurita, Takayuki; and Fukutome, Tatsuro, 4,354,061, Cl. 179-82.000.
- Rippel, Wally E.; and Edwards, Dean B., to California Institute of Technology. Quasi-bipolar battery construction and method of fabricating. 4,353,969, Cl. 429-144.000.
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  - Carre, Jean-Jacques; and Riquart, Christian, 4,353,599, Cl. 303-22.00R.
- Risacher, Gerard H., to Therm-O-Disc, Incorporated. Thermostat with positive off element. 4,354,170, Cl. 337-334.000.
- Risener, George W.; and Risener, R. V. Case and carton handling device. 4,353,675, Cl. 414-403.000.
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- Ritter, Gerhard: *See—*
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- Rizkalla, Nabil, to Halcon SD Group, Inc., The. Preparation of carboxylic acid esters. 4,354,036, Cl. 560-233.000.
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  - Canter, Nathan H.; Robbins, Max L.; and Baker, Edward G., 4,353,806, Cl. 252-8.55D.
- Robert Bosch GmbH: *See—*
  - Frey, Wunibald, 4,354,182, Cl. 340-650.000.
  - Henning, Manfred, 4,353,341, Cl. 123-414.000.
  - Kofink, Wolfgang, 4,354,150, Cl. 322-63.000.
  - Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, 4,353,385, Cl. 137-115.000.
  - Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, 4,353,272, Cl. 74-859.000.
  - Straubel, Max; Konrath, Karl; and Brink, Gerhard, 4,353,340, Cl. 123-365.000.
  - Trachte, Dietrich, 4,353,343, Cl. 123-502.000.
- Robert, Daniel, to Societe Anonyme de Recherches de Mecanique Appliquee. Control rod or power transmission rod. 4,353,267, Cl. 74-579.00R.
- Roberts, James K.; and Johannesen, Donald D., to Bendix Corporation, The. Adjuster for drum brakes. 4,353,437, Cl. 188-79.5GE.
- Roberts, James K., to Bendix Corporation, The. Dual mode drum brake. 4,353,441, Cl. 188-328.000.
- Robertson, Allan J.: *See—*
  - Rickelton, William A.; Robertson, Allan J.; and Burley, David R., 4,353,883, Cl. 423-139.000.
- Rockcor, Inc.: *See—*
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- Rockwell International Corporation: *See—*
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  - Schorr, Ian A.; and Beegle, Mark J., 4,354,159, Cl. 330-86.000.
  - Yao, Shi-Kay, 4,354,247, Cl. 364-713.000.
- Rodzen, Richard A.: *See—*
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- Rogers, Lionel J.: *See—*
  - Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., 4,353,882, Cl. 423-111.000.
- Rogers, Wanda S. Jewelry for animals. 4,353,225, Cl. 63-13.000.
- Rohde, Wilhelm, to Linde Aktiengesellschaft. Process and apparatus for the regeneration of an adsorber. 4,353,716, Cl. 55-59.000.
- Rohen, James E., to International Business Machines Corporation. Scannable readout device. 4,354,100, Cl. 235-449.000.
- Rohr, Wolfgang: *See—*
  - Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,354,031, Cl. 548-362.000.
- Rohrbach, Peter H.; and Hale, Robert A., to Si Handling Systems, Inc. Driverless vehicle with two way accumulation. 4,353,306, Cl. 104-166.000.
- Rohrbacher, Herbert E. Apparatus for rolling chain link fence. 4,353,512, Cl. 242-54.00R.
- Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Field flow fractionation channel. 4,353,795, Cl. 209-155.000.
- Roos, Leo: *See—*
  - Leberzammer, Ernst; and Roos, Leo, 4,353,978, Cl. 430-302.000.
- Rosaen, Oscar E. Rotary engine. 4,353,337, Cl. 123-243.000.
- Rosaz, Guy F., to Scovill Inc. Machine for positioning valves on rims for tubeless tires. 4,353,156, Cl. 29-221.500.
- Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, to Hoechst Aktiengesellschaft. Process for separating water from mixtures thereof with vinyl acetate and acetic acid. 4,353,783, Cl. 203-14.000.
- Rose, Francis: *See—*
  - Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, 4,353,903, Cl. 424-250.000.
- Ross, Michael S.: *See—*
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- Rotaque (Proprietary) Limited: *See—*
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- Roth, Willy: *See—*
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- Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, to BASF Aktiengesellschaft. Continuous preparation of polycaprolactam in vertical tubular reactor. 4,354,020, Cl. 528-323.000.
- Rough, Robert R., Sr., to Owens-Illinois, Inc. Method and apparatus for preheating pulverous materials prior to their introduction into a melting furnace. 4,353,726, Cl. 65-27.000.
- Round, Robert T., to Texasgulf Inc. Shield for gas sampling probe. 4,353,260, Cl. 73-863.410.
- Roussel Uclaf: *See—*
  - Teutsch, Jean G.; and Deraedt, Roger, 4,353,899, Cl. 424-243.000.
- Ruchser, Erich; and Ott, Helmut, to Technomatic AG. Safety valve assembly. 4,353,392, Cl. 137-596.160.
- Rudolph, Peter K. C., to Boeing Company, The. Flap assembly for aircraft wing. 4,353,517, Cl. 244-216.000.
- Ruip, Terrence M., to Goodyear Tire & Rubber Company, The. Pneumatic tire having air escape means. 4,353,403, Cl. 152-353.00R.
- Ruml, Milan: *See—*
  - Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, 4,353,368, Cl. 128-214.00R.
- Ruther, Hubert. Exhibition/house furniture as well as play and sport equipment. 4,353,661, Cl. 403-171.000.
- Rutt, Truman C.; and Stynes, James A., to Tam Ceramics Inc. Ceramic matrices for electronic devices and process for forming same. 4,353,957, Cl. 428-292.000.
- Ruyten, Henricus M.; and Hoefnagels, Johannes F., to U.S. Philips Corporation. Adjustable torsion-spring slipping clutch. 4,353,226, Cl. 464-40.000.
- Ryan, Charles P., to Honeywell Information Systems Inc. Cache memory command buffer circuit. 4,354,232, Cl. 364-200.000.
- Ryan, John O.; and Corkery, Joseph L., to Ampex Corporation. Two dimensional interpolation circuit for spatial and shading error corrector systems. 4,354,243, Cl. 364-515.000.
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  - Fujisawa, Nobuhiko; and Honkawa, Yoshinori, 4,353,297, Cl. 101-77.000.
- S. C. Johnson & Son, Inc.: *See—*
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- S.I.C., Inc.: *See—*
  - Chandler, Donald A.; and Harper, John W., 4,354,058, Cl. 179-1.0MN.
- Saab-Scania Aktiebolag: *See—*
  - Sjoqvist, Carl D. I.; and Soderberg, Tage E., 4,353,430, Cl. 180-90.000.
- Sabo, Michael K.: *See—*
  - Giulie, Joseph D.; and Sabo, Michael K., 4,353,776, Cl. 156-555.000.
- Sachdev, Krishna G.: *See—*
  - Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,353,976, Cl. 430-251.000.
- Sachs-Systemtechnik GmbH: *See—*
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- Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
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- Saigne, Gerard, to Paumellerie Electrique. Window raiser. 4,353,185, Cl. 49-351.000.
- St. Clair, Roger L.: *See—*
  - Burow, Kenneth W., Jr.; and St. Clair, Roger L., 4,354,030, Cl. 548-247.000.
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- Saito, Syuichiro; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Electromagnetically driven shutter device. 4,353,632, Cl. 354-133.000.
- Saito, Tasuku: *See—*
  - Kajita, Ryota; Saito, Tasuku; Matsunaga, Tsutomu; Inoue, Sakae; and Ohtake, Masayuki, 4,353,557, Cl. 273-227.000.
- Sakai, Hideyuki: *See—*
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- Sakai, Takeya: *See—*
  - Kita, Katsuhiko; Fukuda, Junzo; Ohmura, Hidemasa; and Sakai, Takeya, 4,353,958, Cl. 428-329.000.
- Salani, Chittaranjan, to Koehring Company, The. Multi-position amplitude device. 4,353,261, Cl. 74-87.000.
- Salomon, Georges P. J., to Etablissements Francois Salomon & Fils. System for binding a boot to a ski. 4,353,576, Cl. 280-615.000.
- Salzgitter AG: *See—*
  - Osterlitz, Hermann, 4,354,087, Cl. 219-73.200.
- Sampson, Alan J.: *See—*
  - Raven, Clive A.; and Sampson, Alan J., 4,353,733, Cl. 71-93.000.
- Sampson, Arthur J., to Johnson & Johnson. Flocked, foam-coated, water vapor permeable, bacterial barrier. 4,353,945, Cl. 428-90.000.
- Sanderson, Dewey S. C. Changeable wall panel structure. 4,353,193, Cl. 52-311.000.
- Santek, Inc.: *See—*
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- Sanyo Electric Co., Ltd.: *See—*
  - Tada, Kinya; and Oyamada, Kenji, 4,354,148, Cl. 320-20.000.
- Sasaki, Noriaki: *See—*
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- Sasaki, Tohru: *See—*
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- Sato, Fumitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Memory board automatically assigned its address range by its position. 4,354,258, Cl. 365-230.000.
- Sato, Hisao. Clip driver. 4,353,157, Cl. 29-243.560.
- Sato, Masato; and Yamashita, Masanobu, to Kawasaki Jukogyo Kabushiki Kaisha. Fuel supply system for small engine. 4,353,847, Cl. 261-36.00A.
- Sato, Takao, to Hitachi, Ltd. Manipulation-variable separated type system control method and apparatus. 4,354,224, Cl. 364-183.000.
- Sato, Tetsuo; and Kominami, Yasuo, to Hitachi, Ltd. Recording/playing circuit. 4,354,209, Cl. 360-61.000.
- Sato, Yuji: *See—*
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- Sattur, Pralhad B.: *See—*
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- Saunders, James F.; and Krocker, Robert E., to Trane Company, The. Apparatus and method for controlling a variable air volume temperature conditioning system. 4,353,409, Cl. 165-2.000.
- Saur, Charles W., to Lear Siegler, Inc. Belt supports for accumulators. 4,353,458, Cl. 198-781.000.
- Sauvestre, Jean C.: *See—*
  - Moreau, Pierre A.; and Sauvestre, Jean C., 4,353,305, Cl. 102-519.000.
- Sawase, Fumihiko: *See—*
  - Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, 4,353,937, Cl. 427-130.000.
- Saynor, John S.: *See—*
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- Scarberry, Walter P.; and Vollman, Charles K., to Health-Ex Corporation. Multiple ply coextrusion. 4,353,498, Cl. 229-69.000.
- Schadlich, Gunther: *See—*
  - Dryczynski, Kurt; Schadlich, Gunther; and Moraw, Roland, 4,353,970, Cl. 430-31.000.
  - Moraw, Roland; and Schadlich, Gunther, 4,353,639, Cl. 355-10.000.
- Schaefer, John O., to International Business Machines Corporation. Ribbon feed mechanism and correction tape feed mechanism for a typewriter. 4,353,657, Cl. 400-208.000.
- Schafer, Hans: *See—*
  - Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.
- Schaller, Wolfgang: *See—*
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- Schaubel, Charles: *See—*
  - Self, James M.; and Schaubel, Charles, 4,353,556, Cl. 273-186.00A.
- Schaumann, Wolfgang; Kaiser, Fritz; Voigtlander, Wolfgang; Hoyer, Edgar; and Koch, Klaus, to Boehringer Mannheim GmbH. Cardenolide-bis-digitoxoside alkyl compounds, pharmaceutical compositions and method of use. 4,353,895, Cl. 424-182.000.
- Scheck, Gerald W.: *See—*
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- Scheibel, Edward G.: *See—*
  - Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,353,792, Cl. 208-254.00H.
- Schenck, Ray B.; and Schmidt, Wilhelm. Slash gathering vehicle. 4,353,424, Cl. 172-438.000.
- Schering Aktiengesellschaft: *See—*
  - Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,353,985, Cl. 435-59.000.
- Schiemann, Heinz, to Siemens Aktiengesellschaft. Measuring transformer for high-voltage switch-gear with metal encapsulation. 4,354,154, Cl. 324-126.000.
- Schilbe, Laird W. Joining corners and intersections in a log building construction. 4,353,191, Cl. 52-233.000.
- Schilling, Walter W., to MacMillan Bloedel Limited. Rotatable splitter. 4,353,401, Cl. 144-193.00A.
- Schindler, Peter; and Huber, Gerhard, to Hoechst Aktiengesellschaft. Chromophoric cephalosporins. 4,353,824, Cl. 260-156.000.
- Schindler, Rudolf: *See—*
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- Schmid, Jochen: *See—*
  - Diederen, Willi; Prox, Axel; Reuter, Albert; Roth, Willy; and Schmid, Jochen, 4,353,909, Cl. 424-256.000.
- Schmidt, Gunther: *See—*
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- Schmidt, Karl-Heinz: *See—*
  - Roscher, Gunter; Schmidt, Karl-Heinz; Langner, Horst; Neu, Hermann; Lienerth, Aladar; Dempf, Dominik; and Kaiser, Klaus, 4,353,783, Cl. 203-14.000.
- Schmidt, Walter: *See—*
  - Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.
- Schmidt, Wilhelm: *See—*
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- Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., to Suntech, Inc. Process to upgrade coal liquids by extraction prior to hydrodenitrogenation. 4,353,792, Cl. 208-254.00H.
- Schneider, Clayton J., Jr., to Calspan Corporation. Fiber optic acceleration sensor. 4,353,259, Cl. 73-653.000.
- Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, to Robert Bosch GmbH. Apparatus for controlling the operation of the engine-transmission assembly of a motor vehicle. 4,353,272, Cl. 74-859.000.
- Schneider, Henri W., to U.S. Philips Corporation. Device for dividing a recurrent input signal by a non-integer divisor f, notably by $f=N-\frac{1}{2}$. 4,354,188, Cl. 340-814.000.
- Schneider, Ralph J.: *See—*
  - Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., 4,354,074, Cl. 200-153.00J.
- Schneiter, John W.; and Hogan, Lawrence R., to Container Technologies, Inc. Flexible container with displaceable fitting and probe coupler apparatus. 4,353,488, Cl. 222-501.000.
- Schniter, Jorg, to R. R. Donnelley & Sons Company. Selective shutoff for repetitively operated valve. 4,353,393, Cl. 137-624.200.
- Schnittker, George. Fence painting apparatus. 4,353,324, Cl. 118-207.000.
- Schonfeld, Rudolf: *See—*
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- Schornack, Louis W., to Dynascan Corporation. Daily variability timer. 4,354,120, Cl. 307-132.00E.
- Schorr, Ian A.; and Beegle, Mark J., to Rockwell International Corporation. Prescription attenuator having cascaded L-pad sections. 4,354,159, Cl. 330-86.000.
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- Schuler, Murry W. Combine having separating and cleaning apparatus. 4,353,376, Cl. 130-27.00T.
- Schultz, Ronald L., to TRW Inc. Optical fiber connector construction. 4,353,620, Cl. 350-96.210.
- Schulz, Rainer; and Schulz, Wilfried. Pleated filter pack and method of making same. 4,353,723, Cl. 55-521.000.
- Schulz, Wilfried: *See—*
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- Schuster, Georg, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Inking system for rotary offset printing machine. 4,353,300, Cl. 101-365.000.
- Schwarz, Richard, to Cosden Technology, Inc. Method for controlling adduct formation in production of acrylonitrile-butadiene-styrene-acrylate copolymers. 4,354,005, Cl. 525-257.000.
- Schwob, Hans-Peter; and Soppelsa, Peter, to Lasag S.A. Solid crystal laser emission device with an improved external cooling circuit. 4,354,272, Cl. 372-36.000.
- Scoarnec, Louis; and Herbert, Patrick, to Compagnie des Lampes. Solar energy transfer member for introduction into an envelope of a solar collector. 4,353,354, Cl. 126-443.000.
- Scola, Daniel A., to United Technologies Corporation. Aliphatic diene bis-imide polymers. 4,354,012, Cl. 526-259.000.
- Scott Bader Company Limited: *See—*
  - Alexander, Ian J.; and Scott, Roger J., 4,353,787, Cl. 204-159.150.
- Scott, Brian L., to Scott Instruments Company. Vibratory aid for presbycusis. 4,354,064, Cl. 179-107.0BC.
- Scott, George V., to Colgate-Palmolive Company. Stabilization of carrageenan-containing toothpaste. 4,353,890, Cl. 424-49.000.
- Scott, Gerald. Process for preparing oxidatively-stable polymers. 4,354,007, Cl. 525-370.000.
- Scott Instruments Company: *See—*
  - Scott, Brian L., 4,354,064, Cl. 179-107.0BC.
- Scott-Jackson, Dennis G.; and Lim, Hui C., to Windsor Machine Company Limited. Sprocket and clutch drum assembly. 4,353,705, Cl. 474-158.000.
- Scott, Roger J.: *See—*
  - Alexander, Ian J.; and Scott, Roger J., 4,353,787, Cl. 204-159.150.
- Scovill Inc.: *See—*
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- Sea Trec Enterprises, Ltd.: *See—*
  - Lotoski, John G. D., 4,353,203, Cl. 59-85.000.
- Seago, Marvin E. Food storage building. 4,353,188, Cl. 52-93.000.
- Sealed Air Corporation: *See—*
  - Vandenbossche, Benjamin E., 4,353,356, Cl. 126-450.000.
- Sears, Roebuck and Co.: *See—*
  - Gall, John C., 4,354,222, Cl. 362-352.000.
- Seasonmakers Pty. (Australia) Lts: *See—*
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- Seberg, Charles H.: *See—*
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- Sechet, Claude; Babonneau, Gerard; and Guillou, Louis C., to Etablissement Public de Diffusion Dit: Telediffusion de France; and Babonneau, Gerard. Television system with access control. 4,354,201, Cl. 358-122.000.
- Sedgwick, Thomas O.: *See—*
  - Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.
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- Seelig, Henri F.: *See—*
  - Janssen, Wilhelm; and Seelig, Henri F., 4,353,534, Cl. 266-270.000.
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  - Hellwig, Friedrich-Wilhelm; and Seeliger, Christian, 4,354,251, Cl. 364-900.000.
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- Sefton, Michael V. Encapsulation of live animal cells. 4,353,888, Cl. 424-25.000.
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  - Takazawa, Yuzuru; and Nagaoka, Shinji, 4,353,631, Cl. 354-51.000.
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- Serras-Paulet, Edouard. Push-button or keyboard with depressable keys. 4,354,081, Cl. 200-340.000.
- Sessions, Robert W.; Jeslis, Jerome; and Rodzen, Richard A., to Ferris Manufacturing Corp. EKG Electrode and package. 4,353,373, Cl. 128-641.000.
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  - Vecchiato, Antonio, 4,354,000, Cl. 524-388.000.
- Seymour, Shaun A., to Sperry Corporation. Guide for leaf stripping apparatus. 4,353,377, Cl. 130-30.00R.
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- Shanks, Howard R.: *See—*
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- Sharp Kabushiki Kaisha: *See—*
  - Shimizu, Masahiro, 4,353,274, Cl. 83-156.000.
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- Shelcore, Inc.: *See—*
  - Greenberg, Sheldon, 4,353,701, Cl. 434-259.000.
- Shell Oil Company: *See—*
  - Hughes, Patrick M.; Chatterjee, Ananda M.; and Hwo, Charles C., 4,354,004, Cl. 525-240.000.
  - Raven, Clive A.; and Sampson, Alan J., 4,353,733, Cl. 71-93.000.
- Sherer, Paul: *See—*
  - Hester, Gerald P.; and Sherer, Paul, 4,354,101, Cl. 235-463.000.
- Sherman, Robert H.: *See—*
  - Bartlit, John R.; Denton, William H.; and Sherman, Robert H., 4,353,871, Cl. 422-159.000.
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  - Joslin, Joel A.; and Dennison, Marshall T., 4,353,868, Cl. 422-101.000.
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  - Nishioka, Ryozo; Kizawa, Yoshihiro; and Shingai, Hiroshi, 4,353,217, Cl. 60-693.000.
- Shiono, Shigeo: *See—*
  - Warabisako, Terunori; and Shiono, Shigeo, 4,354,115, Cl. 250-551.000.
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- Shoup, Gary L., to Jerr-Dan Corporation. Readily removable and replaceable wear pads for sliding bed vehicles. 4,353,597, Cl. 298-12.000.
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- Shroyer, Ronald G. Aquarium/picture combination. 4,353,327, Cl. 119-5.000.
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  - Rohrbach, Peter H.; and Hale, Robert A., 4,353,306, Cl. 104-166.000.
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  - Bayati, Abutorab, 4,354,158, Cl. 328-75.000.
  - Borburgh, Jacques; and Feight, Ingmar, 4,354,132, Cl. 310-334.000.
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  - Hagen, Rolf; Linck, Diethard; and Pappenberger, Joerg, 4,354,261, Cl. 370-42.000.
  - Hellwig, Friedrich-Wilhelm; and Seeliger, Christian, 4,354,251, Cl. 364-900.000.
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  - Hess, Ruediger; and Marin, Heiner, 4,354,073, Cl. 200-148.00A.
  - Koller, Peter; and Mayr, Ulrich, 4,354,055, Cl. 178-42.000.
  - Krause, Dieter, 4,353,382, Cl. 134-113.000.
  - Nossek, Josef, 4,354,169, Cl. 333-173.000.
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- Simpson, Frank F., to Black & Decker Inc. Guide tube support for rotary impact hammer. 4,353,425, Cl. 173-109.000.
- Simpson Manufacturing Co., Inc.: *See—*
  - Gilb, Tyrell T., 4,353,664, Cl. 403-232.100.
- Singer Company, The: *See—*
  - Schroeder, George F.; and Demers, Edward A., 4,353,254, Cl. 73-517.00B.
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- Sjoqvist, Carl D. I.; and Soderberg, Tage E., to Saab-Scania Aktiebolag. Arrangement for fitting a pedal arrangement in a vehicle. 4,353,430, Cl. 180-90.000.
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  - Gerber, Arthur M.; Slafer, Warren D.; and Walworth, Vivian K., 4,353,977, Cl. 430-256.000.
- Slagel, Roger D. Sequencing valve. 4,353,386, Cl. 137-119.000.
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- Slovak, Petr; Becvarova, Hana; Ruml, Milan; and Kracik, Jiri, to Ceske vysoke uceni technicke. Device for hemodialysis. 4,353,368, Cl. 128-214.00R.
- Sluys, Wesley W., to Builders Concrete, Inc. Utility distribution system for marine floats. 4,353,320, Cl. 114-267.000.
- Smith, Bruce M.: *See—*
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- Smith, Delbert E.: *See—*
  - Smith, Gary L.; Smith, Delbert E.; Catterson, Floyd D.; and Dooley, Ronald G., 4,353,565, Cl. 280-80.00B.
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  - Hedde, Richard D.; and Parish, Roger C., 4,353,902, Cl. 424-250.000.
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  - Marconi, Walter; Bartoli, Francesco; Morisi, Franco; and Pittalis, Francesco, 4,353,996, Cl. 523-105.000.
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- Snitzer, Elias; and Bacon, James F., to United Technologies Corporation. Composite bonding. 4,353,966, Cl. 428-428.000.
- Sobol, Anthony J., III, to Texas Instruments Incorporated. Long travel elastomer keyboard. 4,354,068, Cl. 200-5.00A.
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  - Carre, Jean-Jacques; and Riquart, Christian, 4,353,599, Cl. 303-22.00R.
  - Hauduc, Jean J., 4,353,291, Cl. 92-99.000.
- Societe Anonyme de Recherches de Mecanique Appliquee: *See—*
  - Robert, Daniel, 4,353,267, Cl. 74-579.00R.
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  - Picard, Claude; and Daugny, Daniel, 4,353,268, Cl. 74-587.000.
- Societe Anonyme des Etablissements Adrien de Backer: *See—*
  - Hoffmann, Marcel E., 4,354,221, Cl. 362-300.000.
- Societe Anonyme Francaise du Ferodo: *See—*
  - Bionaz, Jean E., 4,353,444, Cl. 192-3.290.
- Societe d'Exploitation Clairitex: *See—*
  - Comte, Pierre, 4,353,659, Cl. 403-24.000.
- Societe Europeenne de Propulsion: *See—*
  - Habermann, Helmut, 4,353,602, Cl. 308-10.000.
- Societe Internationale de Mecanique Industrielle S.A.: *See—*
  - Menager, Jean, 4,354,097, Cl. 235-96.000.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See—*
  - Soligny, Marcel R.; Duponchel, Jean-Pierre D. J.; and Hoch, Rene G., 4,353,516, Cl. 244-110.00B.
- Societe Nationale Elf Aquitaine: *See—*
  - Faure, Alain; Maldonado, Paul; Husson, Jean-Francois; and Coste, Camille, 4,353,729, Cl. 71-11.000.
- Societe: Ressorts Industrie: *See—*
  - Duchemin, Michel, 4,353,503, Cl. 238-349.000.
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  - Sjoqvist, Carl D. I.; and Soderberg, Tage E., 4,353,430, Cl. 180-90.000.
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- Solomon, Harvey D., to General Electric Company. Method of making high strength duplex stainless steels. 4,353,755, Cl. 148-136.000.
- Sommargren, Gary E., to United States of America, Energy. Laser heterodyne surface profiler. 4,353,650, Cl. 356-371.000.
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  - Sommer, Gordon M., 4,353,448, Cl. 192-70.130.
- Sommer, Gordon M., to Sommer Co. Clutch unit. 4,353,448, Cl. 192-70.130.
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  - Crumbliss, Robert T., 4,353,317, Cl. 112-266.200.
- Spendlow, Harry C., Sr.; and Houghton, William E., to Agri-Flex, Inc. Fluid control gate. 4,353,524, Cl. 251-145.000.
- Spercel, Robert J. Tuning device. 4,353,280, Cl. 84-306.000.
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  - Chow, Mark K.; Seymour, Shaun A.; and Bryant, Cal L., 4,353,199, Cl. 56-10.200.
  - Lonnemo, Kurt R., 4,353,289, Cl. 91-420.000.
  - Olive, Edmond E., 4,354,240, Cl. 364-434.000.
  - Seymour, Shaun A., 4,353,377, Cl. 130-30.00R.
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- Spinnler, Fritz: *See—*
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  - Williams, Milton J., 4,353,318, Cl. 114-211.000.
- Spraying Systems Company: *See—*
  - Butterfield, Ted; Emory, Lyle J.; and Filicicchia, Daniel, 4,353,508, Cl. 239-590.300.
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- Standard Oil Company (Indiana): *See—*
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  - Hoekstra, Gerald B.; and Christian, David R., 4,353,418, Cl. 166-259.000.
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- Steidinger, Ronald L., to Forrest Redi-Mix Co. Method and apparatus for constructing a system of gutters for a swine building. 4,353,328, Cl. 119-20.000.
- Steiner, Janos: *See—*
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- Steingroever, Dietrich: *See—*
  - Steingroever, Erich A.; and Steingroever, Dietrich, 4,354,218, Cl. 361-147.000.
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- Sterbank, John D.: *See—*
  - Hillebrand, Arthur N.; and Sterbank, John D., 4,353,155, Cl. 29-149.5DP.
- Sterling Drug Inc.: *See—*
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- Sterling, Henley F.; Bush, Eric L.; Drake, Miles P.; Hazelden, Denis W. J.; and Hughes, Sarah Y., to International Standard Electric Corporation. Coating powder with valve-metal. 4,353,938, Cl. 427-214.000.
- Stetter, Jorg; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating pests with 2-(azol-1-yl)-aldoxime-carbamates. 4,353,915, Cl. 424-269.000.
- Stevens, Albert F.; and Haley, Paul E., to Opex Corporation. Content activated envelope extraction. 4,353,197, Cl. 53-492.000.
- Stewart, David G.: *See—*
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- Stewart, John M., to Sunglo Solar Ltd. Solar energy collectors. 4,353,355, Cl. 126-445.000.
- Stewart, Roger G., to RCA Corporation. Random access memory with volatile and non-volatile storage. 4,354,255, Cl. 365-154.000.
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- Stohr, Gunter: *See—*
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- Stoll, Kurt. Magnetically coupled arrangement for a driving and a driven member. 4,354,125, Cl. 310-103.000.
- Stollenwerk, Ulrich: *See—*
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- Streicher, William L.: *See—*
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- Striegl, Georg. Device for machine reamer. 4,353,669, Cl. 408-185.000.
- Strobel, Manfred: *See—*
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  - Niertit, Frank; and Conner, Alvin R., 4,354,060, Cl. 179-81.00R.
- Strong, Walker A., to PPG Industries, Inc. Alkyl N-3-halo-,N-3,5-dihalobenzoyl-N-isopropylaminoacetate herbicides. 4,354,032, Cl. 560-41,000.
- Stroud, Lebern W. Alternator winding. 4,354,127, Cl. 310-198.000.
- Sturniolo, Giuseppe. Rolling bearing. 4,353,607, Cl. 308-214.000.
- Stynes, James A.: *See—*
  - Rutt, Truman C.; and Stynes, James A., 4,353,957, Cl. 428-292.000.
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  - Kovar, Josef; and Suchy, Milos, 4,353,428, Cl. 180-7.00R.
- Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Fuel injection control system. 4,353,342, Cl. 123-493.000.
- Sugihara, Takashi F., to United States of America, Agriculture. Soda crackers. 4,353,926, Cl. 426-20.000.
- Sugita, Hiroshi: *See—*
  - Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, 4,353,979, Cl. 430-372.000.
- Sugitani, Hatuo: *See—*
  - Mukoyama, Yoshiyuki; Chikazumi, Nobutoshi; and Sugitani, Hatuo, 4,353,801, Cl. 210-635.000.
- Sugiura, Yutaka: *See—*
  - Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,353,933, Cl. 427-8.000.
- Suh, John T.: *See—*
  - Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, 4,354,027, Cl. 544-346.000.
- Sullivan, Ann C.: *See—*
  - Guthrie, Robert W.; Kierstead, Richard W.; Mennona, Francis A.; and Sullivan, Ann C., 4,354,039, Cl. 562-582.000.
- Sumitomo Bakelite Company, Limited: *See—*
  - Yamaoka, Sigenori; Kusuhara, Akinobu; and Endo, Toshinaga, 4,353,954, Cl. 428-216.000.

- Sumitomo Chemical Company, Ltd.: *See—*
  - Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,353,916, Cl. 424-270.000.
- Sumitomo Metal Industries, Ltd.: *See—*
  - Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, 4,353,951, Cl. 428-198.000.
- Sun Dengyosha Company, Limited: *See—*
  - Yoshimura, Sumio, 4,354,078, Cl. 200-314.000.
  - Yoshimura, Sumio, 4,354,079, Cl. 200-314.000.
- Sunbeam Plastics Corporation: *See—*
  - Luker, Charles E., 4,353,474, Cl. 215-220.000.
- Sunglo Solar Ltd.: *See—*
  - Stewart, John M., 4,353,355, Cl. 126-445.000.
- Suntech, Inc.: *See—*
  - Schneider, Abraham; Hollstein, Elmer J.; Janoski, Edward J.; and Scheibel, Edward G., 4,353,792, Cl. 208-254.00H.
- Superpressure, Inc.: *See—*
  - Christman, Ross D., 4,353,684, Cl. 417-388.000.
- Surek, Thomas: *See—*
  - Kalejs, Juris P.; Chalmers, Bruce; and Surek, Thomas, 4,353,757, Cl. 148-172.000.
- Susnjara, Kenneth J.; and Fleck, Mark A., to Thermwood Corporation. Wrist construction for industrial robots. 4,353,677, Cl. 414-735.000.
- Suzuki, Hajime; and Iwano, Yoshimi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for forming a selvedge in a loom. 4,353,396, Cl. 139-54.000.
- Suzuki, Hideo: *See—*
  - Adachi, Takeshi; Suzuki, Hideo; and Kaneko, Makoto, 4,353,278, Cl. 84-1.010.
- Suzuki, Katsumi: *See—*
  - Kaneko, Kazuyoshi; and Suzuki, Katsumi, 4,353,595, Cl. 297-408.000.
- Suzuki, Sumio: *See—*
  - Murai, Kazuo; Hashimoto, Kenji; Fukushima, Kiyoshi; and Suzuki, Sumio, 4,353,299, Cl. 101-144.000.
- Suzuki, Teruki: *See—*
  - Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, 4,353,808, Cl. 252-301.40P.
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  - Chiba, Moichi; and Suzuki, Toshio, 4,353,605, Cl. 308-187.200.
- Sweeney, William M.; and Herbstman, Sheldon, to Texaco Inc. Novel method of extending a hydrocarbon fuel heavier than gasoline by adding a methoxy or ethoxy group. 4,353,710, Cl. 44-56.000.
- Sweet, Ralph: *See—*
  - Poggemiller, Erhard; and Sweet, Ralph, 4,353,423, Cl. 172-260.500.
- Sweetland, Roger D., to Cummins Engine Company, Inc. Crankcase ventilating system. 4,353,332, Cl. 123-41.860.
- Swenson Spreader Company: *See—*
  - Hoekstra, Ralph W., 4,353,177, Cl. 37-234.000.
- Swift, Harold E., to Gulf Research & Development Company. Process for hydrogenating unsaturated carboxylic acids and carboxylic acid esters. 4,353,835, Cl. 260-409.000.
- Swift, Joseph A., to Xerox Corporation. Method for making reticulated foam structures. 4,353,853, Cl. 264-41.000.
- Switchcraft, Inc.: *See—*
  - Lutzenberger, Kurt, 4,354,076, Cl. 200-308.000.
- SWS Incorporated: *See—*
  - Nilsen, Carl J., 4,354,090, Cl. 219-121.0LC.
- Sybron Corporation: *See—*
  - Pietschmann, Helmut, 4,354,071, Cl. 200-86.500.
- Symersky, Bohuslav, to U.S. Philips Corporation. Method of manufacturing a device having a conductor pattern. 4,353,935, Cl. 427-89.000.
- Syntex (U.S.A.) Inc.: *See—*
  - Clark, Robin D., 4,353,900, Cl. 424-248.540.
  - Clark, Robin D., 4,353,901, Cl. 424-248.570.
  - Pfister, Jurg R., 4,353,922, Cl. 424-274.000.
  - Thurber, T. C.; and Tegg, Derek, 4,353,829, Cl. 260-326.250.
- Synthelabo: *See—*
  - Fabiani, Paul; Rose, Francis; Vartanian, Abkar; and Warolin, Christian, 4,353,903, Cl. 424-250.000.
- Systems, Science and Software: *See—*
  - Lagus, Peter L.; and Peterson, Edward W., 4,353,249, Cl. 73-155.000.
- Szabat, John F.; Baumann, Gert F.; and Copeland, Gaeta L., to Mobay Chemical Corporation. Novel catalyst system for polyurethane foams. 4,353,995, Cl. 521-125.000.
- Szala, Lawrence E.: *See—*
  - Lee, Minyoung; and Szala, Lawrence E., 4,353,714, Cl. 51-295.000.
  - Lee, Minyoung; and Szala, Lawrence E., 4,353,963, Cl. 428-408.000.
- Sze, Daniel T. W.: *See—*
  - Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, 4,354,229, Cl. 364-200.000.
- Szilagyi, Ildiko: *See—*
  - Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
- Tabata, Junichi; and Kaneko, Noboru, to Kabushiki Kaisha Daini Seikosha. Electrochromic display device. 4,354,187, Cl. 340-763.000.
- Tada, Kinya; and Oyamada, Kenji, to Sanyo Electric Co., Ltd. Apparatus for charging rechargeable battery. 4,354,148, Cl. 320-20.000.
- Takada, Juichiro. Automobile passive type safety seat belt system. 4,353,579, Cl. 280-804.000.
- Takahashi, Hisashi; Kawanami, Takao; Sodeno, Keiji; and Baba, Toshihiko, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Welding apparatus with forward shiftable electrode tables. 4,354,089, Cl. 219-97.000.
- Takahashi, Itaru: *See—*
  - Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.
- Takano, Yoshio: *See—*
  - Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, 4,353,727, Cl. 65-36.000.
- Takaoka, Hiromi: *See—*
  - Toyama, Jiro; Takaoka, Hiromi; and Kariya, Kyoji, 4,354,108, Cl. 250-251.000.
- Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, to Fujisawa Pharmaceutical Co., Ltd. Process for preparing 3-methylenecepham compounds or a salt thereof. 4,354,022, Cl. 544-28.000.
- Takazawa, Yuzuru; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Exposure information input circuit for electric shutter. 4,353,631, Cl. 354-51.000.
- Takeda Riken Kogyo Kabushikikaisha: *See—*
  - Aihara, Hiroshi, 4,354,176, Cl. 340-347.0NT.
- Takeda, Susumu: *See—*
  - Isoyama, Mitsunori; Takeda, Susumu; and Nakai, Masatoshi, 4,353,388, Cl. 137-240.000.
- Takematsu, Yoshiyuki, to Fuji Koeki Corporation. Electric flash device for camera. 4,354,141, Cl. 315-241.00P.
- Taketani, Yutaka: *See—*
  - Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.
- Takewa, Hiroyuki: *See—*
  - Hasegawa, Mitsuhiro; Takewa, Hiroyuki; and Yamamoto, Hiroshi, 4,353,432, Cl. 181-166.000.
- Takeyasu, Isaburo; Nagamachi, Koichi; and Sato, Yuji, to Zeni Lite Buoy Co., Ltd. System of generating synchronizing signals in a navigational light group. 4,354,172, Cl. 340-29.000.
- Takimoto, Tadao: *See—*
  - Uchihara, Tatsuo; Takimoto, Tadao; Fujimoto, Junichi; Morita, Katuhiro; and Kubota, Hitoshi, 4,353,600, Cl. 303-24.00F.
- Takizawa, Hiroshi; Oiji, Yoshimasa; and Hirayama, Tatsuyuki, to Kyowa Hakko Kogyo Co., Ltd. Pharmaceutical composition containing a benzofurancarboxamide derivative as the active ingredient. 4,353,923, Cl. 424-285.000.
- Talbot, Kevin J., to Mannesmann Tally Corporation. Rotary/linear shuttle mechanism. 4,353,262, Cl. 74-108.000.
- Tam Ceramics Inc.: *See—*
  - Rutt, Truman C.; and Stynes, James A., 4,353,957, Cl. 428-292.000.
- Tanaka, Haruo: *See—*
  - Omura, Satoshi; Tanaka, Haruo; Takahashi, Itaru; Ishii, Shinzo; Mineura, Kazuyuki; Shirahata, Kunikatsu; and Kasai, Masaji, 4,353,986, Cl. 435-119.000.
- Tanaka, Hiroshi. Apparatus for automatically developing film. 4,353,635, Cl. 354-320.000.
- Tanaka, Susumu; Oka, Tateki; and Mizuno, Hiroshi, to Minolta Camera Kabushiki Kaisha. Copy paper separating method for use in electrophotographic copying apparatus. 4,353,648, Cl. 355-133.000.
- Tando, Shuichi, to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha. Magazine for storing and supplying circuit elements. 4,353,481, Cl. 221-251.000.
- Tanimizu, Shinkichi; Nakano, Masaki; Suzuki, Teruki; and Manabe, Toshikatsu, to Hitachi, Ltd. Phosphors and process for producing the same. 4,353,808, Cl. 252-301.40P.
- Tanimoto, Tateo: *See—*
  - Omori, Shunji; Tanimoto, Tateo; Maeda, Nobutaka; Nishikawa, Seiji; and Moriya, Muneo, 4,353,237, Cl. 72-205.000.
- Tarui, Hiroyuki. Shoe scraper mat. 4,353,944, Cl. 428-74.000.
- Taylor, David H., to Thermo King Corporation. Transport refrigeration system. 4,353,221, Cl. 62-239.000.
- Taylor, Eric, to Paterson Products Limited. Frames. 4,353,644, Cl. 355-72.000.
- Taylor, Harold W., Jr. Tobacco harvesting machine. 4,353,200, Cl. 56-27.500.
- Taylor, William R.; and Gonia, Richard J., to General Electric Company. Cable retractor. 4,353,518, Cl. 248-60.000.
- Teague, W. Dorwin, Jr.; and Sempliner, Arthur T. Power toothbrush. 4,353,141, Cl. 15-22.00R.
- Technomatic AG: *See—*
  - Ruchser, Erich; and Ott, Helmut, 4,353,392, Cl. 137-596.160.
- Tegg, Derek: *See—*
  - Thurber, T. C.; and Tegg, Derek, 4,353,829, Cl. 260-326.250.
- Teijin Limited: *See—*
  - Hara, Shigeyoshi; Hayashi, Yuzuru; Kawaguchi, Takeyuki; Sasaki, Noriaki; Taketani, Yutaka; and Minematsu, Hiroyoshi, 4,353,802, Cl. 210-654.000.
  - Hirose, Isao; Yamamoto, Kiyoshi; and Okitsu, Hiroyuki, 4,354,037, Cl. 562-416.000.
- Telefonaktiebolaget L M Ericsson: *See—*
  - Carlsson, Karl-Johan V.; and Kjoller, Hans O. S., 4,354,231, Cl. 364-200.000.
  - Nyberg, Karl F. L.; and Josefsson, Kjell S., 4,354,265, Cl. 370-111.000.
- Tellert, Rudy; and Fischer, Wolfgang, to Sachs-Systemtechnik GmbH. Cooking vessel for an induction cooking appliance. 4,354,082, Cl. 219-10.49R.

- Tenex Corporation: *See—*
  - Polhemus, Marlan H.; and Ferrante, Peter L., 4,353,470, Cl. 211-126.000.
- Tenmyo, Shigemoto; and Koide, Hiroshi, to Ricoh Company, Ltd. Drive apparatus. 4,354,146, Cl. 318-341.000.
- Tenneco Chemicals, Inc.: *See—*
  - Haase, Donald J.; Walker, David G.; and Ostrowski, Paul C., 4,353,840, Cl. 260-448.00R.
- Tera, Takumi; Omote, Hidetaro; and Kitamura, Satoru, to Ishikawa Seisakusho Ltd. Apparatus for inserting a weft on an air jet loom. 4,353,397, Cl. 139-435.000.
- Terada, Sadatugu; Arai, Hideaki; Itoh, Kenji; Sugita, Hiroshi; Matsuura, Katsumi; and Wada, Thuneo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic materials. 4,353,979, Cl. 430-372.000.
- Terakado, Seishi: *See—*
  - Manabe, Keiji; Kawamura, Tadanori; Fukunaga, Masao; Nishida, Takeo; Terakado, Seishi; and Nagakoshi, Toshiaki, 4,354,092, Cl. 219-225.000.
- Terasawa, Yoshio; Miyata, Kenji; Oikawa, Saburo; Murakami, Susumu; Okamura, Masahiro; and Ogawa, Takuzo, to Hitachi, Ltd. Field controlled thyristor control circuit with additional FCT in reverse bias circuit. 4,354,121, Cl. 307-252.00C.
- Terlizzi, Marie B.: *See—*
  - Quatrini, Lucretia R.; Terlizzi, Marie B.; and Martin, Brice E., 4,353,878, Cl. 423-53.000.
- Terreault, Gerard; and Deflandre, Yves, to 501 Centre de Recherche Industrielle du Quebec. Multi-subscriber differentiation and distribution switching system having interchangeable differentiating circuits. 4,354,167, Cl. 333-103.000.
- Tesa S.A.: *See—*
  - Ginggen, Serge, 4,353,168, Cl. 33-147.00H.
- Tescom Corporation: *See—*
  - Nelson, Craig E.; and Kawamoto, Frank T., 4,353,395, Cl. 137-861.000.
- Tessier, Leo: *See—*
  - Goupil, Marcel; and Tessier, Leo, 4,353,549, Cl. 273-67.00A.
- Teutsch, Jean G.; and Deraedt, Roger, to Roussel Uclaf. Novel 16α-methyl-pregnane. 4,353,899, Cl. 424-243.000.
- Texaco Inc.: *See—*
  - Ganster, Charles A.; and Nelson, Gerald V., 4,354,242, Cl. 364-501.000.
  - Marion, Charles P.; Brent, Albert; Richter, George N.; Crouch, William B.; Child, Edward T.; and Reynolds, Blake, 4,353,712, Cl. 48-197.00R.
  - Richter, Albert P., Jr.; and Campsey, Ronald L., 4,354,110, Cl. 250-358.100.
  - Sweeney, William M.; and Herbstman, Sheldon, 4,353,710, Cl. 44-56.000.
  - Widmyer, Richard H., 4,353,417, Cl. 166-250.000.
  - Widmyer, Richard H., 4,353,419, Cl. 166-379.000.
- Texas Instruments Incorporated: *See—*
  - Brantingham, George L.; and Wiggins, Richard H., 4,354,056, Cl. 179-1.0SM.
  - Jones, James J., 4,353,601, Cl. 303-106.000.
  - Naden, Rex A., 4,354,253, Cl. 365-15.000.
  - Sobol, Anthony J., III, 4,354,068, Cl. 200-5.00A.
- Texasgulf Inc.: *See—*
  - Round, Robert T., 4,353,260, Cl. 73-863.410.
- Thaer, Andreas: *See—*
  - Hagner, Willi; Thaer, Andreas; and Bigar, Francis, 4,353,618, Cl. 350-91.000.
- Therm-O-Disc, Incorporated: *See—*
  - Risacher, Gerard H., 4,354,170, Cl. 337-334.000.
- Thermo King Corporation: *See—*
  - Taylor, David H., 4,353,221, Cl. 62-239.000.
- Thermoset AG: *See—*
  - Smith, Stuart B., 4,353,994, Cl. 521-110.000.
- Thermwood Corporation: *See—*
  - Susnjara, Kenneth J.; and Fleck, Mark A., 4,353,677, Cl. 414-735.000.
- Thibault, Ronald M., to Osborne Industries, Inc. Rotary self-feeder. 4,353,329, Cl. 119-52.00A.
- Thieme, Peter C.; Franke, Albrecht; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, to BASF Aktiengesellschaft. Phenylpiperazine derivatives of 1,3,4-oxadiazolylphenols, and therapeutic agents containing these compounds. 4,353,904, Cl. 424-250.000.
- Thieme, Peter C.: *See—*
  - Frickel, Fritz-Frieder; Thieme, Peter C.; Franke, Albrecht; Hagen, Helmut; Lenke, Dieter; and Gries, Josef, 4,353,917, Cl. 424-270.000.
- Thiersch, Friedrich; and Strobel, Manfred, to Carl Still GmbH & Co. KG, Firma. Earthquake-proof foundation for coke oven batteries. 4,353,189, Cl. 52-167.000.
- Thiokol Corporation: *See—*
  - Bell, Frank H., 4,353,303, Cl. 102-367.000.
- Thomas, Delbert C., Jr.: *See—*
  - Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
- Thomas, Herbert: *See—*
  - Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, 4,353,913, Cl. 424-263.000.
- Thomas, Patrick D. P.: *See—*
  - Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., 4,353,974, Cl. 430-218.000.
- Thompson, Gregory J.: *See—*
  - Lomas, David A.; and Thompson, Gregory J., 4,353,812, Cl. 252-417.000.
- Thompson, Neil E. S., to Petrolite Corporation. N,N'-Disubstituted hexahydropyrimidines. 4,354,025, Cl. 544-231.000.
- Thoms, Roland, to Buckbee-Mears Company. Hole technology. 4,353,948, Cl. 428-131.000.
- Thomson-CSF: *See—*
  - Billottet, Henri; Augy, Henri; and Quoy, Andre, 4,353,284, Cl. 89-40.00B.
  - Delegue, Francois E., 4,354,245, Cl. 364-606.000.
  - Leclerc, Pierre; Huignard, Jean-Pierre; and Aubourg, Philippe, 4,353,616, Cl. 350-3.750.
  - Micheron, Francois, 4,354,134, Cl. 310-800.000.
- Three Rivers Development Corporation: *See—*
  - Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,353,929, Cl. 426-243.000.
- Thurber, T. C.; and Tegg, Derek, to Syntex (U.S.A.) Inc. Process for 5-aroylation of 1,2-dihydro-3H-pyrrolo[1,2-a]pyrrole-1-carboxylic esters. 4,353,829, Cl. 260-326.250.
- Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See—*
  - Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.
- Tiefenthal, Alfred. Ice skate. 4,353,562, Cl. 280-7.130.
- Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
  - Onodera, Takashi; Komine, Kikuji; Ohashi, Fumis; and Naito, Tsutomu, 4,354,003, Cl. 525-222.000.
- Tohill, Henry O., to W-K-M Wellhead Systems, Inc. Metal seal assembly with deformable sealing ring. 4,353,560, Cl. 277-236.000.
- Tokumitsu, Jun; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Optical system capable of continuously varying the diameter of a beam spot. 4,353,617, Cl. 350-6.800.
- Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Tando, Shuichi, 4,353,481, Cl. 221-251.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Hiraoka, Shunji; Niwa, Makoto; and Ishii, Satoru, 4,353,680, Cl. 415-219.00R.
  - Kishii, Toru, 4,353,649, Cl. 356-33.000.
  - Nishio, Kosaku, 4,354,112, Cl. 378-99.000.
  - Sato, Fumitaka, 4,354,258, Cl. 365-230.000.
  - Shima, Takeshi; and Torii, Ken-ichi, 4,354,124, Cl. 307-522.000.
- Tolasch, Gerhard; and Grasse, Hans J., to Hauni-Werke Korber & Co. KG. Apparatus for transport and temporary storage of cigarettes or the like between producing and processing machines. 4,353,454, Cl. 198-347.000.
- Tomburo, Anthony F.: *See—*
  - Kachur, Nicholas W.; and Tomburo, Anthony F., 4,353,475, Cl. 215-223.000.
- Tomita, Yoshinobu: *See—*
  - Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, 4,353,727, Cl. 65-36.000.
- Tomlinson, Harvard L.; and Crain, Stephen F., to Halliburton Company. Additive metering control system. 4,353,482, Cl. 222-1.000.
- Tomsen, Harald: *See—*
  - Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.
- Tong, George L.: *See—*
  - Acton, Edward M.; and Tong, George L., 4,353,894, Cl. 424-180.000.
- Toolema AB: *See—*
  - Undin, Hans; and Wiener, Hans, 4,353,240, Cl. 72-410.000.
- Toreson, James S.: *See—*
  - Gilovich, Paul A.; and Toreson, James S., 4,354,211, Cl. 360-84.000.
- Torii, Ken-ichi: *See—*
  - Shima, Takeshi; and Torii, Ken-ichi, 4,354,124, Cl. 307-522.000.
- Tosco Corporation: *See—*
  - Firth, Donald, 4,353,558, Cl. 277-30.000.
- Toshiba Silicone Co., Ltd.: *See—*
  - Kimura, Hiroshi, 4,354,013, Cl. 528-16.000.
- Totsuka, Kaoru: *See—*
  - Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.
- Toyama, Jiro; Takaoka, Hiromi; and Kariya, Kyoji, to Fujitsu Limited. Atomic beam device. 4,354,108, Cl. 250-251.000.
- Toyo Engineering Corporation: *See—*
  - Inoue, Shigeru; Ono, Hiroshi; and Fujii, Hidetsugu, 4,354,040, Cl. 564-67.000.
  - Kinno, Bunji; Hirayama, Hiroshi; and Honda, Tetsuzo, 4,353,730, Cl. 71-29.000.
  - Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Nagahama, Takashi; and Naruo, Masaki, 4,353,709, Cl. 23-313.0FB.
- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
  - Kaji, Kiyokane, 4,354,131, Cl. 310-328.000.
- Trabue, Gordon C.: *See—*
  - Allen, William M.; and Trabue, Gordon C., 4,353,413, Cl. 165-92.000.
- Trachte, Dietrich, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,353,343, Cl. 123-502.000.
- Trane Company, The: *See—*
  - Linnert, Peter J.; and Quinn, James R., 4,353,682, Cl. 417-295.000.
  - Saunders, James F.; and Krocker, Robert E., 4,353,409, Cl. 165-2.000.
- Trantow, Mark D., to Wausau Metals Corp. Jointed vertical slat for window blind. 4,353,404, Cl. 160-236.000.

- Trummlitz, Gunter: *See—*
  - Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.
- Trutzschler GmbH & Co. KG: *See—*
  - Beneke, Wolfgang, 4,353,148, Cl. 19-105.000.
- TRW Inc.: *See—*
  - Crackel, John E.; and Stieritz, William J., 4,354,277, Cl. 455-259.000.
  - Kolakowski, Thomas A.; and Vishnevsky, Constantine, 4,353,405, Cl. 164-122.200.
  - Schultz, Ronald L., 4,353,620, Cl. 350-96.210.
- Tsakonas, Athanassios: *See—*
  - Polyzoides, Apostolos J.; and Tsakonas, Athanassios, 4,353,136, Cl. 3-1.911.
- Tse, Samuel Y., to Procor Limited-Procor Limitee. Pelletizing method and apparatus. 4,353,852, Cl. 264-37.000.
- Tsukamoto, Masaaki: *See—*
  - Chino, Tatsukichi; Imai, Takuo; Tsukamoto, Masaaki; Asaho, Ryuichi; Bessho, Nagayasu; and Nakanishi, Kyoji, 4,353,533, Cl. 266-265.000.
- Tsukamoto, Shinjiro; and Ugawa, Masahiro. Automatic isolator of blood plasma. 4,354,116, Cl. 250-576.000.
- Tsunematsu, Hiroshi: *See—*
  - Masuda, Toyohiko; Ueno, Takeshi; Nagai, Yoji; Tsunematsu, Hiroshi; and Nakamura, Shozo, 4,353,213, Cl. 60-646.000.
- Tsunoda, Teruo: *See—*
  - Chiba, Katsuyoshi; Tsunoda, Teruo; Kato, Yoshiki; Endo, Mitsushi; Sawase, Fumihiko; Itikawa, Katuji; and Imamura, Masa-aki, 4,353,937, Cl. 427-130.000.
- Turley, Patricia A.: *See—*
  - Capuano, Italo A.; Carr, Lawrence P.; and Turley, Patricia A., 4,353,741, Cl. 75-109.000.
- Turnbull, Fred G., to General Electric Company. Step-up/step down chopper. 4,354,223, Cl. 363-124.000.
- Turner, Gale R.: *See—*
  - Aurand, Kenneth C.; Schneider, Ralph J.; and Turner, Gale R., 4,354,074, Cl. 200-153.00J.
- Turner, Gary B., to Atlantic Richfield Company. Process for fabricating solar to electrical energy conversion units. 4,353,161, Cl. 29-572.000.
- Twohig, Elizabeth A.: *See—*
  - Gay, Walter A.; and Twohig, Elizabeth A., 4,353,920, Cl. 424-270.000.
- U.M.C. Industries, Inc.: *See—*
  - Shah, Hasmukh R.; and Ross, Michael S., 4,353,452, Cl. 194-100.00A.
- Uchidoi, Masanori: *See—*
  - Saito, Syuichiro; and Uchidoi, Masanori, 4,353,632, Cl. 354-133.000.
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- Ueda, Ikuo: *See—*
  - Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
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- Umemura, Izumi: *See—*
  - Nohda, Masao; and Umemura, Izumi, 4,353,625, Cl. 351-13.000.
- Undin, Hans; and Wiener, Hans, to Toolema AB. Crimping tool. 4,353,240, Cl. 72-410.000.
- Union Carbide Corporation: *See—*
  - Doumaux, Arthur R., Jr.; Downey, James M.; Henry, Joseph P.; and Hurt, John M., 4,353,843, Cl. 260-466.000.
  - Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,354,009, Cl. 526-125.000.
  - Keogh, Michael J., 4,353,997, Cl. 523-210.000.
  - Merkert, Rodney F., 4,353,744, Cl. 75-134.00V.
  - Prakash, Sri, 4,353,153, Cl. 29-25.420.
- United Conveyor Corporation: *See—*
  - Margison, Elwood R., 4,353,674, Cl. 414-323.000.
- United Kingdom Atomic Energy Authority: *See—*
  - Goode, Philip D.; Poole, Michael J.; and Proctor, Gordon W., 4,354,113, Cl. 250-423.00R.
  - Klaschka, John T.; and Davies, Michael J., 4,353,415, Cl. 165-104.210.
- United States of America
  - Agriculture: *See—*
    - Frick, John G., Jr.; and Harper, Robert J., Jr., 4,353,707, Cl. 8-187.000.
    - Sugihara, Takashi F., 4,353,926, Cl. 426-20.000.
  - Air Force: *See—*
    - Burns, Richard H.; Smith, Michael R.; Bell, Irving J.; and Crabtree, Kenneth, 4,354,102, Cl. 250-201.000.
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    - Kohler, Hans W., 4,354,192, Cl. 343-14.000.
    - McCain, William T., 4,353,572, Cl. 280-492.000.
    - Vig, John R., 4,354,133, Cl. 310-344.000.
  - Energy: *See—*
    - Bartlit, John R.; Denton, William H.; and Sherman, Robert H., 4,353,871, Cl. 422-159.000.
    - Belmonte, Mark S.; Davis, James H.; and Williams, David A., 4,353,391, Cl. 137-565.000.
    - Cleary, Edward N. G., 4,353,205, Cl. 60-39.120.
    - Jeffrey, Frank R.; and Shanks, Howard R., 4,353,788, Cl. 204-192.00S.
    - Peterson, William R., 4,353,561, Cl. 279-123.000.
    - Sommargren, Gary E., 4,353,650, Cl. 356-371.000.
    - Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.
    - Wolf, Gary A., 4,353,884, Cl. 423-277.000.
  - Health & Human Services: *See—*
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- U.S. Philips Corporation: *See—*
  - Davies, Robert; Newton, Barrie H.; and Booth, Peter L., 4,354,165, Cl. 331-96.000.
  - Feiner, Louis F., 4,354,157, Cl. 324-312.000.
  - Groothuis, Hermanus H. H., 4,354,186, Cl. 340-728.000.
  - Haenen, Henricus W. G.; and Huesken, Robertus S. N. M., 4,354,200, Cl. 358-23.000.
  - Hughes, John B., 4,354,274, Cl. 375-120.000.
  - Immink, Kornelis A.; Bierhoff, Martinus P. M.; and Heemskerk, Jacobus P. J., 4,354,103, Cl. 250-201.000.
  - Janssen, Johannes H. H., 4,354,145, Cl. 318-254.000.
  - Konijnendijk, Willem L.; Peters, Robert C.; and Willemsen, Petrus J. M., 4,354,139, Cl. 313-486.000.
  - Lersmacher, Bernhard, 4,353,782, Cl. 201-25.000.
  - Maier, Hermann F. L., 4,353,623, Cl. 350-391.000.
  - Ruyten, Henricus M.; and Hoefnagels, Johannes F., 4,353,226, Cl. 464-40.000.
  - Schneider, Henri W., 4,354,188, Cl. 340-814.000.
  - Seitz, Alfred, 4,354,142, Cl. 315-241.00S.
  - Strom, Johan P.; and Fager, Leif-Olof, 4,353,603, Cl. 308-26.000.
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- United States Steel Corporation: *See—*
  - Ahner, Walter D.; and Malosh, James B., 4,353,688, Cl. 432-217.000.
  - George, Kenneth E., Jr.; and Alexander, Douglas E., 4,354,085, Cl. 219-59.100.
- United Technologies Corporation: *See—*
  - Doman, Glidden S., 4,353,681, Cl. 416-11.000.
  - Dulberger, Michael D.; Hibner, David H.; and Moringiello, Donald C., 4,353,604, Cl. 308-184.00A.
  - Fishter, Robert E.; Lada, Henry; and Manty, Brian A., 4,353,780, Cl. 156-664.000.
  - Grudkowski, Thomas W., 4,354,166, Cl. 331-107.00A.
  - MacLennan, Roderick A.; and Mulvey, William J., 4,354,234, Cl. 364-424.000.
  - Murphy, Richard D.; and Clelford, Douglas H., 4,354,230, Cl. 364-200.000.
  - Scola, Daniel A., 4,354,012, Cl. 526-259.000.
  - Snitzer, Elias; and Bacon, James F., 4,353,966, Cl. 428-428.000.
- University of Utah Research Foundation: *See—*
  - Harris, Joel M.; and Knorr, Fritz J., 4,353,242, Cl. 73-23.100.
- Uniwave, Inc.: *See—*
  - Abrams, Abraham; and Baumann, John J., 4,353,435, Cl. 184-6.260.
- UOP Inc.: *See—*
  - Antos, George J., 4,353,815, Cl. 252-466.0PT.
  - Childs, Michael E., 4,353,711, Cl. 44-63.000.
  - Cleary, Michael T.; and Kulprathipanja, Santi, 4,353,838, Cl. 260-419.000.
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  - Fink, Allen H., 4,353,811, Cl. 252-417.000.
  - Lomas, David A.; and Thompson, Gregory J., 4,353,812, Cl. 252-417.000.
  - Lowe, Frederick G., 4,353,594, Cl. 297-307.000.
  - Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, 4,353,794, Cl. 208-321.000.
- Upjohn Company, The: *See—*
  - Lincoln, Frank H., 4,354,021, Cl. 542-431.000.
  - Wolf, Holly J., 4,353,987, Cl. 435-147.000.
- Urataki, Etsuo; Takano, Yoshio; Tomita, Yoshinobu; and Nakagawa, Mitsuru, to Hitachi, Ltd. Method for fabricating fluorescent lamp. 4,353,727, Cl. 65-36.000.
- Ustav pro vyzkum motorvych vozidel: *See—*
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- USV Pharmaceutical Corporation: *See—*
  - Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, 4,354,027, Cl. 544-346.000.
- Uyeda, Tim M., to La Gard, Inc. Friction drive-snap inner fit tumbler wheel construction. 4,353,231, Cl. 70-316.000.
- Valentin, Guenter: *See—*
  - Rotzoll, Rudi-Heinz; Matthies, Paul; Valentin, Guenter; and Hoerauf, Werner, 4,354,020, Cl. 528-323.000.
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- Vallourec, Societe Anonyme: *See—*
  - Breton, Jean-Jacques; and Malicet, Philippe, 4,353,238, Cl. 72-209.000.
- Vandenbossche, Benjamin E., to Sealed Air Corporation. Solar collector units with mounting frame. 4,353,356, Cl. 126-450.000.
- van der Scheer, Derk, to Hazemeijer B.V. Selective safety device for the protection of a power distribution system. 4,354,215, Cl. 361-63.000.
- Vander Voort, George F., to Bethlehem Steel Corporation. Steel composition for chipper knife. 4,353,743, Cl. 75-124.000.
- Vander Voort, George F., to Bethlehem Steel Corporation. Method of heat treating a steel composition for chipper knife. 4,353,756, Cl. 148-143.000.
- Van Dorsselaer, Viviane: *See—*
  - Bey, Philippe; Gerhart, Fritz; and Van Dorsselaer, Viviane, 4,353,828, Cl. 260-326.0NS.
- Van Meteren, Johannes, to Lummus Company, The. Apparatus and process for manufacturing finned tubes. 4,353,162, Cl. 29-727.000.
- Van Ness, John F.; and Donaldson, G. Edward, to Ferro Corporation. Glass composition and method of manufacture and article produced therefrom. 4,353,991, Cl. 501-20.000.
- Varkonyi nee Slovicsko, Janosne: *See—*
  - Seres, Jeno; Daroczi nee Csuka, Istvanne; Varkonyi nee Slovicsko, Janosne; Horvath, Gabor; Szilagyi, Ildiko; and Radvanyi nee Hegedus, Belane, 4,353,734, Cl. 71-95.000.
- Varshney, Ramesh C.; and Venkateswaran, Kalyanasundaram, to Fairchild Camera and Instrument Corporation. Sense amplifier for CCD memory. 4,354,257, Cl. 365-219.000.
- Vartanian, Abkar: *See—*
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- Vassiliou, Eustathios, to Du Pont de Nemours, E. I., and Company. Stain-resistant cookware multi-layer coating system comprising pigments and a transluscent outer layer. 4,353,950, Cl. 428-195.000.
- VDO Adolf Schindling A.G.: *See—*
  - Collonia, Harald, 4,353,339, Cl. 123-350.000.
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  - Seliger, Ewald; Dudar, Klaus; Stohr, Gunter; Millner, Rudolf; and Banse, Wilhelm, 4,353,928, Cl. 426-238.000.
- Vecchiato, Antonio, to Settef S.p.A. Resilient plastic wall coating for the building industry. 4,354,000, Cl. 524-388.000.
- Veeco Instruments Incorporated: *See—*
  - Williams, Norman; and Koch, George R., 4,354,111, Cl. 250-396.00R.
- Venkateswaran, Kalyanasundaram: *See—*
  - Varshney, Ramesh C.; and Venkateswaran, Kalyanasundaram, 4,354,257, Cl. 365-219.000.
- Verbandt, Andre. Device for purifying liquids, particularly water. 4,353,797, Cl. 210-159.000.
- Verbatim Corporation: *See—*
  - Martinelli, Lawrence G., 4,354,213, Cl. 360-133.000.
- Veres, Gergely: *See—*
  - Osvald, Zoltan; Veres, Gergely; Odor, Gyula; Lang, Gyorgy; and Steiner, Janos, 4,353,753, Cl. 134-22.130.
- Veretennikova, Nadezhda I.: *See—*
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- Vershinin, Vasily M.: *See—*
  - Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V., 4,354,114, Cl. 250-458.100.
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- Victor Company of Japan, Ltd.: *See—*
  - Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.
- Viesturs, Elmars H.; and Bauscher, Billy J., to Lockformer Company, The. Apparatus for making corrugated tubing and method for joining corrugated tubing. 4,353,232, Cl. 72-50.000.
- Vig, John R., to United States of America, Army. Hermetically sealed container. 4,354,133, Cl. 310-344.000.
- Vishnevsky, Constantine: *See—*
  - Kolakowski, Thomas A.; and Vishnevsky, Constantine, 4,353,405, Cl. 164-122.200.
- Voellmy, Carlo: *See—*
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- Vogt, Martin C.: *See—*
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- Voigtlander, Wolfgang: *See—*
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- Volakakis, John A. Educational learning aid. 4,353,700, Cl. 434-168.000.
- Volk, Benjamin: *See—*
  - Volk, Joseph, Sr., 4,353,931, Cl. 426-483.000.
- Volk, Joseph, Sr., to Volk, Benjamin. Method of hulling pistachio nuts. 4,353,931, Cl. 426-483.000.
- Volker, Herbert; and Oser, Polat, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Exhaust gas purification apparatus for an internal combustion engine of motor vehicles. 4,353,208, Cl. 60-299.000.
- Vollman, Charles K.: *See—*
  - Scarberry, Walter P.; and Vollman, Charles K., 4,353,498, Cl. 229-69.000.
- Volta, Ideo, to La Puntimatic S.n.C. di Musiani Franco & C. Detector device for overcurrents and the loss of one or two phases. 4,354,216, Cl. 361-92.000.
- Vrba, Jiri; Fife, Alistair A.; Burbank, Max B.; Macura, Vaclav; and Lomnes, Randy K., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Nondestructive system for testing the thickness of boiler tubes in boilers. 4,353,257, Cl. 73-623.000.
- Vries, Lodewijk B.; and Diepeveen, Matthijs A., to U.S. Philips Corporation. Apparatus for the processing of an information stream with the aid of an error-correcting convolutional code and apparatus for the detection of an error still irremediable in this processing. 4,354,269, Cl. 371-43.000.
- W-K-M Wellhead Systems, Inc.: *See—*
  - Tohill, Henry O., 4,353,560, Cl. 277-236.000.
- W. R. Grace & Co.: *See—*
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- Wada, Thuneo: *See—*
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- Wagner, Burkhard E.: *See—*
  - Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,354,009, Cl. 526-125.000.
- Wagner, Rudolf, to Rems-Werk Christian Foll und Sohne GmbH & Co. Apparatus for working pipes. 4,353,154, Cl. 29-27.00A.
- Wainwright, Richard M.; and Wilson, Steven. Protective cover for individual water fixtures. 4,353,139, Cl. 4-661.000.
- Wakefield, Jack C. Two stage disengagement spring for electromagnetic tooth clutches. 4,353,450, Cl. 192-84.00C.
- Wakeman, Russell J., to Colt Industries Operating Corp. Engine idle air valve means and system. 4,353,338, Cl. 123-339.000.
- Walker, David G.: *See—*
  - Haase, Donald J.; Walker, David G.; and Ostrowski, Paul C., 4,353,840, Cl. 260-448.00R.
- Walter, Arthur, to Erwin Sick GmbH Optik-Elektronik. Light barrier apparatus. 4,354,106, Cl. 250-239.000.
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- Walton, John F. Motor protection circuit. 4,354,214, Cl. 361-23.000.
- Walworth, Vivian K.: *See—*
  - Gerber, Arthur M.; Slafer, Warren D.; and Walworth, Vivian K., 4,353,977, Cl. 430-256.000.
- Wamser, Manfred: *See—*
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- Warabisako, Terunori; and Shiono, Shigeo, to Hitachi, Ltd. Photocoupling device. 4,354,115, Cl. 250-551.000.
- Ward, Richard, to Dobson Park Industries Limited. Percussive tools. 4,353,426, Cl. 173-119.000.
- Warkentin, Paul A.: *See—*
  - Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., 4,353,218, Cl. 62-6.000.
- Warner-Lambert Company: *See—*
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- Warner, Robert J.: *See—*
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- Warnock, John D.: *See—*
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- Warolin, Christian: *See—*
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- Washington Logging Equipment, Inc.: *See—*
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- Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, to Kowa Company, Ltd. Ka-6606 Aminoglycosides antibiotics and compositions thereof. 4,353,893, Cl. 424-180.000.
- Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, to Brother Industries, Ltd. Electronic typewriter and its control apparatus. 4,353,655, Cl. 400-144.200.
- Water Services of America, Inc.: *See—*
  - Leitner, Gordon F., 4,353,414, Cl. 165-95.000.
- Watling, Anthony D.: *See—*
  - Hannam, Stephen J.; Saynor, John S.; and Watling, Anthony D., 4,354,042, Cl. 564-144.000.
- Watson, Charles L.: *See—*
  - Partin, Norman D.; and Watson, Charles L., 4,353,453, Cl. 194-100.00A.
- Wausau Metals Corp.: *See—*
  - Trantow, Mark D., 4,353,404, Cl. 160-236.000.
- Weaver, David A.; and Bledsoe, Gordon G. Spool mounting assembly and brake. 4,353,515, Cl. 242-86.700.
- Webb. Audivee. Anti-theft device. 4,353,521, Cl. 248-552.000.
- Webb, Terence C.; Thomas, Patrick D. P.; and Long, William E., to Ciba-Geigy AG. Process for the production of photographic images and photographic materials used in this process. 4,353,974, Cl. 430-218.000.

- Weber, Charles J.: *See—*
  - Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J.; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
- Weber, Robert: *See—*
  - Kuhn, Peter; Kolar, Max; Weber, Robert; and Koch, Siegfried, 4,354,173, Cl. 340-52.00F.
- Weeks, Michael W.; and Brandram, Thomas C., to Interlube Systems Ltd. Lubrication monitoring systems. 4,354,183, Cl. 340-682.000.
- Weglin, Walter; and Daly, James M., to Rockcor, Inc. Low inflation warning device for pneumatic tires. 4,353,322, Cl. 116-34.00B.
- Wehrenberg, Charles C.: *See—*
  - Lowe, George F.; Gutkin, Peter A.; and Wehrenberg, Charles C., 4,354,205, Cl. 358-250.000.
- Wei-Chuan, Chang, to Yin-Lung, Yang, a part interest. Controllable motorcycle windshield. 4,353,590, Cl. 296-78.100.
- Weidmann, Ulrich. Electrical drive apparatus for a vertically displaceable blackboard. 4,353,526, Cl. 254-292.000.
- Weigert, Hans. Microfilm retrieval system. 4,353,642, Cl. 355-45.000.
- Weiler, Gerhard H.; Anderson, Paul A.; and Pagels, Louis T., to Automatic Liquid Packaging, Inc. Sterilizing apparatus for an encapsulating machine. 4,353,398, Cl. 141-91.000.
- Weiler, Rolf, to ITT Industries. Inc. Brake booster. 4,353,287, Cl. 91-369.00A.
- Weinkauff, David J.: *See—*
  - Baker, Joseph W.; Mansfield, Dennis L.; and Weinkauff, David J., 4,353,924, Cl. 424-317.000.
- Weiss, Leonard: *See—*
  - Davis, Jonathan B.; Lanier, Charles S.; Sze, Daniel T. W.; and Weiss, Leonard, 4,354,229, Cl. 364-200.000.
- Weiss, Wolfgang: *See—*
  - Keller, Wolfgang; and Weiss, Wolfgang, 4,353,874, Cl. 422-193.000.
- Weldy, Ross A. Steering and suspension system for the front wheel of a three-wheeled vehicle. 4,353,567, Cl. 280-92.000.
- Welimann, Klaus: *See—*
  - Rebbe, Klaus; and Welimann, Klaus, 4,353,374, Cl. 128-686.000.
- Wendel, Wolfgang: *See—*
  - Herbrechtsmeier, Peter; Greiner, Gunter; Grunbein, Wolfgang; Nix, Norbert; Schafer, Hans; and Wendel, Wolfgang, 4,353,717, Cl. 55-68.000.
- Wendle, Jesse G., Jr., to Hercofina. Minimizing iron in recovered oxidation catalyst material in DMT process. 4,353,810, Cl. 252-412.000.
- Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
  - Jordan, Armin, 4,353,170, Cl. 33-174.0TA.
  - Kotthaus, Erich, 4,353,671, Cl. 409-26.000.
- Wermelt, Klaus L. P.: *See—*
  - Hutchinson, William; and Wermelt, Klaus L. P., 4,353,229, Cl. 66-197.000.
- Werner, William L., to Granger Associates. Collapsible antenna support apparatus as well as a kit for and method of assembling the apparatus. 4,354,193, Cl. 343-882.000.
- Westen, Hannes: *See—*
  - Muck, Karl-Friedrich; Post, Lothar; and Westen, Hannes, 4,353,856, Cl. 264-240.000.
- Western Electric Co., Inc.: *See—*
  - Etchison, John O., Jr.; and Jones, Robert H. W., Jr., 4,353,469, Cl. 211-41.000.
  - Etchison, John O., Jr.; and Jones, Robert H. W., Jr., 4,353,614, Cl. 339-125.00R.
- Western Litho Plate & Supply Company: *See—*
  - Harrell, Robert E.; Harrell, Tedd L.; and Coons, Harold E., Jr., 4,353,647, Cl. 355-85.000.
- Westinghouse Electric Corp.: *See—*
  - Hunter, David O., 4,353,258, Cl. 73-644.000.
  - Lee, Richard M., 4,353,206, Cl. 60-39.18B.
  - Lee, Richard M., 4,353,207, Cl. 60-39.18B.
  - Martin, Jack; and Pitkjaan, Elam, 4,354,137, Cl. 313-222.000.
  - Przybysz, John X., 4,353,779, Cl. 156-659.100.
  - Yates, William W., 4,354,126, Cl. 310-156.000.
- Wetter, Jacob, to MDS Mannesmann Demag Sack GmbH. Hydraulic control system with a pipeline antiburst safety device for a double acting drive cylinder. 4,353,286, Cl. 91-5.000.
- Weyerhaeuser Company: *See—*
  - Abo El-Nil, Mostafa M., 4,353,184, Cl. 47-58.000.
- Wheatley, John C.; Paulson, Douglas N.; Allen, Paul C.; Knight, William R.; and Warkentin, Paul A., to United States of America, Energy. Heat pump/refrigerator using liquid working fluid. 4,353,218, Cl. 62-6.000.
- Wheeler, Richard W., to Eastman Kodak Company. Use of oxalic acid or an acid salt thereof in color transfer assemblages. 4,353,973, Cl. 430-216.000.
- White, James S.: *See—*
  - Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,353,929, Cl. 426-243.000.
- White, Paul W.: *See—*
  - Hosler, John F.; and White, Paul W., 4,353,686, Cl. 425-83.100.
- White, Richard E.: *See—*
  - Conger, David R. L.; Gerson, Ira A.; and White, Richard E., 4,354,248, Cl. 364-724.000.
- White, William J.: *See—*
  - Gelpey, Jeffrey C.; Marshall, Donald E., Jr.; and White, William J., 4,354,109, Cl. 250-349.000.
- Wibberley, Louis J.: *See—*
  - Foley, Ernest; Rogers, Lionel J.; Gardner, Henry J.; and Wibberley, Louis J., 4,353,882, Cl. 423-111.000.
- Wicks, Richard W.: *See—*
  - Gomez, Magdalena U.; and Wicks, Richard W., 4,353,982, Cl. 435-7.000.
- Widmyer, Richard H., to Texaco Inc. Method for producing a well in an unconsolidated formation. 4,353,417, Cl. 166-250.000.
- Widmyer, Richard H., to Texaco Inc. Method for manufacturing a well production and sand screen assembly. 4,353,419, Cl. 166-379.000.
- Wiechert, Rudolf: *See—*
  - Petzoldt, Karl; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,353,985, Cl. 435-59.000.
- Wiener, Hans: *See—*
  - Undin, Hans; and Wiener, Hans, 4,353,240, Cl. 72-410.000.
- Wiggins, Richard H.: *See—*
  - Brantingham, George L.; and Wiggins, Richard H., 4,354,056, Cl. 179-1.0SM.
- Wildbolz, Rudolf: *See—*
  - Mandl, Gerhard; Moser, Robert; and Wildbolz, Rudolf, 4,353,667, Cl. 406-29.000.
- Wildt Mellor Bromley Limited: *See—*
  - Hutchinson, William; and Wermelt, Klaus L. P., 4,353,229, Cl. 66-197.000.
- Wiley, W. Don. Pole supported bicycle-type exerciser. 4,353,544, Cl. 272-73.000.
- Wilken, Joachim H.; Stehlin, Bernhard; Pathe, Volker; Wamser, Manfred; and Pietzsch, Ludwig, to Pietzsch, Ludwig. Device for positioning and attitude-stabilizing a slewable inert/mass/supporter on one base. 4,353,446, Cl. 192-21.000.
- Wilkinson, Richard L., to Discovision Associates. Method of manufacturing an optical reading disc. 4,353,767, Cl. 156-245.000.
- Willamette Industries, Inc.: *See—*
  - Jes, Otto J., 4,353,495, Cl. 229-16.00R.
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- William H. Rorer, Inc.: *See—*
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- Williams, Bruce E.: *See—*
  - Loev, Bernard; Suh, John T.; Williams, Bruce E.; and St. Georgiev, Vassil, 4,354,027, Cl. 544-346.000.
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  - Lukens, Herbert R., Jr.; and Williams, Colin B., 4,353,886, Cl. 424-1.000.
- Williams, David A.: *See—*
  - Belmonte, Mark S.; Davis, James H.; and Williams, David A., 4,353,391, Cl. 137-565.000.
- Williams Gun Sight Co.: *See—*
  - Williams, Paul D., 4,353,133, Cl. 2-2.000.
- Williams, Milton J., to Spray Guard Corporation. Spray guard. 4,353,318, Cl. 114-211.000.
- Williams, Norman; and Koch, George R., to Veeco Instruments Incorporated. Screen lens array system. 4,354,111, Cl. 250-396.00R.
- Williams, Paul D., to Williams Gun Sight Co. Shoulder protection device. 4,353,133, Cl. 2-2.000.
- Williamson, Calvin C., to Kaiser Steel Corporation. Edge preforming of metal plate. 4,353,235, Cl. 72-130.000.
- Wilson, Hugh R. Fit adjustable telescope mount for firearms. 4,353,180, Cl. 42-1.0ST.
- Wilson, Joe C.: *See—*
  - Davis, Pauls; and Wilson, Joe C., 4,354,002, Cl. 524-588.000.
- Wilson, Steven: *See—*
  - Wainwright, Richard M.; and Wilson, Steven, 4,353,139, Cl. 4-661.000.
- Windsor Machine Company Limited: *See—*
  - Scott-Jackson, Dennis G.; and Lim, Hui C., 4,353,705, Cl. 474-158.000.
- Wingender, Kaspar: *See—*
  - Helling, Gunter; Wingender, Kaspar; Himmelmann, Wolfgang; and Beck, Manfred, 4,353,972, Cl. 430-213.000.
- Winkler, Heinrich: *See—*
  - Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,152, Cl. 323-241.000.
- Winter, George R., III; Maier, William H.; and Prabhu, K. N. Srinivas, to UOP Inc. Process for the solvent extraction of aromatics and the recovery of an aromatics-free non-aromatic product from a hydrocarbon feedstock. 4,353,794, Cl. 208-321.000.
- Winters, Stephen G. Fluid cleaner apparatus. 4,353,381, Cl. 134-111.000.
- Wissmann, Michael: *See—*
  - Maisch, Wolfgang; Peters, Klaus-Jurgen; Wissmann, Michael; and Gmelin, Karl, 4,353,385, Cl. 137-115.000.
- Witte, Alexander: *See—*
  - Schneider, Erich; Fleischer, Helmut; Rembold, Helmut; and Witte, Alexander, 4,353,272, Cl. 74-859.000.
- Woborschil, Walter, to Siemens Aktiengesellschaft. Display system for localizing regions in a mixed text & picture display. 4,354,184, Cl. 340-709.000.
- Woerz, Stephen E.; and Canup, Travis K., to Boise Cascade Corporation. Method for spin bonding ends for composite containers. 4,353,761, Cl. 156-69.000.
- Wohl, Ronald A.: *See—*
  - Diamond, Julius; Morgan, Thomas K., Jr.; and Wohl, Ronald A., 4,353,921, Cl. 424-273.00R.

- Wolf, Elmar; and Gras, Rainer, to Chemische Werke Huls Aktiengesellschaft. Powdered coating compositions having good storage stability and production of same. 4,354,014, Cl. 528-45.000.
- Wolf, Gary A., to United States of America, Energy. Method for synthesizing boracities. 4,353,884, Cl. 423-277.000.
- Wolf, Holly J., to Upjohn Company, The. Process for preparing glyceraldehyde from glycerol with methanol dehydrogenase. 4,353,987, Cl. 435-147.000.
- Wolff, Edward A.: *See—*
  - Frieder, Gideon; Hughes, David T.; Kline, Mark H.; Liebel, John T., Jr.; Meier, David P.; and Wolff, Edward A., 4,354,225, Cl. 364-200.000.
- Wollweber, Hartmund; Kolling, Heinrich; Thomas, Herbert; and Andrews, Peter, to Bayer Aktiengesellschaft. Benzimidazolylcarbamic acid ester compounds, their production, and their medicinal use. 4,353,913, Cl. 424-263.000.
- Wong, Louis F., to Procter & Gamble Company, The. Activation of hypochlorite bleaching of dyes. 4,353,866, Cl. 422-37.000.
- Wood, Milton D., to Fracture Technology, Inc. Method of determining the azimuth and length of a deep vertical fracture in the earth. 4,353,244, Cl. 73-37.000.
- Woodall, Jerry M.: *See—*
  - Hodgson, Rodney T.; Pettit, George D.; Sedgwick, Thomas O.; and Woodall, Jerry M., 4,354,198, Cl. 357-16.000.
- Woodford, Frank W. Rug cleaning apparatus. 4,353,145, Cl. 15-321.000.
- Woodrich, Kenneth H.: *See—*
  - Ray, Donald J.; and Woodrich, Kenneth H., 4,353,857, Cl. 264-258.000.
- Woods, Thomas J. Ear acoustical attenuating device. 4,353,364, Cl. 128-152.000.
- Worborschil, Walter, to Siemens Aktiengesellschaft. Display system for localizing regions in a mixed text and picture display. 4,354,185, Cl. 340-709.000.
- Wortmann, Ernst: *See—*
  - Fernandez, Jose; Herm, Jurgen; Krakow, Heinz; Wortmann, Ernst; and Tomsen, Harald, 4,353,689, Cl. 432-225.000.
- Wright, John W., to National Semiconductor Corporation. Wide dynamic range control amplifier with offset correction. 4,354,162, Cl. 330-260.000.
- WRR Industries, Inc.: *See—*
  - Osborn, Norbert L.; and Rae, John R., 4,353,685, Cl. 417-406.000.
- Wuerzer, Bruno: *See—*
  - Acker, Rolf-Dieter; Hamprecht, Gerhard; Parg, Adolf; and Wuerzer, Bruno, 4,353,732, Cl. 71-91.000.
  - Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,354,031, Cl. 548-362.000.
- Wuest, Anton: *See—*
  - Demuth, Robert; and Wuest, Anton, 4,353,149, Cl. 19-107.000.
- Wurst, Walter K., to International Standard Electric Corporation. Digital ring control system for digital multiplexer. 4,354,264, Cl. 370-110.000.
- Wyller, Arne A. Print maker. 4,353,640, Cl. 355-21.000.
- Xerox Corporation: *See—*
  - Beery, Jack, 4,353,540, Cl. 271-10.000.
  - Knight, Clifford; Gilmour, William; Page, Bernard F.; and Bilton, John, 4,353,542, Cl. 271-294.000.
  - Kramer, Charles J.; McCarroll, Alan F.; and Fisli, Tibor S., 4,353,615, Cl. 350-3.710.
  - Parker, Delmer G., 4,353,637, Cl. 355-3.0DD.
  - Parzygnat, William J., 4,353,541, Cl. 271-275.000.
  - Sohl, Gordon; Masters, John R.; and Leicht, John R., 4,353,656, Cl. 400-157.300.
  - Statt, William L., 4,353,643, Cl. 355-57.000.
  - Swift, Joseph A., 4,353,853, Cl. 264-41.000.
- Yamada, Kyota; and Komatsu, Akira, to Bodysonic Kabushiki Kaisha. Audio-band electromechanical vibration converter. 4,354,067, Cl. 179-146.00H.
- Yamada, Shigeki; and Yamamoto, Takao, to Kabushiki Kaisha Kyoto Daiichi Kagaku. Composition and test piece for measuring glucose concentration in body fluids. 4,353,984, Cl. 435-14.000.
- Yamaguchi, Takashi: *See—*
  - Watanabe, Isamu; Yamaguchi, Takashi; Kamiya, Kazuhiro; and Mori, Toshihito, 4,353,893, Cl. 424-180.000.
- Yamaha Hatsudoki Kabushiki Kaisha: *See—*
  - Iio, Toshimitsu, 4,353,333, Cl. 123-73.00R.
- Yamamoto, Hiroshi: *See—*
  - Hasegawa, Mitsuhiro; Takewa, Hiroyuki; and Yamamoto, Hiroshi, 4,353,432, Cl. 181-166.000.
- Yamamoto, Kiyoshi: *See—*
  - Hirose, Isao; Yamamoto, Kiyoshi; and Okitsu, Hiroyuki, 4,354,037, Cl. 562-416.000.
- Yamamoto, Makoto: *See—*
  - Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,354,059, Cl. 179-1.0DM.
- Yamamoto, Taizo, to Nippon Elanco Kabushiki Kaisha. Capsule orientation control method and apparatus. 4,353,456, Cl. 198-397.000.
- Yamamoto, Takao: *See—*
  - Yamada, Shigeki; and Yamamoto, Takao, 4,353,984, Cl. 435-14.000.
- Yamanaka, Kenichi; Mihashi, Yutaka; and Sogo, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Thermo-sensitive switching element manufacturing method. 4,353,754, Cl. 148-1.500.
- Yamaoka, Sigenori; Kusuhara, Akinobu; and Endo, Toshinaga, to Sumitomo Bakelite Company, Limited. Flexible printed circuit base board and method for producing the same. 4,353,954, Cl. 428-216.000.
- Yamashita, Masanobu: *See—*
  - Sato, Masato; and Yamashita, Masanobu, 4,353,847, Cl. 261-36.00A.
- Yamashita, Norihisa: *See—*
  - Uematsu, Tamon; Inoue, Satoru; and Yamashita, Norihisa, 4,353,916, Cl. 424-270.000.
- Yamazaki, Osamu: *See—*
  - Ono, Shusuke; Mitsuyu, Tsuneo; Yamazaki, Osamu; and Wasa, Kiyotaka, 4,354,130, Cl. 310-313.00A.
- Yamazaki, Seiichi: *See—*
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- Yamazaki, Takahiko: *See—*
  - Kanai, Hideo; Shinagawa, Akihiro; Yamazaki, Takahiko; and Itai, Reiichi, 4,353,790, Cl. 204-290.00F.
- Yancey, Paul J., to Allied Corporation. Apparatus for growing crystalline materials. 4,353,875, Cl. 422-249.000.
- Yano, Kenji: *See—*
  - Hasegawa, Osamu; Yano, Kenji; and Kaneda, Koichi, 4,354,199, Cl. 357-19.000.
- Yao, Shi-Kay, to Rockwell International Corporation. Optical cosine transform system. 4,354,247, Cl. 364-713.000.
- Yashin, Valery A.: *See—*
  - Karnaukhov, Valery N.; Yashin, Valery A.; Kulakov, Vladimir I.; Vershinin, Vasily M.; and Dudarev, Vladimir V., 4,354,114, Cl. 250-458.100.
- Yates, William W., to Westinghouse Electric Corp. Dynamoelectric machine with a permanent magnet rotor having laminated poles. 4,354,126, Cl. 310-156.000.
- Yin-Lung, Yang: *See—*
  - Wei-Chuan, Chang, 4,353,590, Cl. 296-78.100.
- Yonekubo, Ken, to Olympus Optical Co., Ltd. Afocal relay lens system. 4,353,624, Cl. 350-453.000.
- Yoshida, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Elevator position detector device. 4,354,171, Cl. 340-21.000.
- Yoshida, Tsuyoshi: *See—*
  - Miki, Nobuaki; Kawamoto, Mutsumi; Amano, Hiroyuki; Hida, Tsuneo; and Yoshida, Tsuyoshi, 4,354,236, Cl. 364-424.100.
- Yoshimura, Motokazu: *See—*
  - Watanabe, Tomoyoshi; Hirayama, Takanobu; Yoshimura, Motokazu; Mizuno, Kenji; and Inukai, Yukio, 4,353,655, Cl. 400-144.200.
- Yoshimura, Sumio, to Sun Dengyosha Company, Limited. Illuminating type push button switch. 4,354,078, Cl. 200-314.000.
- Yoshimura, Sumio, to Sun Dengyosha Company, Limited. Illuminating type push button switch. 4,354,079, Cl. 200-314.000.
- Yoshioka, Akiteru: *See—*
  - Takaya, Takao; Masugi, Takashi; Chiba, Toshiyuki; Yoshioka, Akiteru; Kato, Masayuki; Ueda, Ikuo; and Kobayashi, Masakazu, 4,354,022, Cl. 544-28.000.
- Young, Henry T. Apparatus for gravity blending or particulate solids. 4,353,652, Cl. 366-193.000.
- Youngstown Steel Door Company, The: *See—*
  - Jenkins, Oliver J., Jr.; and Mayfield, Charles W., 4,353,187, Cl. 49-501.000.
- Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. System and method for calculating a light information value. 4,353,629, Cl. 354-23.00D.
- Yuhas, Gerald J., to NRM Corporation. Ply down assembly for tire building machine. 4,353,771, Cl. 156-403.000.
- Yukitoshi, Teruo; Hino, Takao; and Ohya, Yoshinobu, to Daicel Chemical Industries, Ltd.; and Sumitomo Metal Industries, Ltd. Spot-weldable bonded clad metal plate. 4,353,951, Cl. 428-198.000.
- Zaehringer, Andre, to Vestra-Union, S.A. Apparatus for forming tucks in a piece of material and for securing those tucks by a heat-sealed reinforcement. 4,353,774, Cl. 156-443.000.
- Zago, Jean-Claude. Electrically heated, hair curling instrument and temperature control stand therefore. 4,354,093, Cl. 219-225.000.
- Zahka, Joseph: *See—*
  - Mir, Leon; and Zahka, Joseph, 4,353,715, Cl. 55-22.000.
- Zahnradfabrik Friedrichshafen, AG: *See—*
  - Holub, Heinrich, 4,353,288, Cl. 91-375.00A.
- Zaidan Hojin Handotai Kenkyu Shinkokai: *See—*
  - Nishizawa, Jun-ichi, 4,354,140, Cl. 313-499.000.
- Zellweger Uster A.G.: *See—*
  - Harzenmoser, Isidor, 4,353,467, Cl. 209-559.000.
- Zeni Lite Buoy Co., Ltd.: *See—*
  - Takeyasu, Isaburo; Nagamachi, Koichi; and Sato, Yuji, 4,354,172, Cl. 340-29.000.
- Zeug, Michael: *See—*
  - Franzen, Rudolf; Klingberg, Peter; and Zeug, Michael, 4,353,718, Cl. 55-112.000.
- Zhukovsky, Alexei A.; Butkin, Vladimir D.; and Kulachek, Mikhail I. Rotary drill automatic control system. 4,354,233, Cl. 364-420.000.
- Zimmerman, Lee T., to International Business Machines Corporation. Font selection and compression for printer subsystem. 4,353,653, Cl. 400-70.000.
- Zimmerman, Lee T.: *See—*
  - Baker, Gregory N.; Greene, Willard B.; Siegl, Ludwig R.; Thomas, Delbert C., Jr.; Weber, Charles J; and Zimmerman, Lee T., 4,353,298, Cl. 101-93.050.
- Zimmermann, Rainer: *See—*
  - Engel, Wolfhard; Trummlitz, Gunter; Eberlein, Wolfgang; Schmidt, Gunther; Engelhardt, Gunther; and Zimmermann, Rainer, 4,353,919, Cl. 424-270.000.
- Zinn, Michael F., to Bio-Energy Systems, Inc. Solar thermosyphon water heater. 4,353,352, Cl. 126-426.000.
- Zinser Textilmaschinen GmbH: *See—*
  - Mollstatter, Walter, 4,353,721, Cl. 55-283.000.
- Zip Heaters (Aust.) Pty. Limited: *See—*
  - Massey, Raymond D.; and Newsam, Leonard, 4,354,094, Cl. 219-306.000.
- 501 Centre de Recherche Industrielle du Quebec: *See—*
  - Terreault, Gerard; and Deflandre, Yves, 4,354,167, Cl. 333-103.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Adams, Thomas M., to Kaepa, Inc. Lacing assembly for a shoe. Re. 31,052, Cl. 36-50.000.
- Allied Chemical Corporation: *See—*
  - Morris, Robert C.; and Cline, Carl F., Re. 31,057, Cl. 372-41.000.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.
- Burroughs Corporation: *See—*
  - Harvey, Edgar L., Re. 31,054, Cl. 313-188.000.
- Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, to Fairchild Camera & Instrument Corp. Computer controlled high-speed circuit for testing electronic devices. Re. 31,056, Cl. 324-73.00R.
- Cline, Carl F.: *See—*
  - Morris, Robert C.; and Cline, Carl F., Re. 31,057, Cl. 372-41.000.
- Corning Glass Works: *See—*
  - Hausheer, Lawrence B., Re. 31,055, Cl. 313-404.000.
- Fairchild Camera & Instrument Corp.: *See—*
  - Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, Re. 31,056, Cl. 324-73.00R.
- Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., to Bell Telephone Laboratories, Incorporated. Apparatus and method for holding and planarizing thin workpieces. Re. 31,053, Cl. 355-77.000.
- Harvey, Edgar L., to Burroughs Corporation. Display panel having rows and columns of coplanar scan and display cathodes and large-area anode. Re. 31,054, Cl. 313-188.000.
- Hausheer, Lawrence B., to Corning Glass Works. Aperture mask supported by spring lugs and spring clips. Re. 31,055, Cl. 313-404.000.
- Herriott, Donald R.: *See—*
  - Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.
- Kaepa, Inc.: *See—*
  - Adams, Thomas M., Re. 31,052, Cl. 36-50.000.
- Morris, Robert C.; and Cline, Carl F., to Allied Chemical Corporation. Chromium-doped beryllium aluminate lasers. Re. 31,057, Cl. 372-41.000.
- Niu, George: *See—*
  - Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, Re. 31,056, Cl. 324-73.00R.
- Poulsen, Martin E.: *See—*
  - Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.
- Rongved, Leif: *See—*
  - Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.
- Saunders, Thomas E.: *See—*
  - Firtion, Victor A.; Herriott, Donald R.; Poulsen, Martin E.; Rongved, Leif; and Saunders, Thomas E., Re. 31,053, Cl. 355-77.000.
- Staffelbach, Rudolph: *See—*
  - Chau, Yuk B.; Niu, George; and Staffelbach, Rudolph, Re. 31,056, Cl. 324-73.00R.

LIST OF DESIGN PATENTEES

- A. Ahlstrom Osakeyhtio: *See—*
  - Sarpaneva, Timo, 266,535, Cl. D26-10.000.
- Abbott Laboratories: *See—*
  - Wilson, Thomas D.; and Scott, William G., 266,533, Cl. D24-58.000.
- Abe, Tadao, to Kabushiki Kaisha Daini Seikosha. Wrist watch. 266,491, 10-12-82, Cl. D10-39.000.
- Albert, Stephen B.: *See—*
  - Furbershaw, Gerard A.; Albert, Stephen B.; and Gruye, Dale W., 266,512, Cl. D14-101.000.
- American Commercial Incorporated: *See—*
  - Everhan, Walter, 266,472, Cl. D7-1.000.
  - Everhan, Walter, 266,474, Cl. D7-59.000.
  - Everhan, Walter, 266,475, Cl. D7-59.000.
- American Hospital Supply Corporation: *See—*
  - Gammons, Clifford E.; Pagel, Kenneth L.; and Jackson, Barry N., 266,470, Cl. D6-204.000.
- Aoki, Eiji, to Tomy Kogyo Co., Inc. Toy racing game track. 266,529, 10-12-82, Cl. D21-143.000.
- Appor Limited: *See—*
  - Rice, Francis J., 266,460, Cl. D6-95.000.
- Arnoldware-Rogers (Canada) Ltee: *See—*
  - Guerette, Richard, 266,485, Cl. D9-349.000.
- Associated Mills, Inc.: *See—*
  - Grube, Clifford E., 266,532, Cl. D24-41.000.
- Astatic Corporation, The: *See—*
  - Minamizono, Tsugikuma, 266,504, Cl. D14-28.000.
- Baldwin Piano & Organ Company: *See—*
  - Kelly, Lawrence J., 266,525, Cl. D17-22.000.
- Barr, Josef J. Diamond necklace. 266,493, 10-12-82, Cl. D11-6.000.
- Bayless, Mark S. Aerial toy. 266,528, 10-12-82, Cl. D21-86.000.
- Bergquist, Gregory D.; and Jones, John A., to Simmons Universal Corporation. Chair. 266,469, 10-12-82, Cl. D6-191.000.
- Bladen, Roy V. Cutting tool. 266,478, 10-12-82, Cl. D8-5.000.
- Bone, Arnold R., to Dennison Manufacturing Company. Bundling tie. 266,484, 10-12-82, Cl. D8-394.000.
- Brody, Robert D.: *See—*
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40 B	4,353,284
42 B	4,353,285
CLASS 91	
5	4,353,286
369 A	4,353,287
375 A	4,353,288
420	4,353,289
461	4,353,290
CLASS 92	
99	4,353,291
CLASS 98	
50	4,353,292
CLASS 99	
283	4,353,293
575	4,353,294
CLASS 100	
8	4,353,295
121	4,353,296
CLASS 101	
77	4,353,297
93.05	4,353,298
144	4,353,299
365	4,353,300
CLASS 102	
334	4,353,301
364	4,353,302
367	4,353,303
470	4,353,304
519	4,353,305
CLASS 104	
166	4,353,306
183	4,353,307
CLASS 105	
29 R	4,353,308
136	4,353,309
199 C	4,353,310
	4,353,311
241.2	4,353,312
397	4,353,313
410	4,353,314
CLASS 106	
2	4,353,745
89	4,353,746
	4,353,747
	4,353,748
97	4,353,749
100	4,353,750
306	4,353,751
309	4,353,752
CLASS 110	
281	4,353,315
CLASS 112	
262.3	4,353,316
266.2	4,353,317
CLASS 114	
211	4,353,318
218	4,353,319
267	4,353,320
283	4,353,321
CLASS 116	
34 B	4,353,322
CLASS 118	
61	4,353,323
207	4,353,324
683	4,353,325
696	4,353,326
CLASS 119	
5	4,353,327
20	4,353,328
52 A	4,353,329
95	4,353,330
CLASS 123	
18 R	4,353,331
41.86	4,353,332
73 R	4,353,333
179 H	4,353,334
185 P	4,353,335
198 B	4,353,336
243	4,353,337
339	4,353,338
350	4,353,339
365	4,353,340
414	4,353,341
493	4,353,342
502	4,353,343
569	4,353,344
575	4,353,345
CLASS 124	
24 R	4,353,346
CLASS 126	
41 R	4,353,347
91 R	4,353,348
112	4,353,349
121	4,353,350
193	4,353,351
426	4,353,352
429	4,353,353
443	4,353,354
445	4,353,355
450	4,353,356
	4,353,357
CLASS 128	
4	4,353,358
66	4,353,359
79	4,353,360
80 C	4,353,361
	4,353,362
130	4,353,363
152	4,353,364
203.15	4,353,365
205.12	4,353,366
213 A	4,353,367
214 R	4,353,368
214.4	4,353,369
269	4,353,370
303.17	4,353,371
640	4,353,372
641	4,353,373
686	4,353,374
689	4,353,152
782	4,353,375
CLASS 130	
27 T	4,353,376
30 R	4,353,377
31 R	4,353,378
CLASS 131	
231	4,353,379
CLASS 132	
40	4,353,380
CLASS 134	
22.13	4,353,753
111	4,353,381
113	4,353,382
CLASS 137	
45	4,353,383
68 R	4,353,384
115	4,353,385
119	4,353,386
203	4,353,387
240	4,353,388
375	4,353,389
527.8	4,353,390
565	4,353,391
596.16	4,353,392
624.2	4,353,393
625.65	4,353,394
861	4,353,395
CLASS 139	
54	4,353,396
435	4,353,397
CLASS 141	
91	4,353,398
CLASS 144	
2 R	4,353,399
117 R	4,353,400
193 A	4,353,401
CLASS 148	
1.5	4,353,754
136	4,353,755
143	4,353,756
172	4,353,757
CLASS 149	
109.6	4,353,758
CLASS 152	
209 R	4,353,402
353 R	4,353,403
CLASS 156	
64	4,353,759
66	4,353,760
69	4,353,761
164	4,353,762
184	4,353,763
203	4,353,764
212	4,353,765
233	4,353,766
245	4,353,767
253	4,353,768
299	4,353,769
308.4	4,353,770
403	4,353,771
433	4,353,772
442.1	4,353,773
443	4,353,774
540	4,353,775
555	4,353,776
643	4,353,777
644	4,353,778
659.1	4,353,779
664	4,353,780
CLASS 159	
2 R	4,353,781
CLASS 160	
236	4,353,404
CLASS 164	
122.2	4,353,405
336	4,353,406
468	4,353,407
503	4,353,408
CLASS 165	
2	4,353,409
18	4,353,410
48 R	4,353,411
59	4,353,412
92	4,353,413
95	4,353,414
104.21	4,353,415
168	4,353,416
CLASS 166	
250	4,353,417
259	4,353,418
379	4,353,419
382	4,353,420
CLASS 172	
5	4,353,421
41	4,353,422
260.5	4,353,423
438	4,353,424
CLASS 173	
109	4,353,425
119	4,353,426
CLASS 174	
22 R	4,354,050
47	4,354,051
48	4,354,052
84 R	4,354,053
CLASS 177	
50	4,353,427
CLASS 178	
3	4,354,054
42	4,354,055
CLASS 179	
1 DM	4,354,059
1 MN	4,354,058
1 SA	4,354,057
1 SM	4,354,056
81 R	4,354,060
82	4,354,061
84 A	4,354,062
103	4,354,063
107 BC	4,354,064
107 H	4,354,065
115.5 DV	4,354,066
146 H	4,354,067
CLASS 180	
7 R	4,353,428
70 MS	4,353,429

CLASSIFICATION OF PATENTS

90	4,353,430

CLASS 181

118	4,353,431
166	4,353,432
207	4,353,433
258	4,353,434

CLASS 184

6.26	4,353,435

CLASS 187

9 R	4,353,436

CLASS 188

79.5 GC	4,353,438
79.5 GE	4,353,437
	4,353,439
181 A	4,353,440
328	4,353,441
330	4,353,442

CLASS 192

3 T	4,353,443
3.29	4,353,444
4 R	4,353,445
21	4,353,446
64	4,353,447
70.13	4,353,448
82 R	4,353,449
84 C	4,353,450
89 B	4,353,451

CLASS 194

100 A	4,353,452
	4,353,453

CLASS 198

347	4,353,454
384	4,353,455
397	4,353,456
774	4,353,457
781	4,353,458
852	4,353,459

CLASS 200

5 A	4,354,068
16 R	4,354,069
19 R	4,354,070
86.5	4,354,071
148 A	4,354,072
	4,354,073
153 J	4,354,074
262	4,354,075
308	4,354,076
314	4,354,077
	4,354,078
	4,354,079
316	4,354,080
340	4,354,081

CLASS 201

25	4,353,782

CLASS 203

14	4,353,783
16	4,353,784

CLASS 204

129.2	4,353,785
144	4,353,786
159.15	4,353,787
192 S	4,353,788
195 R	4,353,789
290 F	4,353,790

CLASS 206

3	4,353,460
45.34	4,353,461
53	4,353,462
220	4,353,463
335	4,353,464
378	4,353,465
453	4,353,466

CLASS 208

10	4,353,791
254 H	4,353,792
262	4,353,793
321	4,353,794

CLASS 209

155	4,353,795
240	4,353,796
559	4,353,467

CLASS 210

159	4,353,797
181	4,353,798
321.3	4,353,799
605	4,353,800
635	4,353,801
654	4,353,802
728	4,353,803

CLASS 211

39	4,353,468
41	4,353,469

126	4,353,470

CLASS 212

259	4,353,471

CLASS 215

211	4,353,472
220	4,353,473
	4,353,474
223	4,353,475

CLASS 219

10.49 R	4,354,082
10.55 F	4,354,083
10.55 R	4,354,084
59.1	4,354,085
64	4,354,086
73.2	4,354,087
75	4,354,088
97	4,354,089
121 LC	4,354,090
213	4,354,091
225	4,354,092
	4,354,093
306	4,354,094
388	4,354,095
523	4,354,096

CLASS 220

85 D	4,353,476
224	4,353,477
	4,353,478
301	4,353,479

CLASS 221

63	4,353,480
251	4,353,481

CLASS 222

1	4,353,482
153	4,353,483
189	4,353,484
243	4,353,485
500	4,353,487
501	4,353,488
570	4,353,489

CLASS 224

32 A	4,353,490

CLASS 225

3	4,353,491

CLASS 226

11	4,353,492
158	4,353,493

CLASS 228

143	4,353,494

CLASS 229

16 R	4,353,495
34 R	4,353,496
55	4,353,497
69	4,353,498

CLASS 233

27	4,353,499

CLASS 235

96	4,354,097
98 B	4,354,098
449	4,354,099
	4,354,100
463	4,354,101

CLASS 236

34.5	4,353,500
	4,353,501
47	4,353,502

CLASS 238

349	4,353,503

CLASS 239

14	4,353,504
167	4,353,505
206	4,353,506
240	4,353,507
590.3	4,353,508

CLASS 241

24	4,353,509

CLASS 242

54 R	4,353,512
55.53	4,353,511
82	4,353,513
84.2 A	4,353,514
86.7	4,353,515
118.32	4,353,510

CLASS 244

110 B	4,353,516
216	4,353,517

CLASS 248

60	4,353,518
72	4,353,519
346	4,353,520

552	4,353,521

CLASS 249

144	4,353,522

CLASS 250

201	4,354,102
	4,354,103
211 J	4,354,104
231 R	4,354,105
239	4,354,106
	4,354,107
251	4,354,108
349	4,354,109
358.1	4,354,110
396 R	4,354,111
423 R	4,354,113
458.1	4,354,114
551	4,354,115
576	4,354,116

CLASS 251

65	4,353,523
145	4,353,524
174	4,353,525

CLASS 252

8.5 A	4,353,804
8.55 D	4,353,805
	4,353,806
49.6	4,353,807
301.4 P	4,353,808
316	4,353,809
412	4,353,810
417	4,353,811
	4,353,812
429 B	4,353,813
441	4,353,814
466 PT	4,353,815
512	4,353,816

CLASS 254

292	4,353,526
304	4,353,527
360	4,353,528

CLASS 256

59	4,353,529

CLASS 260

112.5 R	4,353,821
	4,353,822
	4,353,823
156	4,353,824
239.1	4,353,825
239.3 P	4,353,826
	4,353,827
326 NS	4,353,828
326.25	4,353,829
326.86	4,353,830
386	4,353,833
404.5	4,353,834
409	4,353,835
410.5	4,353,836
412.4	4,353,837
419	4,353,838
	4,353,839
448 R	4,353,840
453 P	4,353,841
465 D	4,353,842
466	4,353,843
549	4,353,844

CLASS 261

3	4,353,845
4	4,353,846
36 A	4,353,847
69 R	4,353,848

CLASS 264

2.7	4,353,849
25	4,353,850
37	4,353,851
	4,353,852
41	4,353,853
63	4,353,854
126	4,353,855
240	4,353,856
258	4,353,857
268	4,353,858
506	4,353,859
519	4,353,860
561	4,353,861
571	4,353,862

CLASS 266

45	4,353,530
120	4,353,531
242	4,353,532
265	4,353,533
270	4,353,534
275	4,353,535

CLASS 269

94	4,353,536
266	4,353,537

CLASS 271

3	4,353,538
10	4,353,539
	4,353,540
275	4,353,541
294	4,353,542
306	4,353,543

CLASS 272

73	4,353,544
76	4,353,545
117	4,353,546
130	4,353,547

CLASS 273

1.5 R	4,353,548
67 A	4,353,549
67 R	4,353,550
73 R	4,353,551
85 G	4,353,552
121 R	4,353,553
143 R	4,353,554
148 R	4,353,555
186 A	4,353,556
227	4,353,557

CLASS 277

30	4,353,558
53	4,353,559
236	4,353,560

CLASS 279

123	4,353,561

CLASS 280

7.13	4,353,562
24	4,353,563
79.3	4,353,564
80 B	4,353,565
87.04 A	4,353,566
92	4,353,567
94	4,353,568
217	4,353,569
283	4,353,570
295	4,353,571
492	4,353,572
606	4,353,573
613	4,353,574
614	4,353,575
615	4,353,576
642	4,353,577
781	4,353,578
804	4,353,579

CLASS 285

39	4,353,580
149	4,353,581

CLASS 290

1 R	4,354,117

CLASS 292

169.15	4,353,582
320	4,353,583

CLASS 293

1	4,353,584

CLASS 294

86.1	4,353,585

CLASS 295

7	4,353,586

CLASS 296

15	4,353,587
37.1	4,353,588
50	4,353,589
78.1	4,353,590
97 B	4,353,592
97 D	4,353,593
97 H	4,353,591

CLASS 297

307	4,353,594
408	4,353,595

CLASS 298

2	4,353,596
12	4,353,597

CLASS 299

2	4,353,598

CLASS 303

22 R	4,353,599
24 F	4,353,600
106	4,353,601

CLASS 307

66	4,354,118
115	4,354,119
132 E	4,354,120
252 C	4,354,121
261	4,354,122
475	4,354,123
522	4,354,124

CLASS 308

10	4,353,602
26	4,353,603
184 A	4,353,604
187.2	4,353,605
189 R	4,353,606
214	4,353,607

CLASS 310

103	4,354,125
156	4,354,126
198	4,354,127
242	4,354,128
313 A	4,354,130
313 C	4,354,129
328	4,354,131
334	4,354,132
344	4,354,133
800	4,354,134

CLASS 313

93	4,354,135
139	4,354,136
188	Re.31,054
222	4,354,137
404	Re.31,055
440	4,354,138
486	4,354,139
499	4,354,140

CLASS 315

241 P	4,354,141
241 S	4,354,142
368	4,354,143

CLASS 318

13	4,354,144
254	4,354,145
341	4,354,146
363	4,354,147

CLASS 320

20	4,354,148
40	4,354,149

CLASS 322

63	4,354,150

CLASS 323

225	4,354,151
241	4,354,152

CLASS 324

73 R	Re.31,056
95	4,354,153
126	4,354,154
133	4,354,155
228	4,354,156
312	4,354,157

CLASS 328

75	4,354,158

CLASS 330

86	4,354,159
107	4,354,160
254	4,354,161
260	4,354,162
293	4,354,163

CLASS 331

1 A	4,354,164
96	4,354,165
107 A	4,354,166

CLASS 333

103	4,354,167
156	4,354,168
173	4,354,169

CLASS 337

334	4,354,170

CLASS 339

2 R	4,353,608
17 C	4,353,609
19	4,353,610
92 R	4,353,611
95 R	4,353,612
119 C	4,353,613
125 R	4,353,614

CLASS 340

21	4,354,171
29	4,354,172
52 F	4,354,173
63	4,354,174
347 AD	4,354,175
347 CC	4,354,177
347 NT	4,354,176
572	4,354,178
575	4,354,179
619	4,354,180
642	4,354,181
650	4,354,182
682	4,354,183
709	4,354,184
	4,354,185

728	4,354,186
763	4,354,187
814	4,354,188
825.31	4,354,189
870.18	4,354,190

CLASS 343

7.5	4,354,191
14	4,354,192
882	4,354,193

CLASS 346

75	4,354,194
	4,354,195
108	4,354,196
140 R	4,354,197

CLASS 350

3.71	4,353,615
3.75	4,353,616
6.8	4,353,617
91	4,353,618
96.21	4,353,619
	4,353,620
145	4,353,621
162 SF	4,353,622
391	4,353,623
453	4,353,624

CLASS 351

13	4,353,625
36	4,353,626

CLASS 353

24	4,353,627

CLASS 354

5	4,353,628
23 D	4,353,629
29	4,353,630
51	4,353,631
133	4,353,632
173	4,353,633
195	4,353,634
320	4,353,635

CLASS 355

1	4,353,636
3 DD	4,353,637
8	4,353,638
10	4,353,639
21	4,353,640
38	4,353,641
45	4,353,642
57	4,353,643
72	4,353,644
75	4,353,645
76	4,353,646
77	Re.31,053
85	4,353,647
133	4,353,648

CLASS 356

33	4,353,649
371	4,353,650

CLASS 357

16	4,354,198
19	4,354,199

CLASS 358

23	4,354,200
122	4,354,201
183	4,354,202
227	4,354,203
	4,354,204
250	4,354,205
254	4,354 206

CLASS 360

9.1	4,354,207
40	4,354,208
61	4,354,209
77	4,354,210
84	4,354,211
113	4,354,212
133	4,354,213

CLASS 361

23	4,354,214
63	4,354,215
92	4,354,216
104	4,354,217
147	4,354,218
284	4,354,219
341	4,354,220

CLASS 362

300	4,354,221
352	4,354,222

CLASS 363

124	4,354,223

CLASS 364

183	4,354,224
200	4,354,225
	4,354,226

	4,354,227
	4,354,228
	4,354,229
	4,354,230
	4,354,231
	4,354,232
420	4,354,233
424	4,354,234
	4,354,235
424.1	4,354,236
428	4,354,237
431.05	4,354,238
	4,354,239
434	4,354,240
492	4,354,241
501	4,354,242
515	4,354,243
556	4,354,244
606	4,354,245
709	4,354,246
713	4,354,247
724	4,354,248
754	4,354,249
802	4,354,250
900	4,354,251
	4,354,252

CLASS 365

15	4,354,253
33	4,354,254
154	4,354,255
189	4,354,256
219	4,354,257
230	4,354,258
	4,354,259

CLASS 366

2	4,353,651
193	4,353,652

CLASS 368

10	4,354,260

CLASS 370

42	4,354,261
58	4,354,262
94	4,354,263
110	4,354,264
111	4,354,265
112	4,354,266

CLASS 371

11	4,354,267
20	4,354,268
43	4,354,269
68	4,354,270

CLASS 372

19	4,354,271
36	4,354,272
41	Re.31,057

CLASS 375

27	4,354,273
120	4,354,274

CLASS 376

251	4,353,863

402	4,353,864

CLASS 378

99	4,354,112

CLASS 400

70	4,353,653
124	4,353,654
144.2	4,353,655
157.3	4,353,656
208	4,353,657
232	4,353,658

CLASS 403

24	4,353,659
132	4,353,660
171	4,353,661
	4,353,662
230	4,353,663
232.1	4,353,664

CLASS 404

10	4,353,665
60	4,353,666

CLASS 406

29	4,353,667
90	4,353,668

CLASS 408

185	4,353,669
193	4,353,670

CLASS 409

26	4,353,671
97	4,353,672

CLASS 411

38	4,353,673

CLASS 414

323	4,353,674
403	4,353,675
512	4,353,676
735	4,353,677
748	4,353,678

CLASS 415

115	4,353,679
219 R	4,353,680

CLASS 416

11	4,353,681

CLASS 417

295	4,353,682
379	4,353,683
388	4,353,684
406	4,353,685

CLASS 420

422	4,353,865

CLASS 422

37	4,353,866
68	4,353,867
101	4,353,868
102	4,353,869
129	4,353,870
159	4,353,871

179	4,353,872
	4,353,873
193	4,353,874
249	4,353,875
263	4,353,876

CLASS 423

6	4,353,877
53	4,353,878
	4,353,879
	4,353,880
58	4,353,881
111	4,353,882
139	4,353,883
277	4,353,884
289	4,353,885

CLASS 424

1	4,353,886
15	4,353,887
25	4,353,888
48	4,353,889
49	4,353,890
50	4,353,891
52	4,353,892
180	4,353,893
	4,353,894
182	4,353,895
195	4,353,896
200	4,353,897
238	4,353,898
243	4,353,899
248.54	4,353,900
248.57	4,353,901
250	4,353,902
	4,353,903
	4,353,904
	4,353,905
251	4,353,906
	4,353,907
	4,353,908
256	4,353,909
	4,353,910
258	4,353,911
	4,353,912
263	4,353,913
267	4,353,914
269	4,353,915
270	4,353,916
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273 R	4,353,921
274	4,353,922
285	4,353,923
317	4,353,924
322	4,353,925

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83.1	4,353,686

CLASS 426

20	4,353,926
101	4,353,927
238	4,353,928
243	4,353,929
281	4,353,930

483	4,353,931
532	4,353,932

CLASS 427

8	4,353,933
57	4,353,934
89	4,353,935
94	4,353,936
130	4,353,937
214	4,353,938
238	4,353,939
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287	4,353,941
434.3	4,353,942

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74	4,353,944
90	4,353,945
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195	4,353,949
	4,353,950
198	4,353,951
201	4,353,952
213	4,353,953
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246	4,353,955
255	4,353,956
292	4,353,957
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331	4,353,959
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536	4,353,981

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234	4,353,690

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259	4,353,701

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259	4,354,277
617	4,354,278

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72	4,353,704

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158	4,353,705

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20	4,353,991

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110	4,353,994
125	4,353,995

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219	4,353,998
454	4,353,819

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388	4,354,000
409	4,353,820
458	4,353,818
501	4,354,001
588	4,354,002

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222	4,354,003
240	4,354,004
257	4,354,005

359.5	4,354,006
370	4,354,007
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259	4,354,012

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272	4,354,019
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	430	266,487
	434	266,488
	455	266,489
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	131	266,499
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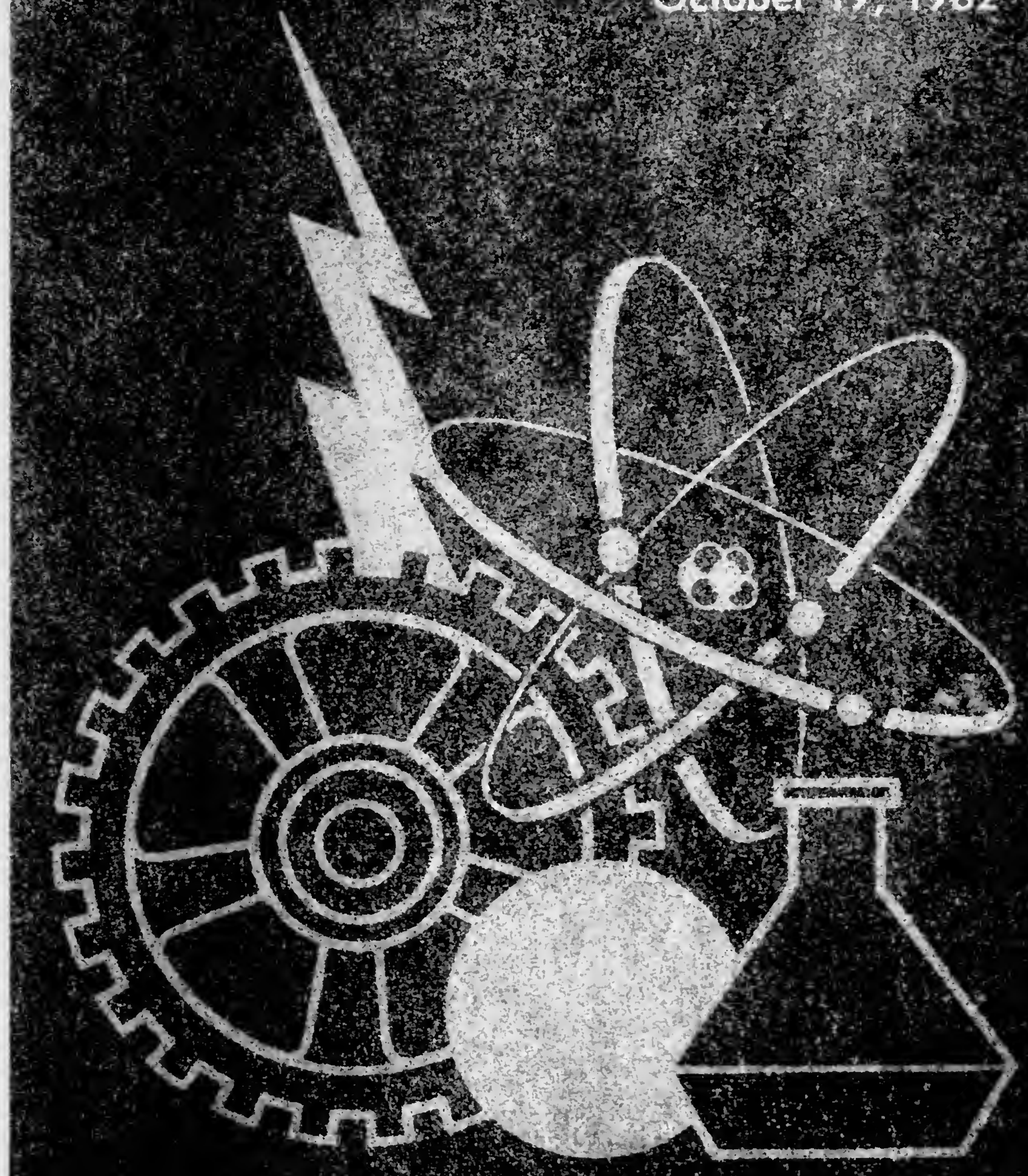
PATENTS

October 19, 1982



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UNITED STATES PATENT AND TRADEMARK OFFICE

October 19, 1982 Volume 1023 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, ee the notice in the Official Gazette of Sept. 28, 1982 at 022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	710.00
International Fees	
Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner*
of Patents & Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,215,850, Re. S.N. 402,938, Filed July 29, 1982, Cl. 254/350, WINCH, Reinhold A. Haase, et al., Owner of Record: *Dutton-Lainson Co., Hastings, Nebr.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 245

4,257,415, Re. S.N. 403,120, Filed July 29, 1982, Cl. 128/200.21, PORTABLE NEBULIZER TREATMENT APPARATUS, Howard Rubin, Owner of Record: *Inventor,* Attorney or Agent: Rodman Steele, Jr., et al., Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,747,620, Reexam. No. 90/000,249, Requested: Aug. 30, 1982, Cl. 137/119, IRRIGATION SPRINKLER SYSTEM CONTROL EMPLOYING PILOT OPERATED PRESSURE ACTUATED AND SEQUENCED VALVE ASSEMBLY, Carl L.C. Kah, Jr., Owner of Record: *Requester,* Attorney or Agent: James W. Miller, Ex. Gp.: 340, Requester: The Toro Co., Minneapolis, Minn.

3,982,419, Reexam. No. 90/000,256, Requested: Sept. 13, 1982, Cl. 73/13G, APPARATUS AND METHOD OF DETERMINING ROTATIONAL OR LINEAR STIFFNESS, John T. Boys, Owner of Record: *Requester,* Attorney or Agent: Aaron Nerenberg, Ex. Gp.: 240, Requester: SPS Technologies, Inc., Jenkintown, Pa.

4,053,845, Reexam. No. 90/000,253, Requested: Sept. 9, 1982, Cl. 330/4.3, OPTICALLY PUMPED LASER AMPLIFIERS, Gordon Gould, Owner of Record: *Inventor,* Attorney or Agent: Lerner, David, Littenberg & Samuel, Ex. Gp.: 222, Requester: Control Laser, Inc., Orlando, Fla.

4,212,075, Reexam. No. 90/000,252, Requested: Sept. 3, 1982, Cl. 364/580, ELECTRICAL COMPONENT TESTING SYSTEM FOR COMPONENT INSERTION MACHINE, Gerald W. Cleversey, et al, Owner of Record: *Requester,* Attorney or Agent: William F. White, Ex. Gp.: 230 Requester: USM Corp., Beverly, Mass.

4,223,981, Reexam. No. 90/000,259, Requested: Sept. 17, 1982, Cl. 350/423, TELEPHOTO ZOOM LENS, Norio Mizutani, et al, Owner of Record: *Nippon Kogaku K.K., Tokyo, Japan,* Attorney or Agent: Shapiro & Shapiro, Ex. Gp.: 257, Requester: Cushman, Darby & Cushman, Washington, D.C.

4,230,175, Reexam. No. 90/000,257, Requested: Sept. 16, 1982, Cl. 165/46, HEAT EXCHANGER ELEMENT, Dieter Disselbeck, et al, Owner of Record: *Requester,* Attorney or Agent: Curtis, Morris & Safford, P.C., Ex. Gp.: 346, Requester: Hoechst Aktiengesellscaft, Frankfurt am Main, Fed. Republic of Germany

Requests for Information on Status of Trademark Registrations

The purpose of this notice is to explain the circumstances in which the Trademark Examining Operation can respond to written and telephone requests for information about the status of trademark registrations. Only limited information can be provided by telephone.

I. Orders for "Status" Copies

The most reliable means of obtaining status information concerning a registration is a written order for a "status" copy of the registration. Status copies show whether affidavits have been filed under Sections 8 and 15, whether the registration has been renewed or cancelled, and whether certain other actions have been taken with respect to the registration. The charge for copies of registrations showing status and/or title, if not certified, is $6.50, effective Oct. 1, 1982. The charge for a certified copy showing status and/or title is $10.00 effective the same date.

II. Telephone Information Available from the Search Library

If the caller has the registration number, he or she may leave a request for status information on an automatic answering machine in the Trademark Search Library (Search Room) at 703-557-3282. The Search Library staff will call back with the information requested within one working day. Callers are asked to limit their requests to two registration numbers per day.

The Search Library staff is not permitted to make "searches" to determine if particular marks are in the Office's search files. Neither is the staff able to supply information as to the ownership or assignment of registrations, or to read over the telephone lengthy passages of a registration, such as the identification of goods or services.

III. Telephone Information on Receipt of Section 8 and 15 Affidavits and Renewal Applications

The Post Registration Section can be reached by calling 703-557-2923. The staff of this section can advise only on whether an affidavit or a renewal application has or has not been received. Inquiries as to whether affidavits and renewals have been accepted should be directed to the Search Library.

MARGARET M. LAURENCE,
Sept. 15, 1982. *Assistant Commissioner*
for Trademarks.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,869,182, Nils B. Glifberg, BALL BEARING, Interference No. 99,772, decided Feb. 22, 1982, claim 1.

Patent No. 3,926,669, James J. Auborn, ELECTROCHEMICAL CELLS HAVING AN ELECTROLYTIC SOLUTION COMPRISING A COVALENT INORGANIC OXYHALIDE SOLVENT, Interference No. 99,876, decided June 18, 1981, claims 1-11, 13-15.

Patent No. 3,957,723, David Francis Lawson & Edward Leo Kay, FLAME AND SMOKE RETARDANTS FOR POLYVINYL CHLORIDE, Interference No. 99,770, decided Apr. 19. 1982, claim 1.

Patent No. 3,992,784, Eke Verschuur, Berend P. Ter Meulen, Teunis Van Herwijnen & Johannes Boom, THERMAN DEWATERING OF BROWN COAL, Interference No. 100,140, decided Apr. 28, 1982, claims 1 & 2.

Patent No. 4,001,248, Dennis M. Zimmerman & Winston S. Marshall, N-CYCLOALKYLMETHYL DECAHYDROISOQUINOLINES, Interference No. 100,293, decided May 26, 1982, claim 1.

Patent No. 4,012,564, James J. Auborn, ELECTROCHEMICAL CELLS HAVING AN ELECTROLYTIC SOLUTION COMPRISING A COVALENT INORGANIC OXYHALIDE SOLVENT, Interference No. 99,877, decided June 18, 1981, claims 1-14 & 16-19.

Patent No. 4,026,705, James V. Crivello & Siegfried H. Schroeter, PHOTO CURABLE COMPOSITIONS AND METHODS, Interference No. 100,337, decided Apr. 1, 1982, claims 1, 2 & 4.

Patent No. 4,041,172, Charles Brian Barlow, COMPOSITIONS AND METHODS FOR COMBATING INSECT PESTS OR FUNGAL PESTS OF PLANTS, Interference No. 100,028, decided Apr. 20, 1982, claim 11.

Patent No. 4,168,623, Charles E. Thomas, Jr., METHOD FOR DETERMINING VOLATILE CONTENT OF A SAMPLE, Interference No. 100,734, decided June 25, 1982, claims 1-8.

Patent No. 4,245,507, Thaddeus V. Samulski, TEMPERATURE PROBE, Interference No. 100,854, decided July 1, 1982, claims 1, 2, 8, 15 & 20.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

Errata

The following registrations, listed in the "Trademark Registrations Issued" section of the Official Gazettes of Feb. 2, 1982, Feb. 9, 1982, Apr. 20, 1982, May 18, 1982, June 1, 1982, July 13, 1982, and Aug. 3, 1982, were inadvertently issued:

TMOG Feb. 2, 1982	1,188,528
TMOG Feb. 9, 1982	1,189,616
TMOG Apr. 20, 1982	1,193,920
TMOG May 18, 1982	1,195,877
TMOG June 1, 1982	1,196,856
TMOG July 13, 1982	1,200,871
TMOG Aug. 3, 1982	1,203,728

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

MARGARET M. LAURENCE,
Sept. 15, 1982. *Assistant Commissioner*
for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 19, 1982

4,140,854
4,155,278
4,197,808
4,202,825
4,230,187
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4,238,731
4,242,212
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4,344,383
4,344,402
4,344,407
4,344,572
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4,345,929
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4,346,335
4,346,357
4,346,714
4,347,148

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 2909-187]

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish a definition and procedures for the payment of fees under section 41 (a) and (b) of Title 35, United States Code, by small business concerns as required by Pub. L. 97-247. This action adopts the definition of a "small business concern" for purposes of paying patent fees established by the Small Business Administration and is necessary at this time in order that the procedures for paying reduced fees will be effective on October 1, 1982, the effective date of the changes in the amounts of Patent and Trademark Office fees established by Pub. L. 97-247.

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: A notice of proposed rulemaking was published in the **Federal Register** on June 28, 1982, at 47 FR 28042-28063 and in the *Official Gazette* on June 29, 1982, at 1019 O.G. 57-120. Oral hearings were held on July 9, 1982. Full consideration has been given to all of the letters, statements, and testimony received at the time. A final rule on "Revision of Patent and Trademark Fees" was published on July 30, 1982 at 47 FR 33086-33112 with corrections in the printing thereof being published on August 4, 1982, at 47 FR 33688 and on August 5, 1982, at 47 FR 33959. The final rule was also published in the *Official Gazette* on August 10, 1982, at 1021 O.G. 19-94. In view of comments received at the hearings, additional time for comment on certain rules, including those covered by this change, was given until August 13, 1982. The notice extending the time for comment was published on July 27, 1982 at 47 FR 32458. A final rule relating to definitions of "independent inventor" and "nonprofit organizations" was published on September 10, 1982 at 47 FR 40134-40140.

Objectives of Rule Changes

These rule changes are designed to implement the Patent and Trademark Office fees and procedures which are provided for by Pub. L. 97-247.

Public Law 97-247

Pub. L. 97-247, signed August 27, 1982, provides that funds available under the act "shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code" by independent inventors, small business concerns, and nonprofit organizations. The Commissioner has established regulations defining independent inventors and nonprofit organizations. Pub. L. 97-247 defines small business concerns by reference to Section 3 of the Small Business Act and regulations established by the Small Business Administration. The Small Business Administration has now established the definition of a small business concern for the purpose of paying reduced fees under Pub. L. 97-247. That definition is hereby incorporated into the patent rules of practice in § 1.9(d). This rulemaking also establishes the procedures which will be followed by small business concerns when paying the reduced fees.

Discussion of Specific Sections

The following sections are changed by this final rule, effective October 1, 1982:

Section 1.9, as amended, adds paragraph (d) which defines small business concern as used in Title 37, Code of Federal Regulations, Chapter I. A small business concern is identified as a "small entity" for purposes of paying fees which are set under section 41(a) and (b) of Title 35, United States Code, as amended by Pub. L. 97-247.

Section 1.9(d) defines a small business concern by reference to and incorporation of § 121.3-18 of Title 13, Code of Federal Regulations. A small business concern is defined therein as any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. The section further defines affiliates of concerns and defines also the terms "employees" and "number of employees." Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees a business concern has is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Business concerns located in any country which meet the small business definition and which comply with the applicable procedures can qualify as a "small business concern". Under the definition, a small business concern would no longer qualify as a small business concern if any rights were assigned to any individual or concern which could not qualify as a small entity pursuant to § 1.9(f), or if the concern came under an obligation to assign any rights to any individual or concern which could not qualify as a small entity.

Section 1.9(d) also incorporates paragraph (b) of 13 CFR 121.3–18 which provides for appeals to the Small Business Administration from Patent and Trademark Office adverse initial size determinations.

Paragraph 1.27(c) provides for claiming status as a small business concern. Any person seeking to establish status as a small entity, for the purpose of paying reduced fees, must file a statement to that effect prior to or with the payment of the first fee paid as a small entity. Under § 1.27, as long as all of the rights remain in small entities, the fees established for a small entity can be paid. This includes circumstances where the rights were divided between an independent inventor, a small business concern and a nonprofit organization or any combination thereof.

A number of changes which have been made to §§ 1.9 and 1.27 as a result of the comments received and further review of the proposed rulemaking are identified below.

Paragraph (d) of § 1.9 has been changed from that proposed so as to incorporate into § 1.9(d), the definition established by the Small Business Administration in § 121.3–18 of Title 13, Code of Federal Regulations. The definition differs from that proposed in specifying the number of employees constituting a small business concern and specifying that the concern must be one which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license any rights in the invention to any person or concern which could not be classified as an independent inventor, small business concern, or nonprofit organization.

Paragraph (c) of § 1.27 has been changed from that proposed to clarify who is to file the verified statement. The verified statement for a small business concern is to be signed by "the owner or an official of the small business concern empowered to act on behalf of the concern." The term "official" as used in paragraph (c) is intended to include any officer, employee, or part-owner empowered to act on behalf of a small business concern. For example, an officer or employee of a corporation empowered to act for the corporation by its board of directors would be qualified to sign such a verified statement.

Response to Comments on the Patent Rules

Specific comments were received on a number of the sections. All of the comments, including the oral testimony and the written comments, were considered in adopting the changes set forth herein.

Written comments on the rules affected by this final rule were received from three patent law groups and a number of individuals. The three patent law groups were (1) the American Patent Law Association; (2) the Patent, Trademark, and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups.

The comments appear below along with replies thereto.

Comment

Two comments urged that in view of the "exceedingly complex" definitions of a "small business" in 13 CFR 121.3, the

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patent system and those associated with it would be best served by setting forth clear guidelines as to whether or not a business qualifies as a small business without reference to the Small Business Act and without incorporation by reference of "the too many pages of SBA regulatory definition."

Reply

Pub. L. 97–247 specifically refers to section 3 of the Small Business Act and regulations established by the Small Business Administration for determining whether or not a business concern qualifies as a small business concern. Pub. L. 97–247 therefore does not permit the establishment of guidelines without reference to the Small Business Act and regulations established by the Small Business Administration. Section 1.9(d), however, does incorporate the definition as established in § 121.3–18 of Title 13, Code of Federal Regulations. This will enable persons to utilize § 1.9(d) without also referring to a copy of Title 13, CFR.

Comment

One comment argued that § 1.27 should be corrected or clarified to indicate that a small business concern would be entitled to the 50 percent fee reduction even though it may grant a non-exclusive or even an exclusive license to some non-small entity.

Reply

The suggestion has not been adopted. Section 1.27 requires that the concern qualify as a small business concern as defined in § 1.9(d). Section 1.9(d) defines a small business concern by incorporating 13 CFR 121.3–18, which in turn defines a small business concern as one not exceeding a particular size "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section." The intent of both 13 CFR 121.3–18 and 37 CFR 1.9(d) and 1.27(c) is to limit the payment of reduced fees under section 41 (a) and (b) of Title 35, United States Code, to those situations in which all of the rights in the invention are owned by small entities, i.e., independent inventors, small business concerns, or nonprofit organizations. To do otherwise would be clearly contrary to the intended purpose of the legislation which contains no indication that fees are to be reduced in circumstances where rights are owned by non-small entities. Adopting the suggestion might, for example, permit a non-small entity to transfer patent rights to a small business concern which would pay the reduced fees and grant an exclusive license to the non-small entity.

Comment

One comment suggested that the specific Small Business Administration regulations which are applicable be specified in § 1.9(d).

Reply

The definition of a small business concern as established by the Small Business Administration is now incorporated into § 1.9(d).

Implementation of §§ 1.9 and 1.27

Status as a small entity can be established in any application or patent for which a fee is due on or after October 1, 1982, and in which the individual inventor, small business concern, or nonprofit organization meets the qualifications established for small entity status.

Other Considerations Relating to Patent and Trademark Fee Revisions

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96–354) for several reasons. Pub. L. 97–247 has taken into consideration the impact the increase in fees may have on small entities. Under Pub. L. 97–247 and this rulemaking, small entities will be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Small businesses.

Amendment of Regulations

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and Pub. L. 97–247, Part 1 of Title 37, Code of Federal Regulations, is amended as set forth below.

PART 1—RULES OF PRACTICE IN PATENT CASES

1. Section 1.9 is amended by adding a new paragraph (d) to read as follows:

§ 1.9 Definitions.

* * * * *

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3–18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§ 121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly cr indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

2. Section 1.27 is amended by adding a new paragraph (c) to read as follows:

§ 1.27 Statement of status as small entity.

* * * * *

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in § 1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in § 1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

Dated: September 23, 1982.

Gerald J. Mossinghoff,

Commissioner of Patents and Trademarks.

[FR Doc. 82–26941 Filed 9–29–82; 8:45 am]

BILLING CODE 3510–16–M

SMALL BUSINESS ADMINISTRATION

13 CFR Part 121

Definition of Small Business for Paying Reduced Patent Fees Under Title 35, United States Code

AGENCY: Small Business Administration.

ACTION: Final rule.

SUMMARY: The Small Business Administration in conjunction with the Patent and Trademark Office is establishing a definition of small business for the purpose of paying patent fees under section 41 (a) and (b) of Title 35, United States Code, which are reduced by 50 per centum for small business concerns as required by Pub. L. 97–247. The definition would be implemented by the Patent and Trademark Office, which has recently published its regulations on the fee reduction procedures (47 FR 40134, September 10, 1982).

EFFECTIVE DATE: October 1, 1982.

FOR FURTHER INFORMATION CONTACT:
R. Franklin Burnett (703) 557–3054.
Harvey Bronstein (202) 653–6373.

SUPPLEMENTARY INFORMATION: Pub. L 97–247 provides that funds available under the Act to the Patent and Trademark Office "shall be used to reduce by 50 per centum the payment of fees under Section 41 (a) and (b) of Title 35, United States Code, by small business concerns as defined in Section 3 of the Small Business Act and by regulations established by the Small Business Administration."

A notice of proposed rulemaking relating to the definition of a small business was published in the **Federal Register** on August 31, 1982 (47 FR 38331). The regulation being issued is the same as that which was proposed. In order to be a small business, the number of employees of the concern, including those of its affiliates, may not exceed 500 persons. Concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of a business concern is determined by counting the number of persons of the concern and its affiliates employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern and of its affiliates. The number of employees is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year.

The definition also requires a small business for this purpose to be one "which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section."

Discussion of Comments

One comment from the American Patent Law Association, whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office, expressed "no comment regarding the definition" and expressed "[t]hanks for all that's been done toward a hopefully workable definition." The remaining comments were from individual patent attorneys rather than comments on behalf of any organization.

Two comments raised questions about the intended scope of the term "license." It was suggested that clarification is needed as to what is included within the scope of the term. One comment suggested that, "[a]t the very least, the record should reflect that the definition is not intended to reach implied licenses to use and resell patented articles purchased from a small business." The comment is correct insofar as it suggests that such "implied licenses" are not intended to be included within the scope of the term. Likewise, an order by the applicant to a firm to build a proto-type machine or product for the applicant's own use is not considered to constitute a license for purposes of the definition.

Another suggestion was that the regulation be reworded to deny small business status where revenue above a certain dollar amount was received from licensing rights under the invention to a concern which could not qualify as a small entity. It was also suggested that the term "exclusive license of any of the rights in the invention" be used instead of the term "license." The latter two suggestions have not been adopted. Adoption of these suggestions would cause the regulation to become more complicated, and does not appear necessary to aid small concerns in accord with the purposes of the legislation. In addition, it could substantially broaden the number of concerns which could qualify with a resulting excessive loss of revenue to the Patent and Trademark Office. It is not seen likely that the restriction on licensing would unduly or adversely affect the ability of the small business concern to participate in the patent system.

Another comment which was made related to a firm which is a subsidiary of a university or other nonprofit organization. The suggestion was made that the number of employees of the university or other nonprofit affiliate be excluded from consideration in determining whether or not the business concern qualifies as a small business concern. The suggestion has not been adopted since the situation raised is already treated under the definition of nonprofit organization established by the Patent and Trademark Office on September 10, 1982, at 47 FR 40134–40140. Under that Patent and Trademark Office regulation, a wholly owned subsidiary of a nonprofit or university is considered a part of the university or nonprofit and thus is already eligible for the fee reduction.

One comment suggested that the regulation contain language specifying that concerns meeting its requirements are also independently owned and operated and not dominant in their field of operation under the Small Business Act. It is not necessary to include this language since this regulation already contains an affiliation test for this purpose; and it is generally unlikely that a small concern would be found to be dominant. The legislative history of the Small Business Act indicates that "The mere fact that a small business makes a particular product or item and is dominant in its field with respect to the particular product or item is not intended to disqualify it from the benefits of this Act * * *" (House Report 494, 83rd Congress, 1st Session 1953). SBA Size Appeals Board precedents have consistently stated that dominance under the Act and the SBA regulations is not viewed in narrow industry subdivisions. It, therefore, does not appear that concerns defined as small business under this provision would be dominant within the meaning of the Small Business Act.

Another comment suggested that foreign concerns should not be eligible as small business under this provision. Since this patent legislation was enacted by the Congress with knowledge of the Paris Convention for the Protection of Industrial Property, there is no indication that Congress intended that foreign small business not be eligible for the fee reduction. It is the view of the Patent and Trademark Office that excluding foreign small concerns would violate U.S. treaties in the patent area.

This comment also questioned whether the Patent and Trademark Office should make initial size determinations, or whether they could more appropriately be made by SBA. Since the fee reduction procedure is part of the patent application and of other Patent and Trademark Office actions and may involve Patent law questions, it would be administratively infeasible to have initial size determinations made by the SBA. The Patent and Trademark Office recently issued regulations (September 10, 1982, 47 FR 40134) which set forth the fee reduction procedures.

Other Considerations Relating to the Rulemaking

Environmental, energy, and other considerations: The rule will not have a significant impact on the quality of the human environment or the conservation of energy resources.

Small business concerns will be benefited by the rule. The proposed rule will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). Public Law 97–247 has taken into consideration the impact it may have on small entities and has reduced the fees, therefore, by 50 per centum.

The Small Business Administration has determined that this rule is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 13 CFR Part 121

Small businesses, Inventions and patents.

PART 121—SMALL BUSINESS SIZE STANDARDS

Accordingly, pursuant to Section 3 of the Small Business Act and Pub. L. 97–247, Part 121 of Title 13 of the Code of Federal Regulations is amended by adding § 121.3–18 to read as follows:

§ 121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

Dated: September 23, 1982.

Robert B. Webber,

Acting Administrator.

[FR Doc. 82–26940 Filed 9–29–82; 8:45 am]

BILLING CODE 8025–01–M

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-30-82
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,204,251 to 3,209,368, inclusive
Plant Patents	Numbers 2,552 to 2,557 inclusive

REEXAMINATIONS

OCTOBER 19, 1982

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,104,156 (23rd)

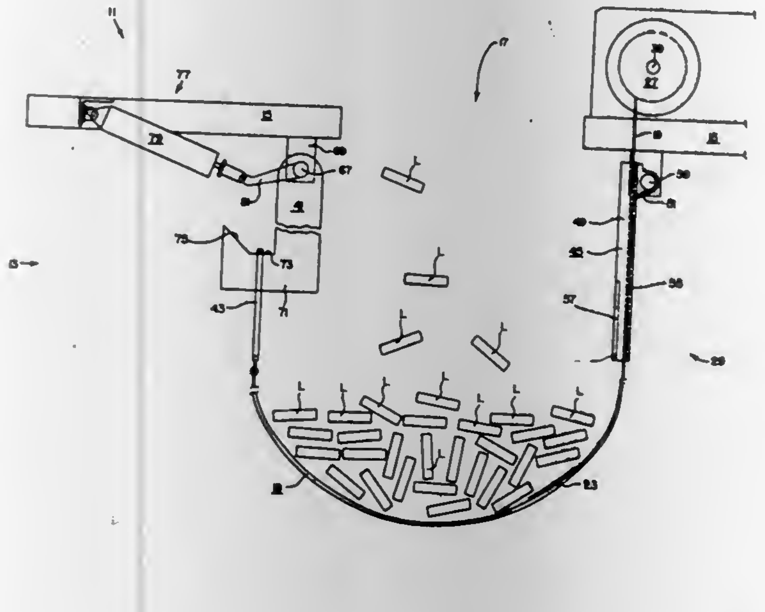
DETACHABLE SLING LETDOWN APPARATUS FOR LUMBER SORTER

John K. Fletcher, Hot Springs, Ark., assignor to Harvey Engineering & Manufacturing Corporation, Hot Springs, Ark.

Reexamination Request No. 90/000,001, Jul. 1, 1981.

Reexamination Certificate for Patent No. 4,104,156, issued Aug. 1, 1978, Ser. No. 805,901, Jun. 13, 1977.

U.S. Cl. 209/521 Int. Cl.^{3} B65G 47/34



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 1 was previously disclaimed.

Claims 2–12, having been finally determined to be unpatentable, are cancelled.

New claims 13–24 are added and determined to be patentable.

13. In a lumber sorter of the type having frame means defining a plurality of bays for receiving pieces of lumber, each of said bays being provided with at least a pair of elongated flexible members defining cooperative forward and rearward open-topped slinglike cradles which support the lumber pieces as they are systematically dropped therein, and means for selectively controlling the height of said forward and rearward cradles and, at least, a pair of automatically operable coupler means for selectively coupling and uncoupling the respective dangling ends of said pair of elongated flexible members from said frame means for enabling said dangling ends thereof to readily be coupled to said frame means, the improvement comprising:

in each coupler means, single hook means carried pivotally from said frame means for rotation between a coupled position depending vertically downwardly from its pivot point and a coupling position projecting substantially horizontally from its pivot point, said coupler means, further, including eye means carried from the dangling end of the respective said flexible member for hooking directly to said hook means to cooperate with said hook means to act as the sole load bearing means for each coupler means of each such cradle.

B1 4,182,460 (24th)

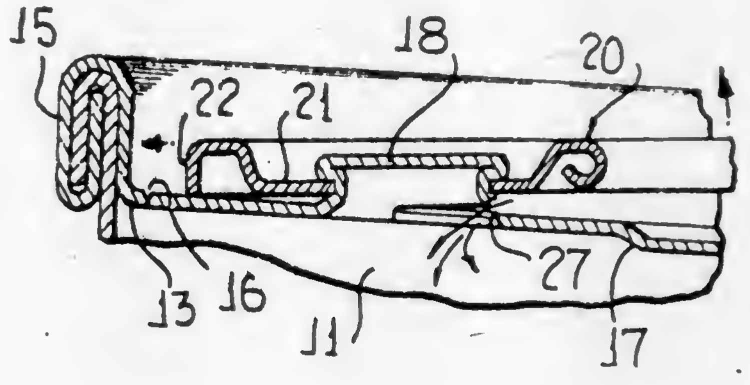
LEVER ACTION TAB SYSTEM FOR EASY OPENING ENDS

Albert J. Holk, Jr., Frankfort; Arnold R. Boik, Chicago, both of Ill., assignors to Continental Group, Inc., New York, N.Y.

Reexamination Request No. 90/000,076, Sep. 28, 1981.

Reexamination Certificate for Patent No. 4,182,460, issued Jan. 8, 1980, Ser. No. 656,388, Jul. 27, 1967.

U.S. Cl. 220/271 Int. Cl.^{3} B65D 41/32



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–10, 16, 18, 19 and 21–54 is confirmed.

Claims 11–15, 17 and 20 are determined to be patentable as amended:

1. In an assembly including a panel having a removable portion, and a pull tab secured to said panel and restricted substantially against hinging relative to an adjacent portion of said panel; the improvement residing in a line of weakening formed in said panel removable portion immediately adjacent the connection between said pull tab and said panel for effecting the initial rupture of said panel upon the application of a panel rupturing force to said pull tab and the formation of hinge means in said panel with said hinge means including said connection and facilitating the hinging of said pull tab for effecting the further and separate rupture of said panel remote from said connection and the removal of said panel portion.

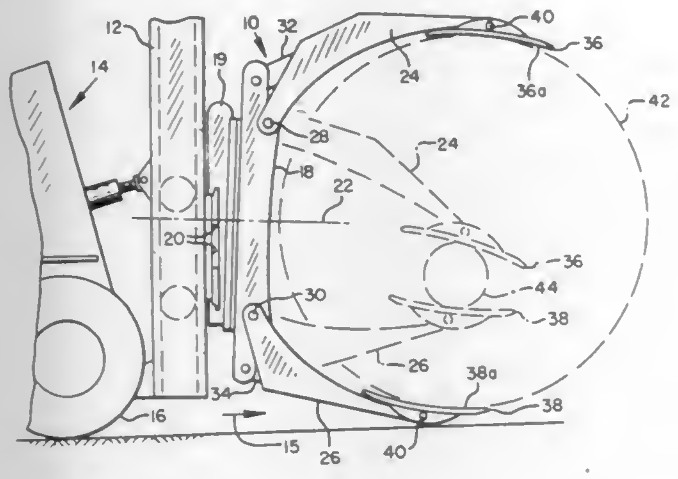
B1 4,209,280 (25th)
LIFT TRUCK LOAD CLAMP HAVING NONRESILIENT CONTACT PAD SURFACES TEXTURED FOR DIRECTIONALLY VARIABLE RESISTANCE TO SLIPPAGE

Edward D. Bittner, Hillsboro, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Reexamination Request No. 90/000,084, Oct. 13, 1981.

Reexamination Certificate for Patent No. 4,209,280, issued Jun. 24, 1980, Ser. No. 970,195, Dec. 18, 1978.

U.S. Cl. 414/620 Int. Cl.^{3} B66F 9/18



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 4, 6 and 8 are determined to be patentable as amended.

Claims 2, 3, 5 and 7, dependent on amended claims, are determined to be patentable.

1. In a lift truck adapted to move longitudinally in a direction of travel having a lifting apparatus at its forward end for raising and lowering a load vertically, a load-handing attachment mounted on said lifting apparatus *for handling a load having a deformable surface of paper or the like, said attachment* comprising:

(a) a frame mounted on a portion of said lifting apparatus so as to be selectively raised and lowered vertically by said lifting apparatus;

(b) a pair of forwardly-projecting selectively openable and closeable opposing clamp arms mounted upon said frame;

(c) power means mounted upon said frame for selectively opening and closing said clamp arms;

(d) a pair of contact pads, each connected to a forward end of a respective one of said pair of clamp arms, said contact pads having opposing load-engaging nonresilient surfaces;

(e) means defining an array of elongate, generally parallel, spaced grooves formed in each of said load-engaging nonresilient surfaces separated by elongate nonresilient lands between said grooves *having nonresilient land surfaces at the tops thereof for engaging said deformable surface of said load,* said grooves and lands being directionally oriented so as to extend along their lengths in a direction generally longitudinal of said lift truck in the direction of travel thereof for sliding longitudinally with respect to [a] *said* load as said lift truck moves forwardly along said direction of travel to engage said load , *said load-engaging nonresilient surfaces being free of any protrusions or depressions, having sides or edges extending in a direction along said surfaces other than the longitudinal direction of said grooves and lands, which effectively resist said longitudinal sliding of said grooves and lands with respect to said deformable surface while in contact therewith, said land surfaces having sufficient width, relative to the width of said grooves, to form nonpermanent indentations in said deformable surface while avoiding any cutting or permanent indentation thereof when engaging said deformable surface with sufficient force to enable said clamp arms to lift said load vertically.*

B1 3,865,678 (26th)
SUEDE-LIKE RAISED WOVEN FABRIC AND PROCESS FOR THE PREPARATION THEREOF

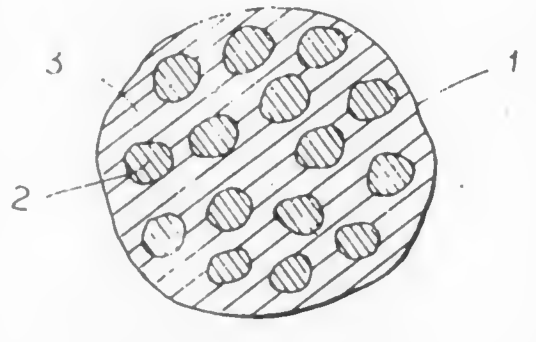
Miyoshi Okamoto, Osaka-fu; Shusuke Yoshida, Otsu; Tadashi Imai, Otsu; Tatsuo Watanabe, Otsu; Shinzo Nishikaku, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan.

Reexamination Request No. 90/000,123, Dec. 10, 1981.

Reexamination Certificate for Patent No. 3,865,678, issued Feb. 11, 1975, Ser. No. 338,962, Mar. 7, 1973.

U.S. Cl. 428/91

Int. Cl.^{3} D04H 1/64; D04H 111/00; B29D 27/00



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–50 is confirmed.

1. A suede-like raised woven fabric which comprises raised fibers covering the surface of said fabric and an elastic polymer impregnated throughout said fabric, wherein said fabric is woven and comprises warp and weft yarns, the weft of said fabric being a yarn consisting of a bundle of extra fine fibers, the mono-filament denier of which is 0.0001–0.4 denier, the warps of said fabric are yarns having a coil-like crimp capacity, the total denier of said warp yarn being 50–300 denier, and said raised fibers consisting mainly of said extra fine fibers which constitute said weft of said fabric.

REISSUES

OCTOBER 19, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

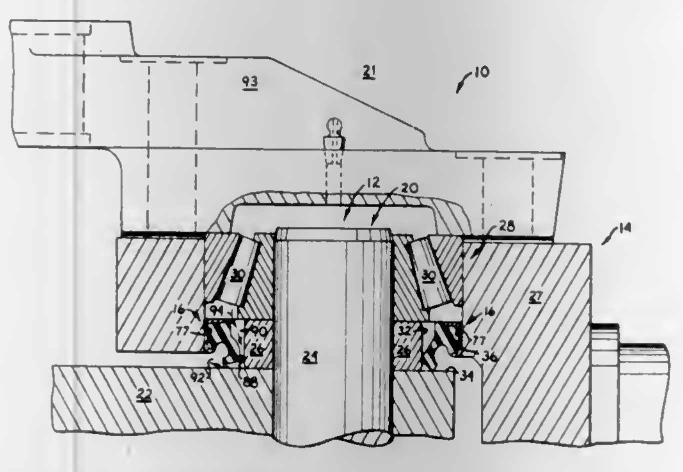
Re. 31,058
SEAL AND SEAL ASSEMBLY

James H. Povejsil, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Original No. 4,210,339, dated Jul. 1, 1980, Ser. No. 4,791, Dec. 26, 1978. Application for reissue Aug. 18, 1980, Ser. No. 179,121

Int. Cl.^{3} F16J *15/32*

U.S. Cl. 277—153 31 Claims



1. A seal (**16**), comprising:

a body (**38**);

a leg (**40**) having first, second and third sides (**46,48,50**), a middle portion (**56**) and first and second end portions (**52,54**) and being connected at the first end portion (**52**) to the body (**38**), said first side (**46**) being linear *and straight along its full length* and generally opposed to said second side (**48**), said second side (**48**) having a linear *and straight* portion (**64**) intersecting the third side (**50**) and being *oriented to extend* parallel to the first side (**46**) and an arcuate portion (**62**) defining an arcuate surface (**58**) extending curvilinearly inwardly in a direction generally toward the first side (**46**) and defining a reduced cross-sectional area of said leg (**40**) at the middle portion (**56**) relative to the second end portion (**54**), said third side (**50**) being [linear] *straight along its full length* and intersecting said first and second sides (**46,48**) at the second end portion (**54**), said second end portion (**54**) being of a construction sufficient for being controllably deflectable relative to said first end portion (**52**) in response to a force exerted on at least one of the first and third sides (**46,50**); and

first and second sealing areas (**42,44**) positioned on said leg (**40**) adjacent the intersection of the first and third sides (**46,50**), and the intersection of the second and third sides (**48,50**), respectively.

Re. 31,059
EMERGENCY PORTION FOR A BRAKE CONTROL VALVE

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Original No. 4,106,819, dated Aug. 15, 1978, Ser. No. 825,748, Aug. 18, 1977. Application for reissue Jul. 23, 1980, Ser. No. 171,603

Int. Cl.^{3} B60T *15/32, 15/42*

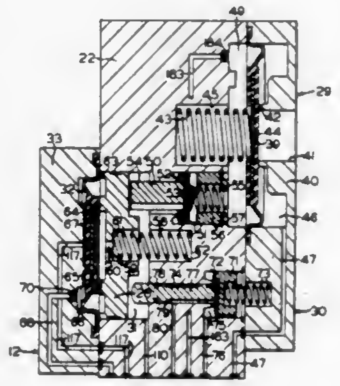
U.S. Cl. 303—38 36 Claims

1. For use in a brake apparatus including a brake pipe, [an auxiliary reservoir,] an emergency reservoir and a quick action chamber each normally charged to a certain chosen pressure, a brake cylinder and a fluid-pressure-operated service valve device, a fluid-pressure-operated emergency valve device operative in conjunction with said service valve device in response to a reduction of the pressure in the brake pipe at an emergency rate to effect [the supply of fluid under pressure from said reservoirs to said brake cylinder to cause] an emergency brake application, said emergency valve device comprising:

(a) a quick service volume chamber,

(b) a continual quick service valve device operable jointly by the pressure in the quick action chamber and in the brake pipe in response to a continuing reduction of the pressure in the brake pipe at a service rate to effect repeated successive release of fluid under pressure from said quick service volume chamber to atmosphere and thereafter recharge of said quick service volume chamber from the brake pipe to the reduced pressure present in the brake pipe,

(c) restricted means enabling flow of fluid under pressure from the brake pipe to the quick action chamber to provide for charging the quick action chamber from the brake pipe to the pressure in the brake pipe, and



(d) fluid-pressure-operated means operably responsive to the release of fluid under pressure from the brake pipe to atmosphere to so cooperate with said continual quick service valve device and said restricted means as to cause the release of fluid under pressure from the quick action chamber to atmosphere at a rate in excess of said service rate, whereby said continual quick service valve device is rendered sequentially operative to terminate the release of fluid under pressure from said quick service volume chamber to atmosphere and thereafter effect recharging of said quick service volume chamber from the brake pipe to the reduced pressure in the brake pipe, and said fluid-pressure-operated means is rendered sequentially operative in conjunction with said continual quick service valve device to terminate the release of fluid under pressure from the quick action chamber to atmosphere at said rate that is in excess of said service rate to enable the flow of fluid under pressure from the brake pipe to the quick action chamber until the pressure in the quick action chamber is the same as that in the brake pipe.

Re. 31,060
ARTICLE HANDLING APPARATUS

David W. Lutz, Carlisle, Pa., assignor to Automatic Truckloading Systems, Inc., Carlisle, Pa.

Original No. 4,181,460, dated Jan. 1, 1980, Ser. No. 865,763, Dec. 29, 1977. Application for reissue Apr. 10, 1981, Ser. No. 253,115

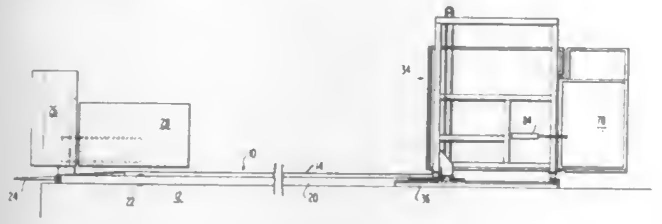
Int. Cl.^{3} B65G *67/08*

U.S. Cl. 414—28 20 Claims

9. Apparatus mounted on a loading dock for loading vehicles, said apparatus comprising:

(*a*) *a conveyor comprising:*

- (*i*) *an elongated shiftable element mounted on said loading dock for movement in a longitudinal path relative to said loading dock and into a vehicle to be loaded;*
- (*ii*) *reversible drive means for effecting said movement; and*
- (*iii*) *first means for restraining a load against longitudinal movement while said shiftable element is retracted from beneath said load and*



(*b*) *second means for aligning and/or compacting a load on said shiftable element in the lateral direction prior to loading a vehicle, said second means comprising:*

- (*i*) *a framework mounted on said loading dock;*
- (*ii*) *side walls on said framework on opposite sides of said conveyor;*
- (*iii*) *third means for adjusting the position of said side walls in the lateral direction; and*
- (*iv*) *fourth means for moving said framework longitudinally from one end of said shiftable element to the other.*

Re. 31,061

5-AMINO OR SUBSTITUTED AMINO-7-PHENYL OR SUBSTITUTED PHENYL-2,3-DIHYDRO-1H-1,4-DIAZEPINES

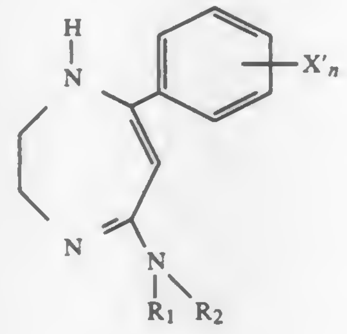
William R. Simpson, Mendham, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Original No. 4,096,140, dated Jun. 20, 1978, Ser. No. 725,440, Sep. 22, 1976. Continuation-in-part of Ser. No. 528,344, Nov. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 456,017, Mar. 29, 1974, Pat. No. 3,929,884. Application for reissue Mar. 27, 1980, Ser. No. 134,444

Int. Cl.^{3} C07D *243/06;* A61K *31/55*

U.S. Cl. 260—239 BC **32 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, alkyl of 1 to 6 carbon atoms or amino, R_2 is hydrogen or alkyl of 1 to 6 carbon atoms, with the provisos that (1) at least one of R_1 and R_2 is not a tertiary alkyl group and (2) R_2 is hydrogen when R_1 is amino,
each X' is independently alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halo, or two X's on adjacent carbon atoms together are methylenedioxy, and
n is 0, 1, 2 or 3,
or a pharmaceutically acceptable acid addition salt thereof.

Re. 31,062

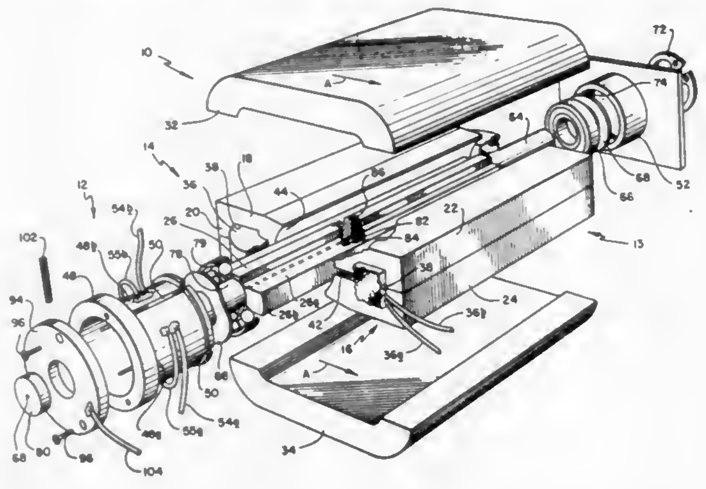
LIMITED-ROTATION MOTOR WITH INTEGRAL DISPLACEMENT TRANSDUCER

Edward F. Burke, Jr., Reading, Mass., assignor to MFE Corporation, Salem, N.H.

Original No. 4,189,699, dated Feb. 19, 1980, Ser. No. 906,712, May 17, 1978. Division of Ser. No. 785,912, Apr. 8, 1977, Pat. No. 4,110,879. Application for reissue Sep. 17, 1980, Ser. No. 188,010

Int. Cl.^{3} H02K *33/00*

U.S. Cl. 335—229 **5 Claims**



1. A limited rotation motor of the type having an array of pole pieces defining a cylindrical passage and an armature rotatively mounted coaxially in the passage and biased toward a reference position, the improvement comprising

A. a bushing *composed of a collar and a body* made of an electrically conductive nonferromagnetic material having an inside diameter that is equal to the diameter of said passage and positioned coaxially with the passage so that the bushing forms an extension of said passage,

B. means defining lengthwise slits in the bushing *body* so as to form at least one pair of tines,

C. means defining a circular cut in the bushing that separates the tines from each other and from the bushing collar so as to electrically isolate the tines, [and]

D. an integral extension on the armature that projects beyond the poles pieces [through] *into* the bushing so that the opposing surfaces of the armature and the tines form an armature displacement transducer *having electrical capacitance* whereby the differential capacitance between the armature surfaces and the tines provides an indication of armature angular displacement[.] *and*

E. means including said collar for rotatively supporting the adjacent end of said armature.

PLANT PATENTS

GRANTED OCTOBER 19, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,896

ALMOND TREE (RENE)

Rene M. Campbell, 3372 S. Burchell Ave., Le Grand, Calif. 95333, assignor to Rene M. Campbell, Le Grand, Calif.

Filed Mar. 2, 1981, Ser. No. 239,342

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, characterized, in comparison to the Carmel, by a more hardy, medium-size tree, whereas the Carmel tree is of small size; by interfertility but blooming with pink rather than white flowers and approximately two days later; and by nuts which are better sealed and hence more insect resistant; and further characterized by a blooming period approximately one day before Mission; by a high percentage of nut set in relation to the quantity of bloom; and by a harvest period substantially concurrent with the Ne Plus Ultra.

4,897

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jun. 18, 1980, Ser. No. 160,824

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Aristocrat and particularly characterized as to uniqueness, as herein described and illustrated, by the combined characteristics of flat capitulum form; daisy capitulum type; dark yellow ray floret color, with minimum color oxidation; diameter across face of capitulum ranging from 85 to 95 mm. at maturity; uniform eight week photoperiodic flowering response to short days; long peduncle length; medium plant height when grown as a single stem cut spray; and semi-upright branching pattern.

PATENTS

GRANTED OCT. 19, 1982

ERRATA

For CLASS	See PATENT NO.
374–134	4,354,384
374–162	4,354,385
524–104	4,354,965
549–220	4,354,975
360–014	4,355,332

PATENTS

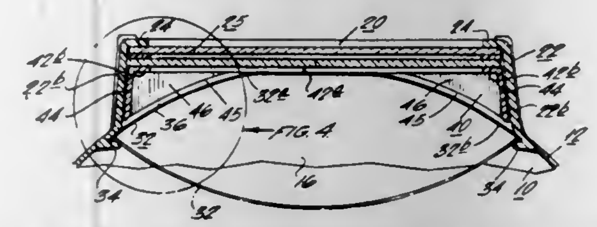
GRANTED OCTOBER 19, 1982

GENERAL AND MECHANICAL

4,354,279
WELDING MASK CORONA BARRIER

Eugene G. Walters, Jr., Orwigsburg, and Heinz E. Ruck, Media, both of Pa., assignors to The Fiber-Metal Products Company, Concordville, Pa.

Filed Jan. 14, 1980, Ser. No. 112,104
Int. Cl.^{3} A61F *9/06*
U.S. Cl. 2—8 **8 Claims**

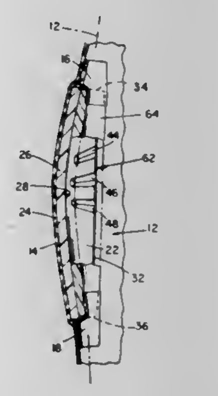


2. A welding mask assembly comprising a shield section, a main frame projecting forwardly from the shield section having a peripheral flange with an opening defining a viewing port, a lens assembly mounted in the main frame and slightly spaced to define a gap, said lens assembly including at least one lens, a corona barrier insert of opaque material seated against a portion of said lens assembly and overlying the peripheral gap between the lens assembly and the main frame to effectively block external light rays which may produce a corona or halo effect interiorly of the welding mask.

4,354,280
JOINT PROTECTOR

John B. Hayes, Walhalla, S.C., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 29, 1980, Ser. No. 220,526
Int. Cl.^{3} A41D *13/08*
U.S. Cl. 2—16 **5 Claims**



1. A contact sport joint protector for protecting a limb joint, comprising

a unitary, foam-filled, semi-rigid, resilient, molded plastic pad of generally uniform thickness and normally straight configuration

said pad having smooth inner and outer membranes with a thick layer of resilient foam therebetween connected together around the peripheral edge of said pad to form relatively thick side edges providing a generally concave inner surface and a generally convex smooth outer surface

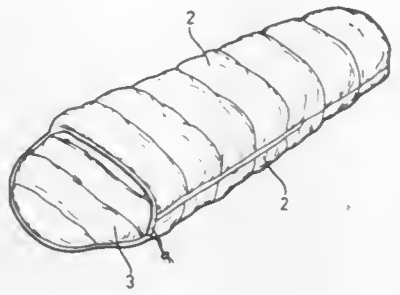
said inner surface and said opposed side edges having a plurality of generally parallel, longitudinally spaced, opposed, hinge grooves extending inwardly from said opposed side edges generally perpendicular thereto with their opposed inner ends spaced from one another

said grooves defining a hinge portion adapted to overlie said limb joint to enable bending of said pad at said hinge portion upon bending of said limb joint.

4,354,281
STRUCTURAL MEMBER FOR SLEEPING BAG

Tomoyoshi Satoh, Tokyo, Japan, assignor to Nihon Yohhin Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1980, Ser. No. 166,686
Claims priority, application Japan, Jul. 4, 1979, 54/91222[U]; Oct. 31, 1979, 54/150085[U]
Int. Cl.^{3} A41D *1/00, 3/00;* **A47G** *9/08*
U.S. Cl. 2—69.5 **10 Claims**



1. A structural component for a garment or sleeping bag comprising:

(a) a first layer of material;

(b) a second layer of material laterally spaced from said first layer;

(c) a layer of a first heat insulating material disposed between said first and second layers and having one surface, substantially adjacent the inner surface of said first layer and another surface laterally spaced from the inner surface of said second layer;

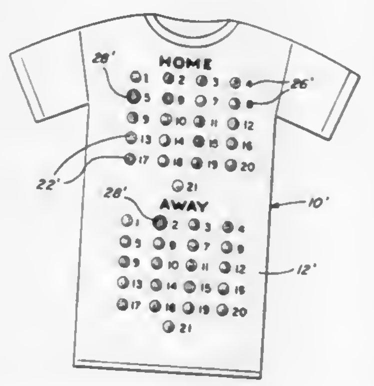
(d) a plurality of partition sheets extending between said another surface of said heat insulating layer and the inner surface of said second layer and terminating at said another surface, so as to form a plurality of transversely extending compartments between said another surface of said heat insulating layer and the inner surface of said second layer; and

(e) said compartments being filled with a second heat insulating material.

4,354,282
GARMENT WITH SCORE INDICIA AND ATTACHABLE SCORE RECORDING MARKERS

Joel A. Langdon, Elizabethtown, Pa., assignor to Joseph F. Monahan, Jr.; Ben B. Ellis, Sr., both of Lancaster and Grace M. Nace, Columbia, all of, Pa.

Filed Mar. 12, 1981, Ser. No. 242,847
Int. Cl.^{3} A41B *1/00*
U.S. Cl. 2—115 **7 Claims**



1. A game score indicating garment to be worn on a body torso while playing an active sport game, said garment including a front panel for overlying the chest area of a person wear-

ing said garment, said front panel including predetermined first distinctive color areas thereon with associated indicia indicating the score values of successive scores of a predetermined sport game, and a second distinctive color marker selectively registrable over said color areas, said color areas and said market including coacting means operative to repeatedly removably support said marker on selected areas for indicating the last scored game point.

4,354,283

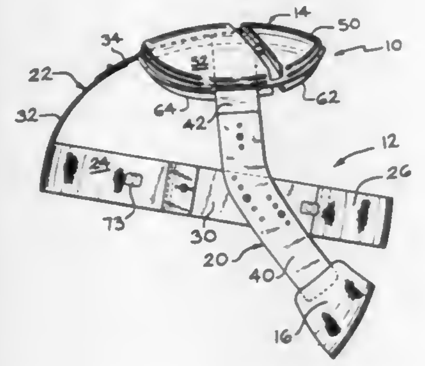
HEADBAND ASSEMBLY FOR PROTECTIVE HEADGEAR

Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Dec. 15, 1980, Ser. No. 216,245

Int. Cl.³ A42B *3/02*

U.S. Cl. 2—413 **12 Claims**



1. An energy-absorbing headband assembly to be worn between protective headgear and a wearer's head comprising:
- a flexible headband having a front portion positionable upon the wearer's forehead, a rear portion positionable upon the occiput of the wearer, and right and left side portions connecting said front and rear portions so as to contact the wearer's head and complete a perimeter about the wearer's head;
- a multichambered fluid-filled vertex pad positionable upon the crown of the wearer's head forming a yieldable and resilient cushion thereon;
- a flexible front support band connecting said vertex pad to said headband front portion so as to locate the vertex pad above and behind the headband front portion;
- a resilient and yieldable nape pad positionable upon the wearer's nape and conformable to the lower part of the wearer's head;
- a right nape band having ends fixed to said vertex pad and said nape pad and having an intermediate portion fixed to said headband right side portion at the intersection of said right side nape band and said headband right side portion; and
- a left nape band having ends fixed to said vertex pad and said nape pad and having an intermediate portion fixed to said headband left side portion at the intersection of said left nape band and said headband left side portion;
- said headband, front support band, right nape band, and left nape band coacting with said vertex pad and said nape pad so as to apply clamping pressure between the crown of the wearer's head and the wearer's nape for securing the headband assembly in place and for absorbing and distributing forces within the headband assembly.

4,354,284

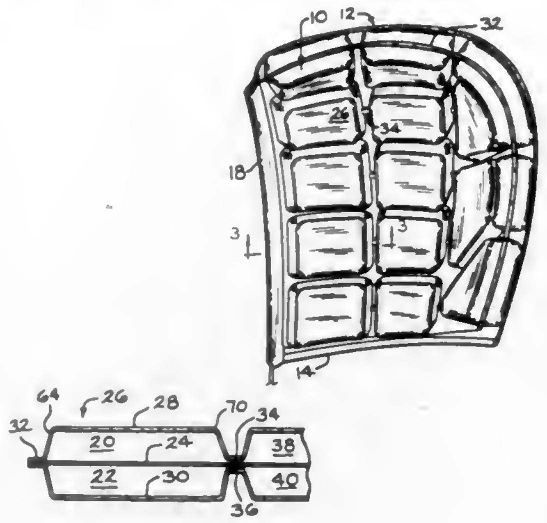
PROTECTIVE LINER FOR OUTDOOR HEADGEAR

Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Jan. 28, 1981, Ser. No. 229,306

Int. Cl.³ A42B *3/02*

U.S. Cl. 2—413 **6 Claims**



1. An energy-absorbing protective liner for use in conventional outdoor headgear, said liner comprising:
- a plurality of resilient wall members secured together in a surface-to-surface relation so as to form a plurality of fluid-filled chambers having walls of resilient material confining the fluid within said chambers, said fluid-filled chambers being formed in pairs positionable concentrically about the wearer's head, each of said pairs including an inner fluid-filled chamber adjacent the wearer's head and an outer fluid-filled chamber to be positioned adjacent the outdoor headgear, one of said wall members dividing said inner fluid-filled chamber and said outer fluid-filled chamber and forming a common wall therebetween, each of said inner and outer chambers being positioned side-by-side with a similar chamber and being in fluid communication therewith through a fluid carrying passage, said liner being mountable against the inside of said outdoor headgear such that when the headgear is worn said liner is between said headgear and the wearer's head so that said liner will cushion and disperse impact blows directed to the wearer's head through the outdoor headgear and absorb impact forces applied to said headgear and thereby diminish the magnitude of those forces on the head of the wearer.

4,354,285

FACE SHIELD AND HELMET

Thomas H. Rudd, Wayzata, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.

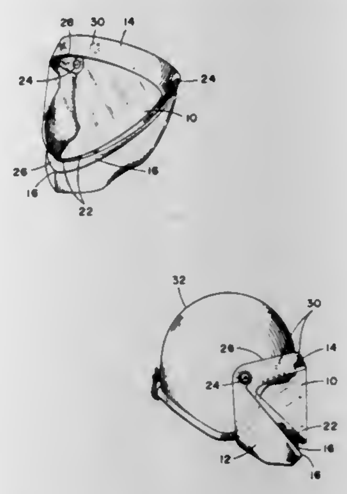
Filed Oct. 6, 1980, Ser. No. 194,004

Int. Cl.³ A61F *9/04;* **A42B** *3/02*

U.S. Cl. 2—424 **14 Claims**

13. A face shield unit comprising:
- (a) a helmet,
- (b) an attachment band curved to substantially the same shape as the front of said helmet,
- (c) pivotal fasteners on each end of said attachment band for detachably receiving a face shield whereby said face shield may be quickly and easily replaced,
- (d) connections on said attachment band for attaching said attachment band to said helmet,
- (e) a face shield pivotally and detachably connected to said attachment band pivotal fasteners thereby pivotally mounting said face shield on said helmet, whereby said face shield may be moved upwardly and outwardly about said attachment band pivots away from the face of the user without removing said helmet, and

- (f) a V-shaped groove having an included angle less than 90° extending upwardly and rearwardly about said face shield



from a point adjacent the bottom of the front of said face shield.

4,354,286

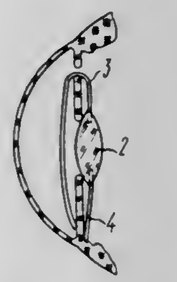
ARTIFICIAL EYE LENS

Mikhail M. Krasnov, ulitsa Udaltsova, 24, kv. 66, and Nikolai N. Pivovarov, ulitsa Nezhinskaya, 15, korpus 3, kv. 87, both of Moscow, U.S.S.R.

Filed Oct. 6, 1981, Ser. No. 309,045

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **2 Claims**



1. An artificial eye lens adapted for being implanted in the posterior chamber of a patient's eye, comprising an optical lens proper and a supporting element made of an elastic material, said supporting element being made up of two components, viz., a first and a second, of which the first component is essentially an arc-shaped loop fixed with its ends in the lens lateral surface and situated in front of the lens surface over a length equal to at least half the length of the lens circumference at a distance from the lens surface corresponding to the thickness of the iris, while the second component is made as a U-shaped leg arranged oppositely to the middle portion of said arc-shaped loop and fixed with its ends in the lens lateral surface; both of the abovesaid components being so inclined as to contact each other prior to implanting the lens in the posterior chamber.

4,354,287

BED FRAME WITH ADJUSTABLE HEADBOARD ENGAGER OR ENGAGER-EXTENDER

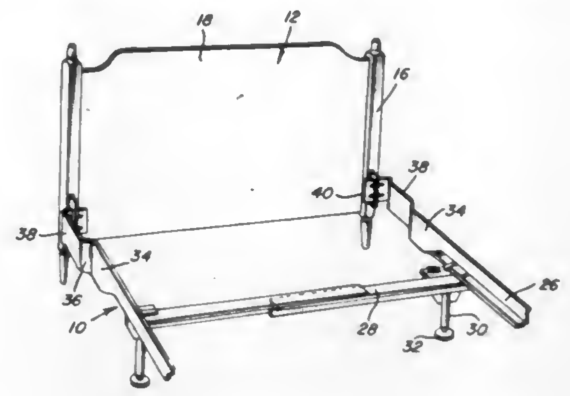
Harry Fredman, 908 S. Washington St., Peoria, Ill.

Filed Jul. 11, 1980, Ser. No. 167,526

Int. Cl.³ A47C *19/04*

U.S. Cl. 5—185 **14 Claims**

1. In combination, a bed frame including a pair of generally parallel side rails having laterally extending end plates oriented generally perpendicular to the side rails, and an engager mounted on each of the end plates, each engager being in the form of a substantially flat hook plate having a pair of vertically spaced hooks on one vertical edge thereof and a vertically disposed slot spaced from the hooks, said vertical slot adapted to slidably receive the end plate on the side rails to enable lateral adjustment of the hook plate in relation to the end plate to align the hooks on the hook plate with slots and transverse pins provided on a headboard thereby enabling the headboard to be connected to the bed frame.



4,354,288

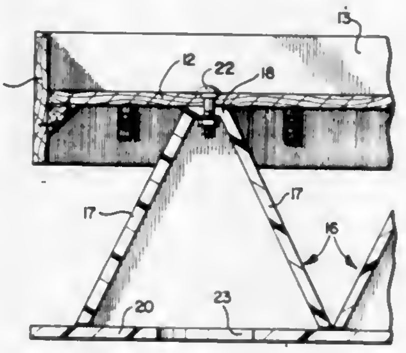
BED FRAME WITH PYRAMID SHAPED PLATFORM SUPPORTS

Joseph W. Dennis, 4054 Little Richmond Rd., Dayton, Ohio 45427

Filed Oct. 3, 1980, Ser. No. 193,676

Int. Cl.³ A47C *19/00*

U.S. Cl. 5—400 **3 Claims**



1. A bed comprising a generally horizontally oriented platform,
- a plurality of underlying rigid pyramids, each of substantially the same height, having their bases arranged in contiguous manner and have apices lying in a common plane,
- means attaching said platform to said apices, and
- means in said bases defining an aperture for access to said attaching means.

4,354,289

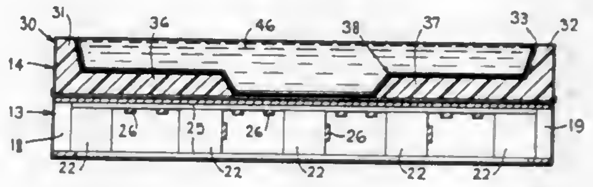
WATERBED

Carl H. Richards, III, East Grand Rapids, and Bruce H. Richards, Walker, both of Mich., assignors to Richards Quality Bedding Company, Inc., Grand Rapids, Mich.

Filed Apr. 11, 1980, Ser. No. 139,608

Int. Cl.³ A47C *27/00*

U.S. Cl. 5—451 **8 Claims**



6. A waterbed comprising:

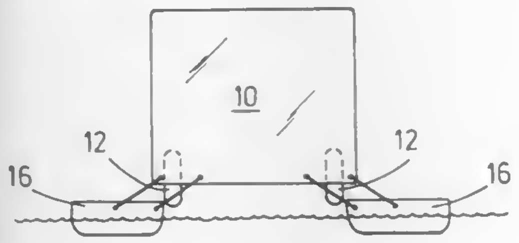
- a rigid support having a substantially planar upper surface;
- a semi-rigid shell formed by upstanding unitary wall means closing the perimeter of a cavity and a pair of bottom wall portions integral with opposing parts of said upstanding wall means and underlying only portions of said cavity, said bottom wall portions extending toward each other but being spaced substantially apart in the central portion of the cavity which opens downwardly through the bottom of the shell, said upstanding wall means having a substantially planar bottom surface, said bottom wall portions having upper surfaces spaced below the upper edge of said upstanding wall means and substantially parallel with said bottom surface of said upstanding wall means;
- flexible sheet means secured to said upstanding wall means adjacent the perimeter of the latter and extending therefrom completely under said central portion of said cavity and said bottom wall portions, said flexible sheet means closing the bottom of said central portion of said cavity; and
- liquid-tight bladder means disposed within said cavity and having a central portion adjacent said flexible sheet means, said bottom wall portion separating remaining portions of said bladder means from said flexible sheet means, said flexible sheet means supporting said shell and bladder means central portion on said rigid support.

4,354,290

CONVERTIBLE HOUSE TRAILER

William B. Tevruchte, R.R. #1, Roseneath, Ontario, Canada, and Julian B. Beecroft, P.O. Box 27, Whitby, Ontario, Canada (L1N 5R7)

Filed Aug. 15, 1979, Ser. No. 66,662
Int. Cl.^{3} B63C *13/00*
U.S. Cl. 114—344 **4 Claims**



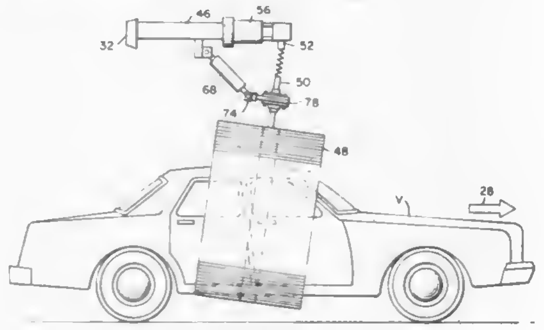
1. A convertible house trailer adapted for use as a house boat, said trailer comprising:
- a cabin portion;
- road wheels movably mounted on said cabin portion, and having linkage means whereby the same may be raised to a water position and lowered to a road position;
- tow bar means connected to said cabin, whereby the same may be towed when on land, and having lower and upper positions;
- float means movably mounted beneath said cabin, and having deck portions and hull portions, and movable support means connecting the same to said cabin, said float means being movable between at least a first raised road position, beneath said cabin, with said deck portions facing upwardly and said hull portions facing downwardly, and a lower water position beneath said cabin, with said deck portions facing upwardly and said hull portions facing downwardly;
- first controllably operable movement means connecting between said float means and said cabin, whereby said float means may be moved from one position to the other, and located and fastened in such position;
- said float means being movable between first, second and third positions which are respectively said first raised road position as aforesaid, a second water-mobile position, wherein said float means is located at a distance beneath said cabin, and a third outwardly spread water-stationary position, wherein said float means is extended outwardly on either side of said cabin, said float means in each of said positions having said deck portions facing upwardly and said hull portions facing downwardly;
- said convertible house trailer further including second controllably operable movement means connected beneath said cabin and said road wheels; and
- said float means each comprises an elongated hollow seated structure having a generally flat bottom and side walls extending upwardly therefrom, said bottom and said side walls defining said hull portions, and a flat deck extending to said side walls, said float means including a pair of parallel first mounting legs disposed at the front of each of said structures and a second pair of mounting legs at the rear of each of said structures, said first and second mounting legs having lower ends pivotally mounted, at points spaced apart a first distance, to said float structure and upper ends pivotally mounted, at points spaced said first distance, to said cabin and connection means coupling said legs in pairs for movement in unison, whereby said floats may swing relative to said cabin, while remaining in planes parallel to the horizontal plane of said cabin with their decks uppermost, and their hull portions lowermost.

4,354,291

SPRING COUPLED BRUSH ASSEMBLY FOR VEHICLE WASHING APPARATUS

George T. Ennis, Del Mar, Calif., assignor to N/S Car Wash Enterprises, Inc., Inglewood, Calif.

Continuation-in-part of Ser. No. 883,514, May 6, 1978, Pat. No. 4,225,995. This application Jun. 13, 1980, Ser. No. 159,116
Int. Cl.^{3} B60S *3/06*
U.S. Cl. 15—53 AB **11 Claims**



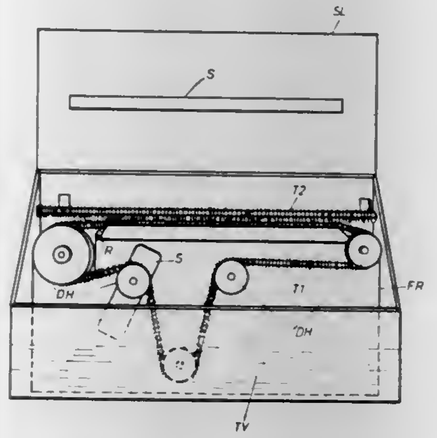
1. In a vehicle washing apparatus having a support frame, a brush assembly supported by said frame for washing one or more of the front, side and rear of a vehicle moving relative thereto comprising:
- brush support means connected to said frame;
- a brush for washing the vehicle moving relative thereto;
- a shaft for supporting said brush in a normal operating position;
- a coupling device for coupling said shaft to said brush support means, said coupling device comprising coil spring means which supports said brush shaft and is responsive to the force of the vehicle against said brush for flexing freely in any direction to tilt said brush, said coil spring means, upon flexing in any direction, further generating a restoring force equal in all directions to urge said brush toward its normal operating position; and
- motor means coupled to said shaft for rotating said shaft and said brush in the opposite direction at the surface of the vehicle to the direction of movement of said brush assembly relative to the vehicle to generate a rotary reaction force against the vehicle which walks said brush along the surfaces of the vehicle.

4,354,292

ARRANGEMENT FOR CLEANING CIRCUIT CARDS PARTICULARLY FOR REMOVING SOLDERING AND RESIN REMNANTS

Ake W. Telestad, Skärholmen; Kjell A. Samuelsson, Saltsjö-Boo, and Dick E. A. Storm, Lidingö, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 23, 1980, Ser. No. 162,113
Claims priority, application Sweden, Jul. 11, 1979, 7906039
Int. Cl.^{3} A46B *13/04*
U.S. Cl. 15—77 **8 Claims**



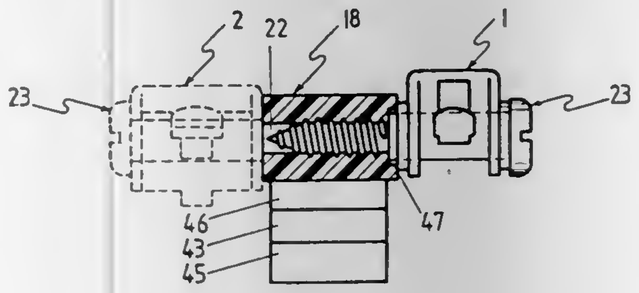
1. Apparatus for cleaning circuit cards to remove solder and resin remnants due to the soldering of components onto the cards, said apparatus comprising container means containing a cleaning liquid, a frame carrying first and second sets of guiding and driving wheels and respective first and second endless cleaning bands on said wheels driven thereby and immersed in said liquid along a portion of the travel thereof, said frame being provided with a guide groove located outside said liquid, said cleaning bands having respective lengths extending in confronting parallel relation in said guide groove and being driven in the same direction by said wheels in said groove, each said band including flexible bristles thereon extending from said band towards the bristles of the other band, said guide groove being outwardly open to permit insertion of a circuit card to be cleaned into said groove, the length of said bristles in relation to the size of said groove being such to cause said bristles of the confronting bands to be pressed against said card and undergo flexing as said bands travel along said card.

4,354,293

ARM TO BLADE CONNECTOR

Robert T. Le Sausse, Brussels, and Johan H. Van den Berg, Hasselt, both of Belgium, assignors to Champion Spark Plug Europe S.A., Virton, Belgium

Filed Jan. 8, 1981, Ser. No. 223,374
Claims priority, application France, Feb. 13, 1980, 80 03157
Int. Cl.^{3} B60S *1/40*
U.S. Cl. 15—250.32 **12 Claims**



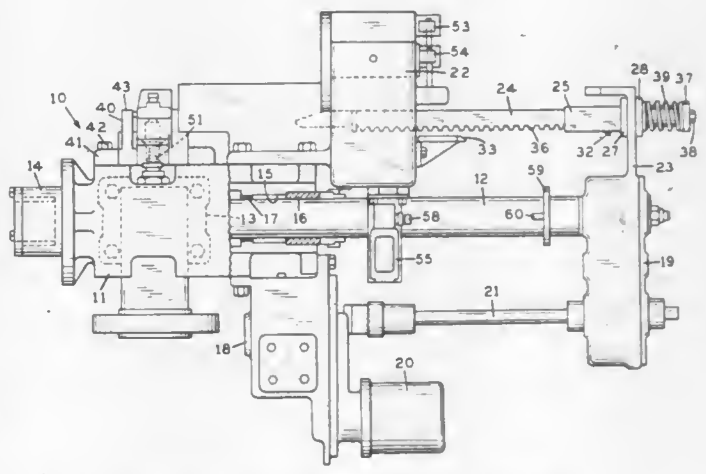
1. A connecting device for attaching one side of a wiper blade to one of two wiper arms of different types (**1,2**), one type of wiper arm (**1**) having a width less than the width of the other type of wiper arm (**2**), wherein the superstructure (**12**) of the wiper blade compries a first pivot pin (**15**) onto which is fixedly or releasably secured the body (**50**) of said connecting device and wherein the free end portion of the two types of wiper arms has substantially the shape of a U of which two flanges (**3,7**) are provided each with a circular opening (**4,8**), characterized in that the connecting device comprises a second pivot pin (**23**) having a first portion which may be threaded from both sides into an opening (**22**) extending through the body (**50**) of the connecting device and having a circular enlargement (**47**) on one side of the body (**50**) adjacent one of the sides of the superstructure (**12**), said second pivot pin (**23**) permitting the attaching of the one type of wiper arm (**1**) to the one side of the superstructure (**12**) and the attaching of the other type of wiper arm (**2**) on either side of said superstructure (**12**).

4,354,294

ROTARY WALL DESLAGGER

Theodore R. Silver, Erie, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Sep. 10, 1980, Ser. No. 185,949
Int. Cl.^{3} F23J *3/02*
U.S. Cl. 15—317 **14 Claims**



13. A rotary wall deslagger which comprises
- (a) a main support structure,
- (b) a lance tube rotatably supported by said main support structure for traverse motion between working and non-working positions,
- (c) cleaning fluid discharge means associated with said lance tube,
- (d) integrated means for moving said lance tube between said working and non-working positions and for activating said cleaning fluid discharge means,
- (e) said integrated means including a selectively-operable, mechanical coupling means for mechanically-engaging said integrated means with said lance tube to move said lance tube,
- (f) means to release said selectively-operable, mechanical coupling means when said lance tube is in the working position,
- (g) said integrated means being operative to activate said cleaning fluid discharge means when said mechanical coupling means is released.

4,354,295

DEVICE FOR AXIAL SHIRRING OF SYNTHETIC TUBULAR MATERIAL FOR FURTHER PROCESSING, ESPECIALLY ON AUTOMATED SAUSAGE STUFFERS

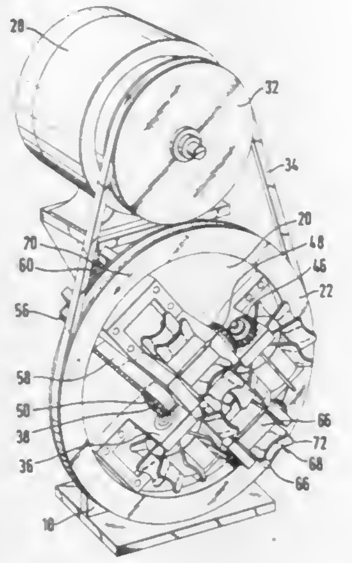
Gunter Kollross, AM Wallerstadter Weg 20, D-6081 Dornheim, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 204,167

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 2944623

Int. Cl.^{3} A22C *13/02*

U.S. Cl. 17—1 R **10 Claims**



1. A device for axial shirring of synthetic tubular material, such as for use on an automated sausage stuffer, comprising:

an assembly of at least three shirring rolls rotatable about axes, all of which axes are located in a common plane, the shirring rolls being distributed equi-angularly about a central opening adapted to receive a cylindrical mandrel, such that the periphery of the rolls all include a portion facing the mandrel and the said common plane of the axes is transverse to the axis of the mandrel,

means for mounting the assembly for revolving movement about the mandrel,

each of said shirring rolls having a plurality of vanes, the outer ends of which vanes extend parallel to the axis of its respective shirring roll and said outer ends including a concave arcuate groove, the curvature of which groove corresponds to the surface of the mandrel which it faces,

the path of the grooves of the vanes of each shirring roll, as they pass closest to the mandrel, overlapping the path of the grooves of the vanes of the two adjacent shirring rolls, when viewed along the axis of the mandrel,

and means for rotating the shirring rolls in timed relation with each other and at a speed of the same order of magnitude as the speed of revolution of the shirring rolls about the mandrel, and the vanes of each shirring roll being positioned circumferentially about its axis such that upon revolution of the assembly about the mandrel, the vanes of any shirring will directly follow the vanes of the preceeding shirring roll, taken in the direction of revolution and in the direction of advance of the tubular material.

4,354,296

METHOD AND APPARATUS FOR KILLING POULTRY

Ronald D. Robinson, Rte. 3, Box 200A, Gainesville, Ga. 30501

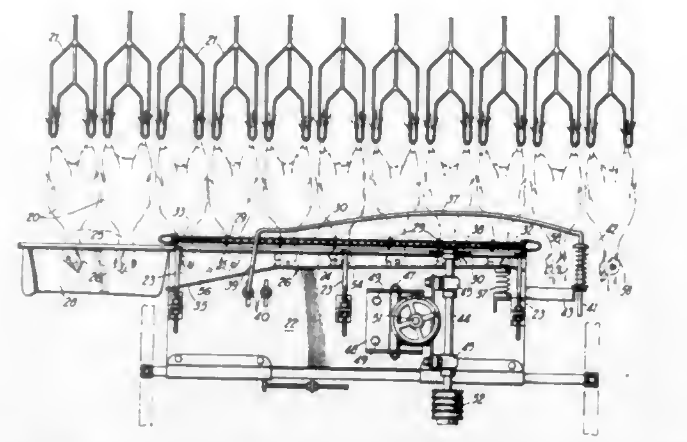
Filed Feb. 20, 1981, Ser. No. 236,587

Int. Cl.^{3} A22C *21/00*

U.S. Cl. 17—52 **18 Claims**

1. A method of killing poultry comprising moving birds in succession along a horizontal path with the birds hanging heads downward, guidingly engaging the necks and heads of the birds during such movement and restraining the heads from moving upwardly, simultaneously cammingly engaging the bodies of the birds during such movement and displacing the bodies upwardly relative to the heads and thereby stretching the necks of the birds, and severing the jugular veins of the birds in succession while the necks are stretched.

3. An apparatus for killing stunned fowl by severing the jugular vein with precision and uniformity comprising means to convey birds in succession with their heads hanging downwardly, horizontal guide means engageable with the necks and heads of conveyed birds and restraining upward movement of the heads, cam means in the path of movement of the conveyed bird and engaging the bodies of the birds in succession to stretch the necks of the birds while they are moving, and means to sever the jugular veins of the birds in succession during their movement and while their necks are stretched.



4,354,297

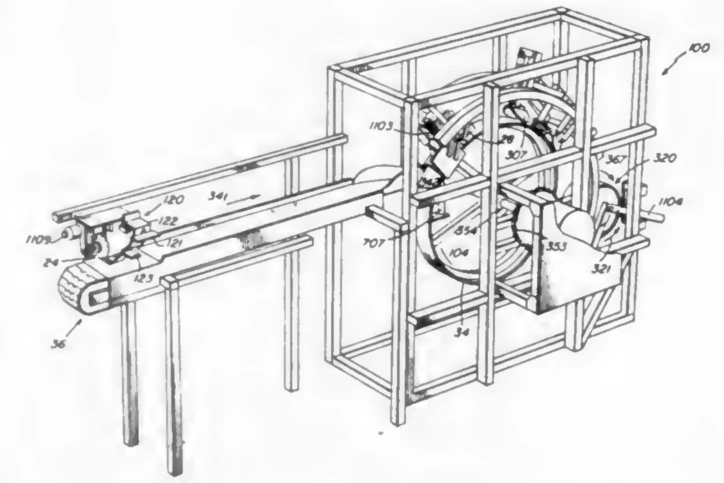
MACHINE FOR PROCESSING FISH

David G. Wilson, Cambridge, Mass.; William B. Hoff, III, Winnetka, Ill., and Roy V. Richard, II, Natick, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 31, 1980, Ser. No. 135,345

Int. Cl.^{3} A22C *25/17*

U.S. Cl. 17—54 **17 Claims**



1. Skin removing apparatus comprising:

a. a conveyor for securing a body and moving it along a prescribed path;

b. securing means for securing one end of the body to said conveyor;

c. slitting means for making a crosswise cut along one of the narrow sides of said body below the end secured by the securing means;

d. gripper means, movable in a direction opposite the conveyor, for gripping the skin at the cut made by the slitting means; and in which the conveyor is a rotatable wheel, the body moves in an arc and the gripper means is mounted on a drum which rotates in the opposite direction to the wheel when the gripper has gripped the skin.

4,354,298

PEDAL COUPLING PIN

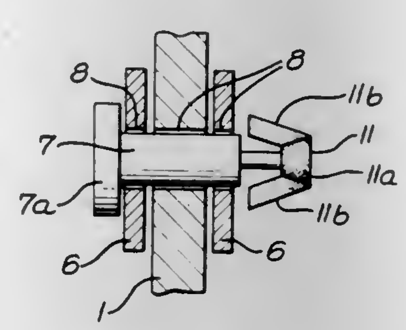
Yoshiyuki Tanaka, and Masaharu Kobori, both of Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha and Kato Hatsujo Kabushiki Kaisha, both of Kanagawa, Japan

Filed Dec. 26, 1979, Ser. No. 106,461

Claims priority, application Japan, Dec. 27, 1978, 53-182410[U]

Int. Cl.^{3} E05C *13/02;* **F16B** *13/04*

U.S. Cl. 24—201 LP **1 Claim**



1. A pedal coupling pin to be inserted through coupling pin insertion holes in a coupling member and a pedal for rotatably coupling said coupling member to said pedal comprising:

a pin portion made from metal, said pin portion comprising:

a cylindrical portion;

a flange whose diameter is greater than a diameter of said coupling pin insertion holes formed in the coupling member, said flange being provided on one end of the cylindrical portion;

a small diameter shaft projecting from the other end of said cylindrical portion; and

a circular plate provided on the end of said small diameter shaft; and

an elastic retaining member made from plastic provided on the circular plate, said retaining member comprising a head portion whose diameter is substantially the same as the diameter of said cylindrical portion integrally molded on said circular plate and at least one pair of resilient arms molded integrally with said head portion which extend outwardly toward the flange end and whose free ends extend outwardly a distance greater than the diameter of the coupling pin insertion holes whereby said pedal coupling pin may be installed by inserting it through said coupling pin insertion holes and retained in position only by said flange and said elastic retaining member.

4,354,299

CLAMP FOR FASTENING GRAPEVINES AND OTHER FRUIT-BEARING SHRUBS ON BRACING WIRES

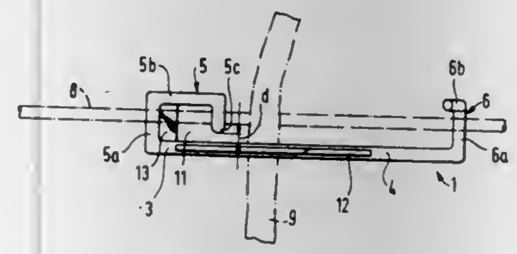
Georg Maidhof, Carlsberg, Fed. Rep. of Germany, assignor to Maidhof GmbH, Carlsberg, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 143,648

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935986

Int. Cl.^{3} A44B *21/00*

U.S. Cl. 24—261 R **17 Claims**



1. A clamp for fastening grapevines and other fruit-bearing shrubs onto a bracing wire, comprising

a pair of angularly connected arms, each of said arms having a free end forming an intermediate piece;

a detent connected at the free end of one of said arms for engagement thereof with the bracing wire;

said detent being in the form of an arc member starting from said one end of said one arm and extending for a predetermined distance in a plane containing said one arm;

the other end of said arc member approaching said one arm but spaced therefrom in said last-mentioned plane a predetermined distance less than the diameter of the bracing wire;

a hook connected at the free end of the other of said arms for engagement thereof with the bracing wire; and,

said intermediate piece being formed from a resilient material with said two arms being angularly spaced from each other with an obtuse angle whose apex is the straight directional lines extension of said two arms.

4,354,300

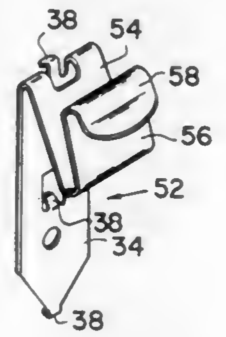
HOLDER FOR SUPPORTING A VALANCE AT A VENETIAN BLIND HEAD

Joseph A. Anderle, Clifton, N.J., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Division of Ser. No. 863,243, Dec. 22, 1977, Pat. No. 4,222,156. This application Jan. 11, 1980, Ser. No. 111,467

Int. Cl.^{3} A44B *21/00*

U.S. Cl. 24—343 **1 Claim**



1. An article of manufacture for use in connection with a venetian blind, comprising: a body of substantially flat sheet metal having means for supporting at least one valance in a substantially horizontal position, said supporting means comprising three spaced prongs protruding from said body and substantially in vertical alignment with each other, said body also having means for connecting said body to a support, said body comprising a first body portion having a top, said supporting means being connected to said first body portion, said body comprising a second body portion spaced from said first body portion in a direction substantially perpendicular to said first body portion and extending substantially parallel to said first body portion, said second body portion having a top and a bottom and integrally formed thereon at its top means for clamping said body to a venetian blind head, and means for positively holding said first body portion in a substantially vertical plane when connected to said venetian blind head, said holding means forming a third body portion connecting the bottom of said second body portion to the top of said first body portion.

4,354,301

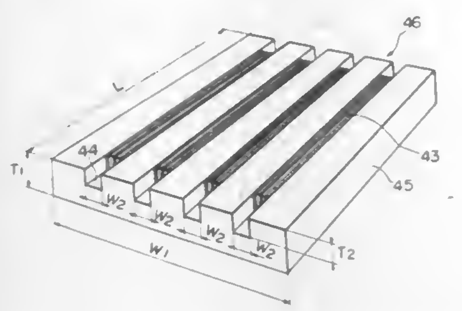
METHOD FOR MANUFACTURING STRIPE-PATTERNED METAL PLATE

Yo Takeuchi, Urawa; Masaki Morikawa, Oomiya; Chuji Tanaka; Toshiharu Hiji, both of Ageo, and Hiroshi Ikeda, Osaka, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 75,256, Sep. 13, 1979, abandoned. This application Aug. 25, 1981, Ser. No. 296,153

Int. Cl.^{3} B23P *13/00*

U.S. Cl. 29—160.6 **12 Claims**



1. A method for manufacturing a stripe-patterned metal plate comprising the steps of:

placing plural kinds of metal sheet blanks having different colors on top of one another to provide a layer structure of said sheet blanks in an alternate order or in a predetermined order of arrangement;

bonding the respective metal sheet blanks to each other directly and metallurigically in a solid state to provide a layer-structured plate;

cutting said layer-structured plate in a direction along a face extending at a predetermined angle to a layer face thereof to provide at least one thin metal plate intermediate;

inserting said metal plate intermediate into an elongated hole of a rectangular cross-section formed longitudinally through an elongated solid package of metal, said metal plate intermediate being substantially equal in cross-section to said hole in said package, said package having substantially the same thermal deformation properties as said layer-structured plate; and

hot rolling said package into a predetermined length with its width remaining substantially unchanged so that said metal plate intermediate is simultaneously extended at a predetermined reduction rate with its width remaining substantially unchanged, the cut fact of said metal plate intermediate being disposed in a horizontal direction.

4,354,302

JACKING TOOL FOR INSTALLING AND REMOVING DRAFT GEARS ON RAILWAY CARS

Roger J. Weseloh, South Holland; Russell G. Brandsma, Hazel Crest, and John R. Hoshour, Country Club Hills, all of Ill., assignors to American Standard Inc., Chicago, Ill.

Filed Sep. 22, 1980, Ser. No. 189,248

Int. Cl.^{3} B23P *19/04*

U.S. Cl. 29—252 **16 Claims**

1. A jacking device for reducing a draft gear to a compressed state prior to installing or removing the draft gear into or from, respectively, a draft pocket formed in a railway car center sill in which the draft gear is operably disposable with one end adjacent an inner end of said pocket for resiliently transmitting buff or draft forces between the coupler and draft gear, said draft gear including a follower axially aligned at the other end thereof opposite said one end, and a yoke surrounding the draft gear and by which the coupler may be connected to the draft gear, said jacking device comprising:

(a) a cylinder having a closed end,

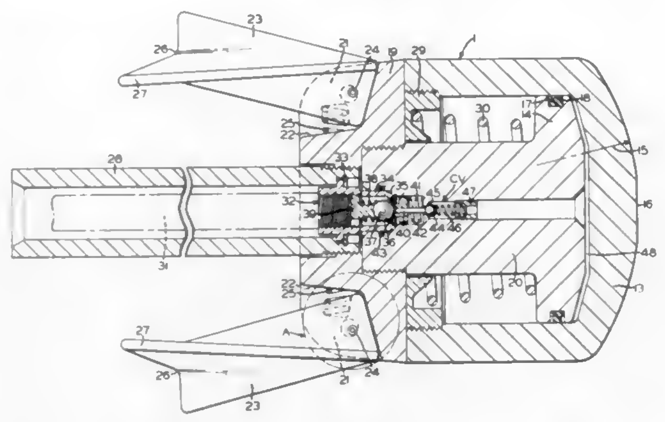
(b) a ram, including a ram head, reciprocably operable within said cylinder, said cylinder and said ram head cooperating to form therebetween a pressure chamber within said cylinder;

(c) a rod portion extending coaxially from the side of said ram head opposite said pressure chamber, said ram head and said rod portion having a bore extending coaxially therethrough with one end opening to said pressure chamber;

(d) a transverse beam member coaxially secured on the end of said rod portion opposite the ram head;

(e) a pair of locking arms each having one end pivotally secured on said transverse beam member on opposite extremities thereof, extending axially away therefrom, and being pivotally biased angularly outwardly therefrom,

(f) said locking arms being so disposed on said transverse beam and of such length as to be engageable with such yoke when the jacking device is inserted into such draft pocket and being effective, when said pressure chamber is charged with fluid under pressure, for transmitting compression forces to such follower and thereby effecting such compressed state of the draft gear;



(g) conduit means connecting with the other end of said bore opposite its said one end so as to provide passage means via which fluid may be supplied to and pressurized in said pressure chamber; and

(h) checking means for retaining said draft gear in said compressed state during removal or installation thereof.

4,354,303

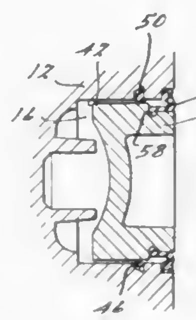
METHOD OF DISC BRAKE REPAIR

Raymond J. Staley, 15990 S. Hampton, Livonia, Mich. 48150

Filed Dec. 15, 1980, Ser. No. 216,679

Int. Cl.^{3} B23P *7/02*

U.S. Cl. 29—402.08 **7 Claims**



1. A method of repairing of disc brake systems having a disc brake caliper housing, said caliper housing comprising a cylinder, and a piston assembly movably disposed within said caliper housing, said piston assembly comprising a piston, a piston dust boot, and a piston seal, said seal being positioned on and movable with said piston, said method comprising: removing said piston assembly from said cylinder; machining an annular groove in a sidewall of said cylinder; installing a new piston seal in said annular groove; installing a generally cylindrically shaped replacement piston in said cylinder.

4,354,304

METHOD OF MAKING INTUMESCENT SEALS

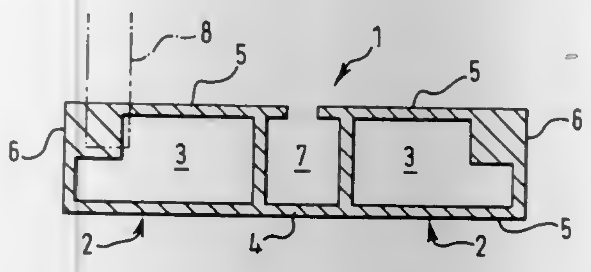
Bernard Dixon, Pampisford, England, assignor to Dixon International Limited, Cambridge, England

Filed Jan. 22, 1981, Ser. No. 227,230

Claims priority, application United Kingdom, Dec. 4, 1980, 8038921

Int. Cl.^{3} B22D *11/126*

U.S. Cl. 29—527.1 **7 Claims**



1. A method of making an intumescent seal comprising: providing a tubular holder having a longitudinal bore or interior chamber defined by a thickened longitudinally extending portion of the holder contiguous with a relatively thin wall of the holder; filling the bore of the holder with solid intumescent material; and thereafter removing a longitudinally extending part of said thickened portion thereby to leave part of said thickened portion as a baffle within the holder, the space left by said removed part forming a strait having a longitudinally extending opening to the exterior of the holder and a longitudinally extending opening to the bore of the holder.

4,354,305

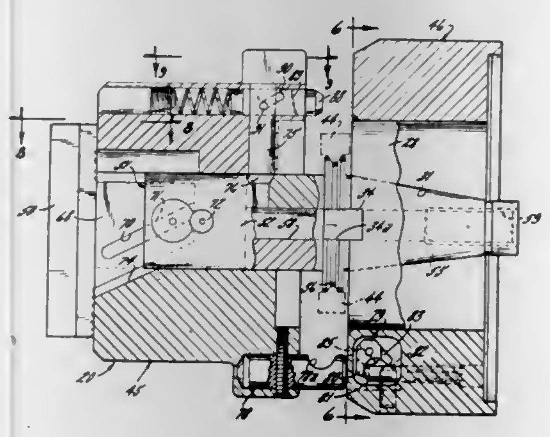
CONTOURING AND THREADING ATTACHMENT FOR MULTI-FUNCTION MACHINE TOOLS

Harvey R. Plummer, Fond du Lac, and William E. Keller, Fox Point, both of Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Continuation-in-part of Ser. No. 971,716, Dec. 21, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 94,545

Int. Cl.^{3} B23B *3/26;* **B23Q** *3/157*

U.S. Cl. 29—568 **7 Claims**



1. A contouring and threading attachment for use with a numerically controlled multi-function machine tool having an automatic tool changer including a tool exchange arm with a tool gripper, said machine tool also having a spindle sleeve and a spindle mounted therein for rotation bodily therewith and for axial movement with respect thereto, said spindle having a tool engaging socket therein, said attachment comprising, in combination:

(a) an adapter collar mountable rigidly on the spindle sleeve of said machine tool for rotation bodily therewith;

(b) a body having a central axial bore therein and adapted to detachably engage said adapter collar for rotation in unison therewith;

(c) an actuating bar housed telescopically within said central bore of said body and movable axially of said bore;

(d) said actuating bar having an inner end portion, an intermediate portion, and an outer end portion;

(e) said inner end portion of said actuating bar being insertable in the spindle socket for driving connection therewith rotationally and axially;

(f) a transverse flange on said intermediate portion of said actuating bar engageable by the gripper of the tool exchange arm acting between said body and said adapter collar;

(g) a radial tool slide adjustably mounted on the outboard end of said body; and

(h) means defining a motion transmitting connection between said tool slide and said outer end portion of said actuating bar;

(i) means for releasably latching said actuating bar in a fixed position with respect to said attachment body to facilitate storage and transfer of said attachment to and from the spindle by the tool exchange arm; and

(j) detent means for disengaging said releasable latching means upon engagement of said body with said adapter collar, and for engaging said releasable latching means upon disengagement of said body from said adapter collar.

4,354,306

MACHINE TOOL HAVING REPLACEABLE GANG HEADS

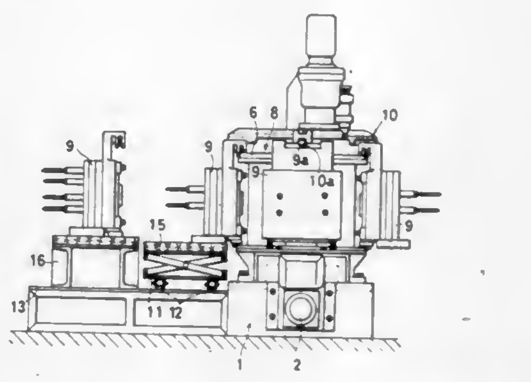
Jinsei Ida, Sayama; Kenzaburo Matsuo; Hiroshi Ejiri, both of Kawagoe, and Takeshi Ishibashi, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,556

Claims priority, application Japan, Nov. 28, 1978, 53/146093

Int. Cl.^{3} B23Q *3/157*

U.S. Cl. 29—568 **2 Claims**



1. In a gang head machine tool of the type including a base, a slide table mounted on said base for sliding movement longitudinally thereof, a working unit having a driving motor mounted on said slide table, a magazine integral with said working unit storing plural independent gang heads, said magazine including vertically spaced rails encircling said working unit and along which said independent gang heads are moveable, an indexing mechanism for moving said gang heads along said rails to locate a selected gang head in an operative position relative to said working unit, and means for detachably interconnecting said working unit and said selected gang head in operative working relationship;

the improvement comprising the combination with said gang head machine tool of a second magazine independent of and supplemental to said first magazine, said second magazine being positioned adjacent said working unit and including a storage device for gang heads additional to those stored in said first magazine, a runway interposed between said working unit and said second magazine, and a transfer device moveable longitudinally of said runway and operative to remove a selected gang head from said first magazine and transfer said selected gang head to said second magazine, and operative to transfer any selected one of said gang heads from said second magazine to said first magazine in substitution for said selected gang head removed from said first magazine, said transfer device including means for uncoupling said selected gang head from said first magazine and coupling a gang head selected from said second magazine to said first magazine without disturbing the positioning of the remainder of said gang heads stored in said first magazine and without disturbing the positioning of the working gang head coupled to said machine, said means comprising a wheeled truck moveable longitudinally of rails comprising said runway, a vertically moveable upper support surface of said truck for the reception of a gang head thereon, means for raising and lowering said upper support surface, and roller means incorporated into said upper support surface facilitating the movement of a gang head laterally onto said upper support surface facilitating the movement of a gang head laterally onto said upper support surface and the removal of the gang head laterally of said upper support surface in a direction transverse to the longitudinal axis and direction of movement of said truck.

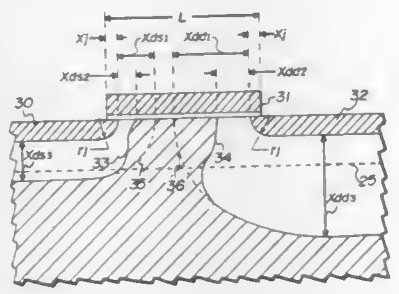
4,354,307

METHOD FOR MASS PRODUCING MINIATURE FIELD EFFECT TRANSISTORS IN HIGH DENSITY LSI/VLSI CHIPS

Mark A. Vinson, San Diego; Rakesh Kumar, Escondido; Norman W. Jones, Poway, all of Calif., and Michael R. Gulett, Fort Collins, Colo., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,515
Int. Cl.^{3} H01L *21/263*

U.S. Cl. 29—571 **18 Claims**



1. A method of forming a field effect transistor of the type which comprises a semiconductor substrate having a major surface, spaced-apart source and drain regions in said substrate adjacent said surface, a channel region in said substrate adjacent said surface and said source and drain regions, and a gate overlying said channel region; wherein said method includes the steps of:

implanting dopant atoms of a first conductivity type into at least said channel region to form a peak density of said first conductivity type dopant atoms at a predetermined depth below said surface of said channel and a substantially lower density of said first conductivity type dopant atoms at said surface of said channel, which peak density reduces reachthrough at said predetermined depth beneath the surface of said channel without adversely increasing the channel's threshold voltage;

implanting dopant atoms of a second conductivity type opposite to said first conductivity type into said source and drain regions to form source and drain junctions with said channel having radii at said surface of less than said predetermined depth, which radii operate to reduce reachthrough at said surface of said channel above said predetermined depth; and

depositing a smooth insulating layer over said gate at subatmospheric pressures and at temperatures that are below the insulating layer's flow point to eliminate the need for a separate reflow step to smooth out said layer, which reflow step would adversely alter the distribution of said implanted dopant atoms.

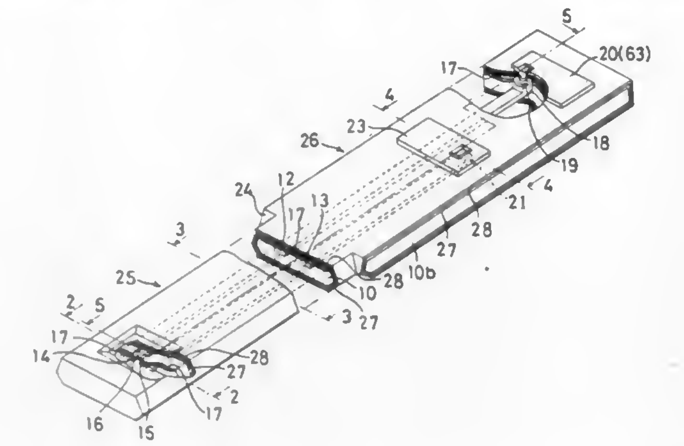
4,354,308

METHOD FOR MANUFACTURE OF A SELECTIVE CHEMICAL SENSITIVE FET TRANSDUCER

Kiyoo Shimada, Kurashiki; Masayuki Matuo, and Masayoshi Esashi, both of Sendai, all of Japan, assignors to Kuraray Co., Ltd., Okayama and Taoayuki Matsuo, Sendai, both of, Japan

Division of Ser. No. 957,433, Nov. 3, 1978, Pat. No. 4,218,298.
This application Feb. 5, 1980, Ser. No. 118,774
Claims priority, application Japan, Nov. 4, 1977, 52-132679
Int. Cl.^{3} H01L *21/22*

U.S. Cl. 29—571 **5 Claims**



1. A method for manufacturing a chemical selective field-effect transistor device, which comprises the steps of:

forming spaced apart diffusion layers on one surface of a semiconductor wafer made of silicon, said diffusion layers having a predetermined doping polarity opposite to that of the semiconductor wafer;

forming electroconductive channel stopper layers, one for each two of said diffusion layers, between the adjacent two of the diffusion layers except for one end portion of said diffusion layers and on said one surface of the semiconductor wafer, for avoiding formation of an electroconductive channel between said adjacent two of the diffusion layers, said channel stopper layer having a doping polarity opposite to that of the diffusion layers;

forming a cut-out portion in the semiconductor wafer so as to leave a substantially comb-shaped arrangement of elongated bodies of the semiconductor wafer in which said one end portion of the diffusion layers is located;

applying a layer of silicon dioxide over the entire surface area of the semiconductor wafer subsequent to the formation of the cut-out portion in the semiconductor wafer;

applying an electrically insulating layer sensitive to change in pH value and having an impermeability to a solution containing a particular chemical substance to which the device is exposed during measurement, over the silicon dioxide layer; and

trimming the semiconductor wafer along scribing lines, to provide separate chemical sensitive field-effect transistors.

4,354,309

METHOD OF MANUFACTURING A METAL-INSULATOR-SEMICONDUCTOR DEVICE UTILIZING A GRADED DEPOSITION OF POLYCRYSTALLINE SILICON

James R. Gardiner, Wappingers Falls; William A. Pliskin; Martin Revitz, both of Poughkeepsie, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 974,577, Dec. 29, 1978, Pat. No. 4,249,968.
This application Sep. 12, 1980, Ser. No. 187,036
Int. Cl.^{3} H01L *21/20, 21/225*

U.S. Cl. 29—571 **6 Claims**

4. A method of making a metal-oxide-semiconductor device comprising the steps of:

providing a planar silicon body,

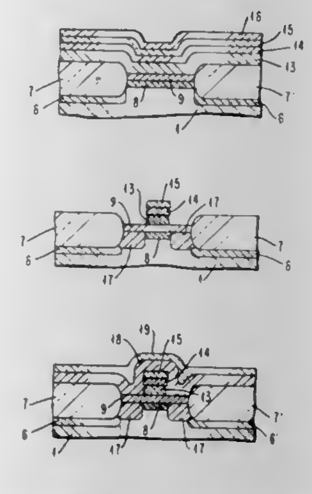
forming a thin insulating layer on a surface of said body,

depositing polycrystalline silicon onto said insulating layer to form a gate,

said polycrystalline silicon being deposited with a substantially intrinsic portion adjacent said insulating layer and having a dopant concentration increasing in the direction away from said insulating layer,

diffusing said dopant into the said intrinsic portion of said polycrystalline silicon, and

depositing a metal contact onto said gate.



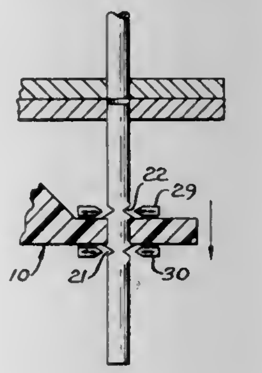
4,354,310

METHOD OF MAKING INDUCTANCE

Richard L. Hatton, 558 Eton Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 22,808, Mar. 22, 1979, abandoned. This application May 13, 1980, Ser. No. 149,315
Int. Cl.^{3} H01F *41/06;* H01R *43/00*

U.S. Cl. 29—605 **6 Claims**



1. A method for making an inductance comprising providing a coil form constructed of insulating material and having at least one passage extending therethrough for the receipt of a wire terminal,

positioning a terminal-providing wire in said passage with portions of the lead extending beyond the ends of said passage on both sides of the passage, said wire being continuous and of indefinite length,

supporting said wire a spaced distance from one of said passage ends,

notching the supported wire in portions adjacent said form to immobilize said wire relative to said form,

severing the supported wire to provide said terminal prior to removal of the support;

removing the support from said wire wherebya terminal-equipped coil form is provided; and winding another wire onto said coil form to provide an inductance.

4,354,311

SOLDERABLE CONDUCTOR COMPOSITION AND A METHOD OF SOLDERING A LEAD TO A LEAD PAD

Donald Neuhoff, Colorado Springs, Colo.; Arthur H. Mones, Minneapolis, Minn., and Kit M. Lam, Peoria, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 942,728, Sep. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 861,226, Dec. 16, 1977, abandoned. This application Jun. 23, 1980, Ser. No. 161,724
Int. Cl.^{3} H05K *3/34;* H01B *1/02*

U.S. Cl. 29—840 **3 Claims**

1. A conductor composition comprising:

finely divided gold particles and finely divided inorganic binder particles dispersed in an inert liquid vehicle having by weight 98.2 to 98.7 gold particles and, complementally, 1.8 to 1.3% inorganic binder particles, the binder consisting essentially of by total weight of gold and binder,

0.35 to 0,24 percent PbF_2,

0.34 to 0.23 percent CdO,

0.68 to 0.39 percent Cu_2O, and the balance glass.

2. The method of soldering a lead to a lead pad on a substrate comprising the steps of: printing a conductor pattern including at least one lead pad on the substrate using a gold composition, said gold composition being composed of finely divided gold particles and finely divided inorganic binder particles dispersed in an inert liquid vehicle, by weight 98.2 to 98.7% gold particles and complementally 1.8 to 1.3% inorganic binder particles, the binder consisting essentially by total weight of gold and binder of:

0.68 to 0.39 percent Cu_2O

0.35 to 0.24 percent PbF_2 l

0.34 to 0.23 percent CdO and the balance glass:

allowing the print to level at room temperature: heating the substrate to a temperature substantially not exceeding 130° C. until substantially dry;

firing the substrate to sinter the inorganic materials;

vapor degreasing the fired substrate;

applying a solder flux to the lead pad;

placing a solder preform on the lead pad;

heating the substrate to allow the solder on the lead pad to liquify:

cooling the substrate to solidify the solder;

presoldering a lead;

cleaning flux off of the lead;

applying solder flux to the solder on the lead pad;

heating the substrate to a temperature at which the solder begins to reflow:

placing the presoldered wire on the lead pad;

maintaining the solder in a liquid state for a predetermined period of time:

cooling the substrate to ambient temperature, and

cleaning the substrate and the lead soldered to the lead pad.

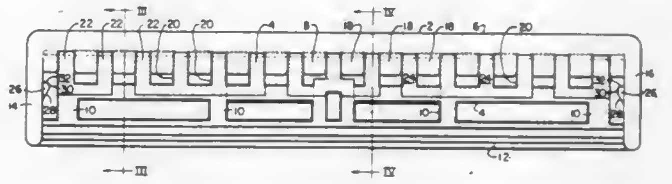
4,354,312

SHAVING IMPLEMENT, HOUSING THEREFOR, AND RAZOR

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 6, 1980, Ser. No. 194,551
Int. Cl.^{3} B26B *21/14*

U.S. Cl. 30—47 **8 Claims**



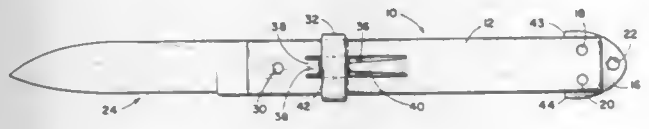
1. A shaving implement housing comprising a platform

portion, a back portion upstanding from a lengthwise margin of said platform portion, a cap portion extending from said back portion and overlying said platform portion, leg portions extending forwardly from said platform portion and joining a guard portion, said platform portion having a series of aligned recesses therein adjacent said back portion, and said cap portion comprising a series of spaced, aligned, forwardly extending fingers, each of said fingers being disposed over one of said recesses, said recesses being separated by platform rib portions, said rib portions and said fingers being adapted to receive and retain blade means therebetween.

4,354,313

SLIDE LOCK FOLDING BLADE KNIFE

Woodrow W. Naifeh, Rte. 13, Box 380, Tulsa, Okla. 74107
Filed Dec. 11, 1980, Ser. No. 215,241
Int. Cl.^{3} B26B *1/04*
U.S. Cl. 30—161 **9 Claims**

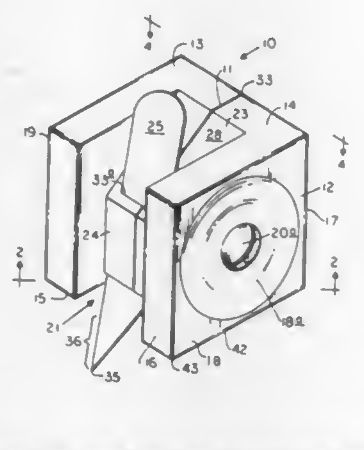


1. A slide lock knife comprising a pair of shaped elongated handle plates, an elongated blade, a pivot pin pivotally connecting the blade between the handle plates, a sleeve member slidably carried by the handle plates, said sleeve member having a first position adjacent to the blade pivot pin and engageable with the blade for holding the blade in either a fully open or a fully closed position, and a second opposite retracted position clear of the blade for opening or closing the blade and locking means for selectively locking the sleeve member in the first position.

4,354,314

HAND-HELD CUTTER AND BLADE HOLDER FOR CUTTING MOUNTING BOARD AND THE LIKE

Donald C. Pierce, 1253 C. Redwood Blvd., Novato, Calif. 94947
Continuation-in-part of Ser. No. 55,345, Jul. 6, 1979, Pat. No. 4,262,419, which is a continuation-in-part of Ser. No. 22,423, Mar. 21, 1979, abandoned. This application Aug. 19, 1980, Ser. No. 179,559
Int. Cl.^{3} B26B *29/00*
U.S. Cl. 30—293 **8 Claims**



1. A hand-held cutter device for cutting mounting board and the like, including in combination:

a generally cube-shaped blade holder comprising two interlocked halves and having a top face, a generally flat front face, a generally flat bottom face, a pair of side faces, and a rear face, said holder having a major recess extending into said top, bottom, and front faces to a body portion extending between the sides of said cube and integral with said rear face, said halves having facing surfaces that nearly meet and extend along planes approximately midway between and generally parallel to said side faces,

at least one blade-receiving slot in said body, split between said two halves and lying along a plane perpendicular to the plane of the side faces of the holder and at an angle to the top, front, and bottom faces,

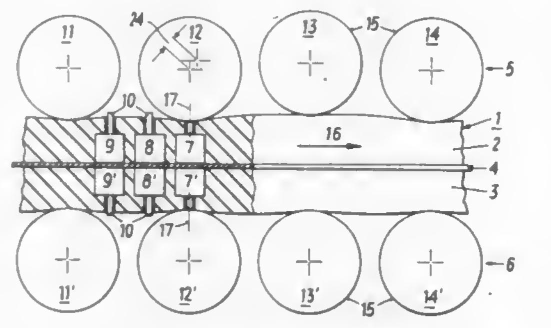
a cutting blade in said slot, and

adjustable securing means holding said halves together with the blade in said slot, said securing means enabling loosening for insertion of and adjustment of the position of said blade and tightening to hold it in a selected said position.

4,354,315

MEASURING ARRANGEMENT PROVIDED AT A ROLLER WAY FORMED BY ROTATABLY MOUNTED ROLLERS AS WELL AS A METHOD OF EVALUATING THE MEASURED VALUES

Hans Hecht, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria
Filed Dec. 8, 1980, Ser. No. 214,130
Claims priority, application Austria, Jan. 25, 1980, 414/80
Int. Cl.^{3} G01B *7/14, 7/31*
U.S. Cl. 33—182 **8 Claims**



1. In a measuring arrangement provided at a roller way formed by rotatably mounted rollers, in particular at a continuous casting plant having oppositely arranged strand guiding rollers, and of the type including a supporting body having a neutral line and adapted to move along said roller way in a moving direction so as to set said rotatably mounted rollers in continuous rotation while in contact with said movable body, and sensors arranged at said supporting body, said rotatably mounted rollers having surface areas coacting with said sensors and said sensors measuring the distance between said surface areas of said rotatably mounted rollers and said neutral line, the improvement wherein said supporting body, on its side facing said roller way, carries at least three sensors arranged at a distance from one another in the direction parallel to said moving direction of said supporting body, said sensors measuring each of said surface areas of said rotatably mounted rollers in subsequent angular positions.

4,354,316

METHOD OF BENEFICIATING WOOD

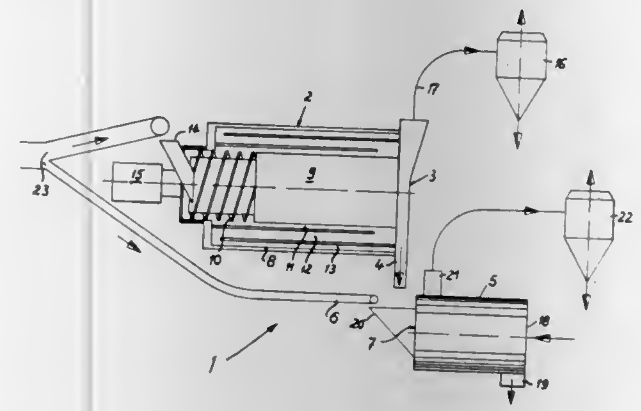
Herbert A. Schroeder, 3000 W. Lake St., Fort Collins, Colo. 80521
Filed Aug. 24, 1981, Ser. No. 295,366
Int. Cl.^{3} F26B *7/00, 5/04, 3/00*
U.S. Cl. 34—13.8 **21 Claims**

1. A method of beneficiating wood, comprising contacting wood with an agent capable of forming a borate ester linkage between hydroxyl groups of the cell wall constituents of the wood, and thereafter contacting the wood with an aldehyde.

4,354,317

PROCESS OF POURABLE MATERIALS

Paul Mathis, Merdingen, and Max Zimmer, Efringen-Kirchen, both of Fed. Rep. of Germany, assignors to Mathis System-Technik GmbH, Merdingen b.Freiburg, Fed. Rep. of Germany
Filed Sep. 12, 1980, Ser. No. 186,593
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1979, 2942633; Apr. 5, 1980, 3013307
Int. Cl.^{3} F26B *3/02*
U.S. Cl. 34—33 **20 Claims**

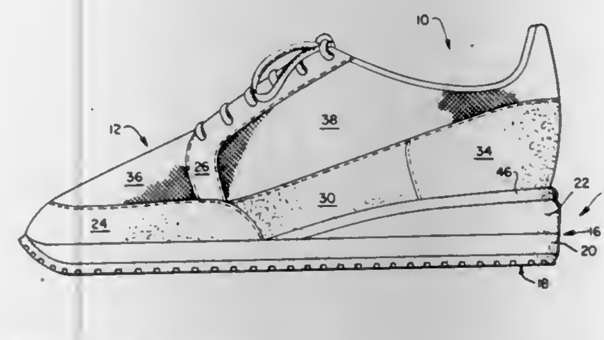


1. A method of drying a quantity of pourable material, particularly moist sand, comprising the steps of splitting the overall quantity into a first portion and a second portion; thermally drying the first portion; splitting the thermally dried first portion into two fractions; adding one of said fractions to the second still moist portion and agitating them to form a mixture; thereafter adding said mixture to the other of said fractions whereby the two portions become mixed together; and further comprising the steps of sensing the moisture of the material prior to, during and/or after the step of drying; and adjusting the quantity ratio of said first and second portions relative to one another as a function of the measured moisture.

4,354,318

ATHLETIC SHOE WITH HEEL STABILIZER

Edward C. Frederick, Missoula, Mont.; Joseph J. Murphy, Biddeford, Me.; James T. Gorman, and Steven J. Burris, both of Exeter, N.H., assignors to BRS, Inc., Beaverton, Oreg.
Filed Aug. 20, 1980, Ser. No. 179,822
Int. Cl.^{3} A43B *13/12, 23/08*
U.S. Cl. 36—30 R **17 Claims**



1. An athletic shoe comprising:

a shoe upper having an outer surface and an inner surface, said shoe upper including a heel spring section and a toe spring section;

a sole secured to said upper, said sole including an outer sole layer with an upper major surface and a lower major surface, an external portion of the upper major surface of said outer sole layer extending, at least one said heel spring section, beyond the area where said sole is secured to said upper;

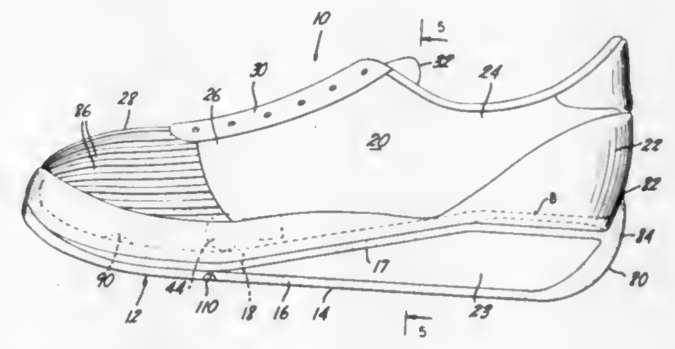
said upper including a heel counter supported in said heel section; and

a bead for enhancing heel stability secured between the outer surface of said upper and said external portion of said outer sole area, said bead extending around only the perimeter of said heel spring section and having a generally wedge-shaped cross-section with an upwardly facing surface terminating at an inner edge a short distance inward of the outer perimeter of the upper major surface of said sole and forming the only contact surface of said bead with said upper, the bead forming a resilient support body for said counter along the area of maximum stress on said counter during running.

4,354,319

ATHLETIC SHOE

Barry H. Block, 25 Fifth Ave., New York, N.Y. 10003, and Stanley Beekman, 26670 Loganberry Dr., Richmond Heights, Ohio 44143
Division of Ser. No. 29,038, Apr. 11, 1979, Pat. No. 4,262,435. This application Dec. 19, 1980, Ser. No. 218,217
Int. Cl.^{3} A43B *5/00, 23/00*
U.S. Cl. 36—114 **3 Claims**



1. An athletic shoe comprising:

an elongated solepiece having a ground engaging bottom surface, and an upper surface on which the wearer's foot is received, and

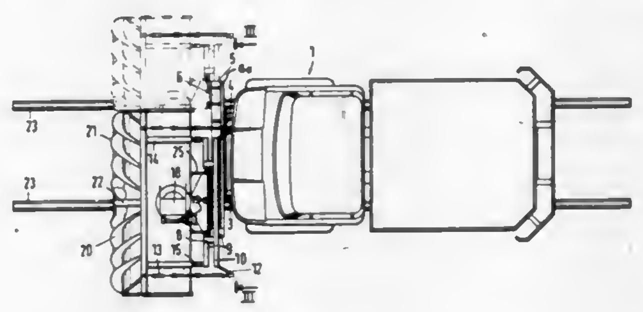
an upper piece secured to said solepiece, said upper piece providing a close encircling foot enclosure extending from a counter section at the rear of the foot to a toe box section at the front,

said upper piece toe box section being provided with pleats rendering said toe box section expansible when the remainder of said upper piece is flexed relative to said toe box section.

4,354,320

SNOW PLOW FOR RAILED VEHICLE

Alfred Schmidt, Friedrichstrasse 17, D-7822 St. Blasien, Fed. Rep. of Germany
Filed Sep. 29, 1980, Ser. No. 191,408
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947396
Int. Cl.^{3} E01H *8/06*
U.S. Cl. 37—213 **4 Claims**



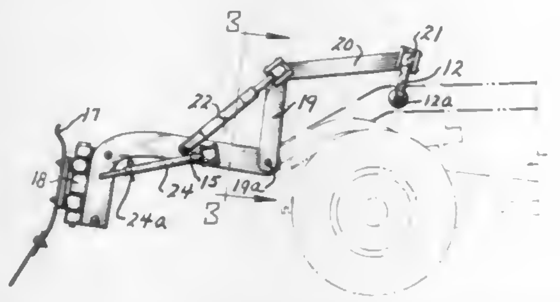
1. Apparatus for attachment to a rail vehicle for plowing snow along the right of way comprising an elongated housing extending the width of the rail vehicle having plow means mounted therein, said plow means comprising a pair of rotatable helical snow plows mounted side by side on a common axis and having transmission means comprising a common drive connection to each plow, attachment means for securing

said housing to said rail vehicle, comprising a first support and guide member attached to the front end of said rail vehicle and extending substantially across the width thereof, and a second support and guide member articulatingly secured to said housing for pivotal movement with respect to the ground, means to enable said plow means to clear a path for said rail vehicle in a single pass consisting of means to permit movement of said plow means from side to side transversely of said rail vehicle, said last named means including mounting said first and second support and guide members for cooperable slidable interengagement across the width of said first member whereby said second member and the housing secured thereto are movable from side to side across the width of said rail vehicle to carry said plows from side to side.

4,354,321

SNOW ATTACHMENT FOR A ROAD GRADER

Floyd V. Weatherholt, Rte. 3, Box 34A, Rockport, Ind. 47635
Continuation-in-part of Ser. No. 7,255, Jan. 29, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,178
Int. Cl.³ E01H *5/00*
U.S. Cl. 37—231 **2 Claims**



1. A simple snow removal blade and snow blade assembly for attachment to a road grading equipment and to its lifting and lowering controls for converting said grading equipment to a snow removal device which comprises:

a snow removal blade, having a front side and a backside;

angling members pivotably secured at one end to the back side of said snow removal blade at its center linearly;

pivot means securing said one end of said angling members to the back side of said snow removal blade;

means for connecting said angling members to the front end of said road grading equipment;

yoke means extending upwardly with its lower ends pivotably connected to said means for connecting said angling members to said road grader;

non-extendable members connected at one end to said angling members at a point between said snow removal blade and said means for connecting said angling members to said grading equipment and pivotably connected at their opposite end to the upper end of said yoke means;

linkage means connected at one end to the upper end of said yoke and extending from said yoke with its opposite ends connected to a power control means on said grader equipment;

a pair of mechanical telescopic members pivotably connected at one end to one each of said angling members at a point nearer said end which connects to said grader than the end which connects with said snow removal blade;

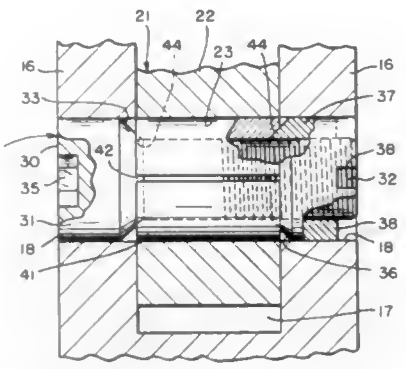
said pair of mechanical telescopic members pivotably connecting at their other end to the back side of said snow removal blade at a point equidistant from said pivot means to which said angling members are pivotable secured;

whereby said angling members and said yoke can be secured to the front end of said grader equipment thereby securing said snow removal blade for removing snow and said linkage means are connected to the power means for raising and lowering said snow removal blade.

4,354,322

HAND GUN WITH IMPROVED BARREL MOUNTING PIN

Robert A. Carone, R.D. No. 1, Dansville, N.Y. 14437
Filed Sep. 15, 1980, Ser. No. 187,504
Int. Cl.³ F41C *23/00;* **E16B** *13/06*
U.S. Cl. 42—75 D **10 Claims**



1. In a hand pistol having a frame, a removable gun barrel, and a lug projecting from the underside of said barrel into a space between two furcations formed on the forward end of said frame, improved means for pivotally connecting said lug to said furcations to allow pivotal movement of said barrel on said frame between loading and firing positions, respectively, comprising

a screw having a cylindrical head removably positioned coaxially in a circular bore in one of said furcations and having an integral, reduced-diameter, externally-threaded shank projecting coaxially through a registering bore in said lug and coaxially into a circular bore formed in the other of said furcations,

an annular, internally-threaded nut adjustably threaded onto said shank of said screw and disposed coaxially and removably in said bore in said other furcation, and

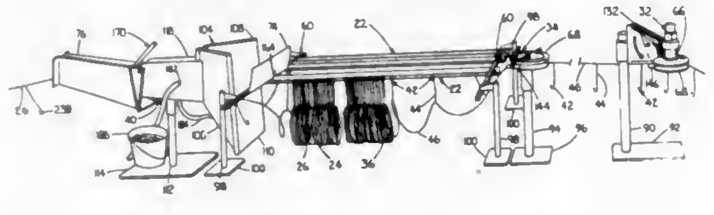
radially expansible means removably mounted in said bore in said lug, and surrounding said shank between said nut and the cylindrical screw head to be compressed therebetween when said nut is threaded onto said shank toward said screw head,

said radially expansible means having thereon at least two bearing surfaces which are inclined to the axis of said screw shank, and each of which is slidable at least in part in a direction radially of said axis relative to a complimentarily-shaped bearing surface with which it is engaged, when compressed between said nut and said screw head.

4,354,323

LONG FISHING LINE APPARATUS WITH MOVABLE MULTIPLE SKATE RACKS, A TWO POSITION MAIN HAULER AND A SLACK TAKER, AND A WATER AGITATED AUTOMATIC BAITER

Warren P. Huff, 15717 Crescent Valley Dr. NW., Gig Harbor, Wash. 98335
Filed Dec. 3, 1979, Ser. No. 99,606
Int. Cl.³ A01K *79/00, 11/06*
U.S. Cl. 43—4 **22 Claims**



1. A long fishing line apparatus, comprising:

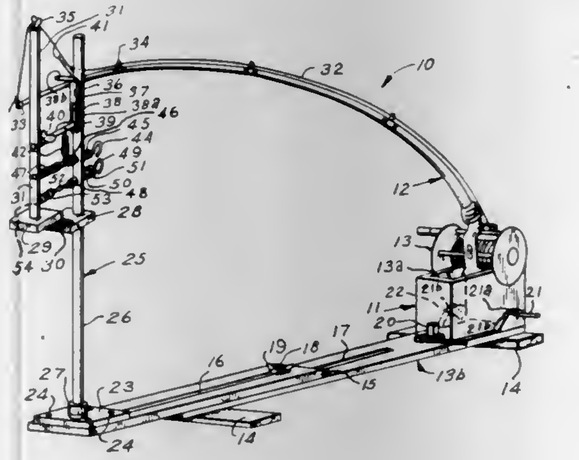
(a) movable, multiple, racks, slidably and removably received on supports, capable of being arranged parallel to one another, and adaptable to support a skate, by having a longitudinal receiver, an upstanding planar bar integrally formed with the longitudinal receiver, serving to create one side of a near top opening of the longitudinal receiver, serving also as a vertical guide during placement of fishing hooks along a rack, and formed with end cutout structues to slide over a support, with fishing hooks of various sizes, both planar and offset, being rotated, then their also rotated barb ends are lowered through the top opening and into the interior of the longitudinal receiver, and then afterwards, upon counter rotation of the barb ends, and also consequently counter rotation of the fishing hooks, these fishing hooks are retained on their respective movable, multiple rack, via this restrictive gripping of their barbs, while also being slidable in one end and out the other end of the rack; and

(b) a support having two parallel beams to removably and to slidably interfit with the end cutout structures of all of the upstanding planar bars integrally formed with the longitudinal receivers to create the various movable, multiple, racks, which are so supported whether empty or loaded with a skate.

4,354,324

FISHING ROD HOLDING DEVICE

James H. Eblen, 1150 W. Panhandle St., Slaton, Tex. 79364
Filed Dec. 8, 1980, Ser. No. 214,276
Int. Cl.³ A01K *91/06*
U.S. Cl. 43—15 **2 Claims**

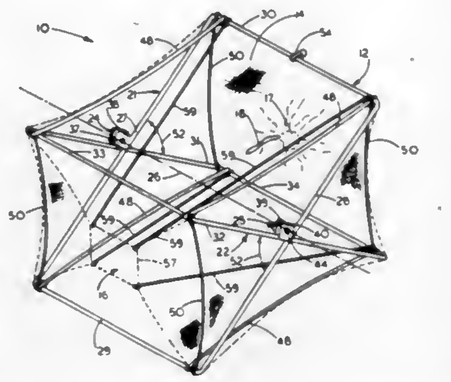


1. A fishing rod holding device, comprising, in combination, a base, a box secured to said base for removably receiving the butt end of said fishing rod, a post removably secured to said base, for holding said fishing rod in a flexed condition, said post including a hinged arm with a seer pin receiving member, which engages a seer pin of said post secured to said base, and said seer pin serves as a means of engaging and retaining the forward end portion of said fishing rod in flexed condition, until a fish strikes the fishing line of said fishing rod, and a block is fixedly secured to said post and is hinged by a hinge secured at one side, to one side of a second block fixedly secured to one end of said hinged arm, and a seer pin receiving tube is fixedly secured to said post and includes an elongated slot in its wall, for freely and slideably receiving said seer pin, and an arm integrally attached to one end of said seer pin projects from the elongated slot and is removably received in said seer pin receiving member, which is flared at its projecting end which receives said arm, and its opposite end is fixedly secured in said hinged arm by suitable means, and a second arm which is integrally attached to said seer pin, and is angularly disposed at the opposite end of said seer pin, engages over said fishing rod near its front tip, and said arm, extending from the elongated slot of said seer pin receiving tube, is held downwards in said seer pin receiving tube by a coil spring, which is received on said seer pin arm at one end, and the opposite end of said spring is received on a bolt transversely received through said post secured to said base, and when said device is set, said fishing rod is placed by the user in a fork member secured fixedly in the top end of said hinged arm.

4,354,325

FOLDING MARINE TRAP

Sakari Aho, Port Coquitlam, Canada, assignor to SAK Industries (1980) Ltd., Port Coquitlam, Canada
Continuation of Ser. No. 108,656, Dec. 31, 1979, abandoned. This application Aug. 12, 1981, Ser. No. 292,152
Int. Cl.³ A01K *69/10*
U.S. Cl. 43—105 **13 Claims**



1. A folding trap characterized by a folding frame and a net, the frame being fitted within the net and being adapted to be erected to support the net and to form an enclosure therewith, the net resembling a bag and having an entranceway including an opening to permit a creature to enter the trap and to hinder leaving the trap, the trap being characterized by:

(a) first and second frame members hinged together to permit swinging therebetween so as to permit erection of the frame from a folded position to an erected position,

(b) extension means connected to and adapted to cooperate with the frame members so as to be strained when the frame is in the folded position for providing a force from the strained extension means which forces the trap from the folded position to the erected position,

(c) limiting means cooperating with the frame members to limit additional movement of the frame members from the erected position that might otherwise occur due to force from the extension means,

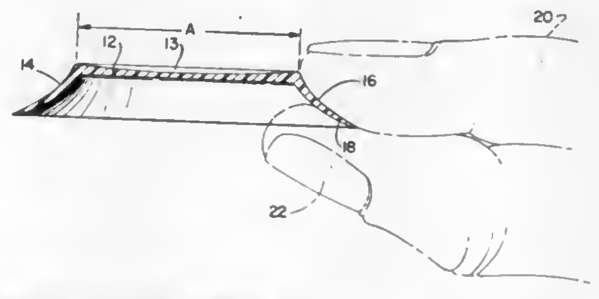
(d) releasable means cooperating with the frame members to permit the trap to be folded,

(e) support means for maintaining the entranceway in an operable position to permit entrance of creatures when the trap is in the erected position.

4,354,326

TOY FLIP CAP

Kenneth D. Mathews, 1833 W. Ash St., Fullerton, Calif. 92833
Filed Jul. 9, 1981, Ser. No. 281,670
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—74 D **3 Claims**



1. A flip-top toy comprising:

a circular body member formed having an approximate diameter between three-quarters of an inch to one and one-half inch;

wherein said circular body includes a substantially flat top

wall having an annular flange wall extending radially downward and outward from said flat top wall;
said flange having a curvilinear cross-sectional configuration defined by an outer concave surface and an inner convex surface, whereby said surfaces are tapered inwardly of each other as said flange wall extends radially outward;
said tapered surfaces being adapted to be positioned between an individual's thumb and middle finger, whereby the snapping of said thumb and middle finger results in an aerodynamic flight of said top through the air.

4,354,327

TISSUE CULTURE METHOD FOR ASEXUAL PROPAGATION OF PINE TREES AND MEDIUM FOR USE THEREWITH

Richard H. Smeltzer, Natchez, Miss., and Lindà M. Cello, Southfields, N.Y., assignors to International Paper Company, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,915
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **14 Claims**

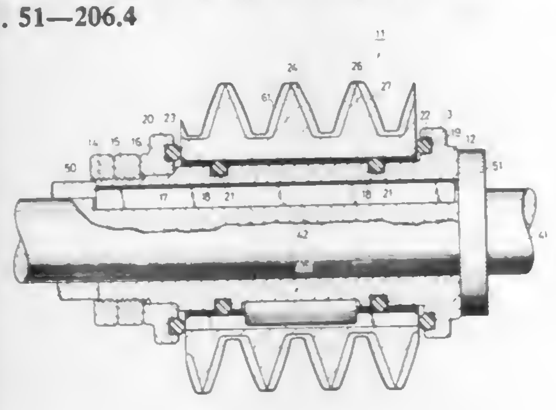
1. A tissue culture method for asexually propagating loblolly pine trees comprising:
stimulating pine seeds for germination;
decoating the stimulated seeds;
inoculating the decoated seeds on a culture medium containing from about 1 to 20 mg./l of benzylaminopurine and from 0 to 30 mg./l of abscisic acid to promote the formation of multiple adventitious buds that can be rooted to provide multiple plants from a single seed.

4,354,328

SCREW TYPE HONE ASSEMBLY FOR THE HONING OF GEARS

Masato Ainoura, 1253-Eguchi, Kitashige Yasu-cho, Miyaki-gun, Saga-ken, Japan

Filed Aug. 12, 1980, Ser. No. 177,485
Claims priority, application Japan, Feb. 11, 1980, 55-15146
Int. Cl.³ B23F *21/03;* B24D *5/00*
U.S. Cl. 51—206.4 **6 Claims**



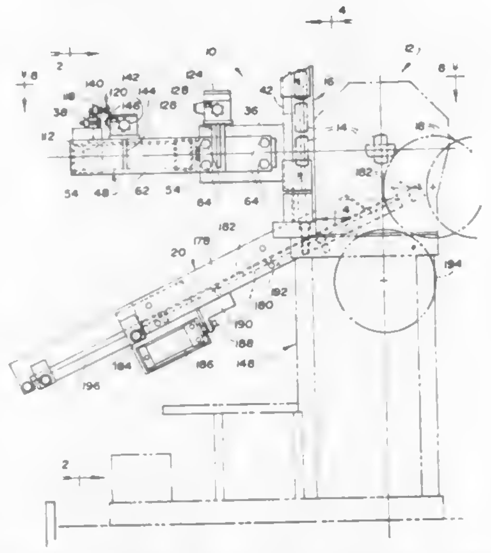
1. A screw type hone assembly for the honing of gears, comprising a substantially cylindrical body **24** of the hone having on the outer periphery a spirally threaded portion **61** possessing rigidity in entirety and mounted on a rotating shaft **41** of a honing apparatus for the integral rotation with said shaft **41**, said cylindrical body **24** further having cylindrical end portions, each having an outer circumferential face;
a honing grain layer **27** formed on at least the surface of the threaded portion **61** of the hone body **24** and adapted to hone the tooth surface of the gear;
a cylindrical sleeve **12** detachably secured on a rotating shaft **41** for carrying the hone body **24** on the rotating shaft **41**, said sleeve **12** having on one end portion thereof a retaining portion **13** which radially projects on the outer periphery and on the other end a retaining ring **16** substantially in the same shape as that of the retaining portion **13**, said retaining ring **16** being urged toward said retaining portion **13** by nuts **15** threaded onto the sleeve **12** from outside the retaining ring **16**, both said retaining portion **13** and said retaining ring **16** having cylindrical portions **28** and **29**, respectively, extending axially inwardly from the respective outer peripheries in a face-to-face relation, each cylindrical portion having an interior circumferential surface overlapping and retaining the outer circumferential face of the respective cylindrical end portion of the body **24**, whereby the hone body **24** is fixedly clamped between said retaining portion **13** and said retaining ring **16**; and
resilient members interposed between said hone body **24** and said sleeve **12**, whereby said resilient members permit the body **24** to be elastically axially and radially movable on the rotating shaft **41**.

4,354,329

LOADER FOR GRINDING MACHINE

Lawrence A. Ambrose, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Filed Sep. 22, 1980, Ser. No. 189,533
Int. Cl.³ B23Q *7/04;* B65G *47/06*
U.S. Cl. 51—215 H **17 Claims**



1. A grinding machine loader comprising: a fixed base; a movable carriage; a pivotal connection that supports the carriage on the fixed base for movement about a vertical axis between a use position and an access position that allows access to the grinding machine with which the loader is used, a loading member including a resilient finger, said loading member being mounted on the carriage for movement with respect thereto in a loading direction such that the resilient finger engages a workpiece to be ground during such movement and deflects so as to grip the workpiece, and a workpiece positioner that is mounted for movement on the carriage and resiliently biased with a sufficient force to counteract the force applied to the workpiece by the finger deflection such that the positioner blocks movement of the workpiece during the initial gripping thereof by the finger, the loading member movement thereafter moving the gripped workpiece against the bias of the positioner to provide loading thereof in preparation for grinding.

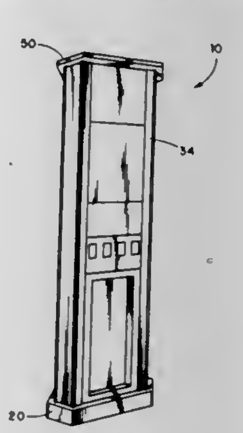
4,354,330

FLAT-CORNERED TRIANGULAR MEDICAL COLUMN

Wesley W. Schwartz, Oshkosh, Wis., assignor to Square D Company, Palatine, Ill.

Filed Dec. 31, 1980, Ser. No. 221,871
Int. Cl.³ A47B *83/00;* A61G *7/06*
U.S. Cl. 52—28 **6 Claims**

1. A medical power service column for use in a hospital room having a floor and ceiling and sources of electricity and gases, said medical column supplying electrical power, lighting and gases and also providing a centralized support for medical equipment, said medical column comprising:
a base having a flat-cornered triangular cross-section shape;
a wall enclosure having an upper end and a lower end attached to said base, and having a flat-cornered triangular cross-sectional shape in alignment with said base, said wall enclosure containing electrical and gas supply lines and electrical equipment and supporting electrical and gas outlets and means for holding medical equipment on its outer surface, said wall enclosure comprising;
three support beams having upper and lower ends located at each of the corners of said wall enclosure, said lower ends of said support beams being attached to said base,
three face panels attached between said support beams to form said flat-cornered triangular shape,
and
support rails attached to said support beams and located directly behind said face panels for supporting electrical and gas outlet boxes and other equipment;



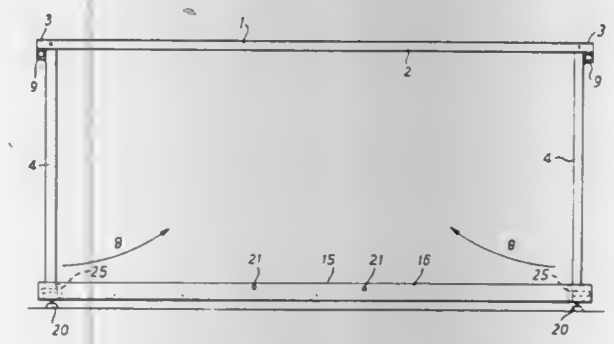
a top cover attached to said upper ends of said three support beams and covering the upper end of said wall enclosure, said top cover having a flat-cornered triangular shape in alignment with said wall enclosure, said top cover also having an aperture for receiving said sources of electricity and gases; and
wherein said medical column is positioned such that one of the corners of said medical column is next to a patient's bed; and
wherein said flat-cornered triangular shape of said medical column allows free access to a patient in the hospital bed while supporting medical equipment in close proximity to the patient.

4,354,331

COLLAPSABLE STRUCTURES

Leslie A. Dyke, Chigwell, England, assignor to Consort Project Developments Limited, London, England

Continuation of Ser. No. 968,734, Dec. 12, 1978, abandoned. This application Nov. 17, 1980, Ser. No. 207,442
Claims priority, application United Kingdom, Dec. 15, 1977, 52334/77
Int. Cl.³ E04B *1/346*
U.S. Cl. 52—66 **18 Claims**



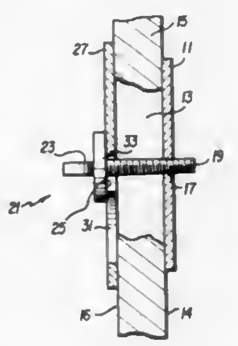
1. A collapsible structure comprising first and second pairs of spaced folding struts, each folding strut having one end which is pivoted to a first rigid element to enable each of said struts to be rotated from a retracted position to an extended position, said struts being located at opposite ends of said rigid element, said struts each having an abutment surface spaced away from its associated pivot and extending in a plane substantially parallel to the pivot axis thereof, each said abutment surface being provided on an abutment projecting from an associated strut, each said abutment surface being shaped to engage a cooperating engagement surface carried on said rigid element to locate said struts in their extended positions, releasable means for forcing said abutment surfaces and cooperating engagement surfaces to be held in contact with each other in the extended positions of said first and second pairs of spaced folding struts, a rigid connecting member extending between the struts of each pair of struts on which said abutment surfaces for said pairs of struts are formed, a portion of each rigid element extending between said pivots being shaped to provide said engagement surface for cooperation with the abutment surfaces, said abutment surfaces on said connecting member face in a direction substantially normal to the lengthwise direction of the struts away from the pivots, said rigid elements being part of a polygonal frame having at least four corners with a strut at each corner and being pivoted thereto by an associated pivot, the axes of pairs of pivots being coaxial, a second rigid element spaced from said first rigid element and being disposed adjacent another end of each of said struts remote from said strut one ends, means for connecting said strut another ends to said second rigid element through slidable connections therebetween, and said releasable means being disposed between said second rigid element and said strut another ends for rigidly connecting the same together when said pair of struts are in their extended positions.

4,354,332

PLASTER AND DRY WALL HOLE REPAIR

Arthur H. Lentz, 908 Brantley Rd., Richmond, Va. 23235

Filed Apr. 29, 1980, Ser. No. 145,202
Int. Cl.³ E04G *23/00*
U.S. Cl. 52—514 **8 Claims**



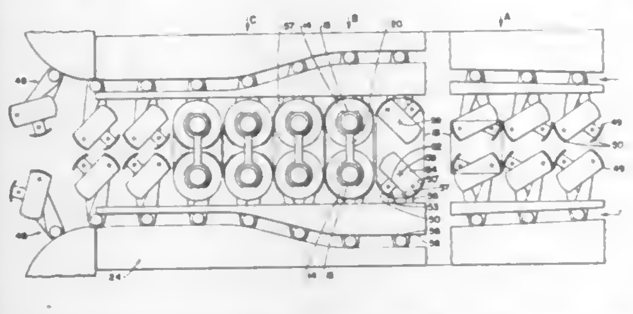
1. A method for repairing a hole in a front surface of a wall without having access to the back surface thereof, said method comprising steps of:
inserting a backing means through the hole to the back side of the wall, and thereafter controlling the position of said backing means from the front side of the wall to cover a portion of the backside of said wall with said backing means, said covered backside portion substantially encompassing said hole, said backing means having at least one adjustable fastening means attached thereto and protruding through said hole when said backing means covers said backside portion of said wall which is used for controlling the position of the backing means;
filling said hole in said wall with a patching material while holding said backing means in a position covering said backside portion of said wall with said fastening means from the front side of said wall;
thereafter positioning a dam means over a portion of a front side of said wall, said front-side portion substantially encompassing said hole, said dam means being adapted to receive said fastening means protruding through said hole;
thereafter tightening said fastening means of said backing means against said dam means so as to exert pressure on

said patching material between said dam means and said backing means; and,

removing said fastening means and said dam means from said front side portion of said wall.

4,354,333
PACKAGING APPARATUS

Edward J. McArdle, Morton Grove, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 14, 1980, Ser. No. 140,071
Int. Cl.^{3} B65B *21/18*
U.S. Cl. 53—48 **10 Claims**



1. An apparatus for applying a tube of flexible elastic plastic material in stretched encirclement of at least two generally cylindrical containers creating a package thereby as containers are continuously carried therethrough, said apparatus comprising a plurality of continuous series of groups of jaw elements mounted on each of a pair of continuous loops of conveyor elements, the pair of conveyor elements arranged so that portions of their closed paths of travel are closely adjacent and opposing one another, forming a package making path extending longitudinally of the apparatus, means for delivering two rows of containers to said package making path and means for delivering packages of pairs of said containers from said package making path, the jaw elements of each group on each of said conveyors formed to be movable relative to one another, wherein the jaw elements are arcuate, shell-like devices, cantilever secured to container receiving bases, the groups of jaw elements being arranged on their respective conveyor to present pairs of directly opposing, interacting groups as they pass along the package making path, the combination of directly opposing groups of jaw elements forming a series of tube applying stations adapted for continuous movement along the package making path, means for controlling the position of the jaw elements relative to each other to move opposing groups of jaw elements apart and together thus opening and closing the tube applying stations in a consecutive repeating pattern so that convex surfaces of the opposing groups of said elements face each other when in a closed position to permit unstretched tubes to be applied therearound and so that concave surfaces face each other when in an open position to accomplish the stretching of the tubes as the conveyor elements carry the groups of jaw elements continuously along the package making path, first to stretch tubes permitting an array of containers to be placed within the tube applying station and second to permit the package to be removed from the tube applying stations, means for transferring a succession of tubes in flattened condition to the tube applying stations and means to place containers within the stretched tubes carried by said opened jaw elements.

4,354,334
APPARATUS FOR ATTACHMENT OF SHEET CARRIERS TO CONTAINERS

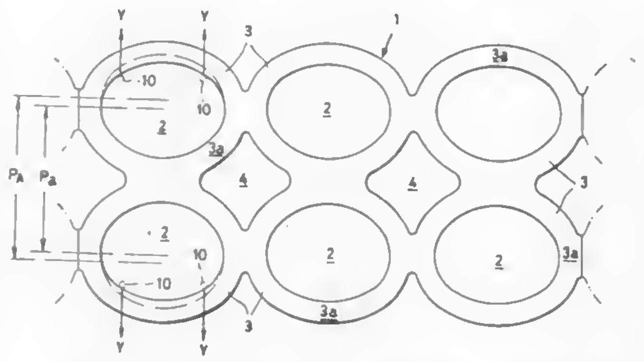
Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Tokyo, Japan
Filed Jul. 24, 1980, Ser. No. 171,680
Int. Cl.^{3} B65B *27/04*
U.S. Cl. 53—48 **4 Claims**

1. An apparatus for the attachment of a plastic sheet carrier having a plurality of openings each surrounded by an annular portion to a plurality of containers having peripheral edges of a diameter larger than the diameter of said openings by forcibly expanding said annular portions of said openings and causing said peripheral edges of said containers to come into tight engagement with said annular portions, which apparatus comprises:

(a) funnel members each having a first tapered portion and a second tapered portion arranged from the basal end to the leading end thereof and each having a plurality of slits longitudinally inserted from the leading end at least to said first tapered portion on the circumferential surface thereof so as to be radially contractable, the largest diameter of said first tapered portion being smaller than the diameter of said openings, the leading ends of said funnel members being engageable with the peripheral edges of said containers,

(b) sleeve members associated one each with said funnel members and each having an opening for accommodating the associated funnel member therein and having a plurality of slits longitudinally inserted from the edge of said opening on the circumferential surface thereof, the diameter of said opening in its normal state being made smaller than the largest diameter of said second tapered portion,

(c) contracting members associated one each with said funnel members and each being disposed concentrically between the associated funnel member and its sleeve member, being movable relative to said two members and being advanceable to cause the leading end thereof to be engaged with said first tapered portion of said funnel member to thereby contract said funnel member so as to cause the leading end of said funnel member to pass through said opening of said sheet carrier,



(d) axial members associated one each with said funnel members and each disposed inside the associated funnel member and provided on the leading end thereof with a swollen portion which protrudes from the leading end of said funnel member as said contracting member advances toward the leading end of said funnel member and is retracted within the leading end of said funnel member as said contracting member moves toward the basal end of said funnel member to thereby prevent the leading end of said funnel member from being bent inwardly,

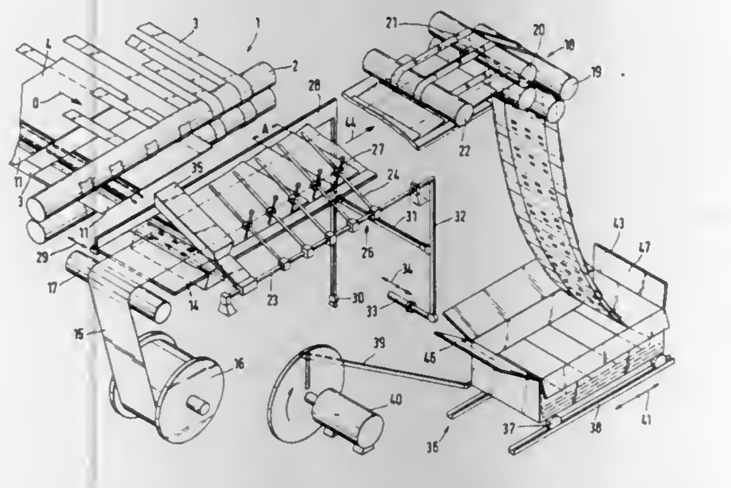
(e) driving means causing said contracting members and said axial members to advance relative to said funnel members and said sleeve members to thereby contract the leading ends of said funnel members and insert the leading ends of said funnel members into said openings of said sheet carrier, then causing said contracting members and said axial members to retract relative to said funnel members and said sleeve members to thereby bring the contracted leading ends of said funnel members into their original states so as to expand said openings of said sheet carrier at the leading ends of said sleeve members and subsequently causing said funnel members, said contracting members and said axial members to retract relative to said sleeve members,

(f) means for disposing the peripheral edges of said containers to face the openings of said sheet carrier when the openings of said sheet carrier are expanded at the leading ends of said sleeve members, and

(g) means for transmitting a fresh plastic sheet carrier to a position corresponding to the leading ends of said funnel members after said containers to which said sheet carrier is attached are removed from said funnel members.

4,354,335
METHOD FOR ORDERLY TRANSPORT AND STORAGE OF FLAT OBJECTS AND A PLASTIC BAG SUITABLE THEREFOR

Alfons Meyer, Donauschwabenstrasse 40, D-7050 Waiblingen, Fed. Rep. of Germany
Continuation of Ser. No. 34,756, Apr. 30, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,949
Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819887
Int. Cl.^{3} B65B *35/32*
U.S. Cl. 53—475 **13 Claims**



1. A method for ordering, transporting and storing flat empty bags (**4**) closed at three sides and having an opening (**6**) at the fourth side and an extending flap (**11**) located adjacent said bag opening and projecting therefrom,

said bags being aligned seriatim and in overlapping position in shingled arrangement on a carrier web (**15**) in which the carrier web provides for storage and delivery of the bags to a subsequent processing station,

comprising the steps of

providing a tear or severing or fracture line (**13**) between the extending flap (**11**) and the remainder of the bag;

transporting the bags seriatim in a first direction (**0**) with their flaps extended at right angles to said first direction;

moving the carrier web (**15**) in a direction (**44**) which is perpendicular to said first direction (**0**);

forwarding the bags, one after another, in predetermined time intervals in said first direction (**0**) at a level above said carrier web (**15**) from a first side of the carrier web and across the carrier web into an abutment or stop means (**27**) located at the second side of the carrier web;

dropping said bags over and on the carrier web in mutually overlapping position while guiding the drop of the then dropping bag on the web and forming a shingled arrangement of bags on the web;

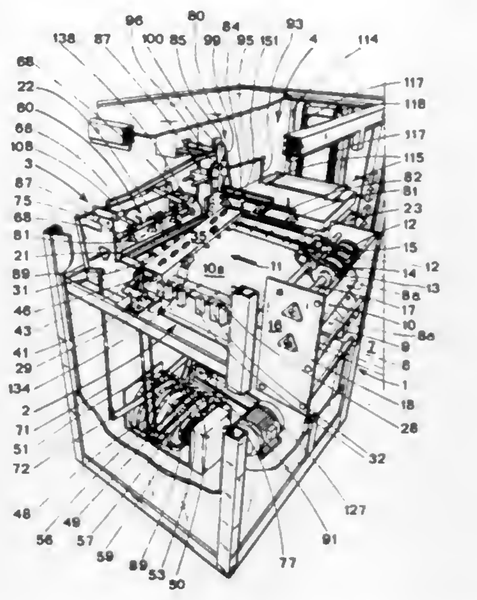
aligning each side of the bag on the carrier web and exactly positioning the bags on the carrier web with their flaps at defined distances (A) from one another;

permanently and irremovably attaching said flaps of bags, as positioned and aligned onto said carrier web, seriatim at said defined distances (A) from one another to insure separation of the bag from the flap at said tear, severing or fracture line upon application of a severing force to the bag, while leaving the flap attached to the web;

and storing said carrier web and said bags for subsequent separation of said bags from said flaps to permit subsequent filling, said separation and removal of said bags (**4**) from the web (**15**) while leaving the flaps (**11**) attached to the web (**15**).

4,354,336
AUTOMATIC MACHINE FOR LOADING AND UNLOADING FILMS IN RADIOGRAPHY CASSETTES

Cesare Azzaroni, Via Toscana, 51, Bologna, Italy
Filed Jan. 15, 1980, Ser. No. 112,313
Int. Cl.^{3} B65H *1/00*
U.S. Cl. 53—505 **12 Claims**



1. Automatic machine to load and unload films in radiography cassettes of differing formats, comprising:

a first operation station in which inserting means operate to insert the radiography cassettes, one at a time, in the machine and to expel the reloaded radiography cassette therefrom;

a second operation station, arranged subsequent to the first station, having at least one conveying means and at least one pushing means, in operation for carrying the incoming radiography cassette to contact at least one striker element, with associated detecting means for detecting the radiography cassette format; an opening means for opening the radiography cassette, arranged alongside and above said conveying means, and withdrawing means for withdrawing from the opened radiography cassette the film contained therein and for transferring the film to transfer means for transferring the film to a developing apparatus;

a third operation station, containing said transfer means; and

a fourth operation station containing a magazine for containing different film formats to reload the radiography cassette inserted in the machine,

wherein said fourth operation station is arranged alongside said second operation station, said magazine being arranged alongside said conveying means opposite to the side along which said opening means is arranged, said magazine being composed of a number of substantially identical film-holding cassettes, arranged at different levels, vertically displaced from one another, each resting on an associated carriage means which slides reciprocally in the direction of the second operation station;

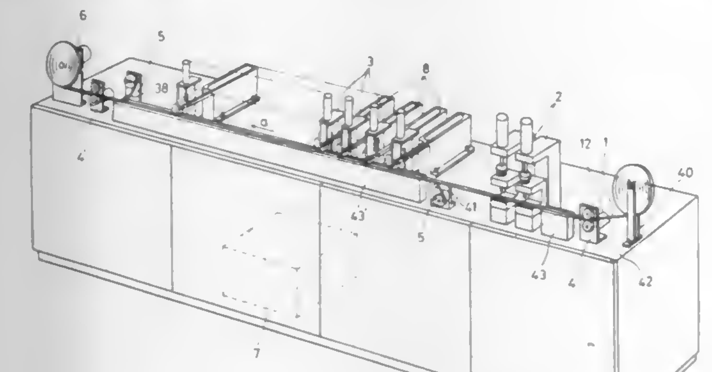
a supporting plate for a number of frames for said carriage means for said number of film-holding cassettes, said supporting plate mounted for sliding vertically on slides fixed to a frame of the machine for vertically moving said frames supported thereby, said number of frames substantially equalling the number of film-holding cassettes;

said supporting plate being equipped with a stylus element located on a line joining a plurality of actuators of a series of level signalling microswitches, vertically displaced from one another and interspaced at distances substantially equal to those between the levels at which said film-holding cassettes rest on the associated carriage means therefor,

said microswitches being connected along with the means for detecting the cassette format inserted in the machine, in a feed circuit of a geared motor through which upward and downward movement of said supporting plate and therefore of the whole magazine is obtained, to stop the vertical movement of the magazine when said stylus reaches a position of the level signalling microswitch relating to a specific film-holding cassette containing the films of suitable format to that detected in the radiography cassette, for positioning said specific film-holding cassette in correspondence with a second withdrawing means to withdraw a film therefrom and to transfer the withdrawn film into said radiography cassette, said second withdrawing means arranged alongside said conveying means and operating above the same conveying means.

4,354,337
APPARATUS FOR PACKAGING ELECTRICAL CIRCUIT COMPONENTS

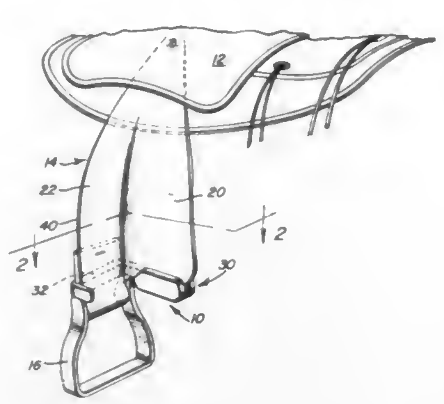
Kazuhiro Mori, Katano; Yasuo Taki, Hirakata, and Shigeru Araki, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Feb. 28, 1980, Ser. No. 125,658
Claims priority, application Japan, Mar. 5, 1979, 54-25807
Int. Cl.^{3} B65B *47/00*
U.S. Cl. 53—559 7 Claims



1. An assembly apparatus for electrical chip components comprising;
- means for supporting a carrier tape having recesses therein, with at least upper openings, formed at uniformly spaced intervals along the tape;
- means for intermittently feeding the tape a predetermined distance corresponding to said intervals;
- a plurality of transferring units spaced along the carrier tape at intervals equal to or a multiple of said recess intervals for transferring an electrical chip component from a supply thereof into a tape recess when said tape is at rest, each of said transferring units being adapted for transferring a single kind of an electrical chip component different from the kind to be transferred by an adjacent transferring unit, each of said transferring units including an in-line feeder for the components, a receptor at a predetermined position near the tape for receiving a component from said feeder, and mechanism disposed above said receptor for picking up the component thereon and depositing the component into a tape recess;
- programmed means for controlling the transferring operations of said units; and
- binding means for joining a cover tape onto said carrier tape after the transferring operations to cover said upper openings of said recesses containing therein electrical chip components.

4,354,338
FENDER BENDING ATTACHMENT

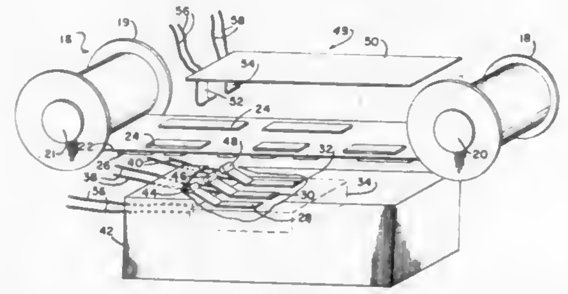
Vernon E. Martin, 504 Sunland Dr., Clovis, N. Mex. 88101
Filed Jan. 25, 1980, Ser. No. 117,217
Int. Cl.^{3} B68C *3/00*
U.S. Cl. 54—47 12 Claims



1. A device for attaching to a saddle fender so as to orient a stirrup in an appropriate direction for riding, said device comprising:
- a first leg portion having a slot formed therein, said slot having opposed abrasive surfaces for gripping said fender; and
- a second leg portion fixedly secured to said first leg portion and extending laterally therefrom, said second leg portion serving to retain said fender in a bent position so as to orient said stirrup in said appropriate direction for riding.

4,354,339
LAWN MOWER APPARATUS

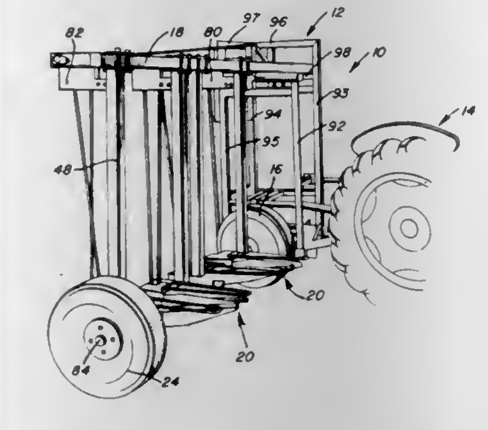
Clarence Nokes, 120 Third St., NE., Washington, D.C. 20002
Filed Nov. 14, 1980, Ser. No. 207,031
Int. Cl.^{3} A01D *75/28*
U.S. Cl. 56—10.2 34 Claims



1. A programmed steering and cutting blade control apparatus for self-contained lawn mowers having steering control means and cutting blade control means comprising:
- a flexible elongated member;
- actuating means disposed on an upper and lower surface of said flexible elongated member; said actuating means embodying in code a predetermined series of steering and cutting blade commands;
- a plurality of rotatable storage means for retaining said flexible elongated member;
- actuator means disposed above and below said flexible elongated member for contacting actuating means thereon to read the coded commands thereon; said actuator means being connected to the steering control means and cutting blade control means for operating those means in a manner dictated by the coded commands.

4,354,340
MECHANICAL PRUNING DEVICE

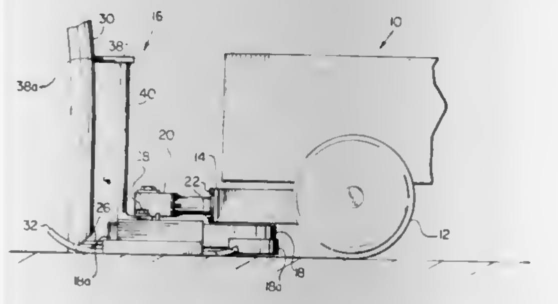
Edgar M. Huggins, P.O. Box 527, Kingstree, S.C. 29556, and Thomas M. Brandon, 321 Azelia Dr., Conway, S.C. 29526
Filed Sep. 26, 1980, Ser. No. 191,308
Int. Cl.^{3} A01D *45/16*
U.S. Cl. 56—27.5 17 Claims



1. An apparatus for defoliating a defined vertical section of a plurality of plants disposed in at least one row, said apparatus comprising in combination: an elongated tool bar mounting a plurality of pruning heads, each pruning head comprising a pair of rotatable paddles laterally spaced by a distance sufficient to accept the stalk of a plant to be defoliated therebetween; support means for supporting said tool bar at a height sufficient to pass over a plant to be defoliated; power drive means for rotating said paddles, said power drive means including a drive shaft mounted to said tool bar, a plurality of drive trains drivingly connecting each of said paddles to said drive shaft, each of said paddles comprising a resilient blade, each of said blades being mounted on a paddle shaft, each of said paddle shafts being disposed at an upwardly inclined angle, said inclined angle being adjustable to control the pruning swath of said paddle, each of said blades being generally planar in configuration with forwardly converging edges forming a generally triangular forward blade portion, each of said pruning heads including a pair of leaf support arms, one of said arms extending codirectionally adjacent each of said paddles for deflecting drooping leaves out of the way of said paddles, each of said drive trains including an intermediate shaft disposed in a parallel plane to each of said paddle shafts, and a chain and sprocket drive connected between each intermediate shaft and each paddle shaft, the chain of said chain and sprocket drive undergoing a longitudinal twist to compensate for the inclined angle of said paddle shaft.

4,354,341
BRUSH CUTTER

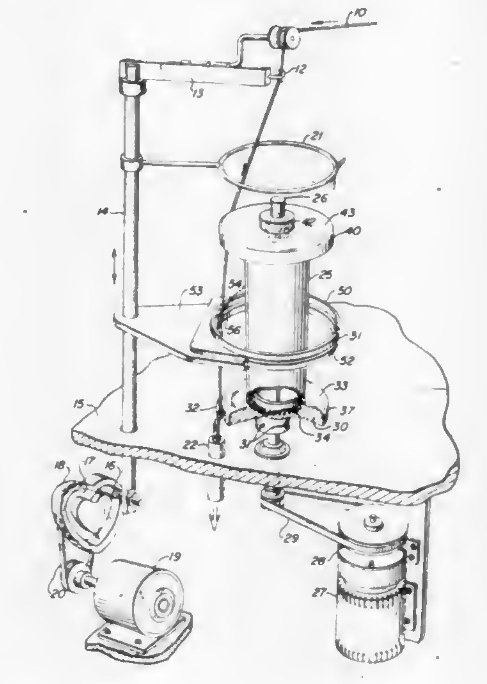
Milton R. Hathaway, 40 Quarry Rd., Bolton, Conn. 06040
Filed Jun. 1, 1981, Ser. No. 268,687
Int. Cl.^{3} A01D *55/18*
U.S. Cl. 56—503 1 Claim



1. A brush cutting attachment for a tractor equipped with a power take-off shaft projecting forwardly of the tractor, said attachment comprising a right angle drive unit, a generally vertical shaft which is oriented at right angles to and driven by said power take-off shaft through said right angle drive unit, a housing pendulously supported by said right angle drive unit and with said vertical shaft extending downwardly into said housing, said housing having a front opening spaced forwardly of said vertical shaft, laterally spaced ground engageable skids for supporting said housing at locations spaced on either side of said vertical shaft, a single rotary saw blade in said housing so arranged that a portion only of its periphery defines an arcuate cutting path passing through said housing opening, means for adjustably mounting said saw blade vertically on said vertical shaft, a horizontal laterally extending brush engageable bar located above said housing and having its leading edges spaced forwardly of said housing opening, said leading edge oriented in a vertical plane which is perpendicular to said power take-off shaft and located just inside the most forward peripheral portion of said saw blade to achieve at least some bending of the brush after the blade contacts the brush and before the blade binds in the brush.

4,354,342
TWISTER RING AND TRAVELER

Robert M. Rumsey, College Park, and Robert W. Thornton, Douglasville, both of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Division of Ser. No. 7,955, Jan. 31, 1979, Pat. No. 4,246,746.
This application May 22, 1980, Ser. No. 152,160
Int. Cl.^{3} D01H *7/52*
U.S. Cl. 57—119 8 Claims



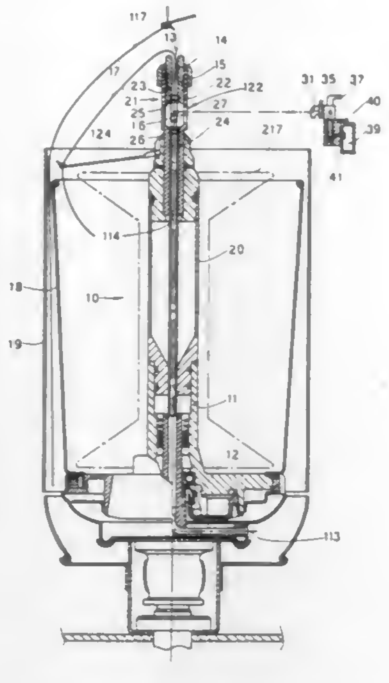
1. A twister ring, which comprises: two interconnected rings positioned to form a race in which a traveler can rotate, and a slit extending through said rings through which yarn can pass.

4,354,343
AUTOMATIC TAKE-IN FOR DOUBLE-TWISTING SPINDLES

Armando D'Agnolo, Porcia; Luigi Colli, and Ugo Gaiotti, both of Pordenone, all of Italy, assignors to Officine Savio S.p.A., Pordenone, Italy
Filed Sep. 24, 1980, Ser. No. 190,187
Claims priority, application Italy, Sep. 24, 1979, 83456 A/79
Int. Cl.^{3} D01H *15/00, 7/86*
U.S. Cl. 57—279 9 Claims

1. An automatic take-in device for a double twisting spindle including a spindle body having a bore through which a filament is threaded, a supply reel fitting over said spindle body, said bore having a lateral opening therein above said reel, said bore at said opening defining a chamber inside said body and a tensioning means in said chamber for tensioning said filament being twisted which tensioning means is capable of temporarily freeing said filament bore during the threading stage of said

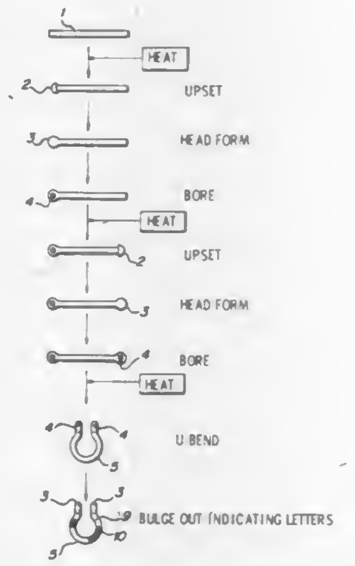
filament comprising an injector for fluid under pressure temporarily insertable into said chamber through said lateral opening



and at least partially displacing said tensioning means to free said bore.

4,354,344
METHOD OF MAKING SHACKLE

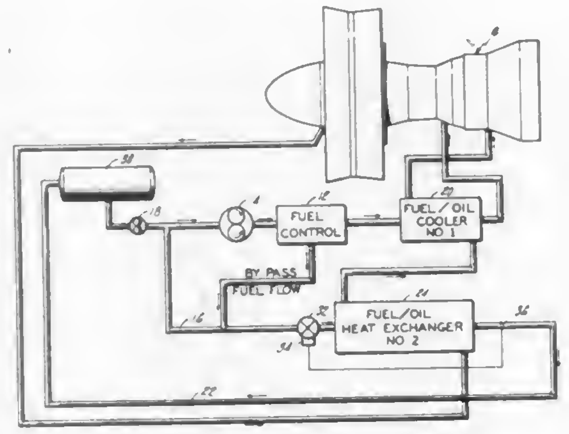
Kazutomo Yagi, Osaka, Japan, assignor to Kyoritsu Manufacturing Co., Ltd., Osaka, Japan
Filed Apr. 10, 1980, Ser. No. 138,995
Int. Cl.^{3} B21L *13/00*
U.S. Cl. 59—35 R **3 Claims**



1. A method of making a shackle, comprising the following steps:
  providing an elongated round bar having two ends; heating the bar;
  upsetting the ends of the bar into convex heads;
  compressing the upset ends of the bar to form circular heads;
  drilling holes in the centers of the circular heads;
  bending the bar in a manner that the holes are aligned with each other to form a shackle;
  providing a first die having a recess shaped to receive a first half of the shackle;
  providing a stamping plate in which indicia are present in relief;
  providing a second die having a recess shaped to receive the stamping plate in another half of the shackle;
  inserting the stamping plate into the second die;
  introducing the shackle between the second die and the first die; and
  closing the second die and first die upon the shackle and thereby causing the stamping plate to strike the surface of the second half of the shackle and stamp indicia in said surface thereof in a manner that the indicia are surrounded by an island and are unprotruding above said surface.

4,354,345
FUEL HEATING SYSTEM FOR GAS TURBINE ENGINE

Raymond A. Dreisbach, Jr., Old Saybrook; James G. Griffin, West Hartford, and Edward F. Cole, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Apr. 29, 1980, Ser. No. 145,191
Int. Cl.^{3} F02C *7/06*
U.S. Cl. 60—39.08 **4 Claims**

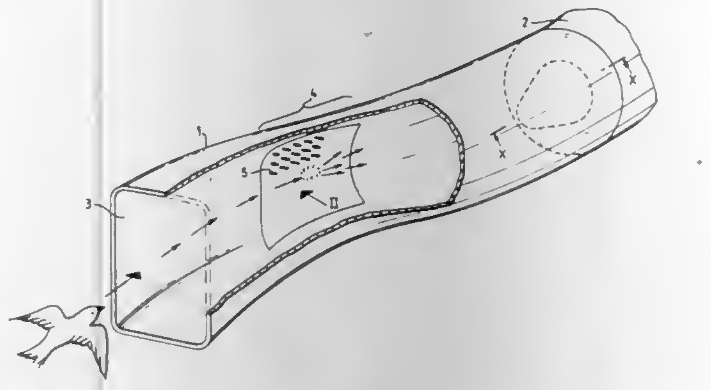


1. A system for heating the fuel in a fuel tank for aircraft which system includes a lubrication system for a jet engine, a fuel control that meters fuel to said engine and a heat exchanger that places the fuel and lubricant of said lubrication systems in indirect heat exchange relation, a pump for pressurizing the fuel prior to being admitted to the fuel control which receives an excess of fuel over that being metered to the engine, and a bypass diverting fuel from said engine continuously flowing said excess fuel, said fuel heating system including another heat exchanger having the lubricant connected in series with said heat exchanger, means for interconnecting said excess fuel to said other heat exchanger so as to place said fuel in indirect heat exchange relation with said lubricant, conduit means leading said heated fuel from said other heat exchanger into said fuel tank, means for selectively turning on and off the flow of bypass fuel to said other heat exchanger and said bypass continuously communicating with the inlet of said pump independently of said selective means.

4,354,346
INTAKE DUCTS FOR AIRCRAFT JET PROPULSION PLANT

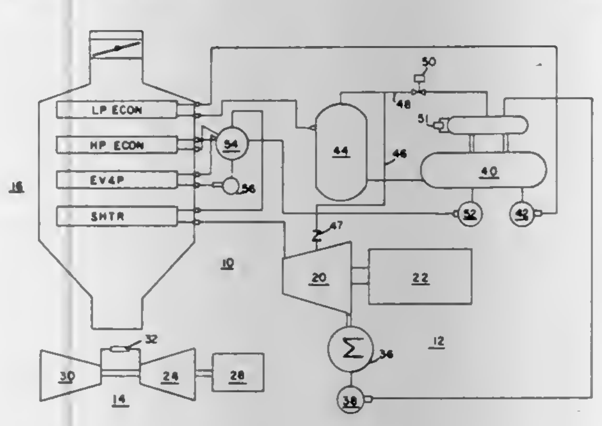
Michael S. Wooding, Lytham St. Annes, England, assignor to British Aerospace, Weybridge, England
Filed Apr. 22, 1980, Ser. No. 142,819
Claims priority, application United Kingdom, May 24, 1979, 7918191
Int. Cl.^{3} F02C *7/05*
U.S. Cl. 60—39.09 P **3 Claims**

1. An intake duct for aircraft jet propulsion plant, including a surface region on which a bird travelling along the duct will impact, a multiplicity of impalement members of rod-like form fixed at that surface region, each member being of such dimensions and so disposed relatively to the other impalement members that a minor part of an impacting bird is impaled thereon and retarded relatively to the remainder of the bird, which remainder is allowed to continue its travel, whereby the resultant distortion produces bird debris of a lower density than the pre-impact bird for ingestment by the jet propulsion plant.



4,354,347
COMBINED CYCLE SYSTEM FOR OPTIMIZING CYCLE EFFICIENCY HAVING VARYING SULFUR CONTENT FUELS

Leroy O. Tomlinson, Schenectady, N.Y., and Richard T. Cuscino, North Andover, Mass., assignors to General Electric Company, Lynn, Mass.
Filed Jun. 2, 1980, Ser. No. 155,473
Int. Cl.^{3} F02G *5/02*
U.S. Cl. 60—39.18 B **1 Claim**

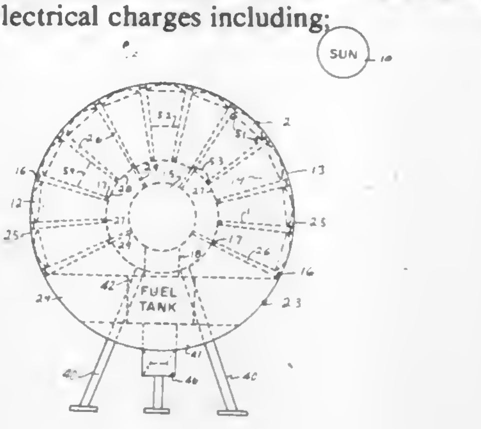


1. A combined cycle power plant having at least one gas turbin and at least one steam turbine thermally interconnected through at least one heat recovery steam generator, said heat recovery steam generator including at least one economizer section adjacent to the heat recovery steam generator exhaust gas outlet; the power plant further comprising:
  a deaerator heating feedwater to the economizer inlet;
  a flash tank connected to the economizer outlet for producing steam from the economizer effluent;
  a first conduit interconnecting the flash tank and the deaerator;
  a second conduit interconnecting the first conduit with a steam turbine inlet
  a valve disposed in the first conduit for apportioning steam between the deaerator and the steam turbine inlet.

4,354,348
SOLAR SPACE VEHICLE

Robert E. Lee, 479 Dean St., Brooklyn, N.Y. 11217
Filed Nov. 14, 1977, Ser. No. 850,974
Int. Cl.^{3} F03G *7/02;* **F02K** *11/00*
U.S. Cl. 60—203.1 **1 Claim**

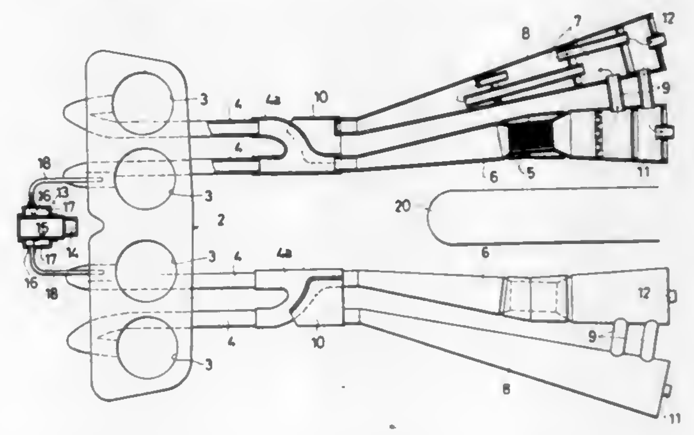
1. A space vehicle comprising:
a. a large diameter outer sphere;
b. a smaller diameter spherical copper boiler located inside and at the approximate center of said outer sphere;
c. means for delivering water to the interior of said copper boiler;
d. means for exposing said copper boiler to solar radiation and to a flow of electrical charges whereby steam is generated, in said boiler;
e. means for delivering said generated steam from the boiler to the environment outside the outer sphere to thereby provide a thrust component and hence a propulsion force for the vehicle;
f. said means for exposing the boiler to solar radiation and said flow of electrical charges including;



1. tapered cones mounted about the entire periphery of the copper boiler,
2. said tapered cones having their narrow ends adjacent said boiler and their wider ends eminating to openings in the outer sphere,
3. lenses mounted in the wider ends of the tapered cones substantially contiguous with the outer surface of the outer sphere,
4. tourmaline gem stones lining the side walls of said cones whereby a piezoelectric effect is generated upon solar energy impinging on the side walls of the cones.

4,354,349
EXHAUST SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Junji Otani, Omiya, and Yasuo Ikenoya, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1980, Ser. No. 184,317
Claims priority, application Japan, Sep. 7, 1979, 54-114167
Int. Cl.^{3} F01N *3/28, 1/08*
U.S. Cl. 60—299 **6 Claims**



1. In combination with a two-wheeled motor vehicle having an internal combustion engine, an exhaust system comprising:
  an elongate first muffler section having a exterior surface entirely exposed to atmosphere and incorporating a catalytic converter and which has a front, upstream end connectable to an exhaust manifold of said engine,
  an elongate second muffler section having an exterior surface entirely exposed to atmosphere and incorporating

sound attenuating elements, said second section extending in adjacent side-by-side relationship with said first muffler section,

a conduit interconnecting said first muffler section at its rearward, downstream end with the adjacent rearward end of said second muffler section, and

at least one outlet conduit associated with said second muffler section and which communicates the interior of said second muffler section with atmosphere at a position spaced rearwardly of said conduit interconnecting said first and second muffler sections, said second muffler section including:

a plurality of transverse walls spaced axially thereof and defining closed expansion chambers,

conduits interconnecting selected ones of said closed expansion chambers in series flow relationship, and

said outlet conduit communicating a final expansion chamber of said series with atmosphere.

4,354,350

HYDROSTATIC AUXILIARY POWER STEERING

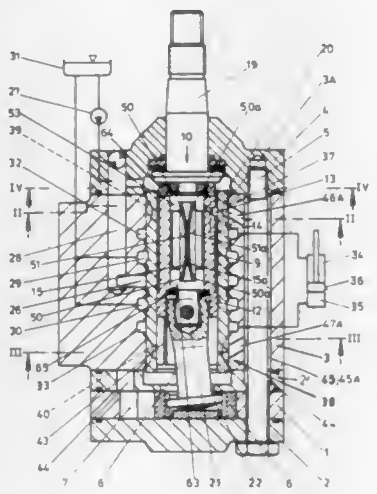
Werner Tischer, Bobingen, and Karl-Heinz Liebert, Schwabisch Gmund, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,583

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919050

Int. Cl.^{3} B62D *5/08;* **F15B** *13/04*

U.S. Cl. 60—384 **11 Claims**



1. In a servomotor system having a housing with flow passage means controlled by a valve means comprising a valve sleeve having an inner bore, and a steering spindle coaxial with the valve sleeve, including actuator means wherein said steering spindle is rotated for axially shifting said valve sleeve responsive to spindle rotation within bidirectional limits for flow control to pressurize and exhaust chambers of a servomotor, and further including a metering pump articulated to said steering spindle and said metering pump being articulated to said valve sleeve wherein said metering pump initially holds said valve sleeve stationary permitting rotation of said steering spindle relative to said valve sleeve within limits imposed by limit stop means responsive to a predetermined extent of rotation of said steering spindle to subsequently effect rotational drive of said metering pump by said steering spindle along with rotation of said valve sleeve without further axial shift;

the improvement which comprises:

said actuator means comprising a separate coupling sleeve (**9**) within said valve sleeve (**20**) and engaging the bore thereof and coupling means (**10**) whereby said coupling sleeve is coupled to said steering spindle (**19**) for rotation therewith and having tolerance for transverse misalignment therewith and further comprising valve sleeve axial shifting means (**13,14**) between said coupling sleeve and said valve sleeve whereby rotation of said steering spindle rotates said coupling sleeve to effect axial shift of said valve sleeve for flow control.

4,354,351

LOAD SENSING STEERING

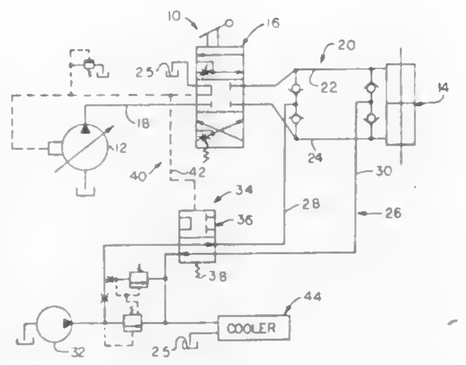
Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01291, § 371 Date Sep. 29, 1980, § 102(e) Date Sep. 29, 1980, PCT Pub. No. WO82/01226, PCT Pub. Date Apr. 15, 1982

PCT Filed Sep. 29, 1980, Ser. No. 250,754

Int. Cl.^{3} F15B *13/04*

U.S. Cl. 60—456 **5 Claims**



1. In a fluid circuit (**10**) having a pressurized fluid source (**12**); a fluid actuator (**14**); a directional control valve (**16** or **16″**) selectively positionable in first and second positions, and being connected to receive pressurized fluid from said source (**12**); fluid directing means (**20** or **20″**) for directing fluid from the valve (**16** or **16″**) to the actuator (**14**) in response to positioning of the control valve (**16** or **16″**) in said second position; and flowing means (**26,26′** or **26″**) for flowing pressurized fluid into and for venting that fluid from said fluid directing means (**20** or **20″**); the improvement comprising:

logic means (**34,34′** or **34″**) for preventing operation of said flowing means (**26,26′** or **26″**) in response to both (a) positioning of said valve (**16**) in said second position and (b) the pressure of the fluid in said fluid directing means (**20** or **20″**) exceeding a preselected magnitude.

4,354,352

CATALYTIC COATING TO DIRECTLY GENERATE HEAT UPON THE SURFACE OF A HEAT DOME

John L. Hoke, Bethesda, Md., and Theodore W. Sudia, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 15, 1981, Ser. No. 254,318

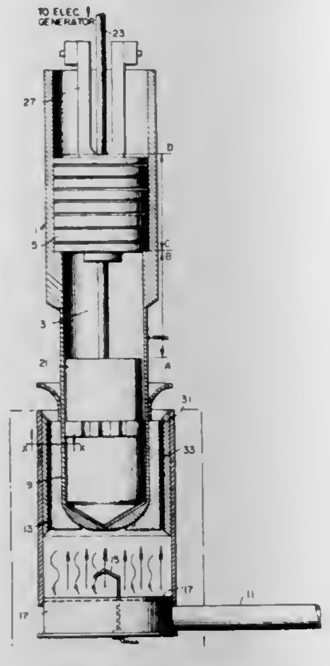
Int. Cl.^{3} F02G *1/04*

U.S. Cl. 60—517 **9 Claims**

1. A method of transferring heat energy from a heat source to a confined working fluid of an external combustion engine comprising the steps of:

(a) supplying a combustible fuel in stoichiometric preparation to an engine's combustion chamber having a heat dome with catalytic material bonded directly on its external surface, said dome acting to confine and being in direct physical contact with the working fluid to be heated;

(b) providing for the flameless combustion of the fuel on the catalytic surface to effect the direct transfer of heat energy through the dome's material to the confined working fluid located in direct physical contact with the material constituting the internal surface of the heat dome; and



(c) utilizing mechanical means to receive a work output from the heated working fluid.

4,354,353

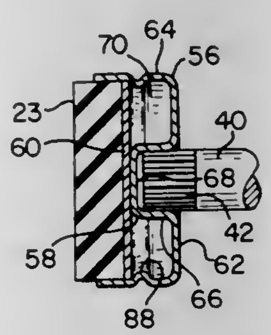
COMPRESSION ROD ASSEMBLY

Charles E. Laue, Wilmette, Ill., assignor to Hamilton-Pax, Inc., Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 113,064

Int. Cl.^{3} B60T *13/20*

U.S. Cl. 60—554 **12 Claims**



1. In a compression rod assembly for tight engagement at its ends, respectively, with a diaphragm-mounted valve body in a power brake cylinder around a flow hole in said body and with a piston in a master brake fluid cylinder; the combination of a hollow button having an annular radial wall, spaced inner and outer axial walls connected to the radial wall, a radial wall connected to the inner axial wall and defining therewith a hollow boss having a socket, said outer axial wall extending axially beyond said boss, a noncompressible disc having a diameter complementary to and snugly fitted against said outer axial wall along its inner diameter, said disc seated against said boss, a resilient disc having its outer diameter complementary to and snugly fitted against the inner diameter of said outer axial wall, said resilient disc seated at its inner side against the noncompressible disc and said resilient disc seated at its outer side against said valve body around its flow hole, a noncompressible rod having one end tightly fitted in said socket, and a noncompressible plunger threaded into the other end of said rod, said plunger having a head engaging the piston.

4,354,354

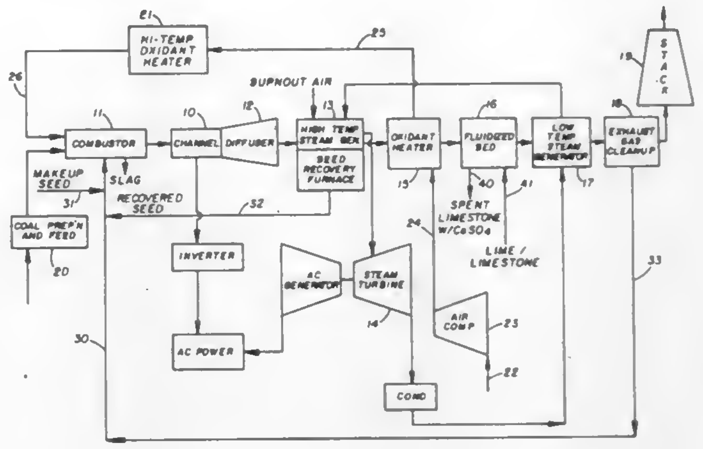
SYSTEM FOR RECOVERY OF SULFUR DIOXIDE IN AN MHD POWER PLANT

Stanley R. Wysk, Suffield, and James P. Clark, III, Amston, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 25, 1980, Ser. No. 181,323

Int. Cl.^{3} F01K *23/04;* **H02N** *4/02*

U.S. Cl. 60—655 **6 Claims**



1. The method of operating an MHD generator, including,

supplying fuel containing sulfur compounds and air to the combustor of the MHD generator,

flowing the products of combustion containing sulfur compounds from the combustor through the channel of the generator to produce electrical energy directly,

supplying potassium compounds to the combustor as seed for the MHD generator,

recovering the K_2SO_4 formed by the potassium seed and sulfur compounds from the products of combustion discharged from the channel,

recycling the K_2SO_4 seed to the combustor,

converting heat energy of the products of combustion from the channel into steam,

and contacting the products of combustion from the steam generation with a body of lime/limestone to reduce the sulfur compounds of the products of combustion to a desired level.

4,354,355

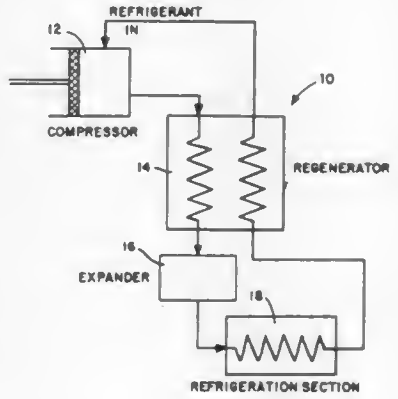
THALLOUS HALIDE MATERIALS FOR USE IN CRYOGENIC APPLICATIONS

William N. Lawless, Westerville, Ohio, assignor to Lake Shore Ceramics, Inc., Dayton, Ohio

Division of Ser. No. 41,039, May 21, 1979, Pat. No. 4,296,149. This application Dec. 5, 1980, Ser. No. 213,448

Int. Cl.^{3} F25B *9/00*

U.S. Cl. 62—6 **9 Claims**



1. In a cryogenic refrigeration system including a gas compressor means, a regenerator containing a solid heat exchange

material, and a refrigerator section, the improvement comprising:

as said solid heat exchange material a thallous halide compound.

4,354,356
TEMPERATURE-CYCLED COLD TRAP

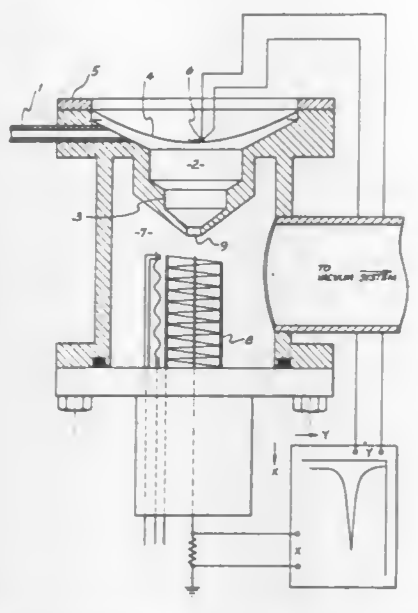
Christopher J. Milner, Northbridge, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed May 4, 1981, Ser. No. 260,288

Claims priority, application Australia, May 2, 1980, PE3389

Int. Cl.^{3} B01D *8/00*

U.S. Cl. 62—55.5 **10 Claims**



1. A cold trap for use in a high vacuum system and adapted for rapid and repeated cooling and reheating, comprising a chamber closed at its upper end by a metallic diaphragm of a thickness of not more than 0.002 inches dished inwardly to receive a liquid coolant, an outlet to interconnect the chamber with a high vacuum system, and means to introduce into the diaphragm successive doses of liquid coolant, each dose sufficing by its complete evaporation to keep the trap cold for a period of less than one minute.

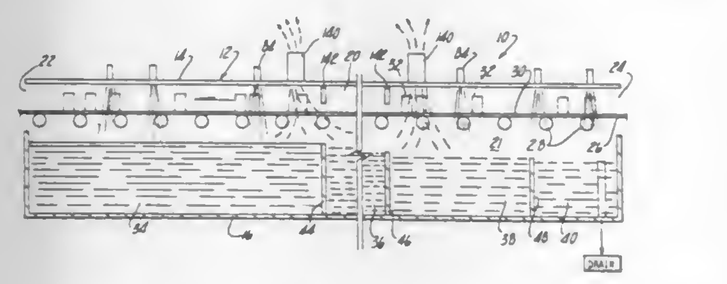
4,354,357
CONVEYOR SYSTEM WITH COOLING MEANS

Robert W. Hofstetter, 14454 Swanee Beach Rd., Fenton, Mich. 48430

Continuation of Ser. No. 90,896, Nov. 5, 1979, Pat. No. 4,261,181. This application Apr. 8, 1981, Ser. No. 252,174

Int. Cl.^{3} F25B *41/04*

U.S. Cl. 62—216 **6 Claims**



1. An article transporting system comprising:

an elongated housing defining a conveyor track and a substantially closed chamber surrounding the track,

an elongated conveyor belt means mounted in said housing so that a portion of said belt means extends along said track, said belt means having an upper substantially planar surface which forms an article carrying surface;

means for longitudinally moving said belt means along said track from an inlet end of the housing and towards an outlet end of the housing;

at least one fluid reservoir formed in said housing beneath said belt means,

means for spraying water onto articles carried on the article carrying surface,

evaporative cooling means comprising at least one fan having an inlet open to said housing chamber and an outlet open exteriorly of said housing, and

means for sensing the fluid temperature in said reservoir and operable to open fluid flow into said reservoir when the temperature in said fluid reservoir exceeds a predetermined value.

4,354,358
OPEN-CYCLE TYPE AIR CONDITIONER

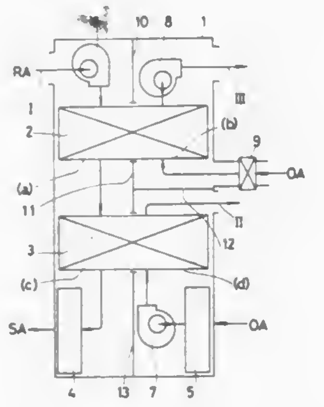
Masao Tatsuoka, and Katsunori Fujimura, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1981, Ser, No. 228,202

Claims priority, application Japan, May 26, 1980, 55-73069[U]; Jul. 29, 1980, 55-104543; Jul. 29, 1980, 55-104544

Int. Cl.^{3} F25D *23/00*

U.S. Cl. 62—271 **9 Claims**



1. An open-cycle type air conditioner comprising:

a room air passage defined between a room air inlet and a room air outlet;

an outside air passage defined between an outside air inlet and an outside air outlet;

a regenerative air passage defined between a regenerative air inlet and a regenerative air outlet;

a room air blower unit disposed in the room air passage to face to face with the room air inlet;

a rotary latent heat exchanger extending over the room air passage and the regenerative air passage and having side walls in a horizontal direction, said rotary latent heat exchanger being disposed on the downflow side of the regenerative inlet;

a rotary sensible heat exchanger disposed on the downflow side of said rotary latent heat exchanger in the room air passage and extending over the room air passage and the outside air passage, side walls of said rotary sensible heat exchanger being disposed in a horizontal direction and being in communication with the outside air outlet;

a first rotary filter type humidifier disposed on the downflow side of said rotary sensible heat exchanger and in the neighborhood of the room air outlet;

a second rotary filter type humidifier disposed in the outside air passage and in the neighborhood of the outside air inlet;

an outside air blower unit disposed on the downflow side of said second rotary filter type humidifier in the outside air passage; and

a regenerative air blower unit disposed on the downflow side of said rotary latent heat exchanger in the regenerative air passage and in the neighborhood of the regenerative air outlet.

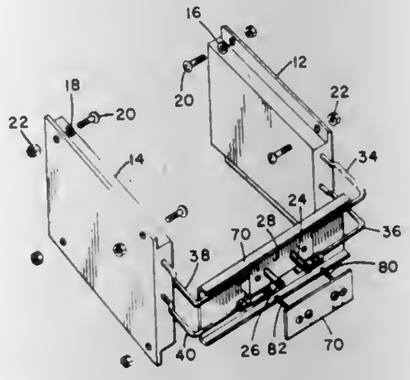
4,354,359
COLD STORAGE ASSEMBLY

Roger W. Hall, 27706 Nopales, Mission Viejo, Calif. 92690, and John F. Lotterer, III, 23812 Via La Coruna, Mission Viejo, Calif. 92691

Filed Jan. 5, 1981, Ser. No. 222,588

Int. Cl.^{3} F25D *19/00*

U.S. Cl. 62—299 **16 Claims**



1. In combination:

a pair of cold storage units each comprising an evaporator having an inlet opening and an outlet opening;

a flow control manifold;

flow circuit interconnector means comprising two connectors for completing flow passages from said flow control manifold to each of a respectively associated one of two external refrigerant flow passages; and

flow path completion and cold storage unit separation means for completing a flow path for refrigerant from one of said two connectors through said manifold and through the evaporators of said cold storage units in series and thence through said manifold to the other of said two connectors, and for holding said cold storage units spaced one from the other.

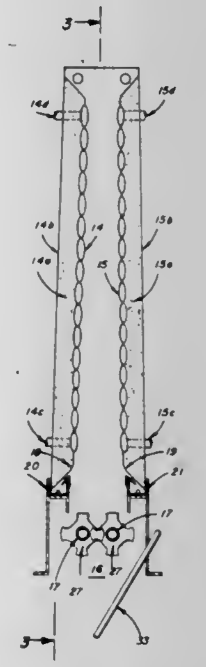
4,354,360
AUTOMATIC MACHINE FOR MAKING CRUSHED ICE

Herbert E. Fiske, P.O. Box 126, Broomfield, Colo. 80020

Filed Oct. 2, 1980, Ser. No. 193,151

Int. Cl.^{3} F25C *5/02*

U.S. Cl. 62—320 **21 Claims**



1. In an ice crushing machine of the type comprising a generally upright freezing surface, means for cooling said surface, and means for distributing water over said surface to be frozen thereby forming a layer of ice thereon, an ice breaking mechanism positioned below said surface and comprising a pair of shafts mounted for rotation in opposite directions on spaced generally parallel axes, each of said shafts having a plurality of spaced ice breaking disk-like members arranged in a set along the shaft, the improvement wherein the members of the set on each shaft are interleaved with the members of the set on the other shaft, each of said members having radial arms thereon spaced equally about the axis of the shaft, said arms having a radial length slightly less than the width of the space between the shafts, the radial width of the portions of said members intermediate said arms being less than one half the distance between the shafts whereby when said intermediate portions are between the shafts an axially extending space is provided between said sets of members, means for rotating said shafts at the same rate to move said arms on one shaft toward those on the other shaft on the upper side of said shafts, the forward radially extending edges of said arms on each of said shafts being in axial alignment and being positioned with respect to the adjacent arms of the members on the other shaft to form an upwardly open slot axially of the members during each revolution as the respective arms approach each other during rotation of said shafts, means for heating said surface to release a layer of ice therefrom whereby the released ice falls against said members and upon formation of said slot and further rotation of the members the portion of ice in the slot is broken away and separated from the remaining released ice and is broken into pieces of a predetermined range of sizes by interaction of the interleaved members and on continued rotation of the members is moved downwardly and falls from said ice breaking mechanism, the interleaved portions of said sets of members after separation of the portion of ice holding the remaining ice above said members whereby said ice remains against the members while the next slot is formed and filled and another portion of the ice is then broken away, such breaking continuing to produce successive portions of ice during rotation of said shafts until all the released ice has been broken.

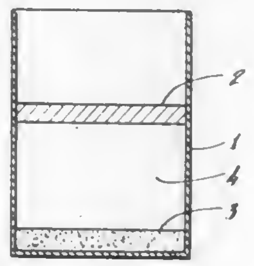
4,354,361
MACHINE FOR RECOVERING ENERGY BY MEANS OF A CYCLIC THERMODYNAMIC PROCESS

Baltzar C. von Platen, Solomon Smith's Vag, Ystad, Sweden (27 100)

Filed Jul. 22, 1981, Ser. No. 285,761

Int. Cl.^{3} F25B *3/00*

U.S. Cl. 62—467 R **16 Claims**



1. In a method of transferring heat energy by means of a cyclic thermodynamic process comprising the steps of:

providing axis of rotation,

providing a plurality of rigid annular containers positioned adjacent one to another concentric about said axis and located at progressively greater radial distances from the axis of rotation,

providing good thermal conductivity between said chambers,

providing in each of said chambers a mixture of propane and an inert gas sealed therein,

mounting said concentric annular chambers in an enclosing hermetically sealed static chamber closely spaced from said annular chambers for defining a narrow gap therebetween,

filling said narrow gap with hydrogen,

rotating said concentric annular containers at high speed about said axis,

allowing heat energy to enter the innermost of said concentric annular chambers, and allowing heat energy to be released from the outermost of said chambers across said gap,

the improvement comprising:

providing means for regulating the quantity of heat energy allowed to enter said innermost annular concentric chamber so that the temperature in the area where said heat energy enters said innermost chamber is prevented from rising above a predetermined value.

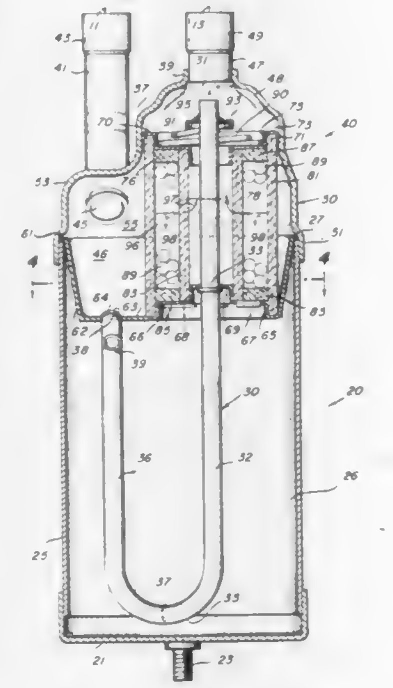
4,354,362
INTEGRAL SUCTION LINE ACCUMULATOR/FILTER-DRIER

Ernest W. Schumacher, DeSoto, Tex., and Stephen E. Evans, Ellicott City, Md., assignors to Virginia Chemicals, Inc., Portsmouth, Va.

Filed Nov. 7, 1980, Ser. No. 204,807

Int. Cl.³ F25B *43/00*

U.S. Cl. 62—474 **34 Claims**



1. A low-pressure accumulator/filter-drier for installation in upright position in an air conditioning system between the evaporator and compressor thereof, which comprises, in sealed combination:

A. a filter-drier, comprising an inlet plenum chamber, a discharge plenum chamber, and a filter-drier assembly which is surrounded by said inlet plenum chamber and which comprises:
  (1) an inner cylindrical filter cartridge,
  (2) an outer cylindrical filter cartridge, and
  (3) an annular dessicant bed which is disposed between said cartridges; and

B. an accumulator, comprising:
  (1) an accumulator plenum chamber, for accumulating liquid and receiving vapor, which is disposed beneath said filter-drier, and
  (2) a pickup tube having a discharge portion which is coaxially aligned with said filter-drier assembly and is radially spaced from said inner filter cartridge to form therebetween an annular vapor discharge channel which is connected to said discharge plenum chamber.

4,354,363
MEANS FOR CONTROLLING THE MOVEMENT OF YARN CARRIERS ALONG WITH A CARRIAGE IN FLAT KNITTING MACHINES

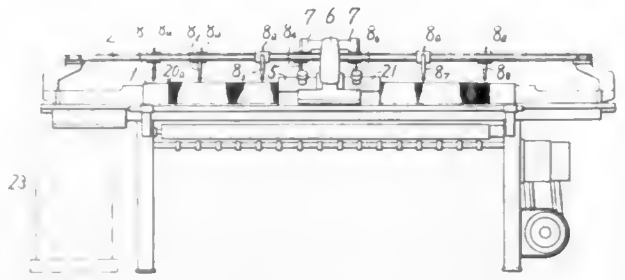
Hideo Inoue, Wakayama, Japan, assignor to Shima Idea Center Co., Ltd., Wakayama, Japan

Filed Dec. 4, 1980, Ser. No. 212,910

Claims priority, application Japan, Dec. 10, 1979, 54-159976

Int. Cl.³ D04B *15/52*

U.S. Cl. 66—128 **2 Claims**



1. Means for controlling the movement of yarn carriers along with a carriage in a flat knitting machine, comprising a trick location detector mounted on the carriage for detecting varying positions of the carriage on a needle bed during its movement thereon, each such position expressed in terms of the number of tricks or of needles counted from one or the other tricked end of the needle bed, a plurality of solenoids arranged in a plunger box on the carriage for individually controlling coupling plungers provided in the plunger box in the same number as the solenoids, each coupling plunger slidable to an operative position relative to one of the yarn carriers on carrier guide rails for engagement therewith, each of said solenoids connected to a solenoid drive circuit, trick position setting means adapted to memorize predetermined signalling positions, each expressed in terms of the number of tricks counted from one or the other tricked end of the needle bed, for selectively energizing and deenergizing the solenoids, and a control unit for controlling the solenoid drive circuit through the operation of values memorized by the trick position setting means and those detected by the trick location detector.

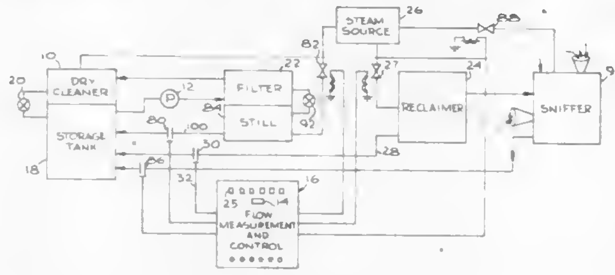
4,354,364
DRY-CLEANING SYSTEM

H. Dennis Holder, 16052 Wedgeworth Dr., Hacienda Heights, Calif. 91745; Herb L. Goodman, 17321 Ave. de la Herradura, and Michael Favish, 17315 Ave. de la Herradura, both of Pacific Palisades, Calif. 90272

Filed Mar. 10, 1981, Ser. No. 242,274

Int. Cl.³ D06F *43/08*

U.S. Cl. 68—18 R **8 Claims**



1. A dry-cleaning system, including:

cleaning fluid storage means;

at least one mdoule, from which cleaning liquid is to be reclaimed;

a return line from said at least one module to said storage means;

a flowmeter connected in said return line and having first output terminals which exhibit changes in electrical conditions across said first output terminals in response to a flow of cleaning fluid through said return line;

a source of steam;

a steam line coupled between said source of steam and said at least one module;

a solenoid-operated valve connected in said steam line for controlling the flow of steam through said steam line to said at least one module, said solenoid-operated valve having a pair of control terminals; and,

flow measurement and control means coupled between said first output terminals and said control terminals for opening said solenoid-operated valve and permitting steam flow therethrough only in the presence of said changes in electrical conditions across said first output terminals.

4,354,365
PERMUTATION LOCK

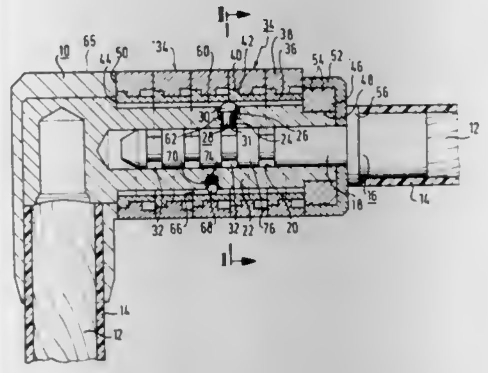
Siegfried Mayer, Münster-Wolbeck, and Ludger Henrichmann, Münster, both of Fed. Rep. of Germany, assignors to Aug. Winkhaus, Telgte, Fed. Rep. of Germany

Continuation of Ser. No. 73,208, Sep. 7, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 236,020

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2840098

Int. Cl.³ E05B *37/02, 37/06*

U.S. Cl. 70—30 **14 Claims**



1. Permutation lock comprising a lock housing having a first end and a second end spaced from said first end, said housing having an axially elongated bore therein extending from the first end toward the second end thereof and a plurality of openings spaced apart in the axial direction of said bore and extending in the radial direction relative to the axis of said bore from the inner surface to the outer surface of said housing, a locking pin movably displaceable in each of said openings, a plurality of setting wheels rotatably mounted on the outer surface of said housing through which said bore extends for movement around the axis of said bore, said setting wheels being arranged in side-by-side relation along the axial direction of said bore and each being rotatable relative to the others, said setting wheels having inwardly facing release recesses for receiving said locking pins, an axially extending closing bolt insertable into said bore along the axis thereof through the first end of said housing and having a plurality of locking recesses formed therein, said locking pins being movably displaceable into the recesses in said locking bolt, said setting wheels being rotatable into a release position representing the combination of said lock wherein said locking pins are released from the recesses in said closing bolt and move radially outwardly into said release recesses and said closing bolt is removable from and insertable into said bore and said wheels being rotatable from the release position for movably displacing said locking pins into the locking recesses in said closing bolt so that said closing bolt is secured within said bore, wherein the improvement comprises that each said setting wheel comprises a radially inner ring having said release recess therein and a radially outer ring located radially outwardly from said inner ring, and said inner ring and outer ring being lockable for rotatable movement as a unit and being displaceable from locked engagement for rotatable movement one relative to the other, said outer ring being axially displaceable relative to said inner ring from a first position wherein said outer ring operates in locked engagement with said inner ring to a second position where said outer ring can be rotated relative to said inner ring for changing the part of the combination of the lock associated with said setting wheel of which said outer ring forms a part, releasable securing means being provided for securing said outer ring in said first position, said securing means comprising a securing member provided on said closing bolt, said securing member securing said outer ring in said first position, when said closing bolt is locked in said bore, such that said outer ring is rotatable with respect to said inner ring only when said closing bolt is at least partially removed from said bore.

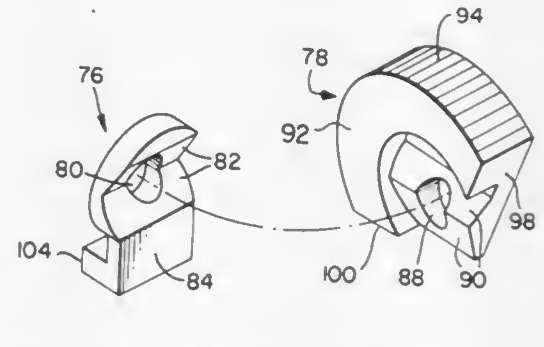
4,354,366
COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Kidde, Inc. (Presto Lock Company Division), Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,490

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—312 **11 Claims**



1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift mechanism for moving said elements axially, said shift mechanism including an actuator mounted for rotation about said axis, means providing a camming action between said actuator and said elements for causing said shift mechanism to move said elements axially responsive to rotary motion of said actuator in one direction, and means for restricting the rotary motion of the actuator to forward and reverse motion between opposed extreme positions, the combination elements in one extreme position of the actuator being in coupling engagement with the cooperating components and in the other extreme position of the actuator being out of coupling engagement with the cooperating components.

4,354,367
COMBINATION LOCK FOR ATTACHE CASES AND SIMILAR ARTICLES

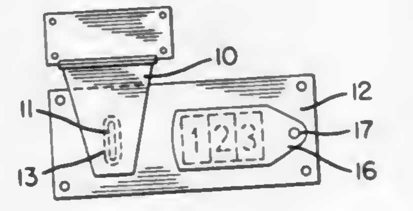
Philippe Wahl, 89A, route de Florissant, 1206 Geneve, Switzerland

Filed May 2, 1979, Ser. No. 35,281

Claims priority, application Switzerland, May 2, 1978, 4728/78

Int. Cl.³ E05B *15/16*

U.S. Cl. 70—333 A **4 Claims**



1. A combination lock for attache cases and the like comprising, a clasp having a movable clasp element, the lock having a plurality of movable elements having digits thereon for setting a combination for selectively locking the lock, said clasp element being in a locking position when the combination lock is

locked, a mask biased to a first of two rest positions, said first position comprising a position in which the mask conceals the digits and blocks the movable element from moving to a position in which the clasp is open, and a second of said two positions comprising a position in which said mask exposes said digits to view and unmasks the clasp element.

4,354,368
KEY HOLDER

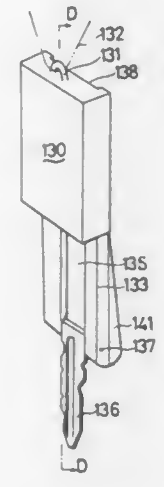
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Company, Limited, Kariya, Japan

Division of Ser. No. 68,568, Aug. 22, 1979. This application Dec. 5, 1980, Ser. No. 213,360

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ **A47G** *29/10*

U.S. Cl. 70—456 R — 6 Claims



1. A pendant type key holder comprising:
a body having an opening formed therein;
a slide member slidably mounted in said opening in said body, said slide member including a first groove formed therein and said slide member being movable to a position inside or outside said body;
a key pivotably mounted to said slide member and movable between a non-operating position in which the key is disposed within said first groove of said slide member and an operating position in which the key is disposed outside of said first groove;
at least one second groove formed in said slide member adjacent said body and elongated in the direction of movement of said slide member;
said body including at least one flange member projected within said second groove; and
said slide member having a leg member which engages said flange member upon sliding of said slide member outside said body and a convex portion of the slide member which engages said body near an entrance of said opening upon sliding of said slide member inside said body.

4,354,369
METHOD FOR SUPERPLASTIC FORMING

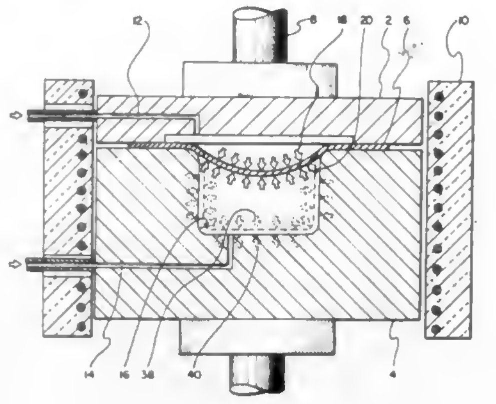
C. Howard Hamilton, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1980, Ser. No. 150,471

Int. Cl.³ **B21B** *9/00*

U.S. Cl. 72—38 — 7 Claims

1. A method of reducing cavitation during superplastically forming a blank of material, comprising the steps of:
providing a blank of material which exhibits an effective value of strain rate sensitivity at a forming temperature;
providing a die having a forming surface;
positioning said blank in said die opposite said forming surface;
holding said blank at said forming temperature so that said material exhibits said effective value of strain rate sensitivity;
applying positive pressure concurrently to both sides of said blank sufficient to prevent the formation of voids in said material; and
increasing said positive pressure on the side of said blank farthest from said forming surface to develop tensile strain in said material at a rate which provides said effective value of strain rate sensitivity, whereby said blank stretches by said tensile strain toward said forming surface and forms against said forming surface without cavitation.



4,354,370
METHOD FOR DEEP DRAWING SHEET METAL

Myron E. Ullman, Jr., Canfield, Ohio, assignor to Kessler Products Co., Inc., Youngstown, Ohio

Filed Sep. 2, 1980, Ser. No. 183,308

Int. Cl.³ **B21D** *22/20*

U.S. Cl. 72—42 — 19 Claims

1. A method of drawing an article from a generally flat metal blank, comprising:
(a) providing a press including mating drawing tools such as a punch and a die, these tools normally being positioned at opposite ends of a travel path along which at least one of the tools is movable relative to the other during a drawing process;
(b) positioning pairs of plastic sheets and a relatively flat metal blank having first and second opposed surfaces transverse to the travel path with:
(i) each of the opposed surfaces of the blank facing toward a separate one of the tools;
(ii) the plastic sheets including first and second pairs of distinct plastic sheets;
(iii) the first pair of sheets loosely overlying each other and being positioned in overlying relationship with the first surface at a location between the first surface and one of the tools; and
(iv) the second pair of sheets loosely overlying each other and being positioned in overlying relationship with the second surface at a location between the second surface and the other of the tools; and
(c) moving at least one of the tools along the travel path relatively toward the other tool to effect drawing of the blank while maintaining the sheet pairs at locations between the tools and the blank to serve as lubricants during the drawing of the blank with the sheets of each pair being free to slide relative to each other to enhance lubrication.

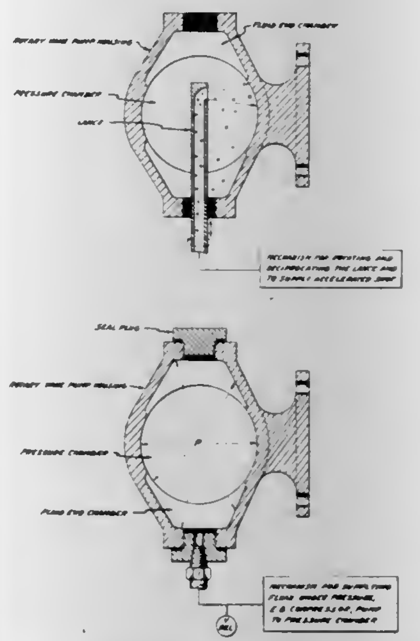
4,354,371
METHOD OF PRESTRESSING THE WORKING SURFACES OF PRESSURE CHAMBERS OR CYLINDERS

Daniel E. Johnson, Dallas, Tex., assignor to Metal Improvement Company, Inc., Paramus, N.J.

Filed Oct. 27, 1980, Ser. No. 200,767

Int. Cl.³ **C21D** *7/06*

U.S. Cl. 72—53 — 6 Claims



1. A method of prestressing the inner working surfaces of the walls forming a pressure chamber comprising the steps of:
(a) shot peening the inner working surfaces of said walls of said pressure chamber;
(b) sealing said pressure chamber and applying a fluid pressure in the chamber of a magnitude sufficient to deform the said walls defining said chamber beyond the yield strength but not sufficient to cause fracture of said walls, and
(c) releasing such applied fluid pressure and unsealing said pressure chamber.

4,354,372
METHOD AND APPARATUS FOR COLD ROLL FORMING METAL STRIP

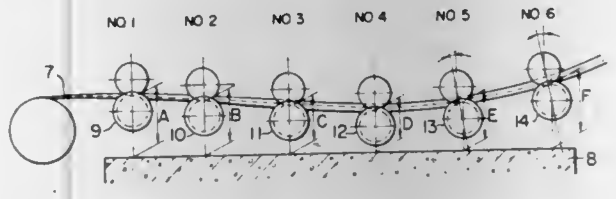
Takesi Inoue, Yasugi, and Kuniaki Okada, Matsue, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,895

Claims priority, application Japan, Mar. 8, 1978, 53-26386

Int. Cl.³ **B21B** *15/00;* **B21D** *5/14*

U.S. Cl. 72—177 — 17 Claims



1. A method of cold roll forming an automotive vehicle bumper comprising:
grinding and washing a metal strip;
forming said metal strip into a shaped strip, while advancing the metal strip, together with changing gradually the height of a point of contact between metal strip to be formed and rolls of each of a plurality of cold forming roll stands so as to inhibit elongation deformation of marginal portions of the metal strip which constitute the edge portions of a product;
curving said shaped strip longitudinally thereof with a predetermined curvature in such a manner that edge portions of said strip are on a concave side of the curvature and a web portion is on a convex side thereof, together with changing gradually the height of the point of contact between said roll formed shaped strip and rolls of each cold forming roll stand in a reverse direction to the forming step and disposing said rolls of each cold forming roll stand for carrying out at least part of said second step for curving the product longitudinally so as to be passed through substantially an extension of a line connecting together the center axes of the shafts of said confronting rolls to a center of the curvature of the product so that the shaping force may be directed toward the center of the curvature of the product when cold roll forming is effected, while simultaneously effecting roll forming from multiple directions at least as part of the curving step; and
the roll formed product being cut to a predetermined length.

4,354,373
AXIAL ADJUSTMENT DEVICE FOR TAPERED INTERMEDIATE ROLLS IN A CLUSTERED MILL STAND

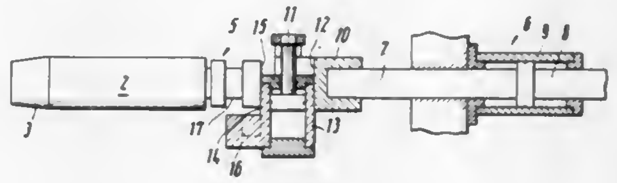
Peter Rheinthal, Hemer, Fed. Rep. of Germany, assignor to Sundwiger Eisenhutte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,763

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835514

Int. Cl.³ **B21B** *31/18, 35/14*

U.S. Cl. 72—247 — 7 Claims



1. An axial adjustment device for tapered intermediate rolls each having a roll neck at one end thereof and a pivot bearing on said roll neck in a cluster mill stand, comprising:
at least one axial adjusting device operable in an axial direction of the intermediate rolls including a shift bar for axially shifting said intermediate rolls;
engagement means on said axial adjusting device for engaging said pivot bearing;
said engagement means including means operable in a direction transverse to an axial direction of said axial adjusting device and effective to positively fit said pivot bearing and to at least partly support said one end of said intermediate roll, the positive fit being effective to provide concerted axial movement of said intermediate roll and said axial adjusting device; and
said engagement means having a selectable position displaced in said transverse direction wherein it releases said pivot bearing and permits axial motion of said intermediate roll independently of said axial adjusting device.

4,354,374
BENDING PRESS

Hideaki Deguchi, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 216,784

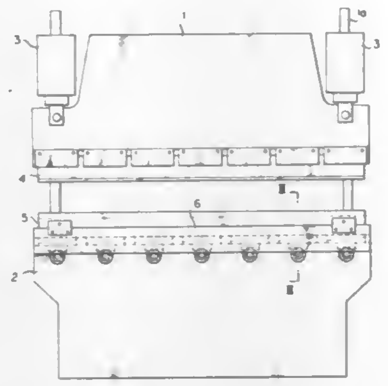
Claims priority, application Japan, Dec. 24, 1979, 54-177711[U]

Int. Cl.³ **B21D** *7/06*

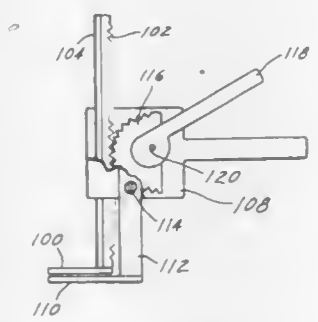
U.S. Cl. 72—389 — 1 Claim

1. A press for bending a sheet metal, comprising:
a frame of said press;
a stationary first support member fixedly secured to said frame;
a second support member vertically movable on said frame toward and away from said first support member;
a punch secured to said second support member;

a table mounted on said first support member;
a die secured to said table; and
a plurality of adjusting means disposed between said first support member and said table for adjusting the height of said table, each of said adjusting means comprising a first wedged member fixedly secured to said table, a second wedged member laterally movable relative to said first support member, said first and second wedged members being arranged one upon the other, a rack fixedly secured to said second wedged member and a pinion engageable with said rack, said pinion having means formed therein open to the front face of said first support member for receiving a tool for turning said means.

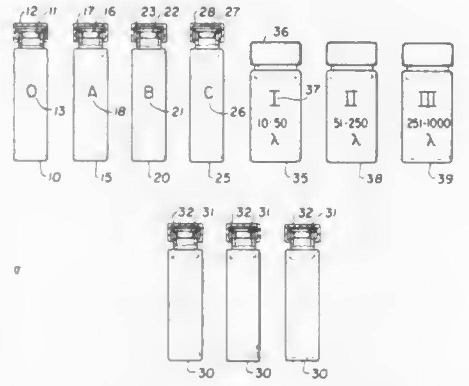


4,354,375
TOOL FOR OPERATING WALL ANCHORS
Joseph Lesowsky, 335 E. Taft Ave., Orange, Calif. 92665
Filed Aug. 15, 1980, Ser. No. 178,544
Int. Cl.^{3} B21J *9/18*
U.S. Cl. 72—449 **3 Claims**



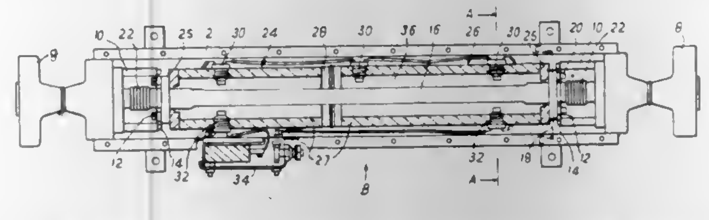
1. A tool for deforming the tubular body of a flanged wall anchor having a headed bolt comprising, in combination:
an upstanding base member;
a first notched jaw member secured to the lower end of said base member;
a bar;
a second notched jaw member parallel to and coextensive with said first jaw member,
said second jaw member being secured to one end of said bar;
a frame member fixed to the other end of said base member and having an integral handle parallel to said jaw members,
said bar being slidable in said frame member;
a movable handle supported by said frame member for pivotal movement toward and away from said integral handle,
said handles being adapted to be gripped by hand to force them together;
and means coupling said one end of said movable handle to said bar and operable on movement of said movable handle away from and toward said integral handle to effect sliding movement of said bar in said frame member, thereby to effect movement of said second jaw member toward and away from said first jaw member,
said jaw members being adapted for insertion insertion between the bolt head and flange of the wall anchor to straddle the bolt with the notches in the jaw members and to thrust the bolt head and flange axially apart and effect deformation of the body of the anchor,
said coupling means being characterized by a mechanical advantage that permits such deformation with a single closing together of said handles.

4,354,376
KIT FOR CALIBRATING PIPETTES
Walter Greenfield, Ardsley; Didya D. Levy, Brooklyn; Richard E. Scordato, Scarsdale, and John J. Hartnett, Yonkers, all of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.
Filed Mar. 3, 1980, Ser. No. 126,718
Int. Cl.^{3} G01F *25/00*
U.S. Cl. 73—1 H **14 Claims**



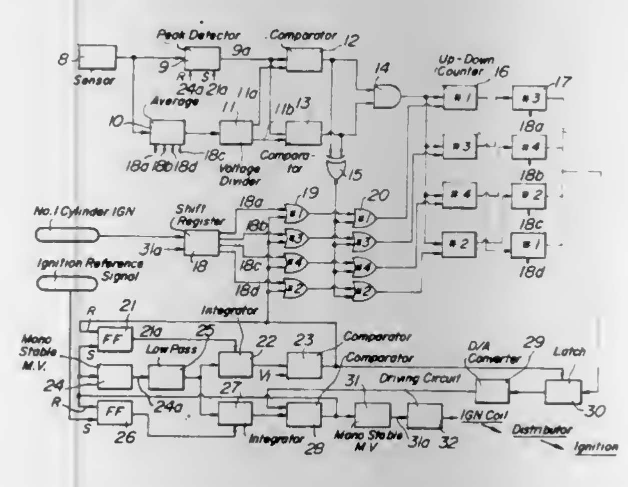
1. A pipette calibration kit comprising a first vial containing a first solution comprising a solute and a solvent having a measurable first predetermined concentration, said first vial bearing an indicia related to that concentration, a second vial containing a second solution similar to said first solution but having a measurable second concentration different from that of said first solution, said second vial bearing an indicia related to the concentration of said second solution, graph means having absorbance values marked along one coordinate axis and volume values marked along a second coordinate axis, said second coordinate axis also containing indicia markings corresponding to those of said first and said second vials so that a measured absorbance of a solution in a vial can be plotted in alignment with the graph means indicia markings corresponding to the indicia on the vial and a calibration curve drawn, a bottle containing a reagent solution similar to said first solution but having a predetermined concentration greater than that of said first and said second solutions, and a vial containing a predetermined volume of a diluent comprising the same solvent as in said first solution, whereby a part of said diluent can be removed from said diluent vial by a pipette that is to be calibrated and replaced by an equal part of the reagent solution pipetted from said reagent bottle and dispensed into the diluent vial by the pipette being calibrated to provide a solution having a measurable absorbance value from which the volume capacity of the pipette being calibrated can be determined from a calibration curve plotted on said graph means.

4,354,377
FLUID DENSITY TRANSDUCER
James W. Stansfeld, Alton, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Filed Nov. 4, 1980, Ser. No. 203,841
Claims priority, application United Kingdom, Nov. 6, 1979, 7938367
Int. Cl.^{3} G01N *9/00*
U.S. Cl. 73—32 A **7 Claims**



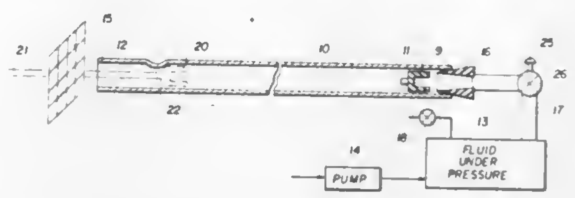
1. A fluid density transducer comprising a tube extending between two node-determining devices, and an electrical transducer arrangement coupling to the tube for exciting natural transverse vibrations and providing an oscillatory electrical signal representative of the frequency of vibration, wherein the tube has a small degree of ellipticity with the minor axis of the ellipse parallel to the direction of the vibration, the ellipticity being so small that the principle parameter of a fluid in the tube affecting the frequency of vibration is the density of the fluid, but being sufficient for the increase in frequency arising from stiffening of the tube when the pressure of the fluid rises to compensate for the decrease in frequency arising from increased circumferential stress when the pressure of the fluid rises.

4,354,378
KNOCK DETECTING DEVICE
Katsunori Oshiage, and Nobuji Manaka, both of Yokosuka, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan
Filed Apr. 18, 1980, Ser. No. 141,599
Claims priority, application Japan, Apr. 21, 1979, 54/49468
Int. Cl.^{3} G01L *23/22*
U.S. Cl. 73—35 **7 Claims**



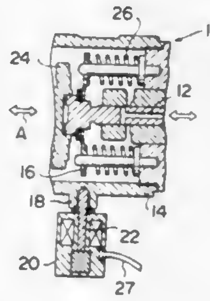
1. A knock detecting device for a multiple cylinder engine, comprising:
a sensor for detecting vibrations of the body of the engine and producing output signals indicative thereof:
a plurality of averaging circuits, each of said averaging circuits corresponding to a separate one of said cylinders;
a first switch means for distributing output signals from said sensor developed in association with individual cylinders to said corresponding averaging circuits in synchronism with ignitions of said individual cylinders;
a second switch means for selecting output signals from said corresponding averaging circuits in synchronism with said ignitions thereby providing individual corresponding reference signals for each of said cylinders; and
a detecting means for detecting a knocking state of each of said cylinders in dependence on said corresponding reference signal for each cylinder.

4,354,379
METHODS AND APPARATUS FOR TESTING ROUNDNESS AND STRAIGHTNESS OF PIPES AND TUBINGS
Robert M. Miner, 1855 Glendale, Casper, Wyo. 82601
Filed Aug. 27, 1980, Ser. No. 181,948
Int. Cl.^{3} G01B *5/12*
U.S. Cl. 73—37 **17 Claims**



1. The method of testing pipe sections for roundness, straightness and internal surface defects, comprising the steps of:
inserting into one end of a section of pipe a light weight cylindrical drift member of a circumference within close tolerance to the internal pipe circumference specification and having a substantially friction free outer surface structure for contacting the inner pipe wall,
and impacting said cylindrical member with sufficient fluid flow directed into one end of the section of pipe to move the cylindrical member through the section of pipe from one end to pass out the other end thereby to indicate whether the pipe is within specification tolerance without burrs, indentations, out-of-round or straightness conditions tending to impede the transit of the member along the pipe length.

4,354,380
FUEL INJECTION PUMP OPERATING CONDITION DETECTOR
Yoichi Murata, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Dec. 1, 1980, Ser. No. 211,774
Claims priority, application Japan, Jul. 2, 1979, 54-84304
Int. Cl.^{3} G01M *15/00*
U.S. Cl. 73—119 A **6 Claims**



1. A fuel injection pump operating condition detector wherein fuel is pressure fed by a reciprocating plunger, comprising an unpenetrated mount formed on a pump housing of the fuel injection pump adjacent the plunger or a reciprocating part operationally associated with the plunger and an electromagnetic pickup, the forward end of a core of which is fixed to said mount.

4,354,381

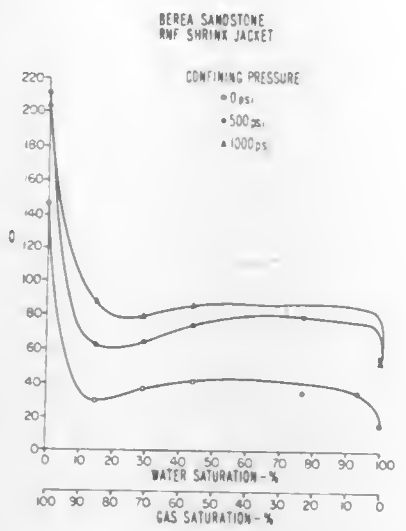
SONIC ATTENUATING METHOD FOR DISTINGUISHING BETWEEN OIL, WATER AND GAS

William L. Medlin; Lucien Masse, both of Dallas, and James H. Sexton, Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,477

Int. Cl.^{3} E21B *49/00*

U.S. Cl. 73—151 **14 Claims**



1. A method for predicting the possible fluid content of a zone of reservoir material disposed at a known depth, comprising the steps of:

(a) sampling said material to determine at least its resonance behavior type, if known; or if not known, determining its resonance behavior type by:

(i) subjecting samples of said material to pressures comparable to to the overburden pressures found at said depth of said zone,

(ii) saturating said samples of said material with differing selected amounts of at least one fluid suspected of being present in said zone within the range of said differing selected amounts; and

(iii) resonance testing said samples to determine the behavior of the resonance loss factor (Q value) while containing such differing selected amounts of said at least one fluid;

(b) estimating the resonance loss factor (Q value) of said reservoir zone; and

(c) positively correlating the resonance loss factor (Q value) of said reservoir zone to the resonance loss factors of said resonance behavior type to predict the possible fluid content of said zone.

4,354,382

DEVICE FOR DETERMINING THE LEVEL OF MELT IN A LADLE OR THE LIKE

Hans Hägglund, Örsundsbro, Sweden, assignor to AB Rescon, Sweden

Filed Jun. 10, 1980, Ser. No. 158,296

Claims priority, application Sweden, Jun. 11, 1979, 790576; Sep. 20, 1979, 7907816

Int. Cl.^{3} G01F *23/26*

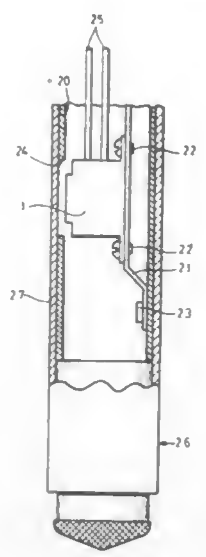
U.S. Cl. 73—290 R **3 Claims**

1. Device for determing the level of a melt in a ladle or the like comprising,

a lance, one end of which comprises a tubular wall portion which is adapted to be submerged into said melt, the surface of said wall portion having at least one aperture therethrough;

at least one non-contact sensor mounted internal of said lance upon the surface of said wall portion, each sensor being positioned opposite an aperture;

means attached to each sensor for electrical connection to equipment which receives signals coming from each sensor; and,



a sleeve of heat resistant, electrically non-conducting material which encloses said tubular wall portion and covers each aperture.

4,354,383

METHOD OF AND DEVICE FOR MEASURING THE AMOUNT OF LIQUID FUEL IN A TANK

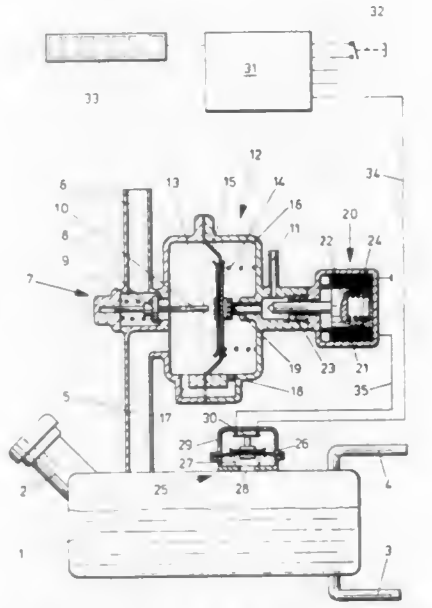
Günter Härtel, Neuss, Fed. Rep. of Germany, assignor to Bosch & Pierburg System oHG, Neuss, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,679

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2937966

Int. Cl.^{3} G01F *23/14*

U.S. Cl. 73—290 B **20 Claims**



1. A method of measuring the amount of liquid fuel in a ventilated fuel tank, said method comprising the steps of stopping temporarily the ventilation from the tank; removing from said unventilated tank an amount of gas; and measuring a quantity indicative of the change in the state of said gas in said tank to provide an indirect measurement of the amount of fuel in said tank, said gas is removed from said tank at a constant volumetric flow rate and said quantity measured comprises the time taken for a predetermined alteration in pressure of said gas in said tank to occur.

4,354,384

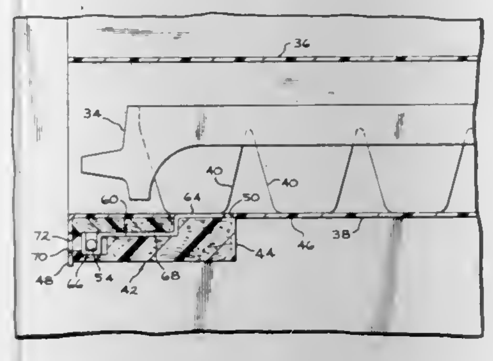
VISUAL DEVICE FOR ICE CUBE TRAYS

Gerhard K. Losert, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 2, 1980, Ser. No. 182,884

Int. Cl.^{3} F25B *49/00;* **G01K** *3/00*

U.S. Cl. 374—134 **7 Claims**



1. A visual device in the freezer compartment of a refrigerator to indicate when water in an ice cube tray is frozen comprising:

a stationary thermal insulated sectioned base in close proximity to a bottom portion of the ice cube tray;

a thermometer located remote from said portion of the ice cube tray and having a bulb containing liquid and a connecting capillary tube for a liquid column, said thermometer being embedded in the insulated base;

a thermal conductive member in heat transfer relationship between said portion of the ice piece tray and the thermometer bulb, said member having a portion geometrically formed to enclose a substantial portion of the thermometer bulb; and

visual means provided in a selected portion in said base and relative to the liquid column in the capillary tube so as to provide access for indicating on the thermometer when water in the ice piece tray is frozen.

4,354,385

THERMOMETRIC COMPOSITIONS FOR MEASURING AND INDICATING LOW TEMPERATURES AND RELATED THERMOMETRIC DEVICES

Mario Fraschini, Via Valcuvia, N. 61, 21033 Cittiglio Varese, Italy

Filed Dec. 5, 1980, Ser. No. 213,644

Claims priority, application Italy, Feb. 6, 1980, 19716 A/80

Int. Cl.^{3} C09K *3/34;* **G01K** *11/16, 11/18*

U.S. Cl. 374—162 **8 Claims**

1. A thermometric composition of mesomorphic cholesteric substances suitable for the measurement and indication of low temperatures in the range of 0° C. to −30° C., said composition having a color change temperature within said range at which said composition changes color, said composition comprising a quaternary mixture of cholesteryl nonanoate, oleyl cholesteryl carbonate, cholesteryl chloride and cholesteryl acetate, said color change temperature being adjustable by varying the amount of cholesteryl acetate relative to said cholesteryl nonanoate, oleyl cholesteryl carbonate and cholesteryl chloride.

4,354,386

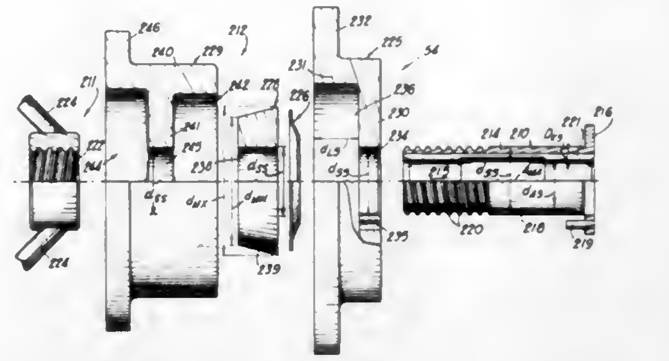
TIRE ASSEMBLY MOUNTING ADAPTER

Robert P. Newton, Tampa, Fla., assignor to Autodynamics, Inc., Tampa, Fla.

Continuation of Ser. No. 2,744, Jan. 11, 1979, Pat. No. 4,229,977, which is a division of Ser. No. 709,544, Jul. 28, 1976, Pat. No. 4,139,041. This application Oct. 28, 1980, Ser. No. 201,526

Int. Cl.^{3} G01M *1/06*

U.S. Cl. 73—487 **8 Claims**



1. A tire assembly mounting adapter with an adapter central axis for selectively mounting, on a drive spindle having a prescribed outside spindle diameter, a tire assembly having an inflated pneumatic tire mounted on a vehicular wheel rim with an effective axis of rotation comprising:

a support member defining a spindle receiving passage therethrough concentric about said adapter central axis and having a prescribed passage diameter substantially equal to the spindle diameter so that the drive spindle is slidably receivable therethrough to removably mount said adapter on the drive spindle with the adapter central axis coinciding with the spindle axis;

tire assembly positioning means for operatively and removably mounting the tire assembly on said support member independently of the drive spindle so that the effective axis of rotation of the tire assembly coincides with the adapter central axis and said tire assembly is rotatably fixed with respect to said tire assembly positioning means;

engaging means interconnecting said tire assembly positioning means with said support member while the tire assembly is mounted on said adapter for maintaining a fixed rotational position between said tire assembly positioning means and said support member and thus the tire assembly relative to said support member; and

keying means positively interconnecting the drive spindle and said support member when said adapter is slidably carried on the drive spindle so that the tire is positively rotated by the drive spindle about the spindle axis with the effective axis of rotation of the tire coinciding with the spindle axis.

4,354,387

APPARATUS IDENTIFICATION SYSTEM

William R. Jones, and Edgar F. Harrington, both of Houston, Tex., assignors to National Identification Bureau Inc., Houston, Tex.

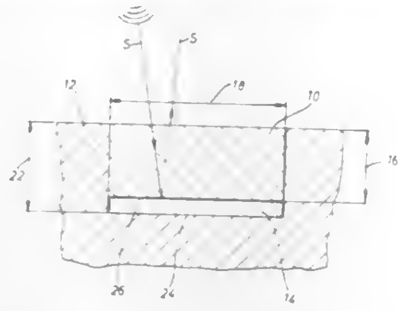
Continuation of Ser. No. 136,388, Apr. 1, 1980, Pat. No. 4,309,904. This application Aug. 31, 1981, Ser. No. 298,152

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—597 **10 Claims**

1. A system for coding and identifying an article, comprising a plurality of pellets selectively secured to the article such that

they may be identified by a time measurement of traveling waves having known characteristics passing through the pellets, said pellets having a selected material and thickness interrelationship.



4,354,388
METHOD FOR NONDESTRUCTIVE MATERIAL TESTING WITH ULTRASOUND PULSES

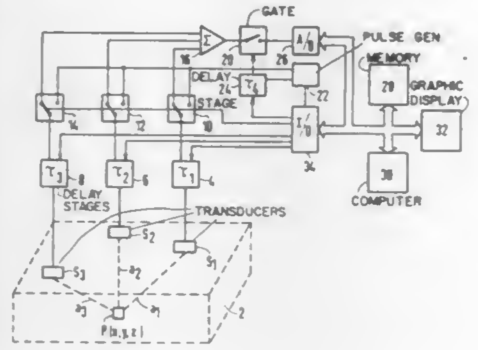
Heinrich Diepers, Höchstadt, and Joachim Niewisch, Nuremburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,330

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926173

Int. Cl.^{3} G01N *29/04*

U.S. Cl. 73—612 **11 Claims**



1. In a method for nondestructive material testing with ultrasound pulses which are introduced into a workpiece under test and are reflected by a fault, the position of which is derived from the propagation time of the ultrasound pulses and the echo pulses, the improvement comprising picking up the ultrasonic echo pulse reflected in the workpiece at the fault at three different points of the surface, said three points spaced from each other in such a manner so as to define only one single plane; electronically adding the electronic echo pulses in phase, each with a delay depending on its respective travel time; and feeding the resulting sum to an electronic memory through an electronic time window.

4,354,389
VAPOR PRESSURE SENSOR AND FLOW MEASURING DEVICES

Lloyd A. Baillie, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

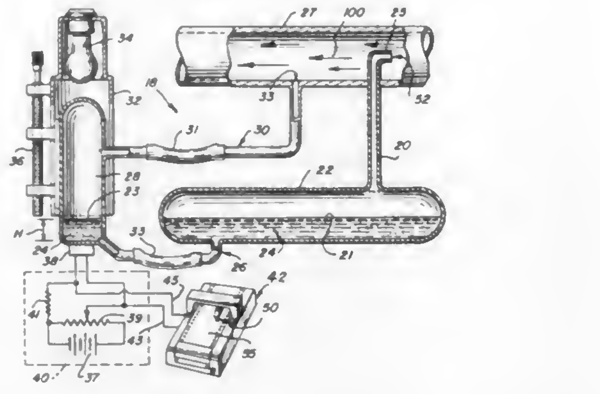
Filed Dec. 3, 1979, Ser. No. 99,346

Int. Cl.^{3} G01L *9/00*

U.S. Cl. 73—749 **5 Claims**

1. A device for measuring differences in pressure comprising: a reservoir, a measuring cell, a first liquid in said reservoir, a second liquid in said measuring cell, a transferring means providing liquid communication between said reservoir and said measuring cell, a first means for sensing a first pressure, a second means for sensing a second pressure, a detector means which responds to a modulated signal by producing a response signal of voltage potential, and a signal source for producing a signal of electromagnetic radiation; wherein

said reservoir is connected to said measuring cell by said transferring means in such a manner that at least a portion of said first liquid and said second liquid contained in said reservoir and said measuring cell, respectively, can flow therebetween, said first means is connected to said reservoir so that a first pressure impinging upon said first means is transmitted in a substantially undiminished degree to a surface of said first liquid, said second means is attached to said measuring cell so that a second pressure impinging on said second means is transmitted in a substantially undiminished degree to a surface of said second liquid; whereby changes in relative value between said first pressure and said second pressure produces changes in an amount of said second liquid in said measuring cell; said signal from said signal source is adapted to interact with said second liquid so that a characteristic of intensity of said signal is modulated to produce a modulated signal, wherein said characteristic varies with said amount of said second liquid, said detector means is adapted to respond to said characteristic of said modulated signal by producing a response signal that is changed in an amount related to changes in said characteristic of said modulated signal.



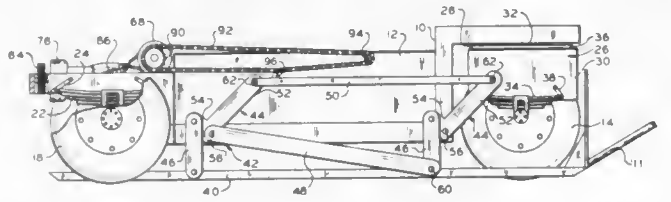
4,354,390
TRACTOR PULL SLED

Robert A. Chamberlain, Custar, Ohio, assignor to Northwestern Ohio Tractor Pullers Assoc., Bowling Green, Ohio

Filed Jun. 23, 1980, Ser. No. 162,083

Int. Cl.^{3} G01I *5/13*

U.S. Cl. 73—862.03 **4 Claims**



1. A tractor pull sled comprising a frame; ground engaging means including front and rear wheels adapted for relatively low frictional movement over the ground; spring suspension means between said frame and said ground engaging means, whereby the weight of the frame is initially supported through said suspension means by said ground engaging means; a skid shiftably mounted on said frame and adapted for relatively high frictional ground engagement; and expansible means between said frame and said skid responsive to the movement of said ground engaging means for shifting said frame relative to said skid and said ground engaging means to progressively transfer the weight of said frame from said ground engaging means to said skid at a rate of which is a function of the distance of forward travel of said sled, wherein said suspension means permits relative vertical movement of said frame and said rear wheels such that said rear wheels are in continuous ground engagement.

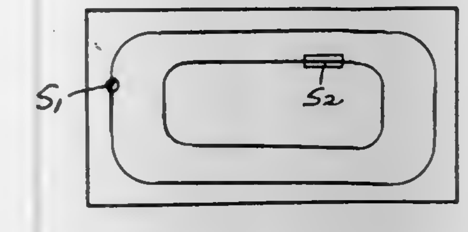
4,354,391
SAMPLING METHOD

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

Filed Dec. 24, 1980, Ser. No. 219,919

Int. Cl.^{3} G01N *1/04*

U.S. Cl. 73—863.11 **17 Claims**



1. A method for sampling a pyrometallurgically treated material for the analysis by a designated analytical instrument of a selected chemical element having an average initial elemental concentration c_o in the material before the treatment, said treatment causing the element to segregate and to become nonuniformly distributed in the material according to a fixed segregation pattern so that in a first portion of the material the elemental concentration is above c_o while in a second portion of the material the elemental concentration is below c_o, the first and second portions joining together along an interface where the elemental concentration substantially equals c_o, comprising:

locating the interface; and

taking a sample of the treated material in a specified shape and size and oriented and spaced relative to the interface so that the sample as a whole has substantially the same elemental concentration as c_o.

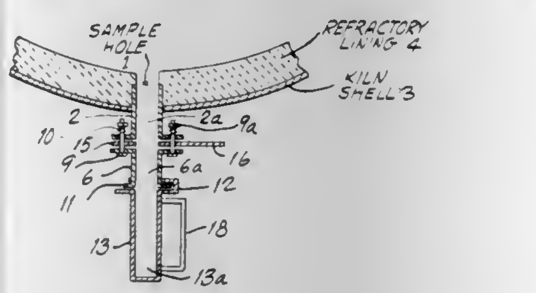
4,354,392
ROTARY KILN MATERIAL SAMPLING SYSTEM

Thomas W. Goodell, Harriman, and Forrest E. Clark, Lenoir City, both of Tenn., assignors to The Direct Reduction Corporation, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,259

Int. Cl.^{3} G01N *1/20*

U.S. Cl. 73—863.86 **8 Claims**



1. Apparatus for removing samples of materials being processed in a rotary kiln comprising:

first means passing through the kiln shell for defining a first chamber communicating with the kiln interior;

second means connected at one end to said first means exteriorly of the kiln shell for defining a second chamber communicating with said first chamber;

gate means disposed between said first and second means and movable between an open position and a closed position for respectively opening and closing off the communication between said first and second chambers; and

receptacle means removably connected to the other end of said means for receiving material samples passing through said first and second chambers from the kiln interior when said gate means is in said open position.

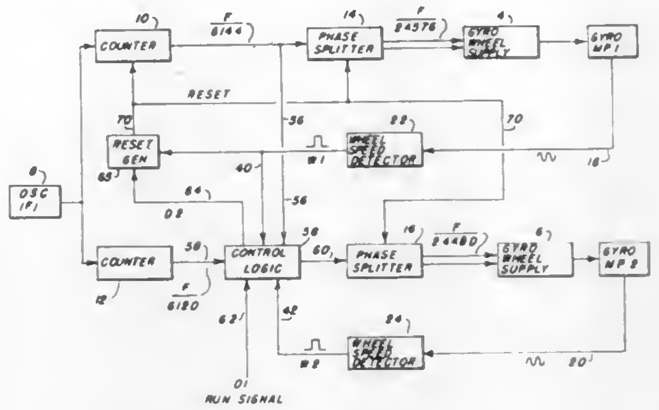
4,354,393
PHASE LOCKED GYROSCOPE WHEEL SUPPLY FOR SYNCHRONOUS HYSTERESIS MOTOR

Robert H. Acker, Packanack Lake; Frank L. Rosen, Parsippany, and Donald J. Weber, North Caldwell, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 30, 1980, Ser. No. 164,551

Int. Cl.^{3} G01C *19/10*

U.S. Cl. 74—5.37 **13 Claims**



1. The method of synchronizing two gyroscopes, one of which is driven by a synchronous motor from an AC voltage source at a first frequency and the other of which is driven by an AC voltage source at a second frequency which is higher than the first, each gyroscope having a pick-off which generates a signal relating the position of the gyroscope wheel to the gyroscope support, comprising the steps of:

bringing the first motor to speed by driving it at the first frequency and bringing the other motor to speed by driving it at the second frequency;

comparing the relative positions of the gyroscope wheels by comparing the signals generated by each pick-off;

and, when the pick-off signals coincide, switching the drive for the gyroscope operating at the second frequency from the source having the higher frequency to the source providing the first frequency.

10. The method of phase-locking a gyroscope wheel at start-up, the gyroscope wheel carried in a support and driven by a synchronous motor powered from an AC voltage supply at a given frequency, comprising the steps of:

driving the motor to bring it up to speed;

generating a signal which is proportional in phase to the position of the flywheel relative to its support; and

when the motor is up to speed, shifting the phase of the power supply voltage to establish a predetermined phase relationship between the drive voltage and the gyroscope wheel, in which the AC voltage supply comprises a resettable counter and the step of shifting the phase of the power supply voltage further comprises resetting the counter.

4,354,394
DEVICE FOR RIGHTING AND STABILIZING A GYRO VERTICAL

Peter Giesenberg, Uhldingen-Mühlhofen, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,392

Claims priority, application Fed. Rep. of Germany, May 1, 1980, 3000265

Int. Cl.^{3} G01C *19/50*

U.S. Cl. 74—5.44 **6 Claims**

1. A device for righting and stabilizing a gyro vertical comprising:

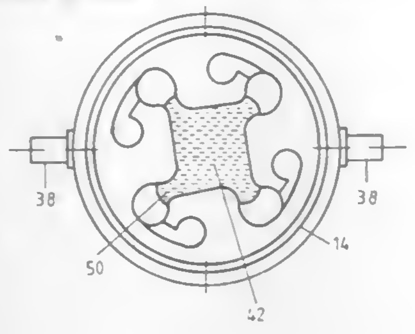
a disc arranged on the gyro housing, and perpendicular to the gyro spin axis, to be driven in the same sense as the gyro rotor

a cavity provided in the disc and

a liquid drop movable in the cavity,

the cavity being formed such that the liquid drop, with an inclination of the gyro spin axis with respect to the vertical, flows downhill into an edge portion of the cavity remote from the gyro spin axis, in which cavity it is taken along and lifted by the wall of the cavity in an angle range, thereby producing a righting torque,

characterized in that



(a) the cavity (**40**) is arranged centrosymmetrically to the gyro spin axis (**16**) and

(b) the surface of the liquid drop (**42**) is relatively large in the central position in the cavity (**40**) as compared to the surface resulting from an eccentric position of the liquid drop (**42**).

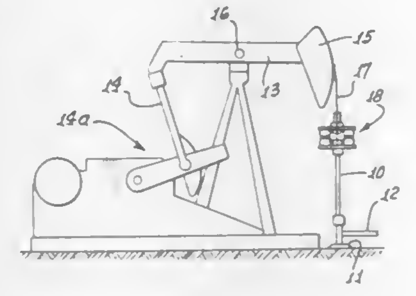
4,354,395
SHOCK ABSORPTION APPARATUS ASSOCIATED WITH WELL PUMP

John S. Page, Jr., 21372 Brookhurst St., #312, Huntington Beach, Calif. 92646

Filed Dec. 15, 1980, Ser. No. 216,321

Int. Cl.^{3} F16H ***21/32;*** **E21B** ***43/00***

U.S. Cl. 74—41 **20 Claims**



1. A well sucker rod shock absorber apparatus, the combination comprising

(a) upper and lower generally horizontal members to pass the rod at a vertically axial location,

(b) shock absorbing cushion means confined between the members, the cushion means defining an opening to pass the rod, the cushion means comprising flexible cushions located at transverse sides of said opening,

(c) the upper member adapted to receive loading exerted downwardly by the rod,,

(d) the lower member adapted to be supported and stroked up and down by a pump unit,

(e) said cushions defining hollows containing gas, and which are vertically compressible against resistance imposed by said gas, each cushion having an annular outer wall which bulges outwardly, said bulging outer wall height occupying a substantial portion of the spacing defined between said upper and lower members,

(f) guide rod means carried by one of said members and sleeve means carried by the other of said members to receive and guide said guide rod means, the guide rod means including two transversely spaced guide rods and the guide sleeve means including two transversely spaced guide sleeves, the rods confined in said opening between said cushions and at opposite sides of said vertically axially spaced location,

(g) each said cushion comprising bellows having multiple, upper and lower annular convolutions,

(h) and means interconnecting the cushions at opposite sides of said opening to intercommunicate the gas in said cushions at opposite sides of the opening,

(i) said guide rods defining a plane intersecting all of the cushions,

(j) whereby the cushions remain openly and peripherally unobstructed to access for adjustment or replacement.

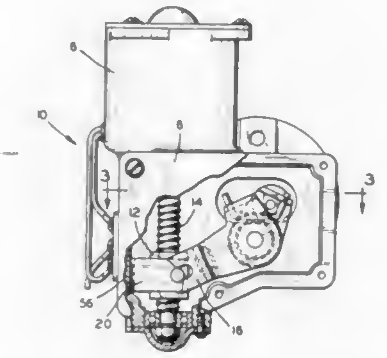
4,354,396
SPEED CHANGE MECHANISM WITH LOAD BEARING SADDLE

James A. Charles, Hagerstown, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed May 22, 1980, Ser. No. 152,277

Int. Cl.^{3} F16H ***25/18***

U.S. Cl. 74—104 **7 Claims**



1. In a speed change mechanism having a gear change yoke actuable by a nut screw assembly, said nut being axially movable along said screw, said mechanism including a housing having internal walls; an improvement comprising a load bearing saddle mounted on the nut and engageable with said yoke, said saddle further comprising a radial load-bearing surface, wherein said surface is in sliding engagement with at least one of said internal walls of said housing.

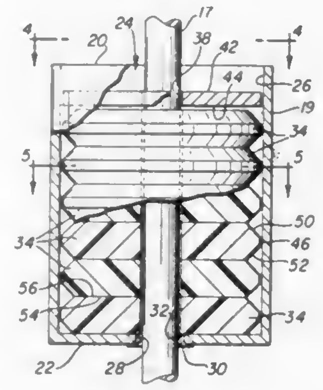
4,354,397
SUCKER ROD SHOCK ABSORBER

Paul W. Fix, P.O. Box 192, Florissant, Colo. 80816

Filed May 9, 1980, Ser. No. 148,544

Int. Cl.^{3} F16H ***21/32;*** **G05G** ***3/00***

U.S. Cl. 74—108 **6 Claims**



1. In a pumpjack unit having a walking beam which reciprocates a bridle, wherein the bridle is connected to a polished rod for reciprocating a downhole pump, the improvement comprising:

a shock absorber apparatus connected between the polished rod and bridle; said shock absorber including an upwardly opening cylindrical housing which terminates at the lower end thereof in an apertured bottom plate member; an apertured upper plate member received within said cylindrical housing in spaced relationship respective to said bottom plate member; and a plurality of concentrically arranged, resilient packer members stacked within said cylindrical housing in sandwiched relationship between said upper and bottom plate members; a longitudinally extending axial passageway formed through said upper and bottom plate members and through said packer members and axially receiving the polished rod therethrough;

clamp means supporting the polished rod from the upper plate member, and means by which the cylindrical housing is supported from the bridle, whereby the upper and lower plate members are biased towards one another, and compress the packer elements therebetween with a force equal to the tension in the polished rod;

the durometer of the outermost packer members is higher as compared to the durometer of the innermost packer members;

said packer members are circular with said axial passageway extending through the center thereof, the inside diameter of the packer being of a size to slidably receive the polished rod therethrough, the outside diameter of the packer being of a size to be loosely received by the interior peripheral sidewall of the cylindrical housing.

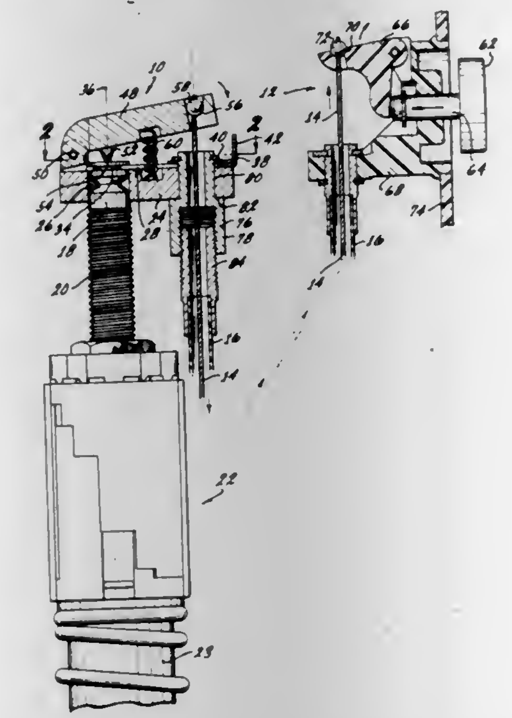
4,354,398
CONTROL MECHANISM FOR HYDRAULIC LOCKING DEVICE

Clyde R. Porter, Los Angeles, Calif., assignor to P. L. Porter Co., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 939,383, Sep. 5, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,356

Int. Cl.^{3} F16C ***1/10***

U.S. Cl. 74—501 R **1 Claim**



1. A control mechanism for use with a hydraulic device employed to control relative movement between two members, said hydraulic locking device including a hydraulic cylinder connected to one of the members, a piston rod extending outwardly through one end of the hydraulic cylinder to an exposed end of the piston rod and connected to the other of the two members, and an operating rod operative when moved to a release position with respect to the piston rod to release the hydraulic locking device so it can be reset to alter the separation between the two members, said control mechanism comprising in combination:

a conduit having a proximal end associated with the piston rod and having a distal end;

a cable extending through said conduit, slidable within it, and including a proximal end and a distal end;

push button means affixed to the distal end of said conduit for moving said cable under control of an operator through a stroke with respect to said conduit;

lever means affixed to the piston rod, connected to the proximal end of said conduit, coupled to the proximal end of said cable and responsive to movement of said cable to move the operating rod to the release position with respect to the piston rod, the movement of the operating rod being less than the movement of said push button means to achieve a mechanical advantage;

a spring clip secured to said lever means and retaining said lever means to the exposed end portion of the piston rod to permit said lever means to be attached to the piston rod without the use of tools;

a ball affixed to said cable and pivotably and removably engaging said lever means to avoid bending of the cable as said lever means is moved and to facilitate disengagement of said cable from said lever means when said cable is cut;

said conduit further comprising a threaded collar connecting the proximal end of said conduit to said lever means for altering the length of the conduit under control of an operator to preset the positions of the distal end of the cable at the beginning and the end of the stroke, with respect to the distal end of said conduit;

said spring clip slidably mounted on said lever means to permit an operator selectively to slide said spring clip from a first position in which said spring clip engages said piston rod for retaining thereto said lever means to a second position in which said spring clip does not engage said piston rod, said spring clip shaped to urge in the first position frictional engagement of said threaded collar with said lever means to prevent rotation of said threaded collar, and shaped to release said threaded collar when moved to said second position, to permit rotation of said threaded collar for altering the length of the conduit.

4,354,399
HANDLE BAR FIXING DEVICE FOR A BICYCLE

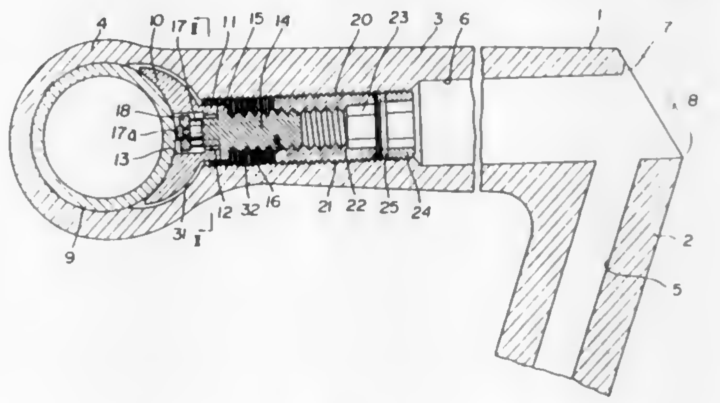
Hitoshi Katayama, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 5, 1979, Ser. No. 91,366

Claims priority, application Japan, Nov. 29, 1978, 53-164931[U]; Nov. 29, 1978, 53-164932[U]

Int. Cl.^{3} B62K ***21/12***

U.S. Cl. 74—551.1 **5 Claims**



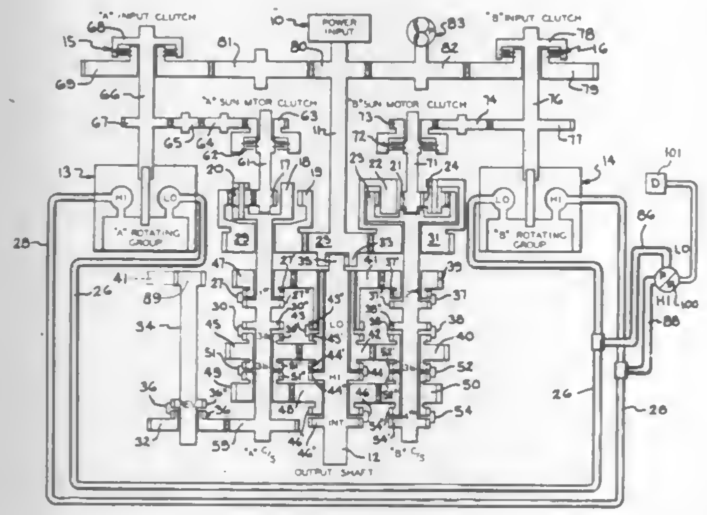
1. A handle bar fixing device for fixing a handle bar to a handle stem of a bicycle comprising: a handle stem having a lug and a cylindrical holding portion provided at an utmost end of said lug for holding a handle bar, said lug having a through bore, said through bore opening at one end thereof onto an inner periphery of said holding portion and at another end onto a top of said handle stem, and having at its inner periphery a partial screw thread, said lug supporting, through a control member mounted therein, a pusher at a first end portion of said through bore opening into said holding portion in a manner permitting said pusher to be non-rotatable movable axially of said lug, said pusher contacting with a handle bar inserted into said holding portion for urging said handle bar radially of said holding portion, and carrying a screw member,

said control member being housed within said through bore at said lug and having a first screw thread screwable with said partial screw thread at the through bore, a second screw thread screwable with said screw member, and a control recess through which said control member is rotatable from a second end portion of said through bore opening onto said top of said handle stem, said control member being supported to said lug through said first screw thread screwing with said screw thread at the through bore, so that said control member is rotatably controlled through said control recess to move said screw member axially of said lug, whereby said pusher moves to fix said handle bar to said holding portion.

4,354,400
HYDROMECHANICAL TRANSMISSION

Willard C. Baker, Columbus, Ohio, assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 878,346, Feb. 16, 1978, abandoned.
This application Sep. 2, 1980, Ser. No. 182,915
Int. Cl.^{3} F16H *47/04, 37/06*
U.S. Cl. 74—687 **18 Claims**



1. A transmission comprising:

an input shaft, first and second countershafts drivable by said input shaft, and an output shaft, said output shaft having at least one gear and each of said countershafts having at least one gear in constant mesh with an output shaft gear, at least one of said countershaft and output shaft gears being clutchable to its associated shaft, whereby said output shaft and at least one of said countershafts are selectively engageable;

first and second planetary gear assemblies, each of said assemblies comprising a sun gear component, a carrier component, a plurality of planet gears mounted on said carrier component and adapted for driving engagement with said sun gear component, and a ring gear component adapted for driving engagement with said planet gears;

means for drivingly engaging said first and second planetary gear assemblies, said means comprising an hydraulic system having first and second interconnected hydraulic units, said first hydraulic unit drivably associated with said first planetary gear assembly and said second hydraulic unit drivably associated with said second planetary gear assembly;

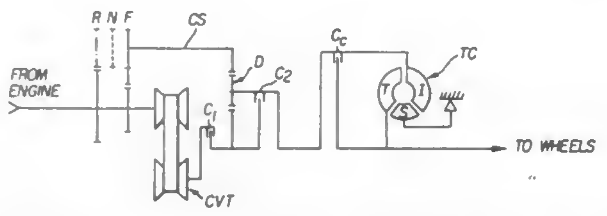
wherein one of said first planetary gear assembly components and a different one of said second planetary gear assembly components are drivingly engaged with said input shaft; and

wherein one of said first planetary gear assembly components is drivingly engaged with said first countershaft and one of said second planetary gear assembly components is drivingly engaged with said second countershaft.

4,354,401
AUTOMATIC TRANSMISSION FOR AUTOMOBILES

Takashi Omitsu, Troy, Mich., assignor to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Apr. 25, 1980, Ser. No. 143,896
Int. Cl.^{3} F16H *37/00*
U.S. Cl. 74—689 **8 Claims**



1. An automatic transmission for vehicles having an internal combustion engine and driving wheels comprising:

a continuously variable transmission device connected with an engine output for continuously variably transmitting a partial torque in accordance with conditions of vehicle speed and degree of engine throttling;

a counter shaft connected with the engine output and transmitting the remainder of the torque from the engine;

a combiner gear mechanism receiving the torque from the engine through said counter shaft and from said continuously variable transmission device;

a fluid torque converter for converting torque from the combiner gear mechanism and transmitting the torque to said driving wheels;

reverse drive means interposed between said engine and said torque converter for reversely transmitting the torque from the engine to said driving wheels;

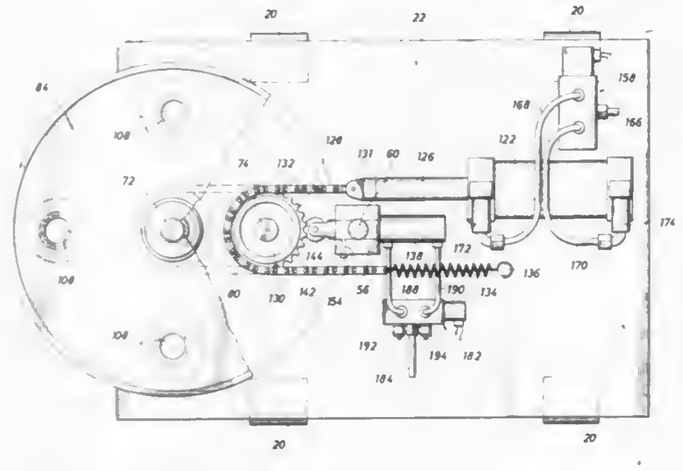
a first clutch operatably interconnecting said continuously variable transmission and said combiner gear mechanism; and

a second clutch and third clutch operatively interconnecting said combiner gear with said torque converter.

4,354,402
VOLUMETRIC APPARATUS WITH IMPROVED DRIVE SYSTEM

John W. Scott, 1510 Johanna, Houston, Tex. 77055

Filed Sep. 14, 1979, Ser. No. 75,427
Int. Cl.^{3} B23Q *17/00;* **F16H** *27/02*
U.S. Cl. 74—822 **10 Claims**



1. Rotary apparatus comprising:

a stationary assembly;

a rotary assembly mounted on said stationary assembly for rotation relative thereto and including rotary shaft means;

reciprocating drive means comprising a first pneumatic piston and cylinder assembly, said piston and cylinder assembly having one member fixed with respect to said stationary assembly and another member reciprocable with respect to said fixed member;

a driven member comprising a sprocket wheel mounted on said shaft means;

link means drivingly connecting said driven member to said drive means for rotation in a first direction upon movement of said reciprocable member of said first piston and cylinder assembly generally away from said sprocket wheel and for rotation in a second direction opposite the first direction upon reciprocating movement of said reciprocable member generally away from said sprocket wheel, said link means comprising

a chain having one end secured to said reciprocable member of said first piston and cylinder assembly, a mid portion extending circumferentially about a portion of the periphery of said sprocket wheel in contact therewith, and the other end secured to said stationary assembly,

a tension spring interconnecting said other end of said chain to said stationary assembly to keep said chain taut between said ends thereof;

clutch means interconnecting said sprocket wheel and said shaft means and operative upon rotation of said driven member in said first direction to cause rotation of said shaft means therewith, and upon rotation of said driven member in said second direction, to permit relative rotation between said driven member and said shaft means, whereby said shaft means is rotated by said drive means in temporally spaced increments; and

indexing synchronization means comprising

an indexing wheel mounted on said shaft means for joint rotation therewith and having a generally radially outwardly facing peripheral indexing surface including at least one convex segment and at least one concave segment,

a second pneumatic piston and cylinder assembly operatively associated with said shaft means for positively stopping rotation of said shaft means generally at the end of each stroke of said reciprocable member of said first piston and cylinder assembly generally away from said sprocket wheel, said second piston and cylinder assembly having one member fixed with respect to said stationary assembly and the other member reciprocable with respect to said fixed member generally toward and away from said indexing surface, and

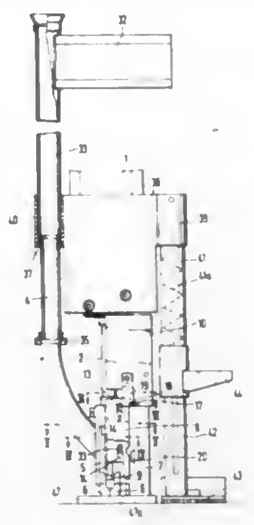
detent means carried by the end of said reciprocable member of said second piston and cylinder assembly and adapted, when extended toward said indexing surface, to ride along said convex segment to permit rotation of said indexing wheel and to engage in said concave segment to stop rotation of said indexing wheel.

4,354,403
SCREW DRIVER APPARATUS

Gerhard Boëgel, Heerbrugg, and Max Sahli, Altstaetten, both of Switzerland, assignors to SFS Stadler AG, Heerbrugg, Switzerland

Filed Jan. 26, 1979, Ser. No. 6,634
Claims priority, application Austria, Feb. 14, 1978, 1063/78
Int. Cl.^{3} B23P *19/00*
U.S. Cl. 81—57.37 **7 Claims**

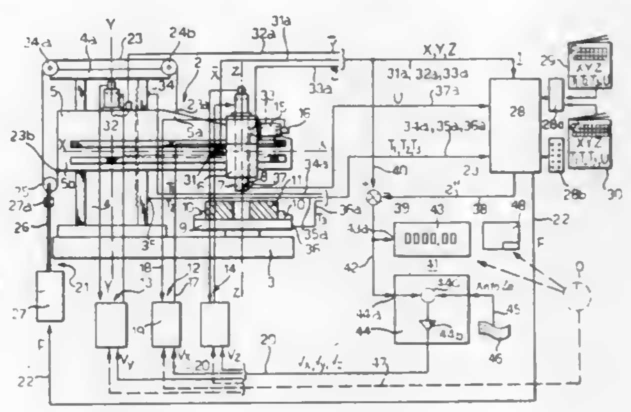
1. Screw driving apparatus comprising a first member having a pair of jaws pivotally mounted thereon for holding a screw to be driven and for releasing said screw upon pivotal movement of said jaws; chute means for delivering a screw to between said jaws to be held thereby in a position to be driven; driver means for engaging a screw held by said jaws to effect driving thereof; control means mounted for movement together with said driver means for effecting pivotal movement of said jaws to release said screw as said driver means is brought into driving engagement therewith; and magnet means located within said chute means adjacent said jaws for holding a screw to be driven against the force of gravity in position for engagement by said driver means.



4,354,404
ARRANGEMENT FOR INCREASING THE PRECISION OF A MACHINE TOOL

Francesco C. Ramusino, Milan, Italy, assignor to Innocenti Santeustacchio S.p.A., Franchi, Italy

Filed Jan. 23, 1980, Ser. No. 114,696
Claims priority, application Italy, Mar. 27, 1979, 21346 A/79
Int. Cl.^{3} B23B *3/10, 11/00*
U.S. Cl. 82—2 D **7 Claims**



1. In a machine tool installation in which the tool of a machine tool is positioned relative to a workpiece by displacement of carriage means of the machine tool to coordinate positions intended to correspond to a desired tool position, an arrangement for at least partially compensating for deviation between the actual and desired tool positions such as caused by elastic deformation in the machine tool, said deviation being composed of component deviations the magnitudes of which are dependent on the current working state of the machine tool, said arrangement comprising:

a mechanical force generator arranged to physically act upon the machine tool to cause displacements in the position of the tool relative to the workpiece, the magnitudes of said displacements being dependent on the value of a control signal fed to said mechanical force generator,

transducers attached to the machine tool and arranged to generate output signals representing the values of a number of parameters characterizing the angular and linear working state of the machine tool, said parameters including the coordinate positions of said carriage means, and

electronic signal processing means connected to receive said output signals from said transducers and including memory means arranged to store predetermined data interrelating values of said parameters representing the machine working state with values of said control signal appropriate to develop working state parameters and cause said mechanical force generator to cancel said component deviation, said predetermined data interrelating values being determined values of the machine working state dependent on particular working conditions, said processing means being arranged to monitor the current values of said working state parameters as represented by said output signals and to derive therefrom the current appropriate value of said control signal, by utilizing and comparing the current values of said stored data, and the said processing means further including output means operative to output said control signal with its value set to said current appropriate value to control said mechanical force generator and compensate for both angular and linear displacements of the machine tool.

7. In a machine tool installation, an arrangement for increasing the precision of a machine tool by compensating for angular and linear component deviations in tool positioning caused by factors which vary in their effect in dependence on the current working state of the machine tool, said arrangement comprising:

mechanical force generator means responsive tó an input control signal fed thereto to physically act upon the machine tool in a manner such as to cancel component deviations,

sensor means connected to said machine tool and arranged to generate output signals representative of the current angular and linear working state of the machine tool,

electronic signal processing means connected to receive said output signals and including memory means arranged to store predetermined data interrelating said working state parameter values with corresponding control signal values being determined values of the machine working state dependent upon particular working conditions appropriate to cause the cancellation of said component deviations, the processing means being operative to utilize and compare said predetermined data to form said control signal with a value appropriate for the current working state of the machine tool as represented by said sensor output signals, and

means feeding said control signal from said processing means to said mechanical force generator means physically acting on the machine tool to compensate for both angular and linear displacements of the machine tool.

4,354,405

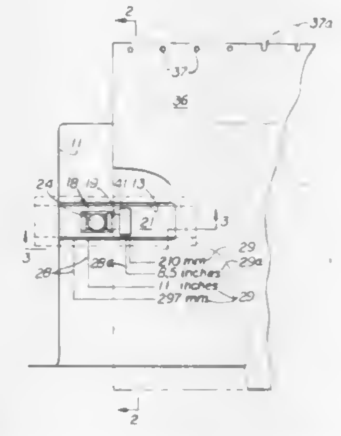
PUNCH EDGE GUIDE INDICATOR AND METHOD

Elmer G. Szanto, Saratoga; George Wu, San Jose, and Salvatore Barone, Santa Cruz, all of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Dec. 8, 1980, Ser. No. 214,012

Int. Cl.^{3} B26F ***1/06***

U.S. Cl. 83—13 **8 Claims**



8. A method of setting the side edge guide of a punch for paper and other flexible material so that the endmost holes punched in said material are equally distant from the end margins of said material despite accumulations for tolerances in the assembly of parts for such punch, said punch having à platen formed with the transverse window, a plurality of punch pins spaced transversely across the inner end of said platen member to punch holes in said material, actuating means for actuating said punch pins, an edge guide for one edge of said material extending above the level of said platen, a support supporting said guide member for movement along said window, said platen being marked with first indicia indicating different lengths of material to be punched, said method comprising providing a gage sheet of a given length formed with gage holes of the same dimension as the holes punched by said pins and at the same spacing as said pins, said given length being of a length corresponding to one of said different lengths of material, the endmost gage hole being the same distance from the end of said gage sheet as the endmost hole in said material of given length is spaced relative to the edge margin of said material, actuating said actuating means so that said punch pins fit properly into said gage holes, adjusting the position of said edge guide to fit against the edge margin of said gage sheet, and applying second indicia to said support aligned with the particular one of said first indicia corresponding to the length of said gage sheet.

4,354,406

METHOD OF AND DEVICE FOR FORMING OPENINGS IN A GELATINOUS SUBSTANCE

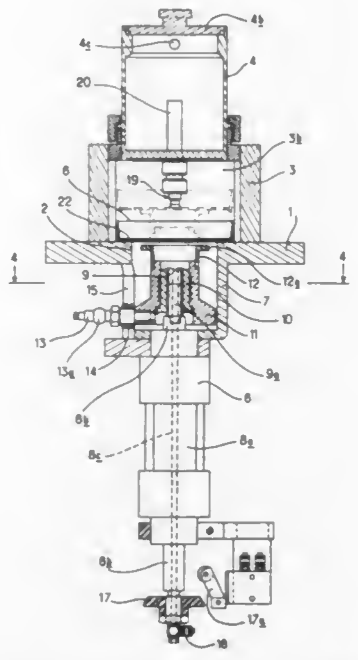
Alain Brun, Pavillons sous Bois; Louis Marcotte, Chevilly la rue Rungis, and Bela Szarazi, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Jan. 13, 1981, Ser. No. 224,501

Claims priority, application France, Jan. 14, 1980, 80 00693

Int. Cl.^{3} B26F ***1/00***

U.S. Cl. 83—24 **17 Claims**



1. A method of forming openings in a gelatinous substance, comprising the steps of: causing a hollow punch tool to penetrate the gelatinous substance perpendicularly to the surface and to the bottom of the gelatinous substance along a strictly rectilinear path along the axis of the tool; when the tool has arrived at least near the bottom effecting relative motion of low amplitude between the gelatinous substance and the tool in a direction substantially perpendicular to the path of penetration; and then withdrawing the pellet cut out from within the hollow tool.

4,354,407

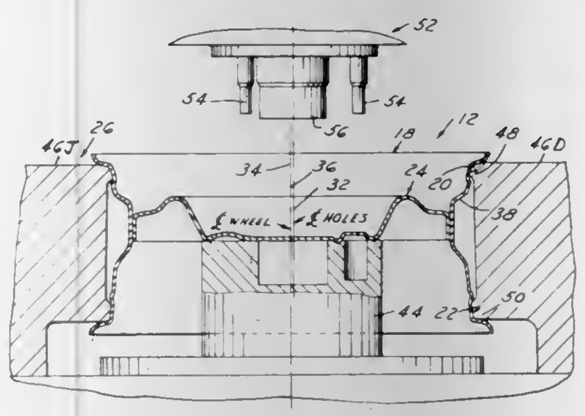
METHOD OF WHEEL MANUFACTURE FOR CORRECTING ROTATIONAL NON-UNIFORMITY OF A PNEUMATIC TIRE AND WHEEL ASSEMBLY AND APPARATUS FOR PERFORMING SUCH METHOD

Anwar Daudi, East Lansing; John H. Golata, Lansing, and Doarde G. Triponi, East Lansing, all of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Division of Ser. No. 104,319, Dec. 17, 1979, Pat. No. 4,279,287. This application Feb. 17, 1981, Ser. No. 234,651

Int. Cl.^{3} B26F ***1/02***

U.S. Cl. 83—55 **4 Claims**



2. A method of forming mounting openings in a disc vehicle wheel having a rim with a tire bead seat region and a wheel mounting disc mounted internally of said rim, said method comprising the steps of locating said wheel on a predefined first axis by clamping said bead seat region coaxially with said first axis and then forming mounting openings in said disc on a second axis offset by a prespecified distance from said first axis such that said mounting openings formed in said wheel disc are eccentrically offset by said prespecified distance from said bead seat region.

4,354,408

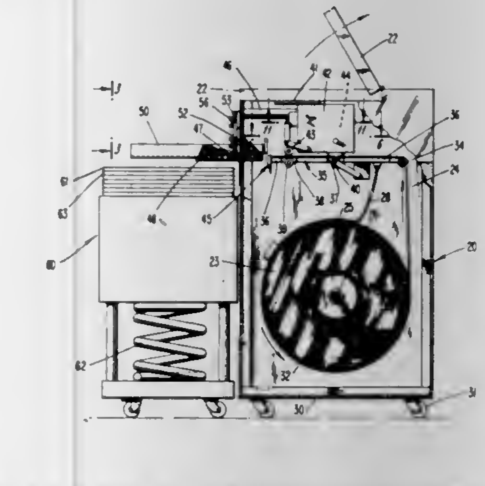
PLACE MAT PRODUCING AND DISPENSING APPARATUS

Clyde R. Carte, Hudson Falls, N.Y., assignor to Valcour Imprinted Papers, Inc., Glens Falls, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,546

Int. Cl.^{3} B26D ***7/06***

U.S. Cl. 83—162 **10 Claims**



1. In an apparatus for dispensing place mats of thin sheet material from a supply roll of a web of said sheet material, including

(a) a support;

(b) means for mounting said supply roll on said support;

(c) a horizontal, substantially planar table carried by said support;

(d) drive roll means operating on said web in a substantially planar condition for drawing said web of said sheet material in a forward path over said table;

(e) a motor for driving said drive roll means;

(f) cutter means disposed at the forward end of the table to cut off a predetermined length of said web, said length constituting one of said mats,

the improvement comprising

(g) curved guide means positioned forward of said cutter means and cooperating with said table to receive said length of web and curl upwardly the side margins of said length of web enabling said web to extend substantially horizontally outwardly from said apparatus in cantilever fashion with its inner end supported by said curved guide means, said drive means maintaining said web in a flat condition when cut by said cutter means and said curved guide means curling said side margins after said web has passed said cutter means.

4,354,409

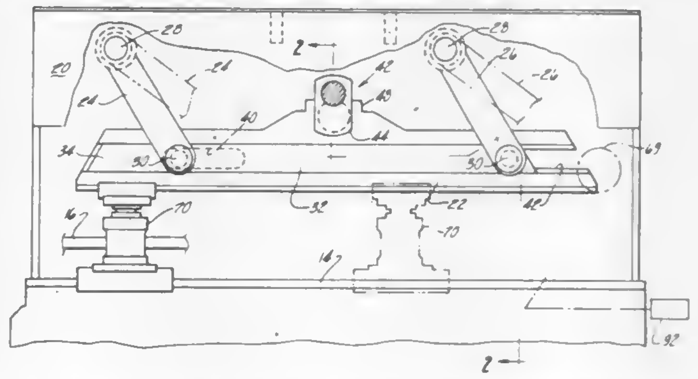
FLYING CUTOFF MACHINE

John F. Riera, 3689 Sandburg, Troy, Mich. 48084; Billy J. Bielawski, Sr., 8065 Robinwood, Detroit, Mich. 48234, and John J. Pavelec, 4155 Three Oaks, Apt. 2A, Troy, Mich. 48098

Filed Feb. 3, 1981, Ser. No. 231,247

Int. Cl.^{3} B23D ***25/06***

U.S. Cl. 83—285 **13 Claims**



1. A cutoff machine for severing elongated material moving continuously longitudinally of its length and having a die carriage attachable to the material for movement therewith including a transversely reciprocating cutting die for severing material during its movement, comprising: a frame having a bed portion slidably supporting said carriage member, an elongated ram extending parallel to said bed, means supporting said ram for movement in spaced relation to said bed including a slide member connected to said ram for relative sliding movement longitudinally of said ram and a pair of links attached to said slide member and to said frame to support said slide member for swinging movement parallel to said bed, rotating drive means having a crank operatively connected to said ram for reciprocating said ram relative to said slide member and moving said ram in an orbital path relative to said bed, and guide means on said ram connecting said cutting die for sliding movement longitudinally of said ram and transverse reciprocating movement relative to said bed during orbital movement of said ram relative to said bed.

4,354,410

STRAIGHT LINE INSULATION CUTTER ASSEMBLY

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Dec. 6, 1977, Ser. No. 858,066

Int. Cl.^{3} B26D ***1/18***

U.S. Cl. 83—471.3 **3 Claims**

1. Sheet material cutting apparatus comprising:

a first elongated support member;

a first cutting tool for cutting sheet material;

a sheet material support surface;

first and second guide members disposed generally parallel to each other, said support surface being disposed generally horizontally in between said guide members, and said guide members spaced a predetermined distance apart and disposed in a same, generally horizontal, plane;

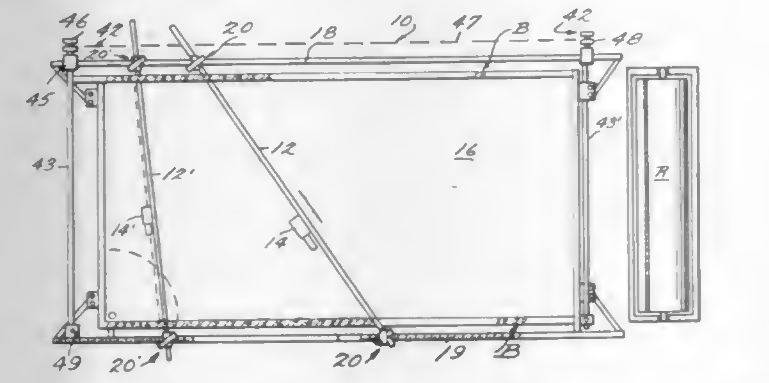
means for pivotally mounting said first support member, for pivotal movement about a generally vertical axis, with respect to each of said first and second guide members;

means for providing linear movement of said pivotally mounting means with respect to said first and second guide members, along said first and second guide members;

means for providing linear relative movement between said first support member and said pivotally mounting means;

means for mounting said first cutting tool on said first support member for movement along said first support member, and means for moving said cutting tool along first support member, so that cutting of sheet material, disposed on said support surface, along a line parallel to said first support member is effected;

and



means for moving said first guide member with respect to said second guide member so that they stay parallel to each other, said moving means comprising: a pair of lead screws extending between said first and second guide members; means for rotating said lead screws in tandem; and means associated with each lead screw and one of said guide members for transforming rotation of said lead screws into linear movement of said guide members relative to each other, said transforming means comprising a traveling nut associated with each lead screw and one of said guide members; and wherein said moving means further comprises a pair of parallel guiding edge surface manifestations of said said support surface disposed parallel to said lead screws, guide roller means associated with each nut for engaging said guiding edge surface manifestations, and means operatively connecting each nut to said guide roller means for effecting guided movement of said nuts with respect to said support surface.

4,354,411

COLD SHEARS AND METHOD FOR CUTTING BILLETS AND BARS

Karl Griese, Düsseldorf; Emil F. Kersting, Ratingen, and Rolf Schulte, Düsseldorf, all of Fed. Rep. of Germany, assignors to Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,605

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911765

Int. Cl.³ B23D *15/02*

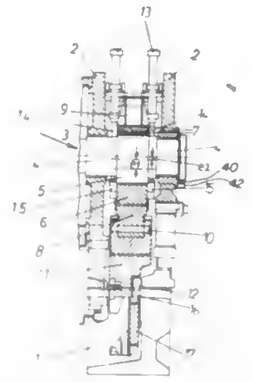
U.S. Cl. 83—862 **6 Claims**

1. A method for shearing bars having a large cross-section, comprising:

(a) placing a bar to be sheared over a stationary shear blade;

(b) reciprocatingly moving a movable shear blade between upper and lower limits above said bar, so as not to contact said bar, by continuously rotating a crankshaft having an attachment connected to said movable shear blade; and

(c) in response to the rotational position of said crankshaft, lowering said movable shear blade, on an up stroke of said reciprocating motion by rotating an eccentric mounted between said crankshaft and said movable shear blade to increase the distance between said movable shear blade and said crankshaft to lower said upper and lower limits by a distance sufficient to cause said movable shear blade to separate said bar entirely on the next successive down stroke of said reciprocating motion.



4,354,412

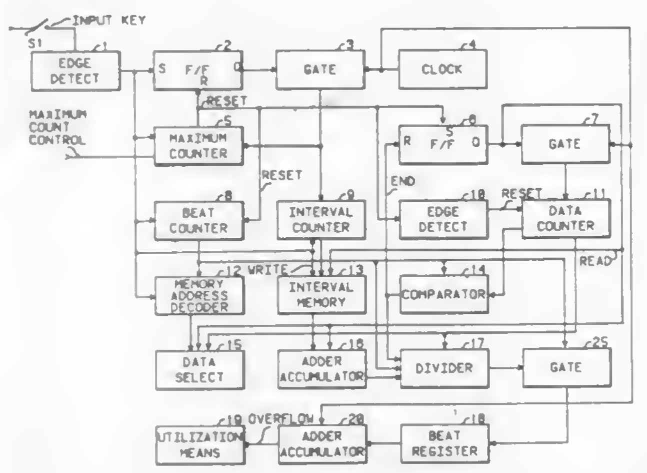
ADAPTIVE METRONOME FOR AN AUTOMATIC RHYTHM GENERATOR

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed May 18, 1981, Ser. No. 264,763

Int. Cl.³ G10H *1/42, 7/00*

U.S. Cl. 84—1.01 **13 Claims**



1. Apparatus for generating an output sequence of signals having a time spacing corresponding to the average time spacing of a number of actuations of a control switch comprising;

detection means whereby a detect signal is generated each time said control switch is actuated,

interval generating means responsive to said detect signal whereby an interval number is generated corresponding to the time interval between successive generations of said detect signal,

an interval memory means for storing said interval number in response to said detect signal,

interval averaging means whereby a frequency number is generated corresponding to the average value of stored interval numbers read out of said interval memory means,

frequency generating means whereby said output sequence of signals is generated having a time spacing corresponding to said frequency number, and

utilization means whereby said output sequence of signals is used as a frequency control signal source.

4,354,413

ACCOMPANIMENT TONE GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENT

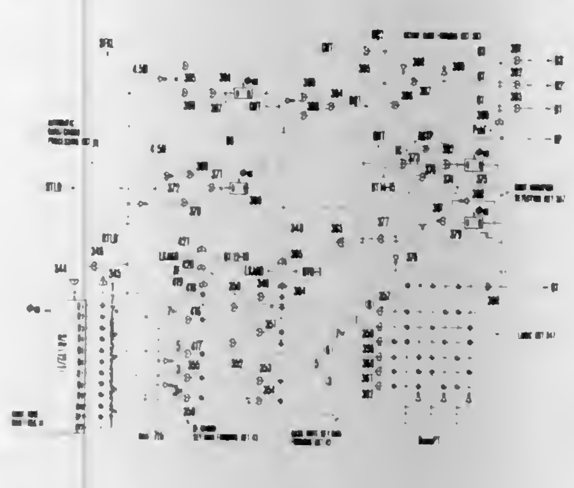
Hideo Suzuki, Kamimura, and Makoto Kaneko, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 27, 1981, Ser. No. 228,905

Claims priority, application Japan, Jan. 28, 1980, 55-8607; May 31, 1980, 55-73635; May 31, 1980, 55-73637

Int. Cl.³ G10H *1/38, 5/00, 7/00*

U.S. Cl. 84—1.01 **28 Claims**



1. An accompaniment tone generator for an electronic musical instrument comprising:

a keyboard having plurality of keys;

depressed key detection means for outputting, in accordance with a certain time division multiplex timing, a pulse at an assigned time slot corresponding to a key being depressed;

a shift register for successively shifting a pulse outputted from the depressed key detection means in synchronization with said time division multiplex timing;

key data formation means for taking out individual output pulses from a plurality of predetermined stages of said shift register in accordance with predetermined conditions; and

tone production means for generating, as an accompaniment tone, a tone signal of the note corresponding to the time slot of each pulse taken out by key data forming means.

4,354,414

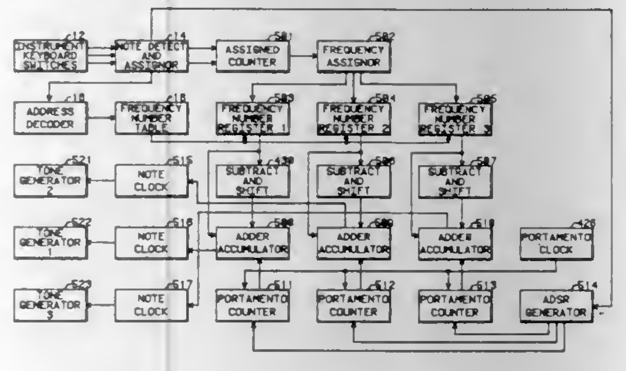
CONSTANT SPEED POLYPHONIC PORTAMENTO SYSTEM

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Glendale, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Nov. 3, 1980, Ser. No. 203,021

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **15 Claims**



1. In a keyboard operated electronic musical instrument having a keyboard containing a plurality of keyswitches, each operable in either an actuated or unactuated switch state, and having a number of tone generators operated at musical frequencies determined by a frequency number selected in response to an actuated keyswitch, apparatus for assigning the frequency numbers according to a priority logic whereby polyphonic portamento frequency effects are produced without frequency cross over transitions comprising;

a frequency number memory means for storing a table of frequency numbers,

detection means for scanning said plurality of keyswitches in each of a sequence of keyswitch scans wherein a detection signal is generated for each keyswitch in an actuated keyswitch state,

frequency addressing means for accessing a frequency number from said frequency number memory means in response to said detection signal,

a plurality of frequency storage means each of which corresponds to one of said number of tone generators,

an assignor means for storing a frequency number accessed from said frequency number memory means in a multiplicity of said plurality of frequency storage means according to said priority logic, and

a plurality of portamento control means each of which corresponds to one of said number of tone generators, for producing said polyphonic portamento frequency effects in response to frequency numbers stored in said plurality of frequency storage means.

4,354,415

PHASE-MODULATING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

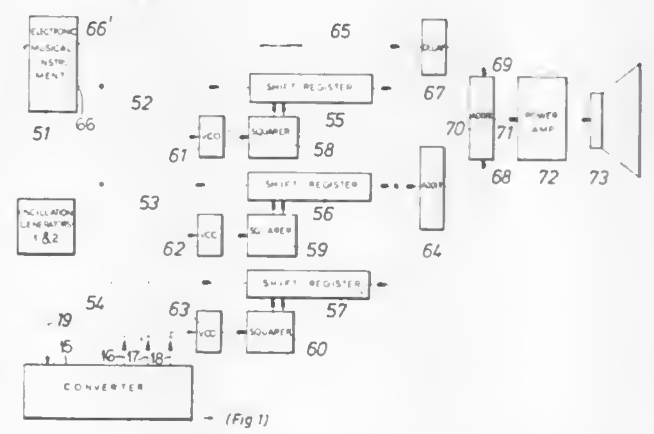
Werner Sonnabend, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,815

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952113

Int. Cl.³ G10H *1/043*

U.S. Cl. 84—1.24 **10 Claims**



1. In an electronic musical instrument comprising a source of audio-frequency oscillations, electroacoustic transducer means, three parallel channels connecting said source to said transducer means, shift registers in said channels stepped by respective high-frequency pulse generators with operating frequencies variable by control signals applied thereto, and modulating means connected to said pulse generators for subjecting said audio-frequency oscillations to delays varying at subaudible rates,

the improvement wherein said modulating means comprises:

waveform-generating means for producing a composite periodic signal synthesized from at least two additively combined sub-audio-frequency components;

a transmission path for said composite signal including cascaded first, second and third operational amplifiers interconnected by first and second RC networks of mutually different time constants introducing respective frequency-dependent phase shifts;

a first connection extending from a junction between said first operational amplifier and said first RC network to a frequency-adjusting input of a first of said pulse generators for supplying same with a first control signal;

a second connection extending from a junction between said second operational amplifier and said second RC network to a frequency-adjusting input of a second of said pulse generators for supplying same with a second control signal differing from said first control signal; and

a third connection extending from an output of said third operational amplifier to a frequency-adjusting input of a third of said pulse generators for supplying same with a third control signal differing from said first and second control signals.

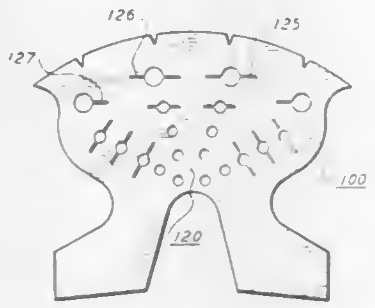
4,354,416
VIOLIN BRIDGE FOR A STRINGED INSTRUMENT

Carl Strait, R.R. #3, Box 85, Andover, N.J. 07821

Filed Oct. 19, 1981, Ser. No. 312,381

Int. Cl.^{3} G10D ***3/04***

U.S. Cl. 84—309 **4 Claims**



1. A bridge for use with a stringed instrument comprising:

(a) a generally fan-shaped upper body portion supported by a pair of legs having an inverted U-shaped indentation therebetween, said upper body portion having a smooth, curved upper surface with string receiving grooves symmetrically spaced thereon;

(b) a series of holes in said upper body portion extending from each string receiving groove generally downwardly to the top of said inverted U-shaped indentation; and

(c) the holes in each of said series being of substantially uniform diameter excepting the holes nearest to the string receiving grooves, which are substantially larger in diameter than the other holes.

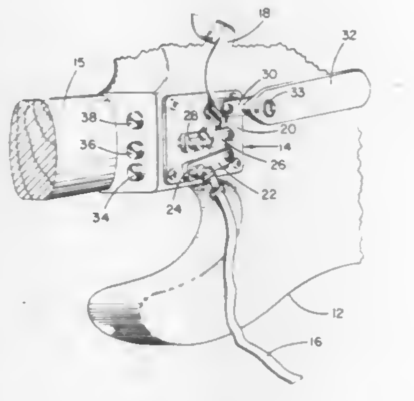
4,354,417
TONE CHANGER FOR STRINGED INSTRUMENT

Joseph Glaser, II, Rte. 6, Box 240, Leipers Creek Rd., Franklin, Tenn. 37064

Filed Sep. 16, 1981, Ser. No. 302,498

Int. Cl.^{3} G10D ***3/14***

U.S. Cl. 84—312 R **12 Claims**



1. In a stringed musical instrument that is held adjacent to a performer and has a plurality of tensioned strings that are strummed by the performer to produce music, the improvement comprising:

a first arm pivotally mounted on said instrument for pivotal movement in a first direction between first and second stop position;

first transmission means connected between said first arm and a first selected string of the instrument for varying the tension in the first selected string in response to movement of said first arm from the first stop position to the second stop position;

a second arm pivotally mounted on the instrument for pivotal movement in a second direction between first and second stop positions; and

second transmission means connected between said second arm and a second selected string of the instrument for varying the tension in the second selected string in response to movement of said second arm from the first stop position to the second stop position.

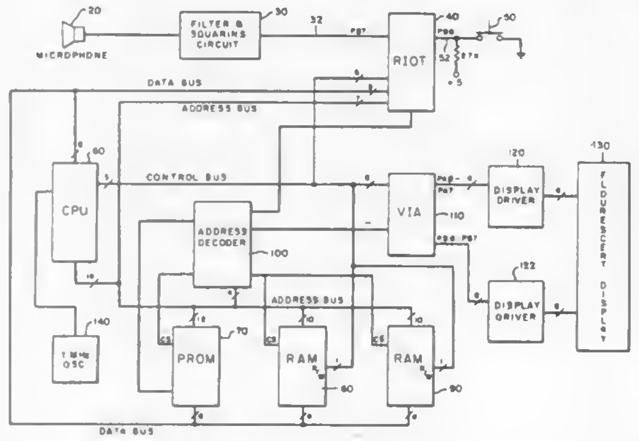
4,354,418
AUTOMATIC NOTE ANALYZER

John V. Moravec, Willow Springs; William P. Carlson, Hanover Park, and Michael J. McGowan, Lombard, all of Ill., assignors to Nuvatec, Inc., Lombard, Ill.

Filed Aug. 25, 1980, Ser. No. 180,860

Int. Cl.^{3} G10G ***7/02***

U.S. Cl. 84—454 **15 Claims**



1. An automatic note analyzer comprising:

means for receiving an input signal indicative of a musical tone;

means for automatically and repeatedly generating and updating a sequence of measured signals, each measured signal indicative of the measured value of a predetermined parameter of the input signal at a respective time;

means for automatically generating a target signal in response to the sequence of measured signals such that the target signal is indicative of an average of the measured value of the predetermined parameter of the input signal during a first time period;

means for automatically storing a signal corresponding to one of the measured signals at a second time subsequent to the first time period, only when said one of the measured signals deviates from a signal corresponding to the target signal by less than a predetermined amount; and

means for automatically modifying the target signal in response to the stored signal by an amount less than the difference between the target signal and the stored signal in order to cause the target signal more nearly to equal the stored signal.

4,354,419
SURVIVABLE TARGET ACQUISITION AND DESIGNATION SYSTEM

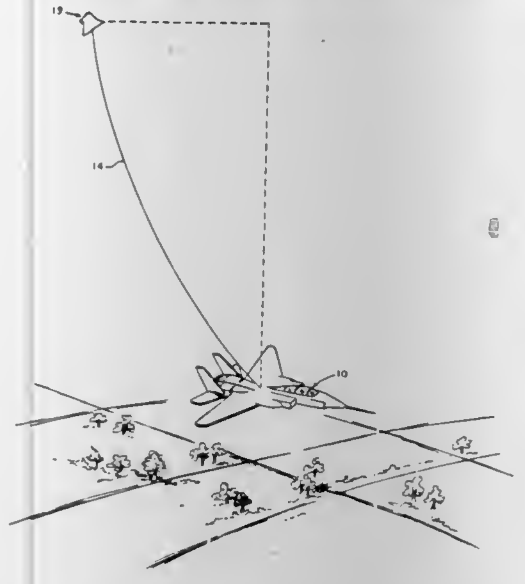
Charles F. Patterson, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,437

Int. Cl.^{3} F41G ***7/00, 7/30***

U.S. Cl. 89—1 A **10 Claims**

1. A target acquisition and designation system for use in a hostile environment, comprising: an aircraft; an unmanned glider towed by the aircraft; means controlling the glider to fly at an elevation substantially above the aircraft; a towline connecting the glider to the aircraft, said towline comprising at least one prestressed load-bearing tension member, and a flexible member surrounding the tension member having complementary airfoil sections forming a symmetrical streamlined exterior shape; electro-optical avionics means carried by the glider for acquiring and designating a target; and means for transmitting signals from the electrooptical avionics means to the aircraft.



4,354,420
FLUID MOTOR CONTROL SYSTEM PROVIDING SPEED CHANGE BY COMBINATION OF DISPLACEMENT AND FLOW CONTROL

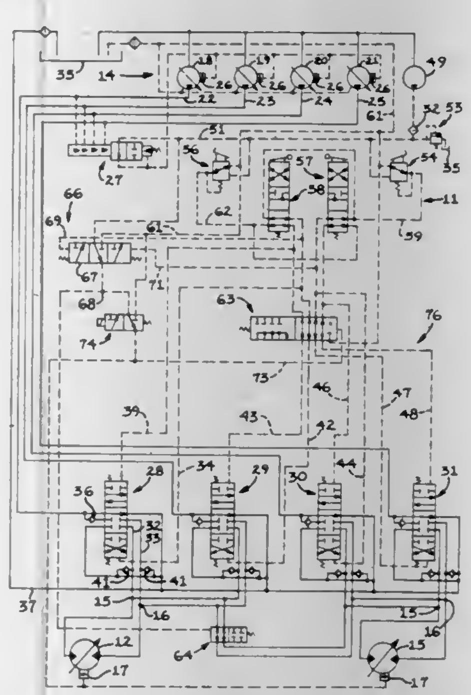
Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00928, § 371 Date Nov. 1, 1979, § 102(e) Date Nov. 1, 1979, PCT Pub. No. WO81/01311, PCT Pub. Date May 14, 1981

PCT Filed Nov. 1, 1979, Ser. No. 116,741

Int. Cl.^{3} F01B ***25/02***

U.S. Cl. 91—6 **6 Claims**



1. A control system (**11**) for at least one fluid motor (**12**) which is driven by pressurized working fluid and which has displacement adjustment means (**17**) for changing the displacement of said motor (**12**) to provide for speed changes, the control system having control means (**66**) for automatically actuating said displacement adjustment means (**17**) upon occurrence of a predetermined condition, a manually operable motor speed control valve means (**54**) for selectively varying the rate of flow of said working fluid to said motor (**12**) and including at least one additional manually actuatable control means (**58**) for selectively initiating said predetermined condition, wherein the improvement comprises:

flow adjusting means (**76**) for reducing the flow of working fluid which is available to said motor (**12**) when the displacement thereof is increased and for increasing the flow of working fluid available to said motor (**12**) when the displacement thereof is decreased, said flow adjusting means (**76**) also being actuated by said control means (**66**) upon occurrence of said predetermined condition, and wherein said control means (**66**) senses actuation of said additional control means (**58**) and responds thereto by causing said displacement adjustment means (**17**) to increase the displacement of said motor (**12**) and by causing said flow adjusting means (**76**) to reduce the flow of working fluid available to said motor (**12**).

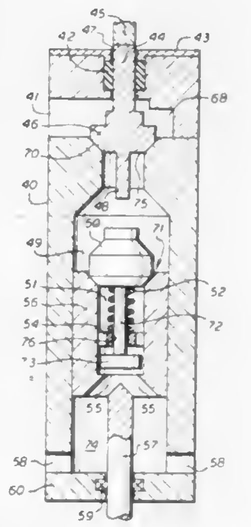
4,354,421
ENERGY RECOVERY RECIPROCATING ENGINE

J. Robert Sims, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 18, 1980, Ser. No. 170,250

Int. Cl.^{3} F15B ***21/02;*** **F01L** ***15/12, 15/16***

U.S. Cl. 91—39 **11 Claims**



1. A reciprocating engine comprising: at least one cylinder, an inlet port in said cylinder, located toward one end thereof, an outlet port in said cylinder, located distal to said inlet port, a first valve movably seated in said inlet port, means biasing said first valve into said inlet port, a piston slidably movable in said cylinder, drive rod means operably associated said piston to a crankshaft, said piston having a conduit therethrough and a second valve movably mounted in said conduit, toward said first valve and aligned to contact said first valve, said second valve being biased out of said conduit, whereby contact of said first valve and said second valve forces said second valve into said conduit and forces said first valve out of said inlet port, wherein the improvement comprises time adjustable means for biasing said first valve into said inlet port to close said inlet.

4,354,422
LOAD RELIEF DEVICE FOR POWER STEERING SYSTEM

Masao Nishikawa, Tokyo; Takashi Aoki, Wako, and Yoichi Sato, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1980, Ser. No. 141,104

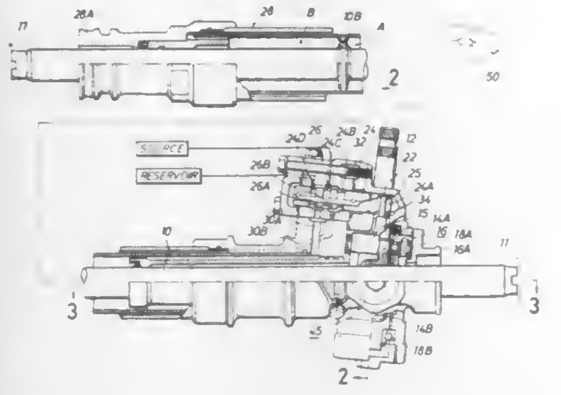
Claims priority, application Japan, Apr. 19, 1979, 54-48163

Int. Cl.^{3} F15B ***13/16, 15/22***

U.S. Cl. 91—358 R **15 Claims**

1. In a power steering system for a vehicle including: a source for supplying a hydraulic medium; a reservoir for accumulating said hydraulic medium; a hydraulic cylinder for providing power assistance to a steering operation of said

vehicle; said hydraulic cylinder having two chambers defined by a piston; a steering rack supporting said piston; a steering pinion operably engaged with said steering rack and adapted for rotary movement in unison with said steering operation of said vehicle; said steering rack being adapted to move linearly in response to said rotary movement of said steering pinion; a four-way valve of the open-center type having a neutral position in which said source is connected with said reservoir, and a power-assist position in which said source is selectively connected with either one of said chambers of said hydraulic cylinder; and said four-way valve being actuatable to be selectively set at either of said neutral and power-assist positions, in response to rotary movement of said steering pinion;



a load relief device comprising:

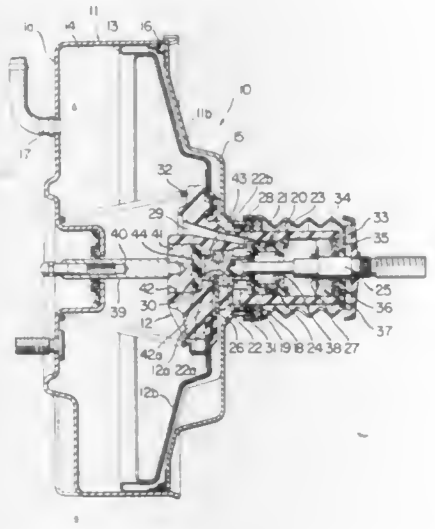
a four-way valve actuation member arranged to be swingable about an axis substantially parallel to the axis of said steering pinion in response to rotary movement of said steering pinion, so as to move said four-way valve by said swinging motion; and

means for operating said actuation member upon detecting an end of said linear movement of said steering rack such that said four-way valve is moved into said neutral position thereof regardless of said rotary movement of said pinion.

4,354,423
REACTION STRUCTURE OF BOOSTER

Atsushi Ohmi, Anjo; Kaoru Tsubouchi, Toyota, and Michiharu Nishii, Chiryu, all of Japan, assignors to Aisin Seiki Co., Ltd., Kariya, Japan

Filed May 9, 1980, Ser. No. 148,372
Claims priority, application Japan, May 10, 1979, 54-57729
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—369 A **3 Claims**



1. In a brake booster including:

a cylinder housing,

a power piston with a center hub of synthetic resin axially movable within the housing and including a cylindrical hollow shaft rearwardly extending from the center hub,

a control valve mechanism arranged in the cylindrical hollow shaft and including first and second valve elements coaxially aligned, the second valve element being operatively connected at its rear end with a manually operable push rod and the front end thereof being slidably disposed in a small bore in the hub of said power piston,

a power output rod with its rear end axially slidably disposed in a large bore in the hub of said power piston, said large bore having a peripheral wall of synthetic resin perpendicular to a rear end wall of synthetic resin and being coaxial with and open at its rear end to the front opening of said small bore, a peripheral wall of said small bore intersecting the rear end wall of said large bore at a right angle and the intersection of the peripheral wall and rear end wall of said large bore defining an annular corner at the rear end of said large bore, and

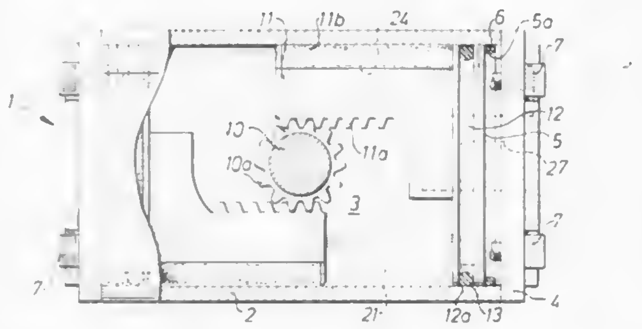
an elastic reaction disc being disposed in the large bore and abutting the rear end of the power output rod, said reaction disc in an uncompressed state having a peripheral wall of a diameter substantially equal to and being parallel to the peripheral wall of said large bore and having a rear end wall parallel to the rear end wall of said large bore, the intersection of the peripheral and rear end walls of said reaction disc defining an annular corner, said reaction disc being received in said large bore so as to be compressed upon booster operation between the rear end of the power output rod and the front end of the second valve element and the rear end wall of said large bore,

the improvement comprising the annular corners of said large bore and said reaction disc in an uncompressed state each being rounded at the same predetermined radius and the rear end wall and annular corner of said reaction disc directly contacting and cooperating with the rear end wall and annular corner of said large bore to permit precise determination of the time and distance of compression of the rear end wall of said reaction disc into said small bore to contact the front end of said second valve element thereby providing a definite jumping value without indefinite delay of output power rise.

4,354,424
PNEUMATIC OPERATING DEVICE

Sven Nordlund, Vällingby, Sweden, assignor to Wire Matic Regler AB, Stockholm, Sweden

PCT No. PCT/SE79/00240, § 371 Date Jul. 24, 1980, § 102(e) Date Jul. 2, 1980, PCT Pub. No. WO80/01096, PCT Pub. Date May 29, 1980
PCT Filed Nov. 21, 1979, Ser. No. 202,382
Claims priority, application Sweden, Nov. 24, 1978, 7812136
Int. Cl.³ F01B *7/02, 31/10, 9/00*
U.S. Cl. 92—69 R **10 Claims**



1. A pneumatic operating device (**1**) for regulating a valve, comprising:

a cylinder (**2**) having an end wall (**5**);

a piston (**12**) slidably mounted in said cylinder, said piston having a bore (**24**) therein;

an operating element (**10**) rotatably mounted in a side surface (**2***b*) of said cylinder so that an axis of said operating element extends in a direction substantially perpendicular to and intersecting a central longitudinal axis of said cylinder, said operating element extending across said cylinder along said perpendicular direction, said operating element forming a seal with said side surface of said cylinder and having first teeth (**10***a*) thereon;

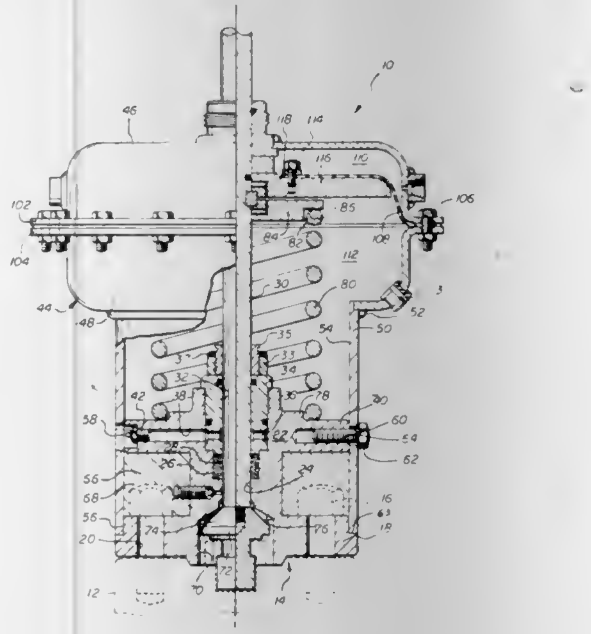
a rack part (**11**) connected to said piston, said rack part having second teeth (**11***a*) thereon engaged with said first teeth, a portion of said rack part extending axially into said cylinder, said portion of said rack part being laterally offset from said central longitudinal axis of said cylinder, said bore in said piston extending into said portion of said rack part a sufficient distance that said bore extends past said operating element axis when said piston is adjacent said end wall of said cylinder; and

a spring (**26**) disposed in said bore for biasing said piston toward said operating element, said spring being compressed when said piston is displaced from said end wall of said cylinder a maximum distance so that said piston is always positively urged toward said operating element by said spring.

4,354,425
FIRE-SAFE VALVE ACTUATOR

Billy R. Bruton; Jerome E. Corneillie, both of Longview, and Marion W. Perkins, White Oak, all of Tex., assignors to U.S. Industries, Inc., New York, N.Y.

Filed May 9, 1980, Ser. No. 148,385
Int. Cl.³ F01B *19/00;* **F16J** *3/00;* **F01B** *29/00*
U.S. Cl. 92—94 **12 Claims**



1. A bonnet and actuator assembly for use with a valve adapted for use in a line including a valve body and a valve member, the assembly being adapted to be connected to the valve body by bolts, comprising:

a bonnet having a first outturned flange with bolt holes therein adapted to receive said bolts to bolt the bonnet to the valve body;

an actuator housing;

an actuator stem within said housing and adapted to be connected with said valve member in said valve body;

stem actuator means in said housing and connected to said stem for moving the stem;

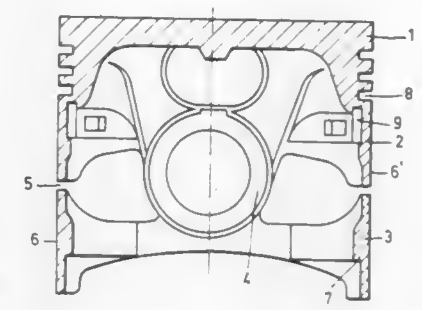
a substantially imperforate shroud connected to said actuator housing and extending downwardly therefrom into engagement with said outturned flange outwardly of said bolt holes so as to protect said bolts connecting the bonnet with the valve body, when assembled thereon, from direct contact by heat from external fires and retarding heat induced deterioration of said bolts holding the bonnet to the valve body and,

a plurality of fastener bolts having heads which are accessible externally of said shroud for releasably connecting said shroud to said bonnet, whereby said bolts can be removed without disconnecting said bonnet from said valve body.

4,354,426
EXPANSION-CONTROLLED LIGHT ALLOY PISTON

Werner Steidle, Bad Friedrichshall, Fed. Rep. of Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,289
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949091
Int. Cl.³ F16J *1/04*
U.S. Cl. 92—235 **6 Claims**

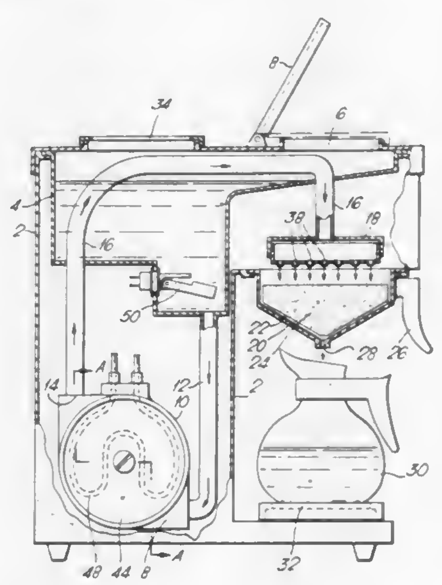


1. An expansion controlled light alloy piston consisting essentially of at least one piston ring below which is disposed a piston skirt, said piston having therewithin a piston pin boss, said skirt being provided on its periphery with a transverse slot which extends around the entire periphery of the skirt or part thereof to define an upper part of said skirt and a lower part of said skirt, said transverse slot being disposed at a level of said piston pin boss, said piston having a constant diameter over the length of said skirt and said piston pin boss being integral with the upper part of said skirt and the lower part of said skirt, which upper and lower parts of said skirt are connected to an outer portion of said piston pin boss.

4,354,427
COFFEE AND TEA MAKING OR BREWING APPARATUS

Maciej K. Filipowicz, St. Leonards-on-Sea, and Cecil Hayes, Hastings, both of England, assignors to W. M. Still & Sons Limited, East Sussex, England

Filed Jun. 30, 1980, Ser. No. 164,234
Int. Cl.³ A47J *31/10*
U.S. Cl. 99—307 **5 Claims**



1. Brewing apparatus for coffee and tea, said apparatus comprising

a supply tank for containing a supply of water,

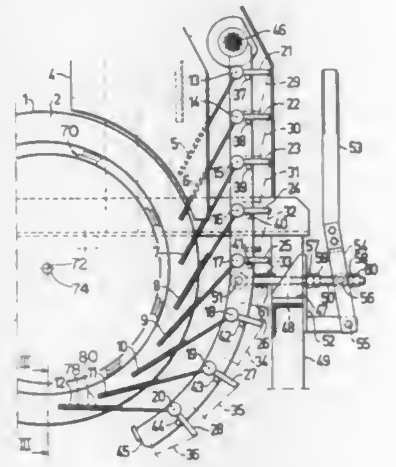
a heater unit for heating water to boiling point and creating pressure,

means to supply water from said supply tank to said heater unit,
a basket for carrying a bed of one of coffee and tea, said basket being lined with a filter paper prior to receipt of said bed, hot water being passed through said bed to produce a brewed liquor,
a spray head positioned above said bed, said spray head being adapted to discharge hot water on said bed,
a series of dimples on the bottom of said spray head, each of said dimples defining a spray hole through which hot water can pass, each of said dimples extending downwardly beneath the bottom of said spray head so that said spray holes are positioned beneath the bottom of said spray head, and each of said dimples being provided with a surface to which a drop of hot water passing through said spray hole may cling due to surface tension of said water prior to dropping onto said bed, said dimples cooperating to distribute hot water drops over said bed in a random fashion in a manner akin to raindrops,
means between said heater unit and said spray head to supply water under pressure and at, or just below, boiling point from said heater unit to said series of dimples, and
means positioned beneath said bed to receive the brewed coffee or tea, said receiving means being separate from said supply tank.

4,354,428
SPRING ASSEMBLY SYSTEM

Ingve R. Akesson, Helsingborg, Sweden, assignor to Societe d'Assistance Technique Pour Produits Nestle, S.A., Lausanne, Switzerland

Filed Oct. 31, 1980, Ser. No. 202,681
Claims priority, application Sweden, Nov. 15, 1979, 7909426
Int. Cl.^{3} A23N *15/02*
U.S. Cl. 99—639 10 Claims

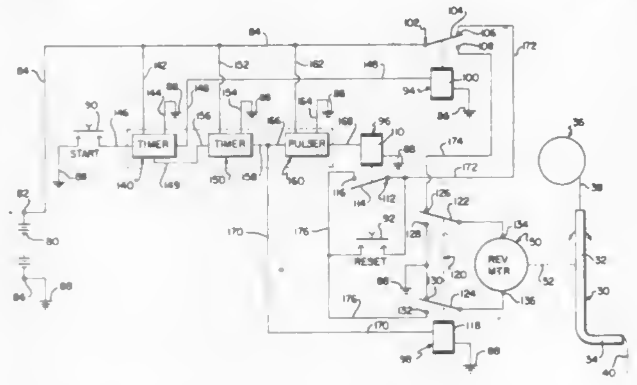


1. A device for trimming vegetables, especially Brussels sprouts, of the type having:
(a) a frame;
(b) a cutter;
(c) means for rotating said cutter about a cutter axis to move said cutter relative to said frame along a predetermined circular path;
(d) guiding means having an annular groove on its periphery, said groove being concentric with the path of said cutter and juxtaposed therewith;
(e) means for depositing vegetables into said grooves in engagement with said guiding means;
(f) means for rotating said guiding means about said cutter axis to advance the periphery of said guiding means relative to said frame in a downstream direction and thereby advance vegetables in said groove; and
(g) holding means for engaging vegetables advanced by said guiding means to rotate such vegetables during such advancement for engagement with said cutter, said holding means being retained against movement in said downstream direction,
characterized in that said holding means includes a plurality of plates confronting said groove, each such plate being mounted for pivoting movement relative to said frame about an associated pivot axis parallel to said cutter axis, each such plate having a free end remote from the pivot axis of such plate, the free end of each such plate being disposed downstream of the pivot axis of such plate, said plates overlapping one another, said holding means further including means for biasing each of said plates about its pivot axis to urge the free end of such plate towards said guiding means so that the free ends of said plates will engage vegetables advanced by said guiding means.

4,354,429
BALE WRAPPING APPARATUS

Garry A. Boldenow, Peabody; Rex O. Weigand, Newton, and Carl L. Nelms, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Dec. 31, 1979, Ser. No. 108,389
Int. Cl.^{3} B65B *13/04*
U.S. Cl. 100—5 6 Claims

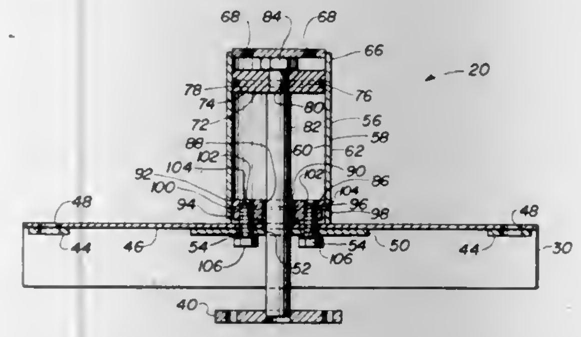


1. For use in combination with a baler machine for forming hay into a generally cylindrical bale of the type having means for supporting and rotating the bale and means for supplying and feeding a filament to be wrapped upon at least portions of the bale as the latter is rotated, improved means for controlling the application and pattern of filament wrapped upon the bale including:
shiftable means for guiding a wrapping filament toward various locations along the axial dimension of a bale during rotation thereof,
said guiding means having a first position adjacent one extremity of the bale and a second position adjacent the other extremity of the bale and being movable in either direction therebetween through a number of intermediate positions;
drive means operably coupled with said guiding means for moving the latter in either direction when said drive means is operated in a corresponding direction; and
control means operably coupled with said drive means and operable when actuated for causing said drive means to move said guiding means from said first position to said second position in a single continuous motion during a first predetermined period of time, then to automatically move said guiding means from said second position to said first position in a series of successive motions each of a second predetermined period of time separated by dwells each of a third predetermined period of time at each of a plurality of said intermediate positions,
said control means including a main, manually operable actuator device adapted for initial manipulation and release by the operator of the baler machine to start a wrapping cycle consisting of one complete, reciprocatory movement of said guiding means to and from said first position, components responsive to said initial manipulation of the actuator device to actuate said drive means, and means coupled with said components for maintaining the same in a condition actuating said drive means in a manner to move said guide means through a complete wrapping cycle notwithstanding release of the actuator device by the operator throughout the wrapping cycle.

4,354,430
BALE TENSION APPARATUS

George H. Horiuchi, Kingsburg, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 6, 1981, Ser. No. 232,345
Int. Cl.^{3} B30B *15/00*
U.S. Cl. 100—192 3 Claims



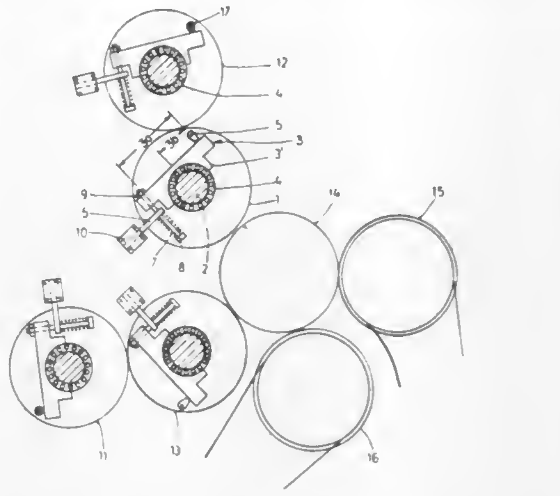
1. In combination with an agricultural baler, a bale tension apparatus comprising:
a bale chamber operably connected to said baler;
a bale tensioning member movably connected to said bale chamber for controlling the density of a bale formed in said bale chamber;
a support mounted on said bale chamber adjacent said bale tensioning member;
a fluid operated cylinder connected to said support, said cylinder having a sliding piston mounted therein, a rod bearing member contained entirely within the cylinder adjacent an end thereof, and a piston rod connected at one end to said piston and at the other end of said bale tensioning member, said piston rod slidably extending through said rod bearing member;
a plurality of fastener members extending through said support into said rod bearing member and terminating within said rod bearing member; and
means for limiting movement of said rod bearing member toward said support.

4,354,431
PRINTING CYLINDER ENGAGEMENT PRESSURE REGULATING SYSTEM

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,598
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932887
Int. Cl.^{3} B41F *13/20, 13/24, 13/36*
U.S. Cl. 101—247 11 Claims

1. Printing cylinder engagement pressure generation and control system having
at least two parallel printing cylinders which are to be pressed into surface contact engagement,
at least one of the cylinders having stub shafts (**2**) journalled in side walls (**18, 28**) of the machine,
a bearing (**4**) positioned on the at least one of the stub shafts, having a non-rotatable outer bearing element;
and means (**3*a*, 3*b***) pressing against the bearing (**4**) for applying contact pressure on the at least one cylinder towards the other cylinder, comprising
an elongated pressure bar (**3**) forming a lever in engagement with the outer bearing element of the bearing (**4**) at an intermediate portion of the pressure bar and engaging the bearing at a side of the axis thereof remote from said other cylinder;
a shell-like or cage-like portion on the pressure bar extending at least in part about the outer bearing element of the bearing (**4**) to support the bearing over an extended portion of its circumference and transfer pressure therefrom over an extended portion of the bearing;
a cam forming a pressure stop (**5, 17; 23, 24**) engaging the pressure bar laterally of the bearing at one side thereof and fixed to an adjacent side wall (**18, 28**) of the machine, the

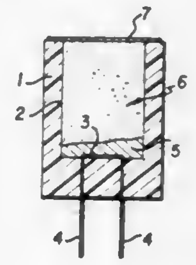


cam (**5**) permitting pressing the pressure bar against the stationary portion of the bearing or relieving pressure therefrom;
and means (**6, 7, 8, 9, 10; 25**) for forcing the pressure bar against the bearing, said forcing means engaging the pressure bar laterally of the bearing at the other side thereof to force the cylinders toward each other.

4,354,432
HOT-WIRE IGNITION INITIATOR FOR PROPELLANT CHARGES

Christian G. Cannavo'; Andre' Espagnacq, both of Bourges, and Marie L. Riffault, Sancerre, all of France, assignors to Etat Francais represente par le Delegue General pour l'Armement, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,673
Claims priority, application France, Oct. 13, 1978, 78 29210
Int. Cl.^{3} F42B *3/10*
U.S. Cl. 102—202.7 11 Claims



1. Hot-wire ignition initiator characterized by the fact that it consists of:
a housing having an open cavity
a filament arranged in said cavity
a pyrotechnic cell composed:
of an initiator pyrotechnic composition formed of at least one oxidant and one reducer, said composition being arranged in intimate contact with the filament, the coefficient of sensitivity to impact of which is at least equal to 100 joules, the coefficient of sensitivity to friction of which is at least 100 N, the coefficient of sensitivity to static electricity of which is about 16 mullijoules and the ignition temperature of which is between 250° and 350° C.;
of an igniter pyrotechnic composition formed of at least one oxidant and one reducer, which composition is arranged in the vicinity of or in contact with the initiator composi-

tion, said igniter composition having a coefficient of sensitivity to impact of at least 100 joules, a coefficient of sensitivity to friction of at least 300 N, a coefficient of sensitivity to static electricity of about 50 millijoules and an ignition temperature of between 400° and 750° C.

4,354,433

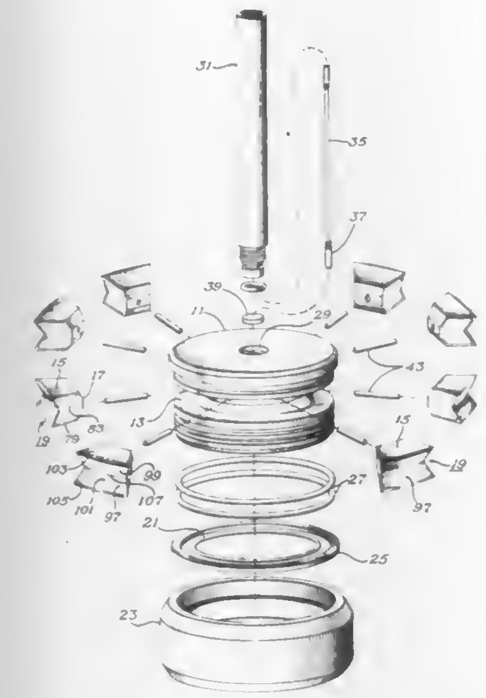
APPARATUS FOR CUTTING PIPE

Harrold D. Owen, Forth Worth, Tex., assignor to Pengo Industries, Inc., Fort Worth, Tex.

Filed Mar. 18, 1980, Ser. No. 131,096

Int. Cl.³ F42B *1/02*

U.S. Cl. 102—307 **4 Claims**



1. An annular shaped charge for use in pipe cutting or severing apparatus, which annular shaped charge is made up of eight or more shaped charge segments with each said shaped charge segment comprising a liner portion and open end portions, with the open end portions both before and after assembly each having a radial taper, with said shaped charge segments when assembled being disposed with said open end portions in side to side abutting relation, and with the liners of said shaped charge segments when assembled having a common maximum circumference and a common minimum circumference.

4,354,434

TRACK AND SWITCH CONSTRUCTION FOR SELF-PROPELLED VEHICLES

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation of Ser. No. 892,774, Apr. 3, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,381

Int. Cl.³ E01B *25/26*

U.S. Cl. 104—103 **10 Claims**

1. In a track construction including a pair of longitudinally extending transversely spaced track members for supporting the wheels of a self-propelled vehicle; arch-shaped yokes connecting the track members together at longitudinally spaced intervals, each yoke having an upper portion extending transversely above the track members; and a conductor rail supported by the upper portion of said yokes in vertically spaced symmetrical relation to the track members; a switch construction for a junction between a main line track and conductor rail converging in one direction with a branch line track and conductor rail; wherein the improvement comprises:

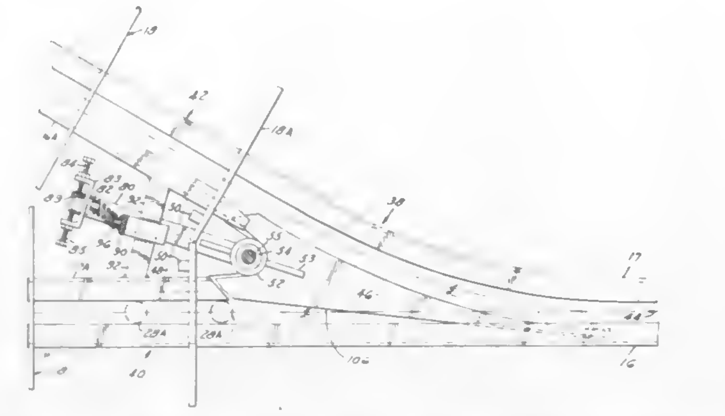
a track switch tongue;

means pivotally mounting the track switch tongue at the junction for movement between main and branch line positions;

a conductor rail switch tongue including main and branch line sections of conductor rail;

means pivotally supporting the conductor rail switch tongue at the junction for movement between main and branch line positions in which the main and branch line conductor rail sections are respectively aligned with the main and branch line conductor rails;

the extent of movement of said conductor rail switch tongue being different from the extent of movement of said track switch tongue between the main and branch line positions of said switch tongues;



means for pivotally moving one of said switch tongues between main and branch line positions; and

motion transmitting means connected to each of said switch tongues for pivotally and differentially moving the other of said switch tongues in response to pivotal movement of said one switch tongue, said motion transmitting means extending from the switch tongues in a direction opposite to said converging direction of the tracks and conductor rails and being arranged substantially within the vertical spacing between the track members and the conductor rails.

4,354,435

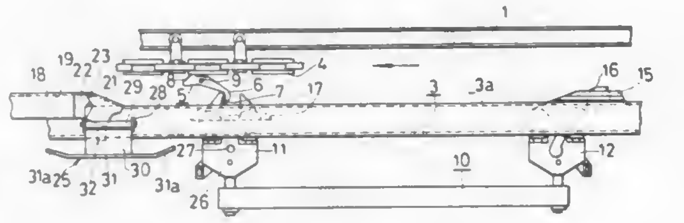
APPARATUS FOR TRANSFERRING CARRIERS AT DISCONTINUOUS PORTION OF POWER LINE FOR POWER-AND-FREE TROLLEY CONVEYOR

Takao Wakabayashi, Shinsenri-Minamimachi, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Dec. 23, 1980, Ser. No. 219,490

Int. Cl.³ B61B *3/00*

U.S. Cl. 104—172 S **1 Claim**



1. In a power-and-free trolley conveyor comprising a first power line and a second power line arranged discontinuously at a specified distance from each other, a free line disposed below the power lines and coextensive with the power lines at the discontinuous portion therebetween, carriers suspended from the free lne and each having a front free trolley and a rear free trolley, the front free trolley being provided with a tilting dog, the rear free trolley being provided at its upper end with a rear projecting member for accumulating following carriers, and pusher dogs pivoted to the drive chain of each of the power lines and arranged at a predetermined spacing, each of the pusher dogs being provided at its rear end with a hooked engaging portion and a side projection extenting from at least one side of the hooked engaging portion, the pusher dog having a stooper portion positioned at its front end to contact the drive chain from below, an apparatus for transferring the carriers at the power line discontinuous portion comprising a

pusher dog disengaging first member, a guide rail for pushing the carrier from behind and a pusher dog disengaging second member arranged in the order mentioned toward the direction of transport of the carriers at predetermined spacings and mounted on a first section of the free line below the first power line, the first member being movable into or out of the path of movement of the side projection on the pusher dog, the guide rail being channel-shaped and having its opening directed inward, a pivotable guide in the form of a channel and attached to the starting end of the guide rail, a guide turning assembly disposed below the pivotable guide, and a guide raising pin extending from a side wall of the front free trolley of each of the carriers for operating the guide turning assembly, so that when the front free trolley of a carrier is led onto the first section of the free line by a pusher dog in engagement with the trolley, the front free trolley in engagement with the pusher dog moves past the first member, the pivotable guide and the guide rail and is released from the pusher dog by the second member to position the rear projecting member of the rear free trolley of the carrier at an intermediate portion of the guide rail, the next following pusher dog being subsequently disengageable from the following carrier by the first member and then movable along the top surface of the guide rail with its front end stopper portion lowered by the action of the guide to cause the stopper portion to strike and engage the rear projecting member of the preceding carrier from behind, the following pusher dog being thereby operable to push the preceding carrier forward from behind, causing the front free trolley thereof to move along an intermediate section of the free line below the power line discontinuous portion and reach a second section of the free line below the second power line, whereupon the following pusher dog is disengaged from the rear projecting member, subsequently permitting a pusher dog of the second power line to pull the front free trolley, whereby the preceding carrier is transferred to the second section of the free line below the second power line.

4,354,436

STAND FOR SUPPORTING ITEMS OF ELECTRONIC EQUIPMENT

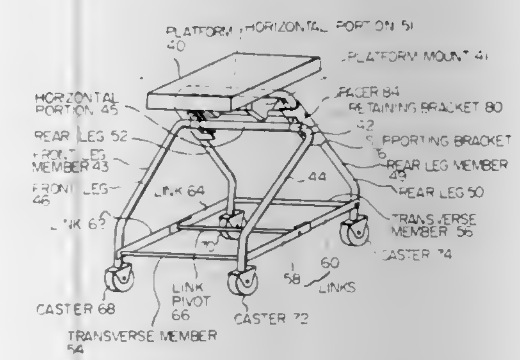
Junkichi Shirono, and Katsuhisa Honda, both of Tokyo, Japan, assignors to Anritsu Electric Company Limited, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,908

Claims priority, application Japan, Jun. 19, 1979, 54-76362

Int. Cl.³ A47B *3/08*

U.S. Cl. 108—123 **14 Claims**



1. A stand for supporting items of electronic equipment, comprising:

a front leg member including a first leg and a second leg, and a horizontal portion integrally formed with said first and second legs and having a length;

a rear leg member including a first leg and a second leg, and a horizontal portion integrally formed with said first and second legs and having a length which is shorter than the length of said horizontal portion of said front leg member, the rear leg member being supported by the horizontal portion of said front leg member;

first and second bracket means fixedly attached to said first leg and second leg of said rear leg member, respectively, at the upper parts of said first and second legs, each of said first and second bracket means including retaining bracket means provided at a lower side of each of said first and second bracket means to rotably retain said horizontal portion of said front leg member and prevent displacement of said horizontal portion of said front leg member along said first and second legs of said rear leg member while the first and second leg of said rear leg member lies on said horizontal portion of said front leg member to rotatably retain and support said horizontal portion of said front leg member;

means for keeping a distance between said front leg member and said rear leg member at the lower portions of said front and rear leg members; and

a platform member rotatably attached to said horizontal portion of said rear leg member.

4,354,437

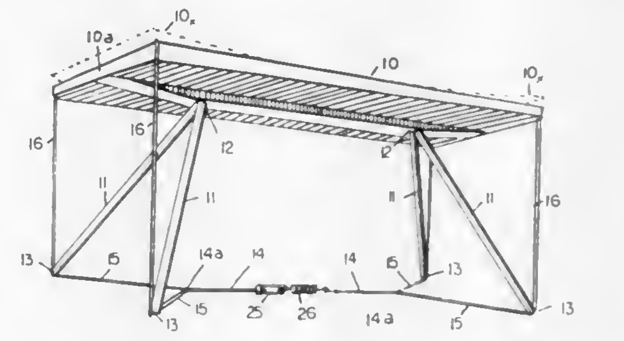
SUPPORT STRUCTURE FOR FOLDING TABLES AND LIKE STRUCTURES

William F. Logan, 70-72 Laight St., New York, N.Y. 10013

Filed Dec. 21, 1979, Ser. No. 106,307

Int. Cl.³ A47B *3/06*

U.S. Cl. 108—153 **19 Claims**



1. In a folding table or like structure having a generally planar table top supported on the floor by multiple legs, a support structure comprising:

(1) multiple points of articulation located below the table top at some distance inward from the edge of the table, at least two of said points being spaced apart from each other;

(2) two splayed legs in V-formation extending each from each point of articulation to points on the floor approximately vertically below the corners of the table top;

(3) a cable network interconnecting the lower ends of said legs and extending from each corner of the table top to the lower end of the leg located vertically below the respective corner;

the arrangement being such that in the assembled state all cables are in tension and the legs are in compression.

4,354,438

METHOD AND APPARATUS FOR COOLING HOT BULK MATERIAL

Georg Beckmann, Vienna, Austria, assignor to Waagner-Biro A.G., Austria

Filed Mar. 6, 1981, Ser. No. 241,382

Claims priority, application Austria, Mar. 12, 1980, 1351/80

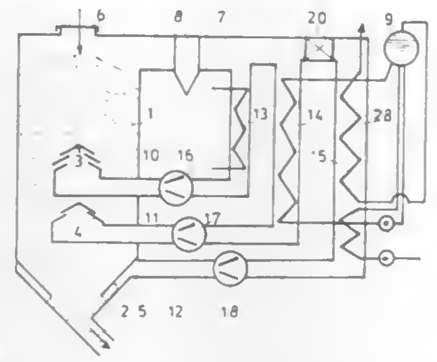
Int. Cl.³ F23B *7/00*

U.S. Cl. 110—234 **16 Claims**

1. In a method for cooling hot bulk material, such as glowing coke, clinker, or sinter material, comprising the steps of:

introducing the hot bulk material through an inlet into a vertically oriented cooling tank wherein it flows downwardly under gravity and is discharged from an outlet of the cooling tank;

feeding at least two partial currents of cooling gas into the cooling tank at respective feeding points therein, said feeding points being respectively arranged one over the other and so that the cooling gas flows upwardly in the tank around the material as the latter flows downwardly to cool the same with the cooling gas being simultaneously heated, the improvement comprising:



the cooling gas partial current fed into the cooling tank at a lower feeding point is at a lower temperature than the cooling gas partial current fed into the cooling tank at a feeding point which is arranged above said lower feeding point.

4,354,439

METHOD OF AND A DEVICE FOR FEEDING SOLID FUEL IN A FLUIDIZED BED HEARTH

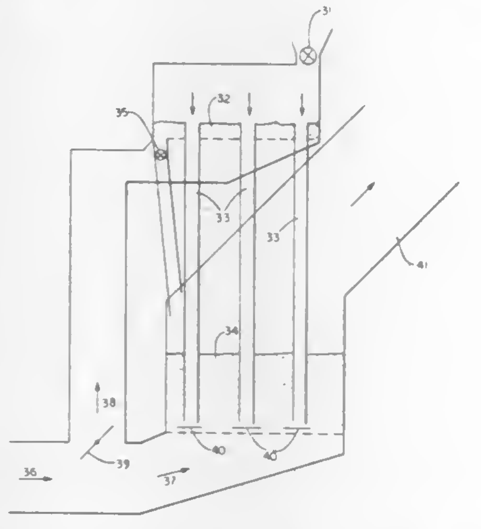
Fritz Baunack, Bad Hersfeld, Fed. Rep. of Germany, assignor to Babcock-BSH AG vormals Büttner-Schilde-Haas AG, Krefeld, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,304

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923250; Oct. 5, 1979, 2940358

Int. Cl.^{3} F23G *5/00*

U.S. Cl. 110—245 **6 Claims**



1. A device for feeding granular solid fuel into a fluidized bed hearth having a fuel distributing space and a combustion space, comprising means for feeding the fuel into said fuel distributing space; means for admitting a whirling stream of conveying gas to said distributing space to form with the fine grains of fuel a first fluidized bed therein; an array of feeding pipes interconnecting said distributing space with said combustion space to pneumatically feed the fluidized fuel from said fuel distributing space into said combustion space and to form a combustion fluidized bed therein, said fuel distributing space being arranged above said combustion space, said feeding pipes extending downwardly from said fuel distributing space into said combustion space; a gas distributing duct system admitting ;streams of fuel conveying and combustion gas streams, said gas distributing duct system including a main duct having two duct branches communicating respectively with said fuel distributing space and said combustion space, said distributing space having a grated bottom to admit said whirl stream of gas to fluidize the fuel present in said distributing space and to overflow the fluidized fuel through said array of feeding pipes into said combustion space, and further including deflection elements arranged in said combustion space opposite the outlet openings of respective pipes.

4,354,440

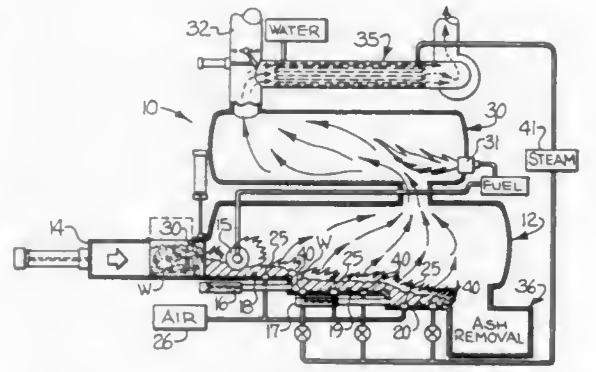
UNDERFIRE AIR AND STEAM SYSTEM AND INCINERATING PROCESS FOR A CONTROLLED STARVED-AIR INCINERATOR

Robert E. McRee, Jr., Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.

Division of Ser. No. 204,490, Nov. 6, 1980. This application Feb. 3, 1982, Ser. No. 345,428

Int. Cl.^{3} B09B *3/00;* **F23G** *7/00*

U.S. Cl. 110—346 **3 Claims**



1. Process of incinerating a wide variety of waste materials in an enclosed incinerator characterized by minimized particulate emissions and clinker formation and by increased thermal efficiency, said process comprising the steps of:

introducing into the incinerator waste materials which are composed primarily of volatile matter, fixed carbon, moisture and non-combustibles;

initially burning the waste materials at low temperatures for vaporizing the volatile matter and moisture and to convert fixed carbon to vaporized volatile matter including supplying air to the burning waste materials at less-than-stoichiometric requirements while creating an exothermic reaction between some of the fixed carbon in the waste materials and the oxygen in the air to produce carbon dioxide vapor and further including supplying steam to the burning waste materials while creating an endothermic "water-gas reaction" between additional fixed carbon in the waste materials and the steam to produce volatile carbon monoxide and hydrogen vapor and while absorbing undesired heat from the exothermic reaction;

thereafter finally burning the volatile vapors under greater-than-stoichiometric conditions to effect complete combustion of such vapors and conversion thereof to gaseous organic materials;

emitting the gaseous organic materials from the incinerator and removing the non-combustible inert residue from the incinerator for disposal; and

moving the waste materials in a longitudinal path of travel during said initial burning of the waste material, while alternately supplying the air and the steam to the moving and burning waste materials at spaced locations along the path of travel;

whereby, localized high temperatures during the initial burning step are minimized to lessen clinker formation and vaporization of the non-combustibles for minimizing the particulate emission rate from the incinerator and conversion of fixed carbon into vaporized volatile matter is maximized for maximizing the thermal efficiency of the incinerator.

4,354,441

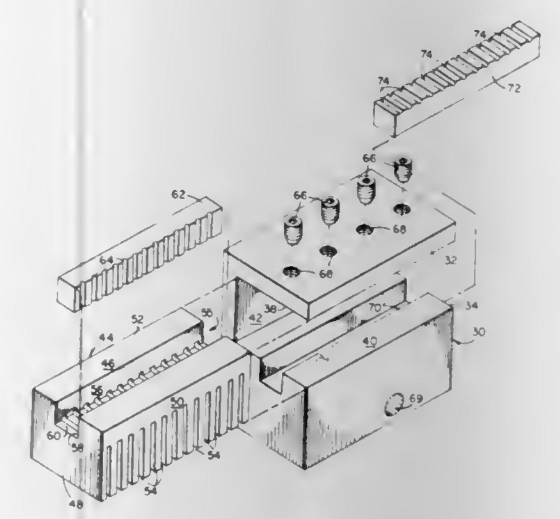
MOUNTING BLOCK FOR TUFTING MACHINE GAUGE PARTS

Kenneth Hurst, 3222 S. Mission Oaks Dr., Chattanooga, Tenn. 37412

Filed Feb. 2, 1981, Ser. No. 230,507

Int. Cl.^{3} D05C *15/00*

U.S. Cl. 112—79 R **9 Claims**



1. A mounting block for a tufting machine for carrying a plurality of gauge parts each having an elongated mounting portion of substantially rectangular cross section, said block comprising a body member having a pair of elongated spaced flanges, a gauge parts retainer having elongated surfaces spaced apart by a distance substantially equal to the spacing between said flanges and positioned intermediate said flanges, means defining an elongated channel in one of said surfaces, means defining a plurality of spaced slots in said retainer extending transversely to said elongated surfaces, each of said slots having a cross sectional configuration corresponding to that of the mounting portion of said gauge parts and extending from the other of said elongated surfaces to and opening into said channel, and gauge parts securing means including a clamping member in said channel for securing said gauge parts in respective slots and for securing the retainer with the body member.

4,354,442

METHOD FOR STORING SEWING MACHINE STITCH PATTERN DATA IN A BYTE ORGANIZED MEMORY

Leonard I. Horey, West Orange, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 22, 1980, Ser. No. 199,147

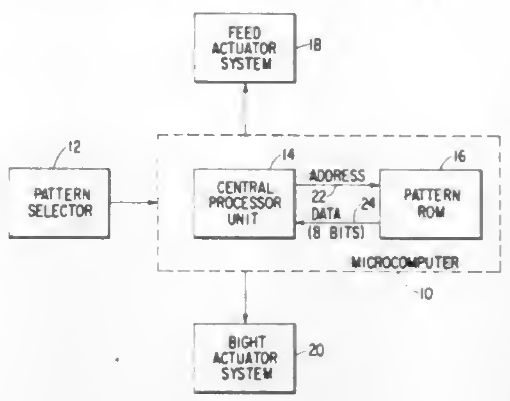
Int. Cl.^{3} D05B *3/02;* **G05B** *19/18*

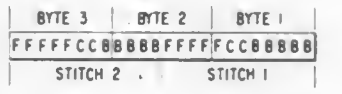
U.S. Cl. 112—158 E **8 Claims**

7. In an electronically controlled stitch pattern sewing machine that utilizes a first set of five ordered bits of bight data for controlling lateral needle position and a second set of five ordered bits of feed data for controlling work feeding for each stitch, said sewing machine including a memory organized in addressable eight bit bytes, a method for storing the bight data and the feed data for a plurality of stitches comprising the steps of:

storing the bight data and one bit of the feed data for a first stitch in a first byte of the memory;

storing the remaining four bits of the feed data for the first stitch and four bits of the bight data for a second stitch in a second byte of the memory; and





storing the remaining bit of the bight data and the feed data for the second stitch in a third byte of the memory.

4,354,443

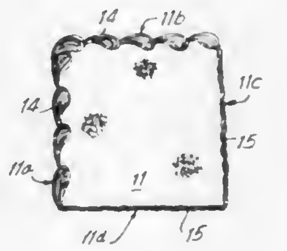
AFGHAN CONSTRUCTION AND METHOD

David M. Abrahamson, Woodbury, N.Y., assignor to Dason International Products Inc., Hicksville, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,382

Int. Cl.^{3} B32B *7/08*

U.S. Cl. 112—440 **10 Claims**



1. An afghan comprising a plurality of peripheral afghan constituents; a plurality of interior afghan constituents; and means for joining said peripheral and interior constituents in side-by-side relation into an afghan with said peripheral afghan constituents defining the periphery of said afghan, each of said peripheral afghan constituents being formed integrally with a first border region unconnected to another of said constituents and defining the outer border of said afghan and a second border region at which said peripheral afghan constituents is joined to other of said constituents, said first border regions having a configuration at least in part wider and different from said second border regions to define a simulated border for said afghan.

4,354,444

SAIL HANDLING APPARATUS

Mario J. Puretic, 259 - 6th Ave. N., Monte Cristo Isle, Tierra Verde, Fla. 33715

Filed Feb. 23, 1981, Ser. No. 237,519

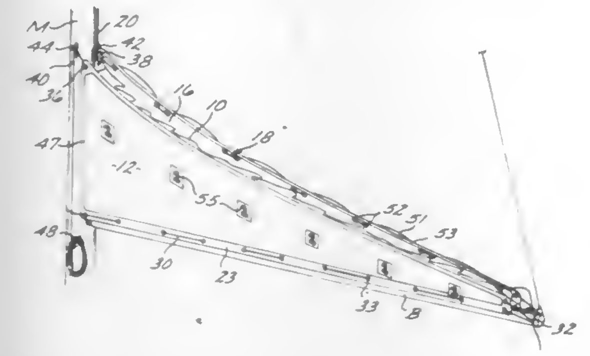
Int. Cl.^{3} B63H *9/10*

U.S. Cl. 114—105 **4 Claims**

1. Sail handling apparatus for use with a boat having a mast, a boom, and a sail supported by said mast and boom, said apparatus comprising:

a pair of aligned, generally triangular panels, each having a horizontal leg attached along said boom and a vertical

front edge normally attached to said mast above said boom, the rear-end of each said panel being shorter than its front edge, with said panels normally straddling said boom to define an open-topped sail-receiving pocket;
and fastening means operatively interposed between the upper edges of said panels, said fastening means being open when said sail is in a raised position, with said sail falling into the pocket between said panels as said sail is lowered onto said boom from its raised position, whereafter the upper portion of said panels are overlapped to cover said sail and said fastening means are engaged to secure said panels around said lowered sail and onto the top of said boom.



4,354,445

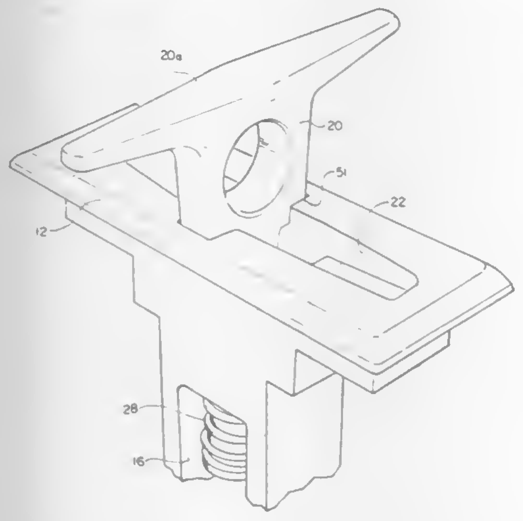
RETRACTABLE LIFT RING

Charles F. Kafka, Bradenton, and Robert S. Kafka, Maitland, both of Fla., assignors to Meacham Marine Products, Inc., Sarasota, Fla.

Filed Sep. 25, 1980, Ser. No. 190,895

Int. Cl.^{3} B63B *21/04*

U.S. Cl. 114—218 11 Claims



1. A retractable lift ring device for installation in the deck of a boat or the like that may from time to time need to be lifted, said lift ring device comprising a slotted deck plate adapted to be affixed in surrounding relation around an aperture in the deck, an elongate structural member secured to the underside of said deck plate at a mid portion thereof, and arranged to extend into the aperture, said elongate structural member having a major dimension approximating the major dimension of said slotted deck plate, with said deck plate and said elongate structural member together forming a component substantially of a T-shaped configuration, a lift ring operatively mounted in the slot in said deck plate, with its upper portion normally being substantially flush with the upper surface of said deck plate, said lift ring having a lower, rod-like portion extending downwardly into said elongate structural member and being slidable therein, said lift ring being able to be manually lifted to a position extending above said deck plate, at which time said rod-like portion has moved upwardly to some extent in said elongate structural member, and spring bias means operatively associated with said rod-like portion and said elongate structural member, the spring bias force being caused to increase as said lift ring is lifted out of said slotted deck plate, said spring bias means serving to bring about prompt return of said lift ring to its recessed position when the lifting force has been removed.

4,354,446

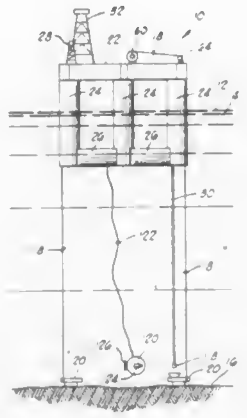
TEMPORARY MOORING OF TENSION LEG PLATFORMS

Riley G. Goldsmith, and John A. Mercier, both of Houston, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Aug. 22, 1980, Ser. No. 180,767

Int. Cl.^{3} B63B *21/00*

U.S. Cl. 114—230 12 Claims



9. The method of temporarily mooring a floating structure, said method comprising steps of:
(a) connecting first ends of a plurality of temporary mooring lines to anchor means positioned on a floor of a body of water;
(b) connecting a plurality of pendant lines to second ends of said plurality of temporary mooring lines;
(c) connecting said plurality of pendant lines to retrieval means attached to said floating structure;
(d) retrieving said plurality of pendant lines and a portion of each of said temporary mooring lines onto said floating structure until said floating structure is located approximately at a position directly above said anchor means;
(e) applying a horizontal force to said floating structure to move it horizontally away from said position directly above said anchor means a distance sufficient to apply a temporary tension load to each of said temporary mooring lines great enough to prevent snap loads from being imposed on said temporary mooring lines due to cyclical forces acting thereupon; and
(f) tensioning said plurality of temporary mooring lines.

4,354,447

EXTENDABLE BOWSPRIT PULPIT FOR A FISHING BOAT

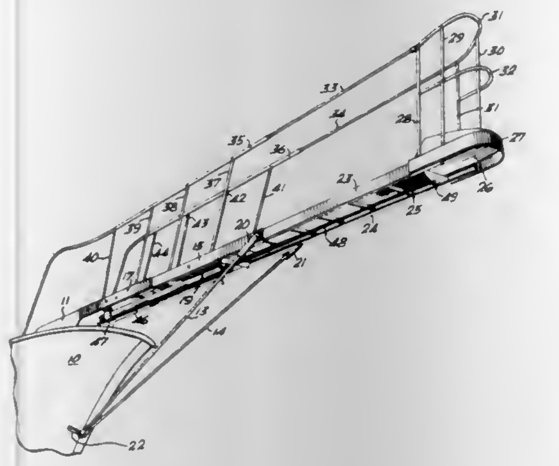
Lennart C. Hultgren, 40 Ryder St., Buzzard's Bay, Mass. 02532

Filed Aug. 27, 1980, Ser. No. 181,717

Int. Cl.^{3} B63B *35/14*

U.S. Cl. 114—255 5 Claims

1. A slidably extendable bowsprit pulpit for mounting on the bow of a fishing boat comprising:
an elongated pulpit having a horizontal deck extending forwardly of the boat's bow deck and two parallel deck-supporting members each having one end affixed to the boat's bow and extending forwardly beneath said horizontal deck,
a slidable pulpit extension having a horizontal deck and two parallel deck-supporting members, each member being slidably mounted on one of the two deck-supporting members of the elongated pulpit, and
a rigid support member having one end affixed to the forward end of said elongated pulpit and its other end affixed to a bracket mounted on the boat's bow beneath the bow deck,



said slidable pulpit extension capable of being retracted to lie mainly within said elongated pulpit and of being slidably extended so that the major portion thereof lies forwardly of the elongated pulpit.

4,354,448

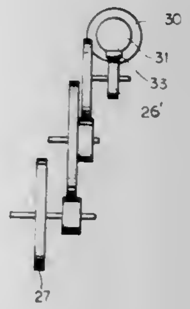
MANUALLY DRIVEN GENERATING MECHANISM FOR DOORBELLS

Chun N. Lin, No. 329, Chungshan Rd., Ching Shui Chen Taichung, Taiwan

Filed Aug. 26, 1980, Ser. No. 181,347

Int. Cl.^{3} G10K *1/067*

U.S. Cl. 116—161 7 Claims



1. A manually driven generating mechanism for doorbells, comprising:
a dynamo;
a spring;
a means to stress said spring;
a train of acceleration gears mechanically connected to said means;
a clutching device which controls the engagement or disengagement between said means and the first gear of said acceleration gears;
a relatively heavy flywheel, with its two ends respectively connected to the last gear of said acceleration gears, and to the rotary shaft of said dynamo;
a buzzer energized by said dynamo;
said means being able to be conveniently operated by hand to bring said spring into stressed state;
said clutching device enabling said means and the first gear of said accelerating gears to connect mechanically with each other before the stressed spring resumes its original, unstressed position, and to disconnect with each other when said spring reaches its unstressed state;

4,354,449

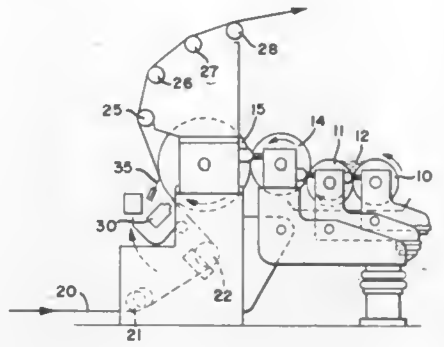
TWO SIDED COATER

Stanley C. Zink, Fulton, N.Y., assignor to The Black Clawson Company, Middletown, Ohio

Continuation-in-part of Ser. No. 921,502, Jul. 3, 1978, Pat. No. 4,231,318, and Ser. No. 34,216, Apr. 30, 1979, abandoned. This application Oct. 9, 1980, Ser. No. 195,560

Int. Cl.^{3} B05C *1/08*

U.S. Cl. 118—126 3 Claims



1. Apparatus for coating a web of paper which is adapted to apply different coating materials to the opposite sides of the web in a single pass through the apparatus, comprising:
(a) a coating roll mounted with the axis thereof in fixed position,
(b) a fixed guide roll cooperating with said coating roll to maintain an otherwise unsupported lead-in portion of the web to be coated travelling generally upwardly from said guide roll to said coating roll,
(c) a second guide roll supporting a lead-off portion of the web travelling generally upwardly from said coating roll and cooperating with said first guide roll to establish the extent of wrap of said coating roll by the web.
(d) means mounting at least one of said guide rolls for adjustment with respect to said coating roll to vary the extent of wrap of said coating roll by the web,
(e) applicator means for applying a metered quantity of a coating material to said coating roll at a location remote from the portion of said coating roll wrapped by the web for application of such coating material by said coating roll to the surface of the web which contacts said coating roll,
(f) non-contacting coating fountain means positioned to direct ametered quantity of a coating material against the other surface of said lead-in portion of the web, and
(g) a doctor blade mounted to engage said other surface of the web along the portion thereof wrapping said coating roll to remove excess quantities of the coating material applied to the web by said fountain means.

4,354,450

JET LAYER GRANULATOR

Takashi Nagahama; Nobuyuki Matsumoto; Masaki Naruo, all of Mobara; Susumu Nioh, Tokyo; Hiroshi Hirayama, Funabashi; Tetsuzo Honda, Funabashi; Yoshinori Sato, Funabashi; Kenji Toyama, Chiba, and Gisaburo Shiotu, Kawasaki, all of Japan, assignors to Toyo Engineering Corporation and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,846

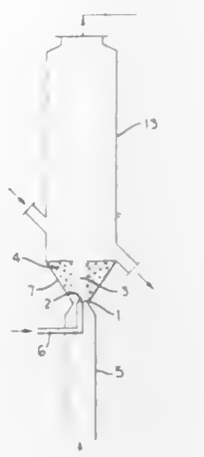
Claims priority, application Japan, May 7, 1980, 55-60369; May 7, 1980, 55-60370; Jun. 17, 1980, 55-82000; Jun. 17, 1980, 55-82001; Aug. 1, 1980, 55-106304; Aug. 1, 1980, 55-106305

Int. Cl.^{3} B05B *17/00;* B05C *5/00;* B05D *7/00*

U.S. Cl. 118—303 17 Claims

1. A granulator, comprising
an elongated, substantially vertical vessel having at its lower portion a downwardly converging funnel of inverted frusto-conical shape, said funnel being adapted to contain a bed of particles;
a gas-supply conduit extending outwardly from the bottom

of said funnel, said gas-supply conduit defining a gas-jetting opening at its upper end which opening is coaxial with the central axis of said funnel, said conduit being adapted for supplying through said gas-jetting opening an upwardly flowing, high velocity stream of gas effective to entrain particles present in the lower portion of the bed so that the gas stream and particles entrained therein flow coaxially upwardly through said funnel and through the central portion of the bed into the central region of the upper portion of said vessel above the bed;



liquid-supply pipe means extending upwardly through the central portion of said gas-jetting opening, said supply pipe means having spraying means at its upper end for spraying droplets of liquid material upwardly into said funnel and through the path of said gas stream so that said liquid droplets contact and adhere to said particles in said funnel and enlarge the size thereof to form granules, said spraying means being disposed within said funnel above the upper end of said gas-jetting opening and being located a vertical distance above said gas-jetting opening which distance is less than the internal diameter of said gas-jetting opening.

4,354,451

DEVICE FOR SPRAY-COATING A WORKPIECE WITH POWDER PARTICLES

Gerhard F. Vöhringer, and Gerhard Hestermann, both of Friedrichshafen, Fed. Rep. of Germany, assignors to ESB Elektrostatische Sprüh- und Beschichtungsanlagen G.F. Vöhringer GmbH, Meersburg, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,700

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003158

Int. Cl.^{3} B05C *15/00*

U.S. Cl. 118—326 9 Claims

1. A device for spray-coating a workpiece with powder particles, comprising:

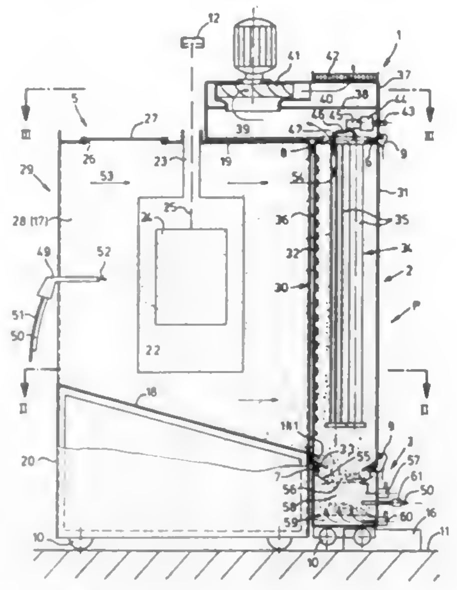
a generally prismatic booth with a substantially fully open front side, a substantially fully open rear side, a pair of sidewalls, a roof and a bottom bounding a spray chamber;

a powder-collecting unit having a housing detachably secured to said booth at said rear side thereof, said housing being substantially fully open toward said spray chamber and forming a recovery compartment below the level of said bottom including a strainer overlying a fluidized bed;

a set of tubular filter elements with air-permeable peripheral surfaces disposed in said housing above said recovery compartment opposite said rear side for intercepting powder particles passing generally horizontally through said spray chamber;

suction means communicating with the interior of said filter elements for drawing air from said spray chamber through said peripheral surfaces, thereby setting up a generally horizontal air flow traversing said spray chamber from said front side to said rear side; and

conduit means extending from said recovery compartment to an electrostatic spray gun trainable through said front side upon a workpiece in said spray chamber for enabling said workpiece to be coated with particles from said powder-collecting unit.



4,354,452

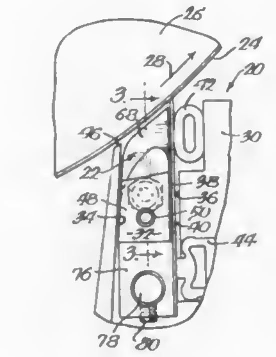
EXPANDABLE EDGE DAM ASSEMBLY FOR PAPER COATING APPARATUS

Harvey J. Patterson, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Apr. 21, 1981, Ser. No. 256,102

Int. Cl.^{3} B05C *3/18*

U.S. Cl. 118—413 14 Claims



1. In combination with an applicator for applying a coating liquid to a moving web of paper, said applicator having a body defining a chamber therein with an elongate opening to said chamber positionable generally adjacent to and transversely of the web, said chamber receiving coating liquid and directing the same through said opening and onto the web, an improved edge seal assembly comprising seal means of a flexible and expandable material mounted in said opening toward a longitudinal end thereof; and means for introducing fluid under pressure into said seal means to expand the same for sealing with said body on opposite sides of said chamber opening and for extending toward and closely adjacent to but spaced from the paper web, whereby said seal means seals the side end of said opening and controls leakage of coating liquid therepast.

4,354,453

SUBSTRATE HOLDER FOR LIQUID PHASE EPITAXIAL GROWTH

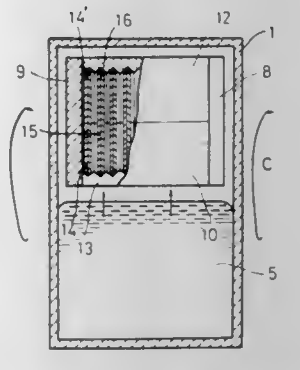
Susumu Koike, Kawachinagano, and Hitoo Iwasa, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 2, 1980, Ser. No. 109,110

Claims priority, application Japan, Jan. 12, 1979, 54-3129

Int. Cl.^{3} B05C *13/02, 5/00, 3/02, 3/109*

U.S. Cl. 118—426 8 Claims



1. An apparatus for liquid phase epitaxial growth comprising, in combination:

a substrate holder having a cylindrical space inside thereof, the inside wall of said cylindrical space having at least one annular groove with a V-shaped cross-section to hold at least one substrate therein for each annular groove, respectively, by uniformly receiving the peripheral edges of both faces of the substrate, the pitches of each said annular groove being larger than thicknesses of each said substrate,

said substrate holder including an opening for introducing and withdrawing at least one semiconductor solution into an out of said cylindrical space thereof,

said substrate holder comprising a semi-cylindrical main part having said at least two annular grooves therein and a semi-cylindrical lid part also having at least two annular grooves therein cooperating therewith, the annular grooves of said lid part having the same pitch as the annular grooves of said main part, whereby when the main part and the lid are put together the correspondingly matched annular grooves are contiguous, establishing uniform boundary conditions around the entire periphery of each said substrate when contacted with the semiconductor solution,

a boat in liquid communication with said substrate holder via said opening and having a semiconductor solution reservoir at the lower portion thereof with the substrate holder at the upper portion thereof, and

means to turn said boat upside down thereby contacting said semiconductor solution with each said substrate.

4,354,454

DEVELOPING DEVICE WITH MAGNETIC POLE HAVING MAGNETIC SPACER MEMBERS

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

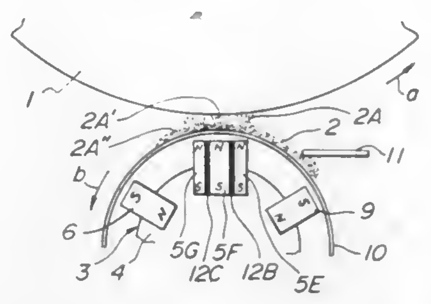
Filed Nov. 21, 1980, Ser. No. 209,294

Claims priority, application Japan, Dec. 8, 1979, 54/158712

Int. Cl.^{3} G03G *15/09*

U.S. Cl. 118—658 9 Claims

1. In a magnet roll developing device including a magnet roll composed of a roll-shaped supporting member made stationary with respect to a surface to be developed, said supporting member including a developing main magnetic pole opposed to the surface to be developed and a plurality of transfer magnetic poles, a non-magnetic rotary sleeve rotatably mounted around the outer peripheral surface of the magnet roll and a doctor blade for controlling a thickness of a developing agent layer held on the non-magnetic rotary sleeve, the improvement in which the developing main magnetic pole is divided into a plurality of magnet portions each having the same magnetic pole opposite the surface to be developed, said magnet portions spaced from each other to provide at least one space into which is arranged a spacing member composed of a magnetic body or magnet having a weak magnetic force in a direction such that the surface of said weak magnet is opposite in polarity to the poles of said magnet portions, a portion of the magnetic lines of force starting from the magnet surface of each of said magnet portions being directed toward said spacing member for forming an area in which magnetic lines of force are low in density near said spacing member, and the thickness of the developing agent layer held on said non-magnetic rotary sleeve being suitably adjusted to form at the magnet surface of each of said magnet portions an independent brush fur-like portion of the developing agent, each of said fur-like portions independently acting on the surface to be developed.



4,354,455

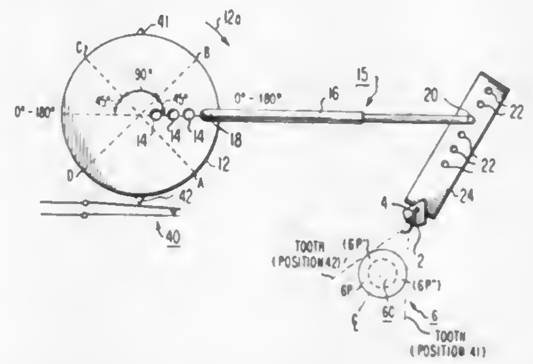
APPARATUS FOR OSCILLATING A GAS MANIFOLD IN A ROTARY DISC REACTOR

Gary W. Looney, Bordentown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,858

Int. Cl.^{3} C23C *13/08*

U.S. Cl. 118—700 13 Claims



1. An apparatus for oscillating a rotatable gas manifold in sweeps between two extrema within a rotary disc reactor, comprising:

an electric motor having a rotating shaft;

variable sweep means connecting the shaft to the gas manifold, for converting rotation of the shaft into reciprocating oscillation of the gas manifold between two extrema; and

a control means for varying electric motor speed, whereby oscillation speed of the gas manifold within a single sweep between its two extrema may be varied;

said sweep means further including:

a circular plate attached to the motor shaft and rotating therewith, the plate being perpendicular to the shaft and having at least one hole and two teeth projecting radially outwardly from the shaft;

a connecting rod with a first end pin and a second end pin, the first end pin being engagable with a single one of said at least one hole in the plate; and

a lever arm connected to the gas manifold and rotating therewith, the lever arm having at least one hole, the

second end pin of the connecting rod being engagable with a single one of said at least one hole in the lever arm;
said control means further including a fixed switch which is actuated by said teeth on said plate.

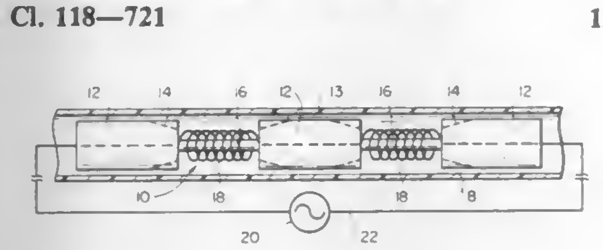
4,354,456
APPARATUS FOR USE IN MAKING A SELECTIVELY VAPOR DEPOSITION COATED TUBULAR ARTICLE

Bruce D. Campbell, Portola Valley, and Lynn O. Chapman, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 24, 1981, Ser. No. 247,042

Int. Cl.^{3} B05B *5/02*

U.S. Cl. 118—721 **12 Claims**



1. An apparatus for use in selectively coating the interior surface of a tubular article having a longitudinal axis, comprising:
a pair of axially aligned spaced apart electrically insulated masks having opposed masking surfaces, each masking surface being generally planar and generally perpendicular to the longitudinal axis, the periphery of the masks being complimentary with the tubular article; and
a vapor deposition coating means for applying a generally uniform coating of electrically conductive material on the interior surface of the tubular article, the coating means connected to the opposed surfaces of the masks and positioned axially therebetween.

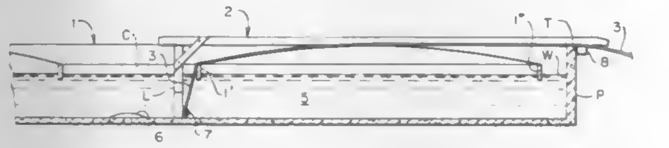
4,354,457
METHOD OF AND APPARATUS FOR ENABLING ACCESS TO THE INTERIOR OF FISH-FARMING PONDS AND THE LIKE

Albert H. Knowles, Concord, N.H., assignor to Robert Harvey Rines, Concord, N.H., a part interest

Filed May 14, 1981, Ser. No. 263,854

Int. Cl.^{3} A01K *61/00*

U.S. Cl. 119—3 **12 Claims**



1. A method of providing access to the interior of a fish-farm pond provided with a water-contacting cover having an internal opening, as for purposes of internal maintenance and the like, that comprises, pushing a longitudinal walk-way provided with terminal transversely depending leg means with a strand attached near its bottom end, inwardly toward the interior of the pond, with the leg means passing over the cover until reaching the lip of the internal cover opening; dropping the leg means over said lip down into the water at said opening to support the walk-way above the cover, thereby enabling access along the walk-way to the internal region of the pond; and thereafter pulling the strand outward of the pond and against the said lip of the cover opening to elevate the leg means through and then clear of the said internal opening lip while pivoting the walk-way downwardly and then slidingly back over the cover.

4,354,458
TRACTOR ENGINE AIR SUPPLY MEANS

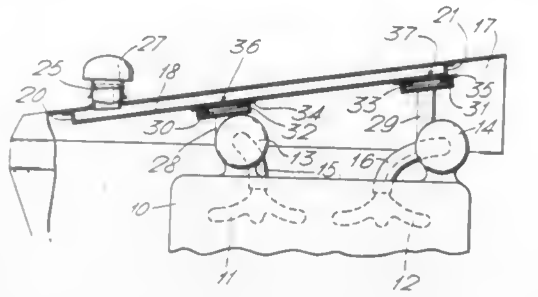
Cecil T. Bury, Huddersfield, England, assignor to David Brown Tractors, Ltd., Huddersfield, England

Filed Sep. 8, 1980, Ser. No. 184,825

Claims priority, application United Kingdom, Sep. 14, 1979, 7931912

Int. Cl.^{3} B60K *13/02*

U.S. Cl. 123—52 M **9 Claims**



1. A tractor having an internal combustion engine containing at least two air cleaners with each air cleaner having an inlet and an outlet, the outlet of each air cleaner communicating with an inlet of a respective manifold of the engine, a hood displaceable from an operative position covering the engine and having an interior and exterior, and an elongated trough with closed ends which said trough is secured lengthwise to the interior of the hood as to form a longitudinally extending air supply ducting with said hood, said ducting having at its front end an intake opening which directly communicates with the exterior of the hood and also having at least two exit holes spaced apart from each other and rearwardly from the intake opening which each of said holes communicates, when the hood is in its operative position, with a respective inlet of one of the air cleaners by way of a resilient ring.

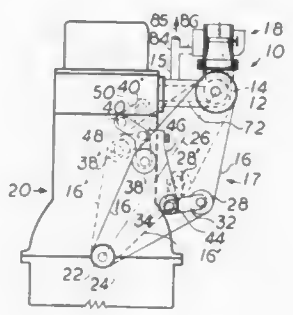
4,354,459
NON-THROTTLING CONTROL APPARATUS FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

Joel W. Maxey, 447 Palmtree Dr., Bradenton, Fla. 33507

Filed Jun. 20, 1979, Ser. No. 50,483

Int. Cl.^{3} F01L *7/00*

U.S. Cl. 123—80 BA **7 Claims**



1. An internal combustion engine having a driven shaft operable in fixed rotational relationship with a driving shaft, of the type having a phase shift mechanism for varying the angular relation between said shafts, and of the type having a valve assembly operably interconnected with said phase shift mechanism for modulating fluid flow, on a time-duration basis, from a fuel mixture feed to a cylinder intake means of said engine, wherein the improvement comprises,
a non-rotatable connector means,
a rotatable rotor means,
a non-rotatable valve passage means,
said connector means, rotor means and valve passage means serially connected to one another and disposed in fluid flow regulating disposition between said fuel mixture feed and said cylinder intake means,
a drive element means connected in driven relation to the driving shaft of the engine and in driving relation to said rotor means,
said drive element means disposed to define a path of travel between said driving shaft and said rotor means,
said phase shift mechanism comprising a line-of-centers defined by an imaginery line extending substantially between the respective axes of rotation of said driving shaft and said rotor means,
a phase shift assembly interconnected to said drive element and movably mounted relative thereto for selective positioning of said path of travel relative to said line-of-centers to achieve the continuous modulation of said fuel mixture flow to said cylinder intake means and thence to the engine cylinders, and
said phase shift assembly further comprising an independently formed control assembly, independently movably disposed on one side of said line-of-centers and interconnected to said drive element, a tension assembly independently formed relative to said control assembly, said tension assembly independently movably disposed on the opposite side of said line-of-centers relative to said control assembly to selectively control disposition of said path of travel relative to said line-of-centers upon selective manipulation of said control assembly.

4,354,460
VARIABLE VALVE EVENT ENGINE

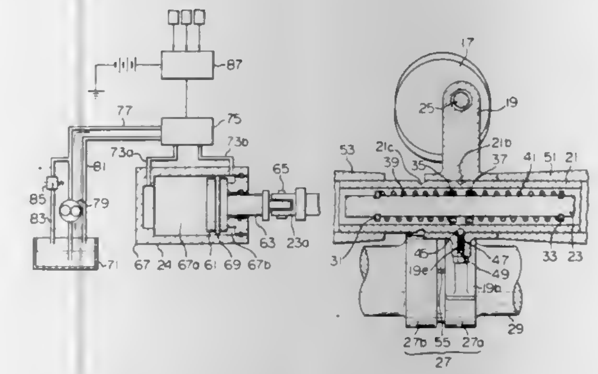
Hisao Mae, Susono; Masaaki Takizawa, Mishima, and Noboru Matsubara, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,629

Claims priority, application Japan, May 9, 1979, 54-55635

Int. Cl.^{3} F01L *1/34*

U.S. Cl. 123—90.16 **9 Claims**



1. A variable valve event engine comprising:
a rocker shaft disposed along said engine;
a camshaft disposed parallel to said rocker shaft and synchronized with a crankshaft of said engine;
a plurality of cams having cam profiles different from each other fixed on said camshaft so as to be adjacent to each other;
a rocker arm for actuating a valve of said engine, said rocker arm being pivotably and slidably disposed on said rocker shaft;
a rocker arm slide shaft disposed parallel and longitudinally movable with respect to said rocker shaft;
a hydraulic member for longitudinally moving said rocker arm slide shaft;
a control valve for actuating said hydraulic member in accordance with changes in the operating conditions of the engine;
a spring connecting said rocker arm slide shaft with the rocker arm for transmitting the movement of said rocker arm slide shaft to said rocker arm to move said rocker arm between logitudinally spaced, predetermined positions, each being aligned with one of said cams;
a first detector for sensing the temperature of the lubricant utilized in said hydraulic member;
a second detector for sensing the rotational speed of the engine;
a third detector for sensing the load of said engine;
a control, connecting said control valve with said first, second and third detectors, for switching said control valve in accordance with the rotational speed and the load of the engine detected by said second and third detectors only when said first detector detects that the temperature of the lubricant is higher than said predetermined temperature.

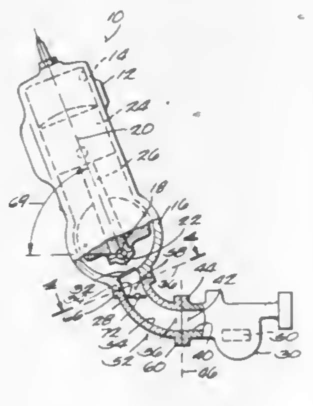
4,354,461
TWO-CYCLE INTERNAL COMBUSTION ENGINE INCLUDING HORIZONTAL CRANKSHAFT

Richard A. Heismann, Knoxville, and Richard L. Morris, Galesburg, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 4, 1980, Ser. No. 175,312

Int. Cl.^{3} F02F *7/00;* **F02B** *33/04*

U.S. Cl. 123—195 AC **8 Claims**



1. A two-cycle, internal combustion engine comprising a cylinder, a crankcase extending from said cylinder and supporting a generally horizontally extending crank shaft having an axis, a piston connected to said crankshaft and mounted for reciprocative movement in said cylinder along an axis extending generally perpendicularly to the crankshaft axis at an angle to the horizontal, means on said crankcase defining an air and/or fuel inlet including a flange disposed in a first plane extending generally parallel to the crankshaft axis and generally perpendicularly to the piston axis, a manifold having an interior passage, an outlet flange which is disposed in said first plane and which is connected to said crankcase inlet flange, and an inlet flange disposed in a second plane which extends generally vertically and which is angularly related to said first plane at said angle, and a carburetor including an air induction passage having an outlet flange which is disposed in said second plane and which is connected to said manifold inlet flange, said carburetor including a float and being operable to regulate fuel flow into said air induction passage when said second plane is vertical.

4,354,462
INTERNAL COMBUSTION ENGINE

Jürgen Kuechler, An den alten Graeben 9, D-3556 Weimar, Lahn 2, Fed. Rep. of Germany; Reinhold Gäbler, deceased, late of Marburg an der Lahn, Fed. Rep. of Germany, and by Inge Funk nee Gäbler, legal representative, Piegenstrasse 43, D-3550 Marburg, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,187

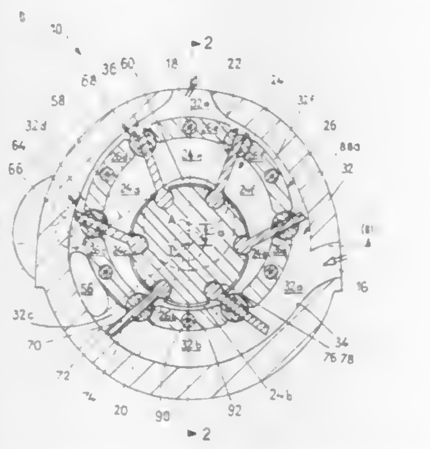
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851346

Int. Cl.^{3} F02B *53/00*

U.S. Cl. 123—241 **7 Claims**

1. An internal combustion engine having a stationary, substantially cylindrical casing, comprising: inlet and outlet openings for the intake of fuel and air supply and for exhausting combustion products, respectively; a rotor and a shaft; top and

bottom cover plates having bearings for supporting said shaft which carries said rotor; a plurality of vanes defining chambers of variable volume, said vanes being sealed along said top and bottom plates; tiltable fulcrum slides through which said vanes pass; a ring structure that surrounds the rotor so as to separate and seal an inner group of said chambers from an outer group of said chambers, said outer group of chambers forming a boosting system and said inner group of chambers forming a compressing system, said fulcrum slides being seated in said ring structure, and said ring structure being arranged for rotation about a first stationary axis which is parallel to a second stationary axis about which the rotor is arranged for rotation, said ring structure including a base disk supporting member; swivel bearings associated with said rotor for allowing said vanes to move in a phase-variable rotatory relation thereto, the tips of said vanes being spaced from the inner wall of said cylindrical casing, said inner and outer groups of chambers having flow communication at predetermined peripheral zones; ignition means for igniting a combustible gas mixture in the smallest inner chamber; a common driving means joined to said ring structure and said rotor so as to maintain them in synchronous rotation, said common driving means including a double-disk toothed wheel meshing both with a first toothed wheel attached to said shaft and with a second toothed wheel axially spaced from said first toothed wheel and attached to the base disk supporting member of said ring structure for rotation therewith, said first and second toothed wheels having identical pitches and identical numbers of teeth, and said base disk being axially extended by a flange collar; a lunate passage being formed between the periphery of said rotor and said base disk, said lunate passage being stationary with respect to the rotating groups of chambers; and a channel formed in at least one of said top and bottom cover plates for periodical flow communication between said outer and inner groups of chambers by means of said lunate passage.



4,354,463
DEVICE FOR IMPROVING COMBUSTION EFFICIENCY OF MIXTURE IN FOUR CYCLE INTERNAL COMBUSTION ENGINE

Junji Otani, Oomiya, and Yasuo Ikenoya, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

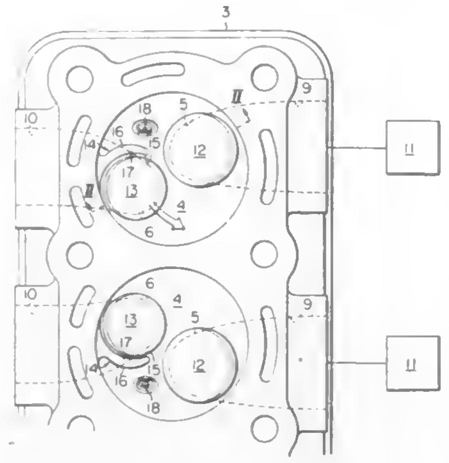
Filed Jun. 6, 1980, Ser. No. 157,188

Claims priority, application Japan, Jun. 9, 1979, 54-72663; Jun. 26, 1979, 54-80938; Jul. 19, 1979, 54-91962; Aug. 6, 1979, 54-99967; Aug. 6, 1979, 54-99968; Sep. 18, 1979, 54-119816; Sep. 20, 1979, 54-120978; Sep. 20, 1979, 54-120979

Int. Cl.³ F02M *25/06;* **F02B** *29/02*

U.S. Cl. 123—308 36 Claims

1. A device for improving combustion efficiency of mixture in a four cycle internal combustion engine comprising: a cylinder slidably receiving a piston, a combustion chamber defined on the top of said piston, an intake port opening to said combustion chamber and communicating with an intake passage, an intake valve fitted in said intake port, an exhaust port opening to said combustion chamber and communicating with an exhaust passage, an exhaust valve fitted in said exhaust port, a fuel supply means disposed in said intake passage for supply of an air-fuel mixture, a swirl generating guide wall formed around said exhaust port and projecting inwardly from a wall defining said combustion chamber so that on the intake stroke of said piston, a part of burnt gas is introduced from said exhaust passage into said combustion chamber through said exhaust port unclosed by said exhaust valve to impinge against said guide wall thereby to produce a swirl.



4,354,464
AIR INTAKE ARRANGEMENT FOR DIESEL ENGINE

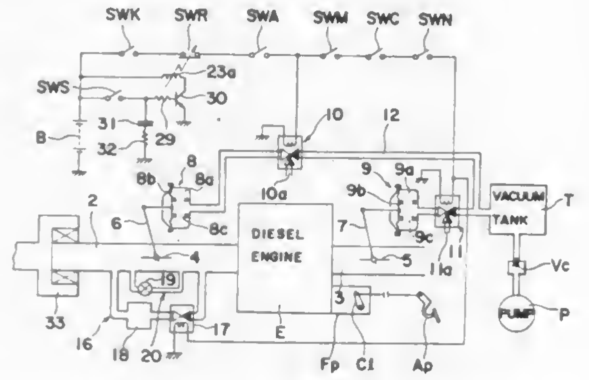
Teruhiro Fujita, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Dec. 1, 1980, Ser. No. 211,714

Claims priority, application Japan, Dec. 8, 1979, 54-159649; Jan. 16, 1980, 55-3931

Int. Cl.³ F02D *9/02, 9/04*

U.S. Cl. 123—323 7 Claims



1. In a system including a diesel engine and a starter motor for starting the diesel engine, the diesel engine having an air intake passage for introducing air into a combustion chamber of the diesel engine, an exhaust passage, and an injection nozzle means, directed into the combustion chamber, for supplying fuel into the combustion chamber so as to effect combustion by injecting the fuel into the air which is compressed in the combustion chamber so as to be raised in its temperature, an improved air intake arrangement which comprises:

means, including an air intake shutter valve, provided in the air intake passages, for controlling the size of the air passage area of the air intake passage;

means for establishing an intake negative pressure at the downstream side of said shutter valve of between 100 and 400 mmHg by closing said shutter valve during idling of the diesel engine, and for fully opening said shutter valve during medium to high engine loads; and

said controlling means including a correction means, responsive to both the temperature of the diesel engine and operation of the starter motor, for increasing the size of the air passage area of the air intake passage while the diesel engine is warming up and during operation of the starter motor, to a size which is larger than the size of the air passage area of the air intake passage while the diesel engine is idling after the diesel engine has warmed up.

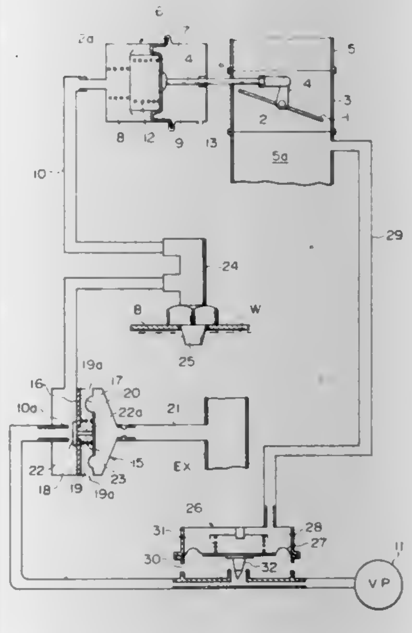
4,354,465
DIESEL THROTTLE VALVE CONTROL SYSTEM

Koichi Takeuchi, Fujisawa; Teruo Nakada, Yokohama, and Mitsuo Iwahara, Ebina, all of Japan, assignors to Isuzu Motors Ltd., Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,876

Int. Cl.³ F02D *9/00*

U.S. Cl. 123—339 8 Claims



1. An intake air throttle valve control system for a diesel engine having an intake manifold and an exhaust manifold comprising:

a throttle valve disposed to control the flow of air in said intake manifold, said throttle valve having a control rod coupled thereto;

a source of negative pressure;

a pressure responsive actuator coupled to said control rod to operate said throttle valve, said actuator having an atmospheric pressure chamber and a negative pressure chamber, a diaphragm separating said atmospheric pressure chamber and said negative pressure chamber, and spring means biasing said diaphragm towards said atmospheric pressure chamber;

an engine temperature sensing valve means having inlet and outlet ports, said engine temperature sensing valve means being operatively positioned to operate in response to the engine temperature, said outlet port of said engine temperature sensing valve means being in fluid communication with said negative pressure chamber of said actuator;

a vacuum cut-off valve having inlet and outlet ports, said outlet port of said vacuum cut-off valve being in fluid communication with said inlet port of said engine temperature sensing valve means, said vacuum cut-off valve venting an outlet portion thereof to the atmosphere in response to a predetermined engine operational parameter;

a negative pressure control valve having an inlet port and an outlet port, said outlet port of said negative pressure control valve being in fluid communication with said inlet port of said vacuum cut-off valve and said inlet port being coupled to said source of negative pressure, said negative pressure control valve operating in response to a pressure in said intake manifold at a point downstream of said throttle valve, and said negative pressure control valve introducing atmospheric air into an outlet port thereof in an amount in proportion to the magnitude of negative pressure at said point downstream of said throttle valve in said intake manifold.

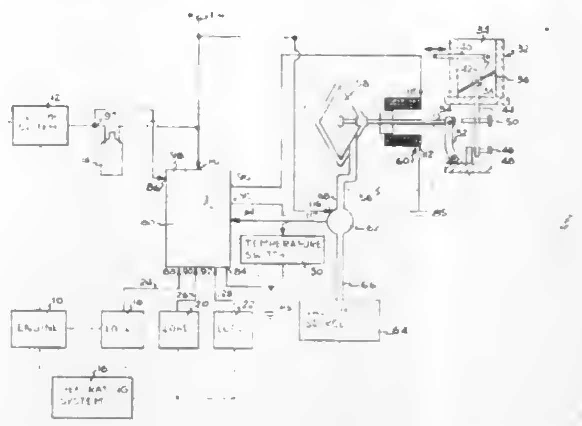
4,354,466
IDLE SPEED CONTROLLER

Carl K. Dudley, Petersburg, Mich., and William J. Roberts, Toledo, Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Jun. 8, 1981, Ser. No. 271,749

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—339 10 Claims



1. An idle speed control for an internal combustion engine having a throttle valve and an ignition system, for permitting a lowered idle speed setting, comprising:

a movable idle speed stop member mounted on said engine for opening the throttle valve of the engine in response to stepwise movement of an actuator means;

said actuator means being capable of assuming a first position and a second position, said movable stop member opening said throttle valve a predetermined amount in said first position;

said actuator means including a vacuum diaphragm actuator and a solenoid actuator, said vacuum actuator being operably connected to a source of vacuum for causing said actuator means to assume said first position in response to a first output signal of a control device, said solenoid actuator being connected to a second output signal of said control device for causing said actuator means to be maintained in said first position;

said first output signal being responsive to a predetermined condition of said engine, said predetermined condition being indicative in part of said idle speed falling below a predetermined minimum speed;

said first output signal being maintained for a predetermined time after said idle speed has fallen below said predetermined minimum speed;

said first output signal being removed after said predetermined time and then being reapplied and maintained if said idle speed falls below said predetermined minimum speed;

said first output signal being disabled when said idle speed rises above a predetermined maximum idle speed.

4,354,467
VEHICLE SPEED CONTROL SYSTEMS

John Noddings, Coventry, and Roland K. Borton, Rugby, both of England, assignors to Associated Engineering Limited, Leamington Spa, England

PCT No. PCT/GB79/00064, § 371 Date Jan. 31, 1980, § 102(e) Date Jan. 30, 1980, PCT Pub. No. WO79/01151, PCT Pub. Date Dec. 27, 1979

PCT Filed Apr. 27, 1979, Ser. No. 189,847

Claims priority, application United Kingdom, May 31, 1978, 25333/78

Int. Cl.³ G05D *13/62;* **G06F** *15/20;* **F02D** *31/00*

U.S. Cl. 123—352 3 Claims

1. A vehicle speed control system, comprising

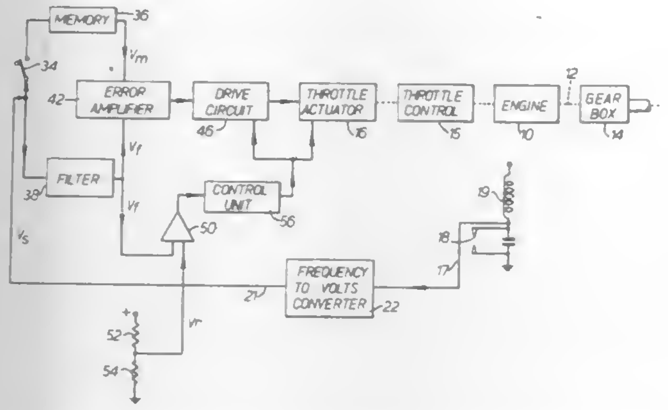
memory means for storing a road speed reference signal representing a desired road speed for the vehicle,

means operative to produce an input signal at least normally representing the actual road speed of the vehicle,

first comparing means operative to compare the road speed reference signal and the input signal whereby to produce a first control signal dependent on the difference, if any, between the two signals compared,

first control means responsive to the first control signal so as to adjust the engine power in a direction and by an amount tending to hold the actual road speed of the vehicle at the desired road speed value,

means operative to generate an engine speed reference signal representing a desired maximum engine speed which is fixed and independent of the actual road speed of the vehicle,



second comparing means connected to compare the engine speed reference signal with a signal representing the actual speed of the engine and independent of the actual road speed of the vehicle whereby to produce a second control signal when the actual engine speed exceeds the value thereof represented by the engine speed reference signal, and

second control means responsive to the second control signal to disable the first control means so as to render the first control means incapable of adjusting the engine power.

4,354,468
SYSTEM FOR FEEDBACK CONTROL OF AIR/FUEL RATIO IN IC ENGINE WITH SUBSYSTEM TO CONTROL CURRENT SUPPLY TO OXYGEN SENSOR

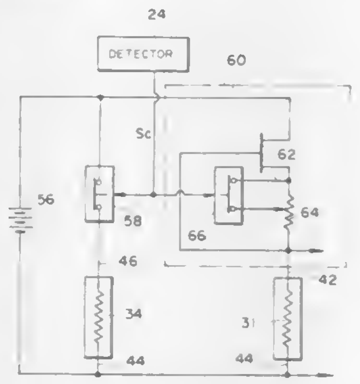
Kohki Sone, Tokyo, and Okamura Kenji, Zushi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 3, 1980, Ser. No. 193,716

Claims priority, application Japan, Oct. 9, 1979, 54-130602

Int. Cl.^{3} F02D *5/00*

U.S. Cl. 123—440 **6 Claims**



1. A system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the control system comprising:

an electrically controllable fuel supplying means provided in the intake system of the engine;

an air/fuel ratio detector which is disposed in an exhaust passage for the engine and has an oxygen-sensitive element of a concentration cell type comprising a substrate, a microscopically porous reference electrode layer formed on the substrate, a microscopically porous layer of an oxygen ion conductive solid electrolyte formed on the substrate so as to cover the reference electrode layer substantially entirely and a microscopically porous measurement electrode layer formed on the solid electrolyte layer and an electric heater;

fuel feed control means for providing a control signal to the fuel supplying means to control the rate of fuel feed to the engine so as to maintain a predetermined air/fuel ratio by utilizing the output of the air/fuel ratio detector as a feedback signal; and

a sub-system to supply a heating current to the heater of the air/fuel ratio detector and force a DC current of a predetermined intensity to flow through the solid electrolyte layer of the oxygen-sensitive element from the reference electrode layer toward the measurement electrode layer to cause migration of oxygen ions through the solid electrolyte layer from the measurement electrode layer toward the reference electrode layer to thereby establish a reference oxygen partial pressure at the interface between the reference electrode layer and the solid electrolyte layer,

said sub-system comprising operating condition detecting means for producing a command signal while the operation of the fuel feed control means is temporarily discontinued to release the air/fuel ratio from the feedback control and the engine is operated under such a condition as causes a significant lowering of the concentration of oxygen in the exhaust gas, and an electrically controllable switch means for interrupting the supply of said heating current to said heater while the operating condition detecting means produces said command signal, whereby the activity of the solid electrolyte layer in the oxygen-sensitive element decreases while said command signal is produced thereby preventing significant lowering of said reference oxygen partial pressure from a predetermined level by the influence of the lowered oxygen concentration in the exhaust gas.

4,354,469
FUEL INJECTION APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

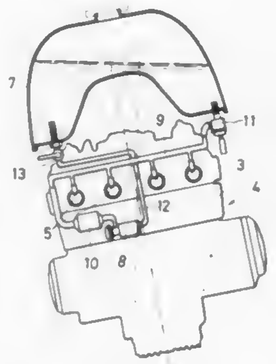
Toshihiko Sato, Oi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,959

Claims priority, application Japan, Jun. 24, 1980, 55/84583

Int. Cl.^{3} F02M *5/10*

U.S. Cl. 123—460 **1 Claim**



1. A fuel injection apparatus for use in a motorized two-wheeled vehicle comprising a vehicle body, front and rear wheels mounted thereon, a side stand mounted on one side thereof, and a multi-cylinder type internal combustion engine mounted on the center portion thereof, said engine including plural cylinders positioned laterally, with respect to said body, plural fuel injection nozzles, a fuel pump, a delivery pipe means for delivering fuel supplied from said fuel pump to said plural nozzles, wherein said plural nozzles are disposed laterally in the direction of said plural cylinders and said delivery pipe means is disposed laterally in the direction of said plural nozzles, and a fuel pressure regulator coupled to one end portion of said pipe means, said one end portion being on the opposite side of the side of the vehicle body having said side stand.

4,354,470
FUEL SUPPLY APPARATUS IN INTERNAL COMBUSTION ENGINE

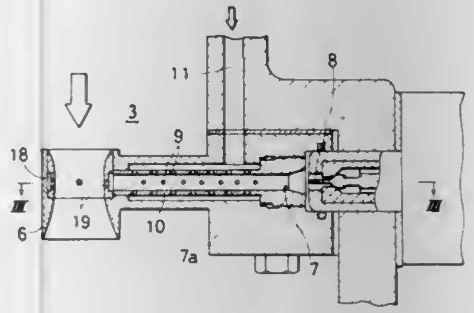
Kiyoshi Miyaki, Asaka; Akihiro Yamato, Sayama; Hidenobu Nagase, Wako, and Kazuo Otsuka, Tanashi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,369

Claims priority, application Japan, Jul. 6, 1979, 54/85011

Int. Cl.^{3} F02M *51/02*

U.S. Cl. 123—472 **4 Claims**



1. A fuel supply apparatus in an internal combustion engine comprising an intake passage having a straight pipe portion with a central axis, a single venturi device positioned and supported in said straight pipe portion along said central axis having a venturi throat therein and at least one fuel discharge opening for discharging into said throat, a mixture producing source communicating with the at least one fuel discharge opening and comprising a hollow bleed tube having two ends and a plurality of bleed holes therethrough positioned circumferentially and axially, one end of the tube opening to the at least one discharge opening, a fuel injection nozzle positioned at the other end of the bleed tube remote from said venturi device, and means surrounding the bleed tube defining an annular space for communicating external air to said plurality of bleed holes whereby a fuel/air mixture produced in said bleed tube by the mixing of fuel supplied under pressure from said injection nozzle with external air passed through the plurality of bleed holes is discharged into said throat of said venturi device through said at least one discharge opening.

4,354,471
INTERNAL COMBUSTION ENGINE

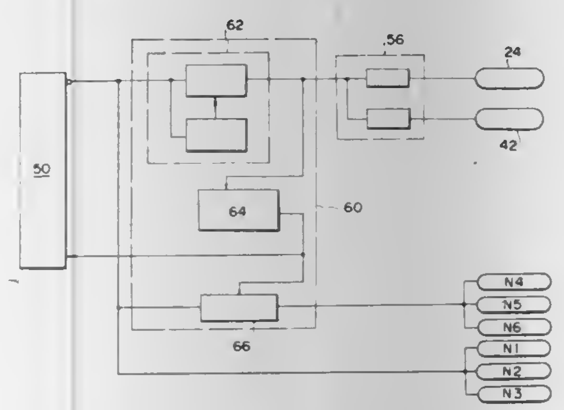
Fukashi Sugasawa, Yokohama, and Haruhiko Iizuka, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 14, 1980, Ser. No. 149,860

Claims priority, application Japan, May 15, 1979, 54-59325

Int. Cl.^{3} F02D *17/02*

U.S. Cl. 123—481 **6 Claims**



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) an intake passage provided therein with a throttle valve, said intake passage being divided downstream of said throttle valve into first and second branches leading to said first and second cylinder units, respectively;

(c) a load detector adapted to detect the load at which said engine is operating and provide a low load indication signal when the engine load is below a predetermined value;

(d) fuel supply means for supplying a controlled amount of fuel into said first and second cylinder units, said fuel supply means being responsive to the low load indication signal for cutting off the supply of fuel to said second cylinder unit;

(e) valve means provided at the entrance of said second intake passage branch, said valve means being resonsive to the low load indication signal for cutting off the flow of air to said second cylinder unit; and

(f) delay means for delaying the start and end of application of the low load indication signal to said fuel supply means.

4,354,472
FUEL INJECTION SYSTEM

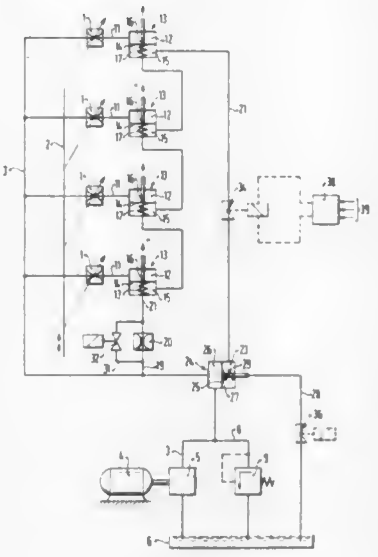
Heinrich Knapp, Leonberg, and Wolfgang Maisch, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,867

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921604

Int. Cl.^{3} F02B *3/00*

U.S. Cl. 123—493 **9 Claims**



1. A fuel injection system for mixture-compressing internal combustion engines with externally-supplied ignition, having controlable fuel metering valves disposed in a fuel supply line for controlably metering a fuel quantity to separate cylinders of said engine which is proportional to the air quantity aspirated by the engine, further wherein said fuel metering occurs at a constant pressure difference which is variable in accordance with operational characteristics of said engine, further having a regulating valve provided with movable valve elements disposed downstream of each fuel metering valve, said movable valve elements dividing said regulating valve into a fuel supply chamber which is connected with said metering valve and a fuel control chamber connected with a control pressure line and arranged to control said pressure difference at each fuel metering valve, each said fuel supply chamber of said regulating valve being exposed to fuel pressure downstream of the associated metering valve and said fuel control chamber of said regulating valve being exposed to pressure in a control pressure line connected to said control chamber of each of said regulating valves, said control pressure line being pressure limited on a fuel supply end by a control throttle

connected to said fuel supply line and on a fuel return end by a control pressure valve disposed downstream of said control chamber, said control pressure line communicating via said control throttle with said fuel supply line, an electromagnetic valve connected in said control pressure line operative in response to control signals, characterized in that pressure in said control pressure line can be influenced by operation of said electromagnetic valve, by means of control signals characterizing engine overrunning so that the regulating valves close and fuel injection is interrupted due to fuel pressure resulting from operation of said electromagnetic valve.

4,354,473
INJECTION INSTANT ADJUSTER FOR INTERNAL COMBUSTION ENGINES

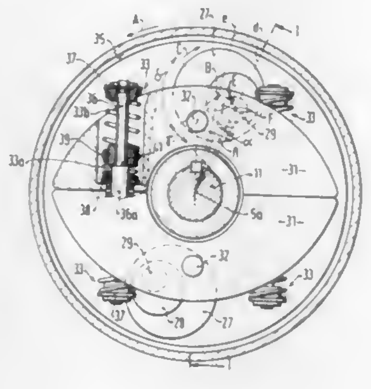
Gerhard Geyer, Munich, and Heinz Kuschmierz, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,137

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952219

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—501 **8 Claims**



1. An injection instant adjuster for Diesel internal combustion engines arranged to vary the mutual rotary position of a driven shaft connected with a fuel injection pump relative to a driving shaft in accordance at least with rpm, said adjuster having at least one control element actuatable counter to the force of a restoring means and having at least one adjusting cam rotatable by said control element and connected between a driving member and a driven element of the adjuster, said adjusting cam further being supported in one of said adjuster elements and coupled with the other element via an eccentric adjusting bolt, characterized in that to attain a "late" adjustment (α) preceding the conventional "early" adjustment (β) of the instant of injection, the outset position of means cooperating with said adjusting cam is designed so that the distance between a connecting line (d) from an axial center of said shafts to the center point (F) of said last-named means and a connecting line (e) from said axial center of said shafts to the center point (B) of said adjusting cam is at first increased, when the rotational direction (C) of said adjusting cam remains the same, in the direction of the "late" adjustment (α) of the instant of injection and is subsequently decreased in the direction of "early" adjustment (β).

4,354,474
FUEL INJECTION ADVANCE ANGLE CONTROL APPARATUS

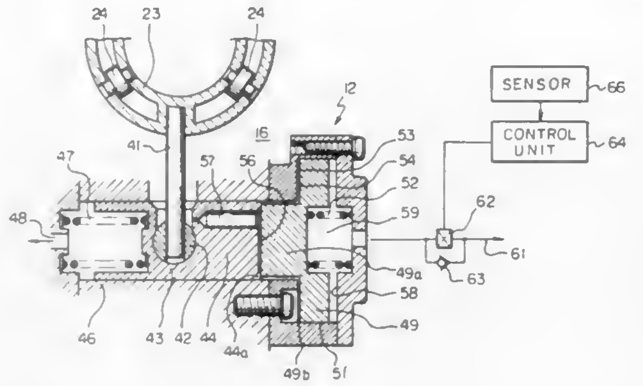
Masayoshi Kobayashi; Toru Sakuranaka; Keilchi Yamada; Masayasu Hayakawa; Sachio Nakagawa; Kohki Iwata, and Ryuichi Komori, all of Matsuyama, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 24, 1979, Ser. No. 60,094

Claims priority, application Japan, Sep. 28, 1978, 53-118978

Int. Cl.³ F02M *59/32*

U.S. Cl. 123—502 **7 Claims**



1. A fuel injection control apparatus for an engine including a housing having a first bore, a second bore having an end wall, the first bore colinerarly communicating with the second bore through said end wall, a diameter of the second bore being larger than a diameter of the first bore, a first piston slidable in the first bore and being connected so that a fuel injection advance angle of the apparatus corresponds to a position of the first piston, a second piston slidable in the second bore, a first spring urging the first piston toward abutment with the second piston, a second spring urging the second piston toward abutment with said end wall, a non-pressurized liquid fuel reservoir, engine driven pump means for pumping fuel from the reservoir at a pressure which increases with engine speed and a first passageway connecting the pump means with a space between adjacent ends of the first and second pistons respectively, characterized by comprising:

- a second passageway connecting the reservoir with the second bore such that fuel from the reservoir is constantly urged to flow through the second passageway into the second bore and contact an end of the second piston opposite to said adjacent end;
- a valve disposed in the second passageway;
- control means for initially closing the valve to apply a liquid lock to the second piston and opening the valve to remove the liquid lock from the second piston after an engine operating parameter reaches a predetermined value; and
- a check valve connected across the valve, the check valve allowing flow of fuel therethrough only from the reservoir to the second bore.

4,354,475
AUXILIARY SUPPLY SYSTEM

James P. O'Toole, Vancouver, Wash., and James L. Mylar, Cheyenne, Wyo., assignors to Lazy S. Mining and Development Corp., Cheyenne, Wyo.

Filed Dec. 10, 1979, Ser. No. 101,462

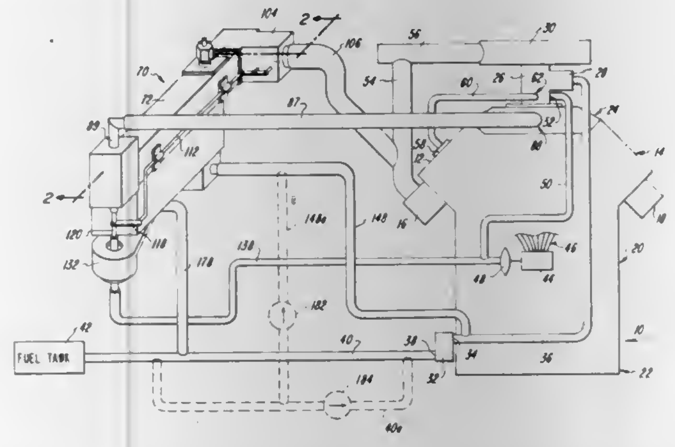
Int. Cl.³ F02M *31/00*

U.S. Cl. 123—525 **27 Claims**

1. For use with an internal combustion engine that includes:
- an intake manifold from which fuel-air mixture is drawn into combustion chambers and within which a vacuum is created during operation of said engine;
- a carburetion system for supplying a fuel-air mixture to said manifold;
- means for selectively varying the quantity of said mixture supplied by said system to said manifold;

- means for selectively changing the ratio between fuel and air in said mixture supplied by said system;
- and means responsive to load upon and speed of operation of said engine for developing a control signal respresentative thereof;

an auxiliary energy supply system comprising:
- a chamber having an inlet and an outlet and an atomizing throat through which a combination of fuel and air may be drawn essentially only from said atomizing throat;
- means separate from the atomizing throat and disposed within said chamber for blending said combination of fuel and air;
- a conduit coupled at one end to said manifold exclusive of said carburetion system and coupled at its other end essentially only to said outlet;



- a metering valve effectively disposed in said conduit and responsive to said control signal for controlling the amount of the blended combination drawn from said outlet and through said conduit by said vacuum;
- said atomizing throat having a fuel intake port, an air input port and an output port with said output port being coupled to said inlet, the drawing of the blended combination from said outlet in turn drawing air through said input port and into commingkement with liquid fuel delivered through said intake port and atomized by action of said throat;
- means for delivering air to said input port;
- and means for delivering liquid fuel to said intake port.

4,354,476
APPARATUS FOR CONTROLLING THE RECIRCULATED EXHAUST GAS QUANTITIES AND THE INJECTION QUANTITY IN AUTO-IGNITING INTERNAL COMBUSTION ENGINES

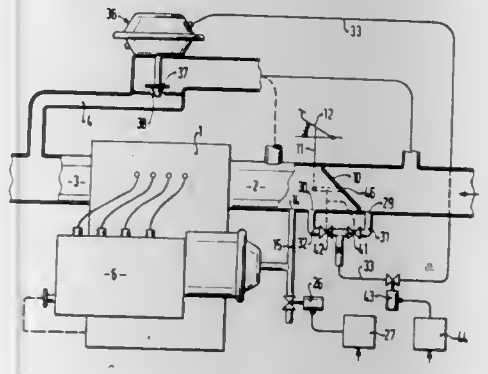
Max Straubel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 84,701, Oct. 15, 1979, Pat. No. 4,304,209. This application Oct. 2, 1981, Ser. No. 308,059

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849508

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—569 **7 Claims**



1. An apparatus for controlling an exhaust gas recirculation quantity and a fuel injection quantity in auto-igniting internal combustion engines including an intake manifold, an arbitrarily actuatable throttle valve disposed in said intake manifold, said throttle valve arranged to vary air input pressure prevailing substantially downstream therefrom, a quantity adjustment device of a fuel injection pump which supplies fuel to said engine, a first pneumatic adjustment device operatively connected with said quantity adjustment device for controlling the supply of fuel to said engine, first pressure supply means connected to a first pressure withdrawal point on said intake manifold downstream of said throttle valve between said intake manifold and said first adjustment means to supply pressure to said first adjustment device for controlling fuel supplied to said engine, an exhaust gas recirculation valve, a second pneumatic adjustment device operatively connected to said exhaust gas recirculation valve for controlling said valve, a first connecting line connected to a second withdrawal point on said intake manifold immediately upstream of said throttle valve, a second pressure connecting line connected to a third pressure withdrawal point downstream of said throttle valve said first and second connecting lines connected to a common pressure line, said common line connecting said first and second connecting lines to said second pneumatic adjusting device for controlling said exhaust gas recirculation valve.

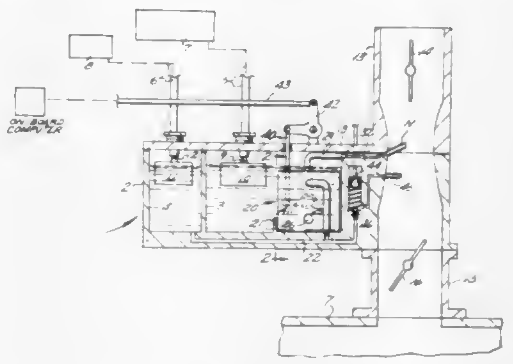
4,354,477
MULTI-FUEL CARBURETOR WITH ROTARY MIXING VALVE

Ellis H. Sprick, 2855 Flintlock St., Eugene, Oreg. 97401

Filed May 4, 1981, Ser. No. 260,348

Int. Cl.³ F02M *13/00*

U.S. Cl. 123—575 **8 Claims**



1. In combination with a carburetor having a fuel discharge nozzle for discharging fuel into the carburetor venturi, the improvement comprising a multi-fuel regulating valve assembly for mixing fuels of different Btu's and permitting the varying of a fuel charge octane rating, said valve assembly comprising in combination,
- a main valve body defining first and second fuel inlets each inlet adapted for communication with a source of fuel of a different octane rating, said body also defining a fuel mixing chamber downstream from the first and second inlets, outlet means communicating the mixing chamber with the carburetor discharge nozzle,
- a valve component rotatably mounted in said main valve body and including a first vane operable to alter the effective size of a first fuel inlet port at the innermost end of said first fuel inlet, a second vane operable to open and subsequently alter the effective size of said second fuel inlet port at the innermost end of the second fuel inlet,
- control means coupling the rotatably mounted valve component with an engine speed control, and
- said first vane operable to regulate fuel flow through the first fuel inlet during constant speed operation of the engine and an increased fuel flow during acceleration periods of engine operation, said second vane operable to regulate a second fuel flow through the second fuel inlet to the mixing chamber during acceleration periods of engine operation to increase the octane rating of the fuel charge while the increased first mentioned fuel flow provides adequate fuel charge Btu's.

4,354,478

COOKING HOB, PARTICULARLY FOR BUILT-IN ASSEMBLY

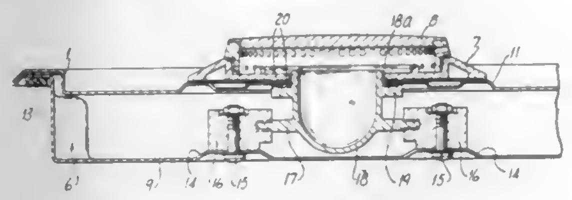
Giorgio Contini, Guastalla, Italy, assignor to Societa per Azioni Technogas Fabbrica Apparecchiature Termo-Electrodomestiche di Giorgio e Gianni F. llt Contini, Gualtieri, Italy

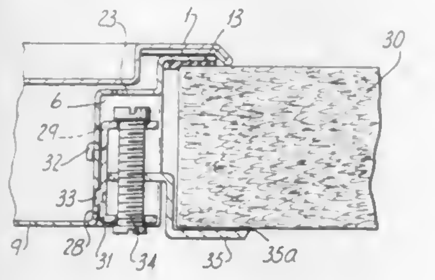
Filed Jan. 14, 1980, Ser. No. 111,803

Claims priority, application Italy, Feb. 2, 1979, 46815 A/79

Int. Cl.^{3} F24C *3/00*

U.S. Cl. 126—39 E **8 Claims**





1. A vertically thin gas cooking top unit particularly for built-in assembly comprising, a lower box casing having a generally flat bottom, an upper drip plate spaced from the bottom by a distance not greater than three centimeters and defining a verticle space between the drip plate and the bottom, said drip plate having a plurality of spaced apart openings formed therein, a plurality of rigid burner bodies in said space, each burner body having an outlet adjacent a respective opening of the drip plate, means for securing each burner body to said bottom in thermally insulated relation to said bottom, means for securing each burner body to said drip plate adjacent the respective drip plate openings, in thermally insulated relation to the drip plate so that each burner body comprises a rigid connecting bridge between and secured to said bottom and said drip plate and which is thermally insulated from both the drip plate and the bottom, conduits within said space for feeding gas to said burner bodies, and a plurality of gas rings on said drip plate and communicating respectively with the outlets of the respective burner bodies.

4,354,479

INFRARED RAY GENERATOR

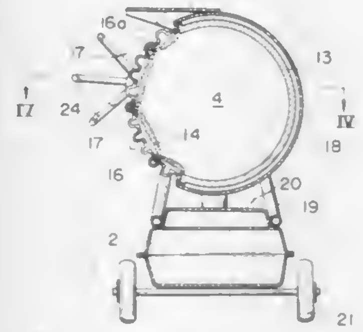
Tadao Haruhara, Suzaka, Japan, assignor to Orion Machinery Co., Ltd., Japan

Filed Feb. 19, 1981, Ser. No. 236,013

Claims priority, application Japan, Feb. 19, 1980, 55-20080[U]

Int. Cl.^{3} F24C *3/04*

U.S. Cl. 126—92 AC **7 Claims**



1. An infrared ray generator comprising a housing of heat resisting refractory material, said housing having a first opening which faces in a desired heating direction, a number of heat resistant inorganic non-metallic mineral fiber mesh screens arranged one over the other to cover said first opening and to form a combustion chamber together with said housing, said mesh screens having a surface which faces in the heating direction, burner means extending through a second opening in said housing for directing a combustion flame into said combustion chamber so that said mesh screens are brought to red heat by the combustion flame and said mesh screens serve to burn flammable substances which originate from the combustion flame and contact said mesh screens, and screen support means fixed to said housing and in contact with said surface of said mesh screens which surface faces in the heating direction for supporting said mesh screens.

4,354,480

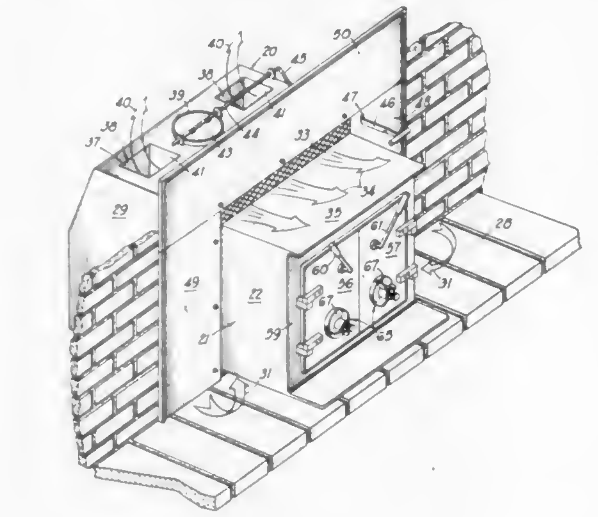
FIREPLACE HEATING UNIT

Louis L. Henderson, Rte. 1, Box 362 YY, and Louis L. Henderson, Rte. 1, Box 362 ZZ, both of Grottoes, Va. 24441

Filed Mar. 20, 1980, Ser. No. 132,295

Int. Cl.^{3} F24B *7/00*

U.S. Cl. 126—123 **2 Claims**



1. A self-contained fireplace heating unit for placement in a fireplace void in communication with a chimney passage and adapted to deliver heated air into a living space in a convective process without forced draft means, said heating unit comprising a refractory lined firebox substantially filling the fireplace void and including a frontal portion projecting well forwardly of the void and into the living space to form a radiator means, frontal access door means on the forwardly projecting portion of the firebox and being vented, a jacket for the reception of living space air and the return of such air to the living space around the firebox portion within the fireplace void and including bottom frontally open section below the floor of the firebox and substantially across the same, a rear upright section at the back of the firebox extending from the floor to a level above the top of the firebox and substantially across the firebox transversely, and a top horizontal forwardly extending section leading forwardly from said rear section of the jacket and being frontally open substantially across the firebox and terminating at the front of the fireplace void to deliver heated air to the living space, the jacket further including vertical side sections extending for the full height of the firebox and from the front of the fireplace void to the rear of the firebox, the side sections being in communication with the other named sections of said jacket to form an integral comparatively narrow heat exchange jacket space substantially around all walls of the firebox within the void, and an integral combustion gas manifold maze for the heating unit in communication with the firebox and fireplace chimney passage and completely isolated from said jacket space, said manifold maze comprising a main large vertical entrance opening for rising combustion gases at the rear and top and lateral center of the firebox, a communicating main forward horizontal passage for combustion gases at the top of the main vertical passage and extending forwardly

beyond the fireplace void to the front of said projecting portion of the firebox, two reverse horizontal side exit passages for combustion gases on opposite sides of the main passages and extending to the rear of the firebox and being constantly in communication with the chimney passage, an adjustable damper valve in said main large vertical entrance opening for rising combustion gases to selectively place such entrance opening in a desired degree of communication with the chimney passage or to block direct communication of such entrance opening with the chimney passage, and remote means to operate said damper valve from said living space.

4,354,481

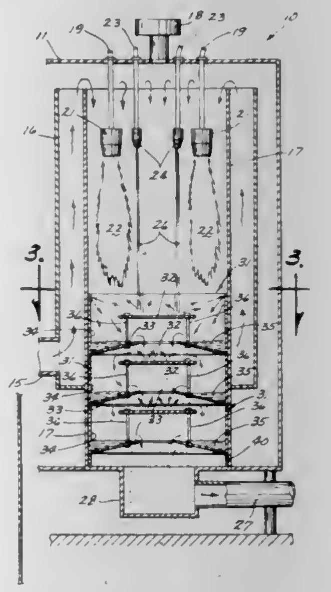
HEATING APPARATUS

David P. Welden, North Indiana Ave., Iowa Falls, Iowa 50126

Filed Sep. 2, 1980, Ser. No. 182,853

Int. Cl.^{3} F24H *1/00*

U.S. Cl. 126—350 B **7 Claims**



1. Heating apparatus comprising:

chamber means for forming a chamber, said chamber means being generally cylindrically shaped;

air inlet means attached to said chamber means;

air outlet means attached to a bottom portion of said chamber means;

heater means attached to said chamber means for introducing heat into said chamber;

blower means for causing air to enter said inlet means, pass through said chamber, and exit through said outlet means;

means for introducing water into said chamber from a top portion thereof; and

water catching means disposed below said water inlet means for holding said water in pools in said chamber and preventing all of said water from passing directly out of said outlet means, said water catching means comprising:

- a horizontally and axially centrally disposed plate means located below said water introducing means for preventing water from said water introducing means to pass directly to said outlet means;
- annular means sealingly and operably attached to the inner wall of said chamber means and extending upwardly and radially inwardly with respect to the axis of the cylindrical chamber means to a point directly below said plate means, a central portion of said annular means having an opening therein for allowing air and water to pass therethrough; and
- means for attaching the plate means to the annular means for holding the plate means above said annular means and for allowing air and water to pass between the plate means and the annular means and through said opening in the annular means.

4,354,482

AUTOMATIC TEMPERATURE CONTROL SYSTEM WITH MANUAL OFF OVERRIDE FOR A CATALYTICALLY HEATED CURLING DEVICE

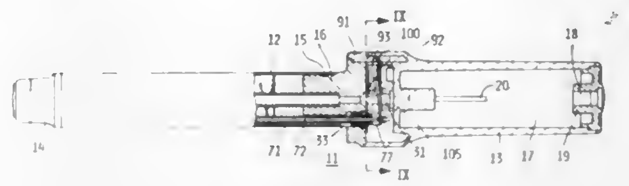
Mark B. Beisecker, Brookline, Mass., assignor to The Gillette Company, Boston, Mass.

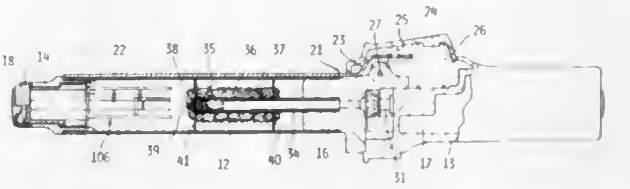
Filed Jul. 22, 1980, Ser. No. 167,632

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 7934175[U]; Dec. 25, 1979, 2948857

Int. Cl.^{3} A45D *1/04;* **F23Q** *2/08*

U.S. Cl. 126—409 **4 Claims**





1. A curling device having a tubular body defining a heating chamber therein and having first and second ends and a hair winding portion disposed between the first and second ends and surrounding the heating chamber, heating means including a catalyst means disposed in the heating chamber, a housing mounted proximate the tubular body including fuel supply means for storing a fuel in a liquid state, and aspirating means coupled between the fuel supply means and the heating chamber for vaporizing the fuel and for mixing the vaporized fuel with air and for supplying a vaporized fuel/air mixture to the catalyst means, wherein the improvement comprises:

- a control plate having first and second ends and adapted to control the axial movement of a valve stem and thereby control the flow of vaporized fuel;
- pivot means for said control plate positioned between said first end of said control plate and the valve stem;
- temperature control means for automatically regulating the flow of vaporized fuel in response to the temperature of said heating chamber including a bi-metal thermostat element positioned coextensive to the tubular body comprising a tube and a rod located within the tube, said tube and rod being firmly attached at a first end, said tube and rod having different co-efficients of thermal expansion so that said rod moves longitudinally relative to said tube in response to variations and temperature of said tube, said second end of said rod being coupled to said first end of said control plate through an aperture defined in said first end of said control plate, said second end of said rod including a stop means to allow unidirectional control of said first end of said control plate; and
- mechanical on/off selector means including a first spring means urging said control plate to pivot in a first rotational direction about said pivot means, and also including a second spring means, said manual on/off selector means also including a manual selector having an on and off position, a portion of said second spring means being movable in response to the movement of said manual selector wherein the positioning of said manual selector in the off position causes said second spring means to overcome said first spring means thereby urging said control plate about said pivot means in a second rotational direction opposite said first rotational direction thereby urging the axial displacement of the valve stem in a downward direction regardless of the thermal state of said bi-metal thermostat element.

4,354,483

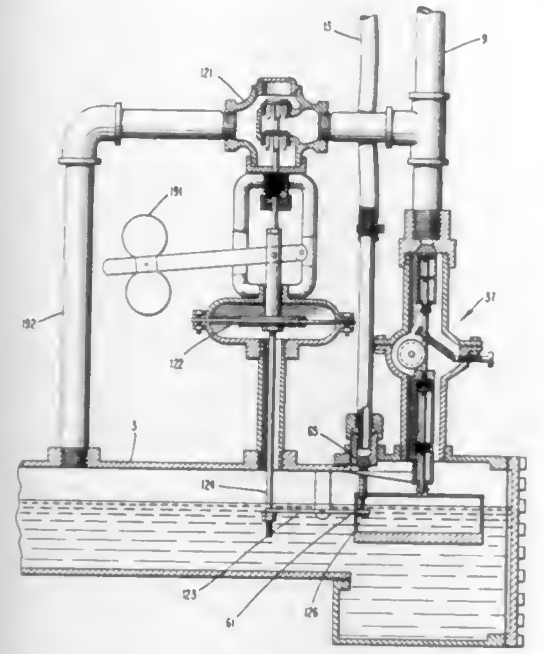
CLOSED LOOP SOLAR COLLECTOR SYSTEM WITH DUAL RESERVOIRS AND FLUID BYPASS

Barry W. Johnston, 1622 Que St., NW., Washington, D.C. 20009

Continuation-in-part of Ser. No. 43,799, May 30, 1979, Pat. No. 4,286,579. This application May 5, 1980, Ser. No. 146,424

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—419 2 Claims



1. A closed loop solar collecting system, comprising:

a fluid receiver for collecting solar heat;

fluid supply means, connected to said fluid receiver, for supplying a quantity of vaporizable heat transfer fluid to said fluid receiver;

means attached to said receiver for precisely metering a quantity of heat transfer fluid from said supply means;

valve means connected to said fluid supply means and to said fluid receiver for bypassing said metering means and supplying said fluid receiver with heat transfer fluid from said fluid supply means when the pressure inside said fluid receiver reaches a predetermined level;

heat exchanger means connected to said fluid receiver for absorbing heat energy from the heat transfer fluid which is vaporized in said receiver, the vaporized heat transfer fluid condensing after releasing its latent heat of vaporization to said heat exchanger, the condensed fluid flowing under pressure provided by the vaporized fluid entering said heat exchanger means to said supply means.

4,354,484

SOLAR COLLECTION SYSTEM

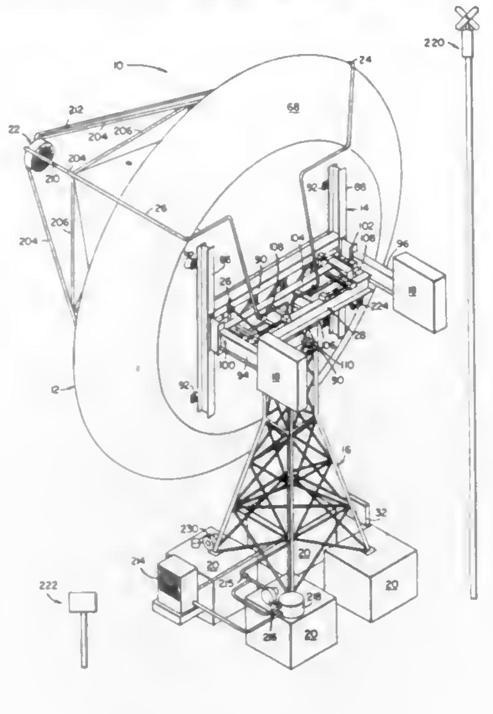
Kenneth B. Malone, and Joseph A. Grow, Jr., both of Chattanooga, Tenn., assignors to Transolar, Inc., Hixson, Tenn.

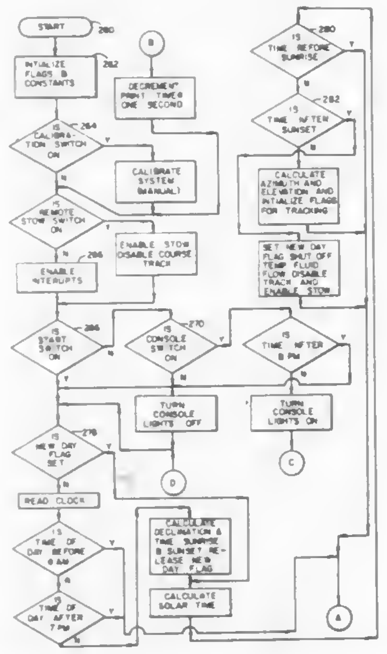
Filed Jan. 5, 1981, Ser. No. 222,316

Int. Cl.^{3} F24J *3/02*

U.S. Cl. 126—425 4 Claims

1. A solar energy collection system for receiving and collecting a concentrated supply of available energy from the sun, said system comprising a substantially dish-shaped reflector having a frontal reflective surface for receiving rays of solar energy and convergingly reflecting the rays toward a focal point, an absorber disposed substantially at said focal point for absorbing the rays, a fixed support tower, mounting means for journally mounting said reflector on said tower for rotation about a substantially vertical axis relatively to said tower, means carried by said tower for journally mounting said reflector for pivotable movement about a substantially horizontal axis relatively to said tower, azimuth drive means responsive to an azimuth control signal for rotating said reflector about said vertical axis, altitude drive means responsive to an elevational control signal for pivoting said reflector about said horizontal axis, position responsive means on each of the azimuth and elevational drive means for generating azimuth and elevational position signals corresponding to the disposition of said reflector, solar insolation monitoring means for providing an enabling signal when available insolation is above a predetermined threshold amount, controller means having stored memory data including the azimuth and elevational position of the sun at all times relatively to the geographical location of the reflector for receiving the azimuth and elevational position signals and the enabling signal and for comparing the azimuth and elevational disposition of the reflector with the stored position and for generating said azimuth and elevational control signals, and means for selectively transmitting said control signals to said azimuth and elevational drive means to point said reflector at the sun.




START
280
INTIALIZE FLAGS & CONSTANTS
282
IS CALIBRATION SWITCH ON
264
Y
N
CALIBRATE SYSTEM (MANUAL)
IS REMOTE STOW SWITCH ON
ENABLE STOW DISABLE COURSE TRACK
ENABLE INTERUPTS
266
B
DECREMENT PRINT TIMER ONE SECOND
IS TIME BEFORE SUNRISE
IS TIME AFTER SUNSET
CALCULATE AZIMUTH AND ELEVATION AND INTIALIZE FLAGS FOR TRACKING
SET NEW DAY FLAG SHUT OFF TEMP FLUID FLOW DISABLE TRACK AND ENABLE STOW
IS START SWITCH ON
IS CONSOLE SWITCH ON
270
IS TIME AFTER 8 PM
TURN CONSOLE LIGHTS OFF
TURN CONSOLE LIGHTS ON
C
D
IS NEW DAY FLAG SET
READ CLOCK
IS TIME OF DAY BEFORE 6 AM
IS TIME OF DAY AFTER 7 PM
CALCULATE DECLINATION & TIME SUNRISE & SUNSET RELEASE NEW DAY FLAG
CALCULATE SOLAR TIME
A

4,354,485

THERAPEUTIC APPARATUS FOR USE IN TREATMENT OF MUSCULAR AND SKELETAL DISORDERS

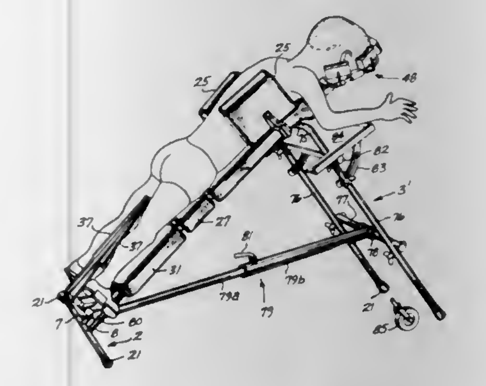
Gary J. Safadago, 5705 Seaview Ave. NW., Seattle, Wash. 98107

Division of Ser. No. 711,469, Aug. 4, 1976, Pat. No. 4,207,879. This application Mar. 17, 1980, Ser. No. 130,592

Int. Cl.^{3} A61F *5/00*

U.S. Cl. 128—70 2 Claims

1. In therapeutic apparatus for use in treatment of muscular and skeletal disorders including an elongated frame having a foot end portion and head end portion, frame-supporting means for supporting the frame on a substantially level surface with the frame inclined upwardly toward the frame head end portion at an angle of inclination to such substantially level surface and body-supporting means carried by the frame and having a head end portion, for supporting a body in downwardly-facing position with the head beyond the head end portion of the body-supporting means, the improvement comprising the frame-supporting means including a freestanding supporting member projecting outwardly from the frame side opposite the body-supporting means and inclined away from the frame foot end portion, one end portion of said supporting member being pivotally mounted to the frame head end portion, means for maintaining the frame and said supporting member selectively in different angular relationships to each other including telescoping brace means adjustable in effective length and having one end portion connected to said supporting member at a location spaced from its pivoted end and its opposite end portion connected to the frame foot end portion for maintaining the frame in different angles of inclination to such substantially level surface corresponding to the adjusted length of said telescoping brace means, and a tray carried by the supporting member and projecting therefrom in a direction lengthwise of the frame away from the foot end portion thereof, said tray having a portion projecting beyond the head end portion of the body-supporting means.



4,354,486

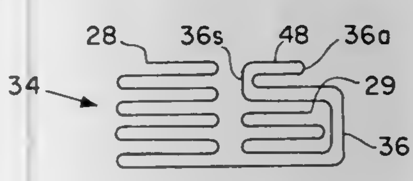
OVERHEAD TABLE DRAPE

Don W. Oliver, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Sep. 29, 1980, Ser. No. 192,136

Int. Cl.^{3} A61F *13/00*

U.S. Cl. 128—132 D 14 Claims



1. A folded, overhead table drape having an upper side and a lower side for contacting a table comprising:

(a) a first stack of panels folded around parallel fold lines having an uppermost panel, a lowermost panel, and two side edges parallel to said fold lines;

(b) a second stack of panels folded around parallel fold lines having an uppermost panel, a lowermost panel, and two side edges parallel to said fold lines; and

(c) a length of material integrally connected to a connecting panel of each of said first and second stacks, said length of material extending from said connecting panel of said first stack underneath said second stack to said connecting panel of said second stack, said length of material being folded such that it comprises a segment having adjacent surfaces, said segment of folded length of material being positioned such that it extends alongside at least a portion of one of said side edges of said second stack and atop the uppermost panel of at least said second stack.

4,354,487

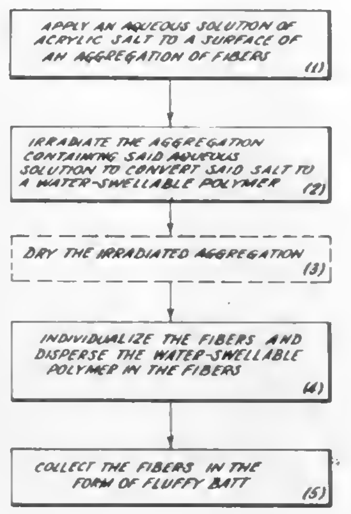
FIBER/ABSORBENT POLYMER COMPOSITES AND METHOD OF FORMING SAME

Boguslaw Oczkowski, Spotswood, and Norman Schiff, Kendall Park, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed May 12, 1980, Ser. No. 149,219

Int. Cl.^{3} C08F *2/54;* **A61F** *13/18*

U.S. Cl. 128—156 17 Claims


APPLY AN AQUEOUS SOLUTION OF ACRYLIC SALT TO A SURFACE OF AN AGGREGATION OF FIBERS (1)
IRRADIATE THE AGGREGATION CONTAINING SAID AQUEOUS SOLUTION TO CONVERT SAID SALT TO A WATER-SWELLABLE POLYMER (2)
DRY THE IRRADIATED AGGREGATION (3)
INDIVIDUALIZE THE FIBERS AND DISPERSE THE WATER-SWELLABLE POLYMER IN THE FIBERS (4)
COLLECT THE FIBERS IN THE FORM OF FLUFFY BATT (5)

1. Process for producing absorbent, fluffy batts of fibers, which comprises the steps of:

(a) applying an aqueous solution comprising a salt of acrylic or methacrylic acid to a surface of an aggregation of fibers, the amount of said solution being sufficient to penetrate said aggregation to a predetermined depth so as contact some but not all of the fibers in said aggregation, said amount being sufficient to provide not more than about 50 weight percent salt, based on weight of fibers;

(b) irradiating said aggregation containing aqueous solution with electromagnetic or corpuscular ionizing radiation to convert said salt of acrylic or methacrylic acid to a water-swellable polymer;

(c) individualizing the fibers to disperse the water-swellable polymer in the fibers; and

(d) collecting the individualized fibers and water-swellable polymer in the form of a fluffy batt of fibers having distributed therethrough isolated portions of water-swellable polymer affixed to individual fibers or to small groups of fibers.

17. The product produced by the process of claim 1.

4,354,488

NOSE MASK GAS DELIVERY DEVICE

Donald M. Bartos, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 24, 1980, Ser. No. 209,784

Int. Cl.^{3} A61M *16/00*

U.S. Cl. 128—205.25 17 Claims

15. A nose mask for administering at least one type of gas to a human being, which comprises, in combination:

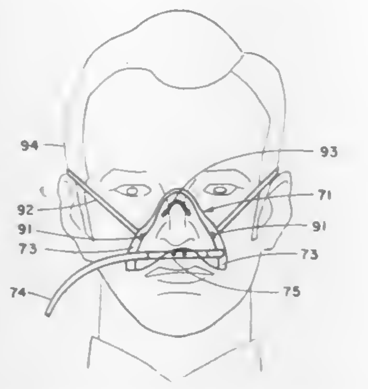
(I) a shell having a rear portion, a front portion, and a first opening, said shell having a shape such that:

  (a) the rear portion has edges which substantially conform to the face of a wearer,

  (b) the front portion is adapted to extend over the nose of the wearer from the bridge of the nose down to a point just above the upper lip of the wearer thereby enabling the wearer to breathe, eat and converse in a substantially normal fashion, and

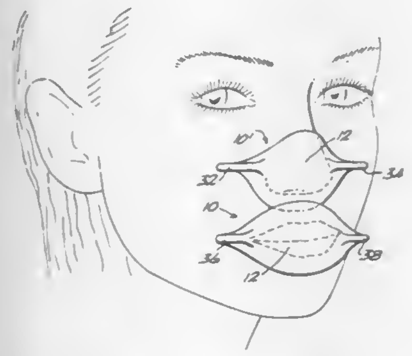
  (c) the first opening consists of the entire horizontal area situated beneath the wearer's nose extending from the front portion to the rear portion of the shell along a line parallel to said point above the upper lip of the wearer and perpendicular to the face of the wearer; and

(II) a length of hollow gas delivery tube contained within an inside region of the shell which region is defined as being the area between both sides of the front portion of the shell and the area between the lower edge of the wearer's nose and said point above the wearer's upper lip, the gas delivery tube extending from one side of the shell to the other in a straight line beneath the nose of the wearer, being affixed to the shell by a suitable attachment means and being adapted to receive at least one gas supply tube, any remaining end of said tube being sealed by a suitable sealing means when only one gas supply tube is employed to provide a source of gas to said delivery tube, said gas delivery tube containing two distinct gas delivering and dispersing means which are two rows of six round gas delivery openings separated by a 90° angle wherein the openings pass through one wall of said gas delivery tube and wherein adjacent openings are equally spaced from each other across the length of said tube and are situated such that the center of each row is located on a line which corresponds to the center of the wearer's nose; one row being positioned such that the gas being delivered is directed up to the wearer's nose and the other row being positioned such that the gas being delivered is directed at the front portion of the shell, at least one of said rows extending longitudinally over the surface of the gas delivery tube for a distance which is greater than the internal diameter of said hollow delivery tube.



4,354,489
INDIVIDUAL NOSE AND MOUTH FILTERS

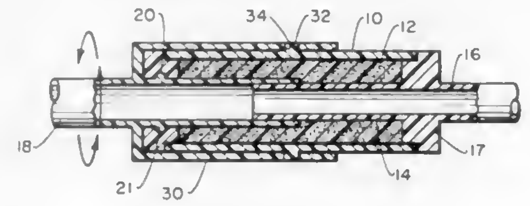
Florence Riaboy, 4819 Sorrento Ct., Cape Coral, Fla. 33904
Continuation-in-part of Ser. No. 30,520, Apr. 16, 1979, Pat. No. 4,240,420. This application Oct. 20, 1980, Ser. No. 198,767
Int. Cl.^{3} A62B *7/00*
U.S. Cl. 128—206.14 **1 Claim**



1. An oronasal filter mask comprising two identical filter mask elements for use in pairs wherein one of said filter elements of the pair is adapted to cover the nostrils of a user and the other of said filter element is adapted to cover the mouth areas of a user, each filter mask element of said pair including a suitable centrally disposed flexible filter material the perimeter of which defines an outwardly extending peripheral flange and being generally ovoid in shape with rounded ends and wherein the dimension of the overall length is approximately twice the dimension of the overall width of each filter mask element, each filter mask element being sized and configurated to cover the mouth area of the user and thereby, also being sufficiently sized and configurated to cover the nostril area of the user, and a continuous band of a pressure sensitive adhesive material applied around said outwardly extending peripheral flange and outside of the centrally disposed flexible filter material for secure engagement with a predetermined facial skin area of the user, the pressure sensitive adhesive area of one of the filter mask elements overlying and being bonded to the pressure sensitive adhesive area of the other filter element in the area between the nostrils and mouth when said filter mask elements are applied to both the nostril and mouth areas.

4,354,490
CONNECTOR FOR AMBULATORY DIALYSIS SYSTEM

Phillip P. Rogers, 27 Horseshoe La., Rolling Hills Estates, Calif. 90274
Filed Jun. 9, 1980, Ser. No. 157,268
Int. Cl.^{3} A61J *7/00*
U.S. Cl. 128—213 A **10 Claims**



1. A peritoneal dialysis fluid connecting device comprising; cylinder means;

an absorbent packing material substantially filling said cylinder means;

said absorbent packing material being saturated with a disinfectant solution;

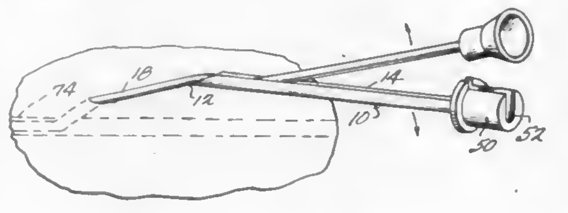
a first tube connecting end for supplying peritoneal dialysis fluid;

a second tube connecting end adapted to telescopically mate with said first tube connecting end;

means for passing said first and second tube connecting ends through opposite ends of said cylinder so that said connecting ends are bathed in disinfectant solution when connection is being made and throughout use.

4,354,491
FLUID TRANSFER DEVICE

Steven L. Marbry, 1806 Apollo Dr., Las Cruces, N. Mex. 88001
Continuation-in-part of Ser. No. 20,956, Mar. 18, 1979, abandoned, which is a continuation of Ser. No. 778,024, Mar. 15, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 106,512
Int. Cl.^{3} A61M *5/00*
U.S. Cl. 128—214.4 **7 Claims**



1. A device for supporting a fluid transfer tube, the device comprising:

an elongated hollow needle having a first end shaped to form a cutting edge for making an incision into tissue and a second end opposite said first end;

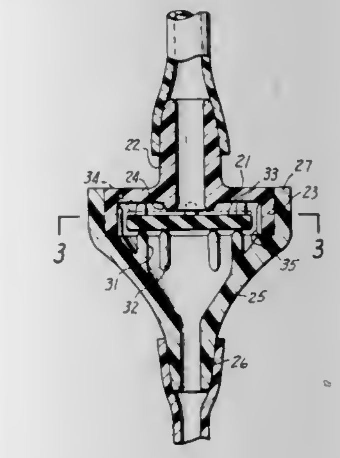
a slot along the length of said needle at a position in the wall thereof removed from the position of the forward extremity of the cutting edge; and

adapter means attached to said needle for gripping and moving said needle during insertion and removal, said adapter means being generally cylindrical and defining a passage extending longitudinally from one end of said cylinder to the other, said passage having a U-shaped cross section and being aligned with the hollow portion of said needle, said needle being attached to the walls defining said passage, the smallest width of said passage being no smaller than the inner diameter of said needle, said adapter means being sufficiently non-rigid to deform upon manual squeezing of the portion of said adapter means adjacent the curved bottom portion of said U-shaped cross-section to hold a catheter passing through said passage;

the arrangement being such that the fluid transfer tube positioned within the needle may be removed from the needle through said slot therein.

4,354,492
MEDICAL ADMINISTRATION SET WITH BACKFLOW CHECK VALVE

Charles J. McPhee, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Continuation of Ser. No. 30,398, Apr. 16, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,949
Int. Cl.^{3} A61M *5/00*
U.S. Cl. 128—214 E **14 Claims**

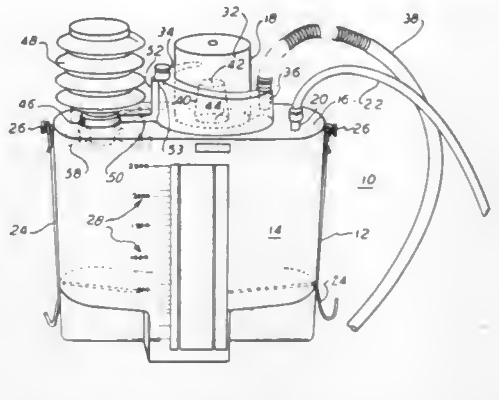


1. A medical administration set with a check valve, wherein the improvement comprises: a valve housing having a valve seat; a compliant sheet-like valve member being free of mechanical bias against the valve seat and movably confined in a compartment of the housing without a physical anchoring to the housing; and a plurality of spaced supports connected to the housing which maintain a sealing surface of the valve member at a distance of 0.002 to 0.030 inch from the valve seat when the valve is open; said valve member having sufficient width to cause a pressure differential in either direction across the valve member as low as 2 inches of water to alternately open and close the valve by means of gravity liquid draining at liquid flow rates commonly used in medical administration sets.

4,354,493
THORACIC DRAINAGE UNIT

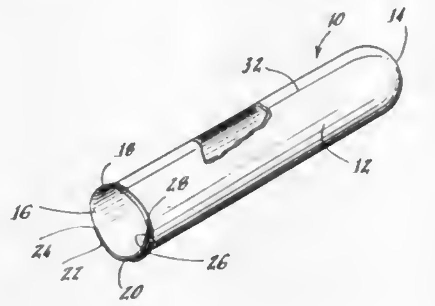
John P. Kayser, and John R. Pinkert, both of Madison, Wis., assignors to Airco, Inc., Montvale, N.J.
Filed Oct. 27, 1980, Ser. No. 200,659
Int. Cl.^{3} A61M *1/00*
U.S. Cl. 128—276 **5 Claims**

1. A thoracic drainage device having a collection chamber for receiving fluids from a body cavity to be drained, said drainage device comprising a water trap chamber for receiving the fluids, said water trap chamber further containing a predetermined quantity of liquid, inlet means to said water trap chamber and with means to communicate with the body cavity to be drained, said inlet means disposed within said water trap chamber at a point below the level of said initial quantiity of liquid, outlet means from said water trap chamber to carry liquid from said water trap chamber to said collection chamber as said liquid reaches a predetermined level in said water trap chamber, receptacle means carried by said drainage device and means to receive a container containing the initial quantity of liquid, channel means providing a flow path for the liquid received in said receptacle means to said water trap chamber and baffle means in said channel means intermediate said receptacle means and said water trap chamber to prevent any return flow of the liquid from the water trap chamber to said receptacle.



4,354,494
CONDOM HAVING A RETENTION STRAP

Philip E. Hogin, Mooreland Rd., Greenwich, Conn. 06830
Filed Mar. 9, 1981, Ser. No. 242,036
Int. Cl.^{3} A61F *5/42*
U.S. Cl. 128—294 **6 Claims**



1. A condom comprising:

an elongate thin tubular sheath of resilient material being closed at one end and having an opening at the other end, said opening including a periphery; and

a resilient retention strap having one end portion attached to said periphery at one point and having another end portion attached to said periphery at another point spaced from said one point, said periphery including a beaded edge, said end portions being formed integrally with said edge, said beaded edge comprising an upper part and a lower part each having a cross-sectional area and wherein said resilient strap has a cross-sectional area, said cross-sectional area of said upper part being approximately equal to the combined cross-section areas of said lower part and said strap.

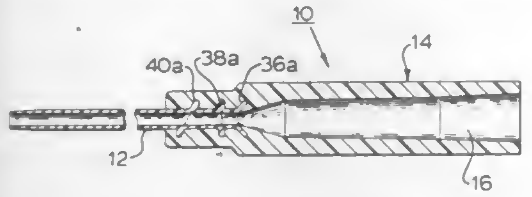
4,354,495
METHOD OF CONNECTING PLASTIC TUBE TO A PLASTIC PART

Raymond O. Bodicky, St. Louis, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.
Filed Oct. 30, 1980, Ser. No. 201,890
Int. Cl.^{3} A61M *25/00;* B29C *17/02*
U.S. Cl. 128—348 **24 Claims**

1. An indwelling catheter comprising a plastic tube having at least one generally annular bulge with an axis at an angle to the longitudinal axis of said tube formed by heating an annular area

around an end portion of the tube but spaced from both ends of the tube to form a generally annular bulge with an axis at an angle to the longitudinal axis, and while the bulge is heat-softened moving inner facing walls of the bulge together, and a plastic hub having one end portion molded about said end portion of said tube including the bulge with the inner facing walls thereof together whereby any forces tending to rotate the tube about the longitudinal axis are opposed by increased resistance to such rotation as a result of the axis of said bulge being at an angle to the longitudinal axis, said hub having passage means in fluid communication with said tube.

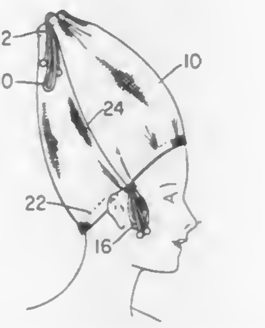
17. The method of making a medical device having a plastic tube connected in fluid-tight connection with a plastic hub comprising the steps of providing a plastic tube of predetermined length which when heated sufficiently in selected areas from the exterior side of the tube expands radially outwardly in that area to form a bulge, heating predetermined areas of a proximal end portion of the plastic tube sufficiently from the exterior side thereof to form a radially outwardly extending generally annular bulge thereon with the axis of the bulge at an angle to the longitudinal axis of the tube, cooling the tube sufficiently to harden the bulge, inserting the end portion of the plastic tube including the bulge into a hub mold, filling the mold with a plastic material to mold a hub with the plastic material about the bulge, cooling the plastic material of the hub and removing the hub from the mold with the tube bulge embedded in the hub.



4,354,496

HOOD FOR PREVENTION OF SCALP HAIR LOSS

Esther Andersen, 1735 N. Green Bay Rd., Racine, Wis. 53405
Filed Mar. 17, 1981, Ser. No. 244,681
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—403 **5 Claims**

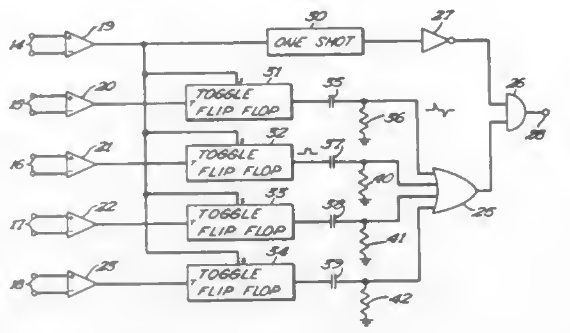


1. A hypothermic tourniquet hood to prevent scalp hair loss comprising,
   an exterior flexible elongated casing open at the top and bottom, the bottom adapted to be placed on the head of a user,
   an interior flexible elongated casing within said exterior casing, said interior casing being closed at its top end and joined to said exterior casing at its bottom to form a space between said casings which can be filled with ice, and
   a drawstring around the bottom of the joined casings, the diameter and position of said drawstring being such that it can be drawn tight to apply pressure as a tourniquet to a patient's hairline.

4,354,497

CARDIAC DEPOLARIZATION DETECTION APPARATUS

Alan R. Kahn, Golden Valley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed May 23, 1977, Ser. No. 799,258
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 D **7 Claims**

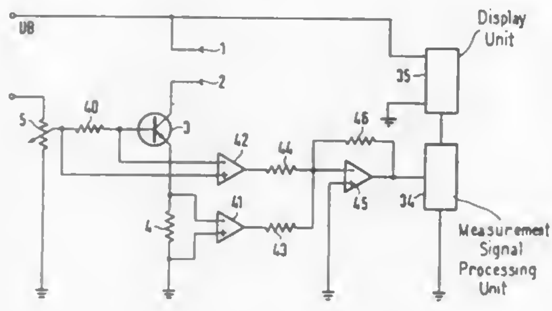


1. Cardiac ectopic heat detection apparatus which comprises:
   means for sensing cardiac depolarization including first means for sensing depolarization of a first area of cardiac tissue and second means for sensing depolarization of at least one other area of cardiac tissue, said first area being an area of earlier activation within the ventricular conduction system than any of said other areas;
   output means; and
   means interconnecting said output means and sensing means for providing a signal to said output means only following the occurrence of cardiac depolarization sensed by said second means and not preceded by a depolarization sensed by said first means.

4,354,498

ELECTROMEDICAL APPARATUS

Kurt Weigert, Nuremberg, Fed. Rep. of Germany, and Karl Hudek, deceased, late of Erlangen, Fed. Rep. of Germany (by Amanda Hudek, Kurt Hudek, Gerd Hudek, heirs), assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Aug. 28, 1980, Ser. No. 182,466
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939234
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 R **4 Claims**

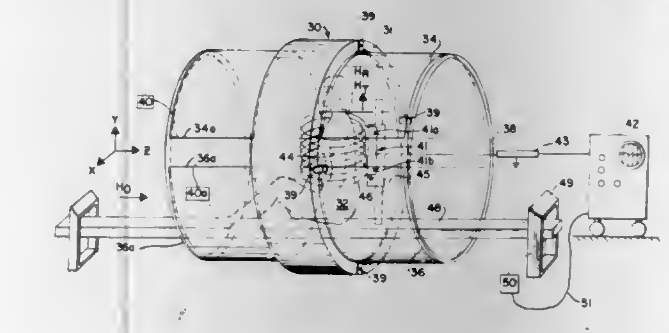


1. Electromedical apparatus, in particular, a current stimulation apparatus, comprising an output stage as current waveform generator for controlling an output current through a patient's body as the load resistance, said generator having an operating voltage circuit (U_B) for supplying the output current, defined resistance means (**4, 40**), measurement means (**34, 35, 41** through **46**) coupled with the defined resistance means (**4, 40**) for sensing the voltage drops thereacross for the purpose of determination of the patient current and including a display unit (**35**) for displaying a measure of patient current, characterized in that said measurement means comprises computational means (**45**) responsive to voltages across said defined resistance means (**4, 40**) which are at relatively low potentials relative to ground potential, and together provide a measure of patient current, said computational means supplying a resultant voltage which can be transmitted to the display unit (**35**) as a measure of patient current, the output stage for the purpose of constant-current control comprising a transistor (**3**) whose emitter path is connected to ground potential, and whose base is activated by an adjustable control voltage, said defined resistance means comprising a defined resistance (**4**) in said emitter path and a defined series resistance (**40**) connected in series with said base for transmitting the control voltage thereto, characterized in that measuring voltages across the resistance (**4**) of the emitter path, as well as across the defined series resistance (**40**), connected in series with the base, are supplied to said computational means (**45**).

4,354,499

APPARATUS AND METHOD FOR NUCLEAR MAGNETIC RESONANCE SCANNING AND MAPPING

Raymond V. Damadian, 64 Shorthill Rd., Forest Hills, N.Y. 11375
Filed Nov. 20, 1978, Ser. No. 961,858
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—653 **15 Claims**

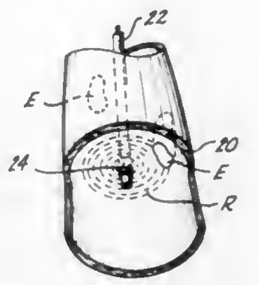


1. A method of detecting selected nuclei within a specimen utilizing nuclear magnetic resonance pheonomenon comprising:
   (a) providing a nonuniform primary static magnetic field space;
   (b) focusing the primary static magnetic field space by a time-independent shaping of the primary static magnetic field space to provide a three dimensional resonance domain of selectable size wherein the field strength is substantially uniform;
   (c) positioning the specimen such that the resonance domain impinges on the specimen;
   (d) directing oscillating magnetic radiation to the resonance domain such that the magnetic field orientation of the oscillating magnetic radiation is orthogonal to the magnetic field orientation of the primary static magnetic field to cause a nuclear magnetic resonance signal to be generated by selected nuclei within the resonance domain;
   (e) receiving the nuclear magnetic resonance signal generated; and
   (f) processing the nuclear magnetic resonance signal to determine a nuclear magnetic resonance value directly which nuclear magnetic resonance valve represents the selected nuclei extant in the resonance domain impringing on the specimen.

4,354,500

SYSTEM USING ULTRASONIC ENERGY FOR DETECTION AND QUANTIFICATION OF AIR EMBOLI

Peter S. Colley, Seattle, and Roy W. Martin, Redmond, both of Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.
Division of Ser. No. 070,356, Aug. 28, 1979. This application Dec. 3, 1980, Ser. No. 212,457
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **22 Claims**



1. A system for detecting air emboli in the blood flow in intracorporeal blood vessels, said system comprising:
   (a) a catheter;
   (b) an ultrasonic transducer carried by said catheter, said ultrasonic transducer comprising a single annular, cylindrical ring of piezoelectric material providing omnidirectional transmission and reception of ultrasonic energy in a substantially planar region that extends radially outward from said ultrasonic transducer and that is oriented transversely with respect to the longitudinal axis of said catheter, said ultrasonic transducer being capable of transmitting ultrasonic energy throughout said substantially planar region when energized by a high frequency electrical signal, and being further capable of converting any returns of said transmitted ultrasonic energy from objects within said substantially planar region into corresponding electrical return signals; and,
   (c) a detecting apparatus including: a source of a high frequency electrical signal, means operative to apply said high frequency electrical signal to said ultrasonic transducer; and, means responsive to said electrical return signals from said ultrasonic transducer to develop a signal representative of air emboli.

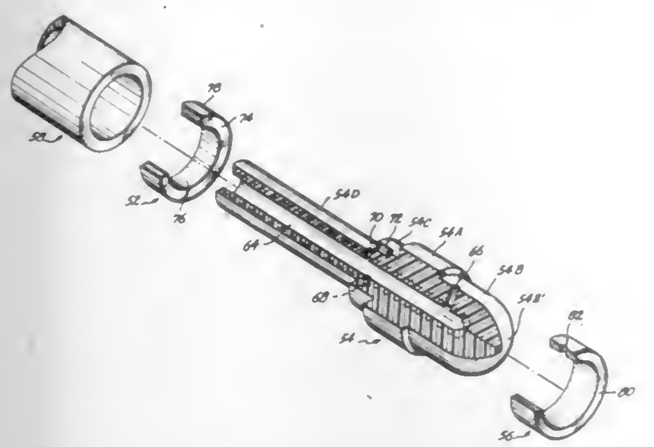
4,354,501

ESOPHAGEAL CATHETER INCLUDING ULTRASONIC TRANSDUCER FOR USE IN DETECTION OF AIR EMBOLI

Peter S. Colley, Seattle, and Roy W. Martin, Redmond, both of Wash., assignors to The Board of Regents of The University of Washington, Seattle, Wash.
Division of Ser. No. 70,356, Aug. 28, 1979. This application Dec. 3, 1980, Ser. No. 212,458
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 **12 Claims**

1. An esophageal catheter particularly adapted for use in the detection of air emboli in intracorporeal blood vessels, said catheter comprising:
   (a) a substantially cylindrical member;
   (b) an ultrasonic transducer comprising a single annular, cylindrical ring of piezoelectric material carried by said substantially cylindrical member, said ultrasonic transducer providing omnidirectional transmission and reception of ultrasonic energy in a substantially planar region that extends radially outward from said ultrasonic transducer;
   (c) an elongated cylindrical tube of flexible material receiving said substantially cylindrical member so that said

substantially planar region is oriented transversely with respect to the longitudinal axis of said tube; and,



(d) electrically-conductive means passing through said tube and electrically interconnected with said ultrasonic transducer.

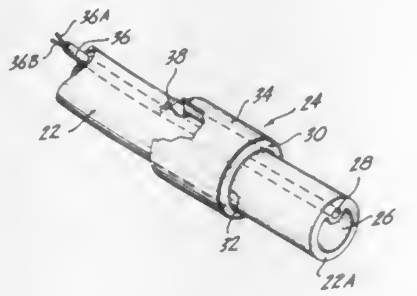
4,354,502
INTRAVASCULAR CATHETER INCLUDING UNTRASONIC TRANSDUCER FOR USE IN DETECTION AND ASPIRATION OF AIR EMBOLI

Peter S. Colley, Seattle, and Roy W. Martin, Redmond, both of Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Division of Ser. No. 70,356, Aug. 28, 1979. This application Dec. 3, 1980, Ser. No. 212,459

Int. Cl.^{3} A61B *10/00*

U.S. Cl. 128—663 **10 Claims**



1. An intravascular catheter particularly adapted for use in the detection and aspiration of air emboli in intracorporeal blood vessels, said catheter comprising:
(a) an elongated cylindrical tube of flexible material, said tube having a tip and having formed therein an axial aspiration lumen extending to and being open at said tip;
(b) an ultrasonic transducer comprising a single annular, cylindrical ring of piezoelectric material carried by said tube adjacent said tip, said ultrasonic transducer when so carried providing omnidirectional transmission and reception of ultrasonic energy in a substantially planar region that extends radially outward from said ultrasonic transducer and that is oriented transversely with respect to the longitudinal axis of said tube; and,
(c) electrically-conductive means located in and extending along said tube, said electrically-conductive means being electrically connected with said ultrasonic transducer.

4,354,503
BLOOD PRESSURE CUFF

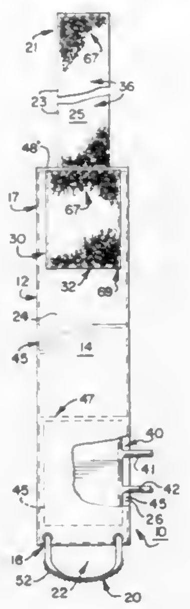
Richard I. Golden, 1736 Highland, Wilmette, Ill. 60091

Filed Dec. 23, 1980, Ser. No. 219,565

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—686 **10 Claims**

1. A blood pressure cuff adapted to be positioned on a limb of a body, comprising: an elongated flexible band having first and second ends, said band having a front face intended for placing in contact with the limb and having a back face, said band having a compartment therein; bladder means confined within said compartment and adapted to be inflated; fastening means having a first part disposed on said back face at one of said ends; said fastening means having a second part disposed on said front face at the other one of said ends; an elongated separate strip of material extending transversely across said band near said first part at said one of said ends to define, with an adjacent portion of said band, a loop for receiving the opposite end of said band so that said band can be tightened about the limb by pulling on both of said ends of said band and said first and said second fastening means parts interconnected for securing releasably the cuff in position on the limb; means attaching said strip to the said one end of said band for enabling said loop to be sufficiently large to receive said opposite end of said band without causing it to buckle; and an elongated flexible strap extending from the opposite end of said band and being adapted to extend through said loop when said band is tightened about the limb, said strap being narrower in width than said band to enable said strap and a portion of the opposite end of said band to be pulled through said loop to accommodate smaller size limbs; and said fastening means having a third part thereof on said front face of said band adjacent to the second part disposed on said strap so that said third part can interconnect with said first part of said fastening means when said opposite end of said band is pulled through said loop for accommodating small sized limbs.



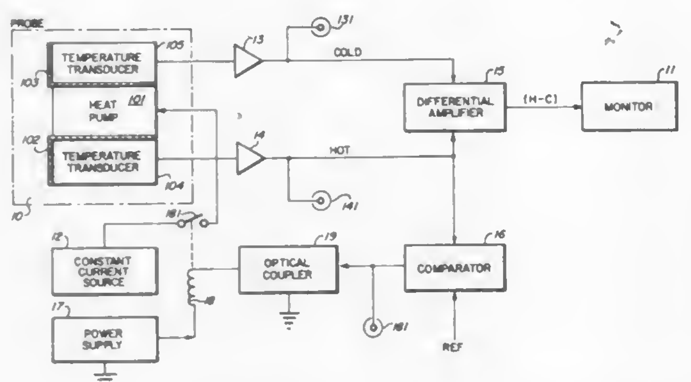
4,354,504
THERMAL DIFFUSION FLOW PROBE

William J. Bro, 3735 W. Cavalier Dr., Phoenix, Ariz. 85019

Filed Sep. 4, 1979, Ser. No. 72,148

Int. Cl.^{3} A61B *5/02*

U.S. Cl. 128—691 **25 Claims**



1. In a thermodiffusion blood-flow probe system comprising a thermodiffusion probe having a hot and a cold body-tissue-contact plate wherein the temperature gradient between said plates is independent of ambient body-tissue temperature but varies with blood flow through said body tissues the improvement comprising:
(a) first signal means coupled to said hot contact plate for outputting a signal proportional to the temperature of said hot plate;
(b) second signal means coupled to said cold contact plate for outputting a signal proportional to the temperature of said cold plate;
(c) reference signal means for outputting a signal proportional to a selected safe temperature to which body tissue may be exposed without damage while said probe is used to determine blood flow; and
(d) comparison means for comparing the relative level of the output of said reference signal means and the output of said first signal means.

4,354,505
METHOD OF AND APPARATUS FOR TESTING AND INDICATING RELAXATION STATE OF A HUMAN SUBJECT

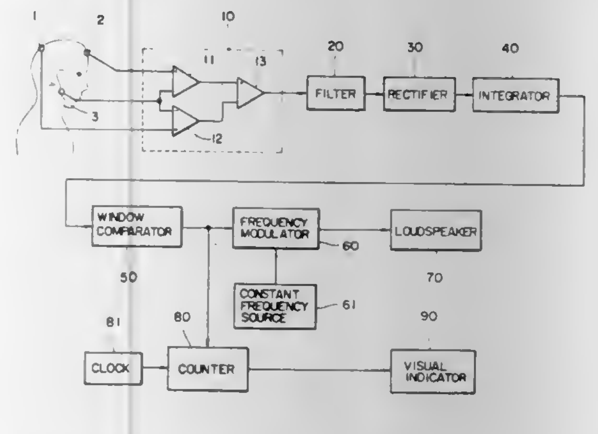
Kazumasa Shiga, Kawasaki, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sep. 3, 1980, Ser. No. 183,750

Claims priority, application Japan, Sep. 4, 1979, 54-113744

Int. Cl.^{3} A61B *5/04*

U.S. Cl. 128—732 **20 Claims**



1. A biofeedback system comprising:
sensing means attached to the scalp of a person for sensing brain waves of a predetermined frequency band and generating therefrom a physiological signal representative of said sensed brain waves;
rectifying means for rectifying said physiological signal for generating a unipolar signal;
integrating means for integrating said unipolar signal;
range detecting means for detecting whether the magnitude of the output of said integrator is in a predetermined range between a first low reference and a second high reference, the output magnitude of the integrating means being susceptible to being lower than the first reference and higher than the second reference;
counter means for accumulatively measuring the duration of the output of said range detecting means and generating therefrom a counter signal representative of the total value of the accumulatively measured durations; and
indicator means for indicating said counter signal.

4,354,506
INTRACRANIAL PRESSURE GAUGE

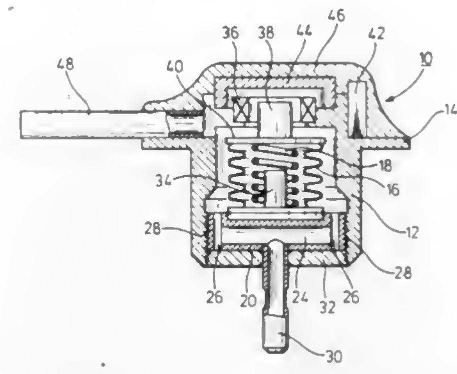
Iwao Sakaguchi, Ueda; Kunihiko Osaka, Nishinomiya; Shigenori Hokari, and Kenichi Takahashi, both of Ueda, all of Japan, assignors to Naganokeiki Seisakujo Company, Ltd., Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 113,068

Int. Cl.^{3} A61B *5/00*

U.S. Cl. 128—748 **9 Claims**

1. An intracranial pressure gauge which comprises,
a powerless resonance circuit composed of a coil and a condenser;
a sensor equipped with a pressure-sensitive section including an evacuated bellows which is capable, when implanted under the scalp, of changing the inductance of the said coil in response to a change in the length of the evacuated bellows with changing intracranial pressure; and
a grid dip meter capable of externally measuring the change in the resonance frequency of the said sensor.



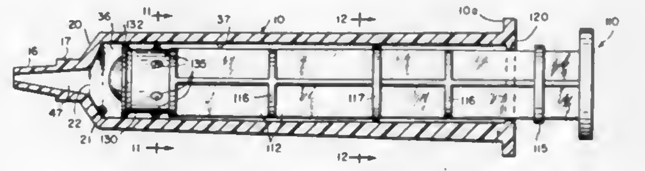
4,354,507
SYRINGE

Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Keene, N.H.

Filed Jan. 17, 1978, Ser. No. 870,118

Int. Cl.^{3} A61B *5/14*

U.S. Cl. 128—763 **2 Claims**



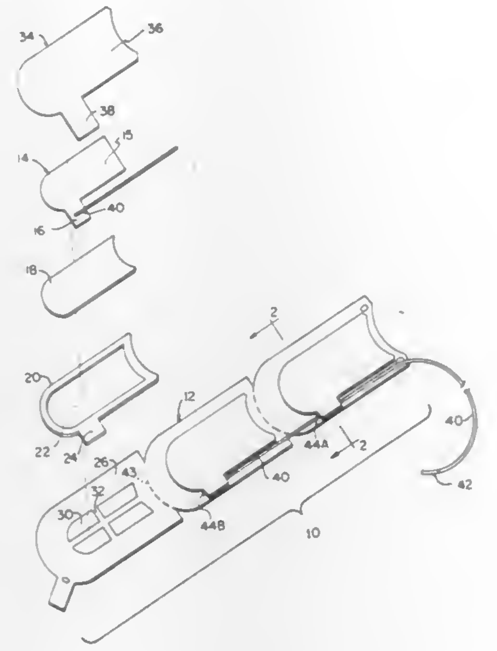
1. A disposable syringe assembly particularly suited because of the low force requirement for the operation thereof to be used for obtaining a blood sample from a patient comprising a barrel having a cylindrical inner wall and a plunger comprising a plunger stem and a compressible, elastomeric, generally cylindrical plunger tip of lesser diameter than the inner wall of said barrel, said plunger tip having an integral, annular, elastically deformable wiper extending peripherally radially outwardly and axially forwardly from said plunger tip at a forward portion thereof at an acute angle to the longitudinal center axis of said plunger tip and terminating at the outer edge thereof in a wiping edge having a minimal diameter slightly in excess of the diameter of the inner wall of said barrel, thereby forming a sealing engagement with the inner wall of said barrel, said annular wiper being the sole sealing element between said plunger tip and said wall, said plunger tip having a plurality of raised portions spaced circumferentially around said plunger tip and located at the rearward portion of said plunger tip, said raised portions when engaging said inner wall of said barrel, having a minimum of frictional contact to prevent canting of said plunger tip in said barrel, said plunger being spaced from said barrel along the length thereof so that axial movement between said plunger and said barrel is substantially free of frictional contact except for the contact by said sole sealing element.

4,354,508

ELECTRODE

Robert R. Murfitt, Chelmsford, and Richard F. Burtt, Andover, both of Mass., assignors to Vaughn Corporation, Salisbury, Mass.

Filed Aug. 18, 1980, Ser. No. 178,839
Int. Cl.^{3} A61N *1/04*
U.S. Cl. 128—798 **11 Claims**



1. An electrode assembly attachable to the skin of a living body for use with signal generating means for generating an electrical signal so as to provide electrical stimulation of a predetermined area of said body, said assembly comprising:

a plurality of electrode modules, each module comprising

- (a) a first sheet of electrically-conductive material;
- (b) a second sheet of porous material for retaining an electrically-conductive gel material;
- (c) a third sheet of material having an aperture for receiving said second sheet of material;
- (d) an adhesive sheet having an adhesive layer on one side of said adhesive sheet for securing each said module to the skin of said body, said adhesive sheet including an opening smaller in its cross-sectional dimension than said second sheet; and
- (e) a cover sheet secured to the side of said adhesive sheet opposite said adhesive so as to secure said first, second and third sheets therebetween in order to maintain said first sheet in contact with said second sheet and said second sheet in the aperture of said third sheet between said first sheet and said adhesive sheet, and so as to expose a portion of said second sheet through the opening in said adhesive sheet;

flexible electrically-conductive means for electrically connecting the first sheets of said modules in series with one another;

means for electrically connecting said electrically-conductive means to said means for generating said electrical signal;

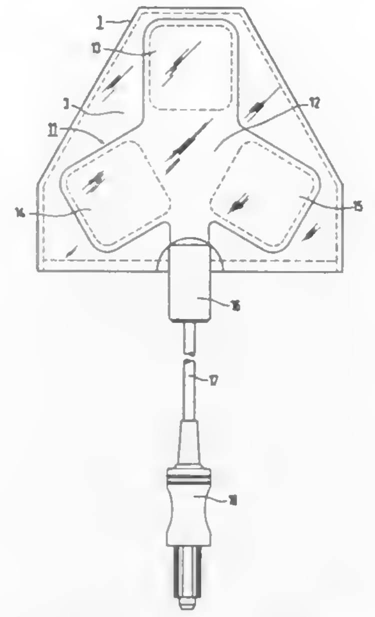
wherein the modules can each be selectively oriented and positioned with respect to the remaining modules when each module is applied to the skin of said body while maintaining electrical contact with one another, and the number of modules applied may be reduced from said plurality by severing said flexible electrically-conductive means at the appropriate location so as to reduce the number of modules to a desired number.

4,354,509

APPARATUS FOR APPLICATION OF AN ELECTRODE SYSTEM ON A PATIENT'S BODY

Franz Strahwald, Ebermannstadt, and Erich Szehi, Buckenhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,799
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 7932816[U]
Int. Cl.^{3} A61N *1/04*
U.S. Cl. 128—803 **7 Claims**



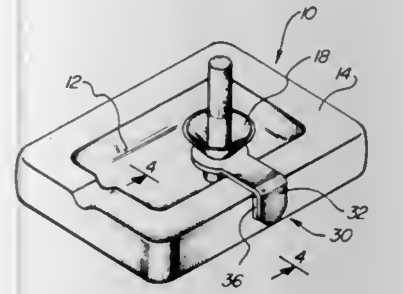
1. Apparatus for application of an electrode configuration to a patient's body; said apparatus comprising an electrode system including a flexible formed part of electrically insulating plastic, individual electrode contact means for transmitting electrical signals secured to said flexible formed part and supported thereby, and a carrier means for a contacting agent for insertion between the electrode contact means and the application location on the patient's body, characterized in that the carrier means for the contacting agent is a fleece material part (2) formed of two superimposed layers each having an exterior contour (8) slightly greater than the exterior perimeter of the formed part (12) of the electrode system (11), the fleece material part (2) having a first side for applying to the patient's body and a second side for contacting the electrode contact means, the fleece material part (2) having a covering (3) of largely impervious insulating material at said second side, said covering (3) having an exterior configuration slightly greater than the exterior perimeter of the formed part (12) of the electrode system and having a first elongated marginal edge portion detached from the fleece material part (2) to define an access opening and having a second elongated marginal edge portion secured with the fleece material part (2) to define a pocket such that the formed part (12) is inserted through the access opening and into a space between the fleece material part (2) and the covering (3), the two superimposed layers of said fleece material part (2) each having a first elongated margin portion extending adjacent but detached from the first elongated marginal edge portion of said covering (3) at said access opening, and each having a second elongated margin portion extending adjacent and secured with the second elongated marginal edge portion of said covering (3), the two superimposed layers of said fleece material part (2) having the respective first elongated margin portions thereof joined by an integral fold connection, and the respective second elongated margin portions being of configurations which are mirror symmetrical in relation to an axis coinciding with the fold connection such that the fleece material part (2) is formed from a flat single layer piece of fleece material having a fold axis and having sections of said fleece material which are mirror symmetrical at the opposite sides of the fold axis.

4,354,510

CIGARETTE SNUFFER

Lourie L. Eakin, 223 Wesley Ave., Ventura, Calif. 93003

Filed May 4, 1981, Ser. No. 259,841
Int. Cl.^{3} A24F *13/18*
U.S. Cl. 131—235 R **3 Claims**



1. A cigarette snuffing apparatus comprising:

a tubular section having an internal chamber, said internal chamber being divided into an enlarged section and a smaller diametered section, an annular ridge separating said smaller diametered section from said enlarged section, said smaller diametered section being open to the ambient, said enlarged section connecting with the internal chamber of a guide funnel, said guide funnel being integrally secured to said tubular section, said tubular section having an exterior continuous side wall;

a sheet material bracket member, said continuous exterior surface of said tubular section being connectable to said bracket member, said bracket member being manually deformable into a configuration other than its initial configuration to facilitate attachment to a particular configuration of exterior structure, said bracket member being normally rigid, said bracket member being deformable by the application of heat to the area of the bracket member where the bending is to occur; and

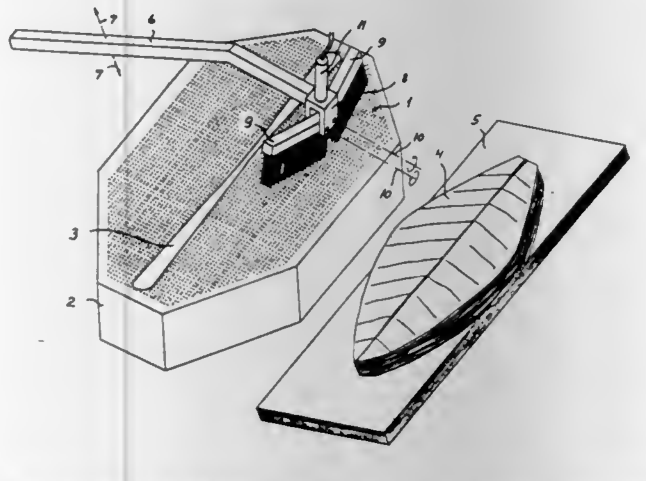
adhesive attachment means to connect with said said bracket member, said adhesive attachment means to connect with the separate structure to which the cigarette snuffer of this invention is to be connected.

4,354,511

DEVICE FOR SPREADING TOBACCO LEAVES

Ian Kjaer, Hadsund; Hans J. Moller, Harlev J, and Steen H. Nielsen, Gistrup, all of Denmark, assignors to Skandinanisk Tobakskompagni A/S, Soborg, Denmark

Filed Mar. 17, 1981, Ser. No. 244,690
Claims priority, application Denmark, Apr. 2, 1980, 1470/80
Int. Cl.^{3} A24B *3/00, 3/18, 5/14;* **A46B** *7/06*
U.S. Cl. 131—324 **3 Claims**



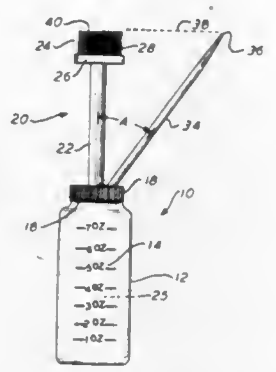
1. A device for spreading out tobacco leaves comprising means for receiving leaves, means defining a path of advance of leaves, a smoothing tool which is movable between an open and a closed position relative to said receiving means and movable relative to said path of advance, wherein said smoothing tool is deformable between a generally straight position in which it is substantially parallel to said receiving means, and a position in which its end portions have a greater distance from said receiving means than its centre portion.

4,354,512

LIQUID APPLICATOR DEVICE WITH HAIR-PARTING WAND

Michael Roppatte, Jr., Garfield, N.J., assignor to Stefan J. Klauber, West Orange, N.J., a part interest

Filed May 30, 1978, Ser. No. 910,471
Int. Cl.^{3} A45D *40/30*
U.S. Cl. 132—88.5 **7 Claims**



1. A liquid applicator device for applying compositions to hair in the course of cosmetically treating same; said device comprising: a compressible container for receiving said composition; a cap closure being removably secured to the top of said container, and including an opening therethrough for feeding said composition upon manual compression of said container body; brush means including liquid distribution means extending from said cap along the longitudinal axis of said container and being in communication with said cap opening to enable feed of said composition to said brush upon said container compression, the applicator face of said brush means being transverse to said longitudinal axis at the upper distal end of said device; and a hair-parting wand extending from said cap at an angle diverging from the direction of extension of said brush means, the length and divergence angle of said wand being such that the perpendicular from the distal end to said brush to said wand intersects the wand substantially below the wand tip, whereby a user of said device may employ said wand to part and separate said hair without interference by said brush means, and thereupon utilize said brush means to apply said composition to the parted hair.

4,354,513

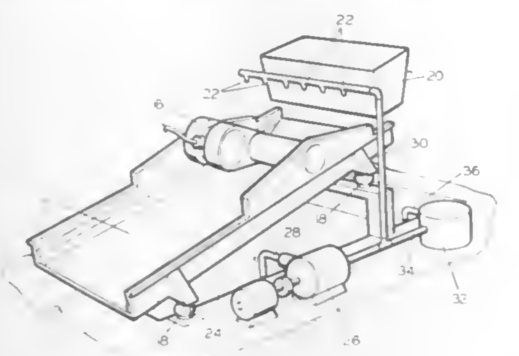
CUTTINGS WASHER ASSEMBLY

Marion G. Bingham, Houston, and Leonard D. Reagan, Spring, both of Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed Dec. 15, 1980, Ser. No. 216,230
Int. Cl.^{3} B08B *3/02*
U.S. Cl. 134—104 **1 Claim**

1. A cuttings washer assembly for removal of hydrocarbon contaminates from cuttings obtained from a fluid circulated from a subterranean well bore, comprising: a plurality of vibrating shakers, each of said shakers including an inclined vibrating screen adapted for retaining cuttings deposited thereon on the screen surface and permitting a wash fluid to pass therethrough; said shakers being arranged in series such that the second screen is arranged to receive said cuttings traveling off of a lower edge of the first screen; means at the upper end of the first screen for spraying a first wash liquid onto the cuttings deposited on the first screen; means at the upper end of the second screen for spraying a second wash liquid onto the cuttings deposited on the second screen; means for vibrating said screens to control the motion of said cuttings

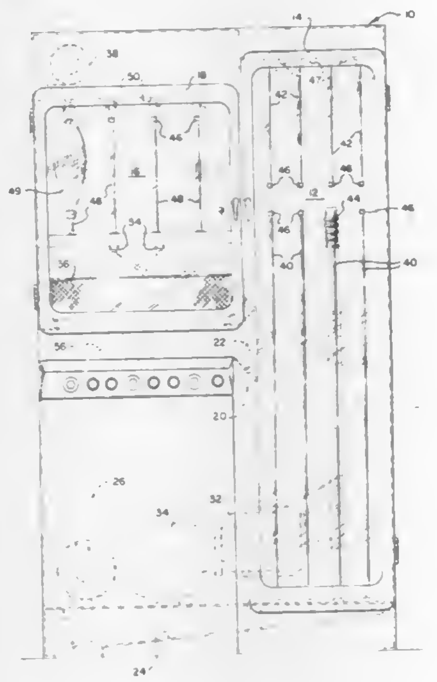
down the incline of said screens and subject the cuttings to sufficient vibration to dislodge wash fluid attached thereto; each of said screens having a total length adequate to reduce the moisture adhering to the cuttings reaching the lower end of the screen to a level less than about 10% by weight; and means for separately collecting said wash fluids for removal of particulate contaminates therefrom and recirculation to said screens for reuse.



4,354,514
APPARATUS FOR CLEANING AND DRYING ANESTHESIA AND RESPIRATORY EQUIPMENT

Craig S. Sundheimer, Erie, and Bradley D. Joslin, Cambridge Springs, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Oct. 21, 1980, Ser. No. 199,187
Int. Cl.^{3} B08B *3/02, 9/02*
U.S. Cl. 134—152 **7 Claims**

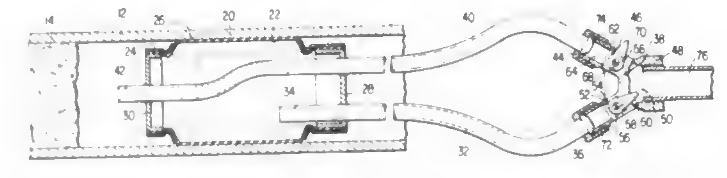


1. Apparatus for cleaning and drying lengths of corrugated tubing, hollow articles and other items constituting components of anesthesia and respiratory equipment comprising:
  - a main chamber;
  - a plurality of substantially vertically arranged pipes disposed within said main chamber, each said pipe being adapted to receive the lumen of a length of said corrugated tubing;
  - each said pipe having one end in selective fluid communication with a source of cleaning liquid and a source of air;
  - means for selectively supplying under pressure to said pipes cleaning liquid and air from said respective sources; and
  - each said pipe further having longitudinally and circumferentially spaced ports for permitting said liquid and alternately said air present in said pipe under pressure to flow radially outwardly therefrom and into contact with said surrounding lumen.

4,354,515
DRAIN PIPE FLUSHING APPARATUS

Rabion C. Sutherland, 1210 Willow St., Flint, Mich. 48503

Filed Nov. 10, 1980, Ser. No. 205,165
Int. Cl.^{3} B08B *3/02, 9/02*
U.S. Cl. 134—167 C **6 Claims**



1. A drain pipe flushing apparatus comprising:

(a) an expansible member of resilient material insertable in a pipe to be flushed,

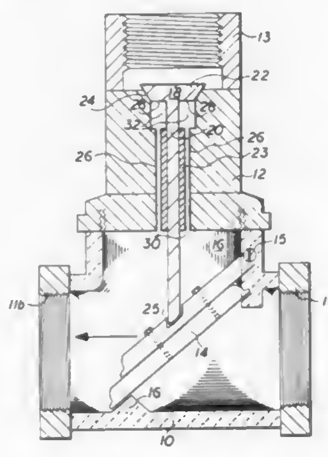
(b) a first manually controlled valve adapted to be connected at its inlet to a source of fluid under pressure and at its outlet to a first hose having connection to first point of said expansible chamber for filling and emptying same, and

(c) a second manually controlled valve adapted to be connected at its inlet to said source of fluid under pressure and at its outlet to a second hose non-centrically disposed with respect to the first hose such that the second hose enters said expansible chamber at a second point removed from said first point and passes through the chamber for flushing said pipe where said first and second hoses extend over different paths to the expansible chamber and where said inlets of said first and second valves are connected to a common coupling member which, in turn, is connected to said source of fluid.

4,354,516
AUTOMATIC CONTROL VALVE

Ronald Newell, 118 Poplar Rd., St. Mary's, Pa. 15857

Filed Oct. 24, 1980, Ser. No. 200,468
Int. Cl.^{3} F16K *19/00*
U.S. Cl. 137—98 **7 Claims**

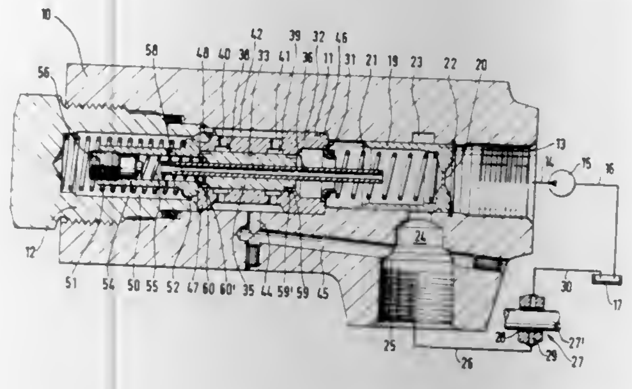


1. An automatic control valve for providing controlled amounts of liquid to a fluid stream, said valve comprising:
  - a housing;
  - a shut-off member pivotally connected to said housing;
  - a piston valve having a valve stem that abuts said shut-off member such that said piston valve is responsive to the pivotal motion thereof; and
  - a core member connected to said housing, said core member forming a seat for said valve and having a valve stem sleeve for maintaining valve stem and at least one metering channel passing through said core member and in communication with said housing.

4,354,517
PRESSURE VALVE

Wilhelm Zirps, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 175,192
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932434
Int. Cl.^{3} G05D *24/00*
U.S. Cl. 132—110 **15 Claims**

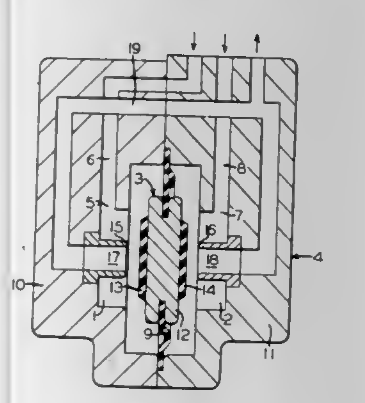


1. A valve for a pressure-medium-operated hydraulic arrangement, comprising a housing having an opening; inlet means in said housing, for entry of a pressure medium; outlet means in said housing, for exit of the pressure medium to a consumer; a distributing slide piston located downstream of said inlet means and seal-tightly movable in said opening of said housing under the action of the pressure medium entering said housing, said slide piston being arranged so that the pressure medium is subdivided into a first stream flowing directly to said outlet means and a second constant stream; a laminar throttle member located downstream of said slide piston and associated with a spring-biased control member, said laminar throttle member and said control member being arranged so that said constant stream flows through said laminar throttle member and generates pressure drop which acts upon said control member against its bias, and said control member subdividing said constant stream into two partial streams which flow to said outlet means and one of which is throttled; a spring-biased movable element acting upon said control member; and spring means arranged to bias said control member associated with said laminar throttle member toward said slide piston and also including a spring biasing said movable element toward said control member.

4,354,518
DIAPHRAGM PISTON OPERATED VALVE DEVICE

Yoichi Kuroda, and Hideo Tamamori, both of Kobe, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Sep. 8, 1980, Ser. No. 184,871
Int. Cl.^{3} G05D *11/00*
U.S. Cl. 137—112 **8 Claims**



PRIOR ART

1. A diaphragm piston operated valve device comprising:

(a) a housing having a pair of valve chambers formed therein and open to respective fluid pressure input ports;

(b) a diaphragm piston operably disposed in said housing between and separating said chambers, and being subjected on opposite sides to the respective pressures prevailing in the chambers,

(c) a pair of oppositely disposed piston type valve members operably connected to said diaphragm piston;

(d) a pair of oppositely facing valve seats fixed in said housing, each opening to a common fluid pressure delivery passageway;

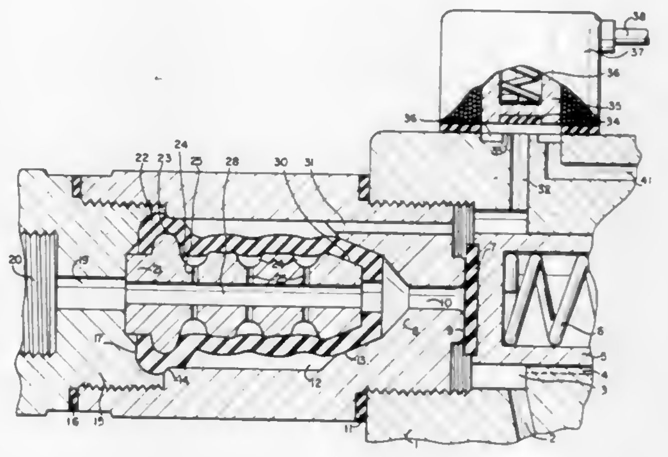
(e) a spring member compressibly disposed between said valve members which biases the valve members in axially opposite directions to a neutral position in which the valve members are simultaneously seated on the valve seats, respectively, to cut off communication between the valve chambers and the delivery passageway,

(f) said diaphragm piston being effective, when the pressure in one of said chambers is greater than that in the other chamber, for operating one valve member to a seated position on the adjacent valve seat and for operating the other valve member to an unseated position, relative to its adjacent valve seat, in which unseated position communication is established between the adjacent chamber and said delivery passageway..

4,354,519
NON-DRIP VALVE APPARATUS

Curt A. Bjorklund, Box 99, Stenasgatan 14, S-523 00 Ulricehamn, Sweden

Filed Mar. 6, 1980, Ser. No. 127,764
Claims priority, application Sweden, Mar. 20, 1979, 7902479
Int. Cl.^{3} F16K *23/00*
U.S. Cl. 137—312 **7 Claims**



1. A non-drip valve apparatus for regulating a fluid flow from an inlet to an outlet, comprising:
  - a housing having an inlet, a supply chamber, a vacuum chamber and an outlet, the supply chamber being in fluid communication with the inlet and separate from said vacuum chamber;
  - a first conduit extending between the supply chamber and the outlet to provide primary flow therethrough;
  - supply valve means at the supply chamber end of said first conduit, said valve means being selectively operable to respectively open and close said first conduit;
  - said vacuum chamber having a hollow wall and a regulating member therein having an exposed surface, said wall and surface defining a predetermined volume in said chamber, an elastomeric sleeve surrounding said surface and constituting a displaceable partition member therein, said member partitioning said vacuum chamber into at least two separate subchambers and operable upon displacement of said partition to expand the volume one of said subchambers and reduce the volume of the other of said subchambers, and vice versa;
  - a second conduit extending between said outlet and a first of said subchambers to provide a suck-back passage; and
  - a third conduit extending between said supply chamber and

a second of said subchambers on the opposite side of said member from said first subchamber to provide fluid pressure communication therebetween, whereby said displaceable partition member operates in response to changes in the pressure differential between the inlet and outlet to reduce and expand the volume of said first subchamber in response to the fluid pressure in said second subchamber being respectively above and below the pressure level in said first subchamber,

said regulating member having at least one groove extending along said surface, said elastomeric sleeve member operable to be displaced into said groove by pressure fluid surrounding said sleeve.

4,354,520

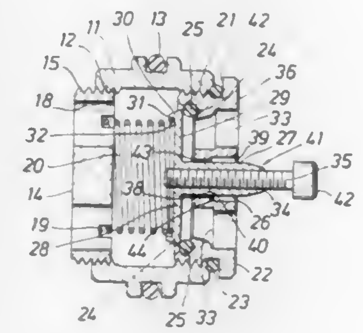
PRESSURE/DEMAND EXHALATION VALVE

Othel D. Easley, Jr., Houston, Tex., assignor to Reactor Services International, Inc., Alvin, Tex.

Filed Apr. 22, 1981, Ser. No. 256,602

Int. Cl.^{3} C16K *15/06*

U.S. Cl. 137—543.23 **11 Claims**



1. An exhaust valve comprising:

(a) A cylindrical valve housing with open ends having threads on the inside surface of each end and having a gasket incircling the outside of the housing for attaching the valve;

(b) A circular exit plate having threads around the outer circumference, attached thereby to one end of the housing, the exit plate having at least one exit opening through the circular faces of the exit plate allowing communication between the inside of the housing and the outside of the housing;

(c) A circular entrance plate having threads running around the circumference, attached thereby to the end of the housing opposite the exit plate, an entrance plate flange near the outer face of the entrance plate running around the circumference of the exit plate, an entrance plate gasket against the flange forming a seal between the entrance plate and the housing, a circular valve seat flange on the inside face of the entrance plate with a valve seat made of a resilient material in the valve seat flange, at least one entrance plate opening running from the inner face to the outer face of the entrance plate, allowing communication between the space inside the housing, within the circular valve seat flange, and the space outside of the housing, a valve stem guide hole running from the inner face to the outer face of the entrance plate at the center of the valve seat flange, the valve stem guide hole having a lip forming the entrance to the inner face, the diameter across the lip being less than the diameter of the remainder of the valve stem guide hole;

(d) A cylindrical valve member inside the housing having an inner face with a diameter between about equal to the mean diameter across the valve seat and greater than the inside diameter across the valve seat, a valve stem attached at one end to the center of the inner face of the valve member extending perpendicular to the inner face of the valve member into the valve stem hole, said valve stem having a stem diameter slightly less than the diameter across the lip, except at the end not attached to the valve member which is beveled, the length of the valve stem is such that when the valve is open, the beveled end of the stem is inside the valve stem guide hole, the valve stem and valve member having a stem screw hole running the length of the stem and through the valve member from face to face, said stem screw hole having threads on its inner surface adapted to receive a screw, a valve stem screw having threads adapted so as to screw into the stem screw hole and seal said hole, the length of said valve stem screw being such that the maximum opening of the valve is determined by adjusting the depth of which the valve stem screw is screwed into the stem screw hole;

(e) A biasing means for holding the valve member sealingly against the valve seat, one end of said biasing means contacting the outer face of the valve member.

4,354,521

DEVICE IN A FUEL TANK FOR MOTOR VEHICLES

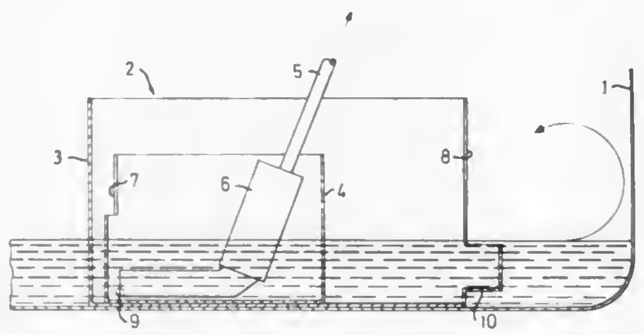
Bo T. S. Harde, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Mar. 27, 1980, Ser. No. 134,475

Claims priority, application Sweden, Apr. 6, 1979, 7903083

Int. Cl.^{3} F17D *1/00;* B65D *1/24*

U.S. Cl. 137—571 **9 Claims**



1. Device in a fuel tank for motor vehicles, comprising a container mounted on the bottom of the tank, with an inlet for fuel from the surrounding tank, the section line to the vehicle fuel pump having an opening in the container in the vicinity of the tank bottom, characterized in that a second container with a greater volume than the first-mentioned container surrounds the first-mentioned container and that both containers are provided with fuel inlets, one container having an inlet placed in a forwardly directed portion of the container and the other container having an inlet in a backwardly directed portion as viewed along the length of the vehicle, the inner container being offset in the outer container such that the distance between the inlet of the inner container and the opposing wall of the outer container is smaller than the distance between the inlet of the outer container and the opposing wall of the inner container.

4,354,522

FLEXIBLE CONNECTING SYSTEM FOR PIPES WITH AUTOMATIC SAFETY RELEASE IN CASE OF TENSILE STRESS

Giorgio Bormioli, Via Galileo Galilei 11, Padova, Italy (35100)

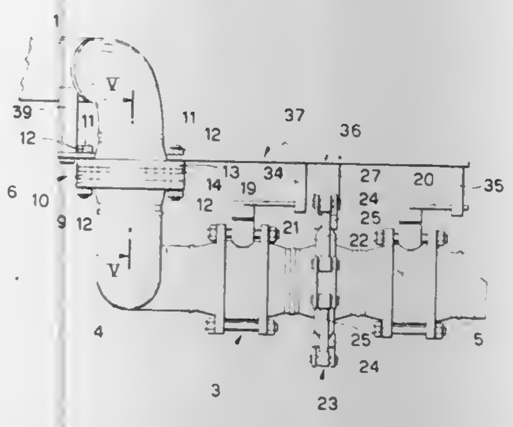
Filed Jul. 17, 1980, Ser. No. 169,904

Claims priority, application Italy, Jul. 24, 1979, 24601 A/79

Int. Cl.^{3} F16L *37/00*

U.S. Cl. 137—614.02 **4 Claims**

1. A flexible connecting system disposed to be arranged between a stationary pipe and a movable pipe which can be moved away from said stationary pipe, characterized in that it comprises a first pipe section of rigid material connected to one of said pipes, a second pipe section of flexible material connected to the other of said pipes, a connecting pipe section of rigid material between said first and second sections fixed relative to said second pipe section and connected to said first pipe section so as to be movable with respect thereto only in one direction and in reply to a tensile stress exerted onto said second pipe section, said connecting pipe section in turn comprising two separable parts which are releasably connected to one another by a quick-release connecting device of a kind having thereon a movable control member, and being capable of allowing the separation of said two pipe parts in reply to a releasing force applied in a predetermined direction to said control member, and a stationary structure adjacent said connecting pipe section arranged in such a way as to be engaged by said control member and to apply to the latter said releasing force in said predetermined direction when a tensile stress exerted onto said second pipe section causes movement of said connecting pipe section in said one direction.



4,354,523

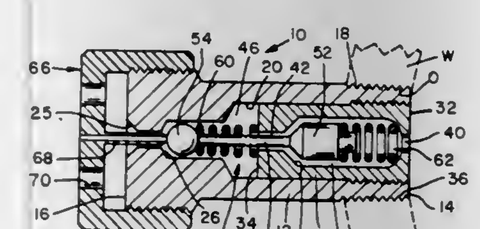
LUBRICANT FITTING FOR A VALVE

William R. Hochmuth, and William S. Shelton, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,110

Int. Cl.^{3} F16L *37/28*

U.S. Cl. 137—614.18 **3 Claims**



1. A lubricant fitting for connection to a valve comprising:

a body having opposite inner and outer ends, said body being connected at said inner end thereof to the valve, said body having a longitudinal bore therethrough having inner and outer ends, said bore having a reduced diameter portion adjacent said outer end thereof to form a port and defining a first inwardly facing annular shoulder in said bore adjacent said port;

a plug having opposite inner and outer ends received within said bore adjacent said inner end of said body, said outer end of said plug and an inner circumferential bore wall of said body forming a chamber, said plug having a longitudinal passage therethrough by which pressure in the valve is communicated to said chamber, said passage having an intermediate portion of enlarged diameter and defining therein adjacent its outer end, a second inwardly facing annular shoulder;

a first check valve means including an outer valve seating element positioned within said chamber for normally closing said port, and a second check valve means including an inner valve seating element positioned within said plug for normally closing said passage between the valve and said chamber;

an elongate stem connected to said inner valve seating element and having a distal end normally contacting said outer valve seating element is unattached relationship therewith whereby a force applied through said port to said inner valve seating element will tend to unseat both said valve seating elements;

outer spring means disposed within said chamber for continuously urging said outer valve seating element in seating engagement with said first inwardly facing annular shoulder whereby said first check valve means normally closes said port;

inner spring means disposed within the intermediate enlarged diameter portion of said plug passage for continuously urging said inner valve seating element in seating engagement with said second inwardly facing annular shoulder whereby said second check valve means normally closes said passage, said outer spring means being operative independently of the movement of said second check valve means to urge the closing of said port by said first check valve means even if said second check valve means does not close said passage; and

a cap-like tool detachably connected to said body at said outer end thereof, said tool comprising an internally threaded cylindrical portion at one end thereof for threaded connection to the outer end of said body and a transverse base portion at its other end, said transverse base portion having an elongate tubular projection extending coaxially through said cylindrical portion and inwardly into said bore through said port, said projection engaging said first check valve means and forcing said first check valve means away from said port when said tool is fully threaded onto said body and said first check valve means in turn acting on said stem to unseat said second check valve means so as to thereby place the opposite ends of said bore in communication, said transverse base portion being provided with openings therethrough including said tubular projection whereby said tool may be operated to relieve fluid pressure from said valve or for the injection of lubricant into said valve through said projection.

4,354,524

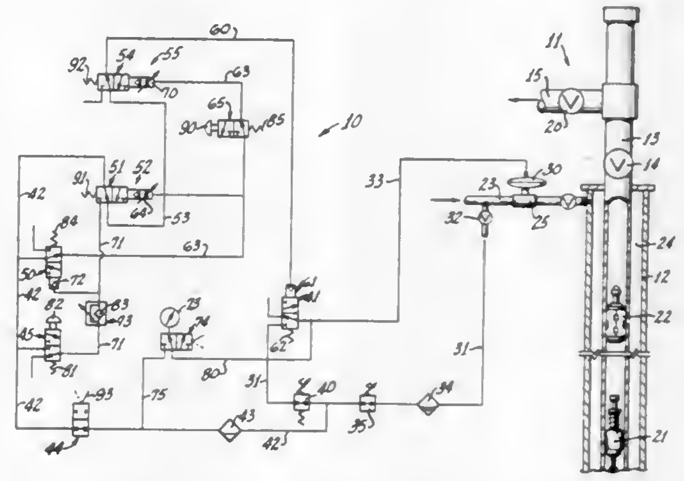
AUTOMATIC RESET PNEUMATIC TIMER

Robert S. Higgins, Tulsa, Okla., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 15, 1980, Ser. No. 186,914

Int. Cl.^{3} F16K *31/126*

U.S. Cl. 137—624.14 **20 Claims**



1. An automatic reset pneumatic timer for delivering pressure signals to a motor valve to control the opening and closing of said motor valve comprising: a pressure source line; a pressure signal delivery line; a cycle timer having a pneumatic valve connected with said source line for controlling the time delay period between said pressure signal delivered by said pneumatic timer; an on timer having a pneumatic valve connected with said cycle timer for controlling the length of each

of said pressure signals; said timers each having starting means and means for moving said pneumatic valve connected thereto to a first pressure signal discharge position responsive to initiating a pressure supply to said timer, means for moving said pneumatic valve to a second position closing said pressure signal exhaust responsive to timing out, and means for reset responsive to interrupting said pressure supply to said timer; an automatic reset valve connected between said source line and said cycle timer and said on timer for interrupting pressure to said timers for resetting said timers when said cycle timer times out; and a relay valve connected between said source line and said signal delivery line and with said on timer for delivering said pressure signals to said signal delivery line responsive to said on timer.

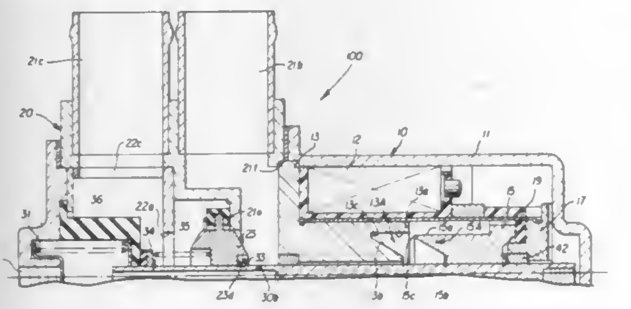
4,354,525
ELECTROMAGNETIC VALVE
Tadashi Oyama, and Shoji Kawata, both of Okazaki, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 29, 1980, Ser. No. 173,429

Claims priority, application Japan, Aug. 29, 1979, 54-119552[U]

Int. Cl.³ F16K *11/04, 31/06*

U.S. Cl. 137—625.5 **6 Claims**



1. An electromagnetic valve assembly comprising:

a housing;

a movable core axially, movably disposed in said housing;

an electromagnetic coil positioned adjacent said movable core actuatable to move said movable core from a first position to a second position upon energization of said electromagnetic coil;

a shaft coaxial with said movable core and axially movable together with said movable core;

valve means including a valve member axially, movably mounted on said shaft, a first and second valve seat disposed in said housing, said valve member being seated on said first valve seat when said movable core is in said first position and being seated on said second valve seat when said movable core is in said second position;

first spring means for continuously biasing said shaft and movable core to said first position;

a stopper member secured to said housing engageable with said shaft and movable core upon said movable core being disposed in said first position; and

second spring means separately positioned from said first spring means and mounted on said shaft for continuously biasing said valve member so as to be seated on said first valve seat.

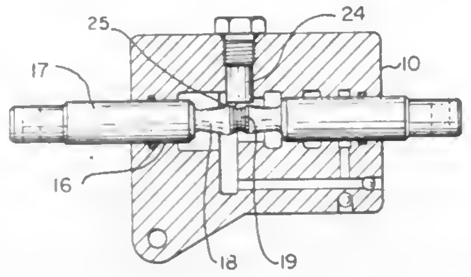
4,354,526
CONTROL VALVES
Robert F. Hodgson, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 12, 1980, Ser. No. 177,387

Int. Cl.³ F15B *13/04*

U.S. Cl. 137—625.48 **5 Claims**

1. A valve structure for use in an integral hydraulic pump and valve assembly comprising a housing adapted to be integral with a pump housing and having spaced apart low pressure and high pressure ports corresponding to the low pressure inlet port and high pressure outlet port of said pump, a low pressure chamber, a high pressure chamber and a cylinder chamber in said housing spaced apart and generally parallel to one another, a transverse bore in said housing intersecting said chambers, valve means movable axially in said bore, said valve means having an annular groove intermediate its ends capable of connecting said low pressure and high pressure chambers in a first neutral position, capable of connecting all of said chambers in a second position and connecting only the low pressure chamber in a third position, detent means in said housing extending into said bore and annular groove in the valve member, detent engaging means in said groove intermediate its ends and stroke limiting means extending into the bore and groove on opposite sides of the detent means to engage the ends of the groove when the valve member is moved in opposite directions to limit its movement.



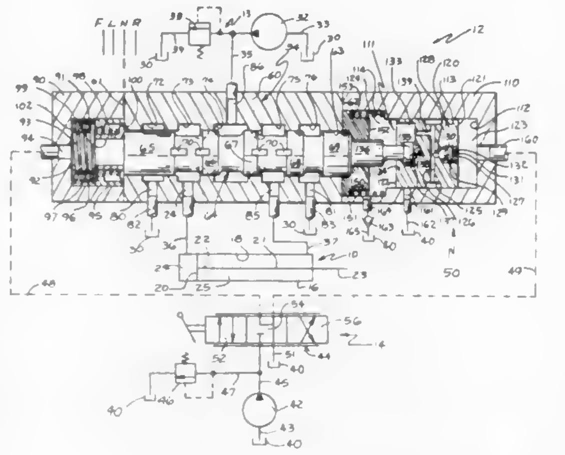
4,354,527
CONTROL SYSTEM FOR PILOT OPERATED VALVE
William D. McMillan, Bartlesville, Okla., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01339, § 371 Date Oct. 9, 1980, § 102(e) Date Oct. 9, 1980, PCT Pub. No. WO82/01402, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 9, 1980, Ser. No. 261,094

Int. Cl.³ F15B *13/042*

U.S. Cl. 137—625.63 **7 Claims**



1. An apparatus (**50**) for shifting the spool (**64**) of a pilot operated valve (**34**) in one direction and changing the magnitude of a shifting force acting on the spool (**64**) in response to the spool (**64**) reaching a predetermined position in the valve (**34**) without changing the magnitude of the pilot pressure, comprising:

a source (**42**) of pressurized pilot fluid;

means (**44**) for selectively directing pilot fluid to the spool (**64**);

a housing (**110**);

a piston (**120**) connected to the spool (**64**) and reciprocally disposed in the housing (**110**) and defining first and second chambers (**123,124**);

a passageway (**128, 126, 139**) connecting the first and second chambers (**123,124**);

means (**49, 160**) for communicating pilot fluid to the first chamber (**123**);

means (**127, 128, 129, 130**) for controllably blocking communication of pilot fluid between the first and second chambers (**123,124**) through the passageway (**128, 126, 139**); and

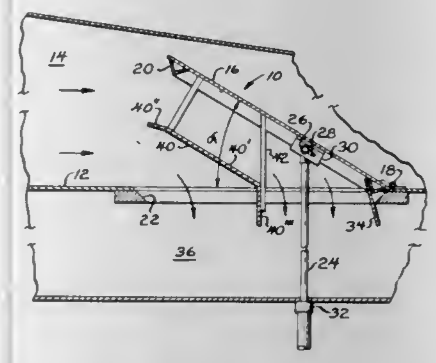
means (**139, 126, 125**) for venting pilot fluid from the second chamber (**124**) in response to the spool (**64**) reaching the predetermined position in the bore (**63**).

4,354,528
POPPET DAMPER WITH GAS FLOW TURNING MEANS
Miles J. McAndrew, Wilton, Conn., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 10, 1980, Ser. No. 214,857

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—875 **5 Claims**



1. A rectangular poppet damer having a poppet plate and means for mounting said damper flush in an opening in the wall of a first gas inlet duct so that the flow of gas through the duct can be selectively caused to pass either over the surface of the poppet plate of the damper when the damper is closed, or under the poppet plate surface into a second duct when the damper is opened, said poppet plate being pivotally hinged to said first duct along its downstream end for movement between its open and closed positions, an actuator rod attached to said poppet plate for moving said poppet plate between its open and closed positions, at least a pair of straightening vanes integrally attached to the underside of said poppet plate, one of said straightening vanes comprising a plate-like member affixed to said poppet plate adjacent its hinged end which extends into said second duct when the damper is opened, a second of said straightening vanes comprising a plate-like member which is affixed to said poppet plate and has an elongated intermediate portion which is generally parallel to said poppet plate and spaced therefrom, said second straightening vane further including integral lead-in and exit portions at its respective ends which are angularly positioned relative to said intermediate portion so that, when said damper is in its open position, a portion of the gas flowing in said first inlet duct will be caused to flow in a substantially non-turbulent manner, both above and below said second straightening vane, the exit portion of said second straightening vane being at such an angle as to cause the gas on either side thereof to enter said second duct in a direction generally perpendicular to the direction of flow in the first duct.

4,354,529
PIPE THREAD PROTECTOR
Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814, and Robert F. Callanan, 2359 Chestnut Ave., Long Beach, Calif. 90806

Filed Mar. 7, 1980, Ser. No. 127,941

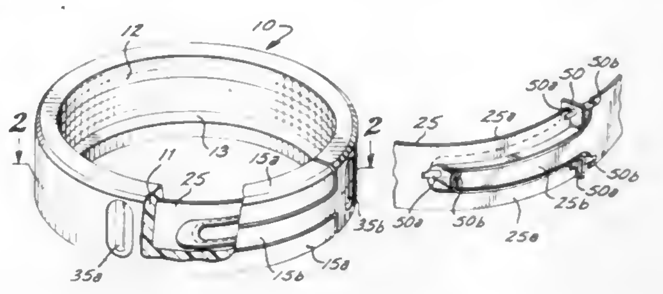
Int. Cl.³ B65D *59/06*

U.S. Cl. 138—96 T **2 Claims**

1. A method of forming a pipe thread protector comprising the steps of:

fabricating a tubular spring having a separation along one side in the form of a plurality of interlaced fingers;

spreading said separation by installing a separating plate therebetween;



installing said spring and said separating plate on the interior of a toroidal mold conformingly mated to said separating plate; and

injecting resilient matter into said mold.

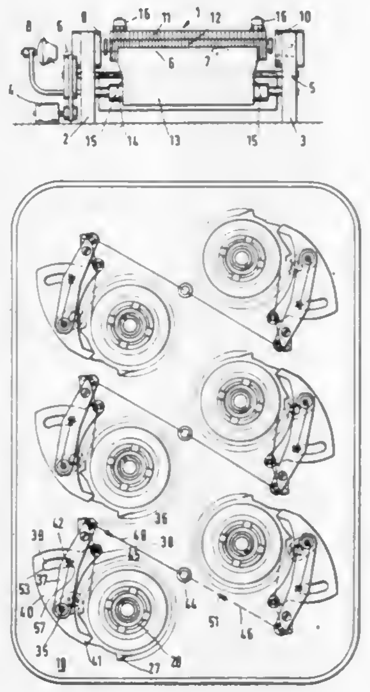
4,354,530
CROSSING THREAD SUPPLY SYSTEM FOR A WEAVING MACHINE
Bernhard R. Koch, Horgenberg, and Erich Vogelbacher, Horgen, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jun. 6, 1980, Ser. No. 157,086

Claims priority, application European Pat. Off., Jun. 11, 1979, 79101878

Int. Cl.³ D03D *5/00, 47/40*

U.S. Cl. 139—54 **11 Claims**



1. A crossing thread supply system for a weaving machine comprising

at least one pair of thread reserve bobbins for paying-out threads; and

a spring biased thread tensioning means for controlling each thread pay-out as a function of thread tension, said tensioning means including a control lever in the path of a thread from a respective bobbin, said lever being spring biased in a direction opposite to the direction of thread pay-out to impart a tension in the thread, and a pivoting lever actuated from said control lever and having a pawl mounted thereon for actuating the pay-out of a thread from said respective bobbin in response to a predetermined increase in thread tension.

4,354,531

ROTATION DOBBY

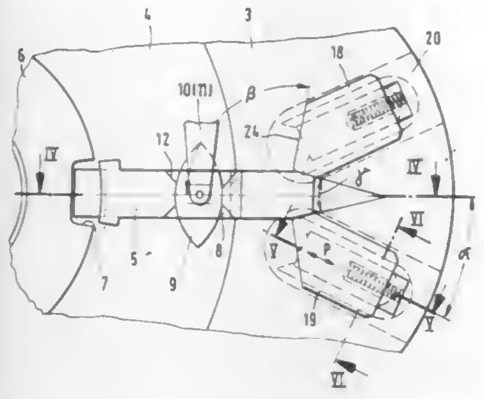
Paul Surkamp, Kempen, and Heinz Sonnenberg, Viersen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 185,709

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938451

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R **11 Claims**



1. In a rotation dobby having a key coupling between a drive shaft and an eccentric device for a heddle movement in which the key is mounted under spring action in a radially extending recess in an eccentric disc arranged in a crank arm and is engageable and disengageable, in accordance with a pattern, into and out of an axially extending groove of the drive shaft at two diametrically opposite coupling positions by means of a shift rod which is controllable in accordance with a pattern and engages via a coupling member into a groove of the key, the latter being open in the axial direction of the drive shaft, the improvement including

- compression spring means for pressing the key in an engaged position thereof into said groove of the drive shaft with a pressing force greater than the centrifugal force acting on the key during rotation of the drive shaft,
- two spring-biased lock slides arranged on each said crank arm at each said coupling position, said two spring-biased lock slides constitute means for receiving an outer end of said key therebetween in a disengaged position of the key.

4,354,532

WOVEN SLIDE FASTENER STRINGER

Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,758

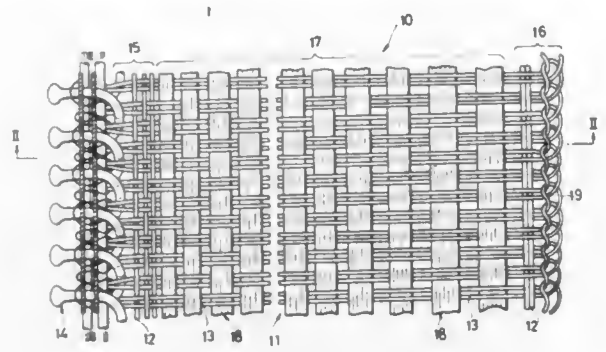
Claims priority, application Japan, Jul. 31, 1979, 54-105805[U]

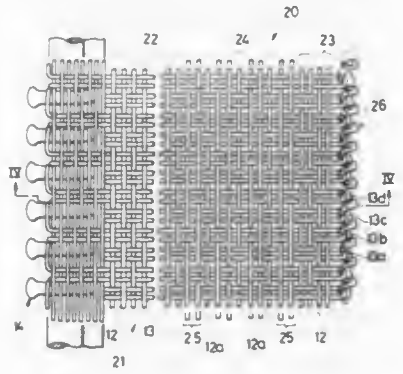
Int. Cl.³ A44B *19/42;* D03D *1/00*

U.S. Cl. 139—384 B **2 Claims**

1. A woven slide fasterner stringer compising:
- a. a stringer tape woven of warp and weft yarns; and
- b. a row of fastener coupling elements woven into said stringer tape along one longitudinal edge thereof;
- c. said stringer tape including:
  1. a first marginal portion disposed adjacent to said longitudinal edge, said weft yarns extending over one of said warp yarns and under a succeeding one of said warp yarns alternately across said first marginal portion;
  2. a second marginal portion disposed adjacent to the other longitudinal edge; and
  3. an intermediate portion extending between said first and second marginal portions, and having a woven structure coarser and thicker than that of said first marginal portion, the number of interlacings of said warp and weft yarns per unit area thereof being smaller than that in said first marginal portion, said weft yarns thereof extending over a group of said warp yarns and under a succeeding group of said warp yarns alternately across said intermediate portion, the warp yarns in each of said group being disposed in a row, the number of said warp yarns in said groups increasing gradually from the group adjacent to said first marginal portion to the group adjacent to said second marginal portion.

2. A woven slide fastener stringer comprising:
- a. a stringer tape woven of warp and weft yarns; and
- b. a row of fastener coupling elements woven into said stringer tape along one longitudinal edge thereof;
- c. said stringer tape including:
  1. a first marginal portion disposed adjacent to said longitudinal edge;





  2. a second marginal portion disposed adjacent to the other longitudinal edge; and
  3. an intermediate portion extending between said first and second marginal portions, and having a woven structure coarser and thicker than that of said first marginal portion, the number of interlacings of said warp and weft yarns per unit area thereof being smaller than that in said first marginal portion, the warp yarns thereof being arranged in a plurality of groups, the warp yarns in each group lying over and under one another.

4,354,533

AUXILIARY NOZZLE FOR JET LOOMS

Hajime Suzuki, Anjo, and Hiroshi Arakawa, Kariya, both of Japan, assignors to Kabushiki Toyoda Jidoshokki Seisakusho, Kariya, Japan

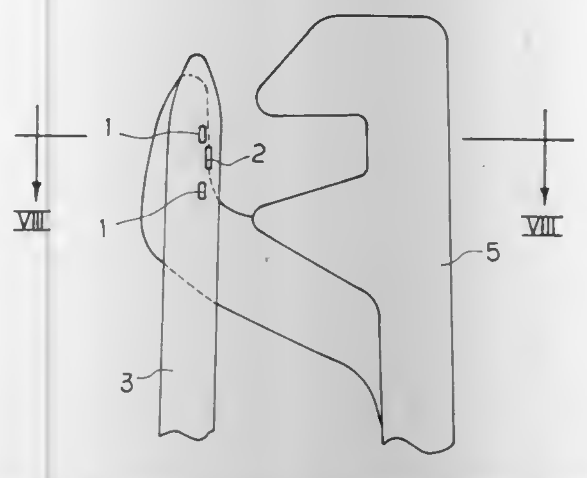
Filed May 28, 1980, Ser. No. 154,119

Claims priority, application Japan, May 31, 1979, 54-72531[U]

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **16 Claims**

1. Improved auxiliary nozzles in a jet loom which comprises a fluid and weft guiding passage formed on a slay by guide members and extending in the filling direction and a plurality of said auxiliary nozzles provided in spaced relation to each other along said guiding passage and adapted to discharge jets of fluid through fluid outlet openings thereof; each of said auxiliary nozzles having therein a first outlet opening having a weft pick assisting function and a second outlet opening having a weft pick stabilizing function; and said outlet openings being positioned to discharge jets of fluid into said fluid and weft guiding passage with a distance between the axes thereof along the axial direction of said auxiliary nozzle and directed in such a way that the axes thereof will form an angle therebetween.



4,354,534

REED FOR JET LOOMS

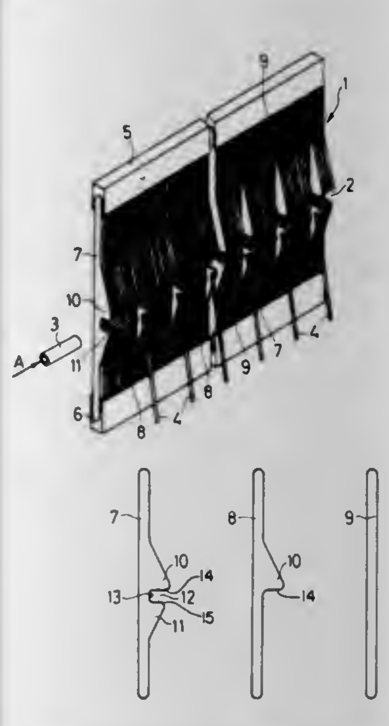
Heinrich Sulser, Rapperswil, and Peter Stucki, Tann-Rüti, both of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Jun. 11, 1980, Ser. No. 158,373

Claims priority, application Switzerland, Jun. 13, 1979, 5522/79

Int. Cl.³ D03D *47/28*

U.S. Cl. 139—435 **7 Claims**



1. A reed for a jet loom in which the filling yarns are introduced into the shed by means of a gaseous fluid which is expelled by nozzles arranged, spaced apart from each other, over the loom width which periodically enter into the shed; having first reed blades having a profiling with a recess on their one edge, the said recesses forming as a whole a guide channel for the filling yarns, characterized by the fact that in the region of the projection of the nozzles onto the reed there are provided second reed blades which on their one edge have a shape which differs from the profiling of the first reed blades.

4,354,535

HAND-HELD AUTOMATIC WIRE BINDING TOOL

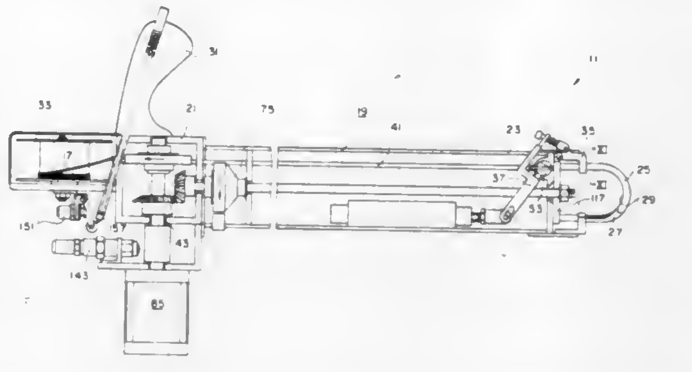
Robert Y. Powell, 750 Adams, Memphis, Tenn. 38105, and Jeff A. Fisher, 12205 Greenlead Dr., Huntsville, Ala. 35803

Filed Apr. 21, 1980, Ser. No. 142,394

Int. Cl.³ B21F *15/04*

U.S. Cl. 140—93 A **11 Claims**

1. A tool for binding a pair of juxtapose elongate structural members together by utilizing a supply of wire said tool comprising a main body member having upper and lower ends thereto, a pair of jaws disposed adjacent the lower end of said main body member and defining in part a hole through which the pair of structural members may freely extend, at least one of said pair of jaws being pivotally mounted to said body member, jaw operating means coupled to the pivotal jaw(s) for remotely operating said pivotal jaw between a "closed position" and a normally "open position" wherein a mouth-like opening is established for enabling the open jaws to be passed over the pair of juxtaposed structural members and thus being admitted to the hole, wire guide means for establishing a channel through which the wire may longitudinally be passed, means for feeding the wire through said wire guide means, wire shear means for shearing the wire, means for twisting the wire around the pair of juxtaposed structural members, and rotary actuator means operable in a forward and reverse rotational direction for operating said wire feeding means to feed wire through said guide means when rotating in a forward direction, and operating said wire twisting means to twist the wire around the pair of juxtaposed structural members when rotating in a reverse direction.



4,354,536

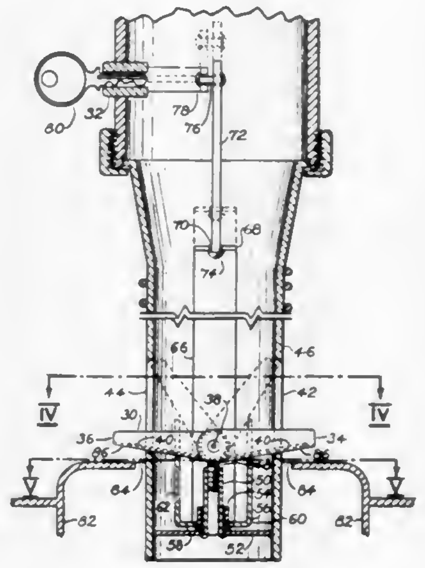
GASOLINE DISPENSING NOZZLE

Jack Moss, 3400 NW. 48th Ave., Lauderdale Lakes, Fla. 33319

Filed Apr. 9, 1980, Ser. No. 138,605

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—383 **8 Claims**



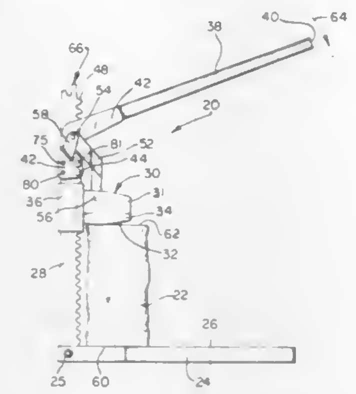
1. A nozzle for dispensing gas into a vehicle gas tank having an entrance pipe provided with a radially inwardly directed cap flange, comprising an elongated tube adapted to be axially inserted within the entrance pipe of said vehicle gas tank, a pair of toggle bars pivotally mounted about a common axis within said nozzle, said nozzle having a pair of diametrically opposed slots through which said toggle bars may move, a coil spring mounted about said axis, normally biasing said toggle bars in opposition to each other, extending outwardly through the respective slots, said toggle bars being movable between a first

position extending radially outwardly through said slots into position to engage beneath said cap flange, and a second position retracted radially inwardly of said nozzle free of said cap flange, and means for selectively actuating said toggle bars into said first or second position.

4,354,537

WOOD SPLITTING DEVICE

Carl E. Balkus, 176 Deepwood Dr., Amston, Conn. 06231
Continuation-in-part of Ser. No. 136,330, Apr. 1, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,421
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 C **4 Claims**



1. Apparatus for splitting firewood comprising:

a base for supporting a log to be split,

a post mounted to said base and havng teeth in one edge, which teeth project toward the log and define recesses therebetween,

a sleeve slidably received on said post,

a blade of wedge shape mounted on said sleeve and adapted to split a log as a result of downward movement of said sleeve and blade along said post,

an operating lever with a free end and an end defining a depending crank arm forming a yoke with portions on either side of said post,

a fulcrum pin adjacent the lower ends of said depending crank arm yoke portions and an intermediate portion of said fulcrum pin adapted to be received in one of said recesses between said teeth so that said lever is pivotally movable from an upwardly inclined position to a position at or below the horizontal,

a link having its upper end pivotally connected to said lever at a point spaced above said fulcrum pin, said upper pivoted end of said link located adjacent said teeth of said post when said lever is in said upwardly inclined position, said link having an opposite lower end pivotally connected to said blade generally below said fulcrum so that said pivoted ends of said lever and said fulcrum pin form an oblique triangle in the upwardly inclined lever position and assume a triangular shape of larger area as said handle is moved downwardly to split a log.

4,354,538

METHOD OF AGING FELLED TREES AND TREATING LUMBER

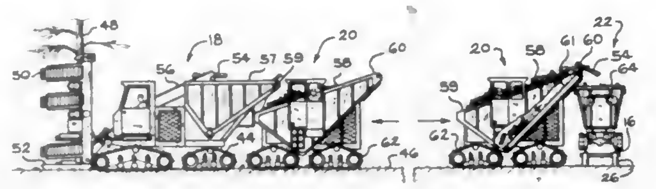
Thomas E. Oswald, P.O. Box 363, Montesano, Wash. 98563
Continuation-in-part of Ser. No. 131,168, Mar. 17, 1980. This application Nov. 24, 1980, Ser. No. 210,061
Int. Cl.³ B27H *1/00*
U.S. Cl. 144—335 **24 Claims**

1. The method of deterring warping and checking of lumber which comprises felling a tree, long-butting the felled tree, applying a seal covering the surface of the tree trunk butt end prior to aging the felled tree without substantial penetration of the seal into the wood to deter penetration into the interior of the tree trunk of bacteria and fungi which promote decay, including stain, mold and rot, aging the felled, long-butted and butt-sealed tree without removing the bark from the tree trunk, and sawing the log of the aged tree into lumber.

4,354,539

SYSTEM FOR PULPWOOD HARVESTING AND DELIVERY

Robert L. Propst, 4141 145 Ave. NE., Bellevue, Wash. 98007
Filed Sep. 29, 1980, Ser. No. 191,947
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—338 **21 Claims**



1. A pulpwood harvesting system for cutting and transporting trees upon a fragile terrain so as to have a dispersed and minimal impact on the terrain, comprising:

a plurality of spaced vertical pilings inserted into the terrain so as to protrude above the terrain, said pilings arranged along a predetermined route extending from at least one harvesting site to at least one unloading site;

a rail network consisting of rail segments mounted on said pilings so as to form a continuous railway having at least two parallel rails supported by said pilings above the terrain over said predetermined route;

mobile rail-laying means for progressively installing said rail network by installing said rail segments upon said pilings while the weight of said rail-laying means is supported upon others of said rail segments previously installed;

mobile tree harvesting means for cutting said trees adjacent to the surface of said terrain and for reducing said trees to bulk-handleable pieces while dispersing the weight of said harvesting means over a large surface of the terrain;

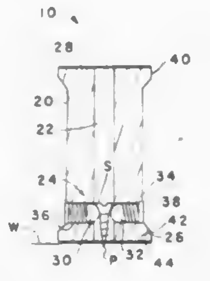
mobile forwarding means for receiving said bulk-handleable pieces from said harvester means and transporting said pieces to said rail network while dispersing the weight of said forwarding means over a large surface of the terrain; and

a plurality of lorries rollable upon said rail network for receiving said bulk-handleable pieces from said forwarding means and for transporting said pieces from said harvesting site to said unloading site.

4,354,540

SCREW HOLDER SYSTEM

Robert T. Jefferson, 4604 Luerssen Ave., Baltimore, Md. 21206
Filed Sep. 8, 1980, Ser. No. 185,219
Int. Cl.³ B25C *3/00*
U.S. Cl. 145—46 **7 Claims**

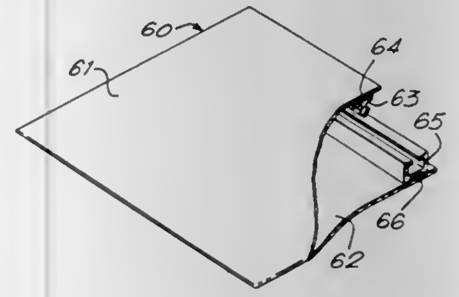


1. In a system for screw holding comprising a body with a bore axially therethrough and means in the bore for resiliently holding a screw centered for driving into a work surface, the improvement comprising in combination: reversible means to accommodate both relatively long and relatively short screws including: the body having a top surface and a bottom surface in parallel spacing transverse to the bore, the screw holding means being substantially the same in construction, top and bottom; the screw centering means being closer to the bottom surface than to the top surface and protruding generally perpendicularly into the bore from the body, the body having cylindrical shape with the bore axial therein, means for protecting fingers of a user holding the body, comprising first and second spool-like flanges circumferentially around respective ends of the body, means increasing the work surface contacting area of the body, comprising the first flange having a portion co-planar with the top of the body and the second flange having a surface co-planar with the bottom of the body, and the bore being a uniform cylindrical bore through said body and proportioned for fitting and guiding the heads of screws passed through the bore.

4,354,541

PROFILED PLASTICS BAG CLOSURE STRIP AND ADHESIVE BONDING METHOD

Paul A. Tilman, Canvey Island, England, assignor to Minigrip, Inc., Orangeburg, N.Y.
Filed Jul. 30, 1980, Ser. No. 173,471
Claims priority, application United Kingdom, Sep. 13, 1979, 7927390
Int. Cl.³ B65D *33/24*
U.S. Cl. 150—3 **15 Claims**



1. Material for making a reclosable bag, and including a thin sheet-like substrate material and a plastic closure strip having closure profile means projecting oppositely to a base surface having opposite longitudinal edges and adapted to be adhesively secured to the substrate, the improvement comprising:

adhesive means between said base surface and said substrate for securing said base surface to the substrate;

and spacer means along said edges extending between said base surface and said substrate, said spacer means being separated by a longitudinal area of said base surface located between said spacer means, said base surface having many times the width of said spacer means, and said base surface being inset relative to said spacer means for assuring a substantial thickness of the adhesive between said base surface and said substrate.

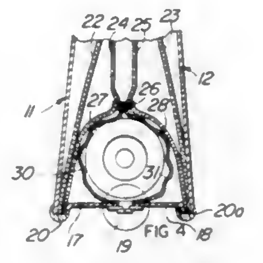
4,354,542

HANDBAG

Edward L. Gerch, Chicago, Ill., assignor to Kingport, Ltd., Evanston, Ill.
Filed Jan. 23, 1981, Ser. No. 227,987
Int. Cl.³ A45C *13/40*
U.S. Cl. 150—34 **6 Claims**

1. In a handbag of the type including opposed front and back side walls connected along at least a portion of their periphery by a narrow elongate web defining a bottom surface and opposed end walls of said handbag, a portion of the said periphery of walls defining a primary opening adjacent a top of said handbag for providing access to a primary compartment extending inwardly of said handbag from said primary opening therein, means for closing said primary opening on said handbag positioned adjacent the top thereof, and means for carrying said bag;

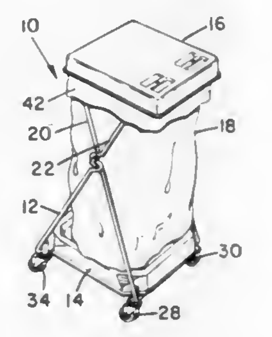
an improvement comprising a secondary compartment in said handbag positioned adjacent the bottom thereof and extending inwardly into said handbag and including an elongate secondary opening on said bottom surface oriented longitudinally therealong for providing user access thereto, means on said bottom surface adjacent said secondary opening for providing selective closing of same, and common joinder means between a portion of said primary compartment and a portion of said secondary compartment for maintaining said secondary compartment within said handbag.



4,354,543

PORTABLE HAMPER

Paul Bogner, 1585 Sunflower Ave., Costa Mesa, Calif. 92626
Filed Nov. 10, 1980, Ser. No. 205,372
Int. Cl.³ B65D *30/00*
U.S. Cl. 150—50 **19 Claims**



1. A material collection hamper comprising:

a pliant bag having sides, a closed bottom and an upper portion surrounding an openable top;

a frame comprising means for holding said upper portion of the bag with its top spread open and such that the remainder of the bag extends downwardly from said upper portion;

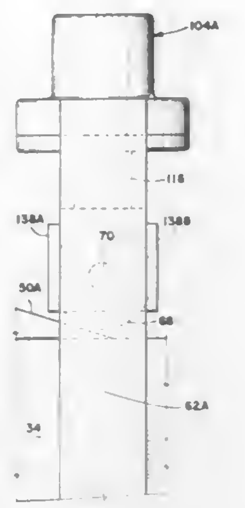
a cover pivotally mounted on said frame such that in a first pivotal position the cover overlies the open top of said bag and such that in a second pivotal position the cover is removed from the region overlying said bag;

said cover including stop means for engaging said frame as a stop when the cover occupies said second pivotal position and having a center of gravity such that said cover is urged downwardly over said bag opening when in said first position and such that said means is urged against said frame when in said second position;

said cover further comprising cover closure means normally engaging a side of said bag when the cover is in said second position for urging said cover to pivotal movement from second to first position as an incident to the side of the bag being stretched taut by the placement of material into the bag.

4,354,544
TIRE BEAD DEMOUNTING TOOL

Finis L. Chisum, P.O. Box 1145, Claremore, Okla. 74017
Continuation-in-part of Ser. No. 958,106, Nov. 6, 1978, Pat. No. 4,256,161. This application Jun. 13, 1980, Ser. No. 159,212
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.17 7 Claims

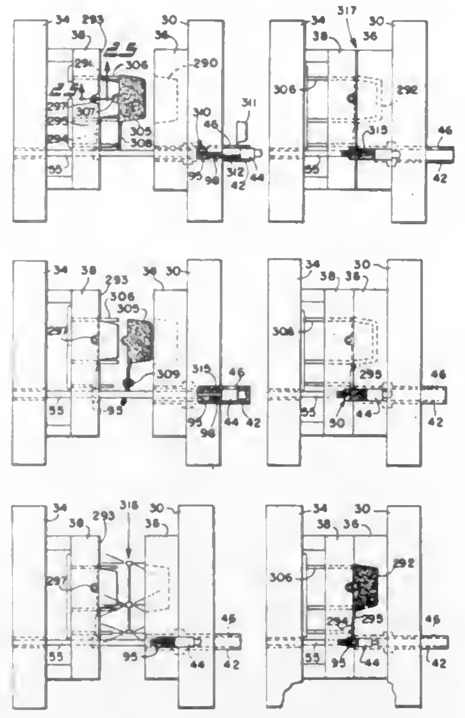


1. A tool for breaking the circumferential bead of a tire from the inward surface of the lip of a wheel rim, comprising:
- a body having a forward downwardly extending rim engaging tooth;
- a bead head slidably supported by said body;
- an arm pivotally supported to said body having an outer end configured to engage the exterior surface of the lip of a wheel rim;
- an arm actuator slidably supported by said body;
- means for longitudinally sliding said arm actuator to first pivot said arm to engage a wheel rim lip between said arm outer end and said body tooth and subsequently slidably advancing said bead head to engage the bead of a tire to force the bead away from the wheel rim lip; and
- hydraulic means interposed between said arm actuator and said arm for applying a selectable force to cause pivotal movement of said arm in response to the longitudinal movement of said arm actuator.

4,354,545
MODIFIED PRESSURE CASTING PROCESS

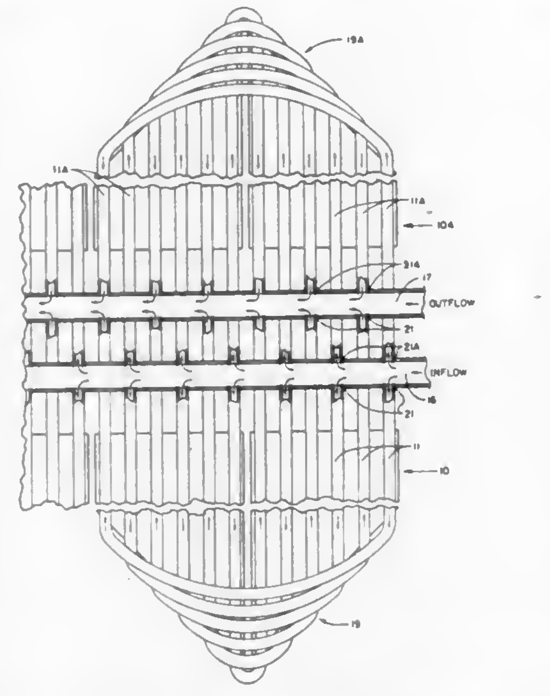
Walter M. Goldhammer, 23300 Shaker Blvd., Cleveland, Ohio 44122
Filed May 16, 1980, Ser. No. 150,596
Int. Cl.³ B22D *17/10, 17/32*
U.S. Cl. 164—457 36 Claims

1. A die casting process comprising the steps of forming a charge of molten metal and moving such charge to a position proximate a gate runner while the dies halves are open, and then shifting the charge into communication with the gate runner and pressure forcing the charge into the cavity through the gate runner as soon as the die halves are closed.



4,354,546
HEADER PAIR AND DOUBLE TUBE MAT CONNECTION

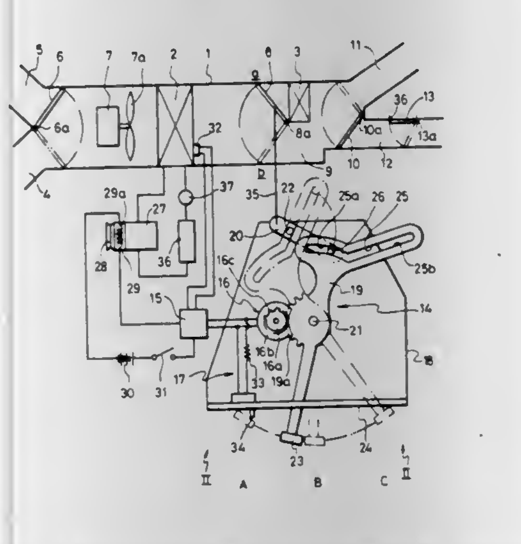
Michael F. Zinn, Spring Glen, N.Y., assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.
Filed Jul. 17, 1980, Ser. No. 169,825
Int. Cl.³ F28F *7/00*
U.S. Cl. 165—1 14 Claims



1. A method of interconnecting a pair of headers for circulating inflow and outflow fluid respectively with first and second extended flexible tube mats each formed of a plurality of tubes cojoined side-by-side with the end portions thereof separated from one another, which comprises
- (a) disposing the first mat in a plane to that side of the inflow header opposite the outflow header so that all tubes thereof extend away from and then loop back toward said inflow header,
- (b) disposing the second mat in the same plane to that side of the outflow header opposite the inflow header so that all tubes thereof extend away from and then loop back toward said outflow header,
- (c) connecting the opposite separated end portions of each tube in the first mat with the inflow and outflow headers respectively through first spaced holes in that side of each header on which the first mat is disposed, and
- (d) connecting the opposite separated end portions of each tube in the second mat with the inflow and outflow headers respectively through second spaced holes in that side of each header on which the second mat is disposed.

4,354,547
DISCHARGE AIR TEMPERATURE CONTROL DEVICE HAVING REFERENCE TEMPERATURE CONTROL FUNCTION FOR AIR CONDITIONING SYSTEM FOR AUTOMOTIVE VEHICLES

Hiroyuki Sugiura, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan
Filed Oct. 3, 1980, Ser. No. 193,650
Claims priority, application Japan, Oct. 11, 1979, 54-140728[U]
Int. Cl.³ F28F *27/02*
U.S. Cl. 165—25 9 Claims

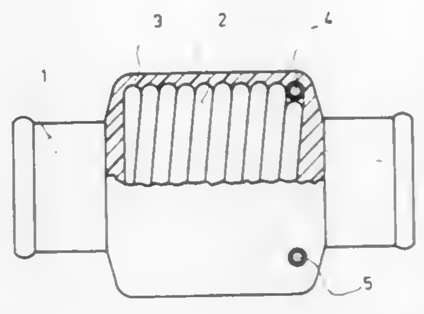


1. A discharge air control device for use in an air conditioning system for automotive engines, the air conditioning system including a compressor, an electrical circuit for driving said compressor, an evaporator core operatively connected to said compressor, a heater core arranged at a location downstream of said evaporator core, a passage by-passing said heater core, and a pivotable air-mix damper disposed to guide an air flow from said evaporator core, respectively, through said by-pass passage alone at a first angular position thereof, through said heater core along at a second angular position thereof, and through both said by-pass passage and said heater core at a position between said first angular position and said second angular position,

said discharge air control device comprising:
- lever means coupled to said air-mix damper for controlling the angular position of said air-mix damper, said lever means being disposed to hold said air-mix damper at said first angular position when said lever means is angularly displaced within a first angular range, and to allow said air-mix damper to be pivoted in a continuous manner within a range between said first angular position and said second angular position when said lever means is angularly displaced within a second angular range;
- a temperature sensor for detecting the temperature of said air flow from said evaporator core;
- switch means coupled to said temperature sensor and operable to close said electrical circuit to actuate said compressor when said temperature sensor produces an output signal exceeding a value corresponding to a predetermined reference value of said air flow temperature, and to open said electrical circuit to render said compressor inoperative when said temperature sensor produces an output which is below a value corresponding to said reference value of said air flow temperature; and
- means responsive to a change in the angular position of said lever means to vary said reference value of said air flow temperature.

4,354,548
DEVICE FOR HEATING LIQUID FOR ONE OR SEVERAL WASHER SYSTEMS

Bror-Erland Carlsson, Falkmansgatan 6, S-311 00 Falkenberg, Sweden
Filed Apr. 23, 1979, Ser. No. 32,443
Claims priority, application Sweden, Apr. 24, 1978, 7802170; Mar. 13, 1979, 7902231
Int. Cl.³ F28D *7/10;* **F28F** *9/22*
U.S. Cl. 165—41 3 Claims



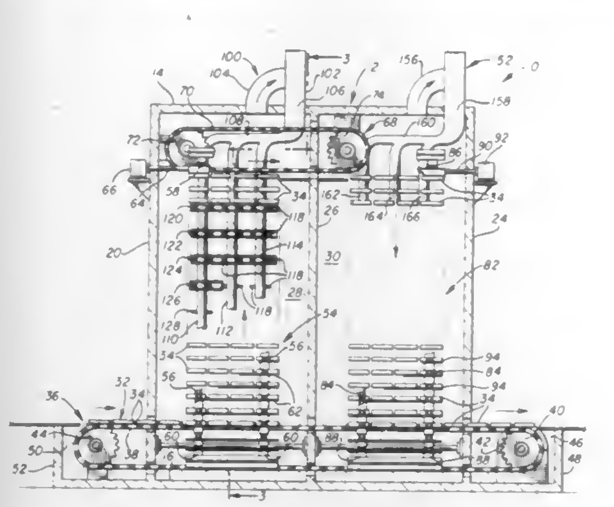
1. A device for heating liquid for one or several washer systems, e.g. wind screen washer system, a head lamp washer system, a rear screen washer system, etc., including a heat exchanger, preferably connected into a return pipe from the engine of a car to the cooling system of the engine, characterized in that the heat exchanger comprises of a central flow through conduit connected into said return pipe and formed of a material of high thermal conductivity, said central flow through conduit being of short length, a further flow through conduit connected into the piping of the washer system and formed of a material of high thermal conductivity, said further flow through conduit being wound in more than one layer on said central flow through conduit and without penetrating the central flow through conduit, said further flow through conduit including a helically wound first layer and a helically wound second layer which are connected together in series, said first layer being in contact with the exterior of said central flow through conduit, said second layer being wound on and in contact with said first layer, said further flow through conduit having an inlet end positioned in said first layer which is closest to the central flow through conduit; said further flow through conduit having its outlet end positioned in said second layer which is furthest from the central flow through conduit, valve means arranged between the heat exchanger, the washer nozzle, the washer liquid container and a pump of the washer system, said valve means being operable to prevent return flow of washer liquid from the nozzle to the heat exchanger.

4,354,549
INDUCED CIRCULATION OVEN OR COOLER

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220
Filed Sep. 14, 1979, Ser. No. 75,803
Int. Cl.³ F25B *13/00*
U.S. Cl. 165—62 30 Claims

1. A food processing unit, comprising: a housing adapted to receive vertically disposed layers of food product; heat transfer means for controlling the temperature within said housing when processing the food product; means for supplying a pressurized fluid in said housing; directing means for directing a flow of fluid from said pressurized fluid supplying means in a substantially horizontal direction through the space vertically located between the layers of food product, said directing means including a plurality of nozzles disposed in rows along

a side of the layers of food product, the nozzles being disposed to direct the fluid in the horizontal direction, the rows being displaced from one another by a distance of two layers of food product, and the nozzles of each row having approximately the same size outlet opening; and means for distributing the flow of directed fluid to induce circulation of the fluid within the housing such as to provide zones of controlled heat transfer to the vertically disposed layers of food product throughout said housing.



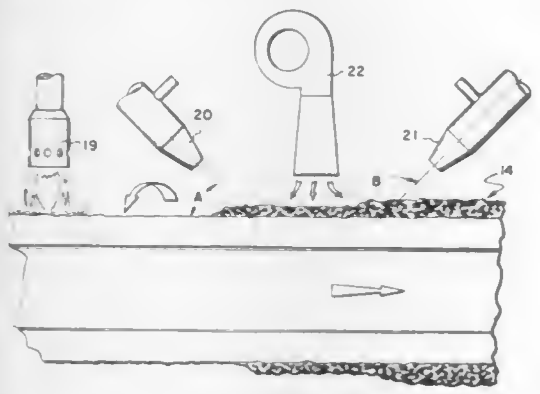
4,354,550
HEAT TRANSFER SURFACE FOR EFFICIENT BOILING OF LIQUID R-11 AND ITS EQUIVALENTS

Robert J. Modahl, Galesville, and Virgil C. Luckeroth, La Crosse, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed May 7, 1981, Ser. No. 261,342

Int. Cl.^{3} B05D *3/08, 1/10*

U.S. Cl. 165—133 **18 Claims**



1. A heat transfer surface, especially efficient in boiling liquid refrigerant-11 and its equivalents, produced by a process in which a flame-spraying apparatus is used, said process comprising the steps of:

flame-spraying a metal substrate with metallic particles which are at least partly oxidized by heat and excess oxygen provided in the flame, the flame-spraying apparatus being oriented such that the metallic particles impact the metal substrate at an angle in the range of 45° to 60°, depositing on the substrate an open-cell, porous coating at least 15 mils thick, said coating comprising oxidized metallic particles, parts of which are fused to the substrate and to each other, the open cells of said coating forming a substantial quantity of nucleate boiling cavities having an equivalent radius of 1.5 to 4 mils.

4,354,551
HEAT EXCHANGER

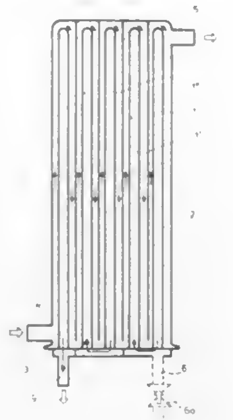
Ingmar Kristoffersson, Rönninge, and Gustav S. Heurlin, Trangsund, both of Sweden, assignors to Alfa-Laval AB, Sweden

Filed May 21, 1980, Ser. No. 151,803

Claims priority, application Sweden, May 25, 1979, 7904587

Int. Cl.^{3} F28F *3/00*

U.S. Cl. 165—166 **2 Claims**



1. Heat exchanger for cooling a fluid by the evaporation of a compressed refrigerant, characterized in that the heat exchanger comprises at least one plate-shaped pressure cell provided with an inlet and an outlet for refrigerant, and a means which achieves a pressure drop in the refrigerant, at which the pressure cell consists of thin plates which are joined together along their edges and at points over the heat exchanging area and that the pressure cell is surrounded by a container for the fluid which is to be cooled when the refrigerant changes its state, the exchanger comprising a number of plate-shaped pressure cells which are connected in series such that the refrigerant is brought to pass through all of the pressure cells, and a means which achieves the pressure drop in the compressed, condensed refrigerant arranged at the inlet to the first of the pressure cells which are joined together, an outlet for the evaporated refrigerant being arranged at the last pressure cell, each pressure cell being divided into two halves by means of a longitudinal joint in such a way that the inlet for refrigerant to the pressure cell is arranged in one half and the outlet for refrigerant in the other half, both halves being connected to each other at the opposite end of the pressure cell.

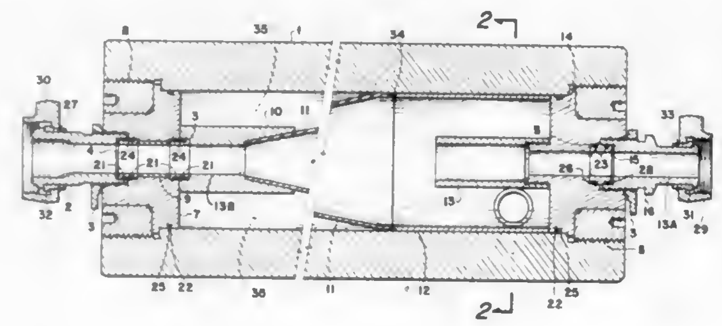
4,354,552
SLURRY CONCENTRATOR

Warren M. Zingg, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 8, 1980, Ser. No. 185,065

Int. Cl.^{3} E21B *34/16, 43/267;* **B01D** *21/26*

U.S. Cl. 166—90 **16 Claims**



1. A slurry concentrator comprising:

a housing having a first end and a second end, the housing defining a bore of generally circular cross section and having an axis of generation extending from the first end to the second end,

the housing adjacent the first end defining an entrance passage which is generally tangentially disposed relative to said bore,

a hollow cylindrical conduit having a diameter approximating the diameter of the bore which is positioned in a nonrotable manner within the bore and adjacent the first end of the housing, the conduit having an entrance opening in alignment with said entrance passage,

a hollow frustoconical member having a lesser end and a greater end disposed within the bore, the greater end being disposed generally adjacent the first end of the housing and said hollow cylindrical conduit and having a diameter approximating the diameter of the bore, the lesser end being disposed generally remote to the first end of the housing,

a first end closure affixed to the housing, supporting therein a first discharge conduit which is generally coaxial to the bore and which extends into the bore and into the conduit beyond the entrance passage, but does not extend into the frustoconical member,

a second end closure affixed to the housing, supporting therein a second discharge conduit which is generally coaxial to the bore and which is in fluid communication with the lesser end of the frustoconical member,

the external surface of the frustoconical member and the adjacent surface of the housing defining a generally annular space, and

fluid communication means between the annular space and the space internal to the frustoconical member.

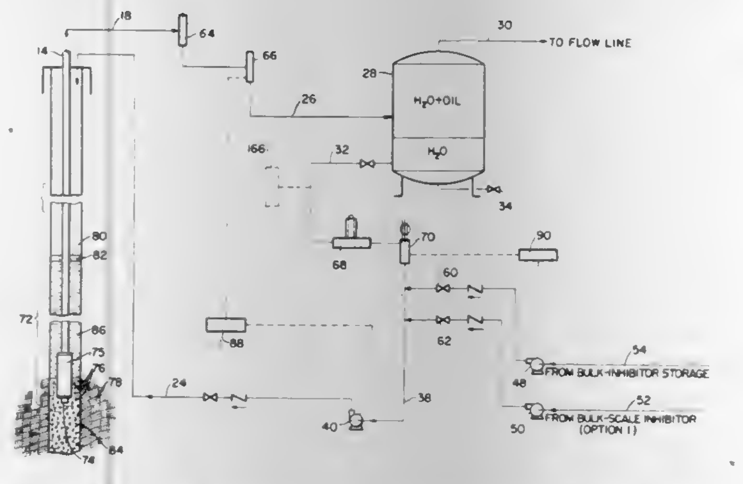
4,354,553
CORROSION CONTROL DOWNHOLE IN A BOREHOLE

Clifford J. Hensley, 310 W. Illinois, Suite 315, Midland, Tex. 79701

Filed Oct. 14, 1980, Ser. No. 196,677

Int. Cl.^{3} E21B *43/12, 43/40, 47/00*

U.S. Cl. 166—244 C **17 Claims**


TO FLOW LINE
H₂O+OIL
H₂O
FROM BULK-INHIBITOR STORAGE
FROM BULK-SCALE INHIBITOR (OPTION 1)

4. In an oil well which produces hydrocarbons and water, and wherein the lower borehole annulus has a hydrostatic head comprised of a mixture of water and hydrocarbons adjacent the pay zone and separated hydrocarbons at a location above the water and hydrocarbon mixture, the method of treating the wellbore with treatment chemical comprising the steps of:

(1) flowing produced fluid from the well and separating at least part of the water from the produced fluid;

(2) admixing treatment chemical with the separated water of step (1) to provide an intimate mixture of produced water and treatment chemical;

(3) continuously flowing the mixture of step (2) into the borehole annulus and gravitating the mixture down through the separated hydrocarbon part of the fluid column contained within the annulus at a rate which causes most of the treatment chemical to arrive at the water and hydrocarbon mixture of the lower borehole.

10. Apparatus for treating oil wells with corrosion inhibitor chemical, comprising:

a separator, means for measuring the conductivity of produced fluid, means for measuring the corrosion rate of produced water, a mixing means by which water and treatment chemicals are admixed together to provide an intimate mixture of chemical and separated well water;

means connecting said separator to the well head for separating produced hydrocarbons from at least part of the produced water; a source of inhibiting chemical;

means connecting said separated water to said mixing means;

means connecting said source of inhibitor chemical to said mixing means; and means connecting said mixing means to the upper annular area of the oil well;

means controlling the rate of chemical flow in proportion to the corrosion measurement of the produced fluid to thereby provide a concentration of inhibitor chemical in the well which effectively controls the corrosion rate downhole in the borehole; and,

means controlling the rate of flow of water through the mixing means proportional to the conductivity measurement so that a mass flow rate of mixed chemical and water is supplied to the annulus in an amount to force the mixture down through the hydrostatic head of the wellbore during a time interval which is less than the time interval required for most of the chemical to separate from the water of the mixture.

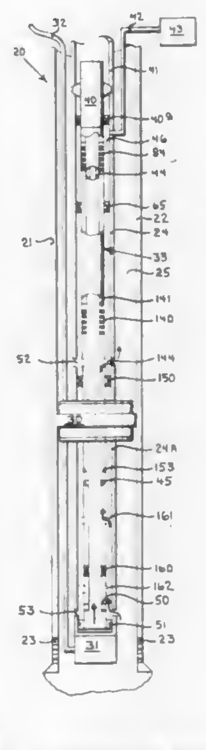
4,354,554
WELL SAFETY VALVE

Michael B. Calhoun, Carrollton, Tex.; Robert L. Holland, Jr., Ventura, Calif., and Paul D. Scott, Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 21, 1980, Ser. No. 142,096

Int. Cl.^{3} E21B *34/10, 34/16, 43/12*

U.S. Cl. 166—321 **20 Claims**



1. A well safety valve comprising: a longitudinal valve housing; means in said housing defining a longitudinal central flow passage and a separate longitudinal annular flow passage; valve means in said central flow passage; valve means in said annular flow passage; recirculating valve means between said central and said annular flow passage; and means coupled with said valves for simultaneously opening said recirculating valve and closed both said central and said annular flow passage valves and for simultaneously closed said recirculating valve and opening both said central and said annular flow passage valves.

4,354,555

HYDRAULIC LIFTING ARRANGEMENT FOR IMPLEMENTS, ESPECIALLY ON TRACTORS

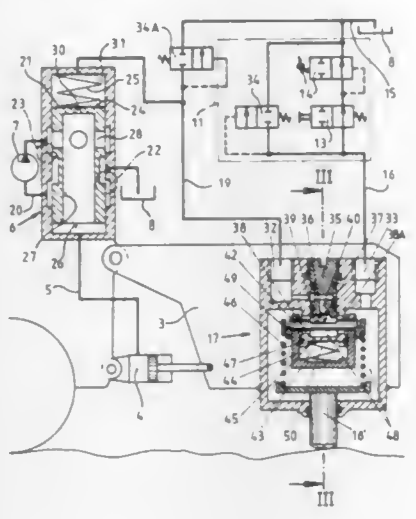
Armin Lang, Schwaebisch Gmuend, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,946

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943994

Int. Cl.^{3} A01B *63/114*

U.S. Cl. 172—4 **16 Claims**



13. In a system with a ground level sensing means associated therewith, said sensing means being adapted for controlling a pump and hydraulic power cylinder to vary the elevation of an agricultural implement in response to said ground level sensing means;

the improvement which comprises:

- a regulator valve means (6), a comparator valve means (17) connecting thereto, and a back pressure control means (14) connecting to said comparator valve means;
- said regulator valve means including means operative to effect a flow from a pump to said comparator valve means and to and from a hydraulic cylinder;
- said comparator valve means having a valve member (36) conconnected to receive said flow and including means (40) upstream of said valve member whereby said flow is operative as a force on said valve member in the opening direction to pass said flow through said valve member to said back pressure means;
- said back pressure means being operative to effect a back pressure in said comparator valve means;
- said comparator valve means including means (44) operative in response to said back pressure in said comparator valve means to effect a force to oppose opening of said valve member;
- said comparator valve means also including means (46) operative in response to said ground sensing means to effect a varying force on said valve member in response to sensing rise or fall of ground whereby said varying force effects a varying opening of said valve member to effect a variation in the flow pressure from said regulator valve means acting on said valve member;
- said regulator valve means including a valve element (21) and means (24, 26) operative in response to said variation of flow pressure for actuating said valve element to control pump flow through said regulator valve means to or from said hydraulic power cylinder for lifting or lowering an implement responsive to sensing of variation in ground level and to shut off said flow to said valve member when flow is from said hydraulic power cylinder to said regulator valve means.

4,354,556

TURF CUTTING AND ROLLING APPARATUS

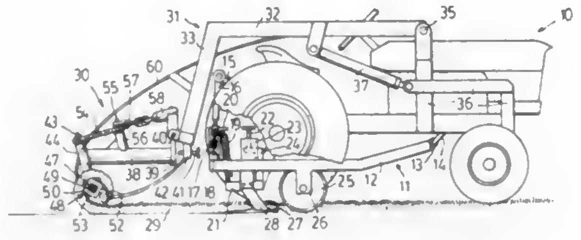
Mervyn L. Evans, 3 Little St., Chinchilla, Queensland, 4413, Australia

Filed Nov. 9, 1981, Ser. No. 319,422

Claims priority, application Australia, Nov. 10, 1980, PE6411; Apr. 3, 1981, PE8304

Int. Cl.^{3} A01B *45/04;* **B65H** *17/46*

U.S. Cl. 172—19 **4 Claims**



1. Apparatus for cutting, rolling and laying turf, of the type including a vehicle with a wheel-mounted main frame, and a pair of upright side cutters and a transverse bottom cutter mounted on said main frame and adapted to cut a turf strip as said vehicle advances, wherein:

- a lift frame is mounted on said main frame,
- a roller is mounted on said lift frame for pivotal movement about a substantially upright axis,
- said roller being adapted to be pivoted on and lowered by said lift frame to a turf rolling position lying on and engaging said turf strip and winding said turf strip on it as said vehicle advances,
- said roller being further adapted to be raised by and pivoted on said lift frame to an unloading position extending rearwardly of said vehicle,
- said roller being further adapted to be pivoted on and lowered by said lift frame to a turf laying position displaced 180° from said turf rolling position, and, as said vehicle advances, to lay said turf roll.

4,354,557

SOIL CULTIVATING IMPLEMENT

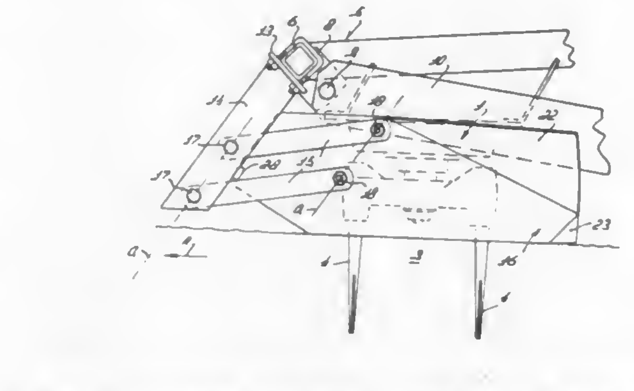
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Sep. 24, 1980, Ser. No. 190,210

Claims priority, application Netherlands, Sep. 24, 1979, 7907081

Int. Cl.^{3} A01B *33/06*

U.S. Cl. 172—49.5 **12 Claims**



1. A soil cultivating implement comprising a frame structure and a row of soil working members mounted on an elongated portion of said structure, said portion extending transverse to the direction of implement travel, an upwardly extending screening plate positioned adjacent at least one lateral side of said frame portion and said plate being pivoted to said structure by links, said links being spaced apart and positioned one above the other, said links extending forwardly from pivot connections to said plate to a support on said structure, a plane containing the pivotal connections of said links to said plate being inclined upwardly and rearwardly with respect to the normal direction of implement travel, said plate being normally positioned to ride along the ground during travel and being freely displaceable upwardly and downwardly about said pivot connections responsive to ground undulations without tilting, said pivot connections defining substantially horizontal axes that extend transverse to the direction of travel, an elongated roller being positioned to the rear of said soil working members, the lateral ends of said roller being pivoted to the supporting structure by corresponding arms, said plate having an obliquely bent-over upper portion that is substantially vertically in register with a respective arm to avoid fouling the arm.

4,354,558

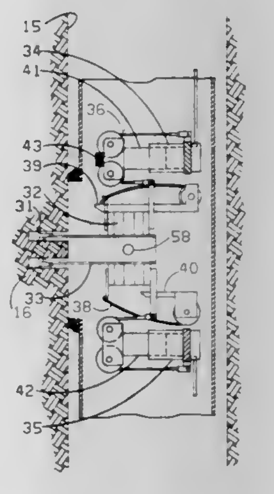
APPARATUS AND METHOD FOR DRILLING INTO THE SIDEWALL OF A DRILL HOLE

Alfred E. Jageler; Robert A. Broding, and Lauren G. Kilmer, all of Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 25, 1979, Ser. No. 51,485

Int. Cl.^{3} E21B *49/06*

U.S. Cl. 175—45 **41 Claims**



1. An apparatus for drilling into the sidewall of a drill hole which comprises:

- a support member,
- a shoe means mounted to said support member for movement toward and away from the sidewall of a drill hole,
- a hydraulic motor means mounted to said support member for movement along track means toward and away from the sidewall of a drill hole, wherein said motor means comprises a rotor,
- a downhole hydraulic power source remotely actuatable for radially driving said rotor,
- downhole power means independent of said hydraulic motor means for moving said motor means along said track means, and
- a drilling bit means connected to said rotor for drilling a hole.

4,354,559

ENLARGED BOREHOLE DRILLING METHOD AND APPARATUS

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

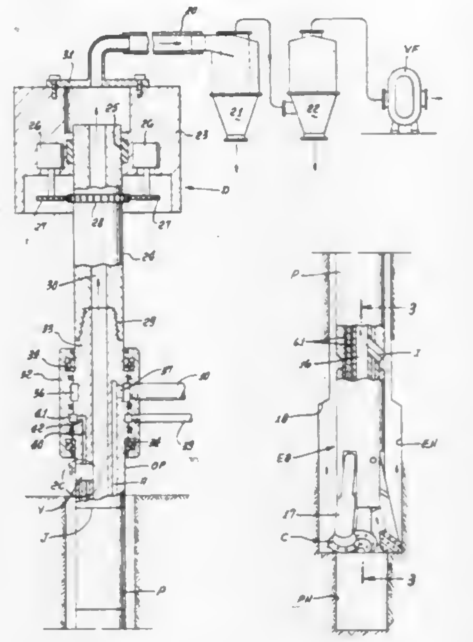
Filed Jul. 30, 1980, Ser. No. 173,836

Int. Cl.^{3} E21B *7/28, 17/18, 21/12*

U.S. Cl. 175—71 **21 Claims**

1. The method of drilling a bore hole in earth formation comprising: drilling the bore hole into earth formation by rotating a bit on a dual pipe having an outer fluid path defined between inner and outer pipes and a suction inlet leading from the bore hole to the interior of the inner pipe above the bit, while circulating air through the bit from said outer fluid path, and applying a vacuum to the interior of said inner pipe, to remove cuttings from the bore hole through said suction inlet, and including halting the circulation of air, removing the pipe from the bore hole replacing the bit with a bore hole enlarging bit having cutters expansible to a gauge in excess of the gauge of the bore hole, moving the bore hole enlarging bit on the pipe to a selected location in the bore hole, expanding the cutters of said expansible bit while circulating air through said outer fluid path and through said bore hole enlarging bit, and applying a vacuum to the interior of said inner pipe while rotating said pipe to enlarge the bore hole to a selected location, retracting said cutters, and removing the pipe and bore hole enlarging bit from the bore hole.

9. Apparatus for enlarging a bore hole drilled into an earth formation comprising: a rotatable dual drill pipe string having an inner pipe and an outer pipe defining an inner fluid path and an outer fluid path between the pipes; a bit having normally retracted expansible cutters connected to said drill pipe string; fluid pressure actuated means for expanding the cutters of said bit; passage means in said bit communicating said outer fluid path with said bore hole; a suction inlet communicating between said inner fluid path and said bore hole; means for connecting said outer fluid path to a fluid source while permitting rotation of said drill pipe string; and means for connecting said inner pipe and inner fluid path to a vacuum inducer to induce fluid flow from said bore hole through said suction inlet.



4,354,560

APPARATUS FOR DRILLING ENLARGED BOREHOLES

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

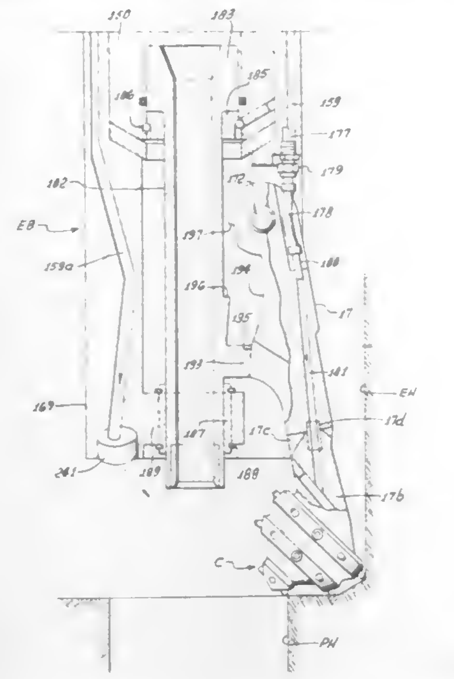
Division of Ser. No. 173,836, Jul. 30, 1980. This application Oct. 26, 1981, Ser. No. 315,184

Int. Cl.^{3} E21B *10/18, 10/34*

U.S. Cl. 175—267 **6 Claims**

1. A rotary bore hole enlarging bit adapted for connection with a rotary pipe string having a drilling fluid flow path and an acutator fluid flow path, said bit comprising: a body structure including inner and outer telescopic body sections; expansible and retractible cutter arms on said outer body section; expander means on said inner body section engageable with said cutters to expand the cutters upon telescopic movement of said body sections in one relative direction; piston and cylinder means defined between said inner and outer bodies to effect telescopic movement of said body sections; first passage means in said body structure and expansible cutters for conducting

drilling fluid to said cutters from said drilling fluid flow path; and second passage means in said body structure for conducting actuator fluid to said piston and cylinder means from said actuator fluid flow path.



4,354,561

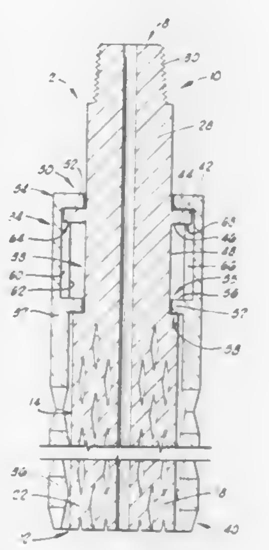
RECIPROCATING DRILL BIT

Clifford K. Logan, Jr., Hickory, N.C., assignor to Bell Charles Haney, Yukon, Okla., a part interest

Filed Aug. 21, 1980, Ser. No. 180,129

Int. Cl.^{3} E21B *4/08*

U.S. Cl. 175—321 **12 Claims**



1. A drill bit, comprising:
- a coupling member for coupling said drill bit to a drill bit drive means;
- a cutter member for drilling into a workpiece; and
- means for reciprocatingly connecting said cutter member to said coupling member, said means including:
  - a first flange associated with said coupling member and extending toward said cutter member; and
  - a second flange associated with said cutter member and extending toward said coupling member for overlying engagement with said first flange so that said first flange delimits the downward travel of said cutter member during reciprocation of said cutter member with respect to said coupling member; and
- cushioning means, disposed between said first flange and said second flange, for damping the reciprocating interaction between said coupling member and said cutter member during relative movement therebetween.

4,354,562

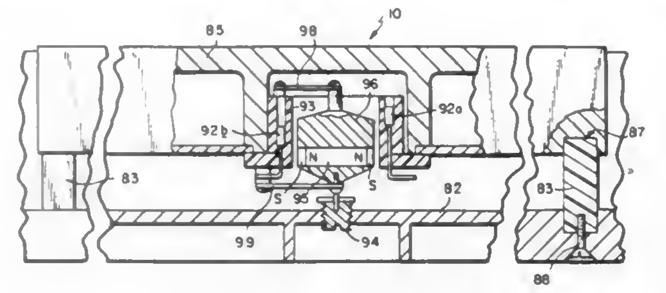
ELECTRONIC WEIGHING DEVICE

Martin H. Newman, 82 Talbot Way, Seekonk, Mass. 02771

Filed Dec. 3, 1980, Ser. No. 212,357

Int. Cl.^{3} G01G *3/14*

U.S. Cl. 177—210 EM **9 Claims**



1. An electronic weighing device comprising:
- a weighing surface for receiving an object to be weighed, so that when the object is placed on said weighing surface, the surface is displaced in response to the weight of the object acting on it;
- sensing means for sensing the displacement of said weighing surface and providing an electrical output signal that is proportional to the distance moved;
- display means for displaying the weight of said object; and
- circuit means for converting the output signal of said sensing means to a form suitable for operating said display means;
- wherein said sensing means comprises a linear Hall effect device and its associated magnetic field.

4,354,563

ELECTROMAGNETIC WEIGHING APPARATUS HAVING MULTIPLE AIR GAPS

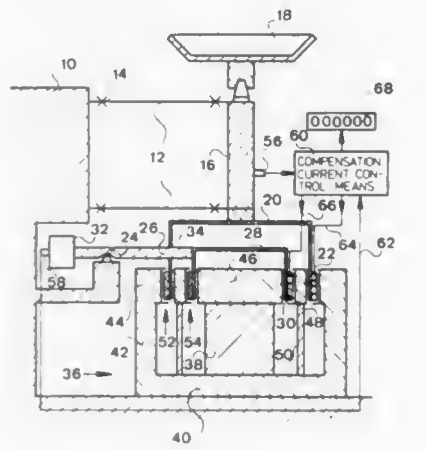
Paul Lüchinger, Uster, and Andreas Stutz, Aathal, both of Switzerland, assignors to Mettler Instrumente AG, Greifensee, Switzerland

Filed Apr. 13, 1981, Ser. No. 253,275

Claims priority, application Switzerland, Jun. 6, 1980, 4368/80

Int. Cl.^{3} G01G *7/00, 3/14*

U.S. Cl. 177—212 **7 Claims**



1. In a weighing apparatus of the electromagnetic load compensation return-to-zero type including a frame (**10**); a load-receiving member (**16**) movably connected with, and normally having an initial no-load position, with respect to, said frame; means (**38**, **72**) connected with said frame for establishing a stationary constant magnetic field; load-mechanic means including a load coil (**22**), and first means (**20**) connecting said load coil with said load-receiving member for movement in said field; reference means including a reference coil (**30**), and second means (**26**) connecting said reference coil with said frame for movement from a normal reference position within said field; load signal generating means (**56**) for generating a load signal that is a function of the extent of displacement of said load-receiving member from its initial no-load position; reference signal generating means (**58**) for generating a reference signal that is a function of the displacement of the reference coil from its reference position; and control circuit means (**60**) responsive to said load and reference signals for supplying load and reference compensation currents (**64**, **66**) to said load and reference coils to displace the same toward their initial no-load and reference positions, respectively, said control circuit means also producing as a function of said load and reference compensation currents a weight indicating signal that is a function of the load applied to said load-receiving member;

the improvement wherein said magnetic field establishing means includes divider means (**48**, **48′**) dividing said magnetic field into a pair of separate air gaps (**52**, **54**), said load and said reference coils being arranged in said air gaps, respectively.

4,354,564

CULTIVATOR HAVING A VERTICALLY OPERATED ENGINE

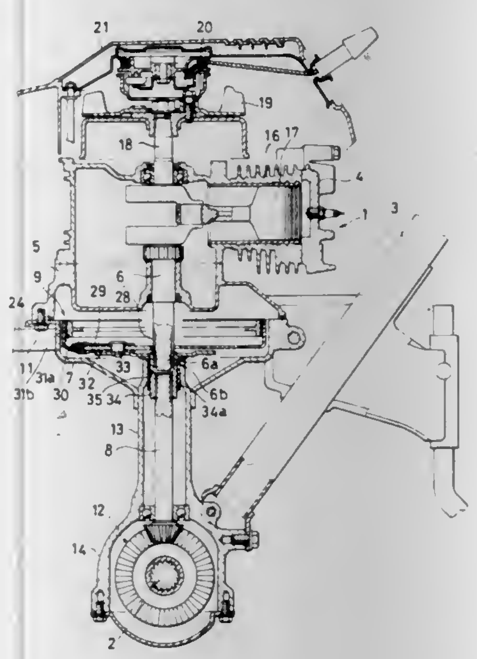
Yoshimi Watanabe, Wako; Gunji Saito, Tokyo; Masaharu Omagari, Niiza, and Kenji Nakamura, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,599

Claims priority, application Japan, Aug. 2, 1979, 54-106142; Aug. 9, 1979, 54-108935; Aug. 9, 1979, 54-108936; Aug. 9, 1979, 54-108937

Int. Cl.^{3} B62D *51/06*

U.S. Cl. 180—19 H **8 Claims**



1. A cultivator of the type employing a vertical engine that comprises an internal combustion engine on its upper side, a wheel shaft on a lower side and an operation handle on a rear side, wherein: the engine is defined by an engine main body provided with a vertically directional crankshaft extending downwards through an oil case thereof, a frame casing on the lower side of the oil case, a clutch mechanism interposed between the crankshaft and an output shaft disposed below the crankshaft contained in the frame casing, and an operational member for the clutch mechanism provided on the oil case side the clutch mechanism comprising a sun gear provided on the crankshaft, at least one star gear provided on the periphery of the sun gear and in mesh therewith, an internal gear provided on the periphery of the star gear and in mesh therewith, and the internal gear being so arranged as to be braked by a brake member, said brake member being arranged to be moved by the operational member.

4,354,565

ENGINE SYSTEM USING LIQUID AIR AND COMBUSTIBLE FUEL

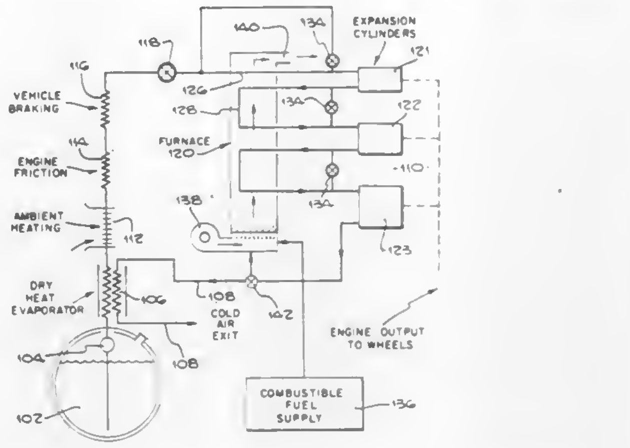
Albert L. Latter, Marina del Rey; R. Philip Hammond, and James L. Dooley, both of Santa Monica, all of Calif., assignors to R & D Associates, Marina del Rey, Calif.

Continuation-in-part of Ser. No. 958,056, Nov. 6, 1978, Pat. No. 4,226,294. This application Sep. 10, 1979, Ser. No. 73,894

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.^{3} B60K *3/02;* **F01K** *25/06*

U.S. Cl. 180—54 B **10 Claims**



1. An automobile system utilizing a combinational engine for operating on liquified cryogenic gas and combustible fuel as energy sources comprising:
- an automobile;
- an insulated tank for storing liquified cryogenic gas mounted in said automobile;
- means for pumping said liquified gas to an elevated pressure above 100 bars;
- first heat exchanger means for warming said high pressure liquified gas toward the ambient whereby it changes to the gaseous state;
- second heat exchanger means located in the said automobile to receive heat from the ambient air and further warm the pressurized gas, as said automobile moves forward;
- means for storing combustible fuel in said vehicle;
- means for burning said fuel to heat the pressurized gas;
- multi-stage expansion engine means for receiving said pressurized gas, permitting it to expand, and obtaining useful work therefrom;
- said fuel burning means being an external combustion furnace;
- means for supplying heat from said furnace to said pressurized gas before application to said expansion engine and between stages thereof; and
- temperature control valve means for directing at least a portion of the pressurized gas through a bypass path to avoid additional heating by said fuel burning means as said pressurized gas is directed to said expansion engine means, to avoid overheating said multistage expansion engine components.

4,354,566

RADIATOR GRILLE FIXING STRUCTURE

Takuo Yuda, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Sep. 8, 1980, Ser. No. 184,872

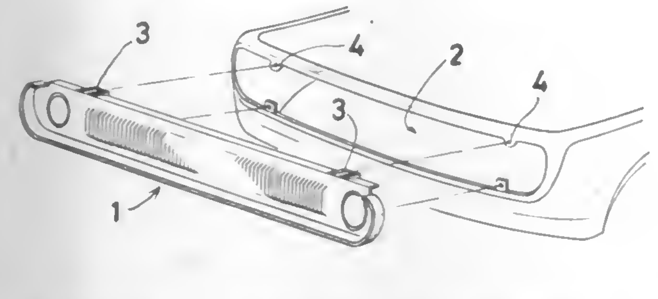
Claims priority, application Japan, Sep. 6, 1979, 54-122433[U]

Int. Cl.^{3} B60R *19/00*

U.S. Cl. 180—68 P **3 Claims**

1. A structure for fixing a radiator grille to an automobile body, which comprises:
- a base plate,
- a first engaging means provided on one surface of the base plate and adapted to come into engagement with a fitting hole formed on a fitting portion of an automobile body,

a second engaging means provided on the other surface of the base plate, possessed of a width smaller than the width of a fitting hole formed on a fitting portion of a radiator grille and adapted to come into engagement with said fitting hole of the radiator grille, and



an oblong screw hole formed in the base plate at a position corresponding to a perforation formed for passage of a screw means in the fitting portion of the radiator grille, with the larger axis of said oblong screw hole falling in the width direction of said second engaging means.

4,354,567
REAR AXLE SUSPENSION SYSTEM FOR MOTOR VEHICLES

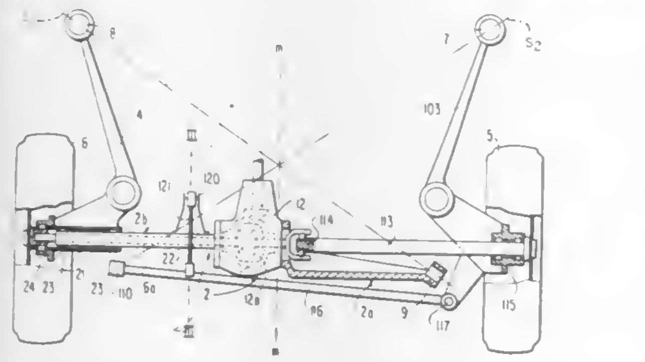
Christian Puchas, Schwieberdingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,068

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932670

Int. Cl.^{3} B60K *17/18;* B60G *3/08*

U.S. Cl. 180—73 C **22 Claims**



2. A suspension arrangement for suspending driven wheels of a motor vehicle, the arrangement comprising a first and second tilted control arm means for respectively carrying the driven wheels, each control arm means including a longitudinal control arm and a transverse control arm, characterized in that the first control arm means supports an axle gear means, a jointless shaft means is provided for operatively drivingly connecting the axle gear means to the wheel carried by said first control arm means, a jointed shaft means is provided for connecting the axle gear means to the wheel carried by the second control arm means, the transverse control arm of the first control arm means includes at least two sections interposed between the axle gear means and the longitudinal control arm of the first control arm means, and in that said at least two sections are mounted so as to be mutually rotatable.

4,354,568
ELECTRICALLY CONTROLLED TRAVEL DRIVE CONTROL SYSTEM FOR STEERABLE VEHICLES, PARTICULARLY FORK LIFT TRUCKS

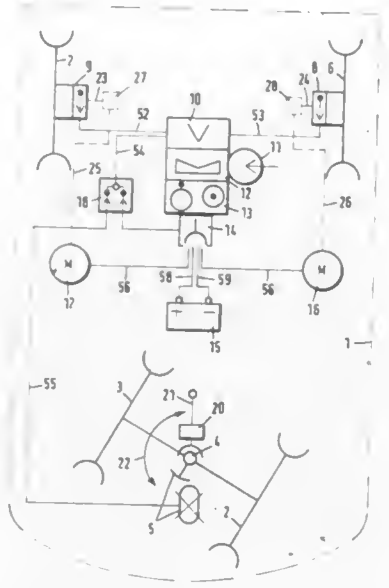
Karl-Heinz Griesenbrock, Stuvenborn, Fed. Rep. of Germany, assignor to Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,910

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909667

Int. Cl.^{3} B62D *11/04*

U.S. Cl. 180—197 **18 Claims**



1. In an electrically controlled travel drive control system for a steerable vehicle comprising

a steerable axle assembly having swivelled first road wheel means,

a second axle assembly spaced from said steerable axle assembly in the longitudinal direction of the vehicle and having second road wheel means,

one of said road wheel means comprising two road wheels disposed on opposite sides of said vehicle, and

travel drive motor means operatively connected to at least one of said road wheel means,

the improvement residing in that

two speed sensors are associated with said two road wheels and operable to generate speed signals which are representative of the speeds of the respective road wheels,

a comparator is arranged to receive said speed signals and to generate an output which depends on the difference between said speed signals,

additional input means are provided and adapted to receive an additional input signal,

a switching system is provided, which is adapted to generate a travel drive control signal for controlling said travel drive motor means in dependence on the difference between said speed signals and on said additional input signal,

said steerable axle assembly comprises an angularly movable bogie and two road wheels mounted in said bogie and disposed on opposite sides of said vehicle,

said travel drive motor means comprise two travel drive motors,

one of said road wheel means comprises two road wheels disposed on opposite sides of said vehicle and operatively connected to respective ones of said travel drive motors,

a proximity sensor is associated with said steerable axle assembly and adapted to deliver an output signal which depends on the angular position of said bogie, and

said switching system is adapted to control said travel drive motors in dependence on the output signal of said proximity sensor.

4,354,569
ELECTRIC VEHICLE

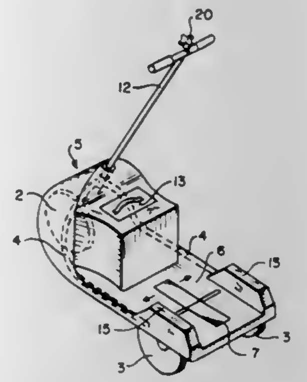
Heinz Eichholz, Kolpingstrasse, 4441 Schapen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,843

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915387

Int. Cl.^{3} B62D *61/08;* B60K *26/02*

U.S. Cl. 180—211 **4 Claims**



1. An electric vehicle comprising:

an electric motor;

a chassis having a pair of rear wheels, a steerable front wheel driven by said motor, a tread board disposed between the wheels, configured to be stood upon by a standing user or driver and means mounting a portion of said tread board to form a rocking pedal; and

a vehicle control means including a speed control element connected to said motor to control the speed thereof;

said speed control element comprising a front portion of said pedal and an electronic control system connected to said motor said electronic control system being operable, in response to the depression of said front portion of said pedal, to control said electric motor; and

said speed control element further comprising a pair of brakes actuatable by said rocking pedal to engage said rear wheels under spring bias in response to the depression of a rear portion of said pedal.

4,354,570
ARRANGEMENT OF AIR CLEANER FOR A MOTORCYCLE

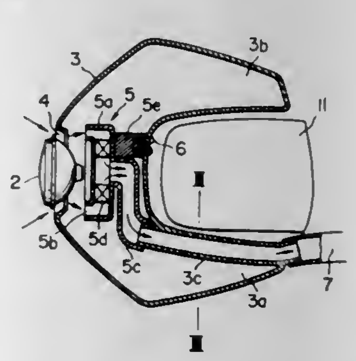
Norio Tanaka, Toda, and Kentaro Ito, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,610

Claims priority, application Japan, Sep. 21, 1979, 54-131795[U]

Int. Cl.^{3} B62J *17/00*

U.S. Cl. 180—219 **2 Claims**



1. An arrangement of air cleaner for a motorcycle, wherein said air cleaner is disposed in an internal space of a hollow fairing of said motorcycle, and is communicatively connected with a carburetor of an engine of said motorcycle through a conduit pipe, characterized in that said air cleaner disposed in the internal space of said hollow fairing of said motorcycle is in confrontation to an air passage opening defined in said fairing surrounding a head light of said motorcycle.

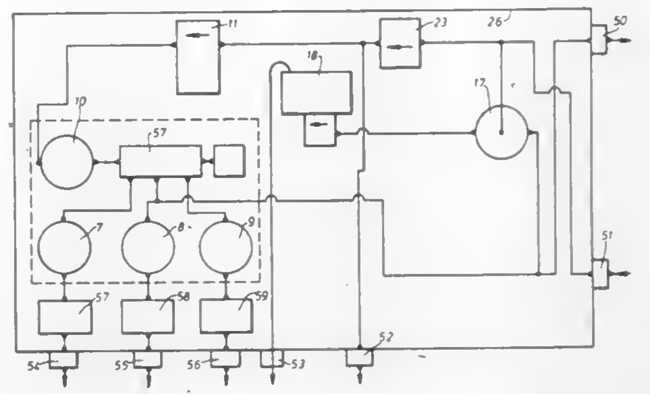
4,354,571
PROTECTIVE SYSTEM FOR USE IN TRANSFER OF HAZARDOUS SUBSTANCES

John Lakin, Verwood, and Philip R. Watson, Sundbury-on-Thames, both of England, assignors to Moorwats Safety Systems Limited, Middlesex, England

Filed Feb. 4, 1981, Ser. No. 231,582

Int. Cl.^{3} F16K *11/20;* B60P *9/00*

U.S. Cl. 180—271 **8 Claims**



1. A control system for the product outlet valves of a storage tank, the system comprising one or more pneumatically operated valves associated with the or each product outlet of the storage tank, a control valve connected to an air reservoir through a charge valve for effecting operation of the pneumatic outlet valves, the charge valve being of a single shot type for pressurising a manifold connected to the product outlet valve or valves, the manifold being associated with one or more emergency release valves and a further solenoid operated valve operatively connected with a gas detector means, detection of escaping product vapour by the gas detector or actuation of the emergency release valve effecting discharge of pressure in the manifold by venting to close the product outlet valves by release of said pressure, the control valves thereafter being inoperative until the charge valve is actuated to re-pressurise the manifold.

4,354,572
PORTABLE SEISMIC ENERGY SOURCE

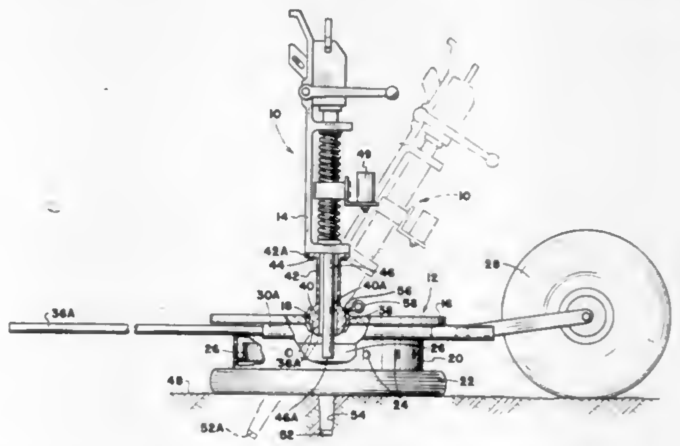
Philip N. Martin, Tulsa, Okla., assignor to Mapco, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 963,982, Nov. 27, 1978, Pat. No. 4,223,759. This application May 5, 1980, Ser. No. 146,786

The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.^{3} G01V *1/104*

U.S. Cl. 181—116 **3 Claims**



1. An improved portable seismic energy source comprising:

a base having an upper plate and a lower circumferential ground seal means, the plate having an opening therethrough;

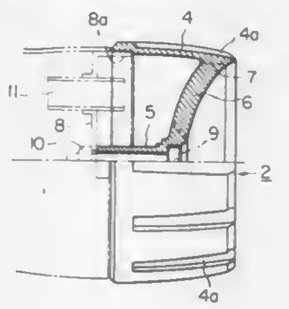
a socket member mounted in said opening in said plate, the interior surface of said socket member being defined by a double truncated sphere;

a ball member having an opening therethrough, said ball member being rotatably received within said socket member;

a gun secured to said ball member having the barrel thereof in alignment with said ball member opening, the gun being thereby supported such that the angle of the gun barrel relative to the surface of the earth may be selected whereby a projectile fired by said gun passes through said ball member to strike the earth's surface beneath said base.

4,354,573
SILENCER FOR MOTORCYCLE

Kazuki Tabata, and Hideaki Honma, both of Toda, Japan, assignors to Sankei Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 17, 1981, Ser. No. 234,634
Claims priority, application Japan, Feb. 21, 1980, 55-21826[U]
Int. Cl.^{3} F01N *7/00, 1/08*
U.S. Cl. 181—239 **6 Claims**



1. In a tail cap of a silencer for a motorcycle comprising an outer cylindrical member having a diameter to fit on and around one end of an exhaust pipe, an inner cylindrical member concentrically positioned in said outer cylindrical member, and a spacer to maintain said outer and inner cylindrical members at an equal distance for their concentricity, the improvement comprising a multiplicity of spacers radially extending from said inner cylinder toward the inner surface of said outer cylinder in an arcuate shape in longitudinal cross-section to define, by and between adjacent spacers, openings constituting the exhaust gas outlet.

4,354,574
OIL SUCTION APPARATUS

Lothar Kieber, Mülheim, Fed. Rep. of Germany, assignor to Deutsche Calypsolgesellschaft mbH & Co., Düsseldorf, Fed. Rep. of Germany
Filed Feb. 14, 1980, Ser. No. 121,611
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 7904993[U]
Int. Cl.^{3} F16N *37/00*
U.S. Cl. 184—1.5 **2 Claims**

2. Apparatus for withdrawing oil from an oil sump of a motor vehicle through a dipstick opening, said apparatus comprising a trolley frame, an oil container carried by the trolley, an electric pump carried by the trolley frame, said pump having an an inlet and an outlet, said outlet communicating with the oil container, a plurality of dipstick suction probes of different sizes, valve means permanently connecting the probes to the pump inlet, said valve means being manually controllable to provide communication between a selected one of the probes and the pump inlet while isolating the remainder of the probes from the pump inlet,

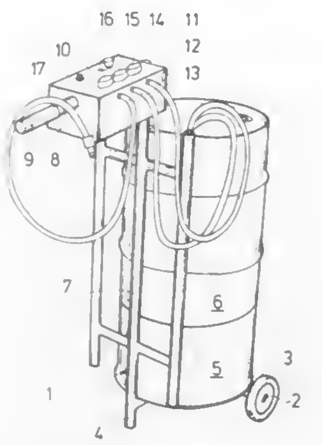
said frame comprises,

a vertically extending leg forming a tube at its upper end, a holding arm extending horizontally from and connected to said tube at the uper end thereof forming an L-shape therewith, a handle is connected to free end of said holding arm,

an axle having wheels on opposite ends thereof,

a bottom cross-member connected to a lower portion of said leg and centrally to said axle, said leg and said wheels form a three-point support,

two vertical side members disposed on lateral sides of said tube extending parallel thereto and connected therewith, said side members have bottoms disposed higher than the lower portion of said leg and defining open upper ends disposed lower than said upper end of said tube, said suction probes being adapted to be inserted in said open upper ends,

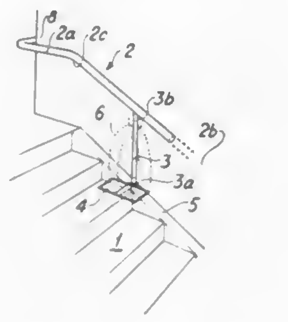


a control box containing said pump and valve means is inserted on said holding arm adjacent said tube and removably secured to said handle,

said battery case being supported on said front axle and said cross member, said oil container being supported on said battery case, said oil container and said battery case being cylindrical with substantially the same diameter.

4,354,575
GOODS CONVEYOR TRACK

Curt E. Andersson, Katrineholm, Sweden, assignor to Kurt Göran Andersson, Sweden
Filed Apr. 21, 1980, Ser. No. 141,924
Claims priority, application Sweden, Apr. 25, 1979, 7903604
Int. Cl.^{3} B66B *9/06*
U.S. Cl. 187—12 **16 Claims**

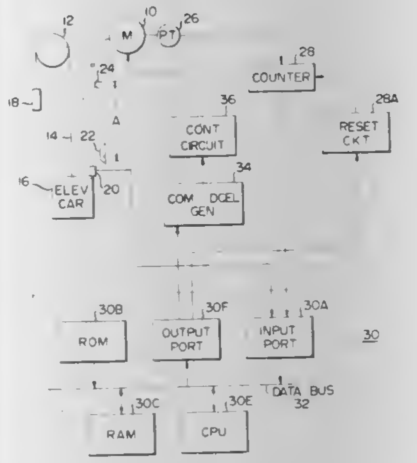


1. A goods conveyor arranged along a staircase, comprising a supporting surface for goods connected with a conveyor unit forming part of a goods conveyor track, the conveyor track including a number of units placed in a single tubular shaped guide, a driving member for moving the units in the guide, an elongated member having a first end connected to the supporting surface and a second end suspended downwardly from one of said units, a displacement of the units in the guide causing a displacement of the supporting surface, the guide being oriented along the staircase with no portion of the supporting surface or the elongated member extending above said guide such that the guide is operable as a handrail for the staircase, a longitudinal slit in the guide facing downwards and receiving the second end of said elongated member, the first end of said

elongated member has a wheel for rolling engagement with a track oriented on a wall adjacent the staircase, said elongated member lying in a vertical plane bounded by the guide and the track, said track supporting a substantial portion of the weight of said goods conveyor.

4,354,576
COMMAND SPEED GENERATOR SYSTEM FOR ELEVATOR CAR

Ryuichi Kajiyama, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 28, 1980, Ser. No. 202,180
Claims priority, application Japan, Oct. 30, 1979, 54-140090
Int. Cl.^{3} B66B *1/18*
U.S. Cl. 187—29 R **2 Claims**

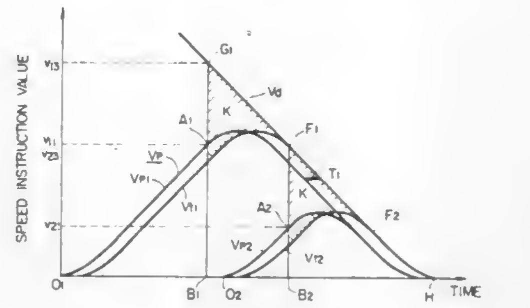


1. A command speed generator system for an elevator car comprising: a counter means for counting pulses corresponding to a distance of movement of said elevator car; an electronic computer means which is independent of said counter means and contains a central processing unit, wherein a count from said counter means is entered into said computer means upon said elevator car reaching a predetermined distance short of a floor on which said elevator car is predetermined to stop and for each of predetermined calculating time periods thereof, and wherein said electronic computer subtracts said entered count from said predetermined distance so as to calculate a residual distance corresponding to the distance between the actual position of said elevator car and said predetermined floor; a signal generator means connected to said electronic computer for delivering a command deceleration signal representative of said residual distance; and a resetting circuit means connected to said counter means and independent of said central processing unit for generating a pulse for resetting said counter means to zero in response to said elevator car reaching said predetermined distance.

4,354,577
SPEED INSTRUCTION GENERATING DEVICE FOR ELEVATOR

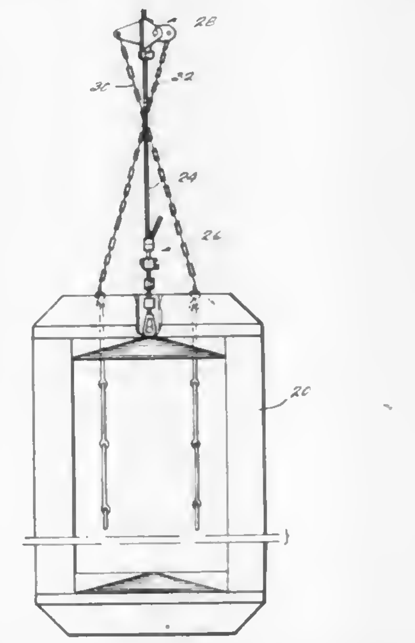
Masashi Yonemoto, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 10, 1981, Ser. No. 272,239
Claims priority, application Japan, Jun. 18, 1980, 55/82363
Int. Cl.^{3} B66B *1/30*
U.S. Cl. 187—29 R **8 Claims**

1. A method for controlling the movement of an elevator, comprising the steps of: moving an elevator cage at a speed determined by a first speed instruction value toward a floor at which said cage is to be stopped; determining a distance remaining from a present position of said cage to said floor at which said cage is to be stopped; adding a predetermined distance to said remaining distance; determining a second speed instruction value in accordance with the sum of said predetermined distance and said remaining distance; determining a difference between said second speed instruction value and said first speed instruction value; issuing a switching preparation instruction when said difference becomes smaller than a predetermined value; and moving said elevator cage at a speed determined in accordance with said second speed instruction value a predetermined period of time after said switching preparation instruction is issued, wherein a difference between said first speed instruction value and said second speed instruction value is constant irrespective of the speed of said elevator cage.



4,354,578
READY CLAMP

Glenn E. Gray, R.F.D. No. 2, Tippecanoe, Ohio 44699
Filed Nov. 5, 1980, Ser. No. 204,267
Int. Cl.^{3} B66B *5/00*
U.S. Cl. 187—71 **10 Claims**



1. A clamp adapted to be mounted on a cable above a load normally supported by the cable for supporting the load from the cable in the event of failure of the cable supporting the load between the clamp and load comprising:

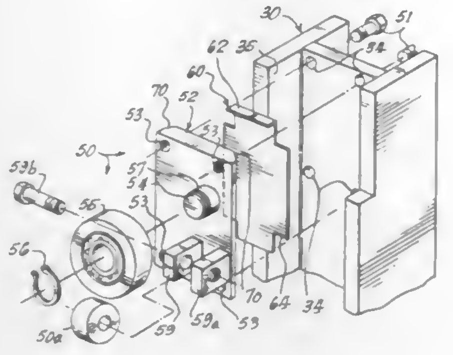
first and second members having opposed surfaces defining therebetween an extending passage for said cable, said first member being adapted for attachment to said load by attaching means connected to said first member at a location separated from said opposed surfaces;

means mounting said second member for movement toward and away from said cable;

a cam member mounted on said mounting means outward from said cable for pivotable movement in a vertical plane about an axis, said cam member having a cam surface at a radius from said axis which radius increases, said cam member engaging said second member and defining means remote from said axis for attaching said cam member to said load so that failure of said cable causes said cam member to pivot about said axis so that said cam surface applies a force to said second member to frictionally lock said clamp to said cable and support said load, said clamp being coupled to the cable in a non-fixed manner so that the clamp only applies a clamping force and is fixed coupled to the cable upon failure of the cable.

4,354,579
APPARATUS FOR GUIDING LIFT TRUCK MAST SEGMENTS

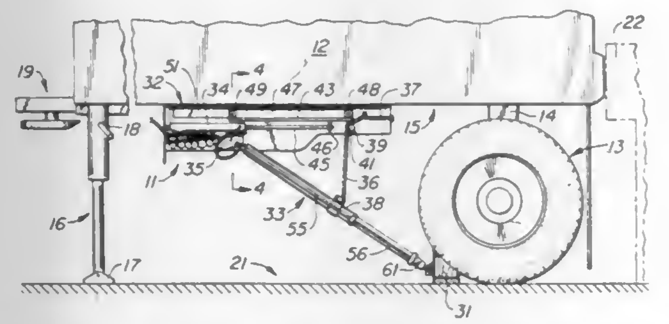
Leonard J. Low, P.O. Box 1927, Sparks, Nev. 89431
Filed Jun. 30, 1980, Ser. No. 164,248
Int. Cl.³ B66B *7/02*
U.S. Cl. 187—95 **1 Claim**



1. An apparatus for guiding lift truck mast segments comprising: a first lift truck mast segment, having a removable roller bearing assembly means mounted thereon, said roller bearing assembly means comprising a flat mounting plate secured to said first lift truck mast segment; a projecting stub shaft mounted on said mounting plate; a first roller bearing mounted on said stub shaft; a snap ring placed in a groove on said stub shaft for retainment of said first roller bearing onto said stub shaft; a pair of projecting ears secured to said flat mounting plate; a second roller bearing mounted between said ears by a threaded bolt passing through one of said ears, through said second roller bearing, and into a threaded opening in the other of said ears; said second roller bearing being at right angles to said first roller bearing; a second mast frame segment placed inside said first mast frame segment and being guided for relative movement to said first mast segment by said roller bearing assembly means; and wherein one of the structural end portions of said first lift truck mast frame segments is cut away in order to allow said first roller bearing to be placed into position to contact a first face of said second mast frame segment, and said second roller bearing is placed into a position to contact a second face of said second mast frame segment.

4,354,580
WHEEL CHOCKING ASSEMBLY

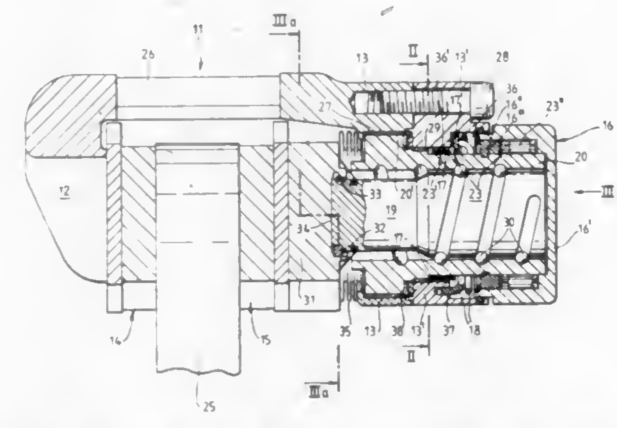
Clifford J. Delasantos, 4380 Benito, Montclair, Calif. 91763, and Peter J. Rasmussen, 10714 Western Ave., Downey, Calif. 90241
Filed Dec. 18, 1979, Ser. No. 104,874
Int. Cl.³ B60T *1/00, 3/00*
U.S. Cl. 188—4 R **9 Claims**



1. A wheel chocking means for a wheeled vehicle having a frame and at least one set of wheels supporting said frame and engaging a roadway surface, comprising:
(a) a chock member;
(b) a collapsable and expandable carrying means for said chock mounted to the underside of said vehicle in a position so as to be parallel to the frame of said vehicle when in the collapsed position and diagonally between the frame of said vehicle and at least one wheel of said vehicle and the roadway surface when in expanded chocking position;
(c) said chock carrying means including a first expandable member having a pivoted end fixed to a laterally moveable element moveable attached to said frame of said vehicle and a free end moveable away from and toward said pivoted end, a flexible member connected at one end to said first expandable member at a point spaced from said pivoted end and connected at its other end to another portion of said frame of said vehicle, said free end of said first expandable member having said chock member attached thereto for engagement with said wheel and said roadway surface;
(d) said chock carrying means further including a second expandable member fixed at one end with respect to said frame of said vehicle and having a free end moveable away from and toward said fixed end, said moveable end of said second expandable member connected to said laterally moveable element to which the pivoted end of said first expandable member is attached, and means attached to said laterally moveable element and cooperating with said flexible member between said other end thereof and said one end connected to said first expandable member;
(e) means for expanding said first expandable member and for moving said laterally moveable element with respect to said fixed end of said second expandable member and for moving said chock member into chocking engagement with said wheel; and
(f) control means for collapsing said first expandable member away from said chocking engagement and then for collapsing said second expandable member to move said laterally moveable element toward the fixed end of said second expandable member and for moving said means cooperating with said flexible member toward the end connected to said first expandable member.

4,354,581
MECHANICAL ACTUATING DEVICE FOR A DISC BRAKE

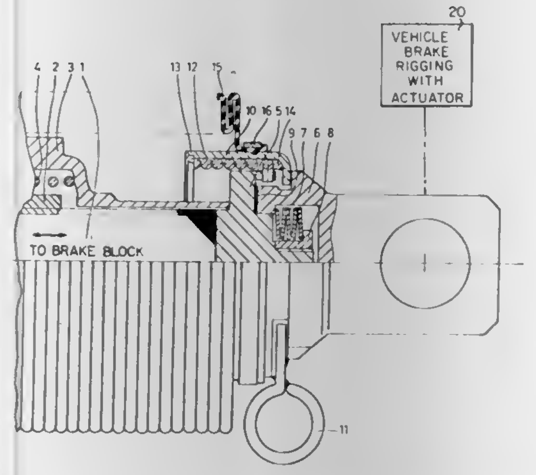
Alfred Birkenbach, Hattersheim, and Helmut Franke, Wehrheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Oct. 29, 1980, Ser. No. 201,883
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1979, 2946850
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 **14 Claims**



1. A mechanical actuating device for a spot-type disc brake comprising:
a brake caliper embracing a brake disc, said caliper including an axial bore in a leg thereof, said axial bore having a longitudinal axis parallel to an axis of rotation of said brake disc;
an actuating spindle disposed in said axial bore coaxial of said longitudinal axis acting against a given brake shoe of said disc brake, said spindle being secured against rotation relative to said given brake shoe;
an actuating nut disposed in said axial bore coaxial of said longitudinal axis and surrounding said spindle, said nut being axial immovable and rotatable relative to said spindle;
an actuating means disposed coaxial of said longitudinal axis and surrounding said nut in a rotational driving relationship therewith; and
an adjusting device for an automatic adjustment to maintain a nominal clearance between said given brake shoe and said brake disc after a braking operation, said adjusting device being disposed between said actuating means and said nut such that said nut is turned back a correspondingly smaller distance than normal when said nominal clearance is exceeded after a braking operation enabling a relative rotation between said actuating means and said nut as said actuating means returns to its initial position prior to said braking operation.

4,354,582
DEVICE AT A SLACK ADJUSTER

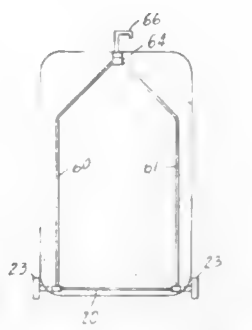
Lars M. Severinsson, Hishult, Sweden, assignor to SAB Industri AB, Landskrona, Sweden
Filed Jan. 23, 1980, Ser. No. 114,659
Claims priority, application Sweden, Jan. 29, 1979, 7900739
Int. Cl.³ F16D *65/042*
U.S. Cl. 188—196 M **5 Claims**



1. A manual adjustment device for increasing slack in an automatic slack decreasing slack adjuster such as required to install new brake blocks, the adjuster having a rotatable part which turns in one direction to adjust the slack and in an opposite direction in response to said device to increase the slack, comprising in combination, first clutch means in said adjuster holding said rotatable part in frictional engagement with a non-rotatable part for holding the rotatable part nonrotatable in the slack increasing direction and means for manually overcoming said frictional engagement to rotate said rotatable part relative to said holding part in the direction increasing slack including a manually accessible second rotatable member and a one way clutch coupling said second rotatable member to said rotatable part to rotate it when the second rotatable member is rotated in the slack increasing direction with a force overcoming the force of said frictional engagement whereby the second rotatable member may be moved back and forth over a small arc to effect an increase in slack.

4,354,583
CARRIER FOR GARMENT BAGS AND THE LIKE

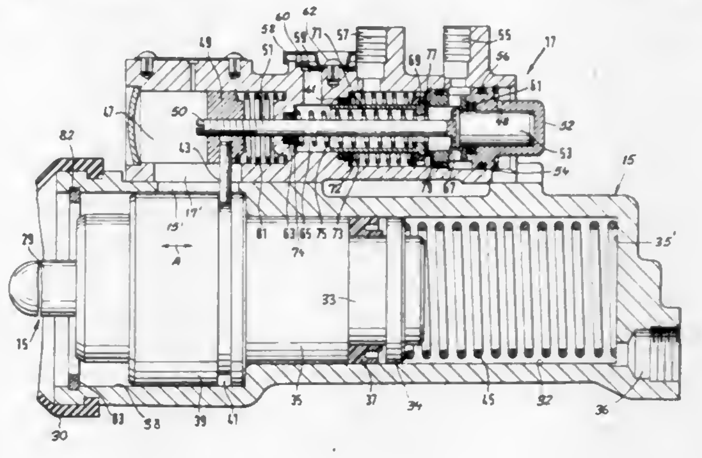
Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133
Filed Aug. 17, 1981, Ser. No. 293,364
Int. Cl.³ A45C *5/14*
U.S. Cl. 190—18 A **2 Claims**



1. In combination with a generally rectangular elongated garment carry-on bag, a carrier for said bag comprising:
a wheeled support positioned at the bottom end of said bag,
said support including a horizontally extending axle positioned within said bag and extending through the opposite vertically extending side edges of said bag,
a vertically extending elongated member positioned within said bag and connected at its lower end to said axle and extending at its upper end through the upper end of said bag,
a second vertically extending elongated member connected to said axle with said two members being adjacent the vertically extending side edges of said bag and connected together adjacent said upper end of said bag.

4,354,584
TRANSMISSION-CLUTCH OPERATING SYSTEM

Günther Reifinger, Germering; Christian Fuchs, Oberschliessheim; Alfred Magg, Friedrichshafen, and Gerold Bieber, Langenargen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen A.G., Friedrichshafen and Knorr-Bremse GmbH, Munich, both of, Fed. Rep. of Germany, a part interest to each
Filed Oct. 30, 1979, Ser. No. 80,508
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842736
Int. Cl.³ F16D *25/00, 13/75*
U.S. Cl. 192—3.57 **5 Claims**

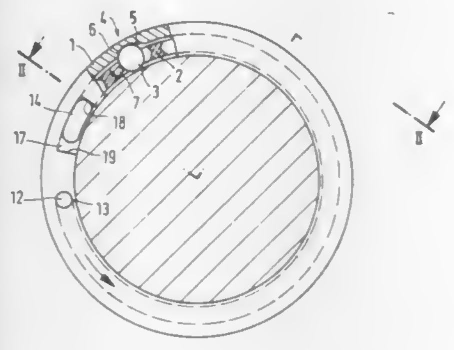


1. A transmission system comprising:
a driven shaft connected to a motor;
a transmission having an input and an output shaft, the output shaft being connectable to a load, said transmission being shiftable to vary the transmission ratio between said input and output shafts in dependence upon application of fluid pressure to a fluid input;
a clutch between said driven shaft and said input shaft;
a clutch-operating cylinder having a piston operatively

connected to said clutch for opening same upon displacement of said piston; and
a supply valve connecting a source of fluid under pressure with said input and including a valve member entrained by said piston for controlling the pressurization at said input with said fluid to permit ratio shifting of said transmission only upon opening of said clutch, said supply valve having a first port connected to said input, a second port connected to said source and a third port for relieving fluid pressure, said valve member being shiftable in a valve housing and including:
a slide coupled with said piston;
a valve plate blocking communication between said first and second ports in a rest position;
first spring means biasing said valve plate into said rest position, said valve plate being engaged by said valve member to unblock communication between said first and said second ports and block communication between said first and third ports; and
a transverse pin connecting said piston and said slide.

4,354,585
OVERRUNNING CLUTCH SHIFTABLE TO FREE WHEELING

Joachim Ritter, Herzogenaurach, Fed. Rep. of Germany, assignor to Industriewerk Schaeffler OHG, Herzogenaurach, Fed. Rep. of Germany
Filed Jan. 26, 1981, Ser. No. 228,175
Int. Cl.³ F16D *15/00, 41/06*
U.S. Cl. 192—45 **3 Claims**

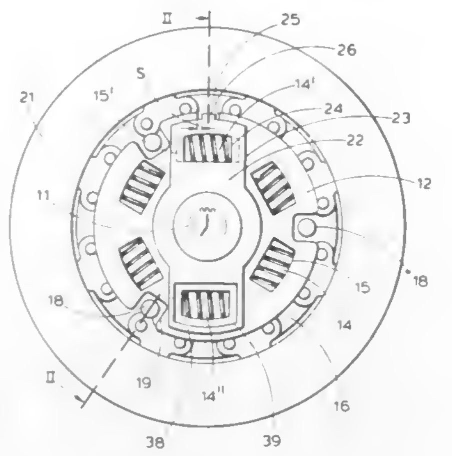


1. An overrunning clutch capable of being shifted to free wheeling in both directions and capable of being shifted to a camming position in one direction or free wheeling in opposite direction comprising an outer race provided with camming surfaces and an inner race, a plurality of cam rollers accommodated in a cage rolling on said races, a circular spring with one end secured to the outer race and the other end engaging the roller cage designed with a shift means at the latter end whereby the roller cage can be shifted from a camming position to a free wheeling position in both directions.

4,354,586
FRICTION CLUTCH DRIVEN PLATE

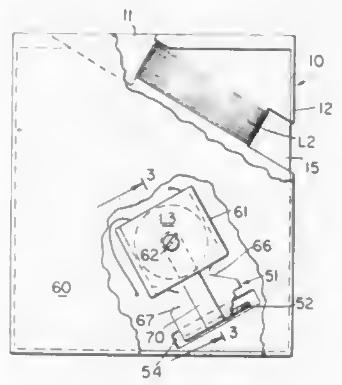
Michael G. Stanley, Banbury, England, assignor to Automotive Products Limited, Leamington Spa, England
Filed Jun. 5, 1980, Ser. No. 156,802
Claims priority, application United Kingdom, Jun. 7, 1979, 7919794
Int. Cl.³ F16D *3/66*
U.S. Cl. 192—106.2 **4 Claims**

1. A friction clutch driven plate having;
a hub with a circumferential flange thereon;
a circumferentially extending slot defined in the outer peripheral edge of the flange;
a friction facing carrier mounted on the hub and capable of limited angular movement about the hub;
springs acting between the flange and the carrier to restrain said angular movement;
and friction damping means which includes;
a control plate located axially between the flange and the facing carrier and which is capable of angular movement relative to the carrier to render said friction damping means effective, said control plate having a substantially radial outwardly projecting arm with an aperture defined therein which snugly accommodates one of said springs, and said arm has at its radially outer peripheral edge an axially directed lug that engages said slot and has circumferential clearance therein to allow for an initial sector of angular movement of the carrier relative to the hub before the damping means is rendered effective.



4,354,587
COIN ACCEPTOR OR REJECTOR

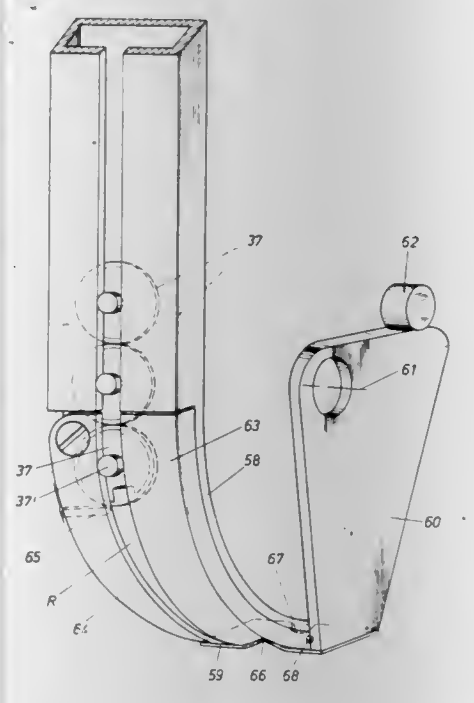
Ronald C. Davies, Las Vegas, Nev., assignor to Third Wave Electronics Company, Inc., Las Vegas, Nev.
Filed Oct. 17, 1980, Ser. No. 198,283
Int. Cl.³ G07F *3/02*
U.S. Cl. 194—100 A **17 Claims**



1. A coin acceptor or rejector apparatus for use in coin-operated machines and the like, comprising a coin chute having a slot for receiving a coin, said chute having a coin acceptance portion and a coin rejection portion, a flapper controlling the direction of movement of coins to one or the other of said portions, an oscillator circuit adapted to oscillate at a substantially constant amplitude, a sensing coil surrounding the chute at its upper end adjacent said slot and actuated by a coin passing therethrough, said sensing coil upon receipt of a coin having its Q substantially decreased and having energy losses caused by eddy currents being dissipated by the coin and by the magnetic hysteresis of the coin whereby the effective resistance of the oscillator circuit is reduced and the current flow therethrough is increased, comparative circuitry for discriminating the change in current and resulting voltage within predetermined limits, and a solenoid energized by the change in resulting voltage within the limit prescribed for a genuine coin which moves the flapper to coin acceptance position.

4,354,588
DEVICE ON AN ATTACHMENT MACHINE

Günter Wolfertz, Schützenstrasse, Fed. Rep. of Germany, assignor to Schaeffer-Homberg GmbH, Wuppertal, Fed. Rep. of Germany
Filed Dec. 28, 1979, Ser. No. 108,262
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856868
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—394 **13 Claims**

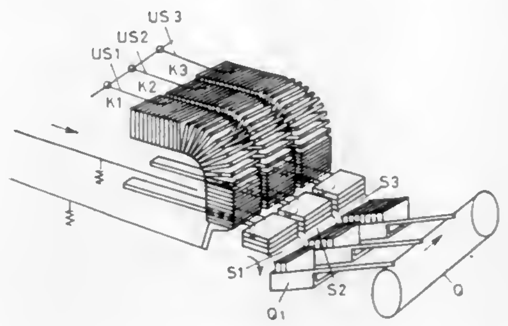


1. A device for transportation and correct angular positioning of fasteners such as buttons, rivets or the like in the tool of an attachment machine which has a trough-shaped guide rail defining a feed trough for the fasteners provided with an indexing stop, which is arranged in front of the tool, the rail having a friction lining over at least part of the length of one side thereof and having, on its opposite side, a side wall which is spring-biased in a direction of the friction lining, comprising
slide means disposed along said rail for pushing forward the fasteners, respectively, along said feed trough, said slide means having a pushing surface therefor, said pushing surface being disposed on a longitudinal center line of the feed trough and adapted to engage said fasteners, respectively,
stop means for contacting the indexing stop on the fasteners, said stop means comprises a pin arranged on said slide means and laterally of said longitudinal center line,
said feed trough defines a curve,
a swing lever being pivotally mounted about a stationary pivot axis and having a free end for swinging substantially along said curve of said feed trough,
said slide means is arranged at said free end of said swing lever so as to swing substantially along said curve of said feed trough and is adapted to get behind said fasteners for pushing the latter by said pushing surface,
said pushing surface of said slide means is formed as an abutment surface.

4,354,589
METHOD AND APPARATUS FOR GROUPING FLAT ITEMS IN STACKS

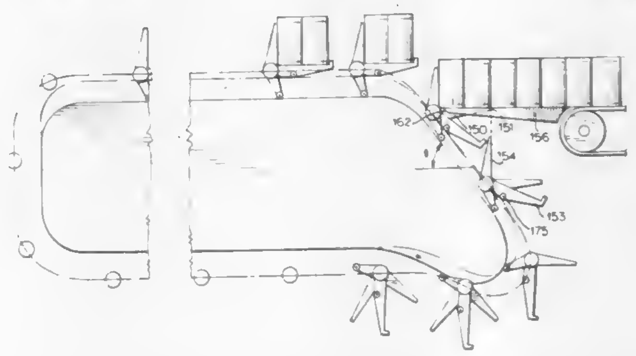
Rene Fluck, Schleitheim, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen, Switzerland
Filed Nov. 21, 1980, Ser. No. 209,329
Claims priority, application Switzerland, Nov. 23, 1979, 10463/79
Int. Cl.³ B65G *59/06*
U.S. Cl. 198—419 **7 Claims**

1. In a method of grouping flat items in stacks, including the steps of advancing the items on at least three parallel channels to a grouping device; cyclically transferring a predetermined number of items from each channel to said grouping device; and forming mixed groups by the grouping device such that each mixed group contains at least one item from each said channel; the improvement comprising the following steps:
(a) monitoring each channel for determining an undersupply of items therein;
(b) upon determination of an undersupply in a channel and for a duration following said determination, transferring from the undersupplied channel to said grouping device a number of items which is reduced by a first quantity as compared with the quantities transferred from the undersupplied channel when there is a normal supply of articles therein; and
(c) upon determination of an undersupply in a channel and for a period following said determination, transferring from the normally supplied channels to said grouping device a number of items which is increased by a second quantity as compared with the quantities transferred by the normally supplied channels when all the channels are normally supplied, whereby the number of the items in the mixed groups obtained by the cyclical transfer of articles from said channels remains constant.



4,354,590
SPACER ESCALATOR FOR SPACING LOADS IN CARTON LOADING MACHINES

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Ltd., Toronto, Canada
Continuation of Ser. No. 873,000, Jan. 27, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 269,431
Int. Cl.³ B65G *47/26, 17/32*
U.S. Cl. 198—425 **3 Claims**



2. In a carton loading machine having a loading conveyor for supporting and transporting a plurality of load units through a loading station in a longitudinally spaced relationship along a forward run which extends in a loading plane, a load accumulating station and means for feeding load units into the load accumulating station, each load unit having a predetermined length in said forward direction, the improvement of:
(a) a transfer platform in said load accumulating station disposed in a plane which is spaced below the loading plane and rearwardly from the forward run of the loading conveyor,
(b) an escalator conveyor having an escalator run which includes a straight section followed by an arcuate section, said straight section extending forwardly and upwardly

from below said transfer platform to said arcuate section which extends from the upper end of the straight section to the plane of said forward run of said loading conveyor,

(c) a plurality of load supports mounted on said escalator conveyor and arranged to form a series of escalator steps along said escalator run, each step having a rearwardly directed stop face and a horizontally extending load support face extending rearwardly from its associated stop face, successive rearwardly directed stop faces being spaced from one another in said forward direction a distance equal to said predetermined length of load unit and being disposed above its associated load support face to engage a load unit driven thereagainst by said means for feeding load units into the load accumulating station such that during movement of said load support means along said escalator run at least one stop face is always presented to the load units feeding to said load accumulating station.

4,354,591

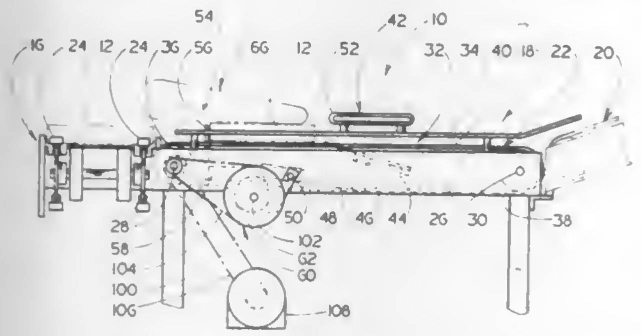
CARTON COLLATING AND TRANSFER APPARATUS

John H. Sexstone, Anchorage; Tom Lewis, Louisville; Ken Milliner, Louisville, and Everett N. Finn, Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 19, 1980, Ser. No. 208,354

Int. Cl.^{3} B65G *47/68*

U.S. Cl. 198—451 11 Claims



1. A carton collating and transfer apparatus for distributing cartons received from a plurality of continuously running feeder conveyer devices onto a single take-away conveyer device moving at an angle to the feeder conveyer devices, comprising:

endless conveyer belt means defining plural paths equal in number to the number of feeder conveyer devices, each path of said conveyer belt means being associated at one end with a different one of the feeder conveyer devices to receive cartons therefrom and associated at the other end with said take-away conveyer device for discharging cartons thereon;

a first carton stop station associated with each one of said plural paths of said conveyer belt means movable between a carton release position and a carton stop position for selectively stopping a carton moving in each path of said conveyer belt means, said first stop station further comprising an elevator plate mounted for movement between a carton release position below the top flight of said endless conveyer belt means and a carton stop position above the top flight of said endless conveyer belt means to lift cartons off said top flight; and, stop plate means spaced above the top flight of said endless conveyer belt means over said elevator plate such that when said elevator stop plate moves to a carton stop position it lifts a carton off the top flight and into friction contact with said stop plate;

a second carton stop station associated with each one of said plural paths of said conveyer belt means disposed downstream from said first stop station and movable between a carton release position and a carton stop position for selectively stopping a carton moving in said path of said conveyer belt means, said second stop station being operated in sequence with said first stop station to a carton release position when said first stop station is in a carton stop position, and to a carton stop position when said first stop station is in a carton release position; and,

carton accelerator means proximate each of said second carton stop stations to impart linear acceleration to a carton at said second stop station when said second stop station is in a carton release position to move the carton rapidly away from said second stop station and onto the take-away conveyer device located downstream of said second stop station.

4,354,592

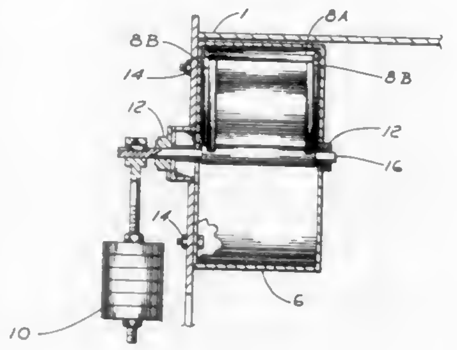
SELF-CLEANING APPARATUS FOR REMOVING MATERIAL FROM A ROTATING DRUM

Allan C. Morgan, Chesterfield, and Dan K. Puckett, St. Charles, both of Mo., assignors to Cabot Corporation, Kokomo, Ind.

Filed Aug. 7, 1980, Ser. No. 175,993

Int. Cl.^{3} B65G *17/36*

U.S. Cl. 198—703 6 Claims



1. Apparatus for removing material from a rotating drum comprising means through which material enters said drum, means through which material leaves said drum, at least one bucket for lifting material and depositing it in said means through which material leaves said drum, said bucket being affixed to rotate with said drum, means for cleaning said bucket without stopping the rotation of said drum, said cleaning means being comprised of scraping means, and means for maintaining said scraping means in a substantially fixed position relative to the local gravitational force vector.

4,354,593

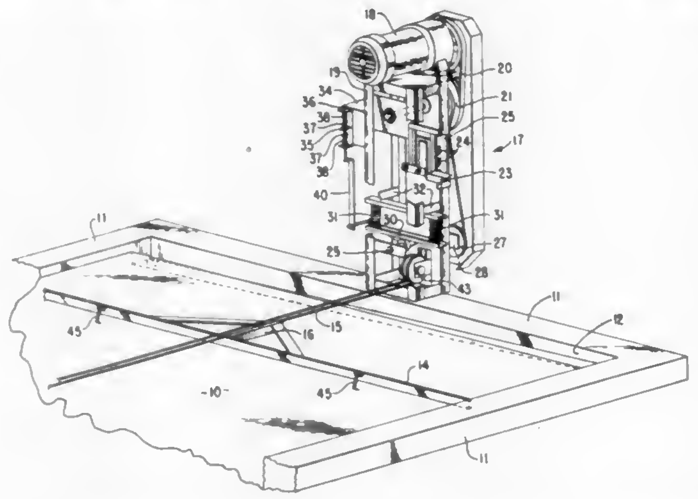
MECHANISM FOR CLEANING SUBFLOOR OF LIVESTOCK CONFINEMENT UNIT

Orville J. Diedrich, Iona, Minn. 56141

Filed Mar. 18, 1981, Ser. No. 244,973

Int. Cl.^{3} B65G *25/04*

U.S. Cl. 198—718 9 Claims



1. For use in moving waste material from a subfloor having curbed edges to a gutter at one end of said subfloor, a mechanism including a scraper blade adapted to extend laterally across said subfloor between said edges, cable means attached to said blade and extending longitudinally of said subfloor in opposite directions from said blade, pulley means engaging said cable means at both ends of said subfloor to direct said cable means, drive means engaging said cable means in pulling relationship, said drive means being reversible so that said cable means may be pulled in opposite directions, control means connected to said drive means adapted to control said drive means, said control means having a central position and two opposite positions, said opposite positions providing for pulling said cable means in opposite directions and said central position providing a neutral position in which said drive means does not pull, and operating means operably connected to said control means and in engagement with said cable means, said operating means including rocking arm means operably connected to said control means, pulleys rotatably mounted near opposite ends of said rocking arm means, said cable means being entrained over said pulleys such that the cable on one of said pulleys pulls said scraper blade in one direction and the cable over the opposite pulley pulls said blade in the opposite direction whereby extra tension on one pulley relaxes the tension in the opposite pulley thereby causing movement of said rocking arm means to move said control means to the neutral position.

4,354,594

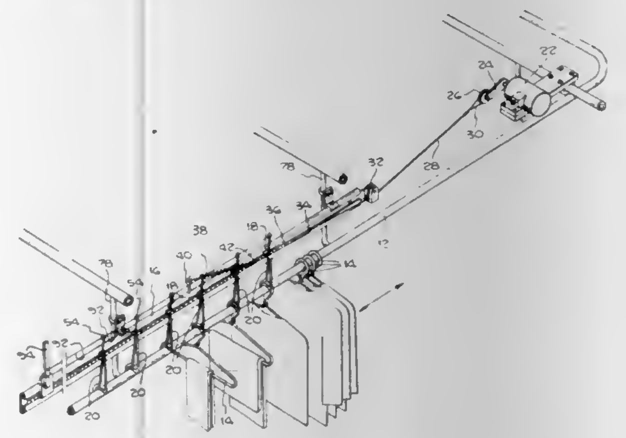
FLEXIBLE CONVEYOR SYSTEM

Robert C. Galloway, 1449 Parkhurst St., Simi Valley, Calif. 93065

Continuation of Ser. No. 929,521, Jul. 31, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,914

Int. Cl.^{3} B65G *25/00, 37/00*

U.S. Cl. 198—743 1 Claim



1. In a fail-safe system for the storing, conveying or general purpose handling of products along a track:

an elevated and elongated generally horizontal rail;

supporting means or hangers for products adapted for longitudinal movement along said rail;

a guide extending generally parallel to and coextensively with said rail;

a plurality of slide means mounted for movement along said guide;

a finger pivotally supported on each slide means for limited rotation about a horizontal axis and having a lower portion for abuttingly engaging and moving said supporting means along said rail and an upper extension projecting above said axis;

a flexible tension element interconnecting the finger extensions;

selectively actuable toggle means carried by the guide for applying tension to said flexible tension element whereby to raise the finger lower portions out of engagement with the supporting means;

means including collapsible tension means interconnecting said slide means for reciprocating said fingers to successively move said supporting means an incremental distance along said rail in one direction, and then move said fingers in the opposite direction past the supporting means previously engaged by said fingers and beyond the next supporting means, preparatory to moving the next supporting means along said rail in said one direction in the next cycle of reciprocation of said fingers;

means movably carried by the guide for applying a biasing force to hold said slide means apart and to hold said tension means fully extended between said slides; and

selectively releasable means for mounting the biasing means at a selected point in the guide for normal operation, whereby release of the releasable means permits the biasing means to be moved along the guide means, in turn permitting the slide means and fingers to be moved into compact relation, with said tension means fully collapsed, whereby said rail may be employed for general purpose materials handling or storage.

4,354,595

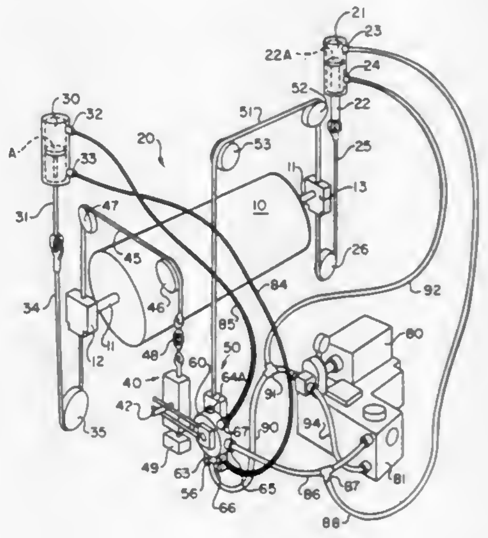
APPARATUS AND METHOD FOR MAINTAINING POSITIONAL ALIGNMENT BETWEEN TWO SPACED-APART POINTS ON A MOVEABLE MEMBER

Augustus T. Reynolds, 3300 Woodwardia Dr., Charlotte, N.C. 28210

Filed Jul. 3, 1980, Ser. No. 165,527

Int. Cl.^{3} B65G *39/16;* F15B *11/22*

U.S. Cl. 198—807 17 Claims



1. An apparatus for maintaining relative positional alignment between two spaced-apart points on a movable member, comprising:

(a) a hydraulic pump;

(b) first hydraulic means operatively connected to said hydraulic pump and to a first point on the member for applying a reference hydraulic pressure to the member and for moving the member to maintain said applied pressure at a constant, pre-determined pressure level;

(c) second hydraulic means operatively connected to said hydraulic pump and to a second point on the member spaced apart from said first point;

(d) sensing means cooperating with the member for detecting movement of the member at said first point relative to said second point; and

(e) hydraulic servo-valve means cooperating with said sensing means and selectively directing hydraulic fluid to said second hydraulic means in response to said sensing means for moving the member at said second point in a direction and for a distance corresponding to the movement of the member at said first point, said hydraulic servo-valve means comprising a circular valve housing adapted for unison movement with one of said first and second points on the member and including port means for conveying hydraulic fluid to said second hydraulic means, and a valve body mounted for rotational movement within said valve housing and cooperating with the other of said first and second points on said movable member for directing fluid to said second hydraulic means in response to and proportional to the relative movement between said first point and said second point on the movable member;

whereby tthe member at said second point follows the movement of the member at said first point and thereby maintains relative positional alignment between said first point and said second point on the member.

4,354,596

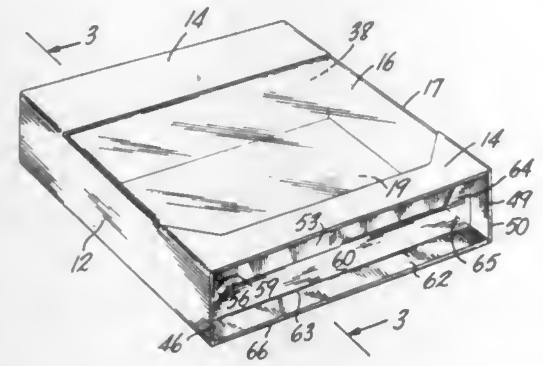
CARTON WITH INVERTED INTERNAL PLATFORM AND CARTON BLANK THEREFOR

John J. Lavery, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 23, 1981, Ser. No. 236,936

Int. Cl.^{3} B65D *25/54, 65/16*

U.S. Cl. 206—45.31 **2 Claims**



1. A display carton formed from a one-piece paperboard blank, said carton comprising:

(a) parallel spaced apart front and back panels having respective side edges interconnected by parallel spaced apart side panels, said side panels being foldably connected to said front and back panels;

(b) means forming a window in said front panel whereby contents of said carton can be viewed, said window having top, bottom and side edges;

(c) means forming a bottom closure for said carton, said bottom closure comprising a first inverting panel foldably connected to a bottom edge of said front panel and adhesively secured to the inside surface of said front panel; a first support panel foldably connected to said first inverting panel and extending perpendicularly therefrom toward said back panel; a second inverting panel foldably connected to a bottom edge of said back panel and adhesively secured to the inside surface of said back panel; a second support panel foldably connected to said second inverting panel and extending perpendicularly therefrom toward said front panel, said first and second support panels having freely pivotable overlapping adhesive-free portions operative to support an article disposed in the carton, and said first and second support panels being disposed closely adjacent to said bottom edge of said window; and

(d) means forming a top closure for said carton, said top closure comprising a first support panel foldably connected to a top edge of one of said front and back panels and adhesively secured to the inside surface of said one of said front and back panels; a second support panel foldably connected to said first support panel and extending perpendicularly therefrom toward the other of said front and back panels; and a third support panel foldably connected to said second support panel and extending perpendicularly therefrom toward the upper edge of the other of said front and back panels, said third support panel lying flat against the inside of said other of said front and back panels but free of securement thereto, whereby said second and third support panels can be pulled through the upper end of said carton to permit placing of contents in said carton; said top closure further comprising a top flap foldably connected to a top edge of the other of said front and back panels and extending perpendicular thereto toward said one of said front and back panels, said top flap having a lip panel foldably connected thereto and extending perpendicular to said top flap in face-to-face contact with an exposed surface of said first support panel.

4,354,597

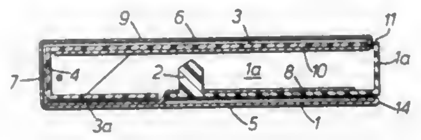
COVERS FOR CASSETTE BOXES

Norman J. Garrod, Great Common, Bletchingley, Surrey, England

Division of Ser. No. 968,214, Dec. 11, 1978, abandoned. This application Mar. 5, 1980, Ser. No. 127,429

Int. Cl.^{3} B65D *85/672*

U.S. Cl. 206—387 **7 Claims**



1. The combination of a box comprising a base and a lid mounted for pivotal movement relative to said base about an axis along one side of said box and a cover for said box comprising: a base panel for overlying the base of the box, said base of said box being attached to said base panel of said cover; a cover panel for overlying the lid of the box, said cover panel being made of two layers of sheet material the inner one of said layers of said cover panel being inserted first into said box to overlie the inner surface of said lid thereof without attachment thereto; and a spine panel connecting said base panel to said cover panel and of sufficient width to accommodate the box between said cover panel and said base panel and overlying that side of the box at which the lid is pivotted, said base panel being made of two layers of sheet material which are integrally connected together along that edge remote from said spine panel and are adhered together.

4,354,598

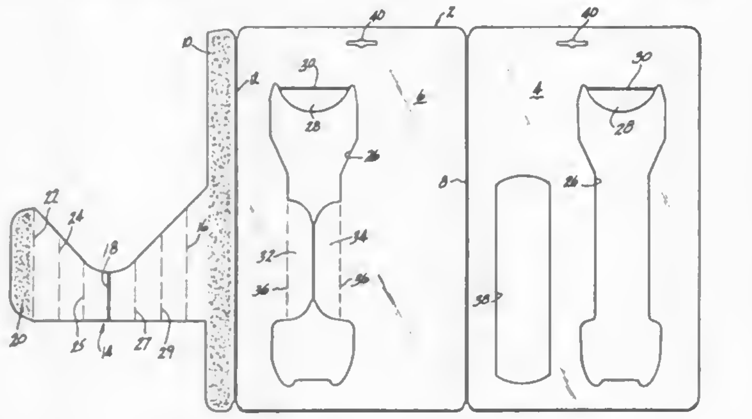
ARTICLE DISPLAY PACKAGE AND BLANK THEREFOR

Joseph F. Schillinger, Fulton, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Aug. 24, 1981, Ser. No. 295,771

Int. Cl.^{3} B65D *73/00*

U.S. Cl. 206—462 **16 Claims**



1. An article display package comprising:

(a) a paperboard front panel;

(b) a paperboard back panel foldably connected to one edge of said front panel, said back panel being juxtaposed in face to face relationship with said front panel;

(c) a tuck flap foldably secured to one of said front and back panels, said tuck flap being sandwiched between said front and back panels and adhesively secured to the other of said front and back panels whereby opposite edges of said front and back panels are secured together;

(d) means forming an article receiving opening in said front and back panels, said article receiving opening being configured substantially to the shape of the article to be received therein; and

(e) uninterrupted paperboard retention panel extending from an edge of said tuck flap between said front and back panels to a first edge of said article receiving opening, said retention panel having a first portion extending from said first edge of said opening outwardly from said front and back panels, a second portion secured to one of said front and back panels and extending from the opposite edge of said opening outwardly from said front and back panels, and a third medial portion foldably connected to said first and second portions and extending therebetween whereby said retention panel bridges one side of said opening to embrace only a portion of a relatively bulky article positioned in said opening to retain the article in said opening while permitting the remainder of the article to be displayed.

4,354,599

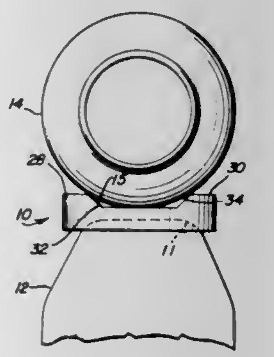
KEG SADDLE

Donald L. Brown, 326 N. 38th Pl., and Gareld D. Calvert, 4094 Jasper Rd., both of Springfield, Oreg. 97477

Filed Sep. 5, 1980, Ser. No. 184,333

Int. Cl.^{3} B65D *21/02*

U.S. Cl. 206—503 **5 Claims**



1. A saddle adapted to hold and restrain two cylindrical objects such as beer kegs, one on top of the other and comprising; a generally cylindrically shaped saddle having the axis extending generally vertically through the saddle, a lower circular and concave surface of the saddle disposed symmetrically about the axis thereof, a portion of said lower surface including means to contact a small portion of the circumferential side edge of said upright keg adjacent the top and the lower surface adapted to be seated on the top surface of an upright keg, and an upper angulated surface of the saddle disposed symmetrically about a diameter thereof, said upper angulated surface including a pair of spaced shoulders extending outwardly of the angulated surface and defining side walls which contact generally tangentially the side walls of the keg on opposite sides of the keg center, said shoulders and side walls extending substantially the full dimensional width of the saddle and adapted to hold a keg oriented on its side and prevent said side oriented keg from excessive rolling.

4,354,600

NESTABLE BULK CONTAINERS

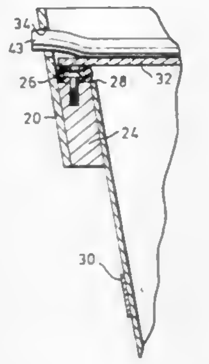
John Treiber, Chausee De la Hulpe 187-189 1170, Brussels, Belgium

Continuation of Ser. No. 64,450, Aug. 7, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 275,535

Int. Cl.^{3} B65D *21/04, 45/28*

U.S. Cl. 206—508 **10 Claims**

1. A nestable, closeable and stackable container having a bottom, a continuous straight-line peripheral side wall upstanding outwardly therefrom in the shape of a frustum, a top peripheral rim defining a plurality of spaced openings, a stiffening member located intermediate said rim and the top extremity of said side wall, a load transferring skirt downwardly dependent from the bottom of said container adjacent the periphery of said bottom, a load supporting lid adapted to sit on said stiffening member, said lid having upstanding chordal reinforcing ribs, closure means comprising at least two closure members each having an actuating portion and at least one closure portion, said actuating portion moving in a plane generally parallel to and directly adjacent said lid to move each closure portion between a first closed position in which the closure portion is engaged in a rim opening securing said lid against said stiffening member and a second open position in which the closure portion is disengaged from said rim opening whereby said closure means in said closed position lies generally flush to said lid, and whereby with said lid closed, said containers can be stacked with the skirt of an upper container resting on the chordal reinforcing ribs on the lid of a lower container the weight of a stacked container passing downward onto the lid, then to the stiffening member, then to the side wall and finally to the skirt of the container below, and with said lid removed said containers can be nested together with the skirt of an upper container resting directly on the bottom of a container below.



4,354,601

TRAYS FOR CREDIT CARD TRANSACTIONS AND THE LIKE

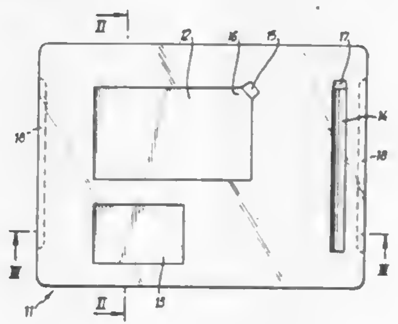
Derek Harrison, Moss Nook Restaurant, Ringway Rd., Manchester, England

Continuation-in-part of Ser. No. 99,514, Dec. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 11,230, Feb. 12, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 216,316

Claims priority, application United Kingdom, Feb. 22, 1978, 7149/78; Jun. 12, 1980, 8019283

Int. Cl.^{3} B65D *1/34, 1/36, 6/54;* **A45L** *11/00*

U.S. Cl. 206—564 **7 Claims**



1. A credit card tray comprising:

a generally flat, broad, thin body having a flat, upper writing surface, a lower surface, and peripheral edges, said body being of predetermined thickness;

said upper surface having a generally rectangular, shallow, recess for receiving and retaining a credit card substantially flatwise therein, and having a generally rectangular, shallow recess for receiving and retaining a credit card slip substantially flatwise therein;

said credit card recess and said credit card slip recess having their respective shorter lateral edges in substantial rectilinear alignment so that any signatures thereon may be visually compared;

the depth of at least a portion, of each of said credit card recess and said credit card slip recess reducing to zero at an edge of said respective recess or portion thereof.

4,354,602
DEVICE FOR INSPECTING THE EXTERNAL APPEARANCE OF SOLID MEDICINE

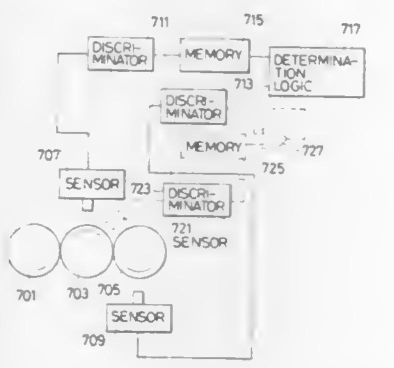
Noriomi Miyoshi; Yoshio Sugiyama; Tetsuji Kawasaki, all of Kawasaki; Jun Yamaguchi, Hiro; Kouji Shiino, Hiro, and Mamoru Shiratori, Hiro, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki and Sankyo Company, Limited, Tokyo, both of, Japan

Filed Mar. 19, 1979, Ser. No. 22,004

Claims priority, application Japan, Mar. 17, 1978, 53-30821; Aug. 7, 1978, 53-96007

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—545 22 Claims



1. A device for inspecting the external appearance of pieces of solid medicine, comprising: a solid medicine piece supply section; a first drum-shaped conveying section for conveying pieces of solid medicine supplied by said supplying section at equal intervals so that one surface of each piece of solid medicine is observed; a second drum-shaped conveying section for receiving the pieces from said first drum-shaped conveying section and conveying the pieces at equal intervals so that an opposite surface of each piece is observed; first and second sensor means provided adjacent to said first drum-shaped conveying sections for observing both surfaces of each piece of solid medicine respectively; means for rotating said first and second drums; first and second discriminating means for determining whether each piece of solid medicine is acceptable or unacceptable according to observation results provided by said first and second sensors; adjustment means for positioning said first and second drums relative to each other, said adjustment means comprising an adjusting metal fitting fitted around one end of a drum shaft of one of said first and second drums, a pulley secured to said drum shaft through said adjusting fitting, a depressing member adapted to depress said adjusting fitting for fixing said fitting to said drum shaft, screws for loosening and tightening said depressing member to facilitate coarsely adjusting a relative phase of said one of said first and second drums relative to said drum shaft, a protrusion extending rigidly from said adjusting metal fitting, first and second metal fittings extending rigidly from said pulley on opposed sides of said protrusion and having threaded holes provided therein, and first and second adjusting screws fitted through said threaded holes of said first and second metal fittings, respectively, and having ends abutting said protrusion; said adjusting screws providing a fine adjustment of said relative phase; and memory means for storing solid medicine piece discrimination signals produced on the basis of the observation results provided by said first sensor, the discrimination signal based on the observation result provided by said second sensor and the discrimination signals stored in said memory means being supplied to a general determination logic means to determine whether the external appearance of each piece of solid medicine is acceptable or unacceptable.

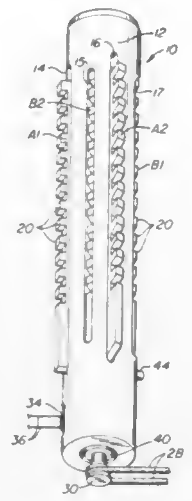
4,354,603
RIGID MAGNETIC DISC STACKER

Floyd Dunn, Sunnyvale, Calif., assignor to Dysan Corporation, Santa Clara, Calif.

Filed Oct. 14, 1980, Ser. No. 196,504

Int. Cl.³ B65G *1/12*

U.S. Cl. 211—1.5 6 Claims



1. A stacking device for rigid discs having an interior aperture, said device comprising:

an elongate registry member having external cross sectional dimensions slightly less than the interior dimensions of the aperture in the discs, said registry member having a hollow interior and at least six spaced axial elongate slots in the outer surface thereof;

a pair of sets of elongate rack members located in the alternating slots in the registry member, each said rack member having a plurality of outwardly directed teeth, the rack members of one set, designated set A, being movable radially and axially with respect to the registry member, and the rack members of the other set, designated set B, being movable radially with respect to the registry member; and

means for operating the sets of rack members to load discs so that set A moves outwardly to receive a disc with set B recessed, set A moves downwardly carrying the received disc, set A moves inwardly as set B moves outwardly to receive the disc from set A, set A moves upwardly and then outwardly to be in a position to receive the next disc and to take the disc previously received from set B as set B moves inwardly, and the process is repeated to load a plurality of discs and is reversed to unload the discs.

4,354,604
MERCHANDISE STOCKING SYSTEM AND METHOD, AND EQUIPMENT USED THEREWITH

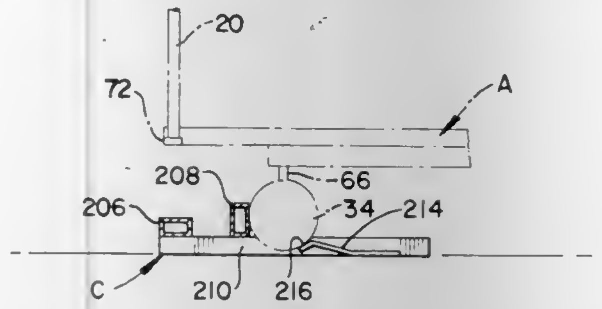
Harold Isaacs, 2567 Lafayette Dr., University Heights, Ohio 44118

Division of Ser. No. 784,148, Apr. 4, 1977, Pat. No. 4,263,986. This application Dec. 22, 1980, Ser. No. 219,395

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—17 2 Claims

1. A parking frame for parking a plurality of rectangular wheeled carts in side-by-side substantially parallel relationship comprising; an elongated main frame member, at least three elongated side frame members secured to said main frame member in perpendicular relationship therewith and in equidistantly spaced relationship to one another to define a plurality of side-by-side cart receiving spaces along said main frame member, said spaces having opposite sides defined by said side frame members and inner ends defined by said main frame member, said spaces having open outer ends opposite from said inner ends, ramps located within said spaces along said sides thereof adjacent said inner ends, said ramps including upwardly sloping portions which slope upwardly in a direction from said outer ends toward said inner ends and downwardly sloping portions which slope downwardly from said upwardly sloping portions toward said inner ends, said downwardly sloping portions being spaced from said inner ends to define wheel receiving spaces.



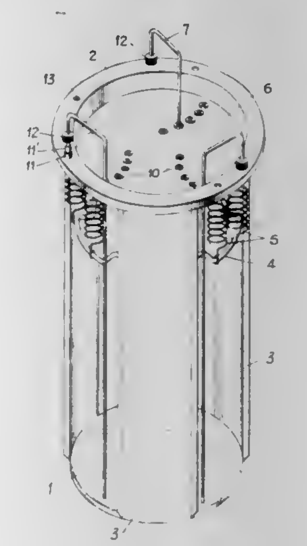
4,354,605
ADJUSTABLE DISPENSER

James W. Brutsman, Cheyenne, Wyo., assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 12, 1980, Ser. No. 129,515

Int. Cl.³ A47B *9/02;* **B65G** *5/02*

U.S. Cl. 211—49 D 3 Claims



1. In a dispenser having an elongated shape with a surrounding annular top flange and a table movable lengthwise therein toward and away from said flange, means for adapting said dispenser to handle stacks of material of different sizes said means comprising

a plurality of wire guide rods releaseably connected only to said top flange and extending downwardly therefrom lengthwise of said dispenser and only through said table and thereby being removable from said dispenser; and

said guide rods extending through said table being positioned relative to one another to receive and steady a stack of material of a predetermined size.

4,354,606
BEARING ASSEMBLY FOR A PEDESTAL CRANE

William D. Morrow, and William R. Bath, both of 6116 Cunningham, Houston, Tex. 77041

Filed Mar. 19, 1980, Ser. No. 131,751

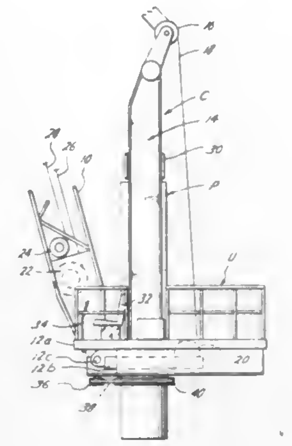
Int. Cl.³ F16C *17/06*

U.S. Cl. 212—175 5 Claims

1. In a pedestal crane having upperworks formed with a central opening thereof for receiving a pedestal therein, a bearing assembly comprising:

two arcuate shoes adapted to be disposed about the pedestal, each of said arcuate shoes having an outer shoe surface and an inner shoe surface, said outer shoe surface engaging the central opening in the upperworks;

a plurality of mounting flanges formed with said outer shoe surface of each of said arcuate shoes for releasably mounting said arcuate shoes with the upperworks; and,



bearing means affixed to and in full engagement with said inner shoe surface of each of said arcuate shoes for engaging the outer surface of the pedestal for reducing friction between the upperworks and the pedestal when rotating the upperworks of the pedestal crane about the pedestal.

4,354,607
CRANE FOR HEAVY LIFTING WITH AN ERECTION COLUMN FOR THE MAIN JIB

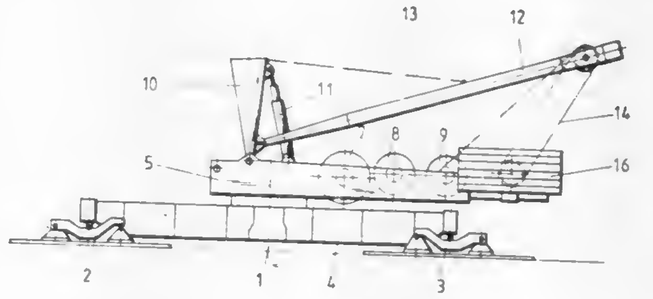
Franz Hilgers, Düsseldorf, Fed. Rep. of Germany, assignor to Leo Gottwald KG, Düesseldorf-Reisholz, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,505

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933382

Int. Cl.³ B66C *23/00*

U.S. Cl. 212—175 11 Claims



1. In a crane comprising an upper chassis, means mounting said upper chassis for rotatable slewing movement about a vertical axis, a main jib, means pivotally mounting said main jib on said chassis for pivotal movement in a vertical plane, an erection column, means pivotally mounting said erection column for pivotal movement in said vertical plane, means for connecting said column to said jib whereby said jib follows pivotal movement of said column in one direction, and tackle means acting between said column and said chassis for pivotally moving said column to raise said jib from an assembly position into an upright operative position, the improvement wherein said jib includes a lower component, means pivotally mounting said lower component on said chassis, means for connecting said lower component to said column and pivoting drive means acting directly on said lower component to enable said lower component to be moved pivotally before remaining parts of said jib are assembled, whereby, to assemble said jib, said lower component is moved by said pivoting drive means into a raised position, said lower component is connected by said connecting means to said column, which is lowered and directed away from said lower component, and said lower

component is then moved by said pivoting drive means in a direction away from said column into said assembly position and moves said column with it, causing said column to be raised into an upright position.

4,354,608

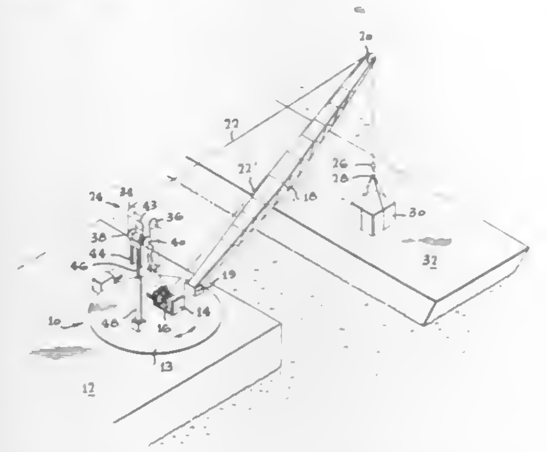
MOTION COMPENSATOR AND CONTROL SYSTEM FOR CRANE

Donald J . Wudtke, Mount Vernon, Wash., assignor to Continental Emsco Company, Dallas, Tex.

Filed Jun. 8, 1979, Ser. No. 46,748

Int. Cl.^{3} B66C *23/52;* B63B *27/00*

U.S. Cl. 212—191 **8 Claims**



1. For use with a crane hoist for lifting a load including a platform, a rotatable machinery deck on said platform, a boom attached to said machinery deck, a sheave at the end of said boom, a hoist including a drum, a rope on said drum reeved over said sheave and a crane hook at the end of said rope for attachment to said load, a motion compensation system comprising:

a reeving system carrying said rope between said boom sheave and said drum;

said reeving system including stationary sheave means affixed to said machinery deck, support means, and sheave means mounted on said support means movable relative to said stationary sheave means;

a counterweight attached to said support means and urging said support means downwardly away from said stationary sheave means, thus taking up slack in said rope;

a hydraulic cylinder anchored to said machinery deck;

a piston in said cylinder and a rod connecting said support means to said piston;

and a control system for controlling operation of said hydraulic cylinder and piston including:

first and second fluid conduits connected to opposite ends of said cylinder;

branch conduits interconnecting said first and second conduits;

a check valve in one branch conduit permitting flow from the head end to the rod end of said cylinder while preventing flow from the rod end to the head end of said cylinder;

a blocking valve in another of said branch conduits in parallel with said check valve and when open permitting flow from the rod end to the head end of the cylinder and when closed preventing flow from the rod end to the head end of the cylinder;

said blocking valve including means for moving the blocking valve between open and closed positions;

a source of power for operating the control valve;

means connecting said source of power to said blocking valve;

anti-slack valve means located in said last mentioned connecting means for controlling the application of power to said blocking valve to shift the blocking valve between open and closed positions; and

override means connected to the fluid conduit connected to the rod end of said cylinder and responsive to a selected pressure within the rod end of said cylinder overriding said anti-slack valve means and preventing movement of the blocking valve from closed to open position while pressure within the rod end of said cylinder exceeds said selected pressure due to the load on said rope.

4,354,609

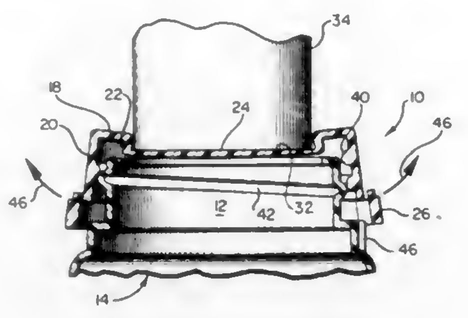
SNAP-ON TAMPERPROOF BOTTLE CAP

Walter E. Hidding, Rte. No. 2, Wood Rock Rd., Barrington Hills, Ill. 60010

Filed Jan. 9, 1980, Ser. No. 110,648

Int. Cl.^{3} B65D *41/34*

U.S. Cl. 215—252 **4 Claims**



4. A tamperproof closure for a bottle or other container having a neck portion with an external rib and at least one external pawl spaced from said rib, said closure comprising: a cap body of flexible, resilient material, including an annular rim, a first annular outboard skirt depending from the outer edge of said rim and having a internal rib adapted for lockable coaction with the bottle neck rib, a second annular inboard skirt of lesser depth than said outboard skirt depending from the inner edge of said rim, and a dome-shaped circular top panel connected to said inboard skirt, said top panel and said inboard skirt defining a recess for receiving a cap-mounting tool and said rim and its connection with said skirts cooperating to define a resilient, peripheral hinge section means for producing an outward flexing of said outboard skirt and resultant movement of said cap rib over said bottle neck rib and into locking engagement therewith upon the imposition of downward, cap-mounting pressure on said top panel by a said tool; a tamperproof ring having a plurality of radially inwardly extending ratchet teeth for locking engagement with said bottle neck pawl in a first direction of rotation; and a plurality of breakable connectors coupling said tamperproof ring to the outboard skirt of said cap body.

4,354,610

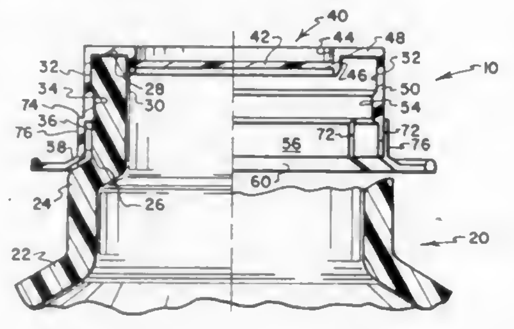
REUSABLE CONTAINER CLOSURE CAP

Milton Kessler, Youngstown, and Myron E. Ullman, Jr., Canfield, both of Ohio, assignors to Kessler Products Co., Inc., Youngstown, Ohio

Filed Aug. 29, 1980, Ser. No. 182,628

Int. Cl.^{3} B65D *41/48*

U.S. Cl. 215—253 **5 Claims**



1. A closure cap for sealing the neck portion of a container such as a milk bottle, the neck portion having an upstanding annular rim, a first outer wall portion depending therefrom, a first outer locking surface spaced from the rim and located about the periphery of the neck portion beneath said outer wall portion, the first wall portion having a diameter different from the diameter of the first locking surface,

the closure cap being formed of a material having limited flexibility and comprising:

(a) a disc-like top wall engageable with said rim to effect a substantially fluid-tight seal;

(b) an annular skirt depending from said top wall, the skirt having on its inner periphery:

  (i) a second wall portion conforming generally to the outer contour of said first wall portion;

  (ii) a second locking suface disposed beneath said second wall portion and engageable with the first locking surface when the cap is in a container-sealing position; and, therebeneath,

  (iii) a lower annular skirt area having spaced generally vertically extending rupture zones therein, the rupture zones not extending upwardly into said second locking surface,

  (iv) said first and second locking surfaces including complementary interfitting circumferential annular rib and groove elements, and,

(c) a tab projecting laterally outwardly of the skirt from a location near the lower edge of said skirt, the tab being disposed between said vertically extending rupture zones whereby, upon upward flexure of the tab, the rupture zones will fail and permit said lower skirt area to be circumferentially expanded, thereby permitting the first and second locking surfaces to be flexibly disengaged to permit ready removal of the cap from the container and wherein the integrity of said locking surfaces remains intact notwithstanding failure of the rupture zones therebelow to permit ready replacement of the cap onto the container for resealing the same.

4,354,611

TOP OPENING RECEPTACLE FOR TRASH COLLECTION AND MANAGEMENT SYSTEMS

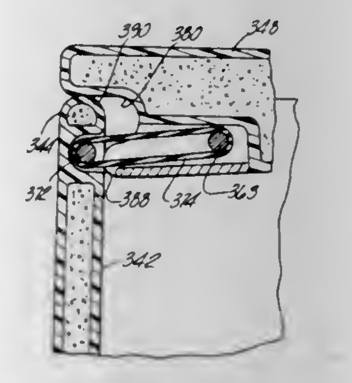
Robert L. Propst, and Paul L. Propst, both of Ann Arbor, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 28,256, Apr. 9, 1979, Pat. No. 4,285,624.

This application Sep. 22, 1980, Ser. No. 189,800

Int. Cl.^{3} B65D *43/24*

U.S. Cl. 220—335 **7 Claims**



1. In a trash collection, transport, and management system for an office environment, a trash receiving, storing, and transporting receptacle comprising a body portion having an open upper end, a bottom wall, a front wall, a back wall, and a pair of side walls, a cover having a back portion, a front portion, and means on said front portion projecting upwardly therefrom and thence rearwardly to form a handle for said cover, a flexible hinge assembly hingedly supporting said cover on said back wall operable to restrict movement of said cover to pivotal movement on said back wall between an upwardly and rearwardly inclined substantially vertical position in which the center of gravity of said cover is displaced rearwardly of said hinge assembly and a substantially horizontal position wherein said cover overlies said open upper end and said cover front portion projects outwardly over said front wall, said hinge assembly comprising a resilient hinge member extending between the upper end of said back wall and said cover back portion, first retaining means connecting said hinge member to said back wall and second retaining means connecting said hinge member to said cover, at least one of said retaining means being operable to release said hinge member in response to a pulling force of predetermined magnitude applied thereto, said hinge member being located to allow pivotal movement of said cover on said back wall and exert forces on said cover operable to pull said cover toward said back wall, said first retaining means comprising structure forming a first cavity in said back wall, said second retaining means comprising structure forming a second cavity in said cover, each of said first and second cavities having an enlarged retaining portion and a tapered neck portion, and said resilient hinge member having a body portion and substantially enlarged end portions, each of said end portions being adapted to be retained in one of said cavity retaining portions so that a tensile stress of predetermined magnitude applied to said end portion is operable to cause compression of said end portion and flow thereof through said cavity neck portion, thus releasing said hinge member from said retaining means.

4,354,612

SYSTEM FOR ATTACHMENT OF A TANK WITHIN A CONTAINER FRAME

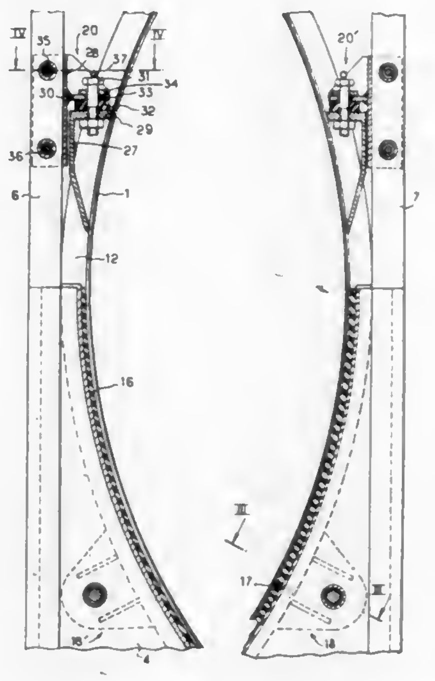
Jean Pelabon, Neuilly, France, assignor to A.N.F. Industrie, Crespin, France

Filed Jul. 28, 1980, Ser. No. 172,694

Claims priority, application France, Aug. 7, 1979, 79 20153

Int. Cl.^{3} B65D *88/22, 90/20*

U.S. Cl. 220—401 **3 Claims**



1. A system for attachment of a cylindrical tank within a container frame comprising,

at least two spaced cradles secured in the lower part of said frame transversely to the longitudinal axis of the tank, each cradle having a concave semi-circular support surface which substantially mates with the outer surface of said tank to support the tank,

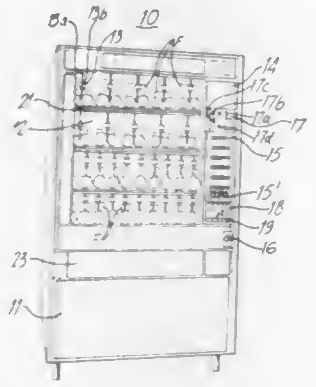
two vertical upright members for each cradle disposed diametrically oppositely with respect to each other, secured to each cradle and to said frame, each upright member having an inner face facing said tank,

an elastic member inserted between said semi-circular support surface of each cradle and said tank,

lower securing means for securing said tank to each cradle having connecting means which are rigid in the longitudinal direction and allow displacement in the vertical direction and directions transverse to the longitudinal axis of said tank, and

upper retaining means for resiliently retaining said tank against vertical displacement, comprising a pair of upper coupling devices each disposed on opposite upper sides of said tank and comprising a bracket attached to said tank and having a planar substantially horizontal extending element, a cleat member attached to a respective upright member adjacent said bracket and having a planar element disposed in substantially parallel spaced relationship to said planar element of said bracket, an elastic member between said planar members, and connecting means for connecting said bracket and cleat members together with the elastic member effectively compressed to allow limited relative displacement of said bracket and cleat with respect to each other.

4,354,613
MICROPROCESSOR BASED VENDING APPARATUS
Mahendrakumar D. Desai, Colonia, and Thomas E. Shuren, Stanhope, both of N.J., assignors to Trafalgar Industries, Inc., New York, N.Y.
Filed May 15, 1980, Ser. No. 149,951
Int. Cl.^{3} G07F *11/16*
U.S. Cl. 221—4 **29 Claims**



1. Apparatus for vending foodstuffs comprising:

a plurality of dispensing means for dispensing said foodstuffs;

a power source;

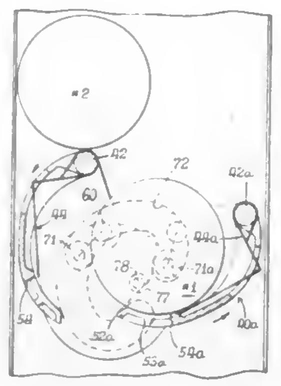
an array of selector means, each being electrically isolated from and associated with one of said dispensing means for selecting a foodstuff, each selector means having an operating state and a quiescent state;

scanning means for scanning the said array of selector means to determine which dispensing means has been selected;

means for identifying a malfunctioning condition for each of said plurality of dispensing means, said means for identifying indicating any of said plurality of dispensing means which have previously malfunctioned and including monitoring means associated with each of said plurality of dispensing means for determining whether its associated dispensing means is in an operating or reset position; and

control means responsive to said scanning means and said means for identifying for coupling said power source to the selected dispensing means if the same has not previously malfunctioned and causing the selection of said selected dispensing means to be refused if an indication that the same have previously malfunctioned is present, said indication that the same has previously malfunctioned including a determination that a selected dispensing means is in an operating position at the time dispensing is required.

4,354,614
CAN AND BOTTLE VENDING
Floyd V. Bookout, Arlington Heights, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.
Filed Oct. 20, 1980, Ser. No. 199,011
Int. Cl.^{3} B65G *59/06*
U.S. Cl. 221—67 **5 Claims**



1. For use in a coin-operated vending machine for dispensing cylindrical articles from magazine means having one or more vertical open bottom storage compartments, each compartment holding one or more staggered stacks of articles to be dispensed, improved article dispensing means commonly blocking the open bottom of each said compartment and comprising: a pair of elongated vend gates, each having a generally clam shell cross sectional configuration presenting a concave interior receptive of articles from each stack of articles in the compartment thereover; spaced mounting means pivotally supporting said gates for arcuate movement about parallel spaced axes extending lengthwise beneath the bottom of the associated said compartment, single cam means rotatably mounted adjacent one end of said pair of gates, cam follower means mounted on each said gate operatively coupling the same with said cam means, and motorized drive means operable to oscillate said cam means selected distances whereby to periodically and alternately pivot said gates in opposite arcuate directions to thereby sequentially move each thereof to and between substantially horizontal lowered and substantially vertically upright elevated positions, and vice versa; movement of each gate to its elevated position causing the same to undersupport the bottom-most article in each staggered stack of articles thereover and movement of each gate from its elevated to its lowered position serving to gradually lower articles undersupported thereby into the concave interior thereof while the other gate of said pair is retained in its elevated position; said motorized means, gates and cam means cooperating during elevation of a lowered gate containing articles to sequentially discharge said articles therefrom one-by-one.

4,354,615
ALTERNATOP MECHANISM FOR DISPENSING MACHINE
James C. Lindsey, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.
Filed Nov. 6, 1980, Ser. No. 204,714
Int. Cl.^{3} B65H *3/44*
U.S. Cl. 221—116 **26 Claims**

1. An article dispensing apparatus including a dispensing assembly comprising:

(a) first and second side by side supporting surfaces adapted to support associated first and second row of articles, each supporting surface inclined from an upper end to a lower end,

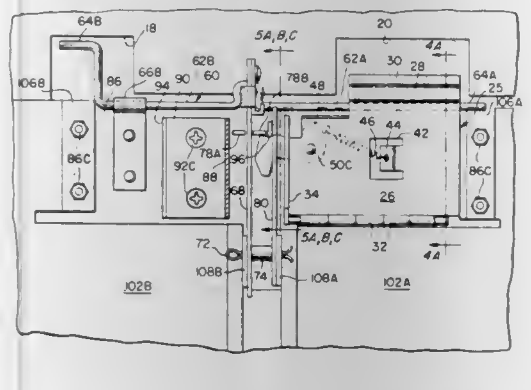
(b) first and second gate members respectively associated with said first and second support surfaces, each gate member located adjacent the lower end of the associated support surface, and shiftable between two opposite positions:

(i) an upper blocking position such that a lowermost articles in the associated row is blocked from moving off the lower end of the associated support surface,

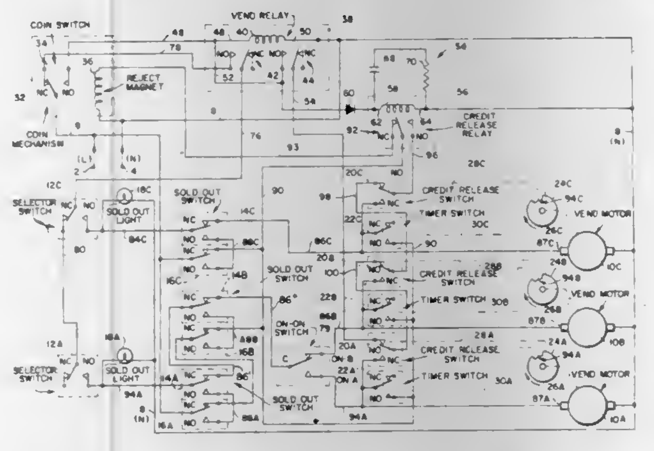
(ii) a lower releasing position such that the gate member does not block the lowermost article in the associated row from freely moving off the lower end of the associated support surface,

(c) a common receiving area located adjacent the lower ends of said first and second supporting surfaces and adapted to receive articles which have moved off of the lower ends of the first and second supporting surfaces, and

(d) an actuator means cooperating with the gate members to provide for the shifting of the gate members upon the dispensing of an articles from the dispensing assembly, and wherein the first and second gate members are adapted to cooperatively and alternately shift between opposite positions such that, until at least one of said support surfaces is emptied of articles, each gate member changes its position upon the dispensing of an article from the dispensing assembly and the first and second gate members always come to rest with one of the first and second gate members in its upper blocking position and the other of the first and second gate members in its lower releasing position, thereby alternately supplying said common receiving area with articles from the first and second rows.



4,354,616
ALTERNATE COLUMN CIRCUIT RECIPROCATOR FOR MULTIPLE COLUMN VENDING MACHINES
Vernon D. Camp, Chattanooga, Tenn., assignor to Cavalier Corporation, Chattanooga, Tenn.
Filed Nov. 6, 1980, Ser. No. 204,715
Int. Cl.^{3} G07F *11/00*
U.S. Cl. 221—116 **4 Claims**



1. A circuit reciprocator for alternately selecting between two separate sources in a vending machine having at least a pair of sources of articles adapted to be selectively dispensed and at least a pair of vend motors, each vend motor corresponding to a separate source and arranged to operate during a vend cycle to dispense an article from the corresponding source when energized, the probability of a mechanism jam occurring being higher at a particular known point of the vend cycle, said circuit reciprocator comprising:

a customer-operable selector switch common to the two article sources;

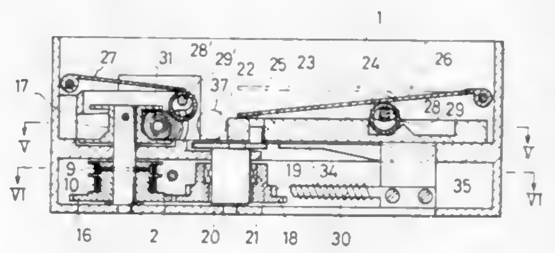
an on-on type switch having an actuating member movable between first and second positions and operable each time said actuating member is moved from the first to the second position to alternately complete either of a pair of respective electrical energizing circuits between said common selector switch and each of said pair of vend motors;

a pair of rotatable cams respectively driven by each of said pair of vend motors when energized; and

an actuating linkage connected between said cams and said on-on switch actuating member, said actuating linkage arranged such that either of said pair of cams can effect movement of said on-on switch actuating member from the first to the second position at a predetermined point of the vend cycle thereby to complete the circuit to the other of said pair of vend motors so that the other vend motor is energized upon the next operation of said selector switch and vend motors are alternately operated through successive vend cycles during normal operation as said selector switch is successively operated, said actuating linkage further being arranged such that both of said cams may simultaneously be at their respective predetermined points of their respective vend cycles without damage to said circuit reciprocator, and said cams being positioned and configured such that said on-on switch actuating member is moved from the first to the second position prior to the particular known point in the vend cycle where the probability of a mechanism jam is higher, and said cams each having dwell at least sufficient to hold said actuating member in the second position in the event a mechanism jam occurs at the particular known point;

whereby in the event a mechanism jam occurs during the vend cycle of one of said pair of vend motors the other of said pair of vend motors can continue to operate through successive vend cycles as said selector switch is successively operated.

4,354,617
CIGARETTE FEEDING DEVICE
Kunitoshi Okayasu, No 3,5-chome, Kaiko-cho, Atami-shi, Shizuoka-ken,, Japan
Filed Aug. 20, 1980, Ser. No. 179,833
Int. Cl.^{3} B65D *83/02*
U.S. Cl. 221—147 **9 Claims**



1. A cigarette feeding device comprising

a case

a pushing lever mounted in the case for movement along its longitudinal axis and having a portion extending exteriorly of the case,

a rocking lever having opposite ends, one end being pivotally mounted in the case, a portion of said rocking lever intermediate the two ends engaging said pushing lever, the other end bearing two pulleys,

a rotary chuck mounted for rotation in said case having two pulley portions coaxial therewith,

a first return spring having two ends and an intermediate portion, one end being fixed in the case, the other end being wound about one of the pulley portions of the rotary chuck, the intermediate portion passing around one of the two pulleys on the free end of the rocking lever,

a second return spring having two ends, one end being wound around the other of the two pulley portions of the rotary chuck,
a first fixed position rotatable pulley mounted in said case, the other end of the second return spring being wound about the first fixed pulley,
a third return spring having two ends and an intermediate portion, one end being fixed in said case, the intermediate portion passing around the other of the two pulleys on the free end of the rocking lever,
a second fixed position rotatable pulley mounted in said case, the other end of the third return spring being wound about the second fixed pulley,
a first gear coaxially mounted on said rotary chuck,
a shaft rotatably mounted in said case,
a disk coaxially fixed to one longitudinal end of said shaft and having an upstanding eccentrically placed projection thereon,
a second gear mounted for rotation on said shaft and engaging said first gear,
a ratchet wheel coaxial with and fixed to said second gear,
one-way clutch means interconnecting said second gear and said shaft for driving engagement of said second gear with said shaft in one direction only and permitting freewheeling of said second gear in an opposite direction,
means for preventing said disk and said shaft from rotating in said opposite direction,
bimetallic means fixed at one end to said case and engaging at an opposite end said ratchet wheel,
a conveying plate horizontally slidably mounted in the case for reciprocation between a first position and a second position, said conveying plate having a groove therein parallel to the longitudinal axis of said pushing lever, said projection of said disk engaging said groove,
at least one feeding plate having one end edge thereof pivotally mounted in said case and defining with said case a magazine for a plurality of cigarettes,
means engagable with said at least one feeding plate and said conveying plate for pivoting said at least one feeding plate upon reciprocation of said conveying plate,
heater means for igniting one end of a cigarette, said heater means being mounted in one side wall of the case,
a delivery port in an opposite side wall of the case, said heater means and said port being aligned along a line which is tangent to said rotary chuck, and
switch means mounted in the case engagable by said rocking lever for electrically connecting said heater means and said bimetallic means with a source of electrical power,
whereby when said pushing lever is pressed, said rocking lever is pivoted unwinding and tensioning said first return spring from the rotary chuck thereby unwinding said second return spring from said first fixed pulley and winding it about the rotary chuck while winding the third return spring about the second fixed pulley; the unwinding of the first return spring rotating the rotary chuck and said first gear in a first direction thereby rotating the second gear, the ratchet wheel, the one-way clutch means, the shaft and the disk in said one direction; the rotation of the disk and the eccentric project thereof engaging the groove in the conveying plate causing the conveying plate to be moved horizontally from said first position to said second position; the movement of the conveying plate engaging the means for pivoting the at least one feeding plate causing one cigarette to move from the magazine to a position in front of the conveying plate when said conveying plate reaches said second position; further rotation of said disk and eccentric projection causing the conveying plate to reciprocate back to said first position pushing the cigarette to tangentially engage said rotary chuck; further pivoting of said rocking lever causing further rotation of the rotary chuck in said first direction pressing one end of the cigarette against the heater means, the further pivoting also causing the rocking lever to engage the switch means to pass electrical current to the heater means and the bimetallic means, the bimetallic means being in engagement with said ratchet wheel preventing rotation in said opposite direction until such time that the heater means has ignited the end of the cigarette whereupon the bimetallic means has also heated sufficiently to release the ratchet wheel; upon the release of the ratchet wheel, the tension of the second return spring rotating the rotary chuck and the first gear, in a direction opposite to said first direction and the second gear and the ratchet wheel in said opposite direction, the opposite rotation of the rotary chuck which tangentially engages the lit cigarette delivers the lit cigarette out of the delivery port; the pushing lever, the rocking lever, the first return spring, the second return spring, and the third return spring all returning to original position thereby disengaging the rocking lever from the switch means.

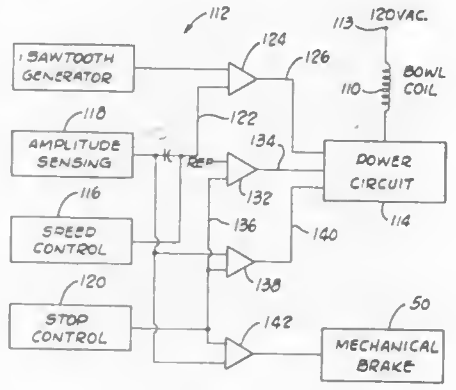
4,354,618
BRAKING METHOD AND APPARATUS FOR VIBRATORY FEEDER

Ronald R. Weyandt, Chesterland, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation-in-part of Ser. No. 53,104, Jun. 28, 1979, abandoned. This application May 15, 1980, Ser. No. 150,096

Int. Cl.^{3} B65G *27/24, 27/32;* **H02K** *33/02;* **H02P** *3/26*

U.S. Cl. 221—186 **15 Claims**



1. In a material dispensing apparatus including a drive means for vibrating a driven bowl, a control circuit comprising:
(a) a speed control circuit for providing a control signal representing an optimum vibratory oscillation amplitude;
(b) an amplitude sensing circuit for monitoring bowl oscillations and modifying said control signal in response to the amplitude of said oscillations;
(c) a power circuit for receiving said modified control signal and providing a driving signal to the drive means; and
(d) a brake coupled to the control circuit for damping vibratory oscillations of the bowl.

4,354,619
CONTAINER FOR THE DISPENSING OF TABLETS ONE BY ONE

Gerhard Wippermann, Brüggen, and Peter Keller, Duisburg, both of Fed. Rep. of Germany, assignors to Bramlage GmbH, Lohne/Oldenburg, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,271

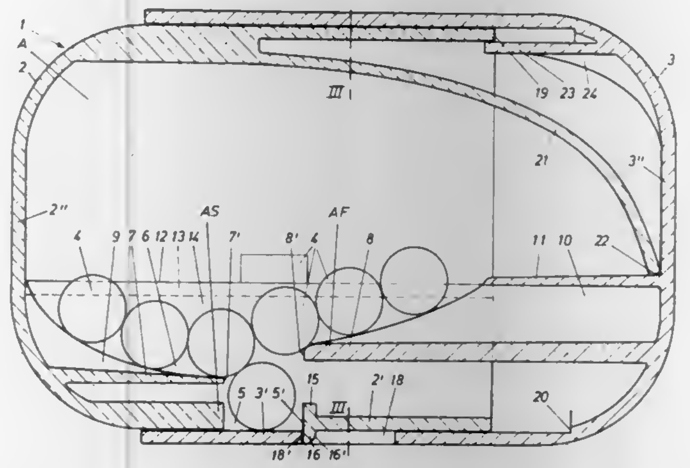
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922350; May 7, 1980, 3017376

Int. Cl.^{3} B65D *83/04*

U.S. Cl. 221—263 **14 Claims**

1. In a container for the dispensing of tablets one by one in which, below a drop-out chamber arranged below a sorting through, a container wall has a tablet drop-out opening in front of which, in each case, one of the tablets is released by spring-biased sliding movement so as to drop out, the improvement wherein
two housing caps complementarily formed and telescopi-

cally insertable within each other form the container and an inner storage space for the tablets,
one of said housing caps forms said drop-out chamber below said sorting trough,
said sorting trough is formed cooperatively by said two housing caps,
spring means for spring-biasing said housing caps,
the other housing cap is formed with a section of a wall closing said drop-out opening from said drop-out chamber in an unoperated basic position of said housing caps in a relatively unstressed position of said spring means,



said other housing cap having a division finger, said division finger closes off said sorting trough from the drop-out chamber in a pushed-together position of said two housing caps,
a side wall of said one housing cap is formed with a window which is open to the outside and communicates with the storage space in a plugged-in connection position of said two housing caps,
said window is closed in said unoperated basic position of said housing caps by a partial region of a side wall of said other housing cap.

4,354,620
REFUELING SYSTEM ADAPTED TO GASOLINE SERVICE STATION

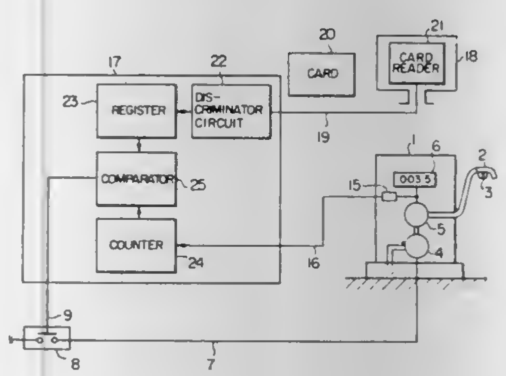
Kazuhiko Tsuneda, Momoyamamourinagatohigashimachi; Sigeru Sagane, and Hiroaki Haba, both of Kawanishi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 23, 1980, Ser. No. 152,677

Claims priority, application Japan, May 23, 1979, 54-63672

Int. Cl.^{3} B67D *5/08*

U.S. Cl. 222—14 **2 Claims**



1. A refueling system for a gasoline service station, comprising:
a refueling machine unit for feeding fuel;
a flowmeter for measuring the amount of fuel fed by said refueling machine; and
controller means for controlling said refueling machine unit, said controller means including:
a register for setting a total amount of fuel to be fed;
a counter for integrating the amount of fuel actually fed;
means for detecting when a first amount of fuel has been integrated by said counter which is equal to one-half the total amount of fuel set into said register, said means then stopping the feeding of fuel by said refueling machine unit for a predetermined period;
means for measuring the amount of fuel fed as a result of the inertia of said refueling machine unit during said predetermined period when the feeding of fuel is stopped, subtracting this measured amount of fuel from the total amount set into said register to provide a corrected fuel setting in said register and correcting the amount of fuel integrated by said counter to increase the count by this measured amount of fuel;
means for restarting the feeding of fuel by said refueling machine after said predetermined period has elapsed, and
means for detecting a second amount of fuel integrated by said counter after the correction thereof which is equal to said corrected fuel setting, said means then stopping the feeding of fuel by said refueling machine.

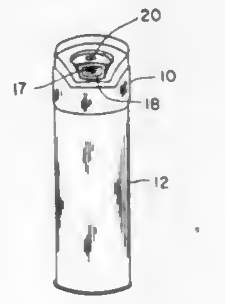
4,354,621
CHILD RESISTANT ASSEMBLY FOR AEROSOL DISPENSERS

Michael G. Knickerbocker, Crystal Lake, Ill., assignor to Seaquist Valve Co., Div. of Pittway Corp., Cary, Ill.

Filed Jul. 23, 1980, Ser. No. 171,358

Int. Cl.^{3} B65D *83/14*

U.S. Cl. 222—47 **16 Claims**



1. A child resistant assembly for use with an aerosol container having a tilt valve for discharging an aerosol product upon tilting the valve, comprising in combination:
an actuator button having a terminal orifice;
a valve stem connecting said actuator button with the tilt valve for enabling discharge of the aerosol product from said terminal orifice upon tilting the valve;
an overcap secured to the aerosol container for at least partially covering said actuator button;
a finger actuator movably mounted relative to said overcap;
an aperture disposed in one of said actuator button and said finger actuator for cooperation with non-symmetrical means on the other of said actuator button and said finger actuator; and
means for rotationally mounting said finger actuator relative to said actuator button for enabling said non-symmetrical means to enter said aperture and to transfer the finger movement of the operator to tilt the valve only upon selected orientation of said finger actuator relative to said actuator button.

4,354,622

FLOW CONTROL SYSTEMS

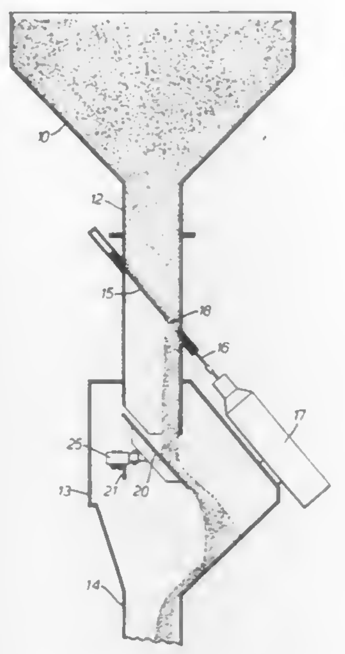
Douglas A. Wood, Usk, Wales, assignor to Technicon Isca Limited, Gwent, Wales

Continuation of Ser. No. 931,801, Aug. 7, 1978, abandoned. This application Oct. 31, 1980, Ser. No. 202,630

Claims priority, application United Kingdom, Aug. 11, 1977, 33644/77

Int. Cl.^{3} G01F *1/30*

U.S. Cl. 222—55 **8 Claims**



1. Apparatus for controlling the rate of flow of a particulate material, comprising a generally vertical duct, a flow control valve positioned in said duct, a motor controlling said valve, a flow rate sensor positioned in said duct (below) immediately beneath said valve, said sensor including an inclined plate onto which the particles will impinge, means supporting said plate for limited movement in a vertical direction, and an electromechanical load cell connected to said plate for sensing the vertical force exerted on said plate by particles falling through said valve, said control valve comprising a movable plate defining an aperture movable within said duct for dispensing the particulate material directly onto the inclined plate, the movable plate being mounted in a plane substantially parallel with but spaced above the plane of said inclined plate, and an electrical control circuit having an input from said sensor and an output connected to said motor for controlling the valve in a sense to close the valve when the sensor detects an increased vertical force.

4,354,623

HEAVY DUTY TUBE WRINGING DEVICE

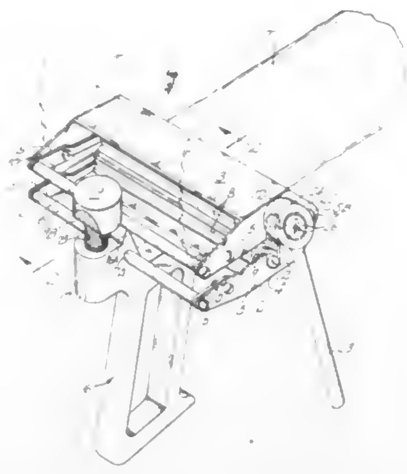
John B. Gill, and Dorothy E. Gill, both of 519 Shire Ct. Eugene, Oreg. 97401

Filed Jul. 7, 1980, Ser. No. 166,488

Int. Cl.^{3} B65D *35/28*

U.S. Cl. 222—102 **7 Claims**

1. A device for progressively wringing a collapsible tubular container, said device comprising,
  a base,
  frames pivotally interconnected at their corresponding ends with one of said frames fixed in place on said base, each of said frames having a cross member and spaced apart opposing side members,
  rollers one each resiliently carried by said frames and having intermeshing surfaces which are adapted to coact on the collapsible tubular container positioned therebetween to progressively collapse same to expel tube contents,
  bearing plates in place on each of said frames and mounting said rollers on said frames, each of said bearing plates having a flexible arm segment to yieldably mount the ends of said rollers, each of said bearing plates being mounted in juxtaposed parallel relationship with an adjacent frame side member,
  removable fasteners attaching said bearing plates to said opposing side members of each of the frames permitting removal and replacement of worn bearing plates, and



  manually actuated means supported at the end of one of said rollers to enable rotation of the roller and the coacting roller to jointly act on the tubular container therebetween.

4,354,624

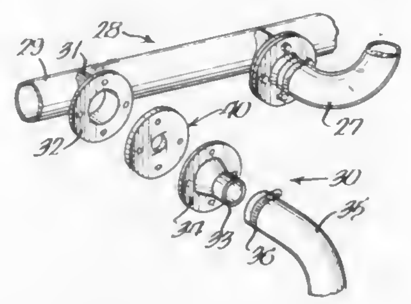
SLURRY SPREADER WITH METERING VALVES

Mofazzal H. Chowdhury, and John W. Bliss, both of Vinton, Iowa, assignors to Farmhand, Inc., Hopkins, Minn.

Filed Jul. 29, 1980, Ser. No. 173,325

Int. Cl.^{3} A01G *25/09*

U.S. Cl. 222—608 **9 Claims**



1. In an apparatus of the type which has a wheeled slurry tank adapted to be moved over a field, a feed conduit communicating with the interior of the tank, a transverse manifold to receive slurry from said feed conduit, several slurry injector pipes which are spaced along said conduit and have open ends through which slurry is discharged onto the field, and means for moving slurry from said tank under pressure for discharge through the feed conduit, the manifold, and the injector pipes, the improvement comprising:
  a flow controlling and equalizing element in each slurry injector pipe between the manifold and the open end of the pipe, each of said elements having an orifice and being formed of elastomeric material which can flex to facilitate passing solid debris through said orifice, said orifices being small enough to produce a positive pressure head in the manifold, and all of said elements being effectively identical so as to maintain substantially the same pressure drop across each one of said injector pipes, whereby all said pipes deliver substantially equal quantities of slurry per unit time under varying conditions of operation.

4,354,625

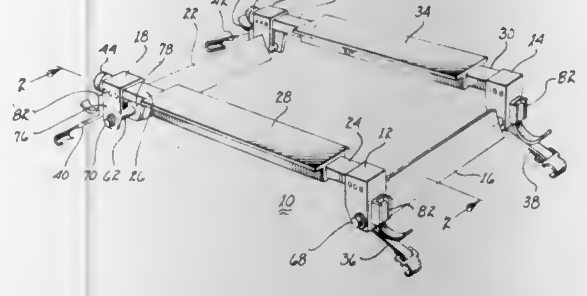
CAR TOP CARRIER

Charles B. Peoples, Scottsdale, Ariz., assignor to U-Haul International, Inc., Phoenix, Ariz.

Filed Apr. 6, 1981, Ser. No. 251,265

Int. Cl.^{3} B60R *9/00*

U.S. Cl. 224—329 **16 Claims**



1. A car top carrier for supporting a load upon the roof of a vehicle, said car top carrier comprising in combination:
  (a) at least a pair of elongated mounting pads for supporting said car top carrier upon the roof, each said mounting pad including:
    i. at least one face configured to be conformable with the lateral curvature of the underlying roof area and internally supporting said elongated mounting pads; and
    ii. a flexible rod resiliently conformable with the longitudinal curvature of the underlying roof area,
whereby each said mounting pad is in mating contact with the underlying surface area and distributes any load imposed upon the mounting pad uniformly across the underlying roof area;
  (b) at least two sets of telescoping members for maintaining said pair of mounting pads at a selectable width and for supporting the load placed upon said car top carrier, each said set of telescoping members including means for adjusting the length of said set of telescoping members;
  (c) a casting disposed at each end of each set of said sets of telescoping members for engaging one end of one of said mounting means; and
  (d) hook and strap means extending from each of said castings for securing said car top carrier to the roof of the vehicle.

4,354,626

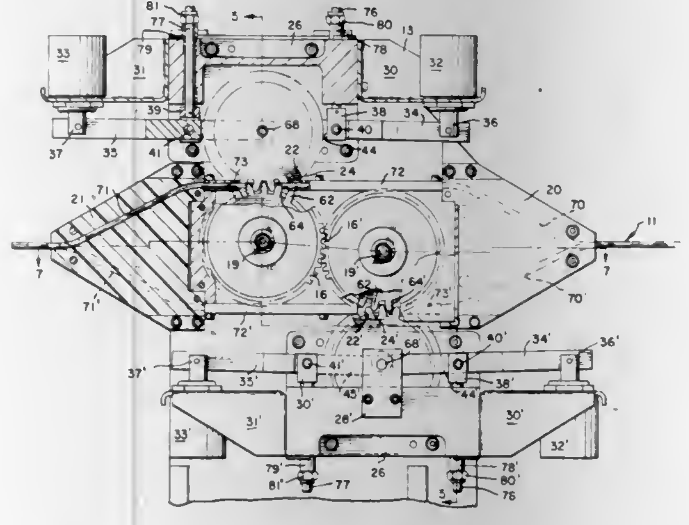
APPARATUS FOR FEEDING A PLURALITY OF WIRES

Joseph E. Brandewie, Dunedin, Fla., and Walter C. Shatto, Jr., Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 11, 1980, Ser. No. 215,295

Int. Cl.^{3} B65H *51/10*

U.S. Cl. 226—109 **2 Claims**



1. Wire feeding apparatus comprising:
  wire feed means operative to feed a first plurality of wires on a first level and a second plurality of wires on a second level, said first plurality of wires passing through first parallel planes which are perpendicular to said first level, said second plurality of wires passing through second parallel planes which are perpendicular to said second level, said first planes being parallel to and alternate with said second planes,
  guide means operative to distribute said first and second pluralities of wires to said first and second levels from a single planar array, said guide means comprising laminas in said first and second parallel planes, each lamina having a guide channel cut in one surface thereof, alternate laminas having guide channels directed to said first level while remaining laminas have guide channels directed to said second level, said laminas being sandwiched together so that each guide channel is enclosed by the adjacent lamina to form a tunnel.

4,354,627

DEVICE FOR HIGH SPEED FEEDING OF A TAPE OR THE LIKE

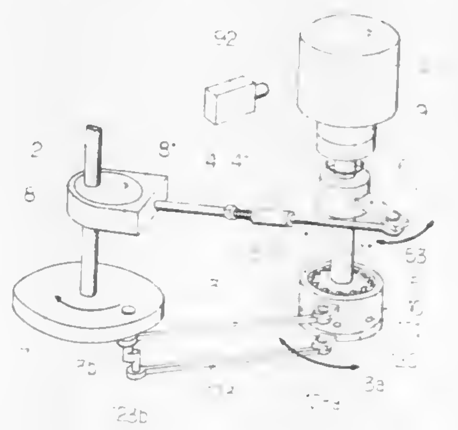
Kyoichi Yamashita, 2361 Nippa-cho, Kohoku-ku, Yokohama-shi, Kanagawa 223, Japan

Filed Nov. 4, 1980, Ser. No. 203,876

Claims priority, application Japan, Nov. 9, 1979, 54-144312

Int. Cl.^{3} B65H *17/22*

U.S. Cl. 226—188 **3 Claims**



1. In a device for high speed feeding and stopping of an article which comprises a shaft, a drum for carrying said article fitted to said shaft, a first clutch having an external cylinder and being mounted on said shaft, a high speed crank for driving said drum at a high speed linked to said shaft with said first clutch, a second clutch on said shaft, and a low speed crank for driving said drum at a low-speed linked to said shaft with said second clutch, the improvement which comprises a brake disk integral with said shaft, a steel ball containing cylinder integral with the external cylinder of said first clutch for high speed driving, a plurality of steel balls arranged between said brake disk and said steel ball containing cylinder, and a plurality of projections positioned closely to said steel balls interposable between said brake disk and said steel balls, whereby said steel balls are detached from said brake disk during the backward stroke period of the external cylinder of said first clutch for high speed driving.

4,354,628

SURGICAL STAPLER APPARATUS HAVING PIVOTALLY RELATED STAPLE HOLDER AND ANVIL

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 29, 1980, Ser. No. 188,691

Int. Cl.^{3} B25C *1/00*

U.S. Cl. 227—19 **33 Claims**

1. A surgical staple cartridge for use with an actuator assembly including a rigid frame having a U-shaped portion for

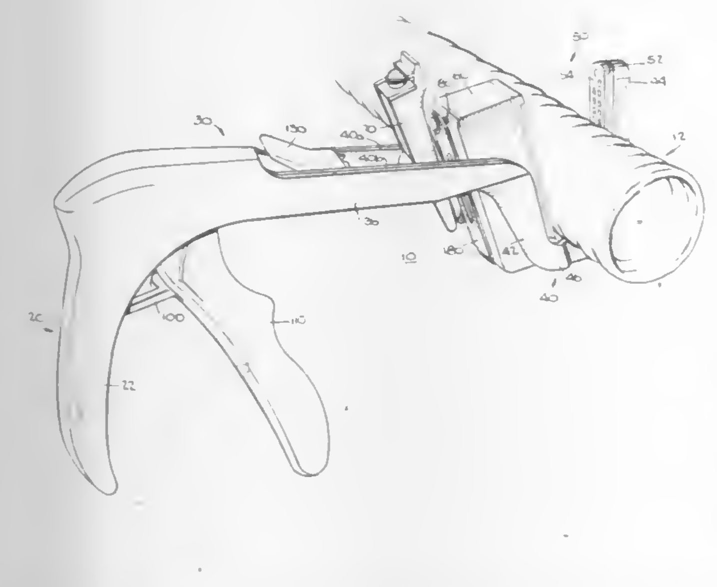
simultaneously forming a plurality of surgical staples in body tissue comprising:

an anvil member for clinching surgical staples driven against it;

a staple holder pivotally connected to the anvil member adjacent one end of the anvil member, the staple holder containing a plurality of surgical staples and including staple driving means for simultaneously driving all of the staples from the staple holder; and

means associated with the anvil member for allowing the cartridge to be removably mounted on the actuator frame so that the anvil member is adjacent a first leg of the U-shaped portion, so that the pivotal connection between the anvil member and the staple holder is adjacent the base of the U-shaped portion, and so that the staple holder is adjacent a second leg of the U-shaped portion, the staple holder being movable relative to the frame when the cartridge is thus mounted on the frame so that when the staple holder is pivoted away from the anvil member, the tissue to be stapled can be positioned between the anvil member and the staple holder via the open side of the U-shaped portion.

31. The method of applying a plurality of surgical staples to body tissue comprising the steps of:



placing a disposable surgical stapling cartridge in an actuator, the cartridge including an anvil member and a staple holder pivotally mounted adjacent one end of the anvil member and containing a plurality of surgical staples, and the actuator including a frame for supporting the anvil member and means associated with the frame for pivoting the staple holder relative to the anvil member and driving the staples from the staple holder;

positioning the actuator, with the staple holder pivoted away from the anvil member, relative to the body tissue to be stapled so that the body tissue is between the anvil member and the staple holder;

operating the actuator to pivot the staple holder substantially parallel to the anvil member so that the body tissue is clamped between the staple holder and the anvil member;

operating the actuator to drive the staples from the staple holder, through the clamped body tissue, and against the anvil member to crimp the staples and thereby staple the tissue;

operating the actuator to pivot the staple holder away from the anvil member to release the stapled body tissue from the cartridge; and

removing the cartridge and the actuator from the stapled tissue.

4,354,629

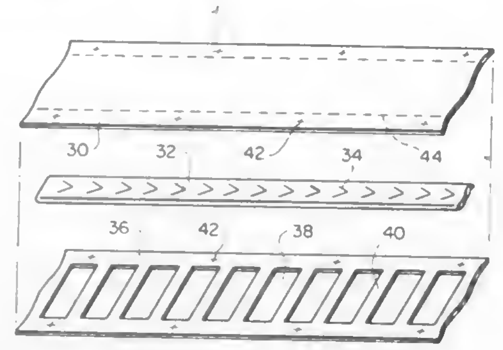
SOLDER DELIVERY SYSTEM

Willie K. Grassauer, Menlo Park, and William M. Robinson, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 9, 1980, Ser. No. 158,034

Int. Cl.^{3} B23K *3/00*

U.S. Cl. 228—56 **14 Claims**



1. A solder delivery system comprising:

(a) two layers of polymeric material, at least one of said layers having a plurality of perforations defined therein and extending through said at least one layer; said plurality of perforations being arranged such that wall portions of the perforations define means providing apertures in said at least one layer; and

(b) a solder strip disposed between and in operative contact with said layers; said solder strip extending continuously along said layers and traversing at least two of said means, said wall portions and apertures being arranged to divide said solder strip into at least two discontinuous portions and direct the flow of said discontinuous solder portions through said apertures when said solder is heated.

4,354,630

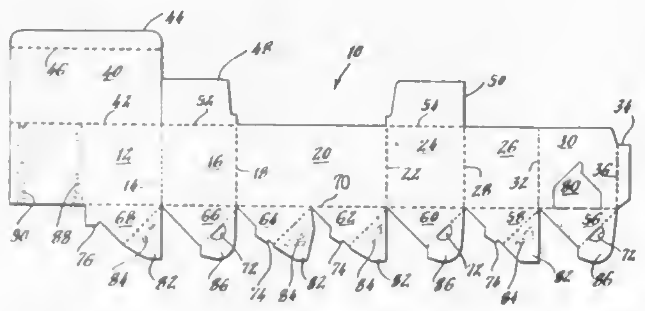
PYRAMID CARTON CLOSURE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 10, 1980, Ser. No. 195,875

Int. Cl.^{3} B65D *5/10, 5/36*

U.S. Cl. 229—39 R **8 Claims**



5. An automatic lock bottom carton having a pyramid closure comprising:

a generally tubular side wall including alternately hingedly connected opposed side panels and end panels;

a plurality of generally triangular bottom panels hingedly connected to the bottom edges of each of said side and end panels of said side wall;

said plurality of bottom panels each having a tab, the tabs of said bottom panels connected to a first opposed pair of panels having central openings with inner peripheries which receive and enclose projecting lock tabs on a second alternately disposed opposed pair of said bottom panels;

said second alternately disposed opposed pair of said bottom panels including second tabs for adhesive engagement with an adjacent one of said first opposed pair of panels.

4,354,631

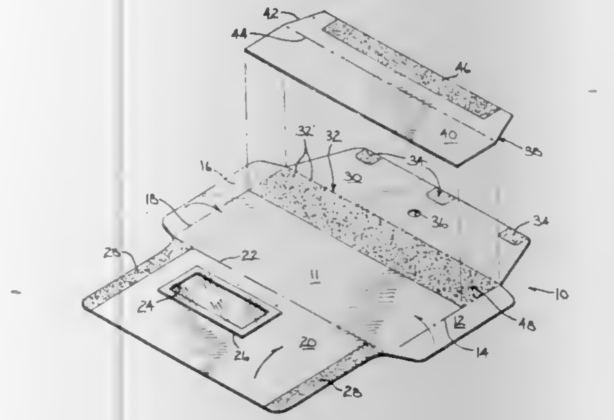
RESEALABLE ENVELOPE

Mayne B. Stevenson, Park Ridge, Ill., assignor to Arvey Corporation, Chicago, Ill.

Filed Apr. 9, 1981, Ser. No. 252,447

Int. Cl.^{3} B65D *27/04, 27/06*

U.S. Cl. 229—71 **3 Claims**



1. A resealable envelope adapted for use with an automatic inserting machine, comprising:

a unitary sheet cut, scored and folded to define a rectangular central panel, a pair of side flaps respectively hinged to one opposed pair of edges of said central panel and folded over and against said central panel, a front panel hinged to one of the remaining opposed edges of said central panel and folded over and against said side flaps and adhered thereto and including a window therein for viewing the contents of said envelope, said central panel, side flaps, and front panel defining a pocket for the contents of the envelope, said unitary sheet further defining an outer sealing flap removably hinged to the remaining opposed edge of the central panel adapted to be folded over and adhered with adhesive means directly to a portion of said front panel disposed between said window and the remaining opposed edge of the central panel for initially sealing said envelope, said adhesive means accommodating detachment of said outer sealing flap from said front panel for opening said envelope without undue damage to said front panel, and

means for resealing the pocket after said outer sealing flap has been removed including an inner flap panel having an inner panel portion affixed to said central panel and an inner sealing flap hinged to said inner panel by a score line generally aligned with the remaining opposed edge of said central panel, said outer sealing flap being larger than said inner sealing flap whereby said inner sealing flap underlies said outer sealing flap when said outer sealing flap is adhered to said front panel, said inner sealing flap being adapted to be folded over and against said front panel and adhered directly thereto for resealing said envelope after said outer sealing flap has been opened and removed from said envelope, said outer sealing flap defining an opening which is adapted to provide communication between suction means of said automatic inserting machine and said inner sealing flap to permit said suction means to open both the inner and outer sealing flaps when the flaps are unsealed during automatic insertion of the contents to be placed in said envelope by said automatic inserting machine.

4,354,632

OPERATING SYSTEM FOR CENTRIFUGES

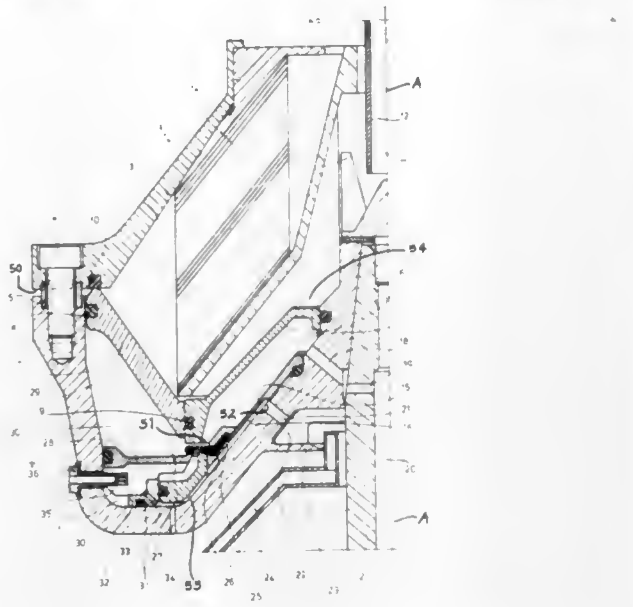
Klaus H. D. Stroucken, Ronninge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Jun. 9, 1980, Ser. No. 157,525

Claims priority, application Sweden, Jun. 20, 1979, 7905419

Int. Cl.^{3} B04B *11/00*

U.S. Cl. 233—20 A **11 Claims**



1. A centrifugal separator comprising a rotor mounted for rotation about an axis and forming a separating chamber having a central inlet for a liquid mixture of at least two components, said chamber also having a central outlet for a lighter separated component and peripheral outlets distributed around the rotor's periphery for a heavier separated component, an annular slide movable axially in the rotor during rotation thereof for opening and closing said peripheral outlets, the slide forming with the rotor a closing chamber communicating with a channel extending radially inward from the closing chamber, means for charging said channel to fill the channel and closing chamber with operating liquid actuating the slide hydraulically to a position for closing said peripheral outlets, a valve in the rotor for discharging operating liquid from the closing chamber, whereby the slide is pressed to a position for opening said peripheral outlets, and valve means operable for closing the connection between said channel and the closing chamber for retaining operating liquid in said channel and thereby maintaining the operating liquid pressure therein substantially unchanged, said valve means also being operable to eliminate the hydraulic pressure on the slide caused by operating liquid thus retained in the channel.

4,354,633

MANUAL MAIN SHUTOFF VALVE FOR A GAS BURNER COMBINATION CONTROL

Jesse H. Turner, Auburn, and Elmer E. Wallace, Fort Wayne, both of Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Aug. 7, 1981, Ser. No. 290,920

Int. Cl.^{3} G05D *73/12*

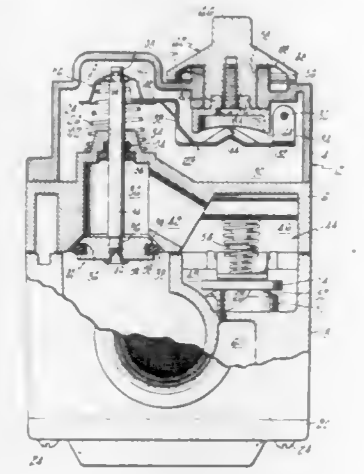
U.S. Cl. 236—1 H **3 Claims**

1. In a combination control for a gas burner comprising a casing having an inlet, an outlet and a flow passage disposed between said inlet and said outlet; and further comprising a manual main shutoff valve, a thermostatic valve and a diaphragm valve located in said casing and serially connected in said flow passage for controlling as flow between said inlet and said outlet; an improved manual main shutoff valve construction comprising:

a partition plate defining part of said casing and having an annular valve seat portion located in said flow passage;

a valve member disposed in said flow passage; said valve member having an open position and having a closed position seated on said valve seat portion;

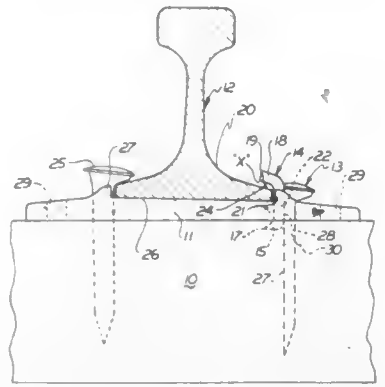
- a valve operating stem axially movable within said casing and connected at one end to said valve member;
- a spring acting upon the opposite end of said stem for biasing said valve member toward said valve seat portion;
- a housing plate positioned in overlying relation to said partition plate;
- a valve actuator rotatably carried on said housing plate and including a knob for manual rotation of said actuator between off and on positions;
- a cam fixed to said actuator and having a cam surface consisting of a raised portion, a lower portion and an inclined portion connecting said raised portion to said lower portion; and
- an operating lever pivotally mounted in said casing between said partition plate and said housing plate; said lever having an operating end operatively connected to said opposite end of said stem; said lever including a cam follower riding on said cam surface of said cam to effect pivotal movement of said operating end upon rotation of said actuator between said off and on positions; said cam follower being in engagement with said lower portion and said raised portion, respectively, of said cam surface when said actuator is in its off and on positions and riding on said inclined portion of said cam surface upon movement of said actuator between its off and on positions; said operating end of said lever being operatively connected to said opposite end of said stem to move said valve member to its open position when said actuator is rotated to its on position and to permit said spring to bias said valve member to its closed position when said actuator is rotated to its off position.



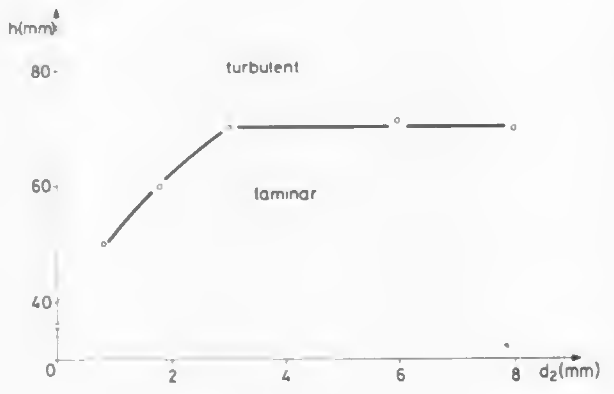
4,354,634
RAIL OVERTURN PREVENTION DEVICE
John A. Kasuba, Germantown, Tenn.; Graham M. Fee, Geneva, and Phillip M. Hoskins, Conneaut, both of Ohio, assignors to True Temper Railway Appliances, Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 888,245, Mar. 20, 1978, abandoned. This application May 21, 1980, Ser. No. 152,133
Int. Cl.^{3} E01B ***9/46***
U.S. Cl. 238—338 **4 Claims**

1. A railway rail overturn prevention device for use as part of a railroad having a cross tie supporting a tie plate, said tie plate having at least one hole therethrough, and a rail having a base flange seated on the tie plate adjacent to the hole, the flange having an overturn path when the rail rotates about its length due to forces created by passing railway vehicles, the flange and tie plate defining a combined thickness, said device comprising a generally C-shaped clip having:

- a first arm terminating in a catch means, said catch means being beveled to form a wedge for penetrating the tie and for engaging the tie at a distance below the tie plate when said device is installed in the tie plate;
- a second arm spaced from and opposite to said first arm; and
- a stem joining said first and second arms, said stem having a length spacing said arms by a distance exceeding said combined thickness and locating said second arm in the overturn path of the flange and said second arm being disposed in partially overlapping, spaced relation to said flange defining a gap therebetween when the device is installed, said gap being of a size sufficient to isolate said clip from the rail except when strong rail overturn forces occur and said gap closing in response to the occurrence of strong rail overturn forces;
- wherein said second arm comprises stop means for restraining motion of said flange beyond the limit of said gap when said device is installed.

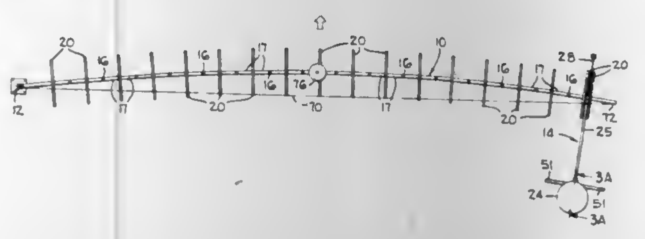


4,354,635
FLUIDIZED BED REACTOR WITH OPEN REACTION GAS INPUT AND METHOD OF INCREASING THE DUCT
Eike Barnert, Jülich; Wolfgang Frommelt, Linnich, and Erich Zimmer, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany
Division of Ser. No. 85,780, Oct. 17, 1979, Pat. No. 4,259,925. This application Aug. 18, 1980, Ser. No. 178,785
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846160
Int. Cl.^{3} B05B ***17/24***
U.S. Cl. 239—11 **1 Claim**



1. A method of achieving an increased rate of laminar gas flow in the limiting range for laminar gas flow in a straight terminal portion of an open-ended duct and the length of the laminar portion of a jet issuing therefrom, which consists of providing said terminal portion of said duct with subdividing walls for subdividing the interior thereof into a plurality of separate ducts of substantially equal cross sectional area over a straight terminal portion of said duct having a length (l) which is not less than 3% of the product (Re·d_2) obtained by multiplying the diameter of one of the separate ducts (d_2) by the Reynolds number (Re) of the gas flow therein.

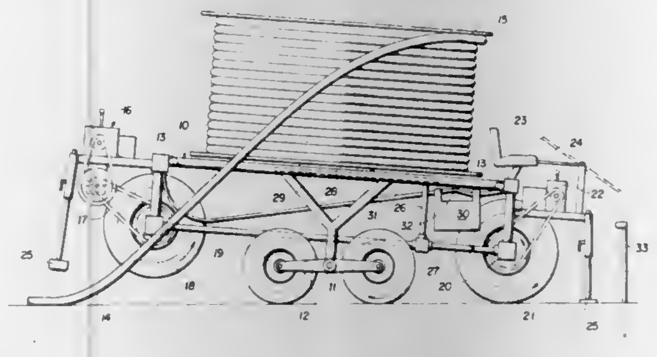
4,354,636
TORQUE DRIVEN ROTARY IRRIGATION SYSTEM
James M. Hait, 8047 Chardonay Ct., San Jose, Calif. 95135
Filed May 14, 1980, Ser. No. 149,813
Int. Cl.^{3} B05B ***3/04***
U.S. Cl. 239—177 **8 Claims**



1. A self-propelled rotary irrigation system for connection at one end to a source of water located at the center of an area to be irrigated, said system comprising:

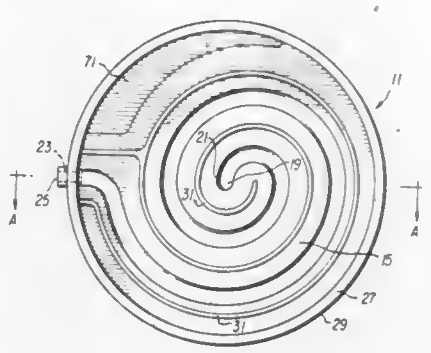
- a length of pipe for carrying water, said pipe having a longitudinal axis;
- a plurality of irrigation outlets arranged in a spaced relationship along said length of pipe for discharging water therefrom;
- means for mounting said pipe with said longitudinal axis of said pipe in a generally horizontal plane;
- means for connecting a first end of said pipe to a water source in a manner such that the length of pipe is free to travel about said source and such that said first end is unable to rotate about the longitudinal axis of said pipe;
- means for inducing a rotational torque about said longitudinal axis to said length of pipe at an opposite end from said first end whereby the degree of rotational displacement varies along the length of pipe; and
- wheel means for supporting and advancing the pipe located at spaced intervals along the length thereof, said wheel means being responsive to the torque induced in the pipe to advance the pipe about the water source.

4,354,637
SELF-PROPELLED REVERSIBLE IRRIGATION MACHINE
Hubert Tidwell, 530 W. 200 South, Price, Utah 84501
Filed Jan. 23, 1981, Ser. No. 227,741
Int. Cl.^{3} B05B ***3/18***
U.S. Cl. 239—184 **6 Claims**



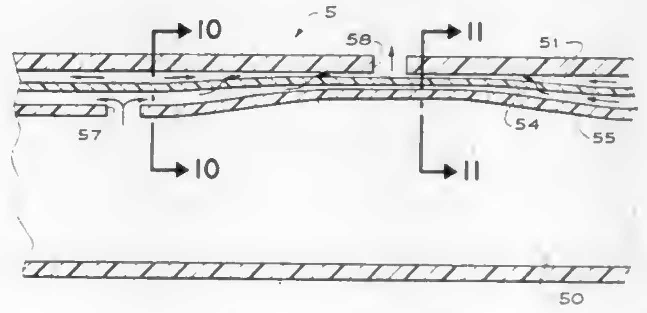
1. An irrigation machine comprising a wide stance carriage means, a rockable support frame on the carriage means extending forwardly and rearwardly of a transverse rocker axis on the carriage means, front and rear traction wheels on the rockable support frame on opposite sides of said rocker axis, power drive means on said support frame to drive both of the traction wheels in unison and in opposite directions, irrigation water delivery means on the support frame adapted for connection with a stationary source of water, an inclined front-to-rear track element on the support frame extending forwardly and rearwardly of said rocker axis, and a reversing weight engaged with the track element and adapted to travel rearwardly therealong under the influence of gravity following engagement of the weight with an abutment in the path of movement of the weight when the machine is traveling in one direction, the track element including a weight retaining portion near the forward end of the rockable support frame causing the weight to depress the front traction wheel of the machine and elevate the rear traction wheel.

4,354,638
SPIRAL ACTUATOR FOR AEROSOL POWDERED SUSPENSION PRODUCT
Jack Weinstein, Old Bridge, N.J., assignor to Bristol-Myers Company, New York, N.Y.
Filed Apr. 25, 1980, Ser. No. 143,404
Int. Cl.^{3} B05B ***7/32***
U.S. Cl. 239—337 **8 Claims**



1. As an article of manufacture an aerosol container having incorporated therein under pressure particulate or powdered material suspended in a normally gaseous hydrocarbon propellant, said aerosol container being provided with a valve and an actuator; said actuator having a surface that engages said valve and a bore therethrough communicating at one end thereof with a fluid outlet in said valve, said actuator also being provided with an exit orifice; said actuator also being provided with a spirally shaped expansion chamber extending from said one end of said bore to said exit orifice whereby when said actuator is activated a controlled expansion of the propellant prior to entry of product into the ambient atmosphere is developed resulting in a low velocity spray with large particle size which tends to fall at a rapid rate rather than remain suspended in air.

4,354,639
MULTIPLE CHAMBER DRIP IRRIGATION HOSE
William M. Delmer, 16901 Bedford La., Huntington Beach, Calif. 92649
Continuation-in-part of Ser. No. 861,119, Dec. 16, 1977, Pat. No. 4,196,853. This application Feb. 5, 1980, Ser. No. 118,721
Int. Cl.^{3} B05B ***15/06***
U.S. Cl. 239—542 **8 Claims**



1. A multichamber drip irrigation hose for distributing irrigation water and the like in controlled amounts, comprising:

- a primary and at least one secondary tube of flexible, water-impermeable material and joined at a common wall;
- said common wall having a series of first holes placing the interior of said primary tube in communication with the interior of said secondary tube;
- said secondary tube having a series of second holes leading

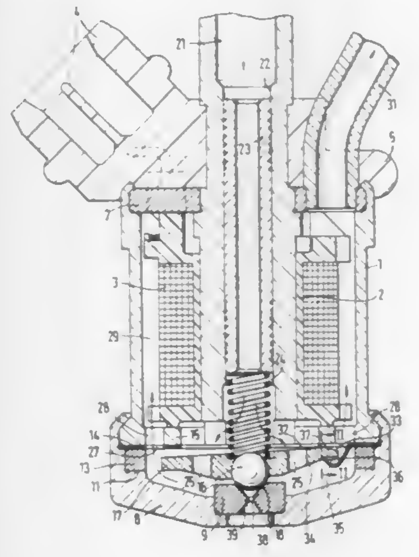
from the interior of said secondary tube to the exterior; and

a smooth, flexible, filamentary line of a material having a density approximately that of water and positioned within said secondary tube and forming a restricted path for water flowing from a first hole to a second hole, said line being of substantially smaller diameter than said secondary tube for movement of said line radially in said secondary tube.

4,354,640

ELECTROMAGNETICALLY ACTUATABLE VALVE

Waldemar Hans, Bamberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 15, 1980, Ser. No. 187,129
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940239
Int. Cl.³ B05B *1/30, 1/32*
U.S. Cl. 239—585 8 Claims



1. In an electromagnetically actuatable fuel injection valve for fuel injection systems of internal combustion engines having a valve axis and including a housing, a flat armature firmly connected to a movable valve element arranged to cooperate with a fixed valve seat, first spring means for exerting a force in an axial direction on said armature, and electromagnetic means for exerting a force in an opposite direction on said armature when electrically energized, the improvement which comprises:

said flat armature, which further includes oppositely disposed first and second surfaces, said first surface including an edge remote from said valve seat; and

a further spring means for exerting a force on said second surface of said armature in the direction of said first surface edge, to hold said edge in contact with an adjacent fixed surface, wherein said armature is pivotable about said edge in response to the forces exerted on the armature by said first spring means and said electromagnetic means, to open or close the valve.

4,354,641

APPARATUS FOR REMOVING NO-BAKE COATINGS FROM FOUNDRY SAND AND CLASSIFYING THE RECLAIMED SAND

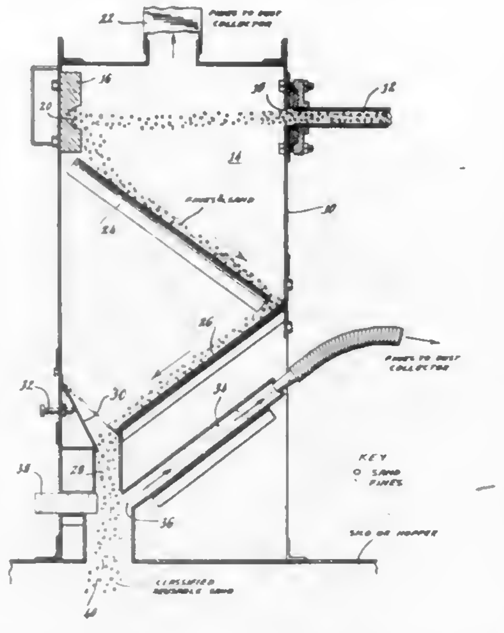
William J. Smith, Hazelton, Pa., assignor to Weatherly Foundry & Manufacturing Co., Weatherly, Pa.
Division of Ser. No. 15,206, Feb. 26, 1979, Pat. No. 4,283,015, which is a continuation-in-part of Ser. No. 847,749, Nov. 2, 1977, abandoned. This application Apr. 2, 1981, Ser. No. 250,238
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—40 15 Claims

1. In an apparatus for removing no-bake rigid coatings encasing no-bake foundry sand and separating the rigid coatings from the sand grains after the no-bake foundry sand has been comminuted to coated sand grain particle size, having means for fluidizing and conveying said sand grain size coated sand grains in a conduit to said apparatus at velocity just sufficient for pneumatic transport, the improvement comprising,

a chamber having a coated sand grain inlet thereto

said inlet arranged to direct a generally horizontal stream of coated particles into said chamber at substantially the same velocity as the velocity at which particles were transported in a fluidized state,

a rigid target in said chamber positioned and arranged in said chamber on the opposite side from said inlet such that the rigid surface thereof is impacted by said stream of coated particles such that by the energy of impact the coatings are fractured and form a downwardly directed curtain of uncoated sand and fractured coatings lying between and below said inlet and said rigid target,



a vent from said chamber above said inlet for removing fine dust,

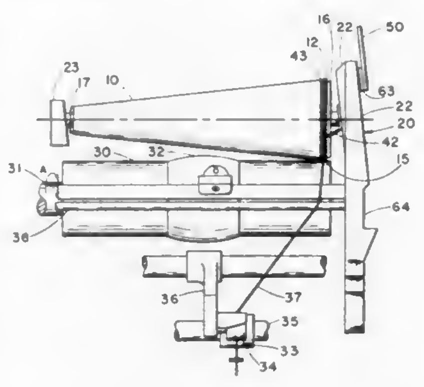
separator means in said chamber below said rigid target and inlet and arranged to receive said curtain of falling particles, for separating said sand grains and said fractured coatings, and

exit means from said separator for separately discharging the uncoated sand grains and fractured coatings.

4,354,642

PACKAGE SUPPORT APPARATUS FOR FORMING A CREELING TAIL

Richard A. Schewe, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed Sep. 24, 1979, Ser. No. 78,409
Int. Cl.³ B65H *54/02, 54/34, 54/42*
U.S. Cl. 242—18 PW 12 Claims

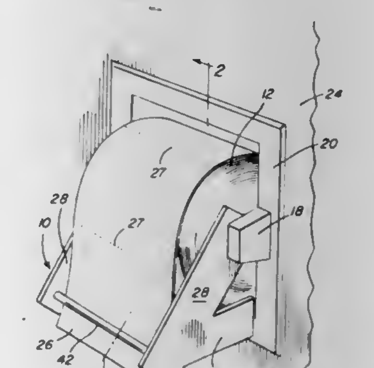


1. A package support apparatus for use in a strand winding device to support a conical package core in association with a core-rotating frictional drive of said winding device, said conical package core having an annular end portion proximate the large end of said core on the conical surface thereof, said package support apparatus comprising: supporting means having first and second spaced-apart members for supporting said core at respective ends of said core; and means for tilting said core between a creeling-tail-forming position and a package-winding position to permit selective engagement of only said end portion of said core with said frictional drive in said creeling-tail-forming position; said tilting means comprising an eccentric element associated with one of said members and rotatable about a center fixed with respect to said one member, said eccentric element having a core-mounting center displaced from said fixed center, said core-mounting center coinciding with the axis of said core when said core is mounted in said support means.

4,354,643

BATHROOM TISSUE HOLDER

Mary B. Kenner, 1 Mile Course, Kings Mill, Williamsburg, Va. 23185
Filed Nov. 18, 1980, Ser. No. 208,184
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.2 6 Claims



1. A holder for the free end of a paper web wound into a roll comprising a pair of generally parallel, spaced paper engaging members adapted to receive the free end of the paper web disposed generally in depending tangential relation to the roll to retain the free end of the paper web spaced from the roll and thus accessible for grasping by a person desiring to unwind the paper web from the paper roll and means supporting said paper engaging members to retain them generally in parallel relation to the longitudinal axis of the paper roll, said means supporting the paper engaging members including a pair of generally parallel, laterally spaced legs rigidly affixed to the ends of the paper engaging members and oriented in straddling relation to the paper roll for supporting engagement with the supporting structure for the paper roll, said legs extending downwardly and outwardly from the rotational axis of the paper roll, and support members fixedly secured to the outer end portions of the legs and extending inwardly to space the outer end portions of the legs and the paper engaging members away from a supporting surface for the paper roll.

4,354,644

REEL MOUNTING METHODS AND APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jul. 21, 1980, Ser. No. 170,370
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68.3 65 Claims

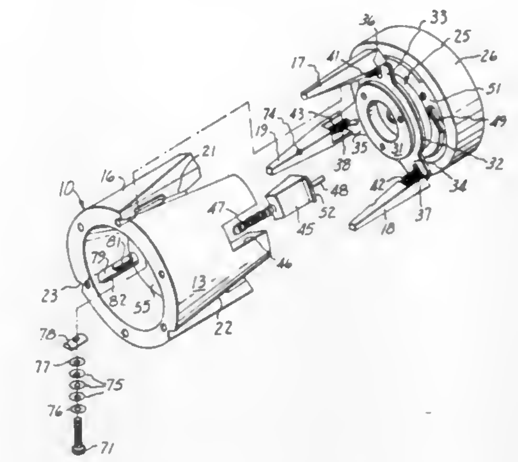
1. A method of releasably retaining a hollow-cylindrical member on a rotatable hub against forces tending to loosen said member, comprising in combination the steps of:

providing a wedge-shaped member for engaging said hollow-cylindrical member on the inside thereof;

providing said hub with a ramp for said wedge-shaped member;

placing said hollow-cyindrical member on said hub;

driving said wedge-shaped member up said ramp into engagement with the inside of said hollow-cylindrical member; and

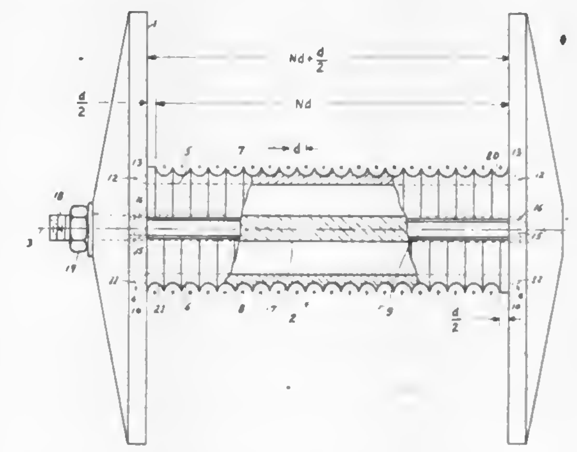


inhibiting any looseness between said releasably retained hollow-cylindrical member and the hub by urging said wedge-shaped member further up said ramp after engagement with the inside of said hollow-cylindrical member and continuously during rotation of said hub.

4,354,645

COLLAPSIBLE MANDREL FOR PRECISE WINDING OF A COIL

Xenophon Glavas, and Robert E. Thompson, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jun. 23, 1980, Ser. No. 161,949
Int. Cl.³ B65H *75/18*
U.S. Cl. 242—117 30 Claims



1. A collapsible mandrel for precise winding of a material having a circular cross-section into a precision-wound coil comprising:

a pair of spaced parallel flanges;

a core upon which said coil is wound disposed between said pair of flanges perpendicular thereto, coaxial of a longitudinal axis and removably secured to said pair of flanges, said core including

a pair of hollow, partially semicircular members extending between said pair of flanges, each of said hollow members having a given arc length less than 180°, being disposed on a different side of said axis and having an outer surface containing therein a plurality of spaced grooves substantially parallel to said pair of flanges, each of said plurality of grooves having a radius substantially equal to the radius of said material, and

a pair of grooveless transition members extending between said pair of flanges, each of said transition members being disposed on a different side of said axis between adjacent ends of said pair of hollow members and having a selected arc length equal to the difference between 180° and said given arc length;

a shaft disposed coaxial of said axis extending between said pair of flanges internally of said core, said shaft having a thread on one end thereof extending beyond one of said pair of flanges to receive a nut to releasably lock said core and said pair of flanges into a integral unit when said coil is being wound and to enable removal of said nut, said pair of flanges and said pair of transition members to permit removal of said pair of hollow members after said coil has been wound.

4,354,646

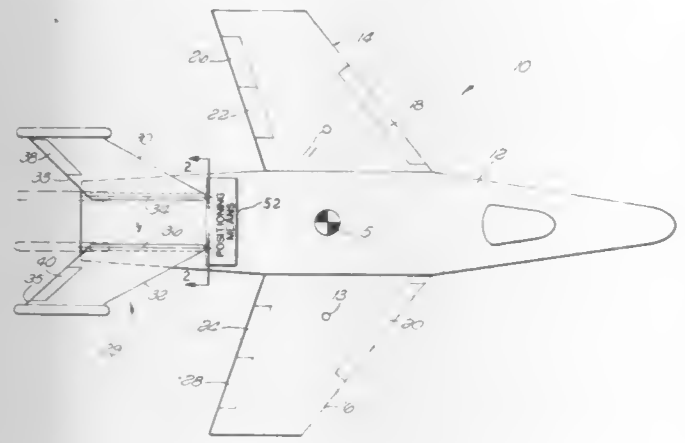
VARIABLE DIHEDRAL ANGLE TAIL UNIT FOR SUPERSONIC AIRCRAFT

Daniel P. Raymer, Del Aire, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 944,058, Sep. 20, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,387

Int. Cl.³ B64C *5/10, 9/08*

U.S. Cl. 244—87 **18 Claims**



1. In an aircraft capable of supersonic flight having a fuselage, and a pair of wings connected to said fuselage, each of said wings projecting substantially horizontally and outwardly from said fuselage, a variable dihedral angle tail unit comprising:

two tail control surfaces extending outwardly from said fuselage pivotally mounted to the upper body of the aft end of said fuselage about respective axes substantially parallel to the longitudinal axis of said fuselage, said tail control surfaces adapted to selectively provide both longitudinal and directional stability, said tail control surfaces being moveable within a range from a vertical position above said fuselage substantially parallel to the plane of symmetry of said aircraft to a predetermined minimum dihedral angle with respect to a horizontal plane passing through said axes; and

positioning means for rotating in unison said tail control surfaces about said axes.

4,354,647

MINIATURE COLLAPSIBLE KITE AND METHOD OF MAKING SAME

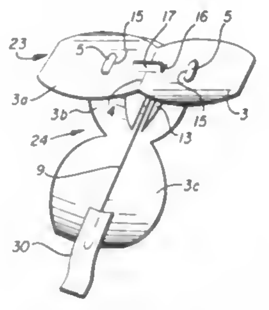
Lindell O. Carpenter, 522 Glen Oaks Blvd., Dallas, Tex. 75232

Filed Mar. 19, 1980, Ser. No. 131,634

Int. Cl.³ A63H *27/08*

U.S. Cl. 244—153 R **13 Claims**

1. A strip of thin continuous material for making a miniature kite which comprises a plurality of paper disks connected in serial fashion and adapted to fold one over another in accordian fashion until the entire assembly forms a thin generally circular package of a size on the order of a large monetary coin, and wherein one of said disks includes a punch thru yoke



structure that folds outward to provide a reinforced terminal to stabilize the kite in flight.

4,354,648

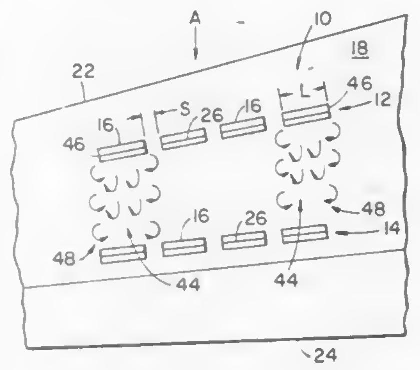
AIRSTREAM MODIFICATION DEVICE FOR AIRFOILS

Karl M. Schenk; Peter T. Reynolds; M. H. Abla, and Robert K. Wattson, Jr., all of Wichita, Kans., assignors to Gates Learjet Corporation, Wichita, Kans.

Filed Feb. 6, 1980, Ser. No. 119,068

Int. Cl.³ B64C *3/58, 21/10, 23/06*

U.S. Cl. 244—199 **17 Claims**



1. In an airstream flow modification device of the type secured to and extending beyond a normaly smooth contour surface of an aircraft airfoil to project into an airstream boundary layer and delay the onset of airstream flow separation from the airfoil while operating at higher aircraft speeds at Mach numbers of about 0.6 to about 0.9 when the airstream near the airfoil accelerates to supersonic speeds, the improvement comprising:

a plurality of spaced, generally rod shaped elements arranged generally end to end in at least one row and extending from said airfoil surface, each element having a height less than the boundary layer thickness formed at said aircraft speeds and a length oriented generally normal to the airstream flow within a range of about −30 degrees to about +30 degrees from a normal to the airstream flow.

4,354,649

ARRANGEMENT FOR CONTINUOUSLY CONTROLLING TRACK-BOUND VEHICLES

Eduard Murr, Kirchseeon; Siegfried Gersting, Munich; Helmut Übel, Leonberg, and Alan C. Knight, Korntal-Müchingen, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,389

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2901994

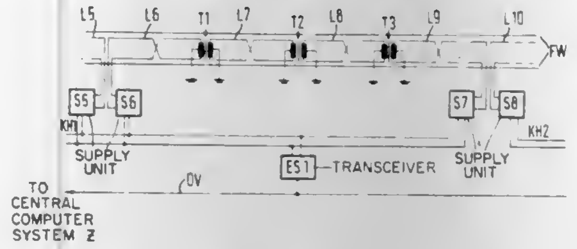
Int. Cl.³ B61L *3/00, 21/00*

U.S. Cl. 246—187 B **6 Claims**

1. An arrangement for continuously controlling track-bound vehicles on a track divided into individual areas comprising:

in each of said areas at least one track-conductor loop having N transpositions therein, where N is an integer greater than two, said one loop communicating data between said

vehicles and a fixed control station by being coupled at opposite ends thereof to a different one of two supply units coupled to said control station and by being inductively coupled to communicating equipment on said vehicles, said two supply units feeding said data to said opposite end of said one loop substantially in phase; and



coupling elements disposed in said one loop intermediate adjacent ones of said N transpositions to subdivide said one loop into N track-conductor loops.

4,354,650

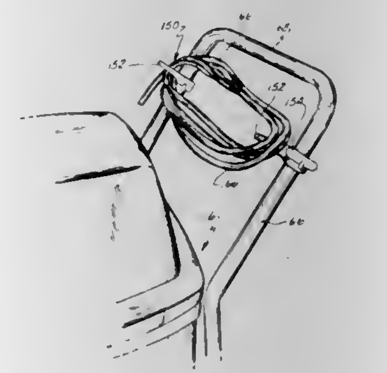
POWER CORD STORAGE DEVICE

Dale E. Lowder, North Muskegon, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Division of Ser. No. 110,010, Jan. 7, 1980, which is a division of Ser. No. 847,905, Nov. 2, 1977, Pat. No. 4,222,145. This application Mar. 18, 1981, Ser. No. 245,026

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—49 **2 Claims**



1. A power cord storage device for electrically powered apparatus comprising:

a generally U-shaped control handle for controlling said electrically powered apparatus;

a pin extending radially outwardly from one leg of said handle;

a pivot arm rotatably supported on said handle, said pivot arm including a hub portion defining a L-shaped slot within which said pin extends; and

an other arm secured to the other leg of said handle, said pivot arm being rotatable to a first position so that said pin may be positioned in one leg of said slot and the power cord may be wrapped around said arms, and said cord being released by shifting said hub of said pivot arm to place said pin in the other leg of said slot and rotating said pivot arm towards said other arm.

4,354,651

CABLE GROMMET WITH TENSION RELIEF

Hans Simon, Bruchhausener Strasse, 5463 Unkel, Fed. Rep. of Germany

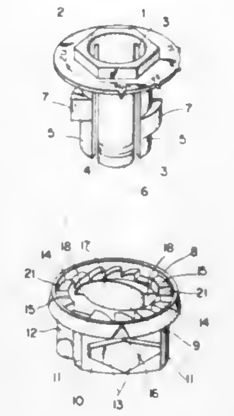
Filed Oct. 26, 1978, Ser. No. 954,827

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822643

Int. Cl.³ F16L *5/00*

U.S. Cl. 248—56 **16 Claims**

1. A two-part strain relief cable grommet for securing cables in an opening in a carrier member including a tubular outer body member and a tubular inner member coaxially telescopically engagable and rotatable one within the other, said outer body member being insertable in said opening, said outer body member having less axial extent than said inner body member and having an inner wall surface defining an inner opening having a plurality of spaced corners, said inner body member including a generally tubular portion divided by axial slits extending over part of its length forming a plurality of segmental jaws terminating in free ends, a gradually circumferentially increasing projection disposed on respective surfaces of two oppositely facing jaws at a location spaced inwardly from their free ends engagable against the inner wall surface of said outer body member, so that upon relative rotation of said members, said two jaws move inwardly towards one another to engage a cable guided through said inner member and with at least one other jaw having a holding lug projecting outwardly from its free end thereof and engagable with an end portion of said outer body member to hold said body members together.



4,354,652

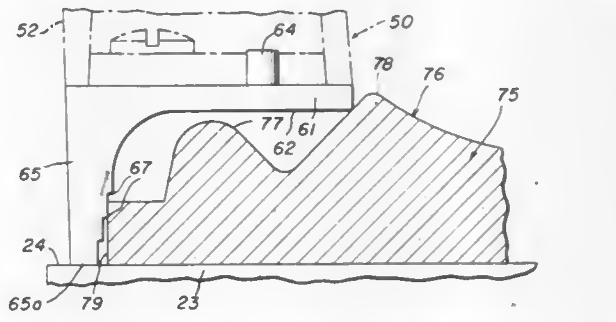
SENSOR MOUNTING ASSEMBLY

Ronald J. Zegarski, Crystal Lake; Philip J. Burnstein, Skokie, and George R. Pariza, Batavia, all of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Jun. 11, 1980, Ser. No. 158,357

Int. Cl.³ F16M *11/00*

U.S. Cl. 248—201 **15 Claims**

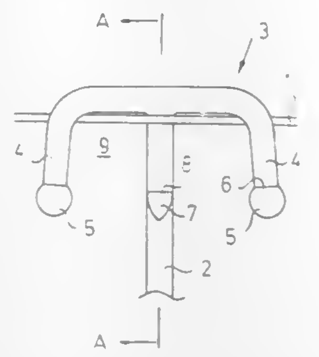


1. An adapter bracket for mounting a sensing component of an alarm system in a predetermined orientation adjacent to the inner edge of a door or window having a substantially planar first outer surface, a frame being attached to the first outer surface and having a second outer surface, said bracket comprising a support member having a flat planar support surface adapted for receiving the associated sensing component thereon and having a first bearing surface adapted for engagement with the second outer surface, a positioning flange on said support member and extending from said first bearing surface along one edge thereof, the outer end of said positioning flange having a second bearing surface generally parallel to said support surface and adapted for abutting engagement with the first outer surface, and a plurality of steps formed on one side of said positioning flange and each having first and second intersecting surfaces, each of said first surfaces being substantially parallel to said support surface and providing a surface along which said positioning flange can be cut to provide a

new second bearing surface thereby to control the length of said positioning flange.

4,354,653
SUSPENSION DEVICE

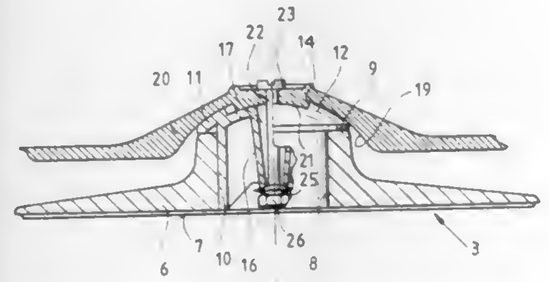
Göte Ericsson, Stora Hestra, 330 27 Hestra, Sweden
Filed Feb. 19, 1980, Ser. No. 122,653
Int. Cl.³ A47H *1/10*
U.S. Cl. 248—317 **10 Claims**



1. A device for attaching an article to a line, such as a clothes line, comprising a main leg adapted at one end to engage one side of said line and having a depending portion with a protuberance spaced from said one end, a pair of auxiliary legs extending in opposite directions from said one end of the main leg with each auxiliary leg having a downturned end portion with a protuberance, the protuberance on the main leg having at least one laterally-extending portion and the protuberances on the auxiliary legs each having laterally-extending portions directed toward the protuberance on the main leg so that when the device is mounted on a line with the main leg engaging one side of the line and the auxiliary legs engaging the opposite side of the line, the protuberances cooperate to resist accidental detachment of the device from the line.

4,354,654
SWIVEL MOUNTING UNIT

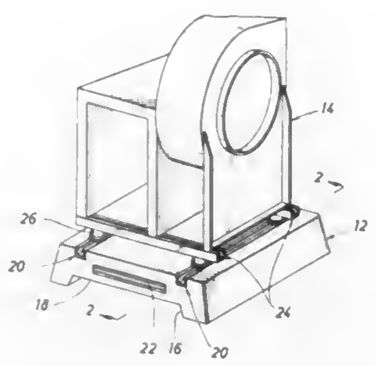
Franz Werner, Paderborn-Wewer; Rudolf Schmeykal, Neuenbeken, and Herman Doeinghaus, Delbrueck-Hagen, all of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 134,782
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 7909786[U]
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—663 **7 Claims**



1. A swivel mount for apparatus such as a projector adapted for angular adjustment about a vertical axis and adjustment of inclination from horizontal characterized by:
- a foot plate having a vertically cylindrical opening therein;
- a bearing element having a hollow cylindrical portion mounted in said opening of said foot plate for angular movement about a vertical axis relative to said foot plate and having an upper convex spherical support surface with a guide slot therein, and
- a step bearing adapted to mount apparatus and having a concave under surface disposed in mating frictional engagement with said spherical support surface and further having a guide arm disposed in said guide slot to limit angular tilting or inclination of said apparatus to a single plane.

4,354,655
MOUNTING BASE CONSTRUCTION

Erwin M. Hengst, 2603 Cocoa La., Pasadena, Tex. 77502
Filed Aug. 22, 1980, Ser. No. 180,462
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—679 **8 Claims**

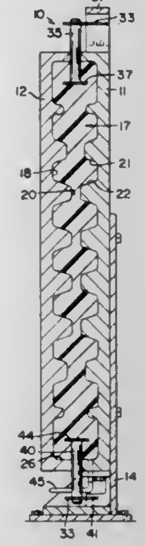


1. Apparatus for mounting equipment, including:
- base means cast from a moldable weatherproof material, said base means being of sufficient mass to act as a stabilizing base for equipment to be mounted thereon;
- a first pair of parallel channel members embedded in said cast base, said channel members including formed over edges at the top of on each side of said channel members to provide downwardly projecting rail means;
- a second pair of parallel channel members positioned over said first pair of channel members and at right angles with respect thereto;
- equipment mounting means in said first pair of channel members, said equipment mounting means having slide portions for matingly engaging said rail means;
- motion isolation means positioned between said first and second pair of parallel channel members, said motion isolation means being a resilient member having an aperture therethrough; and
- bolt means positioned through the bottom of said second channel members, through the aperture in said resilient member, and into holding connection with said equipment mounting means.

4,354,656
SUSPENSION IDLER MOLD APPARATUS

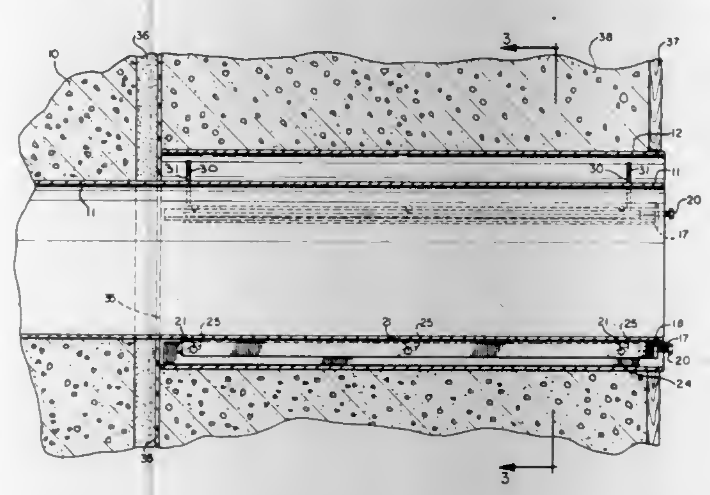
Arthur F. Kain, 1726 Virginia Ct., Lakeland, Fla. 33803
Continuation-in-part of Ser. No. 174,750, Aug. 4, 1980, Pat. No. 4,301,109. This application Jul. 15, 1981, Ser. No. 283,726
Int. Cl.³ B29C *1/00, 6/00*
U.S. Cl. 249—78 **16 Claims**

1. A vertical mold apparatus for molding a suspension idler, or the like, comprising in combination:
- a base;
- a vertical mold having a pair of hinged mold portions having a mold cavity formed therein, one said mold portion being attached to said base;
- an upper and lower shaft positioning and support means attached to one mold portion for supporting a shaft having an anchor formed on one end thereto and protruding into said mold cavity; and
- said mold cavity having a plurality of roller cavity portions connected by a plurality of connecting shaft cavity portions, said roller cavity portions having an angled surface from the perimeter thereof to said shaft cavity portions on either side thereof to prevent entrapment of air during vertical molding, whereby a suspension idler can be molded of a polymer without a cable therein.



4,354,657
SUPPORTS FOR COAXIAL CONDUITS

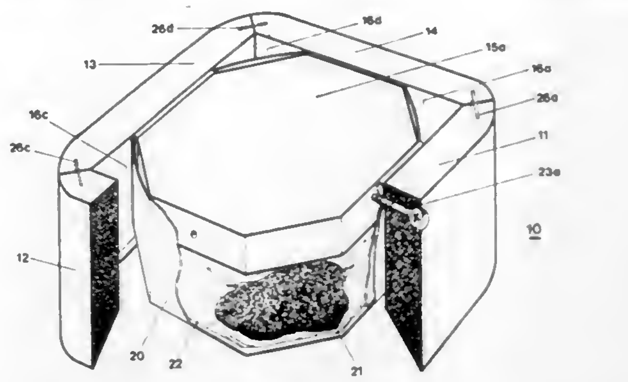
John E. Karlberg, c/o J. Karlberg Associates, P.O. Box 58, Wycombe, Pa. 18980
Filed Dec. 29, 1980, Ser. No. 220,839
Int. Cl.³ B28B *7/16;* B29C *1/00*
U.S. Cl. 249—83 **9 Claims**



1. Apparatus for supporting an exteriorly disposed sleeve member in a fixed interiorly disposed hollow cylindrical member which comprises
- a plurality of axially disposed longitudinally extending support bars for engagement with one of said cylindrical members,
- a plurality of interposed bars each cooperating with a pair of said support bars so as to be movable radially with respect to one of said cylindrical members to adjust the spacing of said cylindrical members,
- said support bars and said interposed bars being disposed at at least three radial locations relative one said cylindrical member for adjusting the spacing of said cylindrical members, and
- members exteriorly accessible at the ends of said support bars for separately adjusting said support bars and said interposed bar.

4,354,658
HOT TOP CONSTRUCTION

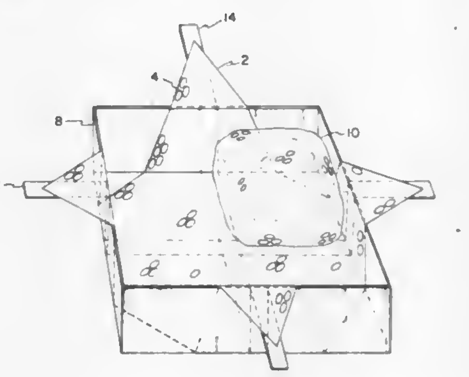
Jan Odsvall, Tyresö, Sweden, assignor to AB Indesko, Stockholm, Sweden
Filed Nov. 28, 1980, Ser. No. 210,897
Claims priority, application Sweden, Dec. 6, 1979, 7910050
Int. Cl.³ B22D *7/10*
U.S. Cl. 249—202 **15 Claims**



1. A hot top construction comprising a plurality of walls of insulating fibrous material, arranged vertically in relation to one another for insertion into an ingot mould to cover the walls of the upper part of the mould, said walls of the hot top construction defining an inner cavity which has upper and lower open ends, an upper confinement member of insulating fibrous material mounted at said open upper end, at least one combustible container containing an additive to be supplied to the melt during casting, and means securing said container below said upper confinement member in said cavity to form an assembled unit adapted to the dimensions of the ingot mold.

4,354,659
LIGHT WEIGHT INGOT MOLD MAT

Herbert A. White, Jr., Churchill Borough, Pa., assignor to American General Supply Company, Pittsburgh, Pa.
Filed Oct. 6, 1980, Ser. No. 194,372
Int. Cl.³ B22D *7/12*
U.S. Cl. 249—206 **9 Claims**

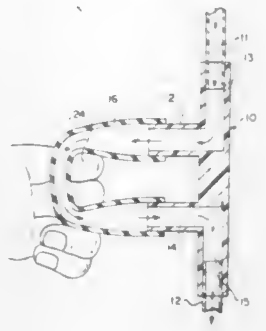


1. A light weight ingot mold mat for receiving molten metal comprising a plurality of crumbled thin sheets each made from a metal compatible with the molten metal and having closely spaced holes therein throughout substantially all its surface, said sheets being arranged in a plurality of layers arranged to define a honeycombed spongelike structure of considerable thickness defining a plurality of discontinuous voids, and substantially flat individual thin sheets arranged on the top and bottom of said spongelike structure to form an assembly, said top and bottom sheets being made from a metal compatible with the molten metal, none of said discontinuous voids extending from the top sheet to the bottom sheet.

4,354,660
IN-LINE FLOW CONTROL CLAMP

James A. Stupar, Waukegan, and Stephen D. Smith, McHenry, both of Ill., assignors to Baxter Travenol Laboratories Inc., Deerfield, Ill.

Filed Feb. 2, 1981, Ser. No. 230,194
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—4 **7 Claims**

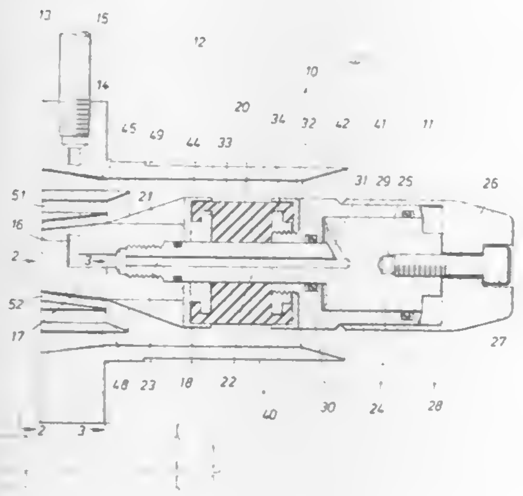


1. A clamp comprising:
a flow directing member, portions of said member defining a first opening through which a fluid can be delivered into the clamp and a second opening out of which the fluid can be directed from the clamp, said openings being axially aligned;
inlet and outlet means in said flow-directing member;
means within said flow-directing member for internally blocking the flow of fluid directly and axially between said openings;
resilient sealing means connected to said inlet and outlet means in bypassing relation around said internally blocking means; and
a crimped area within said resilient sealing means which prevents fluid flow through said sealing means, said crimped area spontaneously springing shut to a closed crimped state unless manually uncrimped, and said crimped area being capable of being uncrimped, to permit fluid flow through said clamp.

4,354,661
CONSTANT VELOCITY DIFFUSER

Robert H. Welker, P.O. Box 138, Sugar Land, Tex. 77478

Filed Nov. 10, 1980, Ser. No. 205,287
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—118 **9 Claims**

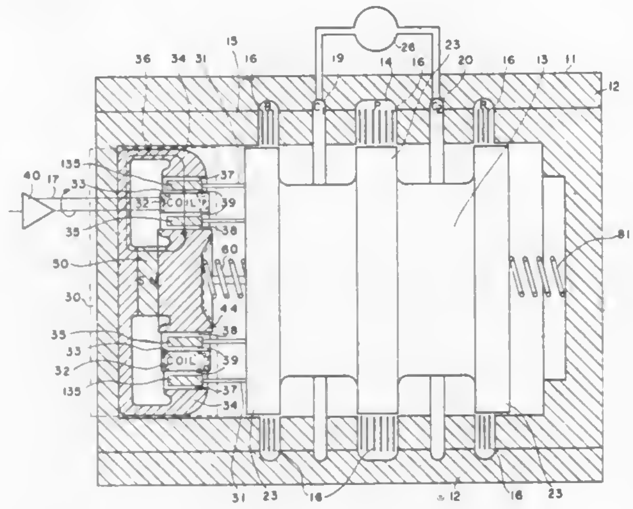


1. A gas line flow regulator which comprises:
(a) a flange supported, radially extending disk located within a pipeline having upstream and downstream faces thereon;
(b) a centrally positioned means supported by said disk on the upstream side thereof, said means including:
1. an elongate centered body;
2. a resiliently expandable means supported by said body having a relaxed and expanded condition wherein the expanded condition is accompanied by a radial outward expansion of said expandable means, and wherein said expandable means further includes;
3. an exposed outer sealing surface thereon;
(c) a sleeve supported by said disk on the upstream side thereof, said sleeve surrounding said expandable means to define an annular flow space therebetween variably constricted by said expandable means on expanding and said sleeve further including an encircling tapered surface terminating at a leading edge for directing flowing gas in laminar flow into said annular flow space; and
(d) said disk extending across the annular flow space and terminating said flow space and having openings therethrough, there being a first opening means for directing flowing gas in a first direction downstream from said disk and a second opening means therethrough for directing flowing gas in a second direction downstream from said disk.

4,354,662
FORCE MOTOR

Thomas W. Thompson, Concord, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 30, 1980, Ser. No. 145,152
Int. Cl.³ F16K *31/08, 7/16, 47/02*
U.S. Cl. 251—129 **7 Claims**

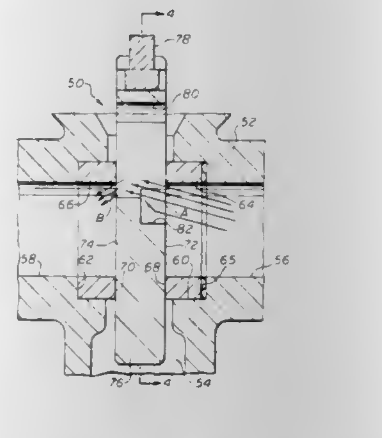


1. A system for moving the spool of a hydraulic valve along the sleeve of a single-stage hydraulic valve that has hydraulic fluid input and return ports, said system comprising:
(a) a first stationary magnetic material;
(b) a second stationary magnetic material, said second material is coupled to said first material in such a manner that a space exists between said first and second materials;
(c) a permanent magnet which is coupled linearly to said first and second stationary material;
(d) a coil of wire that is coupled to electrical input signals, said coil of wire is positioned within said space;
(e) a first ring that is positioned on the outside of said coil; a second ring that is positioned on one of the sides of said coil, opposite said first ring; and a plurality of support members that connect said first and second rings to said spool;
whereby if an electric input signal is present on said coil a magnetic force will be produced on said coil and said magnet causing said first and second ring to move in an amount proportional to said input signal.

4,354,663
VALVE CONSTRUCTION FOR SAND AND SLURRY SERVICE

Ralph W. Vanderburg, and Jerome E. Corneillie, both of Longview, Tex., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,711
Int. Cl.³ F16K *25/04, 3/00*
U.S. Cl. 251—210 **7 Claims**

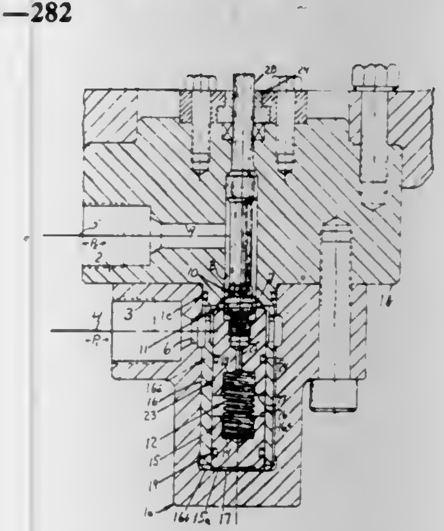


1. In a gate valve wherein a ported gate element having a generally circular gate port is movable between circular valve seats positioned within a valve chamber to control the flow of fluid through flow passages defined by the valve, the improvement comprising:
said gate port and the upstream one of the valve seats being of cooperative configuration at the initial stage of opening movement of said gate and at the terminal stage of closing movement of said gate to define an upstream flow path of greater dimension as compared to the flow path established by the relationship of the gate portion and the downstream seat, whereby the velocity of fluid flowing through the upstream flow path and impinging upon the downstream seat will be of lower velocity as compared to the velocity of flow through the downstream flow path, thereby minimizing erosion of the downstream seat by erosive particulate entrained within the flowing fluid.

4,354,664
FAIL-SAFE VALVE

Dan G. Taylor, Erie, and Walter W. Robertson, Cranesville, both of Pa., assignors to Hydro-Pac, Inc., Fairview, Pa.

Filed Dec. 10, 1980, Ser. No. 215,001
Int. Cl.³ F16K *1/32*
U.S. Cl. 251—282 **1 Claim**

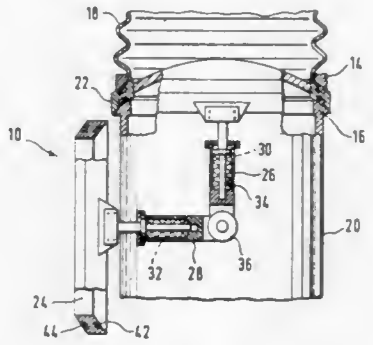


1. A valve for controlling the flow between pressures P1 and P2 comprising
a first body having a connection to P1 and a second body having a connection to P2, said bodies being in direct contact with each other and capable of being turned relative to each other to provide different orientations of the connections to P1 and P2, means for bolting the bodies together, a flow path between said connections, a port in the second body in said flow path, a valve member for opening and closing said port, means for closing the valve comprising first and second pistons for exerting a force on said valve member in one direction to close said port, a sleeve in said first body having its upper end communicating with P1 and surrounding said port and said pistons, said pistons being slidable in said sleeve, a seal between each piston and said sleeve below the upper end of the sleeve,
said first piston having one side facing said one direction, a way from top to bottom in the outer surface of the sleeve leading from P1 to the other side of said first piston for supplying pressure P1 exerting a force on said first piston in said one direction,
said second piston having one side facing said one direction and in force transmitting relation to said valve member and the other side presented to said one side of the first piston, a way leading from P2 to the other side of said second piston for supplying pressure P2 exerting a force on said second piston in said one direction and for exerting a force on said one side of the first piston in the opposite direction,
means for opening the valve,
and a force transmitting biasing means between said pistons for transmitting forces from one piston to the other.

4,354,665
VALVE FOR OPENING AND CLOSING A FLUID CONDUIT

Leon Ulveling, and Pierre Mailliet, both of Howald, Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jun. 5, 1980, Ser. No. 156,757
Claims priority, application Luxembourg, Jun. 15, 1979, 81386
Int. Cl.³ F16K *1/18*
U.S. Cl. 251—298 **5 Claims**



1. A valve for opening and closing a fluid conduit, the conduit having an axis and generally wide cross-section, the conduit further having a slit therein defined by facing ends of upstream and downstream conduit portions, at least one of said conduit portions being relatively movable with respect to the other, the valve comprising:
a moveable shut-off member, said shut-off member having a spherical shape and a pair of peripheral sealing surfaces, said sealing surfaces comprising sealing ring means carried by said member, said sealing ring means being in registration on oppositely disposed sides of the member;
means supporting said shut-off member for movement with respect to the conduit axis and through said slit, said supporting means comprising a first pair of oppositely situated telescopic arms, first ends of said arms of said first pair being coupled to said shut-off member;
a moveable apertured member spaced from said moveable shut-off member, said apertured member defining a spherical shape having the same radius as said shut-off member, said apertured member further having a pair of peripheral sealing surfaces with the same circumference as the sealing surfaces of said shut-off member, said sealing surfaces

of said apertured member comprising sealing ring means carried by said member, said sealing ring means being in registration on oppositely disposed sides of said apertured member;

means supporting said apertured member for movement with respect to the conduit axis and through said slit, said apertured member supporting means comprising a second pair of oppositely situated telescopic arms, first ends of said arms of second pair being coupled to said apertured member; and

drive means engaging said arms of said first and second pairs adjacent the second ends thereof, said drive means imparting arcuate motion to said shut-off and apertured members about a common axis whereby fluid flow through the conduit will be prevented when said shut-off member is positioned in the conduit slit with its peripheral sealing surfaces in registration with the facing ends of the upstream and downstream conduit portions and fluid flow through the conduit will be permitted when apertured member is positioned in the conduit slit with its peripheral sealing surfaces in registration with the facing ends of the upstream and downstream conduit portions.

4,354,666

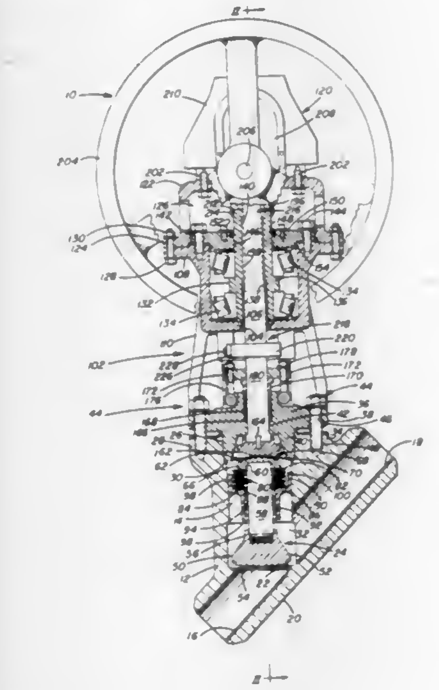
HIGH PRESSURE PACKLESS METAL DIAPHRAGM VALVE

Joseph P. McHale, Allison Park, Pa., assignor to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,888

Int. Cl.³ F16K *31/50*

U.S. Cl. 251—335 A 15 Claims



1. A diaphragm valve comprising,

a valve body having a chamber therein with an upper portion and a lower portion,

said valve body having an exterior flange portion extending radially from said chamber upper portion and an internal annular edge positioned in said chamber upper portion,

said lower portion having inlet and outlet openings communicating with said chamber lower portion,

a valve seat in said chamber lower portion between said inlet and outlet openings,

a valve member positioned for axial movement in said chamber lower portion in overlying relation with said valve seat to control the flow of fluid through said chamber lower portion between said inlet and outlet openings,

a flexible diaphragm positioned in said chamber in overlying with said valve member and supported by said valve body internal annular edge,

said flexible diaphragm being arranged to seal said chamber lower portion from said chamber upper portion, said flexible diaphragm having a top surface and a bottom surface,

said valve member being positioned in abutting relation with said diaphragm bottom surface,

a bonnet positioned in said chamber upper portion in overlying abutting relation with said flexible diaphragm on said valve body internal annular edge, said bonnet having a radially extending flange portion positioned above said valve body flange portion,

first fastener means extending through said bonnet flange portion and into said valve body flange portion in surrounding relation and adjacent to said chamber upper portion for rigidly connecting said bonnet flange portion to said valve body to securely retain said bonnet in gripping engagement with said flexible diaphragm on said valve body internal annular edge,

said bolts being arranged in a circular pattern around said bonnet flange portion in spaced relation to said yoke member radially extending flange,

said bonnet having a passageway therethrough,

a valve stem extending through said bonnet passageway for longitudinal movement relative thereto,

said valve stem having a lower end portion abutting said diaphragm top surface and an upper end portion,

actuator means connected to said valve stem upper end portion for moving said valve stem to transmit movement through said flexible diaphragm to said valve member for closing and opening said valve,

a yoke member positioned in surrounding relation with said bonnet and said valve stem between said valve body and said actuator means,

said yoke member having an upper end portion and a lower end portion,

said yoke member lower end portion having a radially extending flange positioned in overlying abutting relation with said valve body exterior flange portion, said yoke member flange being positioned in spaced surrounding relation with said bonnet flange portion,

second fastener means including bolts for connecting said yoke member radially extending flange to said valve body exterior flange portion, said bolts being arranged in a circular pattern adjacent the outer periphery of said valve body exterior flange portion,

said bonnet being positioned concentrically within said yoke member and removable from connection with said valve body relative to said yoke member which remains connected to said valve body to permit replacement of said flexible diaphragm in said chamber,

said bolts connecting said bonnet to said valve body being arranged in a circular pattern around said bonnet flange portion in spaced relation to said yoke member radially extending flange and within the circle of said bolts connecting said yoke member flange to said valve body flange, and

said valve stem being supported for longitudinal movement in said yoke member so that stem thrust applied upwardly to said valve stem upon closing said valve member under pressure is transmitted through said yoke member to said valve body and isolated from said bonnet to thereby relieve said bonnet of forces acting to disengage said bonnet from gripping engagement with said flexible diaphragm.

12. A diaphragm valve comprising,

a valve body having a chamber therein with an upper portion and a lower portion,

said lower portion having inlet and outlet openings communicating with said chamber lower portion,

a valve seat in said chamber lower portion between said inlet and outlet openings,

a valve member positioned for axial movement in said chamber lower portion in overlying relation with said valve seat to control the flow of fluid through said chamber lower portion between said inlet and outlet openings,

a flexible diaphragm positioned in said chamber in overlying relation with said valve member and arranged to seal said chamber lower portion from said chamber upper portion,

said valve body having a diaphragm seat surrounding said chamber upper portion,

said flexible diaphragm having an annular edge portion supported by said diaphragm seat to position said flexible diaphragm in said chamber,

said diaphragm seat having a plurality of recesses forming a roughened surface with a preselected degree of roughness to increase the sealing engagement of said diaphragm annular edge portion with said diaphragm seat,

a compressible gasket fabricated of graphite and positioned on said diaphragm seat roughened surface,

said gasket having a ring-like structure of a preselected width,

said gasket including a lower surface extending along the entire width thereof in overlying abutting relation with said diaphragm seat roughened surface,

said gasket including an upper surface extending along the entire width thereof in underlying abutting relation with said diaphragm annular edge portion,

said gasket being compressed along the entire width thereof between said diaphragm seat roughened surface and said diaphragm annular edge portion,

a bonnet positioned in said chamber upper portion in overlying relation with said diaphragm,

said bonnet having a passageway therethrough,

a valve stem extending through said bonnet passageway for longitudinal movement relative thereto, said valve stem having a lower end abutting the top surface of said diaphragm and being operable to transmit movement through said diaphragm to said valve member for opening and closing said valve,

said bonnet having a lower annular end portion extending into said chamber upper portion and positioned in abutting relation with the top surface of said diaphragm annular edge portion,

said bonnet lower annular end portion exerting a downward bearing force upon said diaphragm annular edge portion to, in turn, compress said graphite gasket into frictional engagement with said diaphragm seat roughened surface, and

said graphite gasket being composed of fibers being compressed into the recesses of said diaphragm seat roughened surface upon compression of said gasket to engage said fibers on said gasket upper surface to said diaphragm annular edge portion and to engage said fibers on said gasket lower surface to said diaphragm seat roughened surface to lock in sealing engagement said diaphragm to said gasket and said gasket to said diaphragm seat roughened surface and prevent movement of said diaphragm on said diaphragm seat roughened surface.

4,354,667

CRAB POT LINE HAULER

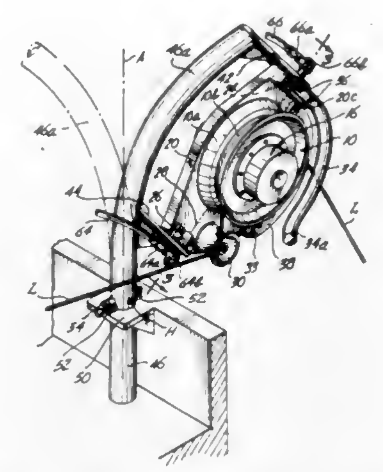
Robert A. Svendsen, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Jun. 13, 1979, Ser. No. 48,059

Int. Cl.³ B66D *1/08*

U.S. Cl. 254—332 23 Claims

1. A line hauler for hauling crab pots and the like on a fishing vessel, comprising a sheave assembly that includes a power-driven V-grooved hauler sheave and associated sheave drive motor and line guide means mounted together as a unit in cooperable relationship on a common support permitting driven rotation of said sheave by said motor about a sheave axis, a structural base adapted for mounting said common support with the sheave assembly in operative position on a fishing vessel, said base having pivot bearing means fixed thereon and mounting said support to permit said sheave assembly to pivot freely about a fixed pivot axis extending transverse to the sheave axis while restraining the support against other bodily motion relative to said base, said pivot axis being angled to the vertical, and the sheave assembly being formed with its center of mass offset downwardly from said pivot axis.



4,354,668

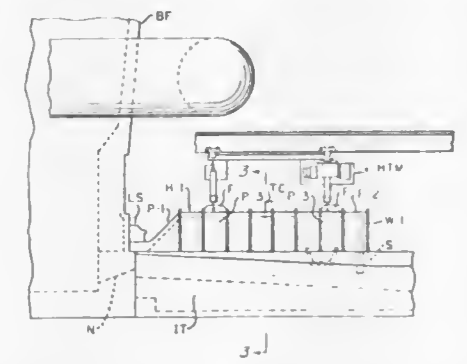
METHOD AND APPARATUS FOR DETERMINING COMPLETION OF A CAST IN BLAST FURNACE CASTHOUSE POLLUTION SUPPRESSION SYSTEM

Donald M. Ernst, Chicago, Ill., assignor to Jones & Laughlin Steel Incorporated, Pittsburgh, Pa.

Filed Aug. 20, 1981, Ser. No. 294,663

Int. Cl.³ C21B *7/12;* B22D *39/00*

U.S. Cl. 266—45 8 Claims



1. A method of operating a blast furnace having a hood covering its taphole during casting, which method comprises:

sensing, with the hood in place, when the level of molten material does not fill the vertical cross-section of the taphole; and

removing said hood before the furnace casts dry.

5. A method of operating a blast furnace having a hood covering its taphole, which method comprises:

(a) measuring and recording the temperature inside said hood;

(b) purposefully casting said furnace dry during a number of casts to provide a temperature profile for said hood in conjunction with said blast furnace,

(1) said profile including a representative plateau temperature range inside said hood reached during full flow of molten material through said taphole

(2) said profile also including a representative dry-cast temperature range in said hood reached when said blast furnace is cast dry; and

(c) removing said hood during subsequent castings of said blast furnace when the temperature inside said hood is above a plateau temperature in said profile and below a dry-cast tap temperature in said profile.

4,354,669

APPARATUS FOR REGULATING THE QUANTITIES AND PERCENTAGES OF THE GASEOUS CONSTITUENTS OF OXYGEN, NITROGEN, CARBON DIOXIDE AND WATER IN REACTION PROCESSES IN METALLURGICAL APPLICATIONS

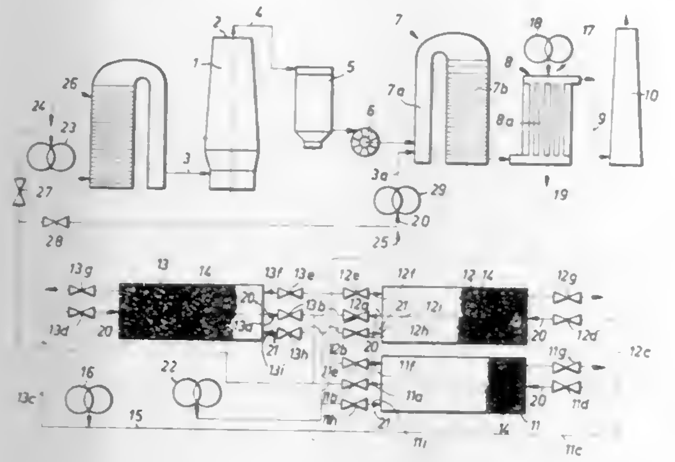
Günter Ratschat, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Division of Ser. No. 89,977, Oct. 31, 1979. This application Feb. 20, 1981, Ser. No. 236,155

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911763

Int. Cl.³ C21B *9/14*

U.S. Cl. 266—140 **12 Claims**



1. An apparatus for regulating the absolute amount of oxygen and relative percentages of individual gaseous constituents of a gas stream provided to a metallurgical reaction furnace, comprising:

(a) at least one container;

(b) each of said containers having molecular screening substances contained therein;

(c) each of said containers being provided with an ambient air inlet conduit;

(d) each of said containers also being provided with an outlet conduit for removal, from said container, of an oxygen enhanced gas stream; and

(e) said outlet conduit being connected to a metallurgical reaction furnace.

4,354,670

LINING APPARATUS FOR METALLURGICAL VESSELS, PARTICULARLY FOR STEEL MILL CONVERTERS AND/OR BLAST FURNACES

Gerhard Eichbaum, and Wolfgang Heidemann, both of Duisburg, Fed. Rep. of Germany, assignors to Mannesmann DeMag A.G., Duisburg, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,896

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921538

Int. Cl.³ C21B *7/04*

U.S. Cl. 266—281 **15 Claims**

1. A lining apparatus for metallurgical vessels having an upper portion and a lower portion, said lower portion having a bottom opening spaced above a mill floor, which apparatus comprises

(a) a working platform,

(b) platform elevator means for supporting said platform above the mill floor and varying its height between selected positions within the vessel and a position beneath the bottom opening of the vessel,

(c) a generally horizontally extending brick conveyor line,

(d) a generally vertically extending brick conveyor line for transporting bricks from below the vessel to the working platform,

(e) the length of said horizontally extending brick conveying means being independent of the height of said vertically extending brick conveying means,

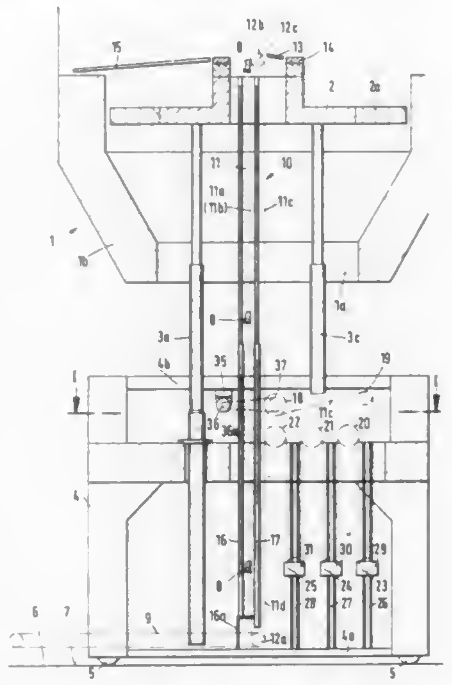
(f) said vertical conveyor line comprising endless chain means supported by a plurality of sprocket wheel means including upper sprocket wheel means, lower sprocket wheel means, reel-off sprocket wheel means including at least one storage sprocket wheel means,

(g) sprocket wheel support means supporting said sprocket wheel means in a predetermined configuration together with said chain means defining

(1) a vertical brick delivery course extending from said lower to said upper delivery sprocket wheel means,

(2) a reel-off course extending from said upper delivery sprocket wheel means, said reel-off course including at least three reel-off course sprocket wheel means,

(3) a reel-on course extending from the last of said reel-off course sprocket wheel means to said lower delivery sprocket wheel means,



(h) means for varying the length of said vertical brick delivery course by varying the separation of said upper and lower delivery sprocket wheel means, the height of said vertical brick delivery course being adapted to be coordinated with the height of said working platform,

(i) said at least one storage sprocket wheel means being positioned in opposed relationship with two sprocket wheel means,

(j) guide means supporting at least one of said storage sprocket wheel means or said opposed sprocket wheel means for limited predetermined displacement to vary the distance between said storage sprocket wheel means and the opposed sprocket wheel means selectively to increase and to decrease the length of chain in the reel-off course and corresponding selectively to decrease and to increase the height of the brick delivery course,

(k) brick support means attached to the chain means in a manner whereby said brick support means clear the sprocket wheel means.

4,354,671

SHEET HANDLING DEVICE

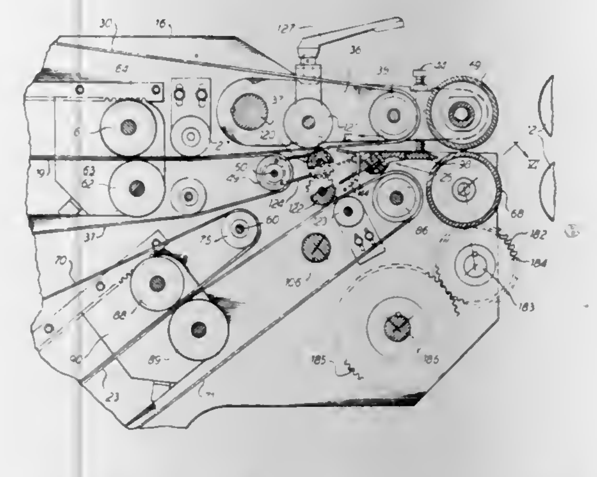
Paul W. Bergland, Sparta, N.J., assignor to Bobst Champlain, Inc., Roseland, N.J.

Continuation-in-part of Ser. No. 127,142, Mar. 4, 1980. This application Mar. 31, 1981, Ser. No. 249,678

Int. Cl.³ B65H *39/06*

U.S. Cl. 270—58 **7 Claims**

1. In a sheet handling device for receiving a flow of sheets at a given speed of travel from a discharge end of a processing apparatus and discharging the sheets in superimposed pairs of sheets to an input station of a second apparatus, said device having a frame with an input end and an exit end; first means for forming a first path between said input and exit ends; second means for forming a second path extending between the input and exit ends, said second path being longer than said first path by an amount equal to approximately one-half the spacing between the leading edges of two successive sheets in said flow of sheets in said processing apparatus and having a portion merging with the first path adjacent the exit end wherein a sheet in the second path is deposited on a following sheet traveling in the first path to form the superimposed pair of sheets for discharge from the exist end, each of said means including coacting belts; and means for selectively directing sheets into said first and second paths, each of said first and second means having means for imparting a new speed of travel to each sheet traveling therein, including a pair of nip rollers to press the belts onto the leading edge of each sheet in the first and second paths to attain a new speed of travel for each sheet prior to forming the superimposed pair of sheets; the improvement comprising means for handling transverse rows of cartons cut from a sheet being discharged from the processing apparatus, said means for handling including means arranged at the input end of the frame for accelerating the speed of advance of each transverse row of cartons cut from a sheet as it is discharged from said processing apparatus and control means disposed along each path immediately adjacent the means for directing for engaging and decelerating the row as it is directed into the selected path and prior to engagement by the pair of nip rollers of the means for imparting.



4,354,672

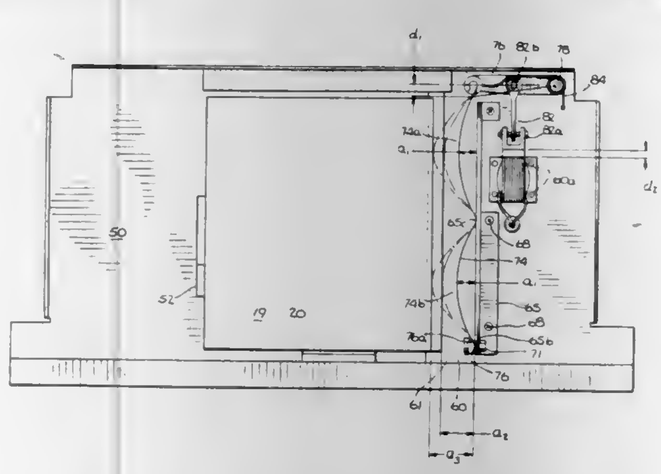
SHEET STACKING AND ALIGNING APPARATUS

Walter J. Kulpa, Norwalk, and John R. Paulik, Newtown, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,413

Int. Cl.³ B65H *31/36*

U.S. Cl. 271—221 **5 Claims**



1. A sheet stacking and aligning apparatus comprising:

A. means defining a sheet receiving tray adapted to receive sheets successively from a feeding apparatus, said tray comprising at least a bottom wall and an abutment in the path of movement of the sheets for arresting forward movement of the sheets,

B. registration means disposed adjacent one side edge of said bottom wall against which the sheets are urged for lateral alignment of the sheets,

C. jogging means disposed adjacent the opposite side edge of said bottom wall for urging said sheets toward and against said registration means, said jogging means comprising,

(1) an elongate strip of flexible material extending along said opposite side edge of said bottom wall and,

(2) means for causing said strip to bow towards the side edge of the sheets in at least one location along the length of said strip when one end of said strip is moved toward the other end to form at least one wave having an amplitude such that the crest of said wave engages the side edge of each sheet for urging said sheet toward and against said registration means, and,

D. means for moving at least one end of said strip toward the other end thereby causing said strip to bow and form said wave.

4,354,673

INADEQUATELY FED SHEET DETECTORS FOR USE IN SHEET-FED PRESS

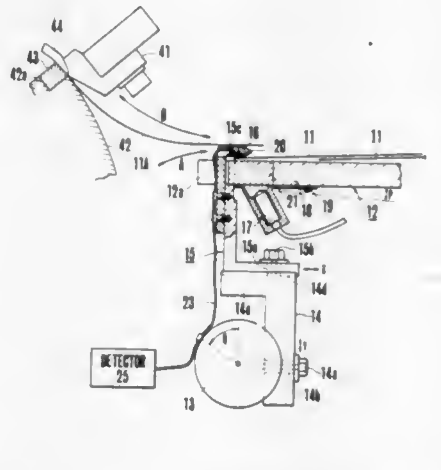
Tamio Kuroda, Soka, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,754

Claims priority, application Japan, Dec. 20, 1979, 54/175488[U]

Int. Cl.³ B65H *7/02*

U.S. Cl. 271—227 **4 Claims**



1. An inadequately fed sheet detector for use in a sheet-fed press comprising:

a feed board adapted to convey a sheet to be printed;

a front guide having a sheet abutting surface for receiving and registering one end of said sheet and a sheet guide tongue extending substantially in parallel with an upper surface of said feed board to cover said sheet end;

said sheet abutting surface being formed with a notch;

a transparent plate mounted on one end of said feed board; and

a luminous element and a light receiving element respectively mounted on said feed board and said sheet guide tongue on the opposite sides of said transparent plate;

said luminous element being inclined with respect to vertical so that an area illuminated thereby takes the form of an ellipse; and

said transparent plate being received by said notch so as to position a free end of said transparent plate in said illuminated area.

4,354,674
DEVICE FOR DISTRIBUTING FLEXIBLE SHEETS IN COLLECTING BINS

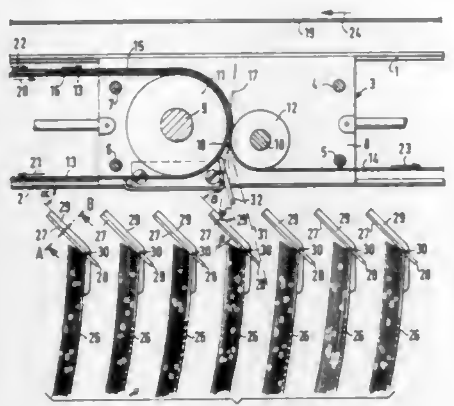
Wilfried Dorer, Donaueschingen; Manfred Fuss, St. Georgen, and Werner Lehmann, Gutach, all of Fed. Rep. of Germany, assignors to Mathias Bäuerle GmbH, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,820

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945502

Int. Cl.^{3} B65H *39/115, 29/52*

U.S. Cl. 271—296 **8 Claims**



1. An improved device for distributing flexible sheets, particularly paper sheets, into a plurality of collecting pockets successively arranged beneath a horizontal sheet feed path, of the type having a plurality of walls substantially vertically disposed and successively arranged beneath the feed path, adjacent walls having an area therebetween defining one of the collecting pockets, means for moving the sheets through the feed path and for successively displacing individual ones of the sheets through a substantially vertical deflection plane into a collecting pocket, the improvement comprising a guide plate connected at the upper end of each of the walls and extending upwardly therefrom at a substantially equal angle of inclination relative to the feed path and the deflection plane and positioned to intersect the deflection plane, and at an oblique angle relative to the upper portion of the respective wall connected thereto, a guide tongue connected to said guide plate extending in the same plane of inclination of said guide plate and projecting into an adjacent one of the collecting pockets, and guide fin means connected to said guide plate for preventing areal contact between the sheet and the guide plate, each of said walls having a bending edge above which said guide plate obliquely extends, each of said walls having an aperture extending therethrough partly separating said guide tongue from said wall, and said guide fin means comprising a corrugation in each of said walls extending at a right angle relative to said bending edge.

4,354,675
WEIGHT LIFTING DEVICE

Stanley B. Barclay, Mississauga; Eugene L. Knaitner, Weston; Eugenio E. Remedios, Georgetown; Arkadi Altosaar, Willowdale, and Richard Rusiniak, Mississauga, all of Canada, assignors to Global Gym & Fitness Equipment Limited, Weston, Canada

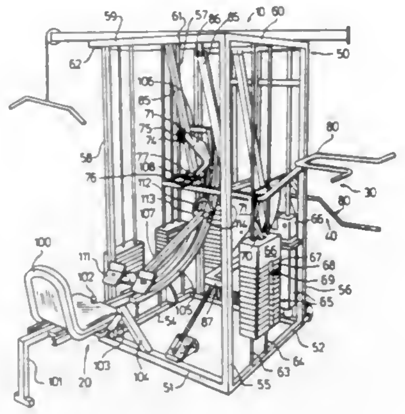
Filed Feb. 6, 1980, Ser. No. 119,087

Claims priority, application Canada, Jun. 12, 1979, 329597

Int. Cl.^{3} A63B *21/06*

U.S. Cl. 272—118 **12 Claims**

1. Weight training apparatus comprising:
a vertical guide;
a weight stack engaged with and reciprocally movable along said vertical guide;
a second guide inclined at a predetermined angle to said vertical guide;
said second guide extending upwardly in a direction inclined away from said vertical guide;
a carriage reciprocally movable along said second guide;
means for moving said carriage along said second guide; and
a rigid link means pivotally connected to said weight stack and to said carriage so that movement of the carriage along said second guide will cause said weight stack to be lifted;
said rigid link extending upwardly in a direction inclined away from said vertical guide.



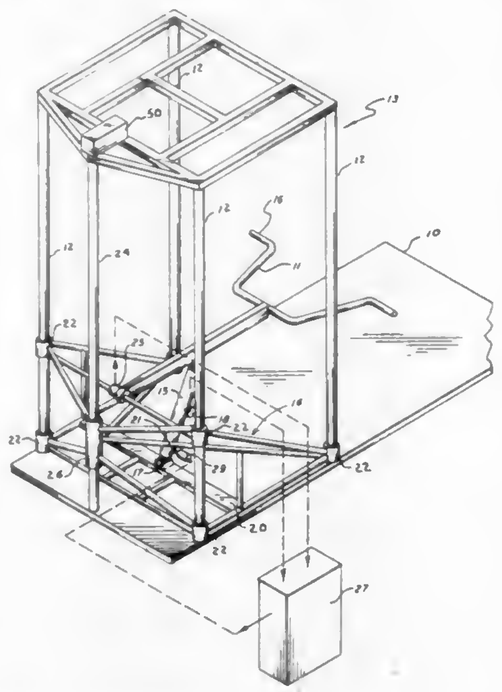
4,354,676
EXERCISER

Gideon B. Ariel, Belchertown, Mass., assignor to Pepsico, Inc., Purchase, N.Y.

Filed Oct. 13, 1978, Ser. No. 949,237

Int. Cl.^{3} A63B *21/24*

U.S. Cl. 272—129 **32 Claims**



1. An exerciser comprising:
(a) first means for engagement by at least one limb of a user, supported for movement between two limits;
(b) second means for controlling the movement of said first means by resisting a force applied thereagainst by the user, said means having a control input;
(c) third means for measuring the force applied to said first means by the user and providing a first output proportional thereto;
(d) fourth means for measuring the displacement of said first means between said limits and providing a second output proportional thereto; and
(e) fifth, programmable means having as inputs said first and second output and providing a third output coupled as the control input to said second means.

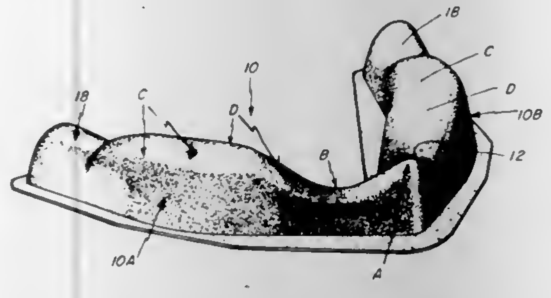
4,354,677
EXERCISING AND TONING DEVICE

Robert J. Young, 230 Spring St., Medford, Mass. 02155

Filed Mar. 21, 1980, Ser. No. 132,697

Int. Cl.^{3} A63B *23/00*

U.S. Cl. 272—144 **6 Claims**



1. A portable device for exercising and toning the buttock muscles useable in either a seated or supine position and comprising, a portable base adapted to be positioned on an elevated flat fixed surface, upright means integral with and extending from the base forming two legs extending angularly from a common vertex, each leg having a similarly configured upper wall surface having different elevation sections including a common peak at said vertex, at least one other high elevation section, means integral with each leg for holding the device when used in the seated position, and a lower elevation section of each leg adjacent to and contiguous with the vertex peak, disposed intermediate the vertex peak and said at least one other high elevation section and useable in the seated position for exercising and toning the buttocks muscles, said device adapted for use with the vertex facing forwardly of the user, said upright walls defining a hollow chamber open from the bottom.

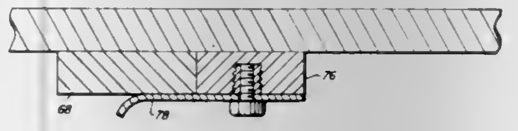
4,354,678
MODULAR APPROACH FILL SYSTEM

Will Heddon, Lake Wales, Fla. 33853

Division of Ser. No. 47,357, Jun. 11, 1979, Pat. No. 4,269,411. This application May 23, 1980, Ser. No. 152,697

Int. Cl.^{3} A63D *1/04*

U.S. Cl. 273—51 **7 Claims**



1. In a bowling alley having first and second adjacent lanes and an approach area for said first and second lanes, a modular approach fill system for filling in the gap between the approach areas of said first and second lanes, comprising:

a. an approach fill module formed from a plurality of hardwood strips adhesively bonded side to side in a single layer;
b. an approach fill support including slat means having one side coupled to the approach area deck of said first lane and a second side coupled to the approach area deck of said second lane for supporting the lower surface of said approach fill module and for maintaining the upper surface of said module level with the upper surface of the approach area of said first and second lanes; and
c. clip means coupled to the lower surface of said approach fill module for coupling said approach fill module to said slat means.

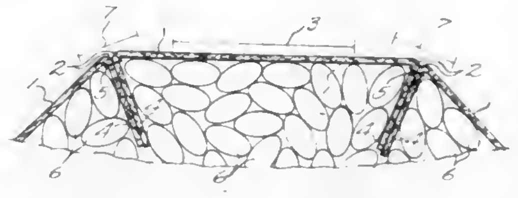
4,354,679
GAME BAG

Richard D. Steinmetz, 91448 Steinmetz Rd., Junction City, Oreg. 97448

Filed Apr. 9, 1981, Ser. No. 252,333

Int. Cl.^{3} A63B *37/02*

U.S. Cl. 273—58 A **4 Claims**



1. Bag construction for a ball-like article used for recreational purposes, said article construction comprising:
a plurality of pliable cover members each being of polygonal shape and having its perimetrical edges in juxtaposition with a like edge of an adjacent member, each of said members having inwardly extending marginal areas,
intersecting lines of stitching joining adjacent cover members along their juxtaposed edges,
filler material of a discrete nature fully occupying the ball interior, and
said intersecting lines of stitching serving to reinforce the cover members against deformation along said abutting marginal areas.

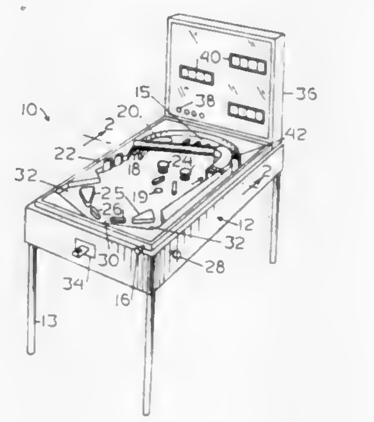
4,354,680
PINBALL GAME INCLUDING ELEVATED BALL PATHWAY

Gregory E. Kmiec, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,756

Int. Cl.^{3} A63F *7/00*

U.S. Cl. 273—121 A **15 Claims**



1. A pinball machine comprising:
a downwardly inclined playfield;
a ball;
means for propelling the ball onto the playfield;
one or more pivotally mounted flippers disposed near the playfield for affecting motion of the ball; and
a play feature comprising a ball carrying member defining a path along which the ball rolls, the ball carrying member being constructed so that a ball rolling along the path must travel generally along a predetermined line, the ball carrying member having an entrance and an exit and being disposed so that the path is located above the playfield, the play feature being disposed so that a ball rolling along the playfield can pass under a portion of the path without coming in contact with the play feature, means for transferring a ball in play from the playfield to the entrance of the ball carrying member, and means for moving a ball from the entrance of the ball carrying member, along the

path and out the exit of the ball carrying member back onto the playfield.

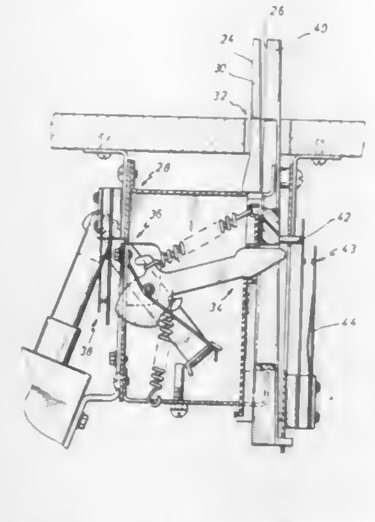
4,354,681
DROP TARGET ASSEMBLY FOR PINBALL GAME

Roman F. Garbark, Westchester, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.

Filed Feb. 17, 1981, Ser. No. 234,780

Int. Cl.³ A63D *3/02*

U.S. Cl. 273—121 R **6 Claims**



1. An improved drop target assembly for a flipper-type pinball game machine comprising:.
   (a) a frame;
   (b) a first target member movably supported by said frame for defining a first target area, said first target member being movable to advance the first target area between a position above the surface of the playfield and a position below the surface of the playfield;
   (c) a second target member coupled to and supported by said frame for defining a second target area, the second target member being disposed behind the first target member to enable the second target area to be ball engageable only when the first target area has been advanced to the below-surface position;
   (d) a mechanism for moving the first target member thereby to drop the first target area to the below-surface position upon ball engagement therewith and to expose the second target area for ball engagement;
   (e) means mounting the second target member to the frame to maintain the second target area above the playfield surface upon ball engagement with the second target; and
   (f) switch contact means to be actuable upon ball engagement of either the first or second target areas.

4,354,682
METHOD AND APPARATUS FOR ENHANCING THE TWELVE COIN BALANCING PUZZLE

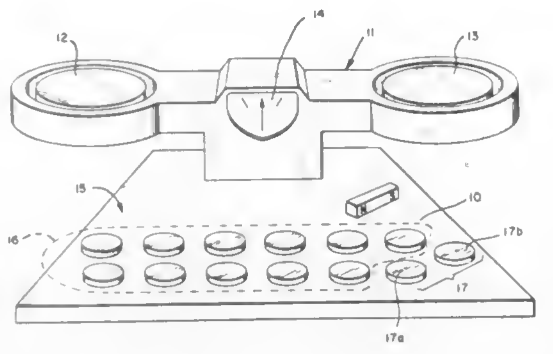
Vlastimil Vcala, 1228 12th St., Santa Monica, Calif. 90401

Filed Apr. 6, 1981, Ser. No. 251,392

Int. Cl.³ A63F *9/06*

U.S. Cl. 273—153 R **11 Claims**

1. A method of enhancing the twelve coin balancing puzzle comprising the steps of:
   (a) making thirteen coins sufficiently similar as to be indistinguishable by the unaided human senses;
   (b) making eleven of said thirteen coins of identical weight to result in eleven identical coins and two remaining coins;
   (c) making one of said two remaining coins heavier than any one of said eleven identical coins by an amount less than can be detected by a person handling the coins yet enough to unbalance a scale when weighed against one of said eleven identical coins;
   (d) making the other of said two remaining coins lighter than any one of said eleven identical coins by an amount less than can be detected by a person handling the coins yet enough to unbalance said balance scale when weighed against one of said eleven identical coins; and
   (e) making said two remaining coins distinguishable from said eleven coins by an aid to the human senses but wherein such aid does not permit distinguishing the two remaining coins from each other, wherein the two remaining coins can readily be separated from the eleven identical coins and one of the two returned to the eleven identical coins to provide twelve coins for the puzzle, a player not knowing whether the returned coin is the heavier or the lighter coin.



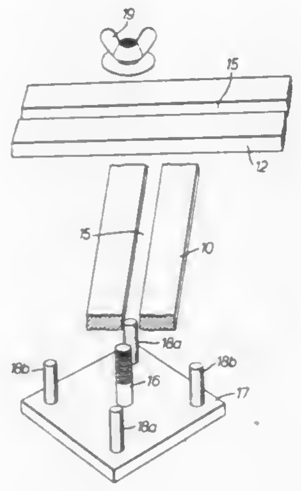
4,354,683
GOLFER'S STANCE POSITIONING AID

Roderic F. Woolland, 34, Kitchener Ave., Gravesend, Kent, England

Filed Jun. 26, 1980, Ser. No. 163,133

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—187 R **2 Claims**



1. In a golfer's aid assembly comprising two elongate members and means for maintaining said two members normal to one another and slidable relative to one another, said members also having graduations and markings carried thereon such that, in use, one member is located on the ground to point towards the ball, the other member is located on the ground to point towards the target, and said members being located relative to one another according to the club to be used in accordance with the graduations thereon and markings thereon indicate ideal locations for the feet of the user, the improvement wherein said means for maintaining the two members normal to one another comprises a plate having four upstanding members carried thereon, each of the said two members also having an elongated slot into which opposed pairs of the upstanding members slidably fit, and wherein said plate carries a threaded member in a central location relative to the said four upstanding members whereby said threaded member locates through the slots in the said two members and cooperates with a nut located thereon to releasably clamp the assembly in a required position.

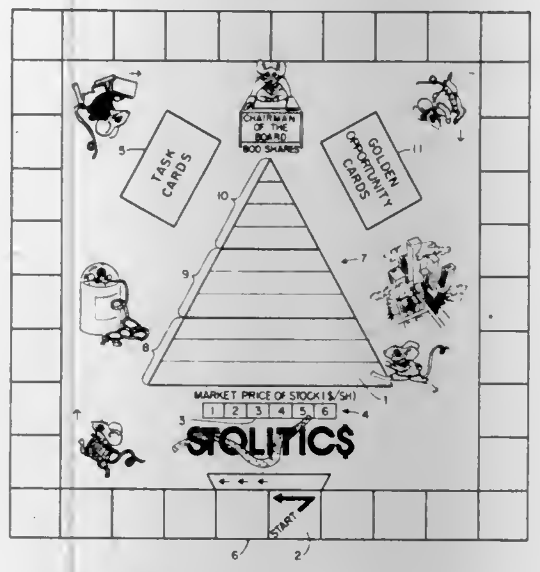
4,354,684
BUSINESS STRATEGY BOARD GAME

Paul F. McKinley, 118 N. Winebiddle Ave., Pittsburgh, Pa. 15224

Filed Dec. 4, 1980, Ser. No. 212,756

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—256 **6 Claims**



NOTE, SCALE - ONE THIRD SIZE

1. A business game comprising:
   a game board having a starting space and a closed circuit of sequentially arranged playing token perimeter resting spaces, each such space being provided with instructions to players for performance of simulated business activities, and, on occasion, for choosing a mandatory instruction card from a designated stack of such cards, whereby the performance of at least some of such instructions will afford progress of a player with respect to at least one of a plurality of business-oriented goals, said game board also having a first progress section, common to all players, such first progress section being located within the perimeter resting spaces and being provided with a plurality of playing token resting spaces diminishing in number from the starting position which is adapted to be occupied by a plurality of playing tokens to a single finishing position which is adapted to be occupied by only a a single playing token, said playing token resting spaces increasing in value toward the finishing position with respect to one of said plurality of goals and signifying the players' progress toward such goal; the movement of the players' playing tokens in said first progress section being coordinated at least in part with the movement of the players' tokens in a second progress section;
   a second progress section having a plurality of sequentially arranged playing token resting spaces signifying a player's progress toward a second business-oriented goal;
   separate playing tokens for said playing section and each of said progress sections, said playing tokens being adapted to be moved sequentially through said playing section and said progress sections; said playing tokens being provided with distinctive indicia to distinguish the playing tokens of each player from those of each other player;
   a first set of instruction cards, such cards being provided with a plurality of mandatory instructions to players to perform optional, simulated business activities;
   a second set of opportunity instruction cards, such cards being provided with a plurality of optional and mandatory instructions to players to perform simulated business activities to be dealt to the players, the instructions of which may be performed by a player at his option during any one of his playing turns, so as to enable the players to exercise some discretion in the movement of their playing tokens;
   random selection means for operation by a player during his playing turn to direct such player to move his playing token circuitously about the playing token resting spaces, the length of the path of such movements being determined by the random selection means.

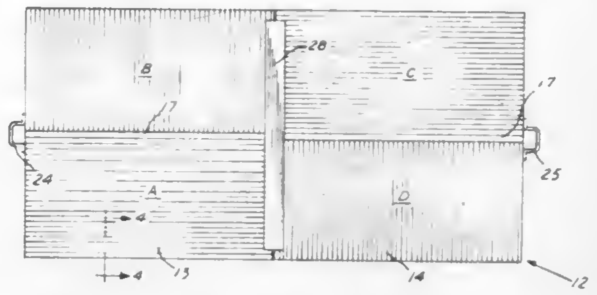
4,354,685
HAND TOSS-CATCH GAME APPARATUS

Edward A. Hampson, 4704 Harlan St., Ste. 260, Denver, Colo. 80212

Filed Jun. 25, 1981, Ser. No. 277,282

Int. Cl.³ A63B *71/04*

U.S. Cl. 273—342 **11 Claims**



1. Game apparatus comprising:
   a playing board including two half-sections joined to move between playing position and a folded position, said board having a top playing surface provided with a layer of granules secured thereto throughout the playing surface for spin enhancement of a playing ball that is bounced on said surface by a player on each side of the board;
   a lateral bar of a selected width and height separating the playing board into playing areas on opposite sides; and
   a longitudinal strip dividing the playing areas on each side into two playing parts of equal size,
   the playing ball being hand-tossed by a player to bounce first on one side playing area and then on the other side playing area over said bar during play of the game.

4,354,686
CONTACT-FREE SEALING MEMBER

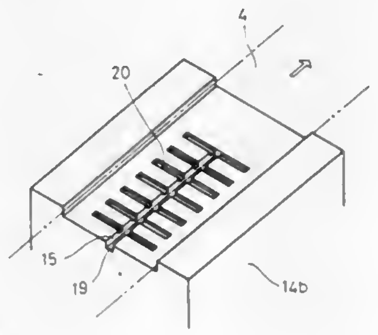
Kiyokazu Imanishi, Higashiosaka, and Takashi Ichiyanagi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 27, 1980, Ser. No. 163,475

Claims priority, application Japan, Jul. 6, 1979, 54-86180; Aug. 17, 1979, 54-105298

Int. Cl.³ F16J *15/40*

U.S. Cl. 277—3 **13 Claims**



1. A contact-free sealing member for sealing an isolated chamber containing a low pressure area from an area consisting of a higher pressure, said member comprising:
   means for defining a slot path for receiving a tape-like object therethrough from a high pressure side into said isolated chamber on a low pressure side, said slot means located on a wall part of said isolated chamber and said slot means used for generating a hydrostatic gas bearing effect, a cross-sectional area of said slot means being slightly larger than that of said tape-like object,
   wherein said slot means has at least one pair of grooves in a

predetermined pattern on the faces above and below said tape-like object, and that,

one end of each of said grooves being opened to said high pressure side thereby generating a hydrostatic gas bearing effect of surface restricter type when said tape-like object is fed through said slot means.

4,354,687

GAS TURBINE ENGINES

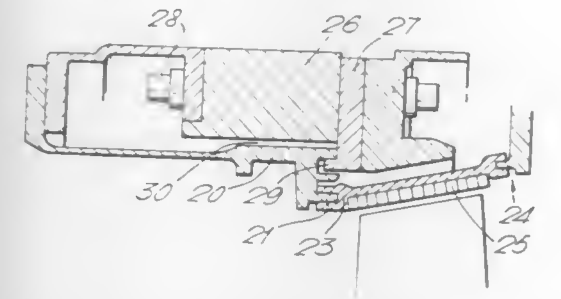
Brian C. Holland, Darley Abbey; Roy T. Hirst, Ticknall; Roger J. M. Sills, and Cyril G. Moore, both of Littleover, all of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 25, 1981, Ser. No. 296,072

Claims priority, application United Kingdom, Nov. 22, 1980, 8037540

Int. Cl.^{3} F16J *15/00;* F02F *11/00;* F04D *29/08*

U.S. Cl. 277—26 **7 Claims**



1. A gas turbine engine turbine tip sealing device comprises an annular sealing ring, a first annular control member having means co-operating with the annular sealing ring, said annular control member having relatively rapid response rate such that it expands or contracts quickly in accordance with a temperature variation, and a second annular control member having a relatively slow response rate such that it expands or contracts relatively slowly in accordance with variation in temperature the arrangement being such that upon an increase in temperature occurring on the device the first annular control member expands relatively rapidly and by virtue of its co-operating means also expands the annular sealing ring and wherein the improvement comprises in that when the first annular control member reaches a particular diameter it contracts and is restrained from further expansion by the second annular control member such that the sealing ring is then expanded relatively slowly in accordance with the rate of expansion of the second annular control member, and upon a decrease in temperature occurring upon the device the annular sealing ring initially contracts relatively slowly in accordance with the second annular control member in a first phase of contraction and then relatively quickly in accordance with the first annular control member in a second phase of contraction.

4,354,688

HYDRAULIC CIRCUIT FOR A TRACTOR DRAWN IMPLEMENT HAVING REMOTE VARIABLE HEIGHT SELECTOR

William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Mar. 3, 1981, Ser. No. 240,037

Int. Cl.^{3} A01B *63/22*

U.S. Cl. 280—43.23 **5 Claims**

1. In an agricultural machine including a tractor vehicle providing a source of hydraulic fluid and a trail behind implement supported on a plurality of hydraulically pivoted mounted wheels an implement height selector control comprising:

a directional control valve in said tractor vehicle interposed between said source of hydraulic fluid and said trail behind implement;

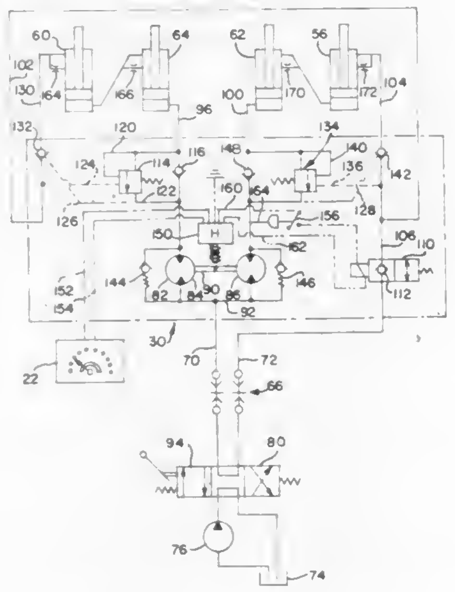
a rotory flow divider having a shaft connecting a plurality of rotors, said rotary flow divider hydraulically connected with said source of hydraulic fluid;

a plurality of hydraulic motors downstream of said rotary flow divider communicating hydraulically through hydraulic conduit with said source of hydraulic fluid through said rotary flow divider, said plurality of hydraulic motors including sets of hydraulic motors corresponding to the number of rotary flow divider rotors;

a revolution counter generator having a counter logic circuit incorporated in said rotary flow divider for counting revolutions of said shaft of said rotary flow divider;

an adjustable count selector located in said tractor vehicle communicating clectrically with said revolution counter generator for determining the value at which said counter logic circuit of said revolution counter generator will produce an electrical signal;

a solenoid operated check valve in a second hydraulic conduit electrically communicating with said revolution counter generator operatively responsive to hydraulic pressure on said hydraulic motor side of said rotary flow divider through a normally open switch;



a plurality of counter balance valves, one of each of said counter balance valves interposed in said hydraulic conduit between one of each of said plurality of rotors of said rotary flow divider and each set of said plurality of hydraulic motors, said counter balance valves communicating hydraulically through pilot lines to said second hydraulic conduit, said counter balance valves set to open either through pressure in said hydraulic conduit or said second hydraulic conduit;

a plurality of one-way check valves, one of each of said one-way check valves interposed in said hydraulic conduit between one of each of said pluralities of rotors of said rotary flow divider and each set of said plurality of hydraulic motors, said one-way check valve allowing flow from said rotary flow divider to said hydraulic motors;

a plurality of one-way pilot operated check valves, one of each of said one-way pilot operated check valves associated with one of each of said sets of hydraulic motors, interposed in said second hydraulic conduit and pilot operated to open allowing fluid to pass from said hydraulic motors through said second hydraulic conduit.

4,354,689

ADJUSTABLE BABY STROLLER HANDLE ROD

Giuseppe Perego, Via de Gasperi, 20043 - Arcore (Milano), Italy

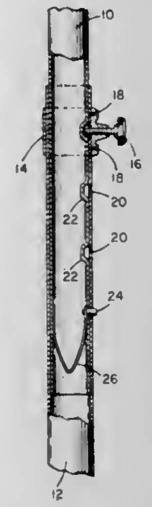
Filed Dec. 11, 1980, Ser. No. 215,632

Claims priority, application Italy, Mar. 31, 1980, 21347/80[U]

Int. Cl.^{3} B62B *1/12*

U.S. Cl. 280—47.37 R **1 Claim**

1. An adjustment device for adjusting the height of a baby stroller handle comprising an outer tube, an inner tube telescopically and slidably engaged in said outer tube, the handle connected to one of said inner and outer tubes, a flat V-shaped spring having two arms, one arm fixed to the inside of said inner tube, a pin extending from the other of said two arms, said inner tube having a hole therethrough with said pin extending through said hole, said outer tube having a plurality of spaced holes therealong, said pin engaged through one of said outer tube holes to fix the position of said outer tube with respect to said inner tube, a sleeve connected to said outer tube, a screw shaft threaded into said sleeve, a knob connected to said screw shaft for turning said screw shaft to extend said screw shaft inwardly of said outer tube, said inner tube having a plurality of recesses corresponding to said outer tube holes, said screw shaft extending into one of said recesses to further fix the position of said outer tube with respect to said inner tube, said outer tube holes being equally spaced along a length of said outer tube, said recesses corresponding in number and location to said outer tube holes, said outer tube having one additional hole spaced from a last one of said plurality of holes in said outer tube, a distance equal to the spacing between said outer tube holes through which said screw shaft is extendible.



4,354,690

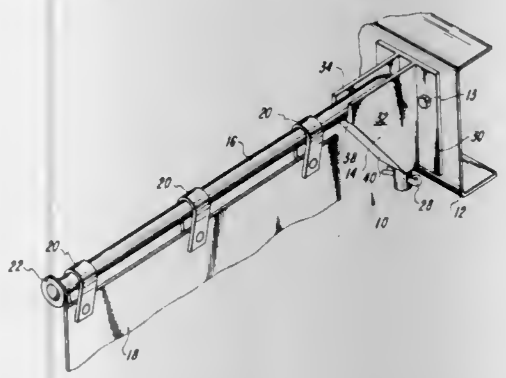
SUPPORT SYSTEMS FOR VEHICLE MUD FLAPS

Marlyn S. Hanson, 13822 W. Warren Dr., Lakewood, Colo. 80228

Filed Jul. 15, 1980, Ser. No. 169,161

Int. Cl.^{3} B62D *25/16*

U.S. Cl. 280—154.5 R **7 Claims**



1. A bracket for mounting a mud flap system on a vehicle, said bracket comprising:

(a) a base plate adapted for attachement to a vehicle;

(b) a socket supported by said base plate, said socket extending in a substantially vertical direction and defining an upper opening when said base plate is attached to a vehicle;

(c) first and second substantially rigid side wall portions secured to said bracket substantially at right angles to said socket, said side wall portions spaced one from another and at a height somewhat higher than said upper opening of said socket; and

(d) means for providing both support and dampening, said support and dampening means connected between said side wall portions at about the same height as said upper opening of said socket, but spaced from said socket.

4,354,691

WHEEL CHAIR PROPULSION SYSTEM

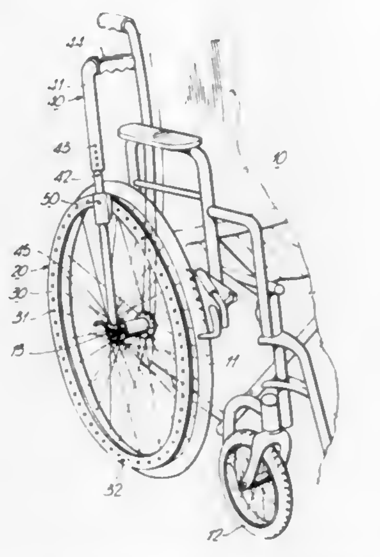
Gerald A. B. Saunders, Bath, Canada, and Philip J. Lowe, Whitley Bay, England, assignors to Queen's University at Kingston, Kingston, Canada

Filed Aug. 28, 1980, Ser. No. 182,128

Claims priority, application Canada, Aug. 31, 1979, 334875

Int. Cl.^{3} B62M *1/16*

U.S. Cl. 280—242 WC **5 Claims**



1. A wheel chair propulsion device comprising:

(a) an annular ring, smaller in diameter than the large wheel of a conventional wheel chair and having a plurality of spaced apart recesses in a surface thereof;

(b) means for fastening said ring to the large wheel of the wheel chair in co-axial relation therewith and spaced outboard therefrom;

(c) lever means having one end thereof adapted for pivotal mounting on an axle mounting the large wheel on the wheel chair and an opposite end that projects above a conventional arm rest on the wheel chair; and

(d) a drive mechanism mounted on said lever arm and positively engageable with said annular ring for rotating the same and disengageable therefrom to allow free rotation of the large wheel when the ring is mounted on the wheel chair wheel, said drive mechanism comprising a lug movable into and out the recesses in the ring in response to movement of the lever means in a direction transverse to the plane of the wheel and resilient compressible means compressed by movement of the lever means in a direction to move the lug into a recess in the ring.

4,354,692

HEAVY DUTY DRAWBAR

Stephen G. Shoup, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 814,380, Jul. 11, 1977, Pat. No. 4,212,139. This application Dec. 17, 1979, Ser. No. 104,221

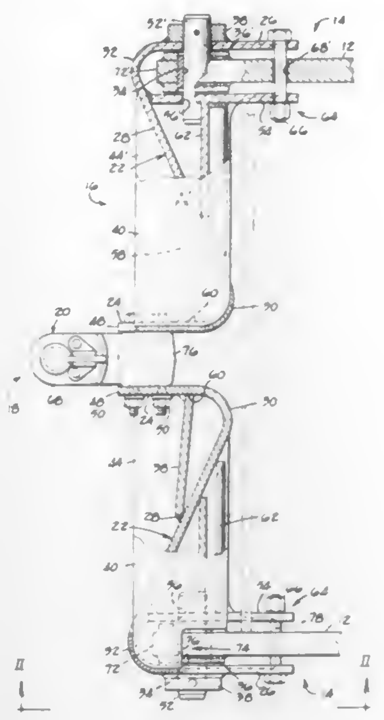
Int. Cl.^{3} B60D *1/02*

U.S. Cl. 280—495 **16 Claims**

1. In a vehicle having a pair of generally vertical frame members, one extending along each side thereof to a rearward end of said vehicle, a drawbar unit comprising:

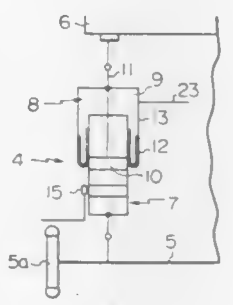
a hitch generally centrally intermediate said frame members adjacent said rearward end of said vehicle; and

a pair of generally Z-shaped brace means, each having a first leg thereof affixed to said hitch, a second leg thereof affixed to a respective one of said frame members and a bridge from generally a forward end of said first leg to generally a rearward end of said second leg, said forward end being disposed at a position forwardly of a position of said rearward end within said vehicle.



4,354,693
VEHICLE HEIGHT ADJUSTING DEVICE

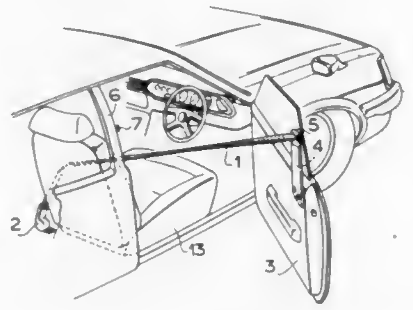
Koichi Maeda, Kawasaki; Sumio Ema, Yokohama, and Tetsuo Saito, Zama, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan
Filed Aug. 7, 1980, Ser. No. 176,242
Claims priority, application Japan, Aug. 20, 1979, 54-114328[U]
Int. Cl.³ B60G ***11/26***
U.S. Cl. 280—714 **4 Claims**



1. A vehicle height adjusting device comprising:
air compressor means for generating compressed air;
air tank storage means for receiving and storing pressurized air from said air compressor means;
elevating means, adapted to be mounted between the chassis and a wheel shaft of the vehicle, for receiving a flow of pressurized air in a first direction from said air compressor means or pressurized air from said air tank storage means and thereby for increasing the height of the vehicle;
exhaust valve means for exhausting air from said elevating means in a second direction reverse to said first direction and thereby for decreasing the height of the vehicle;
dehumidifying means receiving said flow of pressurized air in said first direction for removing water therefrom, and receiving said air exhausted from said elevating means in said second direction;
height detecting means for detecting the height of the vehicle and for generating signals representative thereof;
pressure detector means for detecting the air pressure in said air tank storage means and for generating signals representative thereof; and
electric control circuit means, operatively connected to said height detecting means, said air compressor means and said pressure detector means, for receiving said signals from said height detecting means and from said pressure detector for controlling the operation of said air compressor means as a function thereof, including deactivating said air compressor means when said exhaust valve means is operable for exhausting air from said elevating means even when the air pressure in said air tank storage means is below a predetermined minimum which would otherwise activate said air compressor means.

4,354,694
PASSIVE SAFETY BELT DEVICE

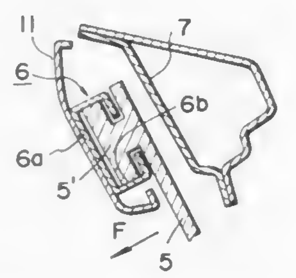
Nobuo Satoh, Ohta, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 10, 1980, Ser. No. 158,176
Claims priority, application Japan, Jul. 17, 1979, 54-98655[U]
Int. Cl.³ B60R ***21/10***
U.S. Cl. 280—802 **9 Claims**



1. A passive safety belt device for a vehicle having on each side a sash-less door and a center pillar with an inside member, comprising
a retractor provided in a lower portion of a central portion of the vehicle,
a door pole upwardly extending from a rear portion of said sash-less door and formed with an engaging hole in said door pole,
a safety belt connected to said retractor and to said door pole at a portion adjacent said engaging hole,
a latch bar secured to said inside member of said center pillar so as to engage with said engaging hole of said door pole in a closed position of said sash-less door,
and
a reinforcement plate constituting means for securing said latch bar to said inside member of the center pillar at a plurality of positions.

4,354,695
SEAT BELT SYSTEM

Yoshimi Sato, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jun. 30, 1980, Ser. No. 164,275
Claims priority, application Japan, Jul. 20, 1979, 54-92767
Int. Cl.³ B60R ***21/00***
U.S. Cl. 280—804 **10 Claims**

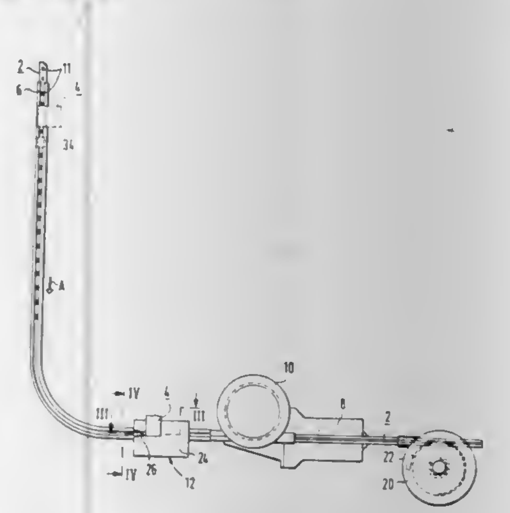


1. A seat belt system for an automotive vehicle, comprising:
a shoulder belt, including a lower end which is fixed to the floor of the vehicle body and a slider connected to the upper end, said slider having an engaging portion;

a guide rail fixed on one side wall of the vehicle body along its longitudinal direction, said guide rail having an open side and an opposite closed base portion and an engaging portion adapted to be engaged with the engaging portion of said slider, so that said slider is slidably fitted to said guide rail;
a roof side rail fixed to the vehicle body and having an inner wall inclined inwardly with respect to the interior of the vehicle body and arranged in parallel to said guide rail;
means for actuating said slider in response to the opening and closing of a door of the automotive vehicle to move the slider between a forward and a rear position;
means for locking said slider in its rearmost position;
said engaging portion of said guide rail facing the side wall of the vehicle body;
said slider being slidably movable between said guide rail and said side wall of the vehicle body;
said guide rail having its open side facing said side wall of the vehicle body and its opposite closed base portion facing the interior of the vehicle body;
said engaging portion of said slider being inserted through said open side of said guide rail into said engaging portion of said guide rail; and
said open side of said guide rail being set adjacent to said inwardly-inclined inner wall of said roof side rail to form a clearance for slidable movement of said slider in such a manner that the upper edge of said slider contacts the inner wall of said roof side rail when said shoulder belt undergoes a predetermined downward force.

4,354,696
DEVICE FOR PASSIVE ACTUATION OF A SAFETY BELT

Hans-Joachim Volk, Ebersdorf, and Michael Forkel, Coburg, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany
Filed Sep. 25, 1980, Ser. No. 190,729
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942207
Int. Cl.³ B60R ***21/10***
U.S. Cl. 280—804 **11 Claims**



1. Device for passive actuation of a safety belt, comprising an elongated force transmission member unyielding in tension and compression, an engaging member attached to said force transmission member and arranged to be connected to a safety belt, a locking device for removably receiving said engaging member for securing said engaging member in the locked position, said engaging member being interengageably attached to said force transmission member so that a certain amount of play is present between said engaging member and said force transmission member in the elongated direction of said transmission member whereby said force transmission member can be moved in the elongated direction for the certain amount of play before commencing movement of said engaging member, release means fixed to said force transmission means adjacent to and spaced from said engaging member for movement with said force transmission member relative to said engaging member for releasing said engaging member from the locked position, said release means comprises a release member, in the locked position of said engaging member said release member being movable into contact with said locking device by moving said force transmission member so that said force transmission member and release member move relative to said engaging member with said release member being movable into contact with said locking device so that said locking device is displaced from the locking contact with said engaging member, and when said force transmission member moves a distance greater than the certain amount of play between said engaging member and said force transmission member said engaging member is moved out of said locking member while said release member remains spaced from said engaging member.

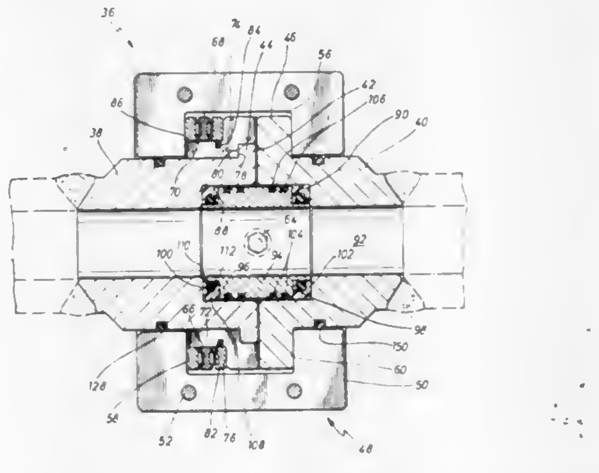
4,354,697
PROCESS FOR PRODUCTING P-PHENYLPHENOL RESIN IMPROVED IN SOLUBILITY AND NO CARBON COPYING PAPER COMPRISING THE SAME

Mitsuru Fuchigami, Takasago, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Continuation of Ser. No. 799,777, May 23, 1977, abandoned. This application Jun. 12, 1980, Ser. No. 158,803
Claims priority, application Japan, Jun. 2, 1976, 51/64300
Int. Cl.³ B41L ***1/20;*** **B32B** ***27/42***
U.S. Cl. 282—27.5 **12 Claims**

1. A color-forming sheet for no carbon copying paper having a coating film containing the p-phenylphenol resin obtained by a process which comprises reacting at a pH value not higher than 1.9 p-phenylphenol itself or a mixture of 100 parts by weight of p-phenhlphenol and 30 parts by weight or less of other substituted phenol with a formaldehyde or a compound capable of forming formaldehyde in the presence of an acidic catalyst and a monohydric alcohol having a boiling point of 80°-170° C. in an amount of 10 to 200 parts by weight based on 100 parts by weight of the p-phenylphenol or the mixture and removing the alcohol, wherein said p-phenylphenol resin is soluble in ethyl acetate and polyethylene glycol.

4,354,698
SWIVEL JOINT CONSTRUCTION FOR PRESSURE CONTAINING CONDUIT

Morris B. Linder, and John J. Beffano, both of Houston, Tex., assignors to Quality Valve & Machine Works, Inc., Houston, Tex.
Filed Sep. 29, 1980, Ser. No. 191,507
Int. Cl.³ F16L ***27/00***
U.S. Cl. 285—98 **21 Claims**



1. A swivel joint construction for movable flow lines, said swivel joint construction comprising:
a pair of hub elements each defining openings that cooperate to define a flow passage through said swivel joint construction, one of said hub elements defining first annular planar thrust transmitting shoulder means oriented in substantially normal relation with the axis of rotation of

said swivel joint and the other of said pair of hub elements defining second annular planar thrust transmitting shoulder means of larger diameter as compared to said first thrust transmitting shoulder means and being in substantially parallel relation with said first thrust transmitting shoulder means;

a roller thrust bearing assembly of circular form defining an inner peripheral dimension of larger diameter as compared to the outer peripheral diameter of said first thrust transmitting shoulder means allowing said bearing assembly to pass over said first thrust transmitting shoulder means and adapted to be received in encircling spaced relation about said one of said hub elements;

segmented bearing retainer means adapted to be assembled at least partially about said one of said hub elements and cooperating with said first thrust transmitting shoulder means to define bearing thrust shoulder means of substantially the same dimension as said second thrust transmitting shoulder means; and

split housing means adapted to be positioned about said hub elements and enclosing said bearing assembly and bearing retainer means, said housing means defining opposed spaced thrust support surface means said bearing assembly engaging one of said thrust support surface means and developing a rotatable relation between said one of said hub elements and said housing means, said second thrust transmitting shoulder means engaging the other of said thrust support surface means.

4,354,699

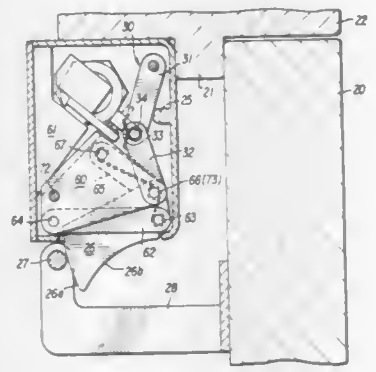
APPARATUS FOR DELAYING OPENING OF DOORS

Emanuel L. Logan, Arlington, Va., assignor to Reliable Security Systems, Inc., Cockeysville, Md.

Filed May 9, 1980, Ser. No. 148,383

Int. Cl.^{3} E05C *15/02*

U.S. Cl. 292—201 **12 Claims**



1. Apparatus for securing an emergency exit door wherein the door is hinged along one edge to a door frame;

means for latching the door;

panic bar means connected to the latching means for unlatching the latching means when force is applied to the bar;

delay means, separate from the latching means and panic bar means, said delay means including a closure operated bolt means which extends between the door and door frame for preventing the door from opening when projected and allowing the door to open when retracted, and means for retarding movement of the bolt means from the projected to the retracted position, and

means for indicating that an attempt is being made to open the door while retraction of the bolt is being retarded.

4,354,700

BUMPER ATTACHMENT APPARATUS, IN PARTICULAR FOR AUTOMOBILES

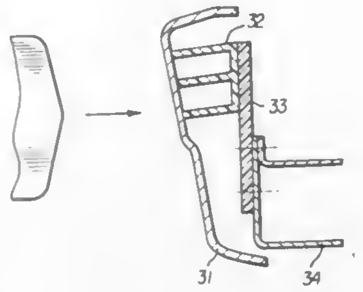
Marcel Goupy, Saint Cloud, and Pierre Roubinet, Ruell-Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 29, 1980, Ser. No. 116,580

Claims priority, application France, Feb. 6, 1979, 79 02973

Int. Cl.^{3} B60R *19/00*

U.S. Cl. 293—132 **10 Claims**



1. A pseudo-resilient bumper or shield attachment comprising:

a vertically extending elastically resilient cantilever counter-fitting having one end attached to the chassis of a vehicle and having another end; and

an inelastically deformable energy absorbing block having collapsible partitions, said block being in contact between said other end and said bumper or shield,

wherein said block comprises a box having thin walled partitions, said partitions extending perpendicular to said resilient counter-fitting.

4,354,701

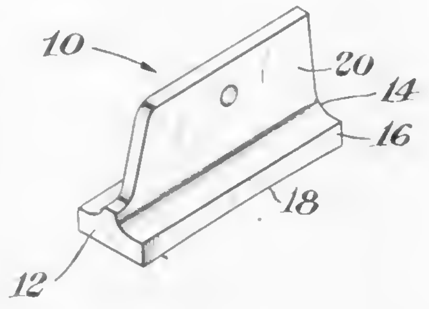
GLAZIER'S PUNCH

Wilbur A. Marshall, Rte. 2, Box 96C, Aurora, Mo. 65605

Filed Dec. 5, 1980, Ser. No. 213,495

Int. Cl.^{3} A67F *13/06*

U.S. Cl. 294—1 R **5 Claims**



1. A glazier's punch having an inverted T-shape, a first or bottom portion integrally affixed to and connected with a second or top portion which extends upwardly from said bottom portion, said bottom portion having a generally flat slightly longitudinally concave face disposed oppositely to said top portion, said first end of said punch being adapted to contact a fastener means, such as a glazier's point, and said second end of said punch being adapted to receive a driving force.

4,354,702

WOOD FIRE FEEDER

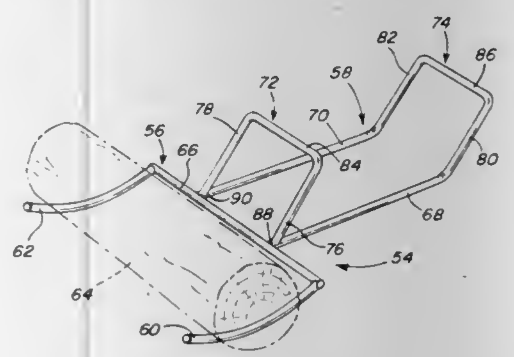
Ray Clements, 110 Ray Ave., and Morris Clements, 201 Ray Ave., both of Rainsville, Ala. 35986

Filed Aug. 26, 1980, Ser. No. 182,397

Int. Cl.^{3} A47J *49/00*

U.S. Cl. 294—9 **3 Claims**

1. A device for lifting a log and inserting it endwise into a stove or other wood burning appliance comprising a pair of straight, parallel, elongated, rigid members spaced apart a distance enabling the free ends to be received through the door opening of a stove and with the members engaging the external surface of a log along spaced longitudinal surfaces on opposite sides of the center of the lower surface of the log, a transverse member rigidly connecting said elongated members adjacent the center thereof and disposed in the same horizontal plane to retain the elongated members in parallel relation and forming a stop to limit movement of the log onto the elongated members from the free ends thereof, each of said elongated members including an upwardly extending member at the end thereof remote from the free end thereof, said upwardly extending members being rigid with respect to said elongated members, a transverse member rigidly interconnecting the upper ends of the upwardly extending members to maintain the elongated members in parallel relation and forming a straight handle extending in a horizontal plane parallel to the horizontal plane of the elongated members to enable the handle to be grasped at any point along its length, and a centrally disposed handle adjacent the center of said elongated members and rigidly supported in relation thereto and including a straight rigid member parallel to said straight handle and disposed in substantially the same horizontal plane, said straight rigid member having the ends thereof rigidly connected to said elongated members by a pair of parallel rigid members extending upwardly from said elongated members at the ends of the transverse member forming a log stop, said upstanding members at the ends of the log stop being inclined away from the free ends of the elongated members to enable a person to grasp the centrally disposed handle with their hand spaced from the end of the log with lifting force applied to the centrally disposed handle being above a substantial portion of the log to reduce the tendency of the log causing the device to tilt about a longitudinal axis when being lifted.



4,354,703

METHOD OF AND APPARATUS FOR TRANSPORTING ARTICLES

Peter Schmidt, Denkendorf, and Emil Mühlberger, Esslingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 1, 1980, Ser. No. 174,404

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931927

Int. Cl.^{3} B66C *1/02*

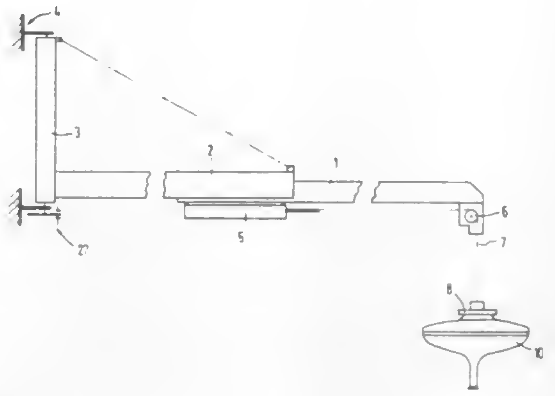
U.S. Cl. 294—64 R **12 Claims**

1. A method of facilitating the manual and mechanical transport of articles using a grab comprising:

subjecting the grab in an unloaded condition to a first mechanical hoisting power of predetermined magnitude in relation to the weight of the grab,

manually guiding said grab onto the article and during transport,

subjecting said grab in a loaded condition to a second mechanical hoisting power which is higher than that acting on the unloaded grab, and smaller than the weight of the loaded grab, and



removing the article from said grab and then switching from said second to said first mechanical hoisting power.

4,354,704

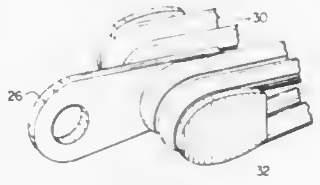
SLING AND METHOD FOR MAKING SAME

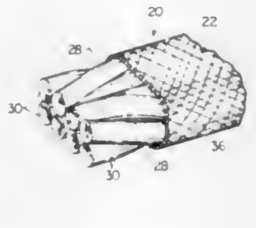
Robert J. Mayerjak, Torrington, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Oct. 1, 1980, Ser. No. 192,863

Int. Cl.^{3} B66C *1/12*

U.S. Cl. 294—74 **28 Claims**





1. A sling comprising: a cord means extending between two spaced ends and having a plurality of bends at each of said ends and a plurality of strands each extending from one to the other of said ends, half of said strands of said cord means being twisted together to form a first discrete rope extending between said ends and the other half of said strands of said cord means being twisted together to form a second discrete rope extending between said ends, said two ropes being individually distinct and being untwisted relative to one another between said ends, said bends at one of said ends being positioned adjacent one another to form collectively a first eye and said bends at the other of said ends being positioned adjacent one another to form collectively a second eye.

4,354,705

CABLE GRIPS

Louis W. Shorey; Keith W. Hill, and Alan R. Davis, all of Minehead, England, assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Oct. 14, 1980, Ser. No. 196,726

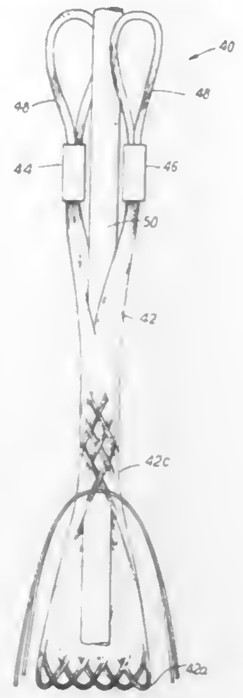
Claims priority, application United Kingdom, Oct. 16, 1979, 7935868

Int. Cl.^{3} F16L *3/00;* F16G *11/02*

U.S. Cl. 294—86 CG **4 Claims**

1. A cable grip of open-mesh construction formed by interwoven strands which comprises a leading end portion of closed tubular form and a tail end portion of split form, said leading end portion being closed circumferentially by interwoven strands of the grip, and said tail end portion including a

first series of mesh loops defining one end of the split and a second series of mesh loops defining the opposite edge of the split, and means for binding the first and second series of loops together for closing the tail end of the grip.



4,354,706

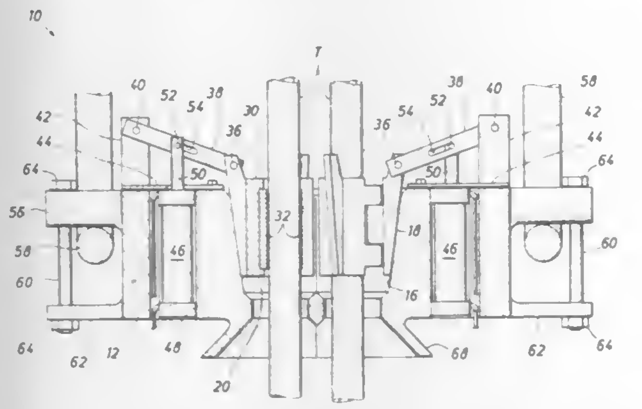
DUAL STRING ELEVATORS

William E. Coyle, Sr., Houma, La., assignor to Bilco Tools, Inc., Houma, La.

Filed Jun. 2, 1980, Ser. No. 155,477

Int. Cl.³ E21B *19/07*

U.S. Cl. 294—102 A **3 Claims**



3. A dual string elevator comprising a body having a single pair of tapered bowls extending vertically through its central portion,

- gripping slips for each bowl,
- an actuator for each set of gripping slips,
- said body having a pair of actuator recesses,
- one of said actuators being positioned within each of said recesses,
- means connecting the actuators to their set of gripping slips whereby when each actuator is actuated in one direction its gripping slips are moved out of engagement with said bowl and when said actuator is actuated in the other direction its gripping slips are moved into a pipe gripping position within said bowl, and
- a pair of lifting projections extending outward from said body in a position aligned with a plane passing through the axes of said bowls whereby the load of supporting a single string in one of said bowls does not introduce a bending load on said string,
- said recesses being aligned with said plane passing through the axes of said bowls and said lifting projections.

4,354,707

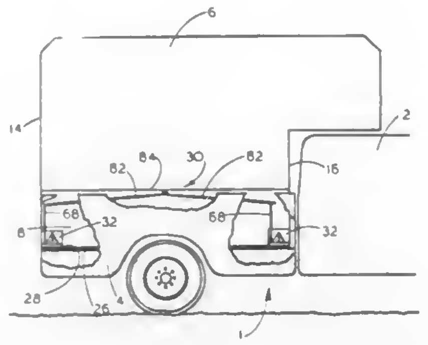
PICK-UP CAMPER LOCATING AND HOLDDOWN ASSEMBLY

Edward A. Jones, 7128 Edmond St., Burnaby, British Columbia, Canada (V3N 1A5)

Filed Oct. 27, 1980, Ser. No. 201,518

Int. Cl.³ B60P *3/32*

U.S. Cl. 296—167 **2 Claims**



1. An apparatus for locating a camper on a pick-up truck bed, the camper and the truck bed having four corners, the camper having vertical side walls which fit within the truck bed and the truck bed having a flat bottom, the apparatus comprising:

- four pairs of first and second members, each said pair being securable to the camper and the truck bed near one of the corners, each said first member comprising a mounting plate securable to one of the side walls of the camper and an apertured plate extending perpendicularly therefrom having an opening, the apertured plate being horizontal when the mounting plate is secured to the one side wall, each said second member comprising a base plate securable to the bottom of the truck bed and a projection from the base plate having a pointed end which is upper when the base plate is secured to the truck bed, the projection having an inner end adjacent the base plate, the inner end and the opening of the first member having generally the same cross-sectional extents so the first and second members of each said pair of members fit closely together when the camper is lowered onto the truck bed and the camper is properly located thereon; and
- a locking device for engaging each said pair of members when the camper is on the truck bed, the locking device comprising a slot in the projection, a shaft pivotly connected to the first member, a latch on the shaft engagable with the slot when the inner end of the projection is adjacent said apertured plate, a crank arm on the shaft for rotating the shaft, levers pivotly connected to the camper on each side thereof generally midway between the corners, and four rods each pivotly connected near one end to one said crank arm and pivotly connected near another end to one said lever so the locking devices can be engaged or disengaged when the levers are pivoted.

4,354,708

REAR TIRE HOUSE STRUCTURE FOR FREIGHT VEHICLE BODIES

Masaaki Koto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

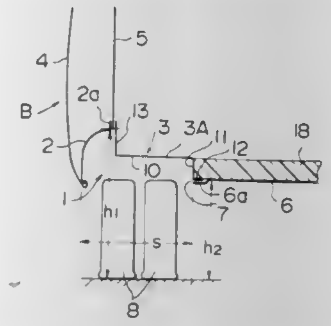
Filed Aug. 12, 1980, Ser. No. 177,433

Claims priority, application Japan, Aug. 16, 1979, 54-104865

Int. Cl.³ B62D *27/00*

U.S. Cl. 296—185 **7 Claims**

1. An automobile body structure including a rear tire house structure at each side of the body structure, said rear tire house structure comprising an outer tire house panel which is so shaped that it can be used with a tire of a first diameter for a single-tired wheel arrangement, a floor panel formed at a transversely outer edge with a cut-out which is of a transverse width sufficient to receive tires of a diameter smaller than the first diameter for a double-tired arrangement and a longitudinal length sufficient to accommodate the first diameter tire, and an inner tire house panel connected with said outer tire house panel and said floor panel for defining a space for rear wheel arrangement, said inner tire house panel being of a substantially L-shaped cross-sectional configuration having a horizontal flat surface coplanar with the floor panel so that a substantially flat loading floor is defined by the floor panel and the flat surface of the inner tire house panel.



4,354,709

FLEXIBLE ELASTIC SUPPORT

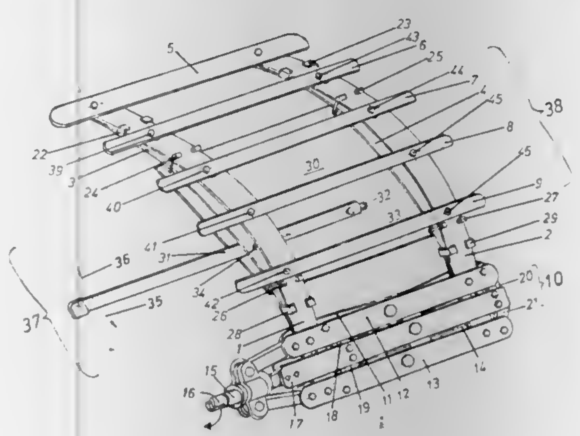
Wilhelm Schuster, Neubauzeile 57, A 4020 Linz-Donau, Austria

Filed Jun. 22, 1979, Ser. No. 51,238

Claims priority, application Austria, Jun. 23, 1978, 4599/78

Int. Cl.³ A47C *7/46*

U.S. Cl. 297—284 **10 Claims**



1. A flexible elastic supporting structure comprising:

- an elongate flexible and longitudinally substantially inextensible and incompressible band forming a support belt;
- an elongate flexible and generally flat element forming a tension belt secured at one end thereof to a corresponding end of said band, said support and tension belts having mutually confronting broad sides and being generally parallel to and coextensive with each other;
- adjustment means engaging the other ends of said belts for relatively shifting same longitudinally while maintaining said tension belt under stress whereby a convex curvature away from said tension belt is imparted to said support belt;
- a plurality of distance-maintaining pieces engaging said belts at longitudinally separated intermediate locations for keeping said belts spaced apart transversely to said confronting sides by predetermined distances at said intermediate locations, several of said pieces being slidable along said belts;
- a substantially inextensible and incompressible link interconnecting said slidable pieces; and
- an operating member mechanically connected with said link for jointly displacing said slidable pieces longitudinally of said belts to shift said convex curvature.

4,354,710

HINGE FOR A CHAISE AND THE LIKE

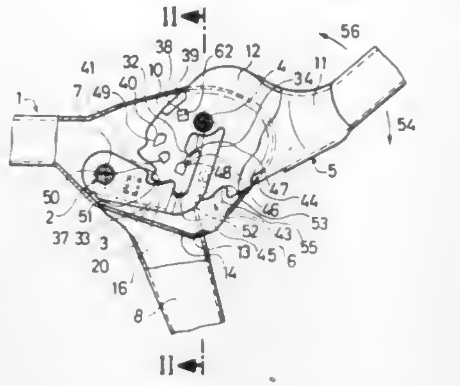
Jörg Rauschenberger, Gartenstr. 8, 7144 Asperg, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,735

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1979, 2925558

Int. Cl.³ A47C *1/025;* **G05G** *5/06*

U.S. Cl. 297—356 **41 Claims**



1. A hinge for a chaise and the like, comprising a first hinge element having a segment portion with a plurality of first arresting formations; a second hinge element provided with an arresting member pivotally mounted on the same and pivotable inwardly to its arresting position, said arresting member having control faces and at least one second arresting formation arranged to abut against said first arresting formations; and means for guiding said arresting member in connection with said first hinge element having said segment portion, said guiding means including control projections arranged so as to engage with said control faces of said arresting member, said control projections being associated with individual ones of said first arresting formations of said segment, so that said arresting member is guided during its inward pivoting to its arresting position.

4,354,711

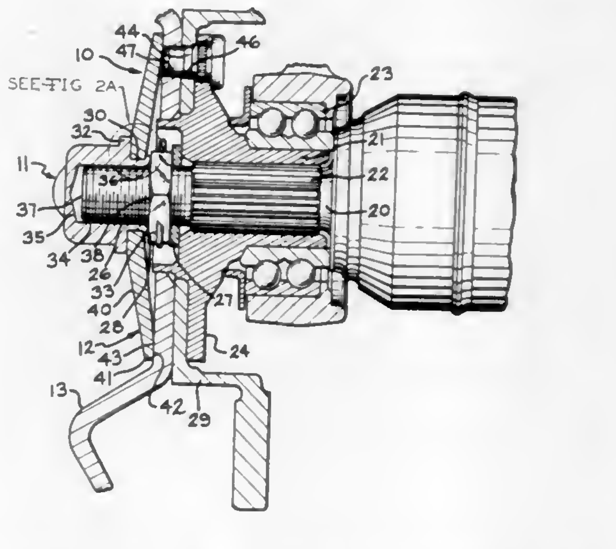
VEHICLE WHEEL ASSEMBLY

John A. Main, Plymouth, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

Filed Apr. 21, 1980, Ser. No. 142,486

Int. Cl.³ B60B *27/00*

U.S. Cl. 301—9 CN **9 Claims**



8. In apparatus for securing a rotating mechanism to a support: a hub mounted on said support, said hub having a flange positioned axially outwardly of said support; said mechanism having a mounting flange in flat abutment with the axially outer side of said hub flange; a threaded nut which when rotated moves axially toward or away from the axially outer face of said mounting flange; means constructed and arranged

to be restrained against axial movement by said support and on which said nut is threaded: a conical spring with its radially inner end being abutted by said nut and its radially outer end overlying and abutting said mounting flange, said spring having a force versus deflection characteristic wherein the force transmitted increases with deflection during an initial zone of deflection and wherein the force transmitted is generally constant during a subsequent zone of deflection, said mounting flange for said mechanism being in generally uniform flat abuttment around said hub flange; stop means against which said nut abuts to limit initial spring hold down force to an initial value and said mechanism being unrestrained against movement against said spring to deflect said spring into said subsequent zone of generally constant transmitted force to absorb axial overloads on said mechanism.

4,354,712

DUAL-CIRCUIT PRESSURE CONTROL VALVE FOR HYDRAULIC BRAKE SYSTEMS

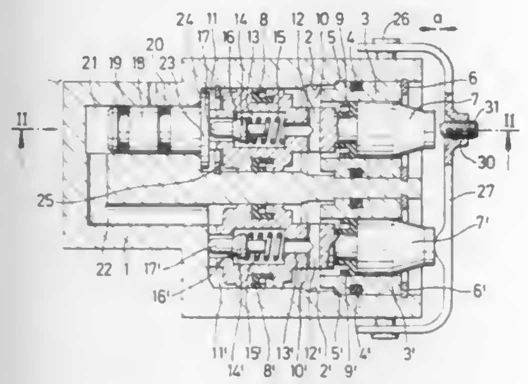
Hans-Dieter Reinartz, Frankfurt am Main; Bernd Schopper, Hattersheim; Peter Tandler, Falkenstein, and Derek Lowe, Glashuetten, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jan. 23, 1981, Ser. No. 227,835

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3004964; Aug. 14, 1980, 3030783; Oct. 8, 1980, 3038004

Int. Cl.^{3} B60T *8/26*

U.S. Cl. 303—6 C **37 Claims**



1. A dual-circuit pressure control valve for hydraulic brake systems comprising:

two control valves disposed in a housing in a parallel side by side relationship, each of said two control valves controlling a different one of two brake circuits, having a control piston disposed between an inlet chamber and an outlet chamber and subjected to a common control force acting on each of said control pistons through a preload distributor; and

means disposed in said housing disposed between said outlet chamber of one of said two control valves and said outlet chamber of the other of said two control valves to provide a hydraulic balancing of the outlet pressure in each of said outlet chambers.

4,354,713

DUAL AREA METERING VALVE WITH VARIABLE REACTION ASSEMBLY

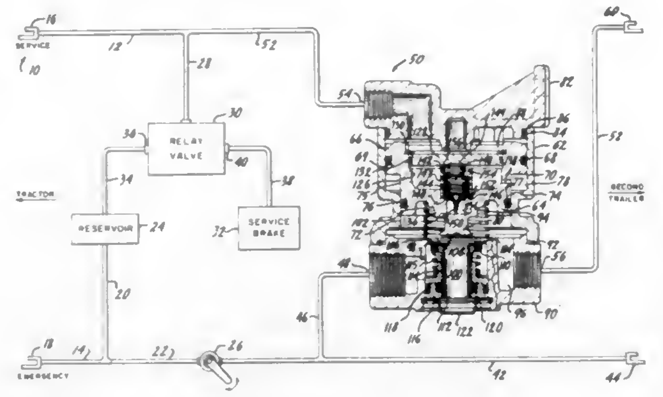
Norman Edwards, Florence, Ky., assignor to Echlin Inc., Branford, Conn.

Filed Nov. 13, 1980, Ser. No. 206,524

Int. Cl.^{3} B60T *15/02*

U.S. Cl. 303—8 **28 Claims**

15. In an amplifying relay valve of the type having a reaction piston in a bore therein, the movement of said reaction piston being adapted for simultaneous operation of an exhaust valve, said reaction piston defining a service chamber and a delivery chamber in said amplifying relay valve, the improvement comprising a reaction chamber defined in said bore between the ends of said reaction piston, said reaction chamber being in selective communication with said delivery chamber by means adapted to transmit metered pressure from said delivery chamber to said reaction chamber only when the pressure in said delivery chamber exceeds a predetermined value and to exhaust pressure from said reaction chamber to said delivery chamber whenever the pressure in said reaction chamber is greater than the pressure in said delivery chamber.



4,354,714

HYDRAULIC BRAKE SYSTEM HAVING WHEEL SLIP CONTROL

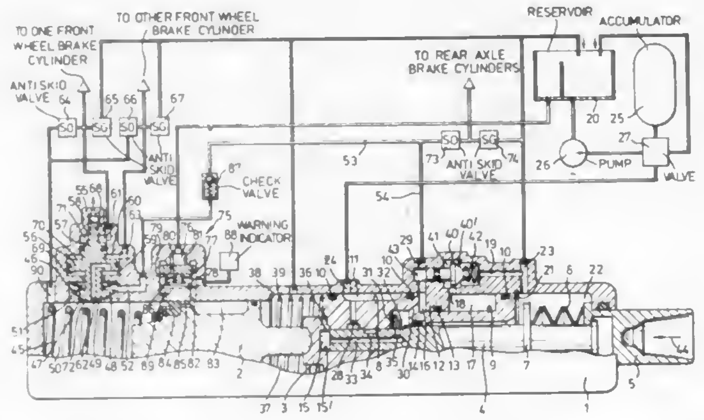
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,215

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942980

Int. Cl.^{3} B60T *8/02*

U.S. Cl. 303—114 **20 Claims**


TO ONE FRONT WHEEL BRAKE CYLINDER
TO OTHER FRONT WHEEL BRAKE CYLINDER
RESERVOIR
ACCUMULATOR
TO REAR AXLE BRAKE CYLINDERS
ANTI-SKID VALVE
CHECK VALVE
WARNING INDICATOR
ANTI SKID VALVE
PUMP
VALVE

1. A hydraulic brake system for a vehicle comprising:

a master cylinder having a pressure chamber;

at least two wheel brake cylinders;

at least two wheel slip control valves each coupled between said pressure chamber and a different one of said two brake cylinders to control the pressure in the associated one of said two brake cylinders independently of the pressure in said pressure chamber in the event of an imminent locked condition of a wheel, the pressure in each of said two brake cylinders being lower than the pressure in said pressure chamber by a predetermined amount; and

a valve device coupled to a pressurized fluid source, said pressure chamber and said two brake cylinders to control fluid flow from said fluid source to said pressure chamber, said valve device being responsive to a differential of pressure between the pressure in said pressure chamber and the pressure of each of said two brake cylinders.

4,354,715

HYDRAULIC ANTI-SKID BRAKING SYSTEMS FOR VEHICLES

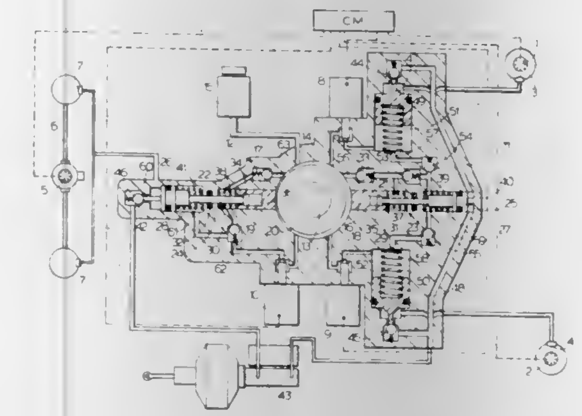
Glyn P. R. Farr, Wootton, and Ivan Mortimer, Solihull, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Aug. 14, 1980, Ser. No. 178,382

Claims priority, application United Kingdom, Aug. 14, 1979, 7928206; Aug. 18, 1979, 7928847; Jul. 24, 1980, 8024203

Int. Cl.^{3} B60T *8/02*

U.S. Cl. 303—116 **21 Claims**



1. An hydraulic anti-skid system for a vehicle comprising a vehicle brake, a supply of operating fluid for applying said brake, skid sensing means for producing a skid signal to modulate the supply of operating fluid from said supply to said brake, a pump having a piston assembly, a drive mechanism for said pump, and means defining a stop chamber, said piston assembly comprising a pump plunger reciprocable in a bore by means of said drive mechanism, a signal piston, a coupling between said signal piston and said pump plunger, and resilient means for urging said pump plunger out of engagement with said drive mechanism, said signal piston having a first area which is exposed to pressure from said supply or from said brake when said brake is applied to urge said signal piston in a direction such that said pump plunger can engage with said drive mechanism, and a dump valve for controlling fluid in said stop chamber to which said signal piston assembly is exposed at least after said brake has been applied, said dump valve being normally closed to trap fluid in said stop chamber in order to hold said piston assembly in a retracted position in which said pump plunger is disengaged from said drive mechanism, and said dump valve being movable into an open position in response to said skid signal to release fluid from said drive mechanism.

4,354,716

HYDRAULIC BRAKE-ACTUATING DEVICE

Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,551

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948428

Int. Cl.^{3} B60T *13/14, 8/02*

U.S. Cl. 303—119 **27 Claims**

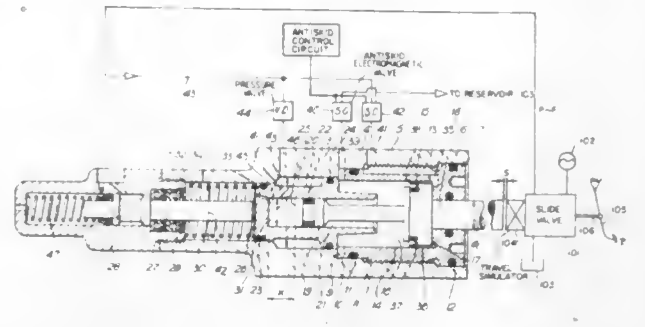
1. A hydraulic brake-actuating device for vehicles having an antiskid unit comprising:

a source of pressure fluid;

a housing containing therein a control chamber defined on one side thereof by a pressure piston acting on a master cylinder piston and a valve arrangement disposed between said source and said control chamber controlled by a brake pedal to couple pressure fluid from said source to said control chamber, said pressure piston being operated by said brake pedal when said source fails;

an additional piston disposed in said control chamber spaced from said pressure piston; and

a pressure fluid connection from said source to said control chamber controlled by said additional piston, said connection being open when said additional piston is in a given inactive position and said connection being closed when said additional piston moves from said inactive position.



4,354,717

PROCESS FOR THE PRODUCTION OF GAS DISCHARGE LAMPS

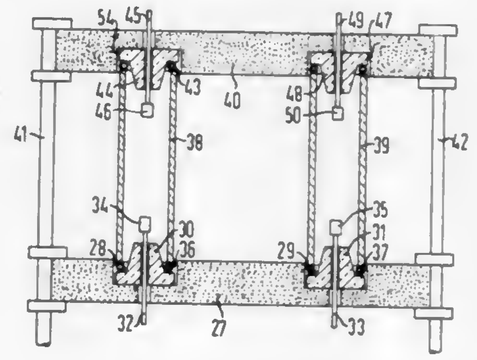
Werner Rech, Taunusstein; Wolfgang Welsch, Wiesbaden, and Josef Zimlich, Taunusstein, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden-Dotzheim, Fed. Rep. of Germany

Filed Mar. 23, 1978, Ser. No. 889,262

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713611

Int. Cl.^{3} H01J *9/24, 9/38*

U.S. Cl. 316—19 **5 Claims**

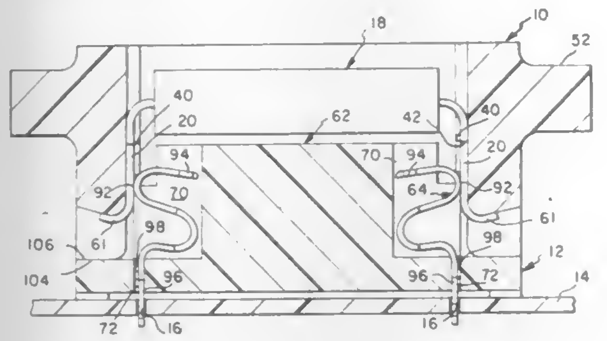


1. A process for a simultaneous production of a plurality of gas discharge lamps particularly useful as flash tubes, each lamp comprising a glass tube containing at least two electrodes and an inert gas with a preformed, sintered glass body sealed into each end of the tube, each of said bodies having at least one electrical connector pin or an electrode extending therethrough in a sealed fashion, said process comprising providing a plurality of the glass tubes, providing a preformed, sintered glass body for each end of the glass tube, each sintered glass body having at least one electrical connector pin for an electrode extending therethrough with a gas tight seal, and then simultaneously sealing each of the glass bodies in the respective end of each glass tube and filling each glass tube with the desired amount of inert gas prior to completing the formation of the seals between the ends of each glass tube and the glass bodies, the step of sealing and filling including soldering by providing a glass solder between the glass body and the end of its tube, and heating the solder to cause melting of the glass solder to form a solder seal and including applying an additional material between at least one of the glass bodies and the end of its glass tube to secure the one body to the glass tube in addition to soldering.

4,354,718
DUAL-IN-LINE PACKAGE CARRIER AND SOCKET ASSEMBLY

Edward J. Bright, Elizabethtown, and Steven J. Kandybowski, Tower City, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 18, 1980, Ser. No. 179,371
Int. Cl.³ H01R *13/24*
U.S. Cl. 339—17 CF **9 Claims**

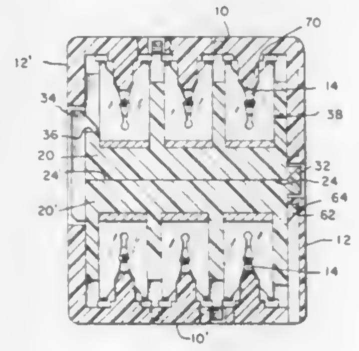


1. A protective carrier for a DIP of the type having depending leads emerging from opposing sides with each lead having laterally positioned, downwardly facing shoulders, said protective carrier comprising a frame consisting of spaced apart, opposing side walls joined by end walls, said side and end walls defining a DIP-receiving central opening therebetween, the inside surfaces of the opposing side walls being stepped with the upper section extending further into the central opening relative to the lower section, a plurality of lead-receiving grooves spaced along the upper sections of the side walls with the grooves having an upper wide portion and a lower narrow portion with the juncture therebetween defining an upwardly facing shoulder on each side of the entrance to the narrow portion, and a plurality of downwardly opened slots provided through the lower section of the side walls, said slots being in alignment with the lead-receiving grooves so that upon inserting a DIP into the central opening, the leads are received in the grooves with the upwardly facing shoulders abutting the downwardly facing shoulders on the leads to support the DIP in the central opening and the free ends of the leads may be bent into the slots to restrain withdrawal of the DIP from the central opening.

4,354,719
TWO-ROW ELECTRICAL CONNECTOR COMPOSED OF CONNECTOR MODULES

Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 22, 1980, Ser. No. 189,532
. Int. Cl.³ H01R *11/20, 33/76*
U.S. Cl. 339—59 M **8 Claims**



1. A pair of connector modules which, when assembled to each other, form a two row electrical connector of the type comprising an insulating housing having a mating face and wire entry face, said faces being oppositely directed, spaced-apart endwalls and spaced-apart sidewalls extending between said faces, a plurality of terminal receiving cavities extending through said housing from said wire entry face to said mating face and a contact terminal in each of said cavities, said cavities and said terminals being arranged in two parallel rows which extend between said endwalls, said cavities and terminals in each row being in alignment with said cavities and terminals in the other row, said connector modules being characterized in that:

each of said modules comprises a molded housing module having a continuous planar barrier wall portion and having endwall portions extending from said barrier wall portions at the ends thereof, a single row of side-by-side terminal receiving cavities between said sidewall portions and terminals in said cavities, and a sidewall spaced from said barrier wall portions,

said modules being in side-by-side aligned relationship with said barrier wall portions in a common plane and with said endwall portions in parallel spaced-apart planes,

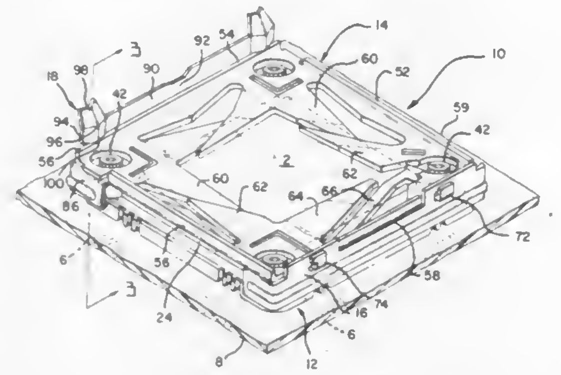
flexible hinge means integral with, and extending between, adjacent side edges of said barrier wall portions, said hinge means permitting relative pivotal movement of said modules towards and against each other about an axis extending parallel to, and between said adjacent side edges, and interengaging means on said modules effective to latch said modules to each other when said barrier wall portions are against each other whereby,

wires can be connected to said wire receiving portions of said terminal while said modules are in side-by-side relationship, and said modules can be thereafter be pivotally moved towards each other and latched to each other to form said two row connector, said barrier wall portions being against each other after pivotal movement of said modules towards each other and forming a barrier wall between said two rows.

4,354,720
CONNECTOR ASSEMBLY HAVING IMPROVED LATCHING MEANS

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 20, 1980, Ser. No. 198,675
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R **6 Claims**



1. A connector assembly for establishing electrical connections with terminal pads on one surface of the substrate of an IC package, said connector assembly comprising a housing having an IC receiving face and laterally directed external side surfaces which extend normally of said IC receiving face, contact terminals in said housing which bear against said terminal pads of a substrate positioned on said face, a flat clamping lid in covering relationship to said IC receiving face for clamping said substrate against said contact terminals, and retaining means on said housing for removably holding said clamping lid on said housing, said connector assembly being characterized in that:

said retaining means comprises a pair of resilient sheet metal latch arms which are mounted on said housing proximate to one of said side surfaces and proximate to said IC receiving face of said housing, said latch arms comprising cantilever beams which extend in opposite direction alongside said one side surface of said housing,

said latch arms each having a retaining portion on its end disposed in a plane which is normal to the plane of said IC receiving face and which extends partially over marginal portions of said IC receiving face,

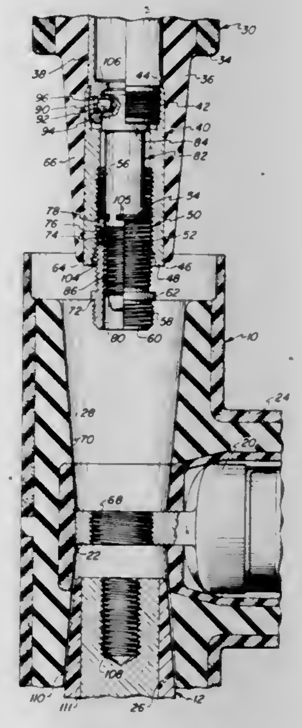
said retaining portions having edge portions, defined by the thickness of said sheet metal latch arms, which are engagable with said clamping lid to retain said lid on said housing,

said latch arms being flexible normally of their own planes and parallel to the plane of said IC receiving face whereby said retaining portions can be moved laterally beyond said one side surface thereby to permit placement of an IC package in, and removal of an IC package from, said connector assembly.

4,354,721
ATTACHMENT ARRANGEMENT FOR HIGH VOLTAGE ELECTRICAL CONNECTOR

Glenn J. Luzzi, Mount Bethel, Pa., assignor to Amerace Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,779
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 R **21 Claims**



1. An attachment arrangement for facilitating attaching and securing a bushing assembly within an electrical connector of a high voltage electrical distribution system, the electrical connector having an axially extending recess including a tapered portion, a terminal contact affixed to a conductor of a high voltage cable and including a portion extending into the recess, the terminal contact having a threaded aperture placed within the recess and aligned axially with the tapered portion of the recess, the bushing assembly including an axially extending tapered body portion complementary to the tapered portion of the recess in the electrical connector such that the complementary tapered portion will be engaged in an appropriate interference fit, the tapered body portion terminating at a terminal end, said attachment arrangement comprising:

a tubular member extending in an axial direction within the bushing assembly adjacent the terminal end thereof and having an axially extending internal thread therein;

a coupling member coupled with the tubular member and projecting axially beyond the terminal end of the tapered body portion of the bushing assembly, the coupling member including a first external thread at least a portion of which is spaced axially away from the tubular member for engaging the threaded aperture of the terminal contact, and a second external thread engaged with the internal thread of the tubular member;

wrenching means associated with the tubular member for enabling rotation of the tubular member about the axial direction, the tubular member being so affixed within the bushing assembly as to assure concomitant rotation of the bushing assembly in response to said rotation of the tubular member;

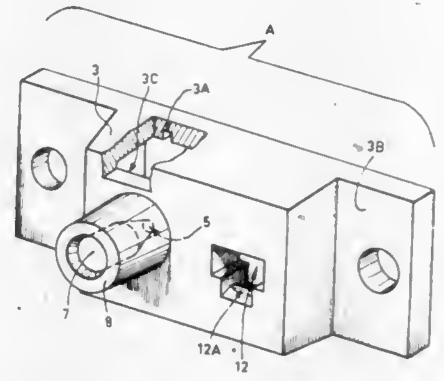
minimum torque responsive means for precluding relative movement between the tubular member and the coupling member below a predetermined torque exerted by the tubular member upon the coupling member; and

stop means located such that upon insertion of the bushing assembly into the recess of the electrical connector and initial rotation of the bushing assembly, the coupling member will rotate with the bushing assembly, and the first external thread of the coupling member will be engaged within the threaded aperture of the terminal contact prior to the engagement of the complementary tapered portions in said interference fit, and continued rotation of the bushing member, as enabled by the wrenching means, will exceed the predetermined torque of the minimum torque means to further engage the second thread within the internal thread of the tubular member until the complementary tapered portions are engaged fully in said interference fit and proper electrical contact is made between the tubular member and the terminal contact.

4,354,722
TERMINAL CONNECTOR DEVICE FOR ELECTRICAL CONDUCTING WIRES

Henri Morel, Maule, France, assignor to ITW de France, Beauchamp, France

Filed Jun. 3, 1980, Ser. No. 156,142
Claims priority, application France, Jun. 5, 1979, 79 14290
Int. Cl.³ H01R *4/29*
U.S. Cl. 339—95 D **11 Claims**



1. Terminal connector for electrical wires, said connector comprising:

a casing;

a wire entrance formed in said casing;

a wire receiving support arranged in said casing;

an actuating button;

a lateral flexible strip of said actuating button;

a notch formed on said flexible strip;

a movable flap for interposing between said entrance and said receiving support and for lateral wedging of the wire, which flap is operable by said actuating button;

a complementary notch formed on said casing, said notches constituting locking means to hold said button and said flap in a retracted position permitting introduction of the wire.

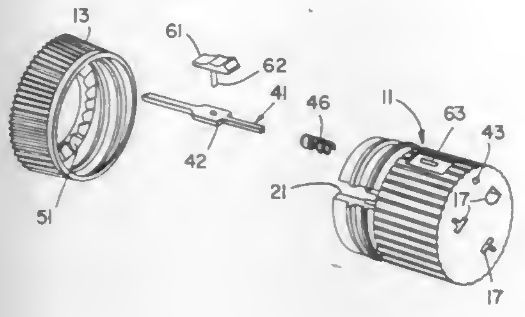
4,354,723
ELECTRIC PLUG

Hop Lee, 2455 - 24th Ave., San Francisco, Calif. 94116

Continuation-in-part of Ser. No. 63,393, Aug. 3, 1979, Pat. No. 4,293,178. This application Nov. 28, 1980, Ser. No. 211,429

Int. Cl.^{3} H01R *13/58, 13/62*

U.S. Cl. 339—103 R **4 Claims**



1. An improved electrical plug having a body with a cap threaded on the rear thereof and engaging a retaining collar about an electric cord comprising
   a ratchet pin slidably mounted in said body and having a spring urging the pin outwardly from the rear of the body,
   said cap having interior ratchet teeth facing said body in position for engagement with said ratchet pin whereby said pin rides over said teeth during threading of the cap on the body and locks with said teeth for reverse cap rotation, and
   release means extending exteriorly of said body for depressing said ratchet pin to retract same from engaging the teeth on said cap and release the cap for unthreading from the body.

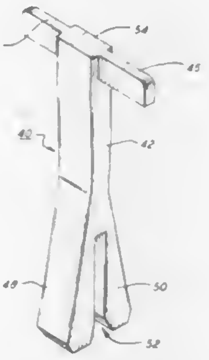
4,354,724
CIRCUIT BOARD CONNECTOR INDEXING KEY

Howard I. Jarmy, San Francisco, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,079

Int. Cl.^{3} H01R *13/645*

U.S. Cl. 339—186 R **1 Claim**



1. An indexing key for use with a circuit board connector strip of the type having an elongate opening for receiving the end of a circuit board, having a series of contiguous locations therealong at which resilient electrical contacts may be placed for electrical/mechanical contact with an inserted circuit board, having indexing slots along the top thereof spaced at predetermined intervals for receiving indexing keys, and having an associated support surface to provide a mechanical connection to a circuit board, the key comprising:
   (a) a body dimensioned so as to fit in said elongate opening;
   (b) at least one key arm in association with said body for insertable engagement with an indexing slot;
   (c) said body comprising an elongate body wherein the bottom of said body is capable of resting on said support surface with said key arm engaged in an indexing slot;
   (d) said circuit board connector strip further comprising divider walls separating said contiguous locations within said connector strip wherein said elongate body further comprises a pair of leg portions for straddling one of said divider walls when said key is inserted in place in said connector strip; and
   (e) means integral with said body for causing said body to bear the force of the end of a circuit board being forced thereagainst by way of compression between said support surface and said circuit board.

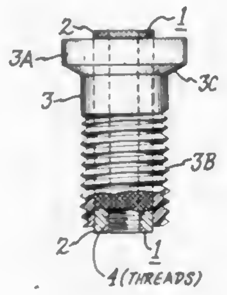
4,354,725
INSULATED TERMINAL ASSEMBLY

Donald W. Herbaugh; Paul J. Kline, and Herbert C. Stull, all of Erie, Pa., assignors to General Electric Co., Schenectady, N.Y.

Continuation-in-part of Ser. No. 142,555, Apr. 21, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,765

Int. Cl.^{3} H01R *9/10*

U.S. Cl. 339—214 R **15 Claims**



1. An insulated electric terminal assembly comprising an electrically conductive metal stud having a predetermined portion of its outer surface knurled, a threaded dielectric bolt mounted in fixed relationship with said stud with an irregular inner surface of the bolt positioned in locking engagement with said knurled surface, said bolt having on one end a head with a diameter greater than the diameter of the threaded part of the bolt, and a threaded dielectric nut formed with threads that are adapted to be threaded onto the threaded part of said bolt, said threaded bolt and nut being operable responsive to the bolt being inserted through an aperture in an electrically conductive member to mechanically secure said stud in fixed and dielectrically isolated relationship to said conductive member.

4,354,726
BATTERY TERMINAL CONNECTOR WITH AN UNEVEN INTERIOR SURFACE

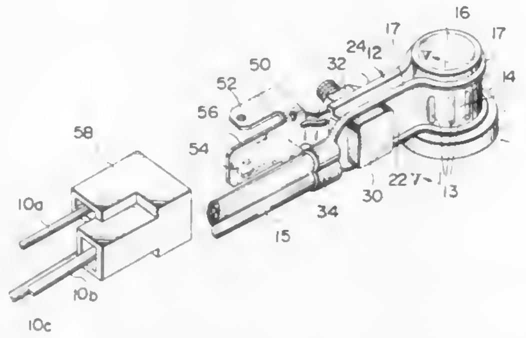
Shinichi Kato, Fujisawa; Syuichi Otani, Tokyo, and Susumu Hashimoto, Kitakawabe, all of Japan, assignors to Nissan Motor Company, Limited, Yokahama, Japan

Filed Mar. 18, 1980, Ser. No. 131,093

Claims priority, application Japan, Mar. 20, 1979, 54-36094[U]; Mar. 20, 1979, 54-36097[U]

Int. Cl.^{3} H01R *11/26*

U.S. Cl. 339—230 R **12 Claims**



1. A battery terminal connecting device, for connecting a battery terminal to an electric cable, comprising:
a gripping portion formed of elastically deformable and electrically conductive material in the shape of a hollow shell having an axially extending slot formed therein to permit the shell to open and close;
a pair of extensions from the gripping portion, each extension extending outwardly from one side of the slot, which extensions extend generally in the same direction, and to one of which extensions the cable is coupled, one of said extensions being formed with a protruding portion which projects towards the other extension and which elastically prevents the extensions from approaching closer than a predetermined distance by acting as a fulcrum around which said extensions must bend in order for said gripping portion to be further tightened after said extensions approach said predetermined distance;
a means for biasing the extensions towards one another; and
a plurality of high portions and low portions formed on the inner surface of said gripping portion, the low portions of which interrupt contact between the inner surface of said gripping portion and the battery terminal so that said inner surface of said gripping portion is constricted onto the periphery of said battery terminal with a contact area substantially less than the total area of the inner surface when said gripping portion is disposed around the battery terminal and closely contacted therewith by the extensions being biased towards one another by the biasing means thereby deforming the gripping portion.

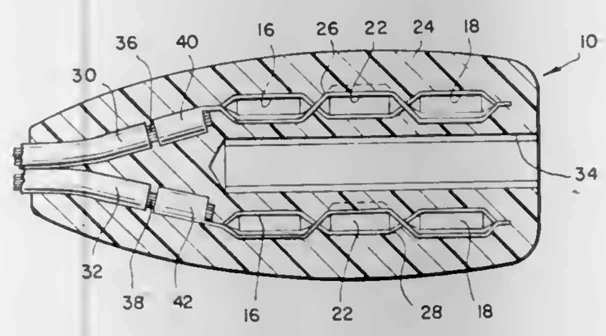
4,354,727
CONTACT STRIP FOR ELECTRICAL CONNECTOR

Donald C. Brown, Westfield, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.

Filed Aug. 15, 1980, Ser. No. 178,443

Int. Cl.^{3} H01R *19/28*

U.S. Cl. 339—256 R **7 Claims**



1. A contact strip for defining a plurality of openings adapted for the insertion thereinto of blades of electrical attachment plugs comprising:
   a metallic strip;
   a connector on said metallic strip for connection to a metallic conductor;
   first and second complementary longitudinal slits through said metallic strip defining a first central contact strip and first and second side contact strips adjacent opposite sides of said first central contact strip;
   said first central contact strip being deformed in a first direction with respect to a surface of said metallic strip;
   said first and second side contact strips being deformed in a second direction with respect to said surface of said metallic strip, said second direction being opposite to said first direction whereby a first of said openings is formed into which one first of said blades may be inserted with one surface thereof in contact with said first central contact strip and a second opposed surface thereof in contact with both of said first and second side contact strips;
   third and fourth complementary longitudinal slits through said metallic strip defining a second central contact strip and third and fourth side contact strips adjacent opposite sides of said second central contact strip;
   said second central contact strip being deformed in one of said first and second directions;
   said third and fourth side contact strips being deformed in the other of said first and second directions whereby a second of said openings is formed into which a second of said blades may be inserted;
   adjacent ends of said first and third and said second and fourth slits ending along a single line transverse to a longitudinal dimension of said metallic strip;
   said first and second and said third and fourth slits being mirror symmetric with respect to a longitudinal axis of symmetry of said metallic strip; and
   means for laterally offsetting ends of said third and fourth slits from adjacent ends of said first and second slits.

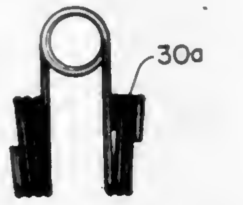
4,354,728
ELECTRICAL CONTACTOR FOR TERMINAL PIN

Victor E. DeLucia, 11846 Mississippi Ave., Los Angeles, Calif. 90025

Filed Apr. 1, 1980, Ser. No. 136,258

Int. Cl.^{3} H01R *4/48*

U.S. Cl. 339—256 S **5 Claims**



1. An electrical contact assembly comprising: a rigid electric terminal pin; an electrical connector to serve as a soldered tab for an electric wire to be connected to said terminal pin, said connector being formed of a resilient electrically-conductive material to which solder may be rigidly bonded and having a coiled portion adapted to fit over the electrical terminal pin in close fitting coaxial relationship therewith, said coiled portion including a first section wound in one direction and a second section coaxial with the first section and wound in the opposite direction, each of the first and second sections grippingly engaging said rigid terminal pin, and said connector having an exposed central portion shaped to permit an electric wire to be soldered to the connector.

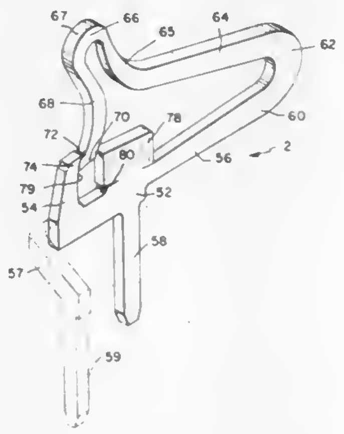
4,354,729
PRELOADED ELECTRICAL CONTACT TERMINAL

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1980, Ser. No. 219,085

Int. Cl.^{3} H01R *13/12*

U.S. Cl. 339—258 R **12 Claims**



1. An electrical contact terminal of the type having a contact portion which is intended to contact a mating contact means and spring means for maintaining said contact portion against said mating contact means, said terminal being of the complanate type having substantially all of its parts lying in a single plane, said terminal having a spring arm and a latch arm, said

arms having free ends which are in overlapping latched relationship and which are held in a latched position by latching means which permits movement of said free end of said spring arm in one direction along said latch arm and which prevents movement of said free end of said spring arm in the opposite direction, said contact portion comprising contact edge portions of said spring arm, said terminal being characterized in that:

- said latched position of said free end of said spring arm is a displaced position relative to the normal position of said free end of said spring arm, said normal position of said free end of said spring arm being adjacent to, and beyond, said free end of said latch arm,
- said spring arm being in a pre-stressed and flexed condition as a result of the displacement of said free end of said spring arm, and
- said free end of said spring arm being resiliently biased against said latch arm whereby, upon movement of said mating contact means against said contact portion of said spring arm, said free end of said spring arm is moved in said one direction along said latch arm with accompanying further flexing of said spring arm and with a resulting development of a predetermined contact force at the interface of said contact portion and said mating contact means and current flows from said contact portion through said interface thence through said latch arm.

4,354,730

OPTICAL RELAY USED FOR TRANSFERRING AN IMAGE FROM ONE POINT TO ANOTHER ALONG AN OPTICAL AXIS

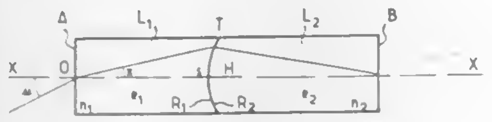
Roger P. Bel, Vincennes, France, assignor to Metallisations et Traitements Optiques M.T.O., France

Filed Jun. 24, 1980, Ser. No. 162,450

Claims priority, application France, Jun. 25, 1979, 79 16266

Int. Cl.^{3} G02B *23/00*

U.S. Cl. 350—54 **9 Claims**



1. An optical relay used for transferring an image from one point to another along an optical axis comprising two optical systems each formed from at least two thick optical elements, one of which is convergent and the other divergent, the index, thickness and the radii of curvature of the optical elements being selected so that the end faces of each of the optical systems formed thereby are conjugate, said systems being connected together by an image conduit of optical fibers which bear against one end face of each of the systems.

4,354,731

SELF-ALIGNING OPTICAL FIBER CONNECTOR

Bob Mouissie, Berlicum, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

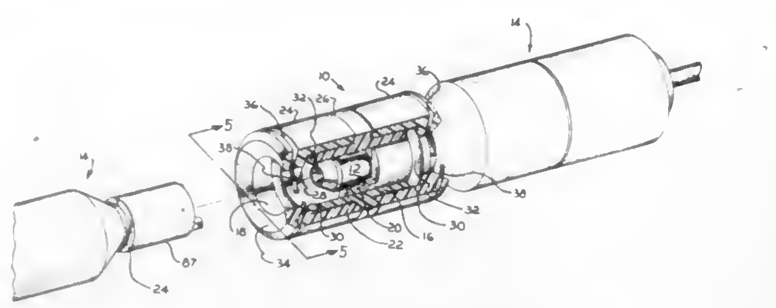
Continuation-in-part of Ser. No. 78,701, Oct. 2, 1979, abandoned. This application Jun. 11, 1980, Ser. No. 156,452

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 350—96.21 **6 Claims**

1. An optical fiber connector comprising:

- a housing having a generally cylindrical first bore,
- at least two opposed ribs extending radially into said first bore and terminating in a hub having a hole coaxial with said first bore,
- a pair of sleeves mounted on said housing in opposed relationship, said sleeves terminating in an inwardly projecting peripheral edge defining an opening to said housing coaxial with said first bore, said peripheral edge forming an annular cavity with said housing,
- a resilient O-ring located in said annular cavity having an inside diameter slightly less than said first bore,
- at least one pair of slightly elongated half-round holding members pivotally mounted in said hole, said holding members having a flat surface in opposed mating relationship, said surfaces having an opposed longitudinal V-groove defining a second bore coaxial with said first bore,



said second bore having a conically inclined convergent surface on either end thereof defining an entrance to receive the exposed core end of an optical fiber,

- means for guiding the ends of an optical fiber into said second bore, and
- means for elastically maintaining said holding members in opposed relationship.

4,354,732

CABLE ELEMENTS COMPRISING OPTICAL FIBRES AND CABLES INCORPORATING THEM

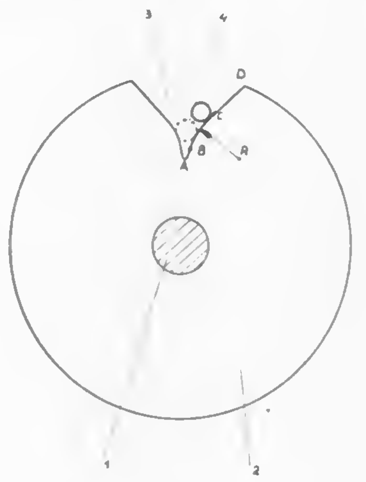
Maurice Arnaud, deceased, late of Paris, France; by Marie C. N. A. Avril nee Arnaud, heir, Quebec, Canada; by Michel F. Arnaud, heir, Saint-Pardoux, France; Bernard Chiron, Paris, France; Claude Gallachi, Paris, France; Jean-Pierre Hulin, Paris, France, and Michel de Vecchis, Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 7, 1979, Ser. No. 18,269

Claims priority, application France, Mar. 8, 1978, 78 06598

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 350—96.23 **5 Claims**



1. An optical fibre cable element comprising a mechanical core; a cylindrical sheath surrounding the core and containing helical grooves of V-shape in cross section in its surface, each groove being bounded by a pair of flanks which are curved convexly toward the interior of the groove over only portions of their lengths; a single undulating optical fibre in each groove resting alternately on the curved portions of the flanks and held thereby spaced from the bottom of the groove; and at least one taping around the sheath.

4,354,733

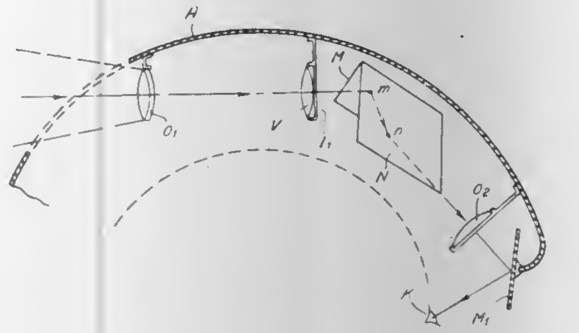
REARVIEW DEVICE INCORPORABLE IN HELMETS

Jean M. Picquet; Lambert Picquet, and Roger Cuvillier, all of 4 Square de l'avenue du Bois, Paris 75116, France

Continuation-in-part of Ser. No. 48,861, Jun. 15, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 193,991

Int. Cl.^{3} G02B *23/02*

U.S. Cl. 350—51 **7 Claims**



1. A rearview device for a helmet, comprising an optical system mountable on said helmet and including an objective lens which, in use, is directed rearwardly of the wearer of the helmet for receiving light from an object to the rear of the wearer and forming an image of said object, an eyepiece lens for enabling the wearer of the helmet to view said image, and laterally and vertically inverting reflector means in the path of light rays passing through said objective lens and said eyepiece lens so that the image of said rearview object that is viewed by the wearer of the helmet is erect and without inversion, in which the reflector means includes two plane reflectors disposed perpendicular to each other and meeting in a line which lies in a plane substantially parallel to and spaced from a plane in which the optical axis of the objective lens lies.

4,354,734

OBJECTIVE OPTICAL SYSTEM FOR ENDOSCOPES

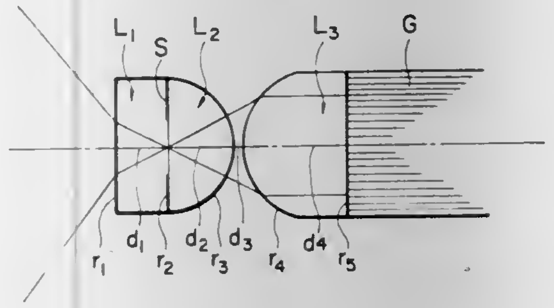
Ken-ichi Nakahashi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,697

Claims priority, application Japan, Aug. 7, 1979, 54-100626

Int. Cl.^{3} A61B *1/00;* G02B *13/22*

U.S. Cl. 350—96.26 **8 Claims**



1. An objective optical system for endoscopes comprising an objective and an image-transmitting optical fiber bundle for transmitting an image of an object formed by said objective, said objective comprising a first lens component consisting of a cover glass and plano-convex lens cemented together by arranging a stop between them and a second lens component consisting of a plano-convex lens arranged convex toward the objective side, said objective optical system for endoscopes satisfying the following conditions:

$$0.7|r_3| \leqq d_2 \leqq 1.1|r_3| \qquad (1)$$

$$n_2 \geqq 1.75 \qquad (2)$$

$$0.6\times(n_3-1)(d_2+d_3) \leqq r_4 \leqq 1.4\times(n_3-1)(d_2+d_3) \qquad (3)$$

$$n_3 \geqq 1.75 \qquad (4)$$

wherein the reference symbol r_3 represents the radius of curvature of the surface on the image side of the first lens component, reference symbol r_4 represents the radius of curvature of the surface on the object side of the second lens component, reference symbol d_2 represents the thickness of the plano-convex lens constituting the first lens component, reference symbol d_3 represents the airspace between the first and second lens components, reference symbol n_2 represents the refractive index of the plano-convex lens constituting the first lens component, and reference symbol n_3 represents the refractive index of the second lens component.

4,354,735

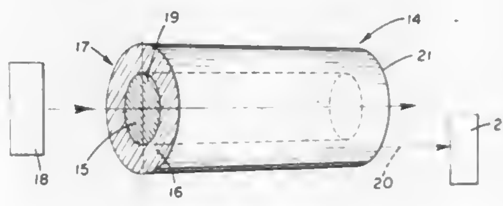
OPTICAL TRANSDUCER

David W. Stowe, Buffalo Grove, Ill.; John D. Christian, deceased, late of Warrenville, Ill.; Albert Christian, heir; Martha R. Christian, heir, both of Indianapolis, Ind.; Ann L. Ziegler, heir, Danville, Ind., and David A. Christian, heir, Indianapolis, Ind., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 26, 1979, Ser. No. 106,761

Int. Cl.^{3} G02B *5/172*

U.S. Cl. 350—96.29 **7 Claims**



5. In an optical transducer (**14**) including an optical fiber core (**15**) having a first refractive index profile, and an optical cladding (**16**) encircling said core and having a second refractive index profile different from that of said optical core, the improvement comprising:

- at least one of said core and cladding being formed of a suitable photoresponsive material for providing a variable difference between the refractive indices of said core and cladding as a function of an electromagnetic field applied to said transducer, thereby to variably couple light from the core to the cladding in accordance with said applied electromagnetic field;
- means (**18**) for transmitting light through said core; and
- means (**22**) for detecting the amount of decrease in the light propagated through said core (**15**) as a result of coupling of light therefrom to said cladding (**16**).

4,354,736

STRESS-INDUCED BIREFRINGENT SINGLE MODE OPTICAL FIBER AND A METHOD OF FABRICATING THE SAME

Mokhtar S. Maklad, Milford, Conn.; Francis I. Akers, Roanoke, Va., and William L. Thomas, Midvale, Utah, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,698

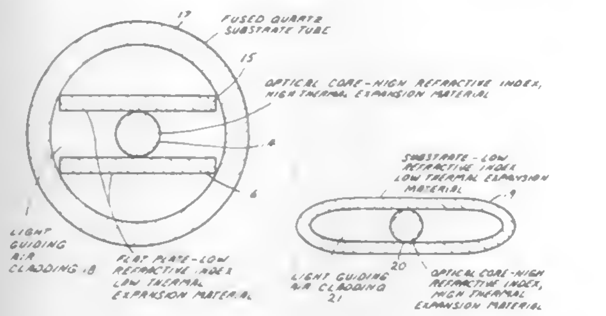
Int. Cl.^{3} G02B *5/172*

U.S. Cl. 350—96.32 **10 Claims**

1. A stress-induced birefringent single mode optical fiber comprising:

- an optical core having a high refractive index and a high thermal expansion coefficient;
- means formed from an optical material having a low refractive index and a low thermal expansion coefficient engaging the outer surface of said core tangentially at opposite

ends of a diameter of said core to establish a stress therein; and

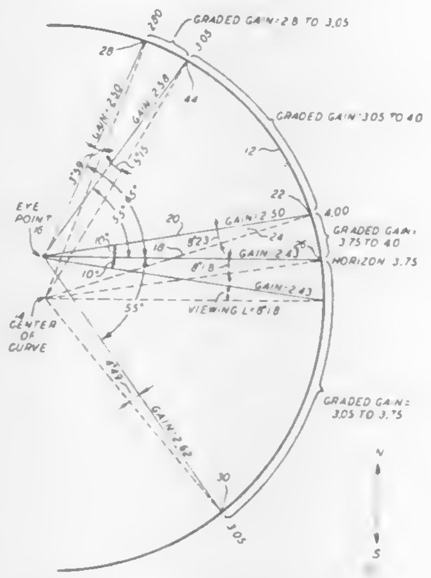

17
FUSED QUARTZ SUBSTRATE TUBE
15
OPTICAL CORE-HIGH REFRACTIVE INDEX, HIGH THERMAL EXPANSION MATERIAL
4
6
1
LIGHT GUIDING AIR CLADDING 18
FLAT PLATE-LOW REFRACTIVE INDEX LOW THERMAL EXPANSION MATERIAL
SUBSTRATE - LOW REFRACTIVE INDEX LOW THERMAL EXPANSION MATERIAL
9
20
LIGHT GUIDING AIR CLADDING 21
OPTICAL CORE-HIGH REFRACTIVE INDEX, HIGH THERMAL EXPANSION MATERIAL

air encompassing the remainder of the outer surface of said core to provide a light guiding cladding.

4,354,737
VARIABLE GAIN SCREEN PERMITTING OFF-AXIS VIEWING WITH IMAGE BRIGHTNESS REMAINING CONSTANT

Martin Dotsko; Robert E. Klemm, both of Binghamton, and David L. Peters, Whitney Point, all of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,968
Int. Cl.³ G03B *21/56*
U.S. Cl. 350—117 **4 Claims**



1. An off-axis viewing system that includes a non-Lambertian screen surface to provide an off-axis viewer with constant image brightness as measured by an equivalent gain, independent of changes of a viewing angle, comprising:

a projector positioned at a first location to provide a projected image on said screen surface;

means to define a second location which is displaced from said first location, which second location receives substantially all of the reflected light of said projected image;

means to determine an off-axis viewing angle, said angle defined by a first ray that begins at said first location and ends at a third location on said screen surface, and by a second ray that begins at said second location and ends at said third location;

a first portion of screen surface encompassing a first predetermined area located at a first viewing angle and having a seleced first screen gain magnitude as measured from the normal of said screen surface;

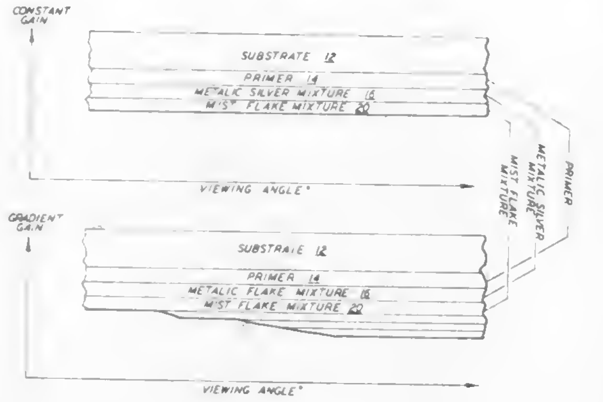
a second portion of screen surface encompassing a second predetermined area located at a second viewing angle and having a selected second different screen gain magnitude as measured from the normal of said screen surface;

said selected first and second screen gain magnitudes each greater than said equivalent gain to provide compensation for the diminution in image brightness caused by the variance of a viewing angle from the normal, whereby said system provides the off-axis viewer with constant image brightness independent of changes of the viewing angle.

4,354,738
FRONT PROJECTION SCREEN WITH PRECISION GAIN CONTROL

Frederic N. Forehand, Apalachin, and Richard A. Mecklenborg, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,825
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—126 **16 Claims**



1. A screen surface for use on a substrate for providing a front projection screen of selective peak gain, comprising:

(a) a liquid metallic silver mixture comprising a lacquer binder component, a mixing color agent component, and a flattening agent component.

10. A method for constructing a front projection screen comprising the steps of:

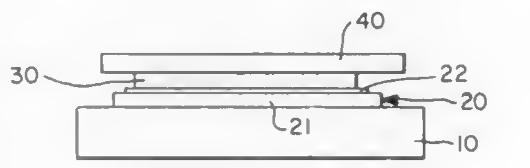
(a) providing a substrate;

(b) applying a liquid metallic silver mixture to said substrate, said silver mixture comprising a lacquer binder component, a mixing color agent component, and a flattening agent component.

4,354,739
COLOR ABSORPTION-TYPE FILTER AND METHOD OF MAKING

Robert T. Scanlon, Santa Rosa, and Robert M. Gelber, Sebastapol, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Sep. 3, 1980, Ser. No. 183,849
Int. Cl.³ G02B *5/22;* **H04N** *5/72*
U.S. Cl. 350—311 **11 Claims**



1. A method of producing a color absorption-type contrast enhancement filter comprising the steps of:

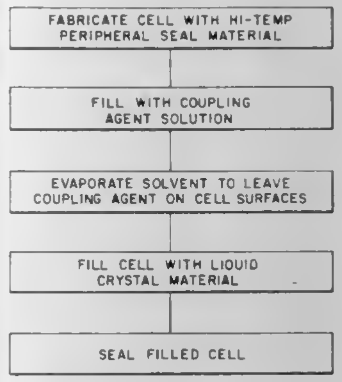
exposing a sheet of positive color transparency film uniformly across its entire area to at least one source of light having wavelength components in the visible spectrum preselected in accordance with the required optical response characteristic of said filter; and

developing said film to produce a filter element which is substantially transmissive for said preselected wavelength components and highly absorptive for other wavelength components of the visible spectrum across said entire area of said film.

4,354,740
SURFACE ALIGNMENT PROCESS FOR LIQUID CRYSTAL DISPLAYS

Herbert S. Cole, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 23, 1980, Ser. No. 152,741
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—340 **22 Claims**


FABRICATE CELL WITH HI-TEMP PERIPHERAL SEAL MATERIAL
FILL WITH COUPLING AGENT SOLUTION
EVAPORATE SOLVENT TO LEAVE COUPLING AGENT ON CELL SURFACES
FILL CELL WITH LIQUID CRYSTAL MATERIAL
SEAL FILLED CELL

1. A method for providing, in one display condition, homeotropic alignment to liquid crystal material filling a display cell, comprising the steps of:

(a) providing an empty cell having a fill hole communicating to an empty cavity therein;

(b) dissolving a surfactant, selected to provide homeotropic alignment, in a volatile carrier solvent;

(c) filling the cell cavity with the solution;

(d) evaporating the volatile carrier solvent to deposit the surfactant on the interior cell cavity surfaces;

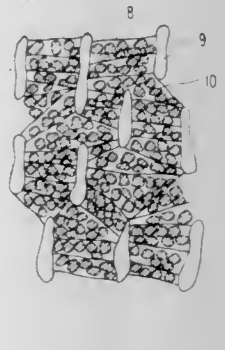
(e) filling the cell cavity with the liquid crystal material, said liquid crystal material being essentially devoid of any surfactants; and

(f) sealing the fill hole.

4,354,741
ELECTROCHROMIC DISPLAY DEVICE

Hiroshi Mano, and Satsuki Kawauchi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 10, 1980, Ser. No. 185,844
Claims priority, application Japan, Oct. 12, 1979, 54-132038; Oct. 23, 1979, 54-136927
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **13 Claims**

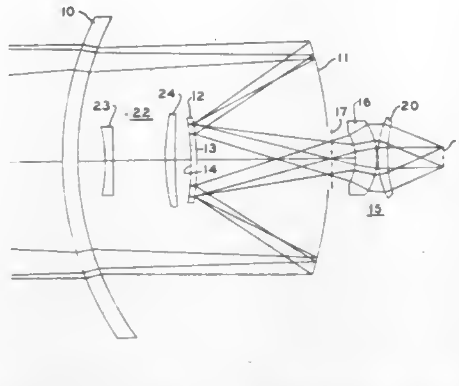


1. An electrochromic display device comprising: a display electrode; a confronting electrode; and an electrolyte-impregnated porous member disposed between said electrodes, said porous member having an average pore diameter of 0.1 to 50 μm, porous spaces occupying at least 30% by volume of said porous member; and at least pigment being held in said porous spaces, said pigment occupying 1 to 50% by volume of said porous spaces; and wherein said porous member comprises a material having a microstructure made up of fibrils and nodes formed by connecting said fibrils.

4,354,742
OPTICAL SYSTEM HAVING A DUAL FIELD OF VIEW

Irving R. Abel, Lexington, and Marcus R. Hatch, Arlington, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 10, 1980, Ser. No. 205,365
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—442 **16 Claims**



1. An optical system having a duel field of view comprising:

a wide-angle objective comprising a lens;

a concave primary mirror;

a movable convex secondary mirror having a first position and a second position;

the secondary mirror when in the first position permitting the wide-angle objective to focus radiation;

the secondary mirror when in the second position preventing radiation from being focused by the wide-angle objective;

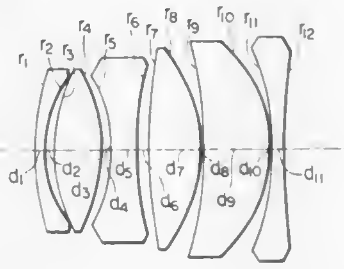
the combination of the secondary mirror when in the second position and the primary mirror comprising a narrow-angle objective with the primary mirror converging radiation to the secondary mirror and the secondary mirror focusing radiation;

whereby the optical system has a wide-angle field of view whenever the secondary mirror is in the first position, and a narrow-angle field of view whenever the secondary mirror is in the second position.

4,354,743
ATTACHMENT LENS SYSTEM

Shin'ichi Mihara, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,449
Claims priority, application Japan, Sep. 18, 1979, 54/119831
Int. Cl.³ G02B *9/62, 11/32*
U.S. Cl. 350—464 **8 Claims**



1. An attachment lens system comprising a front lens group consisting of a first negative meniscus lens component having a convex surface on the object side, a second biconvex lens component and a third biconcave lens component, and a rear lens group consisting of a fourth biconvex lens component, a fifth positive meniscus lens component having a concave surface on the object side and a sixth biconcave lens component, said lens system being so designed as to satisfy the following conditions:

(1) $f_F<0,\ f_R>0$

(2) $0.25<|f_{45}/f_0|<0.32$

(3) $0.16<(d_7+d_8+d_9)/|f_0|<0.21$
(4) $1.4<n_2, n_4, n_5<1.6$
$1.7<n_1, n_3, n_6<1.9$
(5) $30<\nu_2, \nu_4, \nu_5<51.5$
$37<\nu_1, \nu_3, \nu_6<51$

wherein the reference symbol f_F represent focal length of said front lens group, the reference symbol f_R designates focal length of said rear lens group, the reference symbol f_{45} denotes total focal length of said fourth and fifth lens components, the reference symbol f_0 represents focal length of the entire attachment lens system as a whole, the reference symbols d_7 and d_9 designate thicknesses of said fourth and fifth lens components respectively, the reference symbol d_8 denotes airspace reserved between said fourth and fifth lens components, the reference symbols n_1 through n_6 represent refractive indices of the respective lens components and the reference symbols ν_1 through ν_6 designate Abbe's numbers of the respective lens components.

4,354,744

FRAME FOR EYEGLASSES

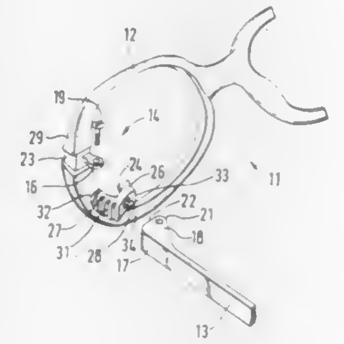
Walter H. Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmiden, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 186,893

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938492

Int. Cl.³ G02C *5/14, 5/22*

U.S. Cl. 351—153 **5 Claims**



1. An optical frame comprising a lens bow, two temples, hinge joints connecting the temples to the lens bow; each temple having a stop face on one end to rest against the lens bow, and an elastic cushion arranged in the region of each hinge joint between the lens bow and the stop face of the temple and wherein:
   - the elastic cushion comprises a base plate and an elastic portion arranged on the base plate at an angle of less than 90 degrees and overlapping the outside edge of the lens bow,
   - the lens bow has a recess and the elastic cushion is set in the recess,
   - the thickness of the elastic cushion is greater than the depth of the recess,
   - the base plate has an opening,
   - the lens bow has a first part of the hinge joint thereon in the form of a solid journal bearing which passes through the opening in the base plate,
   - the end of the temple has a second part of the hinge joint thereon and the base plate has a projection resting under elastic pretension on the second hinge part,
   - the second hinge part has an arc-shaped braking area and the projection has a concave pressure surface,
   - the base plate runs parallel to the plane of the lens bow, and
   - the temple has a straight extension part at its end which, when the temple is open, overlaps the outside edge of the lens bow, the stop face is arranged on the side of the extension part facing towards the outside edge of the lens bow, and the stop face rests on the elastic portion arranged on the base plate to overlap the outside edge of the lens bow.

4,354,745

SLIDE HANDLING APPARATUS

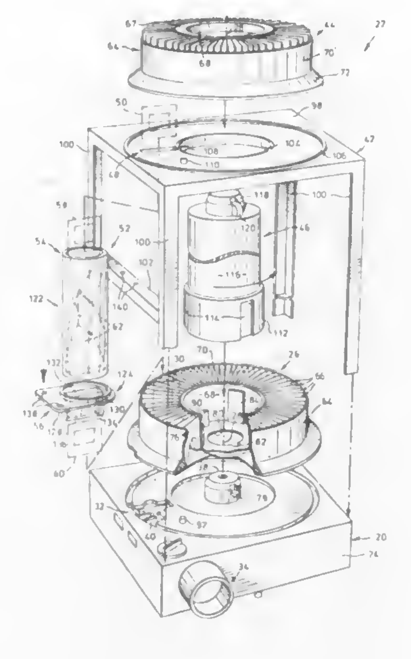
Raymond E. Armstrong, 12 Relmar Rd., Toronto, Ontario, Canada (M5P 2Y5)

Continuation-in-part of Ser. No. 138,770, Apr. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 1,510, Jan. 8, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,097

Claims priority, application European Pat. Off., Jan. 3, 1980, 80300011.6

Int. Cl.³ G03B *23/02*

U.S. Cl. 353—112 **16 Claims**



1. Slide handling apparatus comprising:
   - means adapted to support a rotary slide tray for turning about a generally upright axis;
   - means for indexing said tray about said axis;
   - means adapted to permit the coupling with said indexing means of a second similar tray disposed in a position above and co-axially with the first-mentioned tray so that a said second tray can be indexed in synchronism with the first tray in use;
   - each said tray including a rotatable tray portion defining a plurality of slide receiving compartments arranged in an annular configuration and having open upper and lower ends, and a stationary base member normally closing said lower ends of the compartments and having an opening through which slides can successively leave the compartments at a discharge position as the tray portion rotates in use;
   - means for maintaining said base member of the second tray stationary while the associated tray portion is indexed by said coupling means;
   - chute means disposed between the two trays and having an upper end disposed adjacent said discharge position for the second tray for receiving slides leaving said second tray, and a lower end arranged to deliver such slides into the first tray, said chute means defining a track down which the slides travel by gravity and which is shaped to turn each slide laterally in travelling along said track to an extent such that the slides enter said first tray in reverse orientation compared with their former orientation in the second tray; and,
   - said indexing means being operable to index both trays through angular amounts sufficient to bring successive compartments of said first tray to a position below the lower end of said chute.

4,354,746

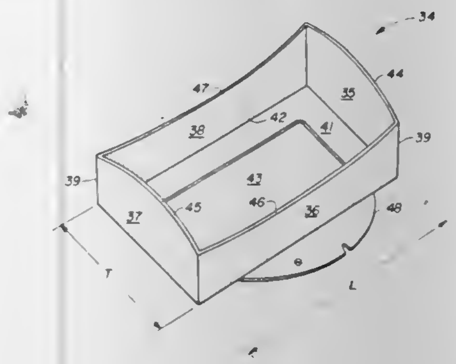
UNITARY LIGHT SHIELD FOR USE IN COLOR PICTURE TUBE LIGHTHOUSES

Emmanuel T. Sagolili, Midland, and Glenn E. Hall, Wye Vale, both of Canada, assignors to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,081

Int. Cl.³ G03B *41/00*

U.S. Cl. 354—1 **10 Claims**



1. A unitary light shield for use with a color picture tube lighthouse comprising
   - a plurality of substantially planar light opaque side members having one curved edge arranged to form a polygon and affixed to one another at light opaque corners; a light opaque bottom member having a configuration congruent to said polygon and affixed to the edge of said side members opposite said curved edge along light opaque seams, said bottom member including a light transparent aperture similar to said polygon and centered in said bottom whereby light can pass through said aperture and the top of said polygon and is blocked by said side members and said bottom member.

4,354,747

SWITCHING CIRCUIT FOR REGULATION OF CAMERA FUNCTIONS

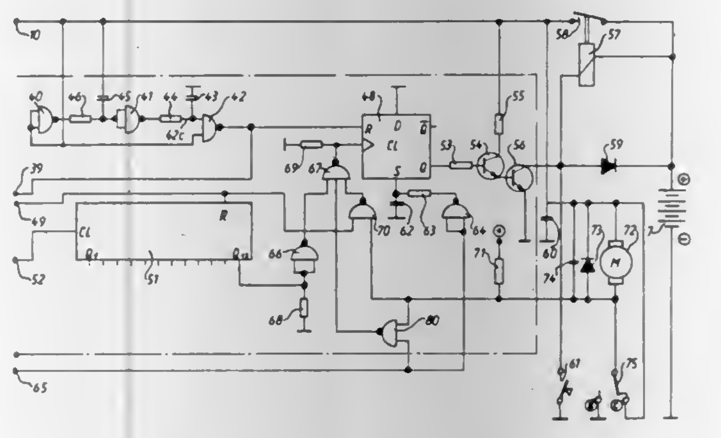
Kurt Borowski, Aschheim; Reinhard Nicko; Istvan Cocron, both of Munich, and Dieter Engelsmann, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,104

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009011

Int. Cl.³ G03B *1/18, 7/26;* H01H *47/00*

U.S. Cl. 354—23 D **26 Claims**



1. In a circuit for the regulation of at least one camera function such as opening of the camera shutter, film exposure, film transport and the like with at least one control circuit which is energized by a source of potential such as a battery having positive and negative terminals through an operation control switch having a first contact coupled to said source and a second contact coupled to said control circuit, the improvement comprising:
   - at least one bistable device having a reset input, said device being electrically coupled to said control circuit to establish a predetermined state thereof upon application of a reset signal to said reset input; and
   - means coupled to said second contact of said operation control switch for generating a reset signal in response to the application of electrical power to said second contact and to bouncing effects between said first and second contacts.

4,354,748

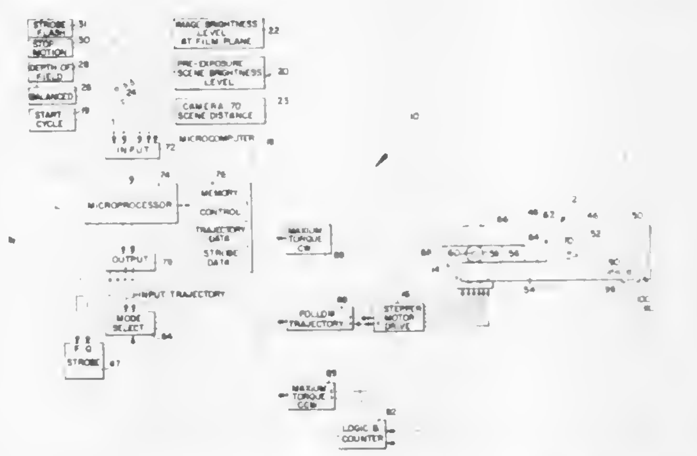
PHOTOGRAPHIC EXPOSURE SYSTEM WITH COMPUTER CONTROLLED STROBE UNIT

Donald L. Grimes, Milford, and Stanley W. Haskell, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 22, 1981, Ser. No. 275,718

Int. Cl.³ G03B *7/097*

U.S. Cl. 354—23 D **16 Claims**



1. An exposure control system usable in a camera for controlling transmission of image-forming light rays from a scene to a film unit located in a film plane during ambient light and strobe flash illumination modes of operation, said system comprising:
   - a blade mechanism;
   - means for mounting said blade mechanism for displacement between a first arrangement wherein it blocks transmission of scene light to the film plane and a second arrangement wherein it defines a maximum aperture, said blade mechanism serving to define a range of progressively increasing sized apertures as it moves from its said first arrangement toward its said second arrangement and then a range of progressively decreasing sized apertures as it returns to its said first arrangement during the course of an exposure interval for regulating transmission of scene light to the film plane;
   - drive means responsive to a program of trajectory signals for driving said blade mechanism in a manner whereby its operation is characterized by an aperture size versus time trajectory curve defined by said program of trajectory signals;
   - means for connecting a quenchable strobe unit to said system to provide a source of artificial illumination directed toward the scene, the light output of the strobe unit being variable between minimum and maximum output values by adjusting the timing of a quench signal provided to said unit subsequent to its firing;
   - means selectively operable for setting said system alternately in either its ambient light or strobe flash mode of operation;
   - means for providing pre-exposure inputs indicative of scene brightness level and camera-to-scene distance; and
   - control means including a first memory section having a preprogrammed trajectory data base stored therein, said trajectory data base including at least characterizing ele-

ments of a plurality of different signal programs defining both ambient light and strobe flash mode trajectory curves that are appropriate for differing scene brightness levels, and a second memory section having stored therein a preprogrammed strobe firing aperture and quench time data base correlated to at least one set of flash mode trajectory curves for various combinations of scene brightness and distance, said control means further including means responsive to said brightness input, when said system is set for said ambient light mode, for utilizing said trajectory data base and developing therefrom a program of trajectory signals to provide a selected ambient light trajectory curve appropriate for the indicated scene brightness level, and for feeding said program of trajectory signals to said blade drive means to effect exposure of the film unit, and, when said system is set for said strobe flash mode, for developing and feeding to said blade drive means a program of trajectory signals to provide a selected flash mode trajectory curve appropriate for the indicated scene brightness level, said last-mentioned means also being responsive to both said scene brightness and distance inputs for utilizing said strobe data base and developing therefrom a selected firing aperture and quench time correlated to said selected flash mode trajectory curve and for providing corresponding strobe fire and quench signals to said strobe unit at appropriate times during said exposure interval.

4,354,749

ENDOSCOPIC PHOTOGRAPHING APPARATUS

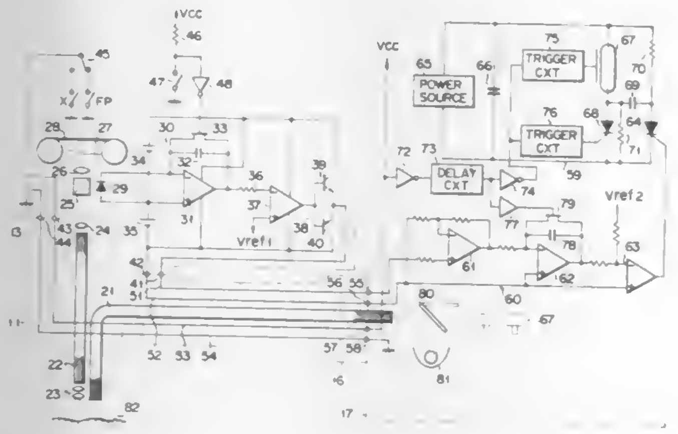
Seiichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,332

Claims priority, application Japan, Sep. 3, 1980, 55-121879

Int. Cl.³ G03B *29/00;* A61B *1/04;* G03B *15/03*

U.S. Cl. 354—33 **4 Claims**



1. An endoscopic photographing apparatus having an endoscope with an eyepiece section, a connector section, a light guide and an image guide, an endoscope camera detachably mounted to the eyepiece section of the endoscope, and a light supply device to which the connector section of the endoscope is detachably coupled, in which said camera comprises a photosensitive element for generating a photoelectric signal corresponding to the intensity of light which enters the camera via said image guide, an exposure calculating circuit for calculating the exposure based on said photoelectric signal from said photosensitive element to output a quenching signal at a predetermined exposure, and high level signal output means for outputting a signal of high level in response to said quenching signal from said exposure calculating circuit to guide this quenching signal to said light source device through a signal line provided in said endoscope.

4,354,750

FLASH UNIT HAVING A FLASH OUTPUT CONTROL DEVICE

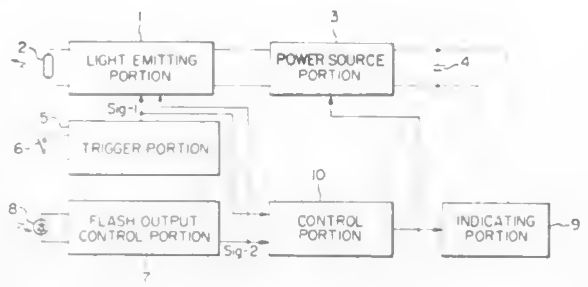
Hiroshi Hasegawa, and Osamu Maida, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,012

Claims priority, application Japan, Feb. 5, 1980, 55-12677

Int. Cl.³ G03B *15/02*

U.S. Cl. 354—128 **5 Claims**



1. A flash apparatus comprising:

a power source portion including a battery and a heavy current consuming source;

means for generating a trigger signal for initiating a flash operation;

a flash discharge tube responsive to said trigger signal and using current from said power source portion for producing light to illuminate an object;

flash output control means for metering the light reflected from the object and for terminating light emission from said flash discharge tube when a predetermined quantity of reflected light is received, thereby effecting a flash output control operation; and

control means responsive to said trigger signal for inhibiting the operation of said heavy current consuming source during said metering.

4,354,751

EXPOSURE SYSTEM FOR A CAMERA

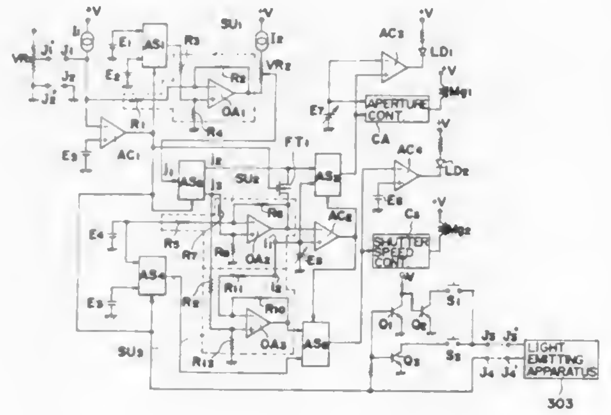
Tatsuro Izumi; Nobuyuki Taniguchi, both of Sakai; Toshiaki Matsumoto, Izumisano; Masatake Niwa, Sakai; Tokuji Ishida, Daito, and Masatoshi Itoh, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 18, 1981, Ser. No. 244,924

Claims priority, application Japan, Mar. 18, 1980, 55-35645; Dec. 24, 1980, 55-184883

Int. Cl.³ G03B *7/16, 15/05*

U.S. Cl. 354—139 **15 Claims**



10. An exposure system for a camera comprising:

electronic flash means for projecting an artificial light which flashes for a prolonged period of time and has a predetermined constant light intensity;

means for obtaining an information of distance to the object;

means for setting an information of film speed; and

means for controlling the exposure of the film in response to the predetermined intensity of said prolonged flash light, the information of distance to the object and the information of film speed.

4,354,752

PHOTOGRAPHIC CAMERA

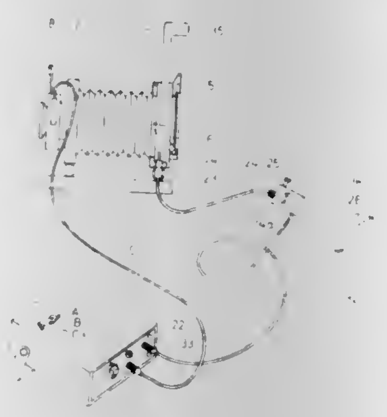
Franz Starp, Mittlere Steige 36, 7547 Wildbad 5, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,244

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014550

Int. Cl.³ G03B *17/38*

U.S. Cl. 354—232 **10 Claims**



1. Photographic camera apparatus comprising

a camera having a rear window housing section containing a rear viewing window and a rear receiving portion operatively arranged adjacent the window for removably receiving a separate cassette insertable thereat for cooperating disposition at the window, and a front lens and shutter system housing containing a controllable exposure shutter and a controllable aperture size diaphragm and electromagnetic means for correspondingly operating the shutter and diaphragm,

a separate electronic control device for selectively operatively controlling the corresponding exposure parameters of the camera, and operatively electrically connectable to the electromagnetic means for controlling the operation of the shutter and diaphragm, and

a mechanical conversion adapter having a mechanical transmitter portion operatively connectable to the rear housing section, an electrical conductor portion operatively connectable to the control device, an intermediate converter portion containing mechanically operated electrical switch means electrically connectable by the conductor portion to the control device for controlling the operation of the control device and electromagnetic means for correspondingly controlling the operation of the shutter and diaphragm, and a mechanical transmitter means operatively arranged in the transmitter portion for displacement between a rest position and an actuating position and including a cassette contact surface operatively arranged in the rest position adjacent the rear receiving portion for mechanical engagement displacement of the transmitter means by the cassette to the actuating position upon such insertion of the cassette and a switch contact surface arranged for actuating the switch means in the intermediate converter portion upon such transmitter means displacement to the actuating position, for converting corresponding mechanical displacement pulses of the transmitter means in response to such cassette insertion into electrical pulses of the switching means for controlling the control device for operating the electromagnetic means.

4,354,753

REFLEX CAMERA HAVING A FOCAL PLANE SHUTTER AND AN INTERCHANGEABLE VARIABLE SHUTTER OBJECTIVE

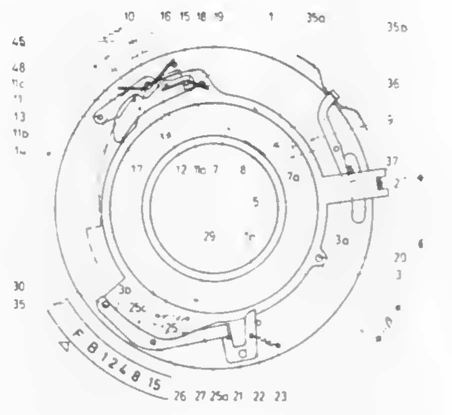
Lave Tenne, 434 Kungsbacha, Sweden; Franz Starp, Mittlere Steige 36, Wildbad, and Walter Holzapfel, Richard-Wagner-Strasse 42, both of Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,535

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 301640; Nov. 28, 1980, 3044882

Int. Cl.³ G03B *9/00*

U.S. Cl. 354—232 **10 Claims**



1. Reflex camera of the type having a focal plane shutter, comprising:

an objective containing a lens aperture and provided with a variable central shutter of the type adapted for operation between a basic open shutter position in which the lens aperture is fully open and a closed shutter position, and a central shutter drive for effecting opening and closing shutter operating movement, the central shutter being arranged for mounting a shutter segment system for operating movement adjustably backwards and forwards for opening and closing the lens aperture and which in the basic open shutter position fully clears the lens aperture,

a focal plane time adjuster associated with the focal plane shutter and arranged for setting to a particular central shutter position "C" for operating the central shutter,

a central shutter time adjuster associated with the central shutter and arranged for setting to a particular focal plane shutter position "F" which effects a "B" function for operating the focal plane shutter while the central shutter is in the basic open position,

a diaphragm and a diaphragm preselecting adjuster arranged such that, before commencement of the operating movement of the central shutter, the diaphragm approaches a specific working aperture which is preselectable by means of the diaphragm preselecting adjuster, and

a central shutter lock arranged such that upon setting the central shutter time adjuster to the focal plane shutter position "F" which effects a "B" function, the lock operates to block the central shutter drive from effecting closing shutter operating movement of the central shutter whereby to permit the focal plane shutter to be operated while the central shutter is in the basic position.

4,354,754

INDICATOR DEVICE WITHIN THE VIEWFINDER OF A CAMERA

Yosuke Takahashi, Sagamihara; Toshikatsu Kasui, Tokyo, and Nobuaki Sasagaki, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,622

Claims priority, application Japan, Jun. 9, 1980, 55-79226[U]; Jun. 12, 1980, 55-80970[U]

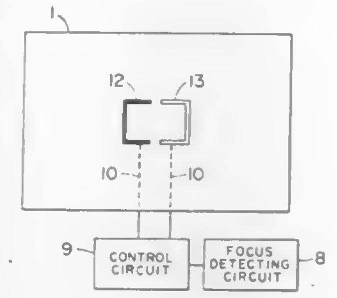
Int. Cl.³ G03B *17/00, 13/02*

U.S. Cl. 354—289 **4 Claims**

1. An indicator device within the viewfinder of a camera for

indicating a predetermined range substantially centrally of the viewfinder field frame, said device comprising:

- electro-optical display means disposed in the viewfinder optical path to display said predetermined range, the display means including at least a first and a second electro-optical element each having an electro-optical effect, and the concentration of each electro-optical element being changed by electrical signal information;
- an information circuit for producing at least three kinds of outputs corresponding to photographing information; and



- a control circuit for producing electrical signal information corresponding to the output of said information circuit and changing the concentration of at least one of the first and second electro-optical elements to display three different states;
- whereby said display means indicates by the predetermined range at least three states corresponding to the photographing information.

4,354,755
APPARATUS FOR THE PROCESSING OF PHOTOGRAPHIC MATERIAL IN SHEET FORM

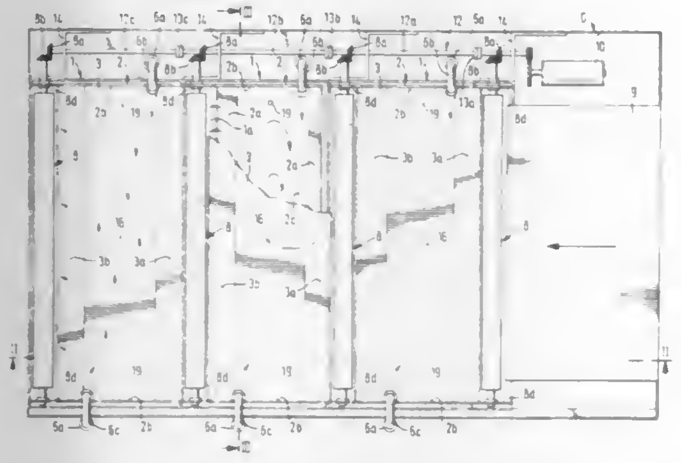
Joseph Becbeiraz, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 13, 1981, Ser. No. 253,958

Claims priority, application Switzerland, Apr. 21, 1980, 3061/80; Feb. 25, 1981, 1251/81

Int. Cl.^{3} G03D *3/08*

U.S. Cl. 354—322 **13 Claims**



1. An apparatus for the processing of photographic material in sheet form, comprising at least two stations, an apparatus frame in which said stations are installed in sequence, each of said stations comprising a flat base tank having a sidewall, an upper rim and a bottom wall; a processing tray having a sidewall, a bottom zone and an upper rim comprising front and rear longitudinal rim portions opposite each other and lateral rim portions therebetween, and being set in said base tank so as to constitute a tray-and-tank unit; guiding elements for conveying the photographic material through the processing apparatus, comprising a cover which is supported on said lateral rim portions of said processing tray while leaving a slot free between the cover and the front and rear rim portions, respectively, said cover thereby guiding the introduction and withdrawal of the photographic material through said two slots; each station comprising a pair of transporting and squeezing rollers constituting a roller pair-building block adapted for being detachably and thereby exchangeably mounted in the tank-and-tray unit of the station; each roller of said roller pair comprising a shaft, and one of the two shafts having an extension part laterally protruding beyond said tank; a composite drive shaft supported in said apparatus frame and composed of drive shaft sections, one per station, and adapted for being detachably connected with each other, for rotation in common, upon the stations being installed to form said sequence thereof in said apparatus frame, a plurality of drive gear means, one per section being mounted on the drive shaft section of the respective station; and a plurality of driven gear means, one for each station, being mounted each on said extension part of one of the roller shafts in the respective building block in such a manner as to be drivingly engaged by said drive gear means of the same station, as the respective building block is inserted into the tank-and-tray unit of that station; and circulating means for circulating treating fluids through said stations.

4,354,756
COPYING APPARATUS

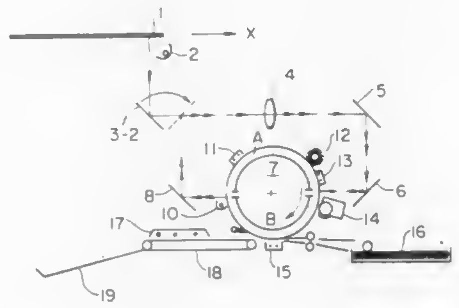
Yasunori Arai, Hatoyama; Ryota Ogawa, Kawagoe, and Michiro Ohishi, Hatoyama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1981, Ser. No. 253,637

Claims priority, application Japan, Apr. 23, 1980, 55/53726

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 R **9 Claims**



1. A copying apparatus comprising: a single rotatable drum having first and second photosensitive surfaces provided thereon; and means for forming an image of an original on said first photosensitive surface and for forming an image of the image formed on said first photosensitive surface on said second photosensitive surface.

4,354,757
XEROGRAPHIC OR ELECTROSTATIC COPYING APPARATUS CAPABLE OF COPYING ONLY SELECTED LINES, PARAGRAPHS OR OTHER SUCH SECTIONS OF AN ORIGINAL

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Fed. Rep. of Germany

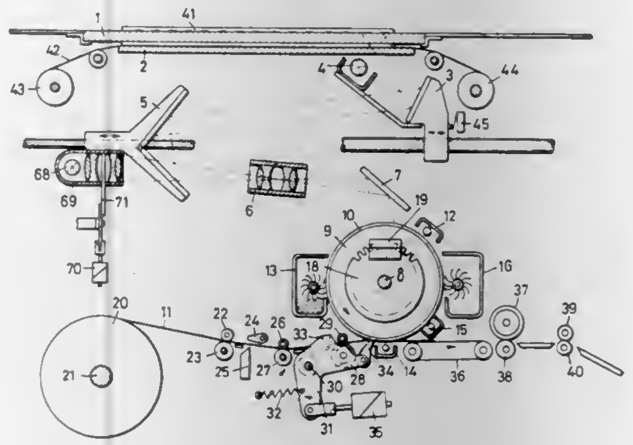
Filed Nov. 1, 1976, Ser. No. 737,564

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1975, 2548836

Int. Cl.^{3} G03G *15/04, 15/052*

U.S. Cl. 355—7 **1 Claim**

1. A xerographic or electrostatic copying apparatus capable of effecting the copying of only selected lines, paragraphs or other such sections of an original to be copied, the copying apparatus comprising, in combination, means provided with a light-sensitive surface; means for illuminating the original to be copied and producing upon the light-sensitive surface an electrostatic image of the original; selector means operable in a plurality of different settings for selecting for copying different respective lines, paragraphs or other such sections of the original; and means, in addition to the means illuminating the original and producing the electrostatic image, automatically operative for electrostatically blanking out that portion of the light-sensitive surface corresponding to the non-selected sections of the original, the means for illuminating the original and producing the electrostatic image comprising means for projecting light from the illuminated original onto successive portions of the light-sensitive surface along a predetermined light path, the means for effecting the electrostatic blanking out comprising means for introducing additional light into the predetermined light path during those time intervals during which the means for projecting light from the illuminated original onto the light-sensitive surface is projecting light onto the sections of the light-sensitive surface corresponding to the non-selected sections of the original, the means for projecting light from the illuminated original onto successive portions of the light-sensitive surface along the predetermined light path including a semi-transmissive mirror positioned to reflect light from the illuminated original towards the light-sensitive surface along the predetermined path, the means for introducing additional light into the predetermined path comprising a light source located behind the semi-transmissive mirror and operative for emitting light through the semi-transmissive mirror and into the predetermined light path.



4,354,758
EXPOSURE CONTROL DEVICE FOR A PHOTOCOPIER

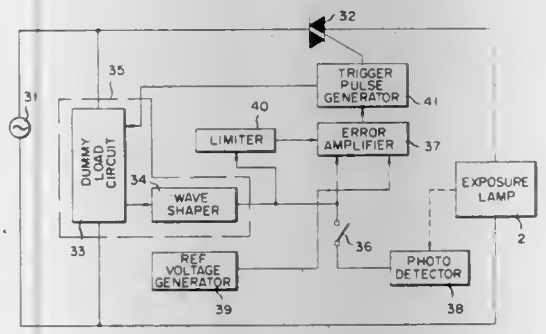
Kenji Futaki, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 21, 1981, Ser. No. 226,806

Claims priority, application Japan, Jan. 31, 1980, 55-10234; Jan. 31, 1980, 55-10235

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—14 E **7 Claims**



1. An exposure control device for a photocopier which exposes an image by irradiating a manuscript with an exposure lamp and guiding the reflected light to a photosensor comprising,

- (a) voltage generating means for generating a voltage corresponding to a voltage applied to said exposure lamp;
- (b) light detecting means for detecting the light reflected from said manuscript for converting it into a voltage signal;
- (c) means for adding an output voltage of said light detecting means to an output voltage of said voltage generating means;
- (d) comparing means for comparing a voltage added by said adding means with a reference voltage set in advance, and for outputting a signal corresponding to the compared result; and
- (e) control means for controlling the amount of light from said exposure lamp according to the output signal from said comparing means.

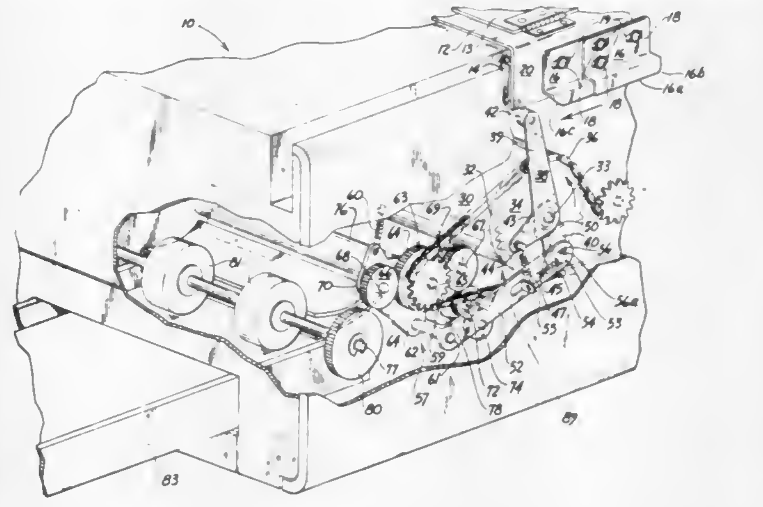
4,354,759
COPY PAPER FEED MECHANISM

David P. Bujese, Toms River, N.J., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed May 1, 1981, Ser. No. 259,397

Int. Cl.^{3} G03G *15/00;* **B65H** *5/04*

U.S. Cl. 355—3 SH **7 Claims**



1. In a photocopy machine having a reciprocating carriage for moving a document past an illuminating means, a rotatable drum having a photoconductive surface thereon, means for projecting an image of the indicia on the document to the photoconductive surface, and means for developing the image on the drum and for transferring the image to a sheet of copy paper, apparatus for feeding a sheet of copy paper to the photoconductive surface in proper registration with the image thereon, said apparatus comprising:

- A. sheet separating means for separating and advancing a sheet of copy paper from a supply thereof,
- B. sheet feeding means disposed in the feed path of the sheet being advanced of a predetermined distance from said sheet separating means and operable to define a registration gate for the sheet when said roller means is stationary and to feed the sheet to the photoconductive surface when said roller means is caused to rotate,
- C. drive means movable from a first position in which said drive means normally is engaged with said sheet feeding means for normally driving said sheet feeding means, to a second position in which said drive means is disengaged from said sheet feeding means and is engaged with said sheet separating means, and
- D. actuating means responsive to a first predetermined amount of movement of the carriage for moving said drive means from said first position to said second position to drive said sheet separating means in order to separate a sheet of copy paper from said supply and to advance the sheet of copy paper to said registration gate defined by said sheet feeding means for registration thereat, said actuating means being responsive to a second predetermined amount of movement of the carriage for moving said drive means from said second position back to said first position to discontinue driving said separating means and to drive said sheet feeding means, thereby causing said sheet feeding means to feed the registered copy sheet to the photoconductive surface of the drum in proper registration with the developed image thereon.

4,354,760
RING INTERFEROMETER COMPRISING A SINGLE-MODE LIGHT WAVEGUIDE

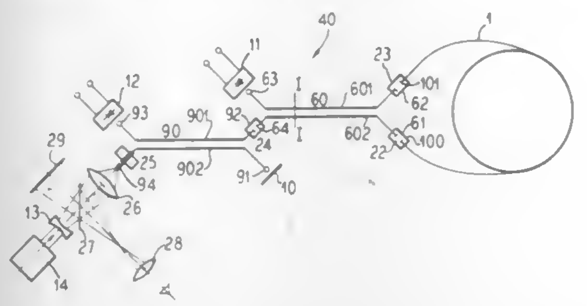
Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,142

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911129

Int. Cl.³ G01P *3/36;* **G01B** *9/02*

U.S. Cl. 356—350 **6 Claims**



1. In a ring interferometer which includes a single mode light waveguide being wound in a coil and having a pair of ends, and means for projecting a light into each end and for sensing light leaving each end of the waveguide, the improvement comprising said means for projecting and sensing including at ieast one optical directional coupler having an input-output end coupled to at least one of the ends of the light waveguide of said coil, said coupler being composed of optical waveguides, which are capable of only conducting light of one polarization state.

4,354,761
METHOD AND APPARATUS FOR AUTOMATIC EVALUATION OF INDENTATIONS IN HARDNESS TESTING OF MATERIALS

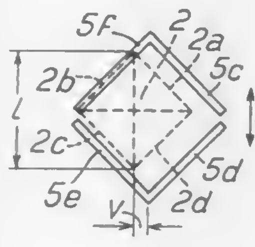
Hans-Dieter Jacoby, Werdorf, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,423

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2917971

Int. Cl.³ G01B *11/02, 11/22*

U.S. Cl. 356—378 **11 Claims**



1. A method for automatically evaluating an indentation produced in a material according to the Vickers hardness testing method, comprising the steps of:
(a) producing an image of the indentation;
(b) scanning edges of the indentation by guiding a diaphragm, having two slits, each of which is apertured in two coordinate directions, over the image of the indentation in a direction parallel to a diagonal of the indentation;
(c) producing electrical signals representing the luminous flux passing through the diaphragm, the electrical signals varying in proportion to surface brightness of the material;
(d) determining from the electrical signals values representing the relative position of edges of the indentation as well as the magnitude of the scanning movement of the diaphragm from edge to edge; and
(e) calculating from said values the length of said diagonal of the indentation, the length of said diagonal being dependent upon the hardness of the material.

4,354,762
EMULSIFYING ASSEMBLY

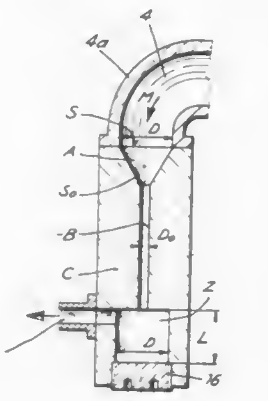
Angelo Cantoni, Rome, Italy, assignor to Solar 77 S.p.A., Rome, Italy

Filed Mar. 28, 1980, Ser. No. 135,081

Claims priority, application Italy, Mar. 30, 1979, 48549 A/79; Jul. 18, 1979, 24448 A/79

Int. Cl.³ B01F *5/06;* **G05D** *11/00*

U.S. Cl. 366—160 **9 Claims**



1. In an emulsifying assembly comprising a metering-mixing device effective to hold constant the ratio of two liquids, as the flow-rate thereof varies, said metering-mixing device including two supply ducts and an output duct, the first supply duct being for a dispersible or liquid supplied at a greater pressure thereto, said first supply duct being effective to be shut by a first shutter able of adjusting the flow rate depending on the opening thereof in said first supply duct, said second supply duct being for a continuous-phase liquid, said continuous-phase liquid being supplied at a pressure less than the pressure of said dispersible liquid and mixed therewith, the liquid mixture being then caused to pass through a duct the passage cross-section whereof is determined by the position of a second shutter, the latter being displaced by said mixture against the biassing of an elastic means, said second shutter being coupled to said first shutter adjusting the flow-rate of the liquid to be dispersed, the improvement wherein an emulsifying device is coupled to said mixture output duct, and comprising a base body wherewithin a tapering duct is formed communicating with a constant cross-section cylindrical duct, said cylindrical duct cross-section being equal to the small cross-section of said tapering duct, said constant cross-section cylindrical duct leading to a cylindrical cross-section plenum chamber of larger diameter than said cylindrical duct, the large section of said tapering duct forming the means for supplying the fluid mixture to be emulsified, and a discharge duct, for discharging the obtained emulsion, being provided on the cylindrical surface of said plenum chamber, said plenum chamber having a closed end spaced from the end at which said cylindrical duct opens into said plenum chamber, said closed end being formed by a wall opposite said cylindrical duct, said discharge duct communicating with said plenum chamber at the end thereof at which said cylindrical duct opens into the plenum chamber.

4,354,763
DRY-TYPE DEVELOPING DEVICE

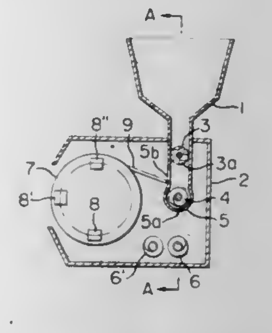
Junichi Koiso; Akihiko Tamura, and Isao Ikemoto, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Nov. 24, 1980, Ser. No. 210,138

Claims priority, application Japan, Nov. 26, 1979, 54-162686[U]

Int. Cl.³ G03G *15/09*

U.S. Cl. 366—181 **3 Claims**



1. In a developing device for an electrostatic recording machine utilizing a developer of toner and carrier and wherein at least a portion of the toner is removed from the developer during development, the developing device including a magnetic brush sleeve for carrying developer on its surface and being partially immersed in a reservoir of developer, an apparatus for replenishing the developer by restoring toner thereto to enable its subsequent reuse for development and comprising:
a toner hopper for containing a supply of fresh toner and including a vertically extending duct into which fresh toner is dispensed and an opening defined in said duct;
elongated mixing and conveying means disposed in said duct at its lowermost portion and below said opening therein so that fresh toner dispensed from said hopper drops onto said mixing and conveying means, and operative to distribute along its entire length the fresh toner dropping thereon;
scraping means for removing used developer from the sleeve and for directing the used developer into said duct through said opening therein and directly onto said mixing and conveying means along its entire length for mixture thereby with the fresh toner to replenish the developer for subsequent reuse; and
said duct further including a plurality of openings at its lowermost portion below and along the length of said mixing and conveying means and through which replenished developer from said mixing and conveying means is returned to the reservoir after mixing by said mixing and conveying means for use in subsequent development.

4,354,764
SPECIMEN TESTING APPARATUS

Heinz Achermann, Sonnhaldenstrasse 2, CH-8610 Uster, and Jürg Daetwyler, Bodenacherstrasse 105, CH-8121 Benglen, both of Switzerland

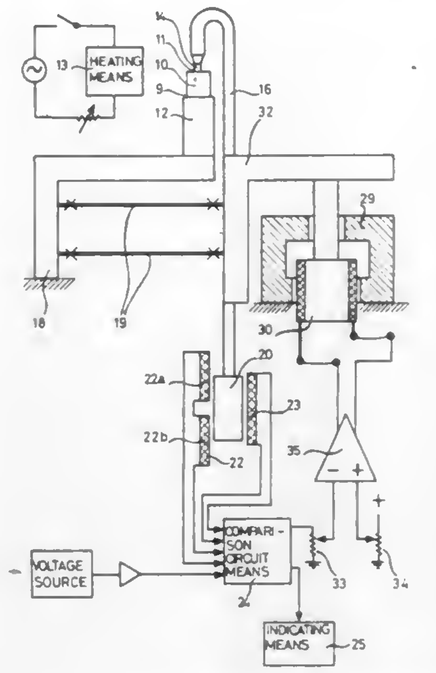
Filed Dec. 29, 1980, Ser. No. 221,023

Claims priority, application Switzerland, Jun. 13, 1980, 4568/80

Int. Cl.³ G01N *25/16*

U.S. Cl. 374—56 **7 Claims**

1. Specimen testing apparatus comprising
(a) specimen support means (**12**) for supporting a specimen (**10**);
(b) specimen sensing means (**16**);
(c) guide means (**19**) connecting said sensing means for displacement relative to said support means, said guide means comprising a parallelogram arrangement including a pair of parallel resilient guide links (**19**) normally biasing said sensing means toward an initial position in engagement with a specimen on said support, whereby variation of a given physical characteristic of the specimen produces a corresponding displacement of said sensing means relative to said support means;
(c) means (**22, 23, 24**) for generating an electrical signal as a function of the displacement of said sensing means from said initial position; and



(d) electromagnetic compensation means (**29, 30**) for applying to said specimen sensing means a force tending to displace the sensing means relative to said support means.

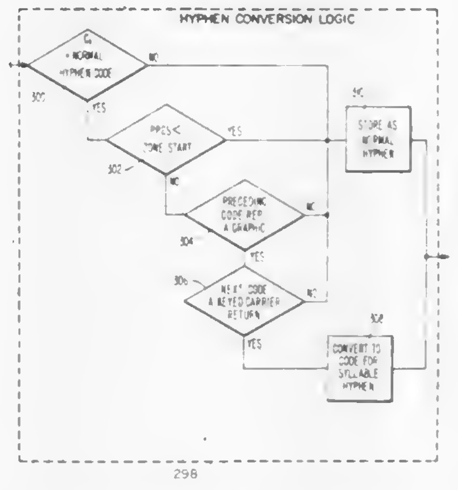
4,354,765
HYPHEN CHARACTERIZATION APPARATUS FOR A TYPEWRITER

James C. Buchanan, and Edward V. Rutkowski, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1979, Ser. No. 79,415

Int. Cl.³ B41J *5/30*

U.S. Cl. 400—7 **2 Claims**



1. In a typewriter of the kind having a keyboard apparatus that sequentially produces coded signals representing printing operations, said signals including a coded normal hyphen signal representative of a hyphen printing operation, plural coded signals representing graphic printing operations and a coded carrier return signal, said typewriter further including a printing apparatus that responds to coded signals to position a print point and to print indicia along a line, means for maintaining a stored record of the present printing position along a line, means for establishing a beginning location for a return zone along said line, and storage means for storing said coded signals originating from said keyboard apparatus, a hyphen characterization system comprising:

means for detecting said coded normal hyphen signal in a sequence of coded signals produced at said keyboard apparatus;

means, cooperating with said detecting means, for examining the coded signals adjacent to said coded normal hyphen signal when detected in said sequence of coded signals to determine the nature of the printing operations represented thereby;

means for comparing the present print location and the beginning location for the return zone;

means for selectively converting said coded normal hyphen signal, prior to receipt by said storage means, to a distinctive coded signal for a syllable hyphen based in part on the nature of said adjacent coded signals as determined by said examining means and in part based on the results of the comparison by said comparison means;

means for defining line endings during playback from storage, said defining means recognizing as potential line ending codes, said coded normal hyphen signal and said coded syllable hyphen signal; and

means, operative on playback from said storage means, for nullifying a coded syllable hyphen signal that does not occur upon playback at a position in said sequence of coded signals that corresponds to the end of a line, whereby syllable hyphens that may be omitted and hyphens that are always printed may be represented at said keyboard apparatus by a common code.

4,354,766
END-OF-PAPER SENSING DEVICE

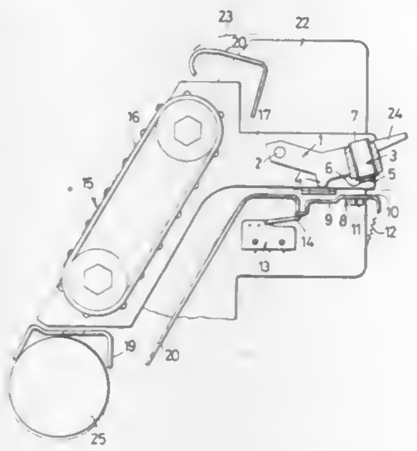
Wolfgang Hendrischk, Neu-Ulm, and Alexander Voigt, Gerstetten, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,624

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2943241

Int. Cl.³ B41J ***29/42***

U.S. Cl. 400—708 **5 Claims**



1. End-of-paper sensing device for a printer, there being a feed path for paper to be printed upon, comprising:

a pivot lever, having a pivot adjacent to the feed path and being capable of assuming a position for extending in upstream direction on the feed path;

a sensing cam on the lever disposed thereon to rest on the paper when in the feed path, but projecting into the path in the absence of such paper;

a permanent magnet mounted on the pivot lever;

a switch bar constructed as a two-arm rocking lever and being disposed adjacent to the feed path so that one arm faces said lever across the feed path, the paper when in the feed path is disposed between the switch bar and the lever, the bar being made of a material permitting attraction by the magnet, said bar further disposed so that said one arm is being attracted by and toward the magnet when the lever has pivoted the cam into the feed path and the magnet toward the bar and there is no paper between the magnet and the switch bar; and

switch means disposed for being actuated by a second arm of said switch bar as the one arm is attracted toward the magnet.

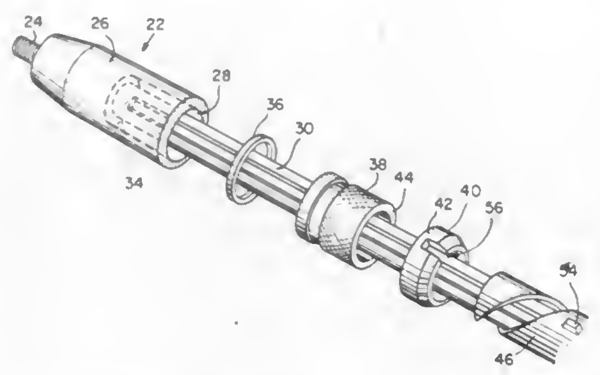
4,354,767
MECHANICAL PENCIL

Aram J. Tessier, Warwick, R.I., assignor to T & T Mfg. Co., Providence, R.I.

Filed Jun. 20, 1980, Ser. No. 161,266

Int. Cl.³ B43K ***21/10***

U.S. Cl. 401—63 **3 Claims**



1. In a mechanical pencil having the following conventional elements:

(a) a lower exterior barrel having an axial bore;

(b) a lower cylindrical portion sized and shaped to fit within and to be fixed against rotation relative to the lower exterior barrel, said cylindrical portion also having an axial bore;

(c) a hollow guide tube having a longitudinal slot along one side, said guide tube being fixed to and extending upwardly from the upper end of the cylindrical portion, said guide tube also having an axial bore;

(d) support means mounted near the lower end of the guide tube above the upper end of the cylindrical portion;

(e) a radially extending stop means mounted on the upper end of the guide tube;

(f) a worm spring rotatably mounted on the guide tube between the support means and the stop means, said worm spring being axially compressed;

(g) a tubular lead carrier sized and shaped to fit within and to slide along the guide tube, said lead carrier having a lower apertured end for resiliently gripping the end of a length of pencil lead, said lead carrier having a radially protruding ear near its longitudinal midpoint, said lead carrier having a longitudinal slot formed between its protruding ear and its upper end where the slot is closed;

(h) a lead expeller rod sliding within the tubular lead carrier, said rod having a radially protruding ear near its upper end, said rod ear protruding through the lead carrier slot parallel to the lead carrier ear, said rod ear being slidable along the slot towards and away from the lead carrier ear;

(i) the lead carrier ear and the lead expeller rod ear being maintained longitudinally spaced-apart by the interposition of one turn of the helical worm spring, the lead carrier moving along the guide tube in response to rotation of the worm spring about the guide tube; and

(j) an upper exterior cap sized and shaped to fit over the worm spring, said exterior cap rotatably linked to the worm spring whereby rotation of said exterior cap causes rotation of the worm spring which causes reciprocation of the lead carrier along the full length of the guide tube slot;

the improvement therein comprising: clutch means for yieldably fixing the lower portion of the worm spring to the upper portion of the support means, said clutch means engaging under conditions of worm spring torque load below a selected load level causing the worm spring to rotate with the rotating support means, said clutch means disengaging when the worm spring encounters torque forces in excess of the selected load level causing the worm spring to slip relative to the rotating support means and to remain stationary relative to the guide tube preventing damage to the mechanism, said improved clutch means further comprising:

(i) the support means being a cap bushing coaxially and rotatably mounted on the guide tube;

(ii) the upper exterior cap gripping the cap bushing and being fixed against rotation relative thereto whereby rotation of the exterior cap causes rotation of the cap bushing;

(iii) the clutch means further including a clutch bushing coaxially and rotatably mounted on the guide tube above the upper end of the cap bushing, said clutch bushing being fixed against rotation and being fixed against upward movement relative to the lower end of the worm spring; and

(iv) the cap bushing having an upper rim extending perpendicular to the axis of the cap bushing, the clutch bushing having a lower rim extending perpendicular to the axis of the clutch bushing, the cap bushing upper rim and the clutch bushing lower rim facing each other and being axially pressed together into frictional contact by the axially exerted spring force of the compressed worm spring.

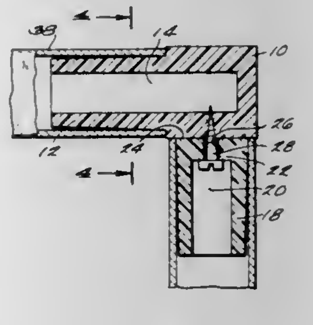
4,354,768
TUBING CONNECTOR

Joseph I. Witek, Downers Grove, Ill., assignor to Medalist Industries, Inc., Mequon, Wis.

Filed May 1, 1981, Ser. No. 259,734

Int. Cl.³ F16B ***2/16***

U.S. Cl. 403—3 **3 Claims**



1. A tubing connector comprising a base block formed from a molded plastic material which can threadably receive a self tapping screw and having six finished connecting faces with the faces oriented to form a cube, a first joining member having a root integrally formed with said base block and extending from one of said faces and the longitudinal axis of said first joining member extending perpendicular to the face of said base block from which it extends, said first joining member having a central bore, a second joining member having a bore, a web at one end of said second joining member and forming the bottom of said bore and a planar end face, and self tapping fastening means extending through said web and received in said base block to secure said end face of the second joining member in abutment with a face on said base block to provide a rigid assembly of said second joining member with said base block, and wherein said joining members have exterior surfaces sized to receive and interconnect tubular members to form structures and the first joining member central bore extends uniformly into said base block and being of a diameter such that said self tapping fastening means from said second joining member penetrates into said central bore yet has sufficient purchase with the block material to retain said second joining new member.

4,354,769
DUAL COUNTERACTING HUB-TO-SHAFT CLAMP CONNECTION

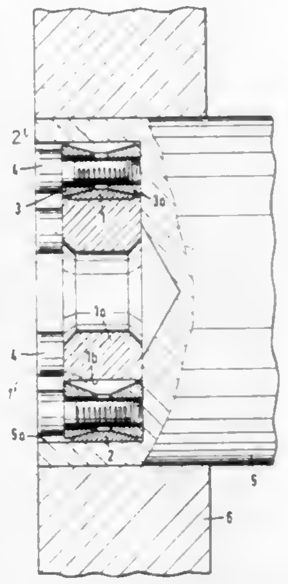
Oskar E. Peter, Scloss-Strasse 9/1, D-7129 Brackenheim, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,156

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013874

Int. Cl.³ F16D ***1/06***

U.S. Cl. 403—248 **6 Claims**



2. Dual counteracting hub-to-shaft clamping connection having

an axially split (1') inner ring (1) formed with outer conical surfaces having the apex from the cone surfaces intermediate the length thereof;

an axially split (2') outer ring (2) formed with inner conical surfaces having the apex from the cone surfaces intermediate the axial length thereof;

a pair of clamping or compression rings (3, 3*a*) having double conical surfaces fitting between the inner conical surfaces of the outer ring (2) and the outer conical surfaces of the inner ring (1);

and circumferentially uniformly positioned clamping bolts passing axially through said axially outer one (3) of the clamping rings and into the axially inner one (3*a*) of said clamping rings to tighten the rings over said conical surfaces against each other and thus provide for diametrically directed forces being applied to said rings,

and comprising, in accordance with the invention,

a circumferentially continuous cylindrical metal ring (1*a*) formed with a circumferential continuous groove (1*b*) in the outer circumferential surface thereof fitted within the axially split inner ring (1), said axially split inner ring (1) being seated in said groove (1*b*).

4,354,770
WEDGE ASSEMBLY

Sheldon A. Block, Cupertino, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1980, Ser. No. 151,072

Int. Cl.³ F16B ***2/14***

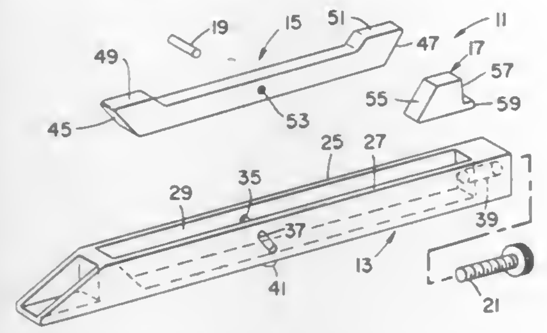
U.S. Cl. 403—409 **4 Claims**

1. Apparatus for securing a circuit board in a rectangular channel comprising:

(a) a housing suitable for mounting on the surface of said circuit board and having an open cavity, said cavity being defined by a flat bottom surface, parallel sidewalls which are orthogonal to said flat bottom surface, a first end surface between said sidewalls extending upward in a forward ramp from said bottom surface, and a second end surface between said sidewalls and substantially normal to said bottom surface, said sidewalls having aligned, ellipsoidal openings extending therethrough having the same slope as said first end surface;

(b) a single wedge member configured to be disposed in said open cavity, a first end of said wedge member having a ramped surface having a slope complementary to the slope of said first end surface of said cavity and a second end of said wedge member having a ramped surface having a slope of the same inclination but opposite in direction to the slope of the first end of said wedge member, the bottom surface of said wedge member being flat and the top surface having at least two contact lands, said wedge member having a hole therethrough orthogonal to the longitudinal axis of said wedge member;

(c) a guide pin which extends through said hole in said wedge member into said ellipsoidal openings of said housing for retaining said wedge member in said cavity;



(d) an anvil configured to be disposed in said cavity between said wedge member and said second end surface of said cavity, said anvil having a ramped surface complementary to the ramped surface of the second end of said wedge member at a first end, a flat bottom surface, and a surface substantially normal to said bottom surface at a second end, said anvil disposed in said cavity so that its ramped surface faces said wedge member; and

(e) means for exerting force upon said second end of said anvil such that said anvil moves forward in said cavity against said wedge member, the wedge member being moved upward between the first end surface of said housing and the ramped surface of said anvil so that the contact lands of the wedge member press against one wall of the channel and the opposite surface of the housing presses against the circuit board to secure it against the other wall of the channel.

4,354,771

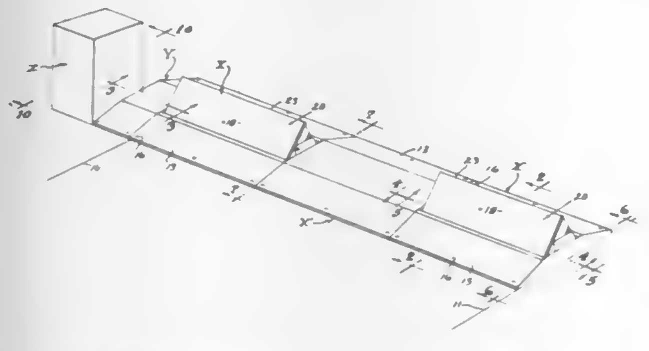
MOTORIZED CURB BARRIER TRAFFIC-WAY CONTROLLER

Harry D. Dickinson, 1681 Larco Way, Glendale, Calif. 91202

Filed Mar. 6, 1981, Ser. No. 241,025

Int. Cl.³ E01F *13/00*

U.S. Cl. 404—6 21 Claims



2. An above grade motorized curb barrier traffic-way controller, including;

a barrier module to be installed upon the surface of and transversely of the traffic-way, and comprised of a frame with oppositely ramped margins extending to spaced rail members defining an open channel for receiving a curb member projecting from a support shaft rotatable therein, the curb member being substantially coextensive with the barrier module and extending from the support shaft at the vehicle approach ramp toward the vehicle departure ramp thereof,

a locking lift means for alternately positioning the curb member in a traffic flow "go" position and a traffic blocking "stop" position, and comprised of an actuating shaft spaced from and parallel to the support shaft and disposed beneath the curb member and with a lift lever projecting from one side of the shaft to extend upwardly from and retractile into the frame opening, there being a toggle link connecting the lever and curb member and substantially aligned with the lever when the lift means is in the traffic blocking "stop" position to lock the same thereat,

and control means for reversibly operating a motor drive means coupled to and positioning the shaft and curb member in said "stop" and "go" positions.

4,354,772

ROAD POST OR REFLECTOR POST

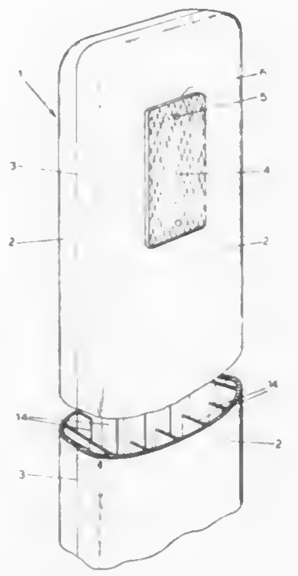
Joannes H. Drexler, Koppelweg 8-12, Doesburg, Netherlands

Filed May 22, 1980, Ser. No. 152,200

Claims priority, application Belgium, Sep. 19, 1979, 197213

Int. Cl.³ E01F *9/00*

U.S. Cl. 404—10 7 Claims



1. A post comprising an elongate hollow body formed of a pair of identical dish shaped members symmetrical with respect to a plane of symmetry passing through a central longitudinal axis, each of said members having an integrally formed bottom wall, a pair of upstanding longitudinal side walls and an end wall at at least one end, the edge of one of said side walls and said at least one end wall on one side of said plane of symmetry being formed with a blade like projection and the edge of the other side wall and the remaining edge of said at least one end wall being formed with a conforming groove receiving said projection each of said members being provided with a longitudinally extending web closely adjacent and parallel to each of said side walls, said webs extending upstanding from the bottom wall to a height such that the edges thereof are in contact.

4,354,773

GROUND COVERING ELEMENT HAVING RAISED PORTIONS AT THE USEFUL SIDE WHICH ARE SEPARATED FROM ONE ANOTHER BY DUMMY GAPS, A GROUND COVERING ELEMENT GROUP OF SUCH GROUND COVERING ELEMENTS, AND A METHOD OF PRODUCING SUCH GROUND COVERING ELEMENTS

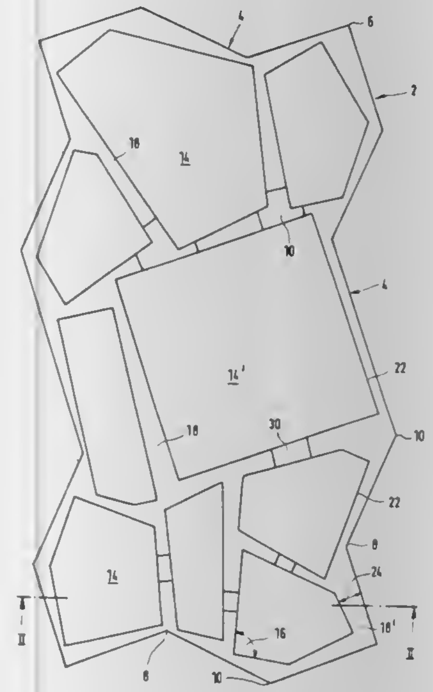
Fritz Noack, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Barth GmbH, Karlsruhe and F. von Langsdorff Bauverfahren GmbH, Rastatt, both of, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,511

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905796

Int. Cl.³ E01C *5/00*

U.S. Cl. 404—41 11 Claims



1. A ground covering element adapted for positioning adjacent another ground covering element, comprising: a top surface, a bottom surface substantially parallel to said top surface and a lateral surface substantially perpendicular over its entire length to said top and bottom surfaces, the outer contour of the ground covering element forming projections and recesses about said entire periphery, said contour having corner projections which form the vertices of a rectangle and line portions all of which are oblique to the sides of said rectangle connecting said corner projections, at least two of the line portions connecting each of said vertices being of equal length and the remaining line portions having lengths which are integer multiples of the lengths of said at least two line portions of equal length; said element comprising a plurality of irregular spaced polygons projecting from said top surface to form raised portions, the majority of said polygons differing in shape from each of the other of said polygons; the edges of said raised portions being straight and separated from each other by dummy gaps having widths which vary linearly along the entire length thereof and from the periphery of said ground covering element by marginal dummy gaps, the edge of each raised portion adjacent the periphery of said element substantially following the contour thereof and having a distance therefrom such that the average distance between the edge of said raised portion adjacent said periphery and said contour is approximately one-half the average width of said dummy gaps between said raised portions, sand filling the space between said adjacent ground covering elements thereby effectively concealing said space from view.

4,354,774

METHOD AND APPARATUS FOR THE RESTRAINED AND FLAME-RETARDANT LAYING OF ELECTRIC CABLES

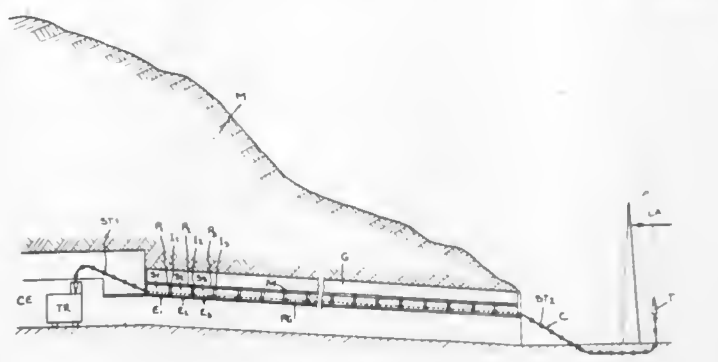
Giuseppe Bianchi, Milan, and Giovanni Gussoni, Settimo Milanese, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Jun. 20, 1980, Ser. No. 161,581

Claims priority, application Italy, Jun. 29, 1979, 23966 A/79

Int. Cl.³ F16L *1/00*

U.S. Cl. 405—157 9 Claims



1. Apparatus for the restrained and flame-retardant laying of one or more electric cables on a surface, said apparatus comprising a duct formed by a plurality of elongated duct elements disposed in alignment with each other and having a cross-section such that they extend at least part way around said one or more cables, said elements being rigid and being made of a non-flammable material and each element being small in length in relation to the length of said duct and comprising a first part which is U-shaped in cross-section and a second portion in the form of a cap which covers the open side of said first part, said elements being spaced from each other at their ends by an amount which is small in relation to their lengths to permit longitudinal movement of the ends of the first part and second part of one element with respect to the first part and the second part of the next adjacent element and said elements being mounted with respect to said surface so as to resist movement in relation to said surface, a granular, non-flammable material in said duct and covering said one or more cables and a flexible, non-flammable sealing means extending between adjacent ends of the parts of said elements for sealing the spaces between said adjacent ends while permitting movement of the ends with respect to each other whereby said one or more cables in said duct are restrained within said duct and said elements can move with respect to each other if required.

4,354,775

PNEUMATIC LINE CLEAN OUT DEVICE

Leon C. Jalas, Rte. 1, Sutherland, Iowa 51058

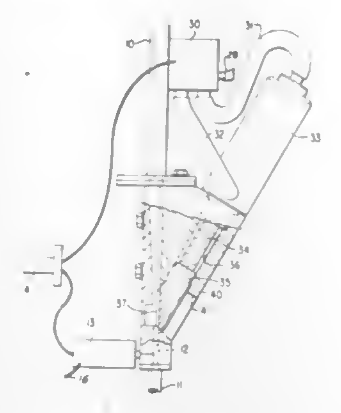
Continuation-in-part of Ser. No. 969,993, Dec. 15, 1978, abandoned. This application Aug. 8, 1980, Ser. No. 176,517

Int. Cl.³ B65G *53/66*

U.S. Cl. 406—3 8 Claims

1. In combination with a device for the pneumatic injection of seeds into the ground including an enclosed seed pathway comprising a chute for conveying seeds to a nozzle; and a pneumatic pressure source adapted to provide pressure to move said seeds through said pathway means for cleaning a blockage in said nozzle caused by blocking material becoming lodged in said pathway comprising closure means adapted to close a discharge opening formed in said enclosed pathway, said closure means being openable to allow ejection of the blocking material, sensing means communicating with said pathway to sense a blocking situation and operably connected

with said closure means to open said closure means upon the sensing of a blockage, said opening being located to allow



pneumatic pressure from said source to blow the blocking material out of said opening.

4,354,776
PRESSURIZED GAS TRANSPORTER AND METHOD

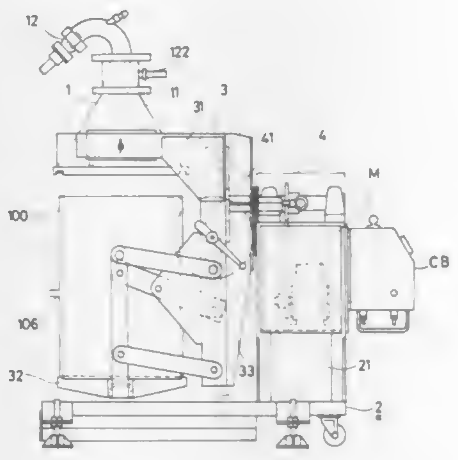
Osamu Matsui, Osaka, Japan, assignor to Matsui Manufacturing Co., Ltd., Osaka, Japan

Filed Aug. 12, 1980, Ser. No. 177,487

Claims priority, application Japan, Aug. 13, 1979, 54-103059; Jun. 5, 1980, 55-76362

Int. Cl.^{3} B65G *53/34*

U.S. Cl. 406—23 **8 Claims**



1. A pressurized gas transporter comprising:
(1) a transporting means having a conical part, including a discharging section, and a pipe arrangement connected to one end of said conical part; and
(2) a carrier cart having a frame; a connecting means mounted on said frame for uniting a container, wherein powdered materials for the like are stored, to said conical part forming an air-tight system; and a turning means on said frame for inverting said container together with said conical part; said connecting means having a locking means for fixing said conical part to said cart, elevator means for raising the container to be air-tightly sealed to the conical part and for supporting said container thereon, and a frame for connecting said locking means with said elevator means.

4,354,777
HIGH PRESSURE FEEDER DEFLECTION PREVENTION

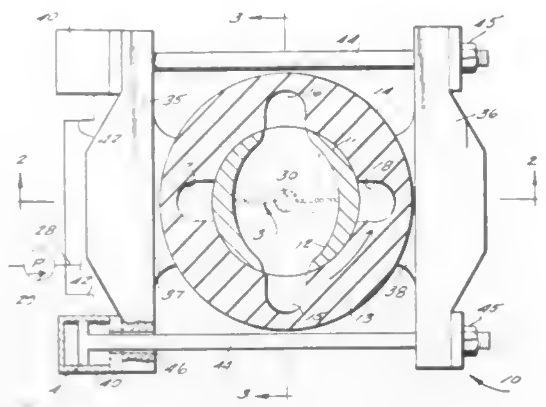
Johan C. F. C. Richter, Nice, France, and Jens Ramstad, Oslo, Norway, assignors to Kamyr, Inc., Glen Falls, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,032

Int. Cl.^{3} B65G *53/30, 53/46*

U.S. Cl. 406—63 **22 Claims**

1. A high-pressure transfer device including: a pocketed rotor containing a plurality of diametrically through-going pockets, said rotor rotatable about an axis; a housing enclosing said rotor for rotation with respect to said housing, said housing having an exterior periphery and having four ports disposed around the exterior periphery thereof for registry with inlets to and outlets from said through-going pockets; means for rotating said rotor in said housing with respect to said ports about said axis of rotation, and in a given direction; screen means for screening particulate material above a predetermined size out of the liquid passing through at least one of said ports; and
means for applying a radially inwardly directed force to said housing exterior periphery roughly proportional and opposite to a force tending to deflect the housing radially outwardly so that significant deflection of the housing is prevented.



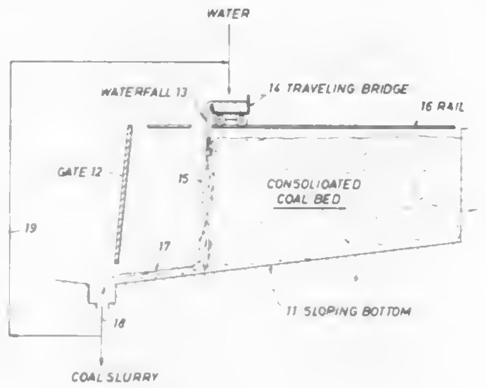
4,354,778
WATERFALL TECHNIQUE FOR REMOVING SETTLED COAL SOLIDS FROM A STORAGE FACILITY

Kenneth L. Bickham, Spring, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 30, 1978, Ser. No. 955,674

Int. Cl.^{3} B65C *53/02*

U.S. Cl. 406—137 **20 Claims**



1. A method for removing slurriable solids which have become settled and compacted during storage and/or transport comprising, allowing the solids to settle and compact in a container having a sloping bottom and a removable gate located adjacent the low end of the sloping bottom, removing the gate of the container and exposing the adjacent part of the compacted solids, subjecting the exposed solids to falling liquid to form a slurry which falls to the bottom of the container, and allowing the slurry to exit the container via the sloping bottom.

4,354,779
DRILLING TOOLS

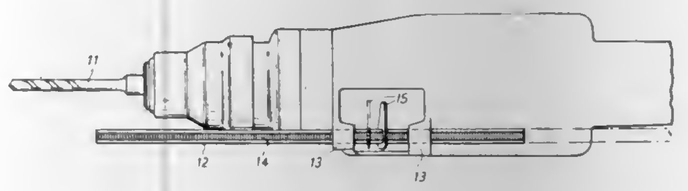
Christopher A. Vaughan, Morden, England, assignor to Kango Electric Hammers Limited, London, England

Filed Jun. 11, 1980, Ser. No. 158,384

Claims priority, application United Kingdom, Jun. 19, 1979, 7921313

Int. Cl.^{3} B23B *49/00, 45/14*

U.S. Cl. 408—241 S **12 Claims**



1. A depth stop device for a drilling tool having a body, said depth stop device comprising:
a pair of flanges attached to the body and being spaced with respect to one another in a direction substantially parallel to the drilling direction of the drilling tool, said flanges inwardly projecting toward the longitudinal center axis of the body and the respective outermost portions thereof being substantially flush with the respective outermost adjacent peripheries of the body, each of said flanges respectively having a bore therethrough;
a stop rod slidably extending through each said bore in the direction of the longitudinal axis of said stop rod and in a direction substantially parallel to the drilling direction of the drilling tool for abutting an object to be drilled;
the outer periphery of said stop rod and the inner periphery of each said bore being dimensioned for substantially non-rotatably fixing said stop rod about the longitudinal axis thereof;
the outer periphery of said stop rod being knurled;
a rigid lever pivotally mounted on the body about a pivotal axis eccentric to and extending in a direction substantially transverse to the longitudinal axis of said stop rod, said lever having a detent edge and being pivotally movable within the space between said flanges and in a first direction and to a first position for engaging said detent edge with said stop rod knurled outer periphery for restricting movement of said stop rod in the direction of the longitudinal axis thereof and for, when said stop rod abuts an object to be drilled, further pivotally moving said lever in said first direction and urging said detent edge into further engagement with said stop rod knurled outer periphery for further restricting movement of said stop rod in the direction of the longitudinal axis thereof;
a spring means operatively associated with said lever for biasing said lever in said first position; and
said lever being manually pivotally movable in a second direction opposite said first direction and to a second position for disengaging said detent edge from said stop rod.

4,354,780
MAKING FORMED MILLED CUTTERS AND KEY CUTTERS

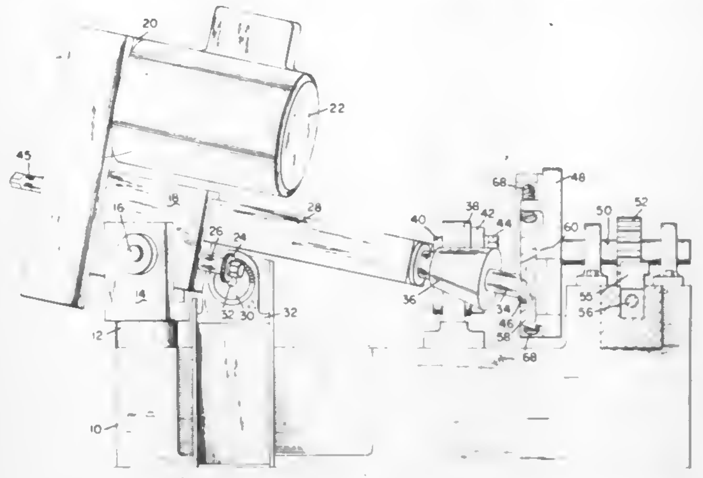
Evangelos Bougiouris, Auburn, Mass., assignor to Ilco Unican Corp., Rocky Mount, N.C.

Filed May 23, 1980, Ser. No. 152,614

Int. Cl.^{3} B23C *3/28*

U.S. Cl. 409—122 **7 Claims**

1. A milling machine for cutting teeth in the peripheral area of a circular blank, comprising:
an arm, a universal joint mounting said arm at one end thereof, a rotary cutter mounted on said arm adjacent to the universal joint, a motor to rotate said cutter, a template adjacent to the opposite end of the arm,
means at said opposite end of the arm to move the arm and its cutter in a pattern controlled by the template, comprising a cam follower on said arm in the area of the template, a rotationally mounted member and means to oscillate the same, a generally diametrical guide on the rotationally mounted member, a block in the guide, a connection from the arm to the block, and resilient means on the rotationally mounted member constantly biasing the block in a direction to cause the arm to engage the cam follower



with the template, whereby oscillatory motion of the rotationally mounted member causes the cutter to be bodily moved in a certain direction, then translated, and thereafter moved in the opposite direction and returned in operative cutting relation to the circular blank,
and means to index the blank between the formation of each complete cut.

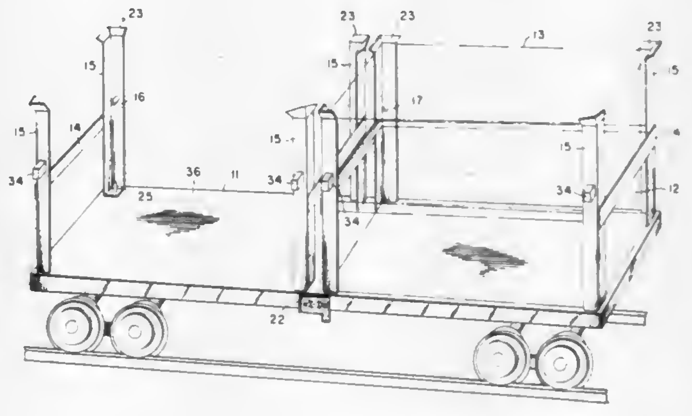
4,354,781
DOUBLE DECK SECURING MEANS FOR RAILROAD CAR

Hugh Roberts, 814 Marlowe Rd., Cherry Hill, N.J. 08003

Filed Feb. 5, 1980, Ser. No. 118,729

Int. Cl.^{3} B61D *45/00*

U.S. Cl. 410—77 **13 Claims**

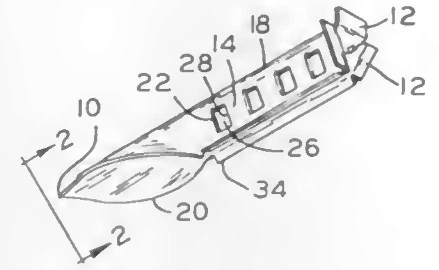


1. In a railroad flatcar, means for securing shipping containers in a doubledeck configuration, said shipping containers having corner castings with side holes and bottom holes, the improvement comprising a frame assembly, said frame assembly having four L-shaped vertical members, at least two of said vertical members having retractable and extendable substantially cylindrical securing members, said securing members positioned on said vertical members so as to be aligned with the side holes of the corner castings of the upper shipping container and adapted to extend into the side holes of said upper shipping container corner casting prior to and during movement of said flatcar so as to secure the upper shipping container during movement of said flatcar, and to retract for unloading and reloading shipping containers on said flatcar so as to permit quick and efficient unloading and loading.

4,354,782

DRIVE-IN EXPANSION FASTENER

Duane B. Newport, 3131 Simon St., Arcola, Ind. 46895
Filed Aug. 18, 1980, Ser. No. 178,741
Int. Cl.³ F16B *13/06, 15/06*
U.S. Cl. 411—61 **10 Claims**

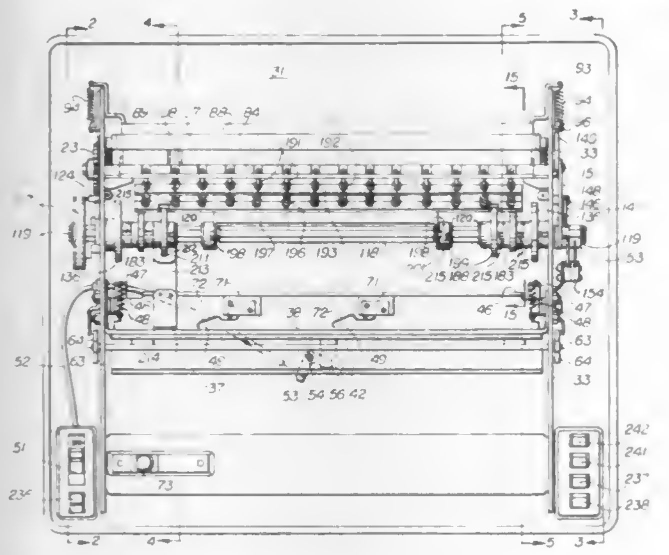


1. An expansion fastener comprising an elongated body of resilient sheet metal pointed on one end and having at least one lateral flange on the other end, said body intermediate the ends having a shank portion which is generally triangular in cross section, said shank portion having two longitudinally extending generally planar spaced juxtaposed sides integrally joined by a longitudinally extending bridging portion, said sides having longitudinal edges opposite from said bridging portion which are adjacent and spreadable, at least one tooth on one of said sides extending outwardly therefrom and formed of said sheet metal, said one side having a thread-engaging edge opposite said teeth which extends transversely of said shank portion, the pointed end portion of said body being defined by two other edges which converge at said pointed end and at the other ends join said longitudinal edges, respectively, said other two edges extending obliquely with respect to the axis of said body, the projection of said two other edges onto a plane which is substantially normal to the axis of said body being substantially circular, said tooth lying radially within an imaginary cylindrical extension of said pointed end portion, whereby driving said body into wallboard forms a hole therein conforming to the shape of said pointed end portion which clears said tooth.

4,354,783

PUNCHING AND BINDING MACHINE

Elmer G. Szanto, Saratoga, Calif., assignor to Velo-Bind, Inc., Sunnyvale, Calif.
Filed May 15, 1980, Ser. No. 150,049
Int. Cl.³ B42C *13/04;* **B42B** *5/00*
U.S. Cl. 412—13 **26 Claims**



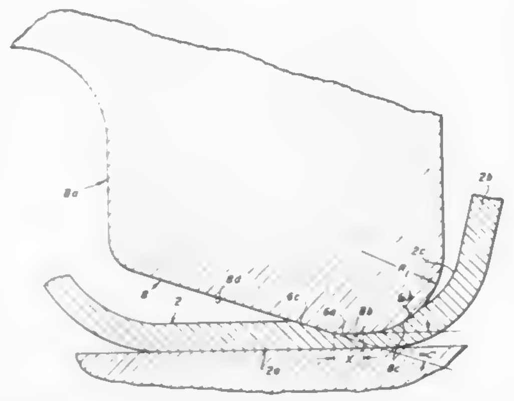
1. In apparatus for binding apertured sheets together using a first strip, a plurality of thermoplastic studs projecting from and spaced longitudinally along said first strip and a second strip formed with holes spaced longitudinally of a second strip at intervals complementary to said studs, said apparatus having a frame provided with a pair of spaced sides, means formed to receive a second strip and a platen to support sheets with their apertures aligned with said holes with a first strip above said sheets with said studs extending through said apertures and said holes and protruding below said second strip, a pressure bar, cooperating means on said sides and bar for guiding movement of said bar from a first position above said platen to a second position adjacent said platen on top of said first strip, actuating means for moving said pressure bar, and a motor driving said actuating means,

the improvement which comprises a switch mounted on the bottom edge of said pressure bar positioned to be closed when said pressure bar encounters resistance to movement as it is manually moved from first to second positions, said switch being wired when closed to energize said motor to cause said actuating means to drive said pressure bar further toward second position to exert downward pressure.

4,354,784

METHOD AND APPARATUS FOR FORMING A NON-SILVER SCORED METAL END

Teddy M. Westphal, Glencoe, Mo., assignor to Boise Cascade Corporation, Boise, Id.
Division of Ser. No. 70,170, Aug. 27, 1979, Pat. No. 4,254,890. This application Oct. 24, 1980, Ser. No. 200,595
Int. Cl.³ B21D *51/44*
U.S. Cl. 413—12 **3 Claims**



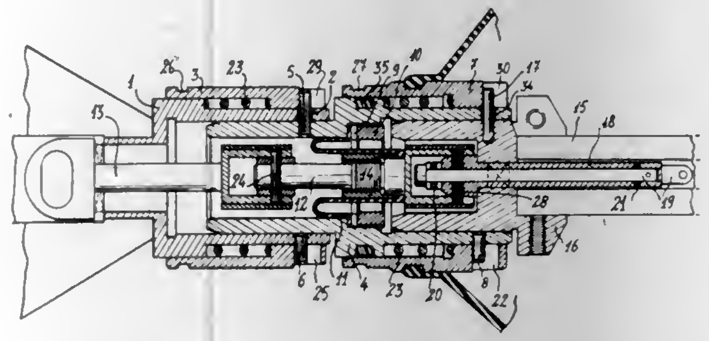
1. The method of forming a continuous annular scoreline (6) in the upper surface of a horizontally supported end closure member (2) having a central panel portion (2*a*), a chuck wall portion (2*b*), and a radius portion (2*c*) connecting said central panel and chuck wall portions, which comprises the steps of

(a) arranging opposite the closure member a scoring die (8) having a single downwardly depending annular projection (8*a*) for forming an annular scoreline (6) between the radius and central panel portions of the end, thereby to define a removable portion within the closure member central panel portion, said projection including in cross-sectional profile
  (1) a central horizontal flat surface portion (8*b*) for forming the bottom wall of the scoreline
  (2) a convex outer wall surface portion (8*c*) diverging outwardly from one end of said bottom wall for forming the outer side wall of the scoreline, said central flat surface portion being tangent to the surface of said outer wall portion; and
  (3) a flat inner wall surface portion (8*d*) diverging outwardly from the other end of said bottom wall for forming the inner side wall of the scoreline, said inner wall surface portion being angularly arranged at an obtuse angle relative to said central flat surface portion; and
(b) pressing said scoring die vertically into the upper surface of the closure member while horizontally supporting the lower surface of said closure member opposite said score die annular projection to form the scoreline between the central panel and radius portions of the member, whereby when the metal end is opened mechanically by a can opener, the formation of metal slivers is minimized.

4,354,785

GAS-TIGHT CONNECTOR

Andre Garnier, Ferme de Bel-Air, Lueil-Sous-Faye, F-86200 Loudun, France
Filed May 1, 1980, Ser. No. 145,815
Int. Cl.³ B25J *1/00*
U.S. Cl. 414—8 **9 Claims**



1. A connector for a remote manipulator of the master-slave type intended primarily for remote handling of radioactive or hazardous products, comprising a first element designated as a "tong-unit connector" and comprising the tong unit proper, a second element designated as a "gas-tight connector" and a third element designated as a "remote-manipulator connector", the gas-tight connector being engaged coaxially within the tong-unit connector and the remote-manipulator connector being engaged coaxially within the gas-tight connector, the three elements aforesaid being traversed from one end to the other by shafts which are capable of translational motion in order to initiate opening and closing of the tong unit, wherein the gas-tight connector is provided with a sealing diaphragm which is capable of unfolding throughout the range of translational motion of a shaft of the gas-tight connector while accompanying the displacement of said shaft and ensuring that perfect gas-tightness is maintained between said gas-tight connector and the remote-manipulator connector during all the forward and return movements of the shaft, said connector including a system for locking the gas-tight connector onto the tong-unit connector, said system being so arranged as to permit said locking action by applying the gas-tight connector axially against the tong-unit connector, followed by rotational displacement of said gas-tight connector about its axis, radial pins forming part of said gas-tight connector being then adapted to engage within bayonet sockets of said tong-unit connector and being locked automatically within said sockets by means of a component forming part of the second tong-unit connector.

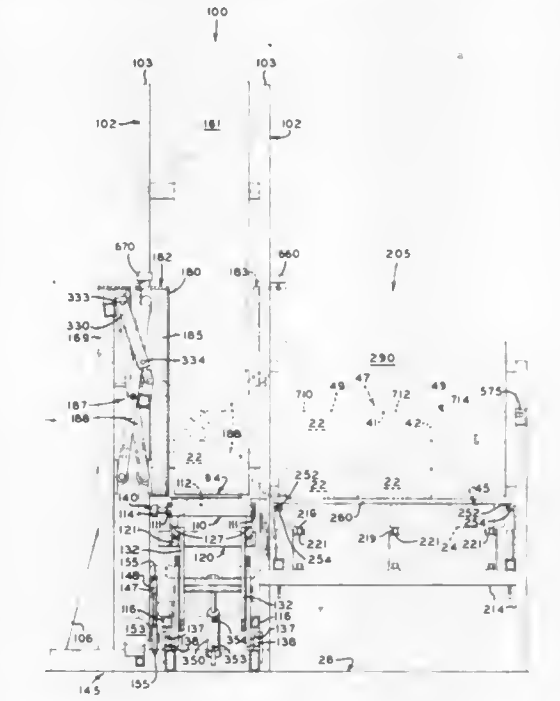
4,354,786

APPARATUS FOR STACKING CONTAINERS ON A PALLET

Blaine W. Spitler, 2622 Dayton, Visalia, Calif. 93277
Filed Mar. 24, 1980, Ser. No. 132,883
Int. Cl.³ B65G *57/30*
U.S. Cl. 414—46 **9 Claims**

1. In an apparatus for stacking containers on a pallet in a pack having a stack of the containers:

A. means for conveying a pallet to and from a loading station with the pallet in a substantially horizontal attitude and at a predetermined elevation at the loading station;
B. a plate;
C. means mounting the plate for movement between a substantially horizontal attitude in superimposed relation to said predetermined elevation at the loading station and a position retracted therefrom;
D. a conveyor having a section adjacent to the loading station for reciprocation between a lowered position to receive the containers and an elevated position;
E. a pair of clamping members disposed oppositely of and extended upwardly from the conveyor section when the section is in the elevated position, one of the members being movable from the other member and toward the other member to clamp a row of containers received on the section between the members and to support said row with the section subsequently disposed in the lowered position to receive a subsequent row of containers for elevation beneath the clamped row of containers to assemble said rows into a stack having the previously received row upwardly of the subsequently received row;
F. power drive means selectively motivating said one clamping member to and from said other clamping member;



G. control means responsive to the presence of the conveyor section at a position between said positions thereof as the section moves during the stroke toward the elevated position from the lowered position, said control means controlling the power drive of the clamping member to motivate said one member from said other member and to release a row clamped therebetween so that said row is supported on the section when the section attains the elevated position;
H. means for moving successive rows of stacked containers from the conveyor section onto the plate at the loading station when such section is at the elevated position; and
I. means for retracting the plate from the loading station and from beneath the pack while a pallet is disposed therein whereby the pack descends onto said pallet.

4,354,787

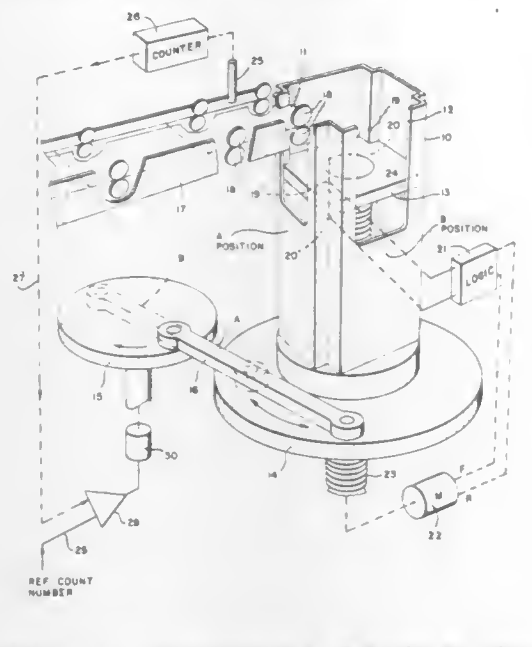
MICROFICHE COLLATING STACKER

Karl H. Gensike, Northridge, and Robert C. Marsh, Pacific Palisades, both of Calif., assignors to Photomatrix Corp., Santa Monica, Calif.
Filed Sep. 2, 1980, Ser. No. 183,305
Int. Cl.³ B65H *33/08*
U.S. Cl. 414—54 **2 Claims**

1. A microfiche collating stacker including, in combination:

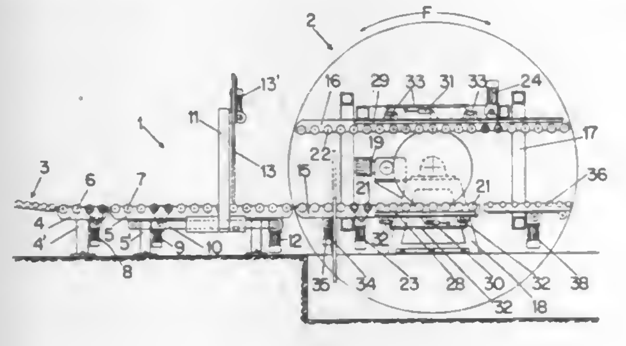
(a) a vertical hopper having an interior cruciform cross section for accommodating microfiche received in the top of the hopper when the hopper is in either first or second positions at 90° to each other;
(b) a vertically movable platform in said hopper for supporting microfiche received therein;
(c) drive means connected to said hopper for moving said hopper from one to the other of its positions when actuated;

(d) feed means for delivery individual microfiche into the top of said hopper so that microfiche can be received and stacked in the hopper to form a first set when the hopper is in said first position and received and stacked in said hopper to form a second set at right angles to said first set when said hopper is in said second position;
(e) sensing means adjacent to said feed means for providing a signal each time a microfiche passes into the hopper;
(f) a counter for counting said signals;
(g) programming means for rotating said hopper to one of its two positions whenever said counter has counted to a given reference count number so that the number of microfiche in each set received by the hopper when in said other of its positions corresponds to said reference count number; and
(h) means for moving said platform downwardly whenever the top of a stack of microfiche in said hopper is within a given distance of said top of the hopper so that additional microfiche can be received in the hopper after the platform is lowered whereby said first and second sets of microfiche can be easily manually separated as they are removed from the hopper.



4,354,788
AUTOMATIC SYSTEM FOR THE FORMATION AND DISTRIBUTION OF LAYERS OF GROUPS OF SHEETS

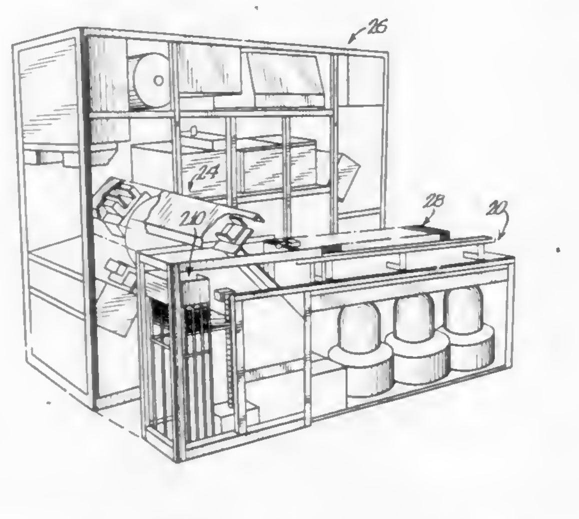
Giampiero Giusti, 42 Via S. Marco, 55100 Lucca, Italy
Filed Feb. 6, 1980, Ser. No. 119,179
Claims priority, application Italy, Feb. 21, 1979, 17702 A/79
Int. Cl.^{3} B65G *57/08*
U.S. Cl. 414—55 **7 Claims**



1. A machine for the formation and distribution of layers of groups of sheets, characterized in that it comprises a preparatory unit, formed by two horizontal planes placed at the same level, one after the other in longitudinal direction with respect to the machine and each of which comprises motor driven conveyor means, the motor driven means of the first one of said planes being able to be made to rotate in both directions in order to cause the groups of sheets to advance towards or move away from the second plane, said groups of sheets arriving on said first plane from a group of sheets production or formation machine, placed upstream, while the motor driven means of said second plane may be caused to rotate only in the direction which moves away from the first plane the groups of sheets which the second plane receives from the first, electric sensor control means being provided to start moving the motor driven means of the second plane only when a group of sheets is reaching it and to stop them when the group of sheets has passed completely over the second plane, said preparatory unit further comprising a stopping member, movable vertically over said second plane between a lowered position which stops the groups of sheets arriving on said second plane in order to be formed into a layer, and a raised position which allows feeding, downstream of said second plane, of the formed layer, said stopping member further being capable of sliding along fixed guides of the second plane and capable of being fastened at a distance from the separation area between the first and second planes, such to allow feeding to said second plane, of the desired number of groups of sheets for the layer to be formed, said control means further controlling the vertical movement of said stopping member as well as starting of the motor driven means of the first plane in the direction which moves the group of sheets away from the second plane as soon as the formation of the layer on said second plane has ended.

4,354,789
METHOD AND APPARATUS FOR TRANSFERRING ENVELOPES

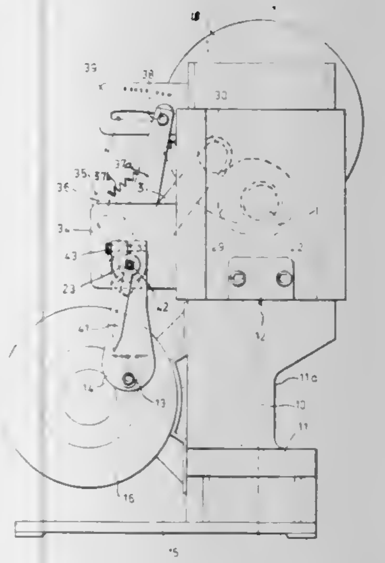
James B. Ellis, Palatine; Mieczyslaw J. Lisiecki, Norridge, and Stephen Ruderman, Oak Park, all of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.
Filed Mar. 31, 1980, Ser. No. 135,355
Int. Cl.^{3} B65G *61/00*
U.S. Cl. 414—104 **13 Claims**



13. A method for transferring envelopes from a first station to a second station and for subsequently transferring envelopes from said second station to said first station wherein each said envelope has first and second opposite end edges, a bottom edge, and a top edge; said method comprising the steps of:
(a) providing and aligning a guide to extend between said first and second stations to guide said envelopes;
(b) providing first and second paddles spaced apart by an amount greater than the length of said envelopes and locating said paddles at said first station;
(c) holding a batch of envelopes between two spaced-apart holding members at said first station with the batch being located between said first and second paddles with the envelopes in face-to-face relationship with said first end edges of said envelopes being disposed substantially at and defining a first end of the batch and with said second end edges of said envelopes being disposed substantially at and defining a second end of the batch;
(d) moving said first and second paddles together in a first direction to contact said batch first end with said first paddle and to push said batch in said first direction out of said first station, along said guide, and at least into said second station;
(e) holding a batch of envelopes between two spaced-apart holding members at said second station with the batch being located between said first and second paddles with the envelopes in face-to-face relationship with the first end edges of said envelopes being disposed substantially at and defining a first end of the batch and with said second end edges of said envelopes being disposed substantially at and defining a second end of the batch; and
(f) moving said first and second paddles together in a second direction opposite to said first direction to contact the second end of the batch at said second station with said second paddle and to push the batch in said second direction out of said second station, along said guide, and into said first station between spaced-apart holding members at said first station.

4,354,790
FEED MECHANISMS

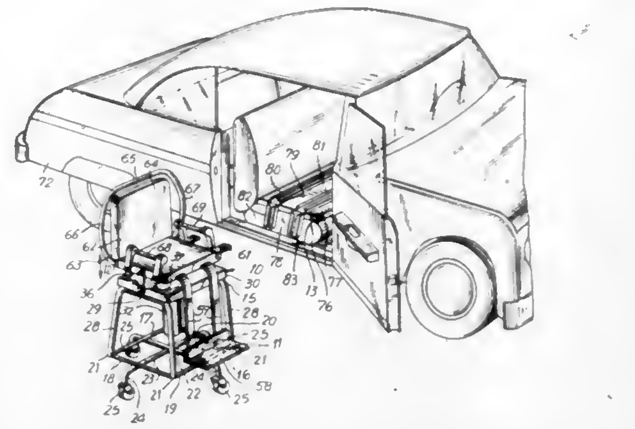
Walter Karl, Sydney, Australia, assignor to Utilux Pty. Limited, Australia
Filed Dec. 31, 1979, Ser. No. 108,524
Int. Cl.^{3} B23Q *7/06*
U.S. Cl. 414—222 **11 Claims**



1. Apparatus for feeding work pieces to a work station, the apparatus comprising:
(a) a first shaft adapted to be driven;
(b) a second shaft rotatably mounted;
(c) drive means for transmitting drive from the first shaft for driving the second shaft in an oscillatory cycle of forward and return movement;
(d) stop means for limiting motion of the second shaft in the direction of return movement, the stop means comprising abutment means fixed to and extending outwardly from the second shaft, and a normally fixed, elongated stop arm, pivotally mounted for motion about an axis substantially parallel to the axis of the second shaft and having a manually accessible adjustment means for securing the stop arm in a desired position such that an engagement portion of the stop arm provides an abutment surface for said abutment means at a location remote from the adjustment means; and
(e) a driven arm connected to the second shaft for applying motion to a feed device for the work pieces, the angular position of the driven arm relative to the second shaft being adjustable for controlling the forward limit of motion of the feed device.

4,354,791
WHEELCHAIR CONSTRUCTION

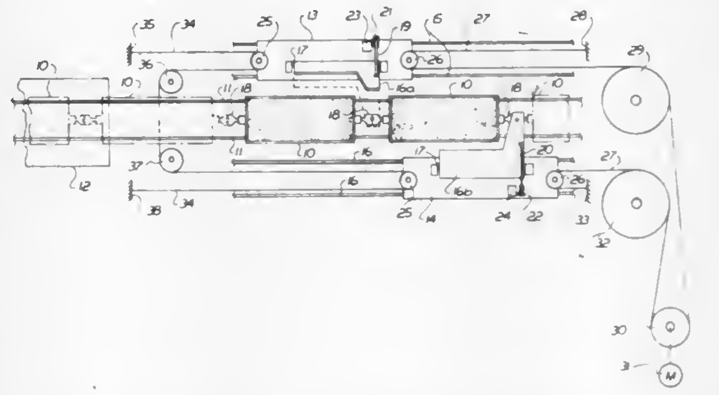
Robert A. Antonellis, 2324 Garfield St., Hollywood, Fla. 33022
Filed Jun. 29, 1979, Ser. No. 53,319
Int. Cl.^{3} B60N *1/08;* A61G *5/00*
U.S. Cl. 414—343 **5 Claims**



1. An improved wheelchair construction having seat transfer means cooperating with the seat of an adjacently positioned vehicle comprising: a wheeled base element having first guiding means thereon, a movable seat element selectively supported by said base element for controlled lateral movement thereupon, said base element having elevating means thereon for adjusting the vertical level of said seat element relative thereto; a platform adapted for support by an automobile seat cushion and having corresponding second guiding means thereon selectively communicating with said guiding means on said base element, whereby said seat element may be selectively moved between said base element and said platform to and from said vehicle, said first and second guiding means each having a set of tracks thereon, said seat element having wheeled means constrained by said tracks to permit only lateral movement; said second guiding means including a set of extendable track extensions interconnected to said platform and selectively engaging the tracks on said base element.

4,354,792
TRAIN POSITIONER

James E. Cornish, North Olmsted, Ohio, assignor to Dravo Corporation, Pittsburgh, Pa.
Filed Mar. 31, 1980, Ser. No. 135,640
Int. Cl.^{3} B65G *67/00;* B61B *9/00*
U.S. Cl. 414—359 **10 Claims**



1. In a train positioner for sequentially advancing a string of coupled railroad cars to a rotary car dumper in a step-by-step and a car-by-car sequence, each of said cars having rotatable couplings permitting the rotation of each car about a longitudinal axis, said rotary car dumper being adapted to invert a railroad car about said axis, said axis being colinear with the axis of the car coupling members of said car, in combination therewith the improvement which comprises at least two car pushing members adapted to sequentially engage a car's cou-

pling, advance said car towards said dumper, and hold said car in the advanced position from movement in either direction, and, driving means to drive at least one of said pushing members forwardly toward said dumper a distance corresponding to about the length of a car while said at least one member is engaged with a car while simultaneously retracting at least another one of said members rearwardly away from said dumper a distance corresponding to about the length of the car while said at least another member is disengaged from said car.

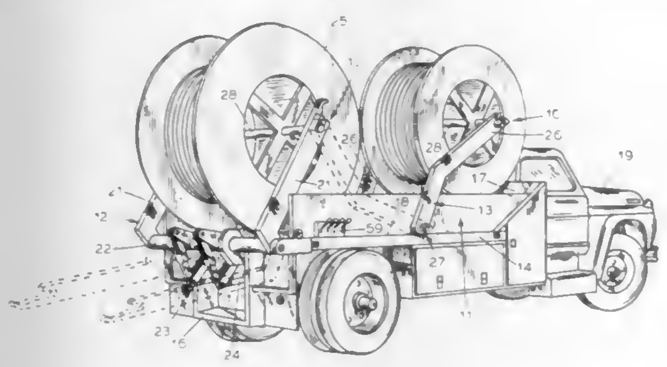
4,354,793
REEL LOCKING MECHANISM FOR A REEL LOADER APPARATUS

Marvin D. Perry, West Des Moines, Iowa, assignor to Mid-America Body & Equipment Co., West Des Moines, Iowa

Filed Feb. 6, 1981, Ser. No. 232,257

Int. Cl.^{3} B60P *1/00*

U.S. Cl. 414—546 **2 Claims**



1. A mechanism for locking the spindle of a cable reel in a reel handling apparatus having a pair of lift arms supported on a portable frame for movement to reel loading and operating positions, said mechanism comprising:

(a) a spindle supporting means on the free end section of each lift arm including a transversely extended spindle receiving pocket having inwardly converging side wall portions such that the distance between said side wall portions adjacent the inner end of the spindle receiving pocket is less than the transverse dimension of said spindle,

(b) a spindle locking member movably supported on each lift arm including a jaw member movable into and out of a pocket closing position,

(c) each lift arm of a tubular construction, with said free end section terminating in a bifurcation to form said spindle receiving pocket between the inner adjacent ends of the bifurcated portions thereof, and one of said bifurcated portions having an opening therein for movement therethrough of said jaw member,

(d) each locking member housed within the confines of an associated lift arm with the jaw member thereof retractable within said one of said bifurcated portions and out of a pocket closing position therefor,

(e) a hydraulic cylinder assembly movably supported within an associated lift arm for actuating an associated locking member,

(f) said spindle, when the jaw members are out of a pocket closing position being receivable within said pockets, whereby an actuation of the locking members to move the jaw members into the pocket closing positions therefor, said spindle is engaged and moved within said pockets into frictional wedged engagement with said side wall portions against rotational and axial movements,

(g) each locking member comprised of a lever pivotally supported intermediate the ends thereof with said jaw member integrally formed at one end thereof,

(h) stop means comprising a pair of abutment members arranged at opposite sides of the lever pivotal support so that the lever is freely movable within a lift arm into and out of a pocket closing position for said jaw member, and

(i) means pivotally connecting a hydraulic cylinder assembly with the other end of each locking member.

4,354,794
CARRIAGE ASSEMBLY

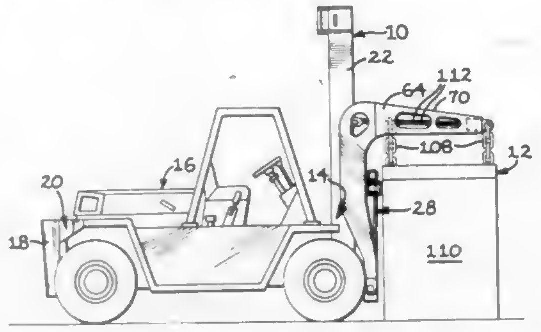
John E. Macnab, Dallas, Oreg., assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/01041, § 371 Date Aug. 11, 1980, § 102(e) Date Aug. 11, 1980, PCT Pub. No. WO82/00455, PCT Pub. Date Feb. 18, 1982

PCT Filed Aug. 11, 1980, Ser. No. 251,529

Int. Cl.^{3} B66F *9/06*

U.S. Cl. 414—607 **17 Claims**



1. A carriage assembly (**28**) for a lift mast (**22**), comprising:

a frame (**30**) having elevationally spaced support (**36**) and guide (**34**) beams elevationally positionably mounted on said lift mast (**22**) with said support beam having opposite end portions (**60,62**);

a pair of load supporting arms (**64**) each individually pivotally connected to opposite end portions (**60,62**) of said support beam and extending therefrom in passing relation to said guide beam (**34**); and

means (**52,48,72**) for movably connecting said load supporting arms (**64**) to said guide beam (**34**) and permitting unitary pivotal movement of the load supporting arms (**64**) about said pivotal connections and sideways relative to the lift mast (**22**).

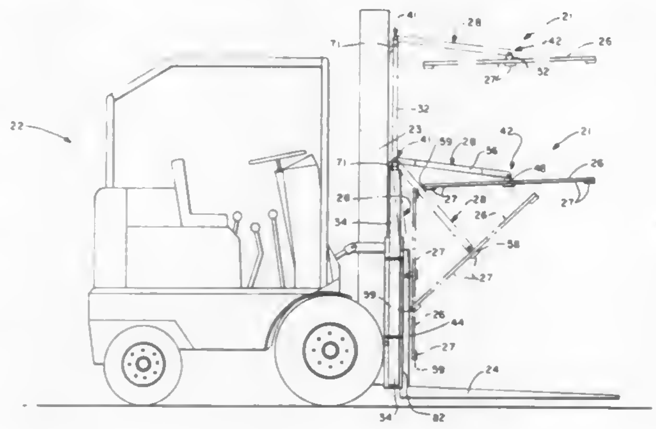
4,354,795
LOAD STABILIZER ASSEMBLY WITH PIVOTAL MOUNT FOR A FORKLIFT TRUCK

Joseph G. Dutra, Jr., 4568 Thornton Ave., Fremont, Calif. 94536

Filed Feb. 13, 1981, Ser. No. 234,408

Int. Cl.^{3} B66F *9/18*

U.S. Cl. 414—622 **13 Claims**



1. A load stabilizer assembly for a forklift truck or the like, said assembly including assembly mounting means formed for mounting said assembly to a forklift truck proximate the forklift tines, clamp means extending outwardly of said assembly as mounted proximate said tines and oriented in generally superimposed vertically spaced relation to said tines, said clamp means including a downwardly facing load engaging surface, and the remainder of the assembly wherein the improvement in said assembly enabling compact storage of said clamp means is comprised of:

pivotal mounting means coupling said clamp means to said remainder of said assembly, said pivotal mounting means including:

(a) arm means,

(b) a first pivotal connection coupling said arm means to said remainder of said assembly,

(c) a second pivotal connection coupling said arm means to said clamp means, and

(d) latch means formed for latching said arm means in a deployed position extending away from said remainder of said assembly and formed for selective release of said arm means for movement to a stored position proximate said remainder of said assembly,

said first pivotal connection, said second pivotal connection, and said arm means being further formed for rotation of said arm means in a first direction upon release of said latch means and rotation of said clamp means in an opposite direction during pivotal movement from said deployed position to said stored position, and said clamp means being moved to a generally parallel orientation to said remainder of said assembly when in said stored position with said load engaging surface facing outwardly of said assembly to enable engagement of a load carried by said tines.

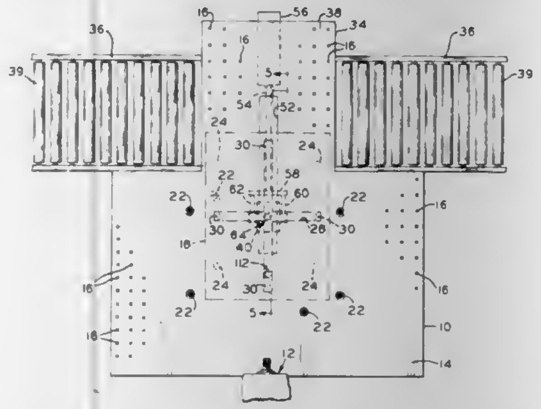
4,354,796
AIR FLOAT POWER TRANSLATION SYSTEM

Raymond A. Bergman, 107 E. Second St., Minster, Ohio 45865

Continuation-in-part of Ser. No. 924,958, Jul. 17, 1978, Pat. No. 4,179,106, which is a continuation of Ser. No. 815,676, Jul. 14, 1977, abandoned, which is a division of Ser. No. 684,725, May 5, 1976, Pat. No. 4,058,885. This application Dec. 4, 1978, Ser. No. 966,072

Int. Cl.^{3} B23Q *7/06*

U.S. Cl. 414—676 **9 Claims**



1. An air-float fixture support system comprising: a table having an upwardly facing upper surface, a workpiece fixture having a lower surface and being supported on said table upper surface, means for supplying a cushion of pressurized air between the fixture surface and the table surface to floatingly support the fixture thereon, an elongated slot in said table surface, a carriage mounted in said table below the table surface for reciprocal movement parallel to said table surface along said slot, said workpiece fixture having an opening in the lower surface thereof, a translation pin member carried by said carriage and protruding through said slot, means in said carriage for selectively extending said pin member to protrude above said table surface and enter the opening in the lower surface of said workpiece fixture to capture the workpiece fixture and for selectively retracting said pin member below said table surface to release the workpiece fixture, said fixture being rotatable around the axis of said pin on the cushion of pressurized air on said table while captured by said pin, and drive means for translating said carriage and said pin member carried thereby along said slot to translate said workpiece fixture when it is captured by said pin member.

4,354,797
FRONT LOADING HYDRAULIC EXCAVATOR

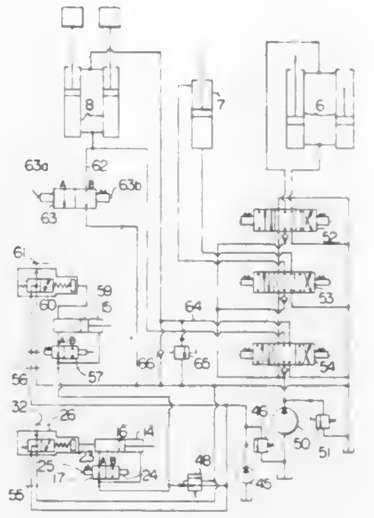
Kiyonobu Hirose, Ibaraki, and Taizo Izumiyama, Toride, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,278

Claims priority, application Japan, May 31, 1979, 54-67716; May 31, 1979, 54-67717

Int. Cl.^{3} E02F *3/86*

U.S. Cl. 414—700 **8 Claims**



1. An excavator comprising: a swivelling member mounted for swivelling motion on a travelling member; a boom pivotally moved by boom cylinders pivotally connected to said swivelling member; an arm pivotally moved by an arm cylinder pivotally connected to said boom; and a bucket pivotally moved by bucket cylinders pivotally connected to said arm; wherein the improvement comprises:

boom detecting means for detecting a pivotal displacement of the boom and producing a first pilot pressure substantially proportional to the detected pivotal displacement of the boom;

bucket detecting means for detecting a pivotal displacement of the bucket and producing a second pilot pressure substantially proportional to the detected pivotal displacement of the bucket;

control valve means including first and second valve switching pilot pressure ports;

first conduit means for introducing the first pilot pressure to the first valve switching pilot pressure port of said control valve means;

second conduit means for introducing the second pilot pressure to the second valve switching pilot pressure port of said control valve means; and

said control valve means being connected to the bucket cylinders in a manner to allow a piston side of the bucket cylinders to be drained.

4,354,798
ROTARY TOOL POSITIONING UNIT FOR A WOODWORKING MACHINE

Gabriel De Muynck, Ardooie, Belgium, assignor to Bekaert Engineering, Zwevegem, Belgium

Filed Apr. 22, 1980, Ser. No. 142,677

Claims priority, application Belgium, Apr. 23, 1979, 1/9365

Int. Cl.^{3} B27C *9/02;* **B23Q** *1/18*

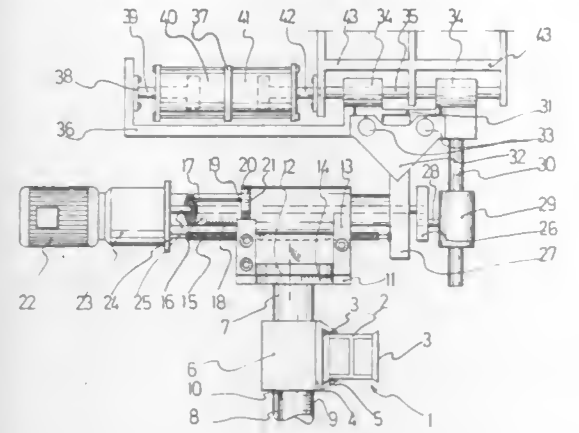
U.S. Cl. 414—750 **6 Claims**

1. A rotary tool positioning unit adapted to be fixedly connected on an alignment surface of a machine frame for machining workpieces, said unit comprising:

a rotary tool holder having a longitudinal axis about which a tool held by said tool holder is adapted to be rotated;

means for independent translation of said tool holder in a first direction;

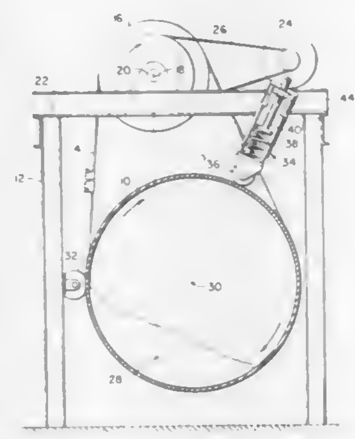
means for independent translation of said tool holder in a second direction perpendicular to said first direction;
means for independent rotation of said tool holder about a first axis;
means for independent rotation of said tool holder about a second axis perpendicular to said first axis;
one of said translation directions being parallel to one of said first and second axes of tool holder rotation; and,
means for imparting a reciprocating movement to said tool holder in a direction perpendicular to said longitudinal axis of said tool holder, said means for imparting a reciprocating movement comprising first and second slide bearing means cooperating with said tool holder and oriented for sliding perpendicularly with respect to one another and an eccentric cam shaft drive means cooperating with said first and second slide bearing means whereby the rotational movement of said drive means is transmitted through said first and second slide bearing means in the form of a reciprocating movement imparted to said tool holder.



4,354,799

CONNECTOR FOR WIRE ROPE

George P. Hurst, 235 Hill St., Jackson, Calif. 95642
Division of Ser. No. 861,604, Dec. 19, 1977, Pat. No. 4,229,138, and a continuation-in-part of Ser. No. 763,188, Jan. 27, 1977, Pat. No. 4,078,298. This application Jan. 28, 1980, Ser. No. 115,658
Int. Cl.³ B25J *13/00;* F16C *11/00;* B01F *7/00*
U.S. Cl. 414—756 **1 Claim**

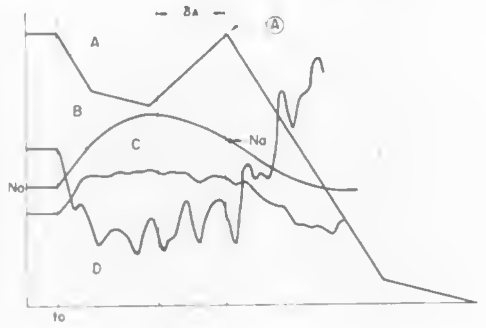


1. In combination with a horizontally extending cylindrical drum for bearing a material for processing, a plurality of sheaves spaced above and supported over said drum for rotation about an axis parallel with the central axis of said drum, wire ropes extending around said drum and sheaves in a manner suspending said drum from said sheaves for rotation of said drum and sheaves together, each of said ropes terminating in opposite end portions, a wire rope connector for a coupling of said opposite end portions of each rope in an endless loop, said connector comprising first and second rope holding means, each rope holding means having radially outwardly opening grooves in which said wire ropes are seated and held in position extending generally radially outwardly of said sheaves and including a radially outwardly opening groove portion disposed to confront said sheaves and said drum with said wire rope interposed therebetween, and hinge means for connecting said rope holding means to one another, said hinge means having an axis of flexure substantially centered on and perpendicular to medial axes of said wire ropes when seated on one of said sheaves, for maintaining a neutral axis and permitting said rope holding means and said wire ropes to flex without substantial displacement of said wire ropes relative to a path of travel upon rotation of said sheaves and said drum wherein said hinge means comprises first and second hinge pieces having interlocking abutting surfaces, the abutting surfaces of said hinge pieces being characterized by radii of curvature defining a convex surface relative to the other abutting surface such that rotation of said hinge means causes translation of said neutral axis tending to track the medial axis of said wire ropes along the sheave.

4,354,800

METHOD OF CONTROLLING PUMP TURBINE

Takao Kuwabara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
PCT No. PCT/JP79/00084, § 371 Date Dec. 4, 1979, § 102(e) Date Dec. 4, 1979, PCT Pub. No. WO79/00928, PCT Pub. Date Nov. 15, 1979
PCT Filed Apr. 5, 1979, Ser. No. 187,848
Claims priority, application Japan, Apr. 13, 1978, 53/44654
Int. Cl.³ F03B *15/08*
U.S. Cl. 415—1 **14 Claims**



1. A method of controlling a pump-turbine having an S-section in its characteristic curve, characterized in that wicket gates of said pump-turbine are controlled upon judging that the operation point of said pump-turbine has commenced to trace said S-section in a flow-rate increasing direction, said judgement being made through a detection of the fact that the rotation speed of said pump-turbine, during the tracing of said S-section up to its end in a flow-rate reducing direction, has come down below a predetermined speed.

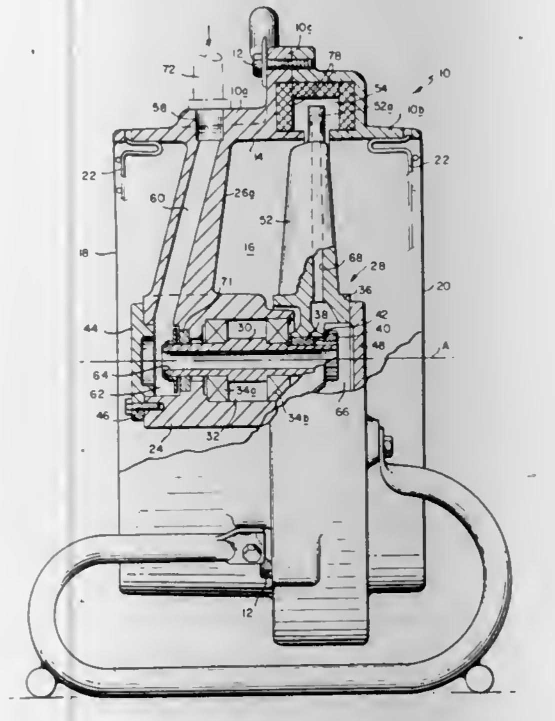
4,354,801

REACTION FAN WITH NOISE SUPPRESSION

William P. LaBaire, Spencer, Mass., assignor to Coppus Engineerng Corporation, Worcester, Mass.
Filed Jan. 23, 1981, Ser. No. 227,623
Int. Cl.³ F01D *1/20*
U.S. Cl. 415—80 **9 Claims**

1. A reaction-type fan comprising in combination:
a housing structure having a circular interior wall defining a chamber, with opposed inlet and outlet openings communicating with said chamber, and with a collar positioned at a fixed central location within said chamber by support struts extending inwardly from said interior wall, said interior wall as well as said collar and said inlet and outlet openings having a common central axis;
a rotor assembly supported by said collar for rotation about said axis, said rotor assembly having blades extending radially outwardly from said axis towards said interior wall;

nozzles carried at the tip portions of said blades;
conduit means for directing a flow of a pressurized gaseous medium from the exterior of said housing to said nozzles, the arrangement of said nozzles being such that the reactive force of the pressurized gaseous medium exiting therefrom causes said rotor to rotate about said axis, the said rotation in turn causing ambient gases to be drawn through said housing via said inlet and outlet openings; and

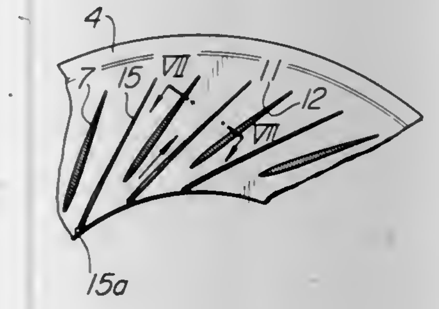


sound attenuating means for lessening the level of sound associated with the flow of said pressurized gaseous medium through said conduit means and said nozzles, said sound attenuating means including cylindrical sleeves of resilient sound absorbing material surrounding the flow path of said pressurized gaseous medium through said nozzles.

4,354,802

VANED DIFFUSER

Hideo Nishida; Fumio Koseki, both of Shimoinayoshi, and Ichiro Gyobu, Dejimamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 3, 1980, Ser. No. 136,488
Claims priority, application Japan, Apr. 6, 1979, 54-44726[U]
Int. Cl.³ F04D *29/30*
U.S. Cl. 415—207 **7 Claims**

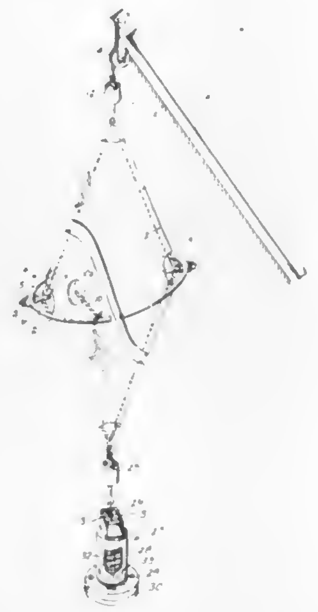


1. A vaned diffuser for a turbocompressor comprising a pair of diffuser plates defining therebetween a fluid channel, and a plurality of vanes arranged in said fluid channel defined between said diffuser plates to form a circular cascade, the improvement comprising rib means including at least one rib arranged on at least one of said diffuser plates in a surface area defined between adjacent vanes, said at least one rib having a height not less than one fifth of a height of said vanes and a leading edge located upstream of leading edges of said vanes as viewed in a fluid flow direction, the at least one rib has a curved configuration corresponding to the vanes between an inlet and an outlet side of the vanes, and wherein an inlet angle of a leading edge of the rib is less than an inlet angle of the vanes.

4,354,803

SAIL POWER DEVICE

Victor S. Korionoff, Jr., 83 Silencio St., Santol, Quezon City, and Miguel A. Magsaysay, 1575 Cypress St., Dasmarinas Village, Makati, Metro Manila, both of Philippines
Filed Jan. 9, 1978, Ser. No. 868,389
Int. Cl.³ F03D *5/06*
U.S. Cl. 416—81 **3 Claims**

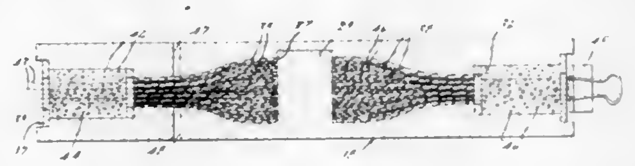


1. A sail power device the upper end of which is adapted to be secured to a rigid support and the lower end of which is adapted to be secured to a reciprocating work load, said sail power device comprising a diamond shaped sail disposed such that the upper and lower corners thereof are vertically aligned, while the other two corners thereof are horizontally aligned, a cable means secured to the peripheral sides of said sail, a sail stretcher means to which the two horizontally aligned corners of said sail are attached, and an upper and a lower bearing swivel means connected to the upper and lower corners of said cable means.

4,354,804

COMPOSITE TURBINE WHEEL, METHOD OF MANUFACTURE AND FIXTURE THEREFOR

Gerald S. Cruzen, Gregory, Mich., assignor to Williams Research Corporation, Walled Lake, Mich.
Filed Nov. 30, 1979, Ser. No. 99,005
Int. Cl.³ F01D *5/28;* F04D *29/26*
U.S. Cl. 416—230 **6 Claims**

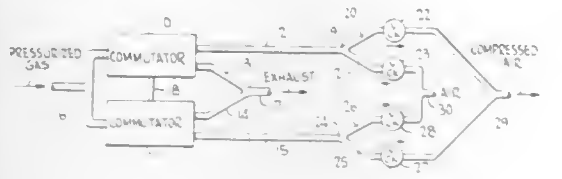


1. A turbine wheel comprising a hub having layers of woven carbon cloth discs impregnated with carbon bearing resin, and turbine blades formed of carbon bearing resin and carbon reinforcing fibers, at least some of the fibers extending radially through a blade, then circumferentially at least part way around the hub and back through a blade in a continuous manner, said turbine blades also comprising chopped carbon fiber fillers impregnated by said carbon bearing resin.

4,354,805

FLUID DYNAMIC ENERGY EXCHANGER

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767
Continuation-in-part of Ser. No. 44,656, Jun. 1, 1979, which is a continuation-in-part of Ser. No. 25,714, Mar. 30, 1979. This application Jul. 7, 1980, Ser. No. 166,487
Int. Cl.^{3} F04F *1/02*
U.S. Cl. 417—54 **30 Claims**



1. Apparatus for transferring energy from a first fluid at relatively high pressure to a second gaseous fluid at relatively low pressure, said apparatus comprising:

an energy exchange conduit having an upstream end and a downstream end;

an exhaust passage;

an outflow passage;

an inflow passage;

first check valve means for controlling flow communication between said outflow passage and the downstream end of said conduit and permitting such flow communication only when the fluid pressure at the downstream end of said conduit exceeds the fluid pressure in said outflow passage by a predetermined amount;

second check valve means for controlling flow communication between said inflow passage and the downstream end of said conduit and permitting such communication only when the fluid pressure in said inflow passage exceeds the fluid pressure in the downstream end of said conduit by a predetermined pressure;

a source of said second fluid, at said relatively low pressure, connected to supply said second fluid to said inflow passage; and

commutator means for receiving said first fluid at said relatively high pressure and distributing said first fluid as slugs directed alternately and repetitively into said exhaust passage and the upstream end of said conduit, said commutator means including:

means for establishing a pressure wave at the upstream end of said conduit when a slug of said first fluid enters said upstream end, which pressure wave traverses said conduit at sonic velocity plus the velocity of fluid flowing in said conduit;

means for establishing a rarefaction wave at the upstream end of said conduit when the first fluid is diverted therefrom into said exhaust passage; and

aspiration means for aspirating fluid from the upstream end of said conduit into said exhaust passage by means of the flow of said first fluid into said exhaust passage;

whereby said pressure wave, in traversing said conduit, compresses second fluid therein, the second fluid being forced through said first check valve means into said outflow passage, and whereby said rarefaction wave, traversing said conduit, reverses the flow direction of said first fluid so that the first fluid flows toward said upstream end where it is aspirated into said exhaust passage by said aspiration means, said rarefaction wave additionally acting, upon reaching the downstream end of said conduit, to close said first check valve means to prevent outflow into said outflow passage and to open said second check valve means to permit entry of said second flow into said downstream end of said conduit.

28. The method of pressurizing a second gaseous fluid with a first fluid in an energy exchange conduit, said method comprising the steps of:

(a) directing a jet of said first fluid into the upstream end of said conduit and thereby creating a pressure wave which traverses said conduit at sonic velocity to compress second fluid in said conduit and open a first check valve which permits the compressed second fluid to egress from the downstream end of said conduit;

(b) diverting said jet of first fluid away from said conduit and into an exhaust passage and thereby creating a rarefaction wave which traverses said conduit at sonic velocity plus the velocity of said first fluid in said conduit, said rarefaction wave reversing the flow direction of first fluid it passes in the conduit so that the first fluid flows toward the upstream end of the conduit, said rarefaction wave further closing said first check valve while opening a second check valve to permit entry of said second fluid into the downstream end of said conduit;

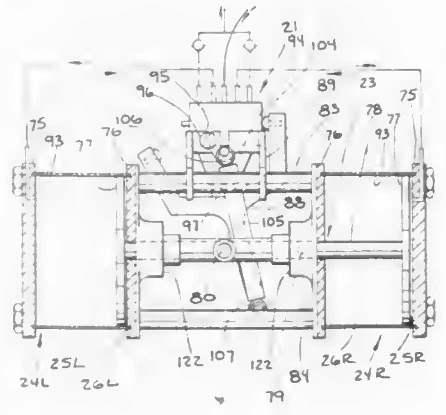
(c) aspirating said first fluid from the upstream end of said conduit by means of the jet of first fluid directed into said exhaust passage, whereby said second fluid which enters the downstream end of said conduit flows into said conduit to replace the aspirated first fluid; and

(d) cyclically repeating steps (a), (b) and (c).

4,354,806

PNEUMATICALLY POWERABLE DOUBLE ACTING POSITIVE DISPLACEMENT FLUID PUMP

John R. McMillin, Maplewood, Minn.; Gene A. Tracy, Amery, Wis.; William A. Harvill and William S. Credle, Jr., both of Stone Mountain, Ga., assignors to The Coca-Cola Company, Atlanta, Ga. and The Cornelius Company, Anoka, Minn.
Division of Ser. No. 202,522, Oct. 31, 1980, Pat. No. 4,304,736, which is a continuation of Ser. No. 116,374, Jan. 29, 1980, abandoned. This application Aug. 13, 1981, Ser. No. 292,383
Int. Cl.^{3} F04B *17/00*
U.S. Cl. 417—393 **27 Claims**



1. A pneumatically powerable double acting positive displacement fluid pump comprising

(a.) first and second cylinders opposed to one another on a common axis, each cylinder having an outboard head on an outer end, an inboard head on an inner end, a fluid port in each end, and a piston dividing the cylinder into inner and outer fluid chambers;

(b.) an elongate piston rod projecting through both of the inboard heads and connected to both of the pistons, one piston being on each end of the piston rod;

(c.) a plurality of elongate tie rods generally parallel to the axis of the cylinders and spaced from each other around the periphery of the cylinders, said tie rods fastening the cylinders to each other;

(d.) spacer tubes on the tie rods and in between the cylinders, said tubes spacing the cylinders from one another;

(e.) transverse slots in two adjacent tubes, on two adjacent tie rods;

(f.) a control cradle carried on the two adjacent tie rods, said cradle being fixedly positioned in and by the transverse slots;

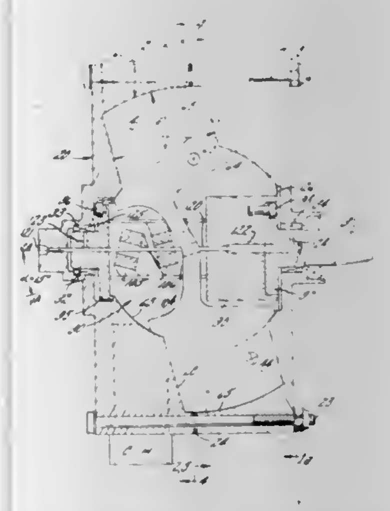
(g.) a control valve mounted in the cradle and fluidly connected to each cylinder for alternately connecting the cylinders to a source of compressed gas; and

(h.) a control valve actuator operatively connecting the piston rod to the control valve.

4,354,807

COMPRESSOR-EXPANDER OF THE VANE TYPE HAVING CANTED VANE CAVITY

Wayne C. Shank, Tucson, Ariz., and Thomas C. Edwards, Cocoa Beach, Fla., assignors to The Rovac Corporation, Rockledge, Fla.
Continuation-in-part of Ser. No. 858,680, Dec. 8, 1977, abandoned. This application May 2, 1980, Ser. No. 146,183
Int. Cl.^{3} F01C *1/00, 11/00, 21/04, 21/06*
U.S. Cl. 418—13 **29 Claims**

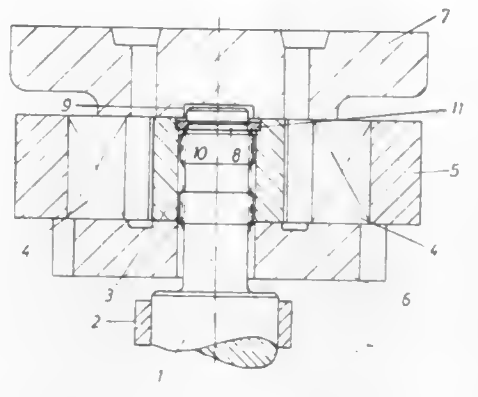


1. A rotary machine comprising, in combination, a housing having bearing means, stubshaft means journalled in the bearing means, the housing defining a disc-shaped main cavity having adjoining axial recesses, the main cavity being more particularly in the form of a doubly truncated sphere symmetrical about a vane axis which is canted with respect to the shaft axis and with the axial recesses thereof being defined by concave spherical surfaces concentrically opposed to one another, a rotor in the housing mounted on the stubshaft means, the rotor having a central spherical portion for mating with the concave spherical surfaces, the rotor including an integral Saturn-like ring of trapezoidal section symmetrical about the shaft axis, the ring extending to a position adjacent the peripheral wall of the main cavity dividing the cavity into first and second sides each of annular wedge shape having thick and thin portions arranged in complementary fashion, the rotor having diametrically extending slots aligned with the rotor axis to divide the rotor into sectors, the slots intersecting to create a hollow in the spherical portion of the rotor, the sectors being interconnected by cores spaced at the axial ends of the rotor, the stubshaft means extending axially outwardly from the cores for journalling in the bearing means, vane pairs in the slots, the vanes presenting a profile substantially corresponding to the profile of the truncated sphere to separate each side into successive chambers which vary cyclically in volume as the rotor rotates, the vanes having lateral edges lying in a cylindrical locus and having a thickness at least equal to T sin α where T is the thickness of the main cavity and where α is the angle of the vane axis with respect to the shaft axis, each side having an inlet port and an outlet port in straddling relation to the thin portion thereof, the vanes having laterally projecting shoulders along their lateral edges formed to mate with the respective concave spherical surfaces in the housing, the vanes comprising each pair being interconnected in coplanar relation by a central connector, the central connectors being axially offset for crossing one another in the hollow of the rotor.

4,354,808

VANE PUMP HAVING SLEEVE BEARING AND ROTOR RETAINING CONSTRUCTION

Rudolf Ilg, Aalen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany
Filed Jan. 15, 1980, Ser. No. 112,184
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1979, 2902723
Int. Cl.^{3} F04C *2/00, 15/00;* **F16B** *21/18;* **F16D** *1/06*
U.S. Cl. 418—259 **1 Claim**



1. In a vane type pump having a drive shaft extending into the bore of a rotor having the drive shaft keyed in the rotor bore and being supported in a sleeve bearing at one side of said rotor and said pump having a face plate at the opposite side of said rotor adjacent the free end of said drive shaft;

the improvement comprising:

a groove (**8**) in said drive shaft and an annular open face recess (**11**) at an end of the bore of said rotor encompassing said groove;

a retaining ring (**10**) carried in said groove and confined radially within said recess against being dislodged from said groove to axially secure said drive shaft;

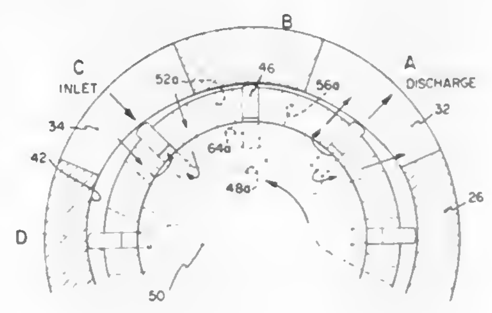
wherein the depth of said annular recess is at least equal to the thickness of said retaining ring in addition to a predetermined axial clearance between the drive shaft end and said face plate;

wherein said recess is open towards said face plate and said face plate has a recess (**9**) to accommodate said drive shaft end with said axial clearance; said latter recess having a diameter less than the diameter of said retaining ring so as to axially retain said retaining ring in said recess in said rotor.

4,354,809

FIXED DISPLACEMENT VANE PUMP WITH UNDERVANE PUMPING

Jack G. Sundberg, Meriden, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Mar. 3, 1980, Ser. No. 126,432
Int. Cl.^{3} F04C *2/00*
U.S. Cl. 418—268 **6 Claims**



1. In a vane pump of the type comprising: a housing with a cam surface therein defining a pumping cavity, the cam surface including a discharge arc, an inlet arc and a seal arc therebe-

tween; a rotor, having a plurality of outwardly facing radial slots, mounted for rotation within the pumping cavity, and a plurality of vanes respectively mounted in the slots for radial inward and outward movement, each vane having an undervane surface and a radially outer tip adapted to slidingly engage the cam surface during rotation of the rotor, the improvement comprising:

the undervane surface of each vane comprising an inboard surface portion and an outboard surface portion defined by two outboard surface segments;

the rotor having a plurality of first passages which each fluidly interconnect the outer peripheral surface thereof adjacent the advancing side of an associated vane and a portion of its undervane surface in all of the cam surface arcs;

the rotor further having a plurality of second passages which each fluidly interconnect the outer peripheral surface thereof adjacent the trailing side of a vane associated with a first passage and the other portion of its undervane surface in all of the cam surface arcs; and

two end caps respectively mounted in the outboard portions of the rotor such that they project slightly beyond the axial ends thereof.

4,354,810

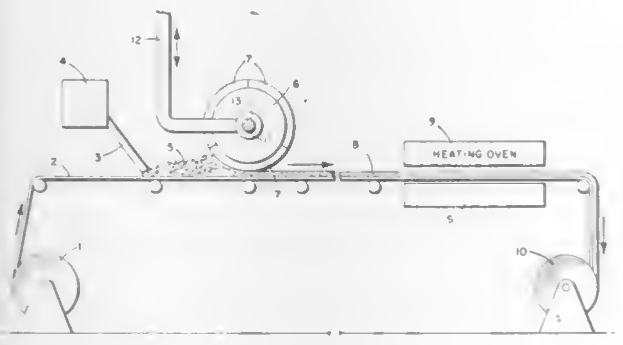
APPARATUS FOR DISTRIBUTING A FOAMED COMPOSITION ON A SUBSTRATE

Warren D. Stidham, Hixson, Tenn., assignor to Polysar Incorporated, Akron, Ohio

Filed Nov. 24, 1980, Ser. No. 209,656

Int. Cl.³ B29C *15/00*

U.S. Cl. 425—91 **10 Claims**



1. An apparatus for continuously distributing a viscous foamed fluid composition which has been applied to a movable substrate which comprises:

a rotatable member and at least two distribution means wherein said member is a tubular roll with a generally cylindrical shape;

means cooperating with said member to readily attach and detach said distribution means without ever interrupting the distribution of said composition on said substrate;

said distribution means being attached to said member in a radially outwardly extending manner so that the most radially distant surface of each of said distribution means is a distribution surface for distributing said composition on said substrate;

said distribution means being attached to said member so that at any given time the distribution surface of only one of said distribution means is in position for distributing said composition on said substrate;

each of said distribution surfaces imparting essentially the final surface pattern to said composition when used for distributing said composition;

said member being positioned above and extending substantially across the surface of said substrate normal to the direction of travel of said substrate;

means cooperating with said member to rotate said member about the central axis of said member and normal to the direction of travel of said substrate through an angle of one or two times 360° divided by the number of said distribution means;

locking means cooperating with said member to prevent rotation of said member; and

means cooperating with said member to oscillate said member from side to side normal to the direction of travel of said substrate.

4,354,811

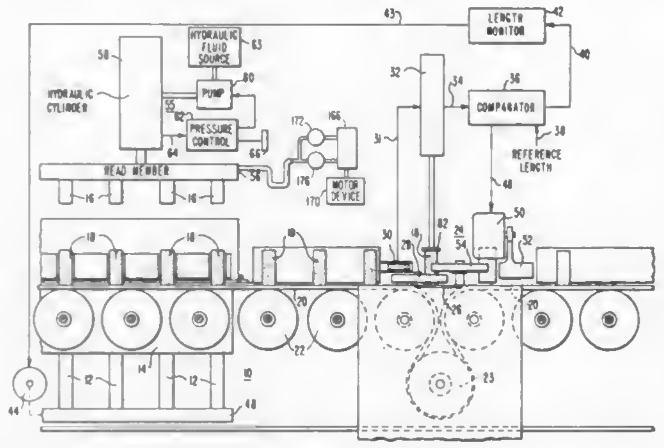
WORKPIECE PELLET LENGTH CONTROL APPARATUS

Anthony R. Marmo, Cheswick, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 22, 1980, Ser. No. 171,221

Int. Cl.³ B28B *17/00*

U.S. Cl. 425—140 **7 Claims**



1. In workpiece length control apparatus for determining the length of workpiece pellets formed from powder material provided in a holding cavity, the combination of

first means including a first member movable within said cavity for forming a workpiece pellet from said powder material,

second means including a second member positioned within said cavity for determining the length of the formed workpiece pellets and movable for removing said formed workpiece pellet from said pellet forming first means,

third means including a length measurement device cooperative with the workpiece pellet formed in said cavity by a previous operation of the firt and second means for determining the actual length of said workpiece pellet in relation to a desired length, and

fourth means responsive to said determined length and connected to determine the position of at least one of the pellet forming first means and the pellet removing second means for controlling the actual length of the workpiece pellet formed in said cavity by another operation of the first and second means.

4,354,812

METHOD AND APPARATUS FOR MOLD TEMPERATURE CONTROL

Horst K. Wieder, Watertown; Klaus A. Wieder, Helenville, and Joseph Haberkorn, Watertown, all of Wis., assignors to CITO Products, Inc., Watertown, Wis.

Filed Aug. 20, 1980, Ser. No. 179,886

Int. Cl.³ B29F *1/08*

U.S. Cl. 425—144 **19 Claims**

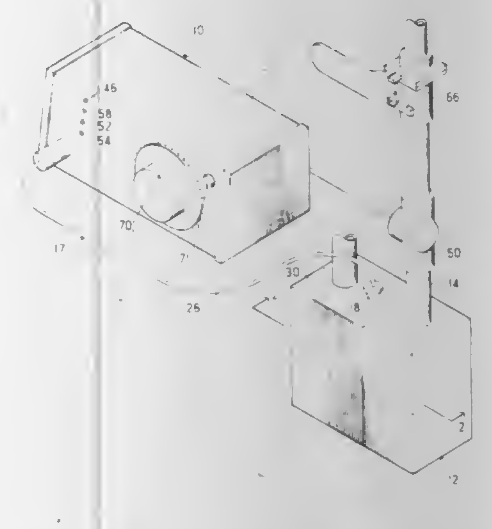
1. A mold temperature controlling apparatus for a fluid cooled mold, comprising:

(a) temperature sensor means adapted to be mounted to a mold for providing an output signal indicative of the temperature of the mold, the temperature sensor means including a temperature probe having a thermistor adapted to contact the mold, a resilient shank containing electrical leads and having a contact head at its end which houses the thermistor, and a frustum shaped sleeve of resilient material which surrounds the shank and is adapted to be wedged into a well formed in a mold to thereby hold the probe firmly in position on the mold, the temperature sensor means also including circuit means for providing a bias current to the thermistor and a voltage signal across the thermistor;

(b) means receiving the voltage signal across the thermistor indicative of the temperature of the mold and responsive thereto for providing a control signal when the temperature sensed exceeds a selected control temperature; and

(c) flow control valve means, connected to receive the control signal and adapted to be connected in the flow of cooling fluid to the mold, for opening and closing in response to the control signal to provide a flow of cooling fluid to the mold when the sensed temperature exceeds the selected control temperature and to cut off the flow of cooling fluid when the sensed temperature drops below the selected control temperature.

4. A mold temperature controlling apparatus for a fluid cooled mold, comprising:



(a) temperature sensor means adapted to be mounted to a mold for providing an output signal indicative of the temperature of the mold;

(b) means responsive to the signal indicative of the temperature of the mold for providing a control signal when the temperature sensed exceeds a selected control temperature; and

(c) flow control valve means, adapted to be connected in the flow of cooling fluid to the mold and connected to receive the control signal, for opening and closing in response to the control signal, the flow control valve means opening to provide a flow of cooling fluid to the mold when the sensed temperature exceeds the selected control temperature and the control signal is present and closing to cut off the flow of cooling fluid when the sensed temperature drops below the selected control temperature and the control signal is removed.

4,354,813

PLANT FOR PRODUCING CONTAINERS BY DRAWING-BLOWING OF PREFORMS IN PLASTIC MATERIAL

Andre-Marcel Collombin, Geneva, Switzerland, assignor to Motosacoche S.A., Geneva, Switzerland

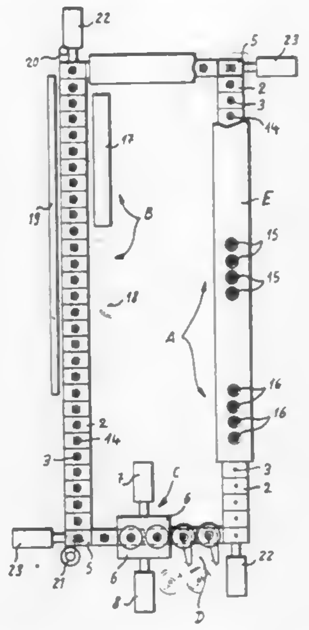
Filed Sep. 30, 1980, Ser. No. 192,232

Claims priority, application Switzerland, Oct. 9, 1979, 9069/79

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—182 **6 Claims**

1. In a plant for producing containers by drawing-blowing of preforms in plastic material, comprising a conveying device for preforms along a path along whih are disposed conditioning and heating means, a drawing-blowing station and an extraction station, the conveying device for the preforms comprising a plurality of independent supports disposed side by side and sliding in a guide extending along said path, which is formed of a plurality of rectilinear slide rails forming right angles with each other, and in which the feeding of the supports along the guide is controlled by pushing members disposed in each angle of the guide; the improvement in which each support is elongated rectangular and carries only one preform; the guide comprising wide sliding rails extending in one direction and having a width corresponding to the length of the support, and narrow sliding rails extending perpendicularly to the wide sliding rails and having a width corresponding to the width of the supports; the supports moving longitudinally along the narrow sliding rails and transversely along the wide sliding rails so that the distance between the preforms carried by the supports is less along the wide sliding rails than along the narrow sliding rails, said path having two long sides along which said wide rails extend, interconnected at their ends by at least one short side along which said narrow rails extend, said drawing-blowing station being disposed along said short side, whereby the spacing between the preforms is augmented in the drawing-blowing station so as to facilitate the performance of a drawing-blowing operation thereon.



4,354,814

EXTRUDER WITH A SHEET EXTRUSION HEAD AND AN ASSOCIATED CALENDER

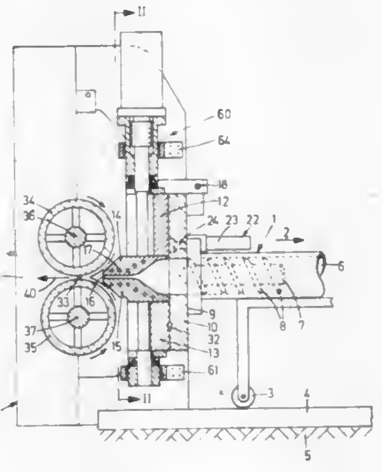
Albert Grimminger, Warmbronn, and Heinz Koch, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Werner and Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Aug. 5, 1980, Ser. No. 184,340

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1979, 2937204

Int. Cl.³ B29F *3/012, 3/04*

U.S. Cl. 425—186 **7 Claims**



1. An extruder with a wide extrusion head defining an elon-

gated die for forming a sheet and an associated calender mounted in a frame, comprising an extruder housing movable into working position adjacent to said calender and into a position remote from said calender wherein the wide extrusion head, defining a sheet extrusion die, has an upper extrusion head part and a lower extrusion head part, means to separate the upper head part from the lower head part; clamping means to releasably press the upper extrusion head part and the lower extrusion head part together and which is mounted in an associated side wall of the calender and is provided with a hydraulically operable piston and cylinder drive unit, said clamping means comprising a tie rod, which releasably bears against the lower extrusion head part or against the upper extrusion head part by means of either a fixed abutment or by means of an axially variable abutment to vary the axial position of said axially variable abutment, and wherein said clamping means remains mounted on a side wall of said calender frame but is freely swingingly movable in the upward and horizontal directions.

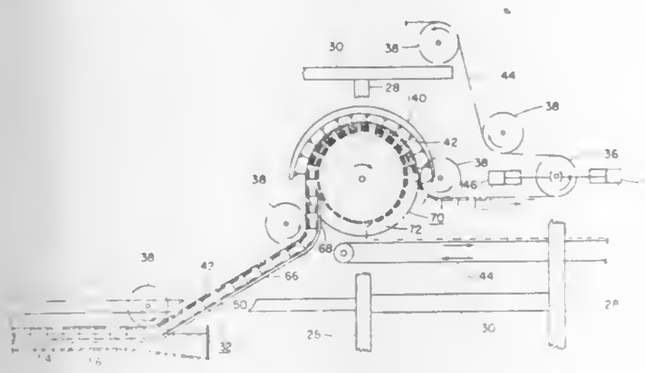
4,354,815
APPARATUS FOR THE PREPARATION OF A FOOD PRODUCT

Robert F. Bardsley, Harrington Park, N.J.; Jonas Bortkevicius, Woodhaven, N.Y., and Charles D. Schoonmaker, Boonton, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 914,046, Jun. 9, 1978, Pat. No. 4,195,559. This application Sep. 12, 1979, Ser. No. 74,730

Int. Cl.^{3} B29J *1/00*

U.S. Cl. 425—236 **7 Claims**



1. An apparatus for the molding of generally ready-to-consume friable or fragile food product strips having a predetermined configuration, such as a bacon analog or the like, from cooked strips of said food product comprising a plurality of guide rods; a series of strip-engaging members along said guide rods for sequentially conveying said food product strips; a plurality of first forming die means for said cooked strips being arranged on said strip-engaging members; a rotatable forming die wheel for said cooked strips; a plurality of second forming die means being mounted on the periphery of said forming wheel each adapted to receive respectively one of said cooked strips from said first forming die means; and means for operatively associating said second die means with a first forming die for conjointly molding said strips into their finished configurations; and further comprising first camming means having a camming surface extending in predetermined spaced relationship about a portion of the periphery of said rotatable forming die wheel for imparting radial movement to said first forming die means towards an associated second forming die means on said forming die wheel.

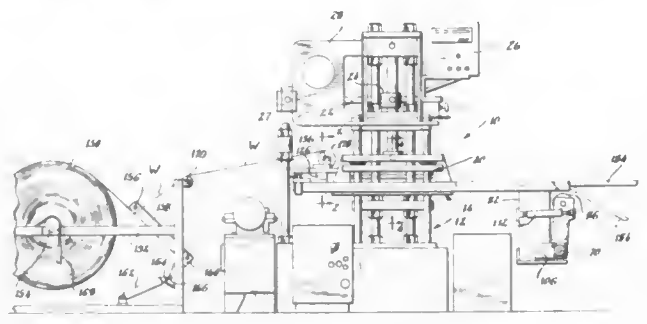
4,354,816
THERMOFORMING APPARATUS

Frank Schepp, Huntington, Conn., assignor to R & G Mold Company, Inc., Milford, Conn.

Filed Aug. 31, 1981, Ser. No. 298,077

Int. Cl.^{3} B29C *3/00, 17/04*

U.S. Cl. 425—302.1 **14 Claims**



1. In a thermoforming apparatus for forming a plurality of articles on a plastic web, said apparatus including
- means for heating said web,
- means for placing said web in close proximity to a mold cavity defining the shape of at least one of said articles to form said articles in response to a difference in pressure on opposite sides of said heated web, and
- means for severing said formed article from said web,
- the improvement comprising:
- means for intermittently feeding said plastic web to said heating, forming and severing means,
- said feeding means including
- means downstream from said heating, forming and severing means for intermittently moving the opposed edges of said plastic web, and
- means upstream from said forming, heating and severing means for applying feeding tension to said web as it is intermittently advanced,
- said intermittently moving means downsteam from said heating, forming and severing means including
- a roller arrangement receiving therethrough the opposite edges of said plastic web, and
- said feeding tension means upstream from said forming, heating and severing means including
- a pair of rollers adjacent said forming means disposed in facing relation to each other, and
- means connected to one of said rollers for reciprocally moving said roller vertically with respect to the other in response to completion or initiation of said forming cycle.

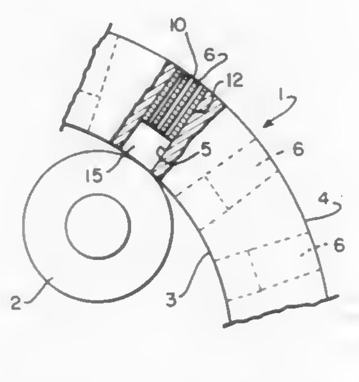
4,354,817
COMPOSITE EXTRUSION DIE

Robert W. Gilman, San Francisco, Calif., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 5, 1981, Ser. No. 290,380

Int. Cl.^{3} A01N *35/00*

U.S. Cl. 425—331 **7 Claims**



1. An extrusion die for a pellet mill of a type having compression means movable over a surface of the die;
- said die having a compression side and a discharge side;

- a plurality of extrusion passages interconnecting said compression side and said discharge side;
- a heat and wear resistant insert disposed in each of said extrusion passages towards said discharge side of said extrusion passage; and
- said insert being provided with die passages extending through said insert from one side of said insert towards said compression side to one side of said insert towards said discharge side.

4,354,818
MOULDING APPARATUS FOR COMPACTING POWDERED MATERIALS

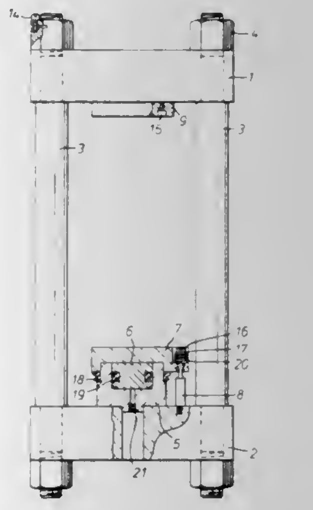
Kenneth J. Morris, 28 Berrisford Close, Market Drayton, Shropshire, England (TF9 1LG)

Filed Apr. 6, 1981, Ser. No. 251,291

Claims priority, application United Kingdom, Apr. 11, 1980, 8012105

Int. Cl.^{3} B30B *5/02*

U.S. Cl. 425—405 H **15 Claims**



1. Moulding apparatus for compacting powdered materials into desired shapes comprising a fixed press frame two opposite side of which are formed by a pair of spaced apart members, a clamping cylinder mounted on one of said members, an isostatic moulding pressure vessel with a removable end member and means pivotably mounting said pressure vessel for movement between an operating position in which said pressure vessel lies between said spaced apart members and can be acted on by said clamping cylinder and an ejecting and filling position in which said pressure vessel is not located between said spaced apart members and in which said removable end member of said pressure vessel can be removed to allow removal of a moulded compact from said pressure vessel and filling of powdered material into said pressure vessel to form a further compact.

4,354,819
MULTI-PIVOTABLE MOLD CARRIER CLAMPING APPARATUS

Jakob Wirz, Territet-Montreux, Switzerland, assignor to Spühl AG, St. Gallen, Switzerland

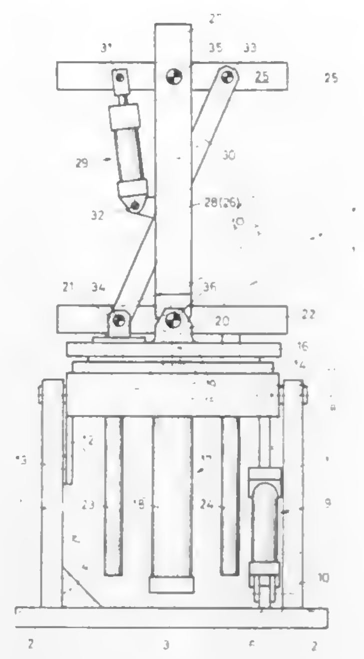
Filed May 20, 1981, Ser. No. 265,313

Claims priority, application Switzerland, May 30, 1980, 4238/80

Int. Cl.^{3} B29C *1/00, 3/00, 7/00*

U.S. Cl. 425—409 **8 Claims**

1. A tool carrier, particularly for mounting expanded plastic molds, comprising: a base frame (**1–6**), a table plate (**7**) mounted to the base frame and pivotable about a horizontal axis (**8**), a closing unit rotatably mounted on the table plate, said closing unit including a base plate (**16**) carrying upper and lower clamp plates (**25, 22**), a plurality of guide members (**30, 23, 24**) for the clamp plates, and first drive unit means (**17**) for moving the two clamp plates towards or away from each other to close or open the unit, the lower clamp plate lying adjacent the base plate and movable by means of said guide members (**23, 24**) parallel to the base plate (**16**), second drive unit means (**29**) disposed between the base plate and the upper clamp plate for pivoting the upper clamp plate relative to the lower clamp plate, a yoke (**26–28**) pivotally connected to the base plate, and means pivotally mounting the upper clamp plate in the yoke.



4,354,820
EXTRUSION DIE AND METHOD FOR PRODUCING EXTRUSION DIE FOR FORMING A HONEYCOMB STRUCTURE

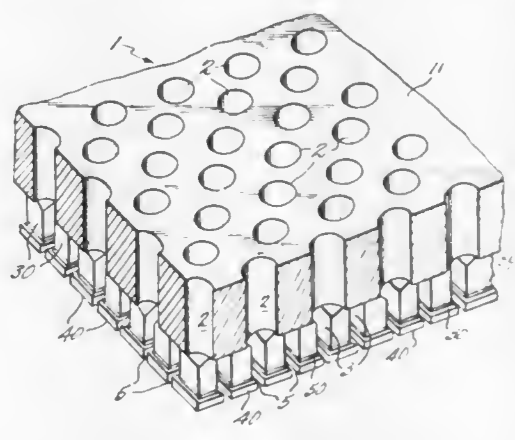
Shinichi Yamamoto, Takahama, and Toshihiko Ito, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation-in-part of Ser. No. 186,268, Sep. 11, 1980. This application Feb. 18, 1981, Ser. No. 235,725

Claims priority, application Japan, Sep. 12, 1979, 54-117626; Feb. 18, 1980, 55-19563

Int. Cl.^{3} B29F *3/04*

U.S. Cl. 425—461 **12 Claims**



1. A method for producing an extrusion die to be used in forming a honeycomb structure provided with numerous axially extending passages which are separated by thin walls, comprising the steps of:
- preparing from a single metallic block a die body having opposing end surfaces and a shape and size corresponding to those desired for said extrusion die,
- forming numerous discrete initial feed passageways in said die body for initially receiving and feeding an extrudable material of said honeycomb structure and interconnected pooling slots for pooling and distributing said extrudable material directly fed from said feed passageways temporally,

said feed passageways being formed from one of said end surfaces of said die body towards the other end surface opposed to said one end surface in an axial direction of said die body at predetermined intervals to a predetermined depth,
said interconnected pooling slots being formed from said other end surface of said die body towards said one end surface thereof to the level of said predetermined depth,
the inner end of each of said feed passageways being directly communicated with said pooling slots,
securing a metallic plate directly to said other end surface of said die body to cover said pooling slots,
forming interconnected extrusion slots in said metallic plate so as to be respectively narrower than but in register and communicated with said interconnected pooling slots for extruding said extrudable material distributed through said pooling slots,
said interconnected extrusion slots having the same shape and width as a transverse cross section of said walls of said honeycomb structure,
and, before securing said metallic plate to said other end surface, forming recesses in at least one of the said plate and other end surface to increase the area of securement therebetween.

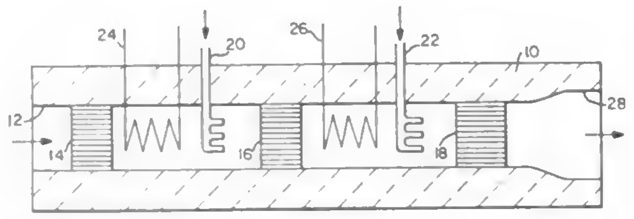
10. An extrusion die for making a honeycomb structure, comprising:
an integral metallic die body having two opposed surfaces from one of which a multiplicity of discrete feed passageways extend inwardly to a level of about 13 mm. to about 16 mm. toward the other of said surfaces and having in said other surface a grid network of criss-crossing pooling slots running transverse to said passageways and forming a multiplicity of intersections and being interconnected throughout said network and extending from said other surface toward said one surface to said level at which said passageways meet said slots for direct communication, said pooling slots being formed by individual columns integral with said die body,
the number of said feed passageways being substantially less than said pooling slot intersections, and
a multiplicity of discrete metallic platelets each larger than said columns in transverse dimensions and nonintegral with said die body but respectively bonded permanently to said columns and together forming a grid network of interconnected extrusion slots respectively registering on said pooling slots but having a width substantially narrower than said pooling slots,
there being a recess in each set of platelet and column for increasing the effective bonding contact area therebetween.

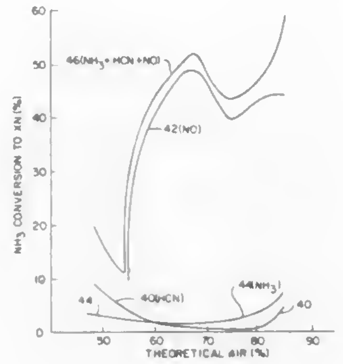
4,354,821
MULTIPLE STAGE CATALYTIC COMBUSTION PROCESS AND SYSTEM

John P. Kesselring, Mountain View; Wayne V. Krill, Sunnyvale, both of Calif., and G. Blair Martin, Cary, N.C., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,074
Int. Cl.^{3} F23D *3/40*
U.S. Cl. 431—7 **9 Claims**

1. A process for combusting a nitrogen-containing fuel with high efficiency and low levels of NO_x emissions, comprising the steps of directing a flow of the fuel in series through at least two fuel-rich combustion zones each having a bed of a catalytic material, combining air with the fuel in each zone to form a fuel-rich mixture with the percentage of theoretical air in the mixture being established at the value where a minimum of NO_x precursors is formed upon combustion in the presence of the catalytic material within the respective zone, combusting the mixture in each zone at a temperature $<2600°$ F. to form exhaust products, directing the exhaust products from the last fuel-rich zone in the series into a final combustion zone having a bed of catalytic material, combining air with the exhaust products in the final zone to form a mixture having a stoichiometry of at least 100% of theoretical air, and combusting the mixture in the final zone to substantially complete combustion of the fuel.

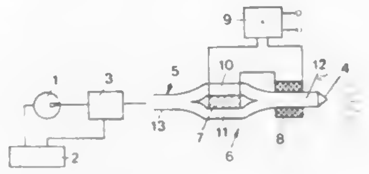


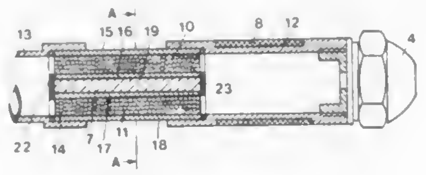


4,354,822
ATOMIZER BURNER FOR OIL FIRING PLANT

Ingvard M. Madsen, Sonderborg, and Niels L. Andersen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 5, 1980, Ser. No. 146,795
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919763
Int. Cl.^{3} F23D *11/44*
U.S. Cl. 431—208 **11 Claims**



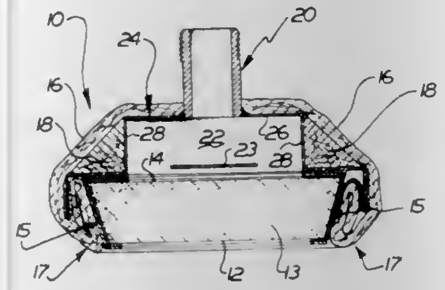


1. An atomizer burning assembly for an oil burner comprising, conduit means providing a conduit for transporting a fluid, said conduit means having internal wall surface means contactable by said fluid and external wall surface means isolated from said fluid, an atomizer nozzle attached to the outlet end of said conduit means, electrical circuit means including power means connected in series with a heating element and a PTC resistor element, said elements being in heat transmitting contact with said external wall surface means with said PTC resistor element being upstream relative to said heating element to control the heat generated by said heating element in accordance with the temperature of said fluid to maintain a substantially constant temperature for said fluid.

4,354,823
NON-AIR COOLED RADIANT BURNER

Arnold L. Buehl, Solon, and Werner H. Zwipf, Parma, both of Ohio, assignors to Slyman Manufacturing Corporation, Cleveland, Ohio

Filed Jan. 19, 1981, Ser. No. 226,188
Int. Cl.^{3} F23D *13/12*
U.S. Cl. 431—328 **7 Claims**

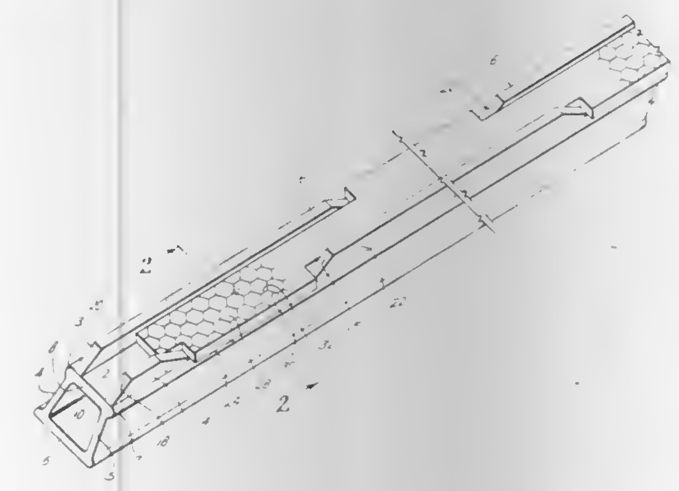


1. A gas-fired radiant burner comprising:
a gas-permeable matrix of refractory fiber material having a generally equal degree of porosity throughout, the matrix having an inner face, an outer face, and a gas non-permeable peripheral edge separating the faces;
a plenum means sealed against the periphery of the inner face of the matrix to supply a pressurized combustible gas thereto for burning at the outer face of the gas-permeable porous matrix;
a flexible blanket of thermal insulation material wrapped around the outside of the plenum means to thermally insulate the plenum means from high temperature gas by-products generated by said burning, an edge portion of the blanket being biased against the edge of the matrix; and
a plurality of clip means positioned at spaced intervals about the matrix edge and engaging the edge portion of the blanket to maintain it in its biased position against the matrix edge, the clips being supported solely by the plenum means.

4,354,824
METHOD AND DEVICE FOR REDUCING HEAT FLOW FROM A WORKPIECE TO A SKIP PIPE

Frank Campbell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Apr. 2, 1981, Ser. No. 250,502
Int. Cl.^{3} F27D *1/16, 3/02*
U.S. Cl. 432—3 **9 Claims**

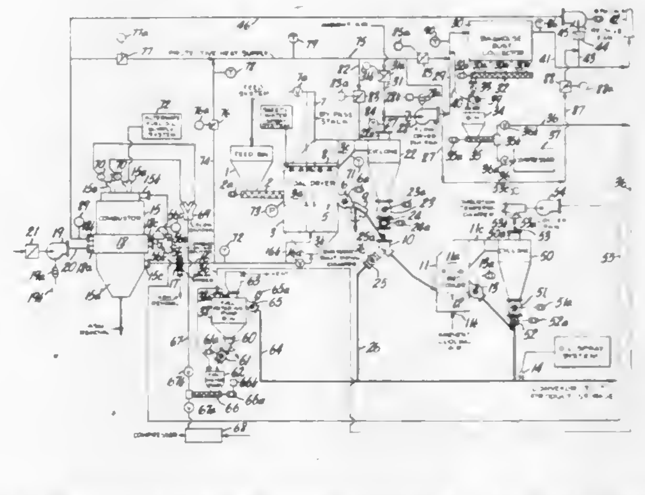


1. A method for reducing heat transfer in a high temperature environment from a workpiece to an upper surface of an internally cooled skid pipe comprising:
(a) securing at least two transversely spaced apart skids, having leading ends, on the upper surface of said pipe, said transversely spaced apart skids alternatingly repeating themselves for substantially the length of said pipe,
(b) securing a reinforcement frame to the upper surface substantially between said spaced apart skids and between the upper surface and the workpiece,
(c) projecting the reinforcement frame with an insulator; and
(d) projecting the reinforcement frame from the upper surface less than the skids.

4,354,825
METHOD AND APPARATUS FOR DRYING COAL

Donald L. Fisher, Milton; Thomas B. Kearns, Danville, and Edward T. Maciejewski, Catawissa, all of Pa., assignors to McNally Pittsburg Mfg. Corp., Pittsburg, Kans.

Filed Feb. 20, 1981, Ser. No. 236,250
Int. Cl.^{3} F23G *5/04;* F27B *15/00;* F26B *15/12*
U.S. Cl. 432—14 **28 Claims**



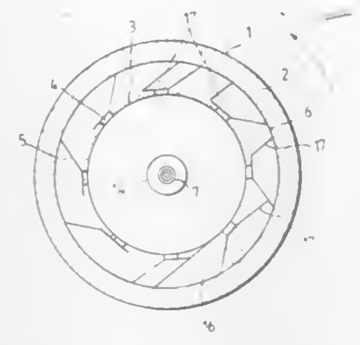
1. A coal drying apparatus comprising a coal dryer through which coal is fed in heat exchange relationship with a hot gas to heat the coal to a high temperature below the temperature which would bring about combustion, thereby removing moisture from the coal, a combustor for generating the hot gas supplied to the coal dryer, means for supplying the hot gas from the combustor to the coal dryer, a coal cooler through which the dried coal is fed in heat exchange relationship with ambient air to cool the coal quickly to slow the oxidation rate, said cooler having an inlet through which the coal is introduced from the dryer, an outlet from which the coal is discharged from the cooler and means defining a flow passage intermediate the inlet and outlet, means for introducing the ambient air into the cooler for flow through the coal in said flow passage, means for removing the dried and cooled coal from the cooler outlet as a useful product, and means for supplying the air heated in the cooler to the combustor.

4,354,826
PROCESS OF DRYING AND CALCINING BULK MATERIALS

Gerhard Krüger, Frankfurt am Main, Fed. Rep. of Germany, and Werner Kepplinger, Linz, Austria, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,285
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949479
Int. Cl.^{3} F26B *9/12;* F27B *7/02;* F26B *7/14*
U.S. Cl. 432—18 **6 Claims**

1. In a process for drying and/or calcining bulk material in a rotary kiln comprising means for feeding bulk material into said kiln at one end, means at the other end for withdrawing bulk material, means for passing hot gases in counter-current flow to said bulk material and contacting said bulk material with said hot gases, a centrally disposed tube being disposed axially within said rotary kiln toward the bulk material discharge end of said rotary kiln, whereby an annular space is defined between the outer wall of said central tube and inner wall of said rotary kiln, means for passing hot gases within said central tube and means for passing said bulk material through said annular space whereby said bulk material is heated by indirect heat exchange with hot gases within said tube, the improvement which comprises trickling said bulk material over the outside of both sides of said central tube in substantially equal amounts, said central tube being secured to the shell of said rotary kiln by means of lifting blades, each lifting blade being connected at its trailing end with the shell of the rotary kiln such that it does not permit bulk material to pass therethrough, each lifting blade being connected to said central tube by connecting members which cause material falling out of the lifting blades to trickle down the outside surface of said tube and the lifting blades have a shape that the material falling from the leading edges trickles down on both sides of said tube in substantially equal amounts.



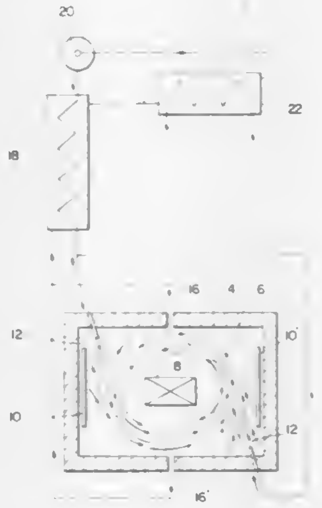
4,354,827
PROCESS AND DEVICE FOR IMPROVING HEAT EXCHANGE IN FURNACES HEATED BY RADIANT HEATERS

Roland R. Kissel, Le Vesinet, France, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 17, 1981, Ser. No. 255,244

Int. Cl.^{3} F26D *7/04;* F27B *3/22*

U.S. Cl. 432—21 **12 Claims**



1. A process of heating a load positioned within the heat treatment chamber of a furnace, comprising the steps of (I) radiantly heating the load by means of heat that radiates directly from at least one radiant heater in the chamber, (II) additionally convectionally heating the load by contacting the load with at least one continuous stream of heated gas that is blown, under pressure, into the chamber, (III) continuously exhausting hot gas from the chamber in accordance with the volume of incoming gas being blown into the chamber, and (IIII) circulating the hot exhaust gas, under a pressure lower than the pressure under which incoming gas is blown into the chamber, through a heat exchanger, outside the chamber, into heat exchanging relation with incoming gas being blown into the chamber, to heat the incoming gas, prior to blowing such gas into the chamber, and to cool the hot exhaust gas exiting the chamber.

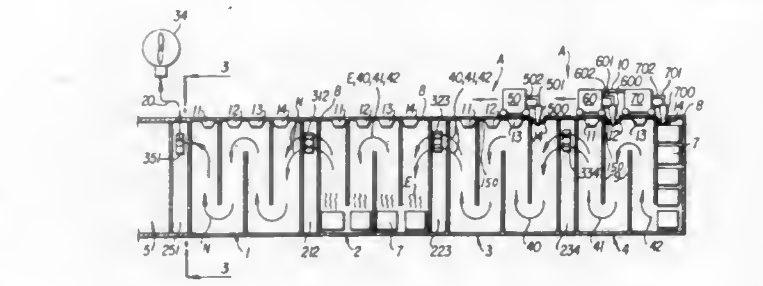
4,354,828
METHOD AND APPARATUS FOR PRODUCING UNIFORMLY BAKED ANODES

Charles M. Benton; Homer M. Charlton, both of Owensboro, Ky.; Wade L. Van Winkle, Tell City, Ind.; Jerry A. Meyer, Owensboro, Ky.; Franklin D. Arnold, Owensboro, Ky., and Anthony Kamalich, Owensboro, Ky., assignors to Southwire Company, Carrollton, Ga. and National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 18, 1981, Ser. No. 245,006

Int. Cl.^{3} F27D *7/00;* F27B *9/40;* F27D *19/00;* F27B *9/00*

U.S. Cl. 432—24 7 Claims



1. In a method for controlling the baking cycle of a carbon anode ring furnace of the type having a series of baking pits connected by heating flues in which heat is introduced into at least one of said pits by burners communicating therewith, said burners being of the type which combine and combust a variable air flow with a constant ratio of gaseous fuel, while succeeding pits are heated by hot products of combustion flowing through the connecting flues in order to maximize the thermal efficiency of the furnace and to produce uniformly baked carbon anodes of uniform electrical resistivity, the improvement comprising:

(a) detecting the temperatures of those baking pits and also the connecting heating flues of said furnace being fired; and transmitting corresponding pit and flue temperature signals to a computing means which contains preselected target profiles of said temperatures verses time;

(b) computing a plurality of control errors by comparing said pit and flue temperatures with current values calculated from said preselected target temperature-time profiles, respectively; and, if said temperatures are not substantially equal to the values calculated by said preselected profiles, then computing a control action for each of the burners of said furnace corresponding to said errors, respectively;

(c) controlling the air flow to said burners in response to said computed control action, respectively; further provided that said burners are regulated to maintain a constant air/fuel ratio; and

(d) repeating the foregoing steps at selected frequent intervals throughout the baking cycle to control said pit and flue temperatures within a close tolerance band about said temperature-time target profiles, respectively, thereby substantially duplicating the intended baking cycle to produce anodes of substantially uniform resistivity.

4,354,829
METHODS AND APPARATUS FOR CALCINING CARBONACEOUS MATERIAL

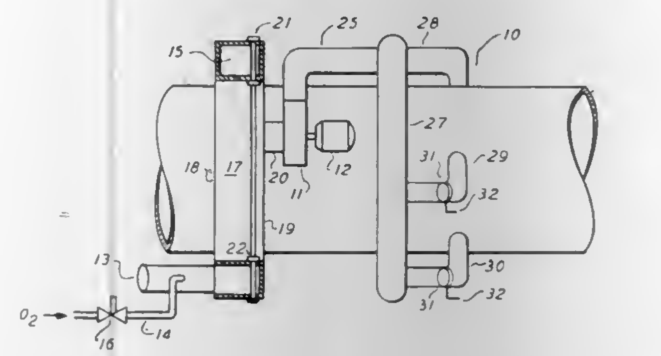
James W. Estes, Piscataway, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Apr. 29, 1981, Ser. No. 258,825

Int. Cl.^{3} F27B *7/32*

U.S. Cl. 432—117 **10 Claims**

1. Apparatus for calcining carbonaceous material comprising a rotary kiln; substantially annular plenum means disposed circumferentially about the exterior of said kiln, said plenum means including a first stationary portion and a second portion mounted for rotation with said kiln with said first and second portions being juxtaposed with respect to one another to define a substantially annular plenum chamber; fan means for passing oxygen enriched air through said plenum means and means for introducing said oxygen enriched air passed through said plenum means into the interior of said kiln.



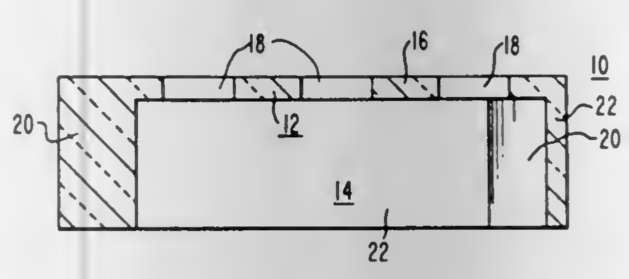
4,354,830
CERAMIC GREENWARE SUPPORT

James R. Gamble, Greensburg; Lear C. Herrold, Derry, and Rowland S. Baran, Latrobe, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1980, Ser. No. 212,282

Int. Cl.^{3} F27D *5/00*

U.S. Cl. 432—258 23 Claims



1. Apparatus for supporting ceramic insulator greenware having first and second portions, comprising: a first plate having at least one hole therein, said hole having a predetermined diameter selected to allow said first portion of said ceramic insulator greenware to pass therethrough but not allow said second portion of said ceramic insulator greenware to pass therethrough; and integral support means integrally connected with and extending a predetermined distance from and below said first plate for supporting said first plate said predetermined distance above a support surface to permit said second portion of said ceramic insulator greenware to be supported by said first plate and a plurality of said apparatus to be stacked one upon the other without interfering with said ceramic insulator greenware supported thereon.

4,354,831
CRUCIBLE FOR PRECISION CASTING DEVICE

Tsutomu Shinkawa, Itami, and Hiroaki Tokuda, Yamato, both of Japan, assignors to Sansha Electric Mfg. Co., Ltd., Osaka, Japan

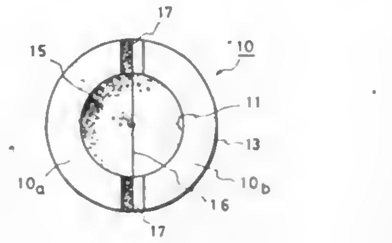
Filed Feb. 24, 1981, Ser. No. 237,998

Claims priority, application Japan, Feb. 28, 1980, 55-24838

Int. Cl.^{3} F27B *14/10*

U.S. Cl. **432—263** **5 Claims**

1. A crucible having a tubular body with a bottom wall, said body and bottom wall being divided vertically into a plurality of segments, each of said segments having a support portion to be supported by supporting means at its upper part and a center of gravity deviating horizontally from said support portion, and at least one top corner of each segment having an oblique tapered portion on the dividing plane whereby the lower ends of said segments come apart when the segments are hung at said support portion.



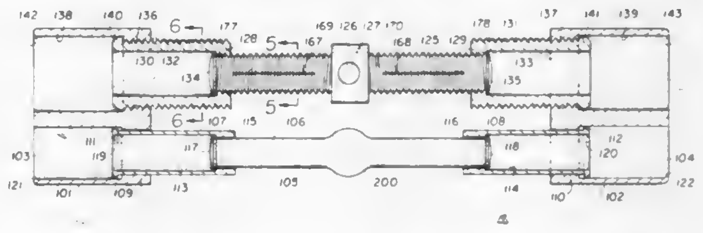
4,354,832
ORTHODONTIC BIASSING DEVICE WITH DEFORMED SCREW THREADS

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y. 11214

Continuation-in-part of Ser. No. 104,310, Dec. 17, 1979, which is a continuation-in-part of Ser. No. 785,587, Apr. 7, 1977, Pat. No. 4,200,979. This application May 13, 1980, Ser. No. 149,304

Int. Cl.^{3} A61C *3/00*

U.S. Cl. 433—7 4 Claims



1. A method of fabricating an orthodontic biassing device comprising at least first and second body members having oppositely threaded bores therein, and an elongated threaded member having end portions which are oppositely threaded, said elongated threaded member being threadably engaged in said threaded bores of said body members, the method comprising:

assembling the biassing device by threadably engaging said elongated threaded member into said first and second body members;

unthreading said elongated threaded member from said first and second body members to cause said first and second body members to separate from each other and to thereby expose at least a portion of the threaded end portions of said elongated threaded member; and

impacting at least a portion of the exposed threaded portions of said elongated threaded member to deform threads thereof so as to provide an interference, but threadable, fit of said elongated threaded member in the respective threaded bores of said body members when it is threaded back into said body members.

4,354,833
ORTHODONTIC APPLIANCE

Kinya Fujita, No. 326, Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan

Filed Dec. 15, 1980, Ser. No. 216,737

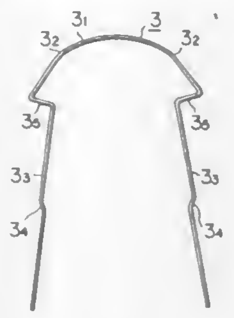
Claims priority, application Japan, Aug. 8, 1980, 55/112498[U]

Int. Cl.^{3} A61C *3/00*

U.S. Cl. 433—20 **5 Claims**

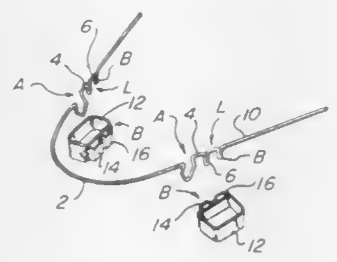
1. In an orthodontic appliance for correcting dental malocclusion comprising a one-piece preshaped orthodontic wire, a plurality of brackets adapted to be affixed to the lingual surfaces of the teeth of the dental arch of a patient, said dental arch comprising central incisor, side incisor, canine, first pre-

molar, second premolar and first molar teeth, said orthodontic wire being adapted to be secured to and apply force against said brackets so that said orthodontic wire is effective for changing the positions of the teeth, the improvement which comprises: said orthodontic wire comprises a central arch-shaped section having a substantially uniform curvature corresponding to the desired curvature of the central portion of the dental arch of the patient consisting of the lingual surfaces of the incisor and canine teeth, a pair of lateral sections, each lateral section being substantially linear and corresponding to a line extending between the lingual surfaces of the premolar and molar teeth with the respective ends of said central arch-shaped portion being horizontally transversely outwardly offset from the adjacent ends of said lateral sections, and a pair of connecting sections connecting the respective ends of said central arch-shaped portion with the adjacent ends of said lateral sections, each connecting section extending transversely inwardly toward the center of said central arch-shaped portion a short distance.



4,354,834
MODULAR ORTHODONTIC APPLIANCES

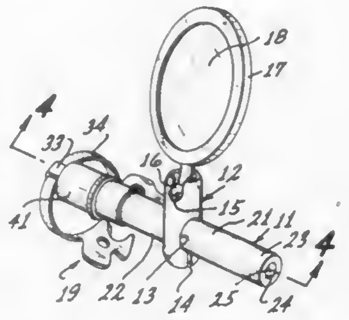
William L. Wilson, 15 Dix St., Winchester, Mass. 01890
Filed Feb. 21, 1978, Ser. No. 879,436
Int. Cl.³ A61C ***7/00***
U.S. Cl. 433—21 **15 Claims**



1. A lingual assembly for mounting on the lingual side of the teeth of an orthondontic patient, said assembly comprising:
a lingual tube bracket for mounting on a first molar of the patient, said bracket including:
a first mesial tube having a generally rectangular opening; and
a second distal tube having a generally rectangular opening, said tubes being generally parallel to each other and lying along generally vertical axes when mounted on the molar; and
a lingual wire, having a longitudinal axis for use in the patient's mouth for effecting selective teeth movements, said wire including:
a first mesial post having a generally rectangular cross section receivable in said first mesial tube;
a second distal post having a generally rectangular cross section receivable in said second distal tube, said posts being generally parallel to each other and lying in the same plane and perpendicular to the longitudinal axis of said lingual wire;
an extender segment extending distally from said distal post which is bendable for use in tooth movement;
a connector segment extending mesially from said mesial post;
and adjustable activator extending mesially from said connector segment for accomplishing any one of a large variety of orthodontic movements, said activator generally lying in the plane of said posts and, including:
a first leg extending downwardly and distally from said connector segment;
a second leg extending downwardly and mesially from said first leg;
a third leg extending upwardly and mesially from said second leg;
a fourth leg extending upwardly and distally from said third leg; and
a wire segment extending mesially from the upper end of said fourth leg.

4,354,835
SUPPORT FOR MOUNTING METAL MIRROR ON TEETH

Cheri J. Lewis, 240 S. La Cienega Blvd. #301, Beverly Hills, Calif. 90211
Filed Apr. 13, 1981, Ser. No. 253,796
Int. Cl.³ A61B ***1/24***
U.S. Cl. 433—30 **4 Claims**



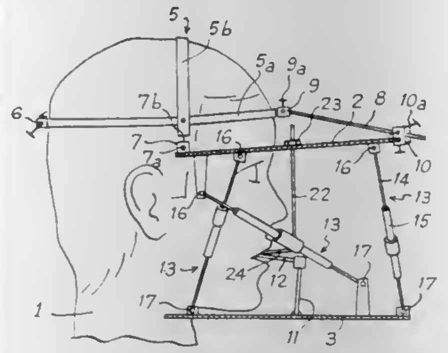
1. A support for a dental mirror comprising:
a cylindrical body;
a link slideably mounted on said body so that the link slides axially along and rotatably about said body;
said link having a socket formed at one end;
a disk-shaped mirror, having a radially protruding ball formed thereon;
said ball being disposed within said socket to swivel in relationship thereon; and
a spring clip capable of gripping a human tooth;
spring means for releasably mounting said spring clip on one end of said body.

4,354,836
ARTICULATOR DEVICES FOR REPRODUCING THE MOVEMENTS OF THE MANDIBLE

Pierre J. Santoni, 1, Avenue Jean Jaures, 13700 Marignane, France
PCT No. PCT/FR80/00029, § 371 Date Oct. 26, 1980, § 102(e) Date Oct. 23, 1980, PCT Pub. No. WO80/01753, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 25, 1980, Ser. No. 201,414
Claims priority, application France, Feb. 26, 1979, 79 05426
Int. Cl.³ A61C ***19/04***
U.S. Cl. 433—73 **11 Claims**

1. A dental device comprising:
means for analogically converting the movements of a patient's mandible into electric signals, comprising an upper plate and a lower plate, said plates to be fixed to the patient's skull and mandible respectively, and six sensors of linear displacement which have ends articulated respectively to said upper and lower plate;
and a dental articulator comprising two plates on which are fixed respectively a cast of the patient's upper and lower

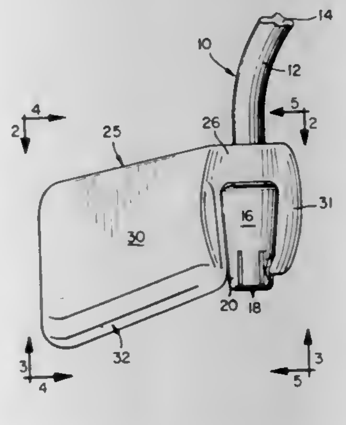
jaw, said articulator plates being connected with each other by six extensible stems, each having two ends which are articulated respectively to said two articulator plates and which six stems occupy relative positions which are respectively identical to the positions of the six sensors, each extensible stem comprising a linear servomotor;



and electronic means comprising electronic circuits connecting respectively each servomotor to a sensor so that said servomotor moves the extensible stem carrying it and reproduces accurately the elongation movements of the sensor.

4,354,837
DENTAL APPLIANCE FOR USE IN COMBINATION WITH A SALIVA EJECTOR

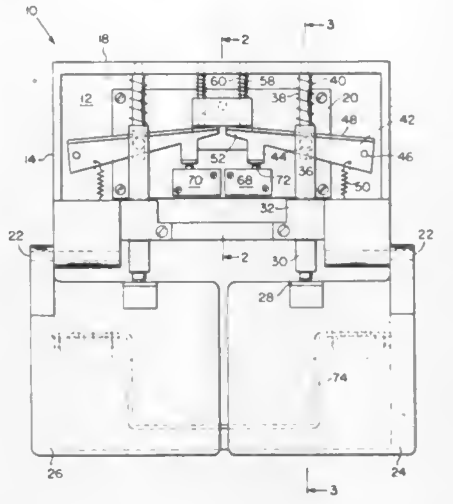
Charles E. Moore, 365 N. Church St., Tupelo, Miss. 38801
Filed Nov. 25, 1981, Ser. No. 325,010
Int. Cl.³ A61C ***17/04***
U.S. Cl. 433—91 **5 Claims**



1. A dental appliance for use in combination with a saliva ejector having a flexible hollow suction tube and a terminal cap secured to one end of the suction tube and including a plurality of slotted grooves laterally spaced apart in substantial parallel alignment about the periphery of the cap, said appliance comprising a collar having a bore adapted to fit over said suction tube, a relatively flat blade-like protrusion extending from one side of said collar, a depending locking finger extending from another side of said collar including means for engaging any preselected one of said slotted grooves upon depressing said collar.

4,354,838
FOOT CONTROLLER FOR DENTAL INSTRUMENTS OR THE LIKE

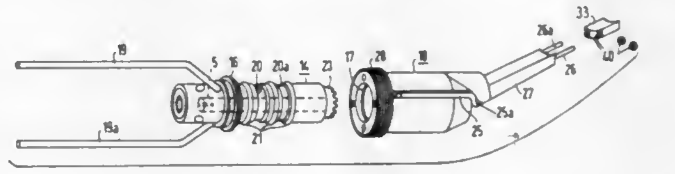
Gerd Hoyer, Karlsruhe, and Helmut Pietschmann, Karlsbad, both of Fed. Rep. of Germany, assignors to Sybron Corporation, Rochester, N.Y.
Filed Mar. 4, 1981, Ser. No. 240,598
Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017245
Int. Cl.³ A61C ***1/02***
U.S. Cl. 433—101 **10 Claims**



1. A foot controller for initiating and controlling the flow of a utility service to a dental instrument, said controller comprising:
(a) a housing adapted to rest on a floor surface, said housing having front and rear walls;
(b) a pair of foot pedals hinged to said housing for movement about a horizontal axis;
(c) bias means for urging said pedals upwardly to a rest position;
(d) a signal generator within said housing including a single movable control element, said generator producing an output signal in response to the movement of said control element;
(e) means operatively connecting each of said pedals with said single control element for moving said element responsive to either independent or simultaneous movement of said foot pedals; and
(f) an on-off switch associated with each foot pedal for switching on a utility supply responsive to movement of said foot pedals against said bias means.

4,354,839
DENTAL HANDPIECE

Werner Schuss, In der Lahrbach 18, 6148 Heppenheim, Fed. Rep. of Germany
Filed Dec. 1, 1980, Ser. No. 211,688
Claims priority, application European Pat. Off., Nov. 29, 1979, 79104768.1
Int. Cl.³ A61C ***1/08, 17/02, 1/12***
U.S. Cl. 433—126 **8 Claims**



1. In a dental handpiece having a drive part with a drive shaft extending in a projection, a head part with a head housing containing socket means for supporting a tool for rotation and having a neck extending therefrom, and a grip part connected

to the head part and being removably supported on the projection of said drive part so that it can be axially removed therefrom, said grip part having a drive means for transmitting rotational motion from the drive shaft of the drive part to the socket means, said handpiece having at least one cooling agent line formed of sections in said parts with two of said cooling agent line sections being connected to one another by means of a rotatable connection consisting of an annular channel with annular sealing rings in one said parts, and an opening in the other of said parts in communication with said channel in said other part and being rotatable therearound, the improvements comprising a first drive shaft having means at one end to form a direct coupling with the drive shaft of the drive part and having two coaxially arranged gears of a different number of teeth disposed on the other end, said first drive shaft being supported for rotation in a first sleeve which forms one of the two parts of the rotatable connection and carries one of the coolant agent line sections, a second sleeve forming the other part of the rotatable connection being arranged concentrically on the first sleeve and having cooling line sections for conducting fluid from said connection to the head section, said first sleeve having first means coacting with the drive part for detachably connecting the first sleeve on the projection of said drive part without any rotation therebetween, said first sleeve and second sleeve having second means for releasably securing the second sleeve concentrically on the first sleeve for rotation thereon without any axial displacement, said grip part being formed by said first and second sleeves and an outer sleeve covering supported thereon; said sleeve covering having means for releasably receiving the neck of the housing of the head part, said neck having support means for supporting a second drive shaft in the neck, said second drive shaft having a gear at each end with the gear at one end engaged with a gear of the socket means, said support means for the second drive shaft supporting the second drive shaft with the gear at the other end engaged with one of said two coaxial gears of the first drive shaft section, so that by replacing the head part with another head part having its drive shaft supported with the gear at the other end engaged with the other of said coaxial gears, the gear ratio between the connection of the first drive shaft and the drive shaft of the head part can be changed.

4,354,840

SPLINTING DEVICE FOR ANTERIOR TEETH

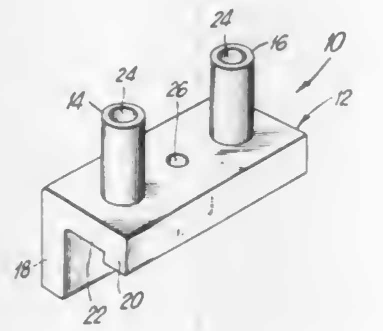
Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 70,247, Aug. 27, 1979, Pat. No. 4,260,383. This application Apr. 7, 1981, Ser. No. 251,774

The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.

Int. Cl.^{3} A61C *5/00*

U.S. Cl. 433—215 **22 Claims**



1. A dental splinting device comprising an elongated bar-like body member having a rear wall, a front wall, and a base wall interconnecting said front and rear walls, said front wall having a longitudinally extending portion shorter than said rear wall to thereby define a substantially J-shaped cross sectional configuration, at least one tubular member extending perpendicularly from said base wall for being received in a bore provided in a first tooth with said body member being disposed in a channel extending from the first tooth to at least one adjacent tooth, said tubular member including axial opening means extending therethrough for guiding a drill during formation of a pilot hole in the first tooth, the pilot hole functioning as a lead hole for the formation of said bore in the first tooth, and said body member including retaining means longitudinally spaced from said tubular member for securing said body member to the adjacent tooth when said body member is in a final position in the channel.

4,354,841

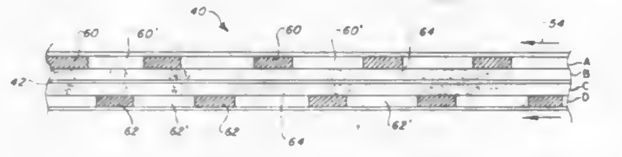
PRERECORDED INSTRUCTIONAL MATERIAL AND METHOD OF INSTRUCTION

Ernest P. Meeder, Glen Ellyn, Ill., assignor to C. F. Distributions, Inc., Glen Ellyn, Ill.

Filed Sep. 29, 1980, Ser. No. 191,835

Int. Cl.^{3} G09B *5/04;* G11B *5/02*

U.S. Cl. 434—157 **8 Claims**



1. A magnetic audio tape employable as a learning aid, said tape comprising:

a plurality of tracks extending longitudinally in a direction of advancement of the tape;

each of first and second tracks including longitudinally spaced prerecorded sections separated by intermediate sections;

said prerecorded sections of said first and second tracks being staggered with respect to each other in said direction of advancement, such that all of said prerecorded sections of said first track are entirely out of alignment with all of said prerecorded sections of said second track, taken transversely of said direction of advancement;

said prerecorded sections having thereon recorded sounds, the recorded sound of each section on said first track being related as a learning aid to the next succeeding recorded sound on said second track, taken in said direction of advancement; and

background sounds recorded along the entire length of at least a third said track being substantively related to the subject matter of said prerecorded sections so that the phrases of each section are associated with the background sounds, and thus with each other, by a listener, so as to enhance the learning effect and interest of the listener.

4,354,842

SYSTEM FOR UTILIZING INTERACTIVE BLOCKS TO TEACH ARITHMETIC

Deborah Stoddard; Blair F. Baldwin, both of New York, N.Y., and Donald Gorgas, Long Valley, N.J., assignors to Baldwin, Stoddard & Co., New York, N.Y.

Filed May 28, 1981, Ser. No. 267,682

Int. Cl.^{3} G09B *19/02*

U.S. Cl. 434—195 **15 Claims**

1. A system for utilizing interactive blocks to teach arithmetic, comprising:

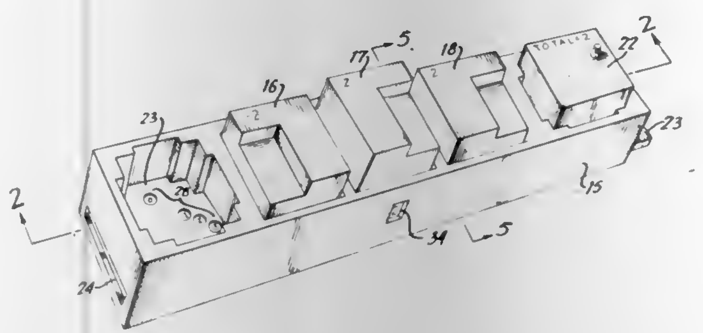
a base member having a longitudinal passage therein and a plurality of recesses communicating with said passage, each recess extending to a surface of said base member,

a summary rack mounted for longitudinal movement in said passage;

cam means disposed in selected ones of said recesses for causing incremental movement of said summing rack in response to insertion of an arithmetic value block into the corresponding recess, the amplitude of said movement

being proportional to a given dimension of an actuating portion of said block associated with the arithmetic value thereof;

indexing means operatively associated with said summing rack and having a series of index elements adjacent a predetermined one of said recesses, said index elements establishing a pattern in said recess uniquely corresponding to the longitudinal position of said summing rack in said passage, for enabling said predetermined recess to receive only an answer block having index element engaging means disposed in a pattern corresponding to an arithmetic value defining the longitudinal position of said summing rack;



whereby when one or more arithmetic value blocks are inserted in the corresponding recesses, said predetermined recess is rendered capable of receiving only an answer block having an associated arithmetic value equal to the arithmetic combination of the values associated with said arithmetic value blocks.

4,354,843

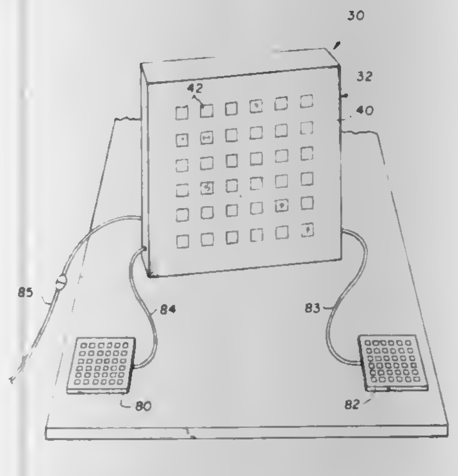
SPACIAL ORIENTATION INSTRUCTION DEVICE

Brian Feldman, 338 E. 22nd St., Apt. 2C, New York, N.Y. 10010

Filed May 4, 1979, Ser. No. 36,183

Int. Cl.^{3} G09B *19/00*

U.S. Cl. 434—236 **1 Claim**



1. The method of providing spacial orientation instruction to a student comprising the steps of displaying to said student a plurality of display windows in an intersecting pattern of horizontally and vertically oriented rows so as to define a display location at each said intersection of said rows, successively illuminating a display window at only one said display location at a time so as to provide a corresponding single-light display to said student, and providing for actuation by said student plural buttons operatively arranged in said same pattern of horizontal and vertical rows at said display locations, each said button having a controlling operative relation over a cooperating display window having the same location in said pattern effective to terminate the illumination thereat incident to being actuated, whereby said student in the process of selecting an illumination-terminating button requires recognition of the spacial orientation of the location of said one display window selected for illumination.

4,354,844

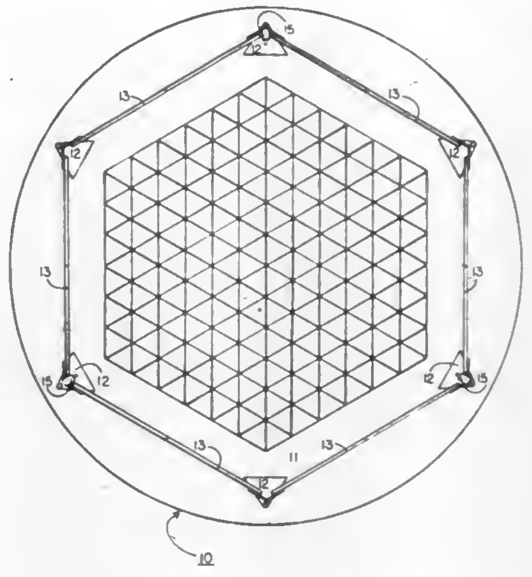
BEHAVIORAL AND PSYCHOLOGICAL TEST INSTRUMENT

William J. Ickinger, 254 Terrace Ave., Apt. C-2, West Haven, Conn. 06516

Filed Oct. 23, 1980, Ser. No. 199,737

Int. Cl.^{3} G09B *19/00*

U.S. Cl. 434—237 **18 Claims**



1. A test chamber for observing and statistically evaluating human behavior comprising

A. moveable wall member means positionable to peripherally surround and define a test chamber of any desired size and shape in any desired location;

B. a test zone located within the wall members and defined by a specific pattern displayed on the floor of the chamber; and

C. a test zone floor pattern comprising a plurality of indicia, with each indicia being in spaced relationship to adjacent indicia to provide a test subject with the plurality of alternate directions in which to move each time a move is required.

4,354,845

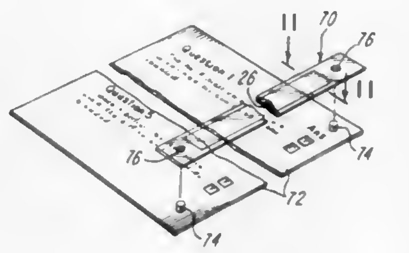
IDENTIFICATION STRUCTURE FOR GAMES AND EDUCATIONAL USE AND FOR OTHER USE

Ronald J. Poteet, and Anne P. Poteet, both of 4377 Tangent Dr., Dayton, Ohio 45440

Filed Nov. 24, 1980, Ser. No. 210,016

Int. Cl.^{3} A63F *3/06, 9/18;* G09F *19/00*

U.S. Cl. 434—410 **12 Claims**



1. Identification structure adapted to be positioned immediately above a surface for identification of portions thereof comprising:

a substantially flat bag having opposed flexible substantially transparent parts,

a viscous material within the bag between the transparent parts, the viscous material being visible within the bag but being sufficiently transparent that the surface is visible through the transparent parts of the bag and through the viscous material, the viscosity of the viscous material being such that a portion of the viscous material may be readily displaced within the bag as a result of the application of pressure upon a part of the bag, the viscosity of the viscous material being such that a portion of the viscous material which is displaced remains displaced, displacement of such portion of the viscous material by application of pressure upon a portion of a transparent part of the bag displacing and removing substantially all the viscous material from below the portion of the transparent part of the bag to which pressure is applied, so that a portion of the surface immediately below that portion of the transparent part of the bag is observable directly through the transparent parts of the bag, a portion of the surface thus being identified as that portion of the surface which is more clearly visible through the transparent parts of the bag than portions of the surface above which the viscous material has not been displaced.

12. The method of identifying a portion of a surface comprising:

positioning a body of viscous material immediately above the surface, the viscous material being a material in which a portion thereof is readily displaced as pressure is applied thereto and which remains displaced, the viscous material being visible but also substantially transparent so that the surface is visible through the viscous material,

containing the viscous material in a substantially flat bag of flexible transparent material,

applying pressure to the portion of the viscous material which is immediately above a portion of the surface to be identified so that the portion of the viscous material which is immediately above said portion of the surface is displaced and remains displaced until smoothing pressure is applied generally to the body of viscous material.

4,354,846
NONSTEERABLE DRIVE MECHANISM FOR A WATERCRAFT

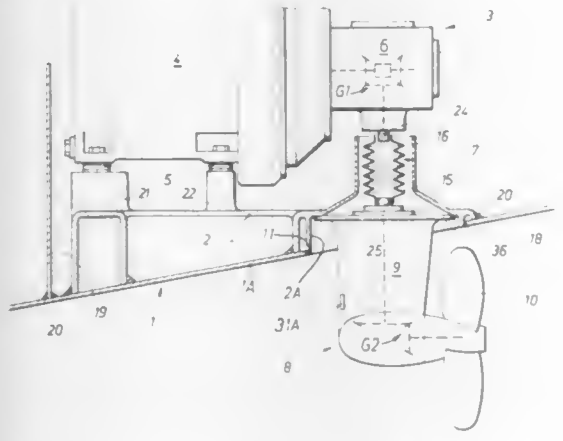
Johann Eichinger, Vaterstetten, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 9,226, Feb. 2, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 249,291

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805688

Int. Cl.^{3} B63H *21/28*

U.S. Cl. 440—52 **10 Claims**



1. In a drive mechanism for a watercraft having an opening through a hull, said drive mechanism comprising an upper part which is arranged within said watercraft and a lower part which is arranged outside of said watercraft and having an input shaft, and drive means including a downwardly directed driving shaft and an angled gear arranged in said lower part, said lower part having a driven shaft extending substantially horizontally below the waterline and a propeller fixedly secured to an end of said driven shaft, the improvement comprising a base plate means on the interior of said hull, said base plate means including means thereon encircling said opening, resilient mounting means for resiliently mounting said upper part to said base plate means, a closure member for sealingly closing said opening, said closure member being sealingly, fixedly secured by connecting means to the outside of said base plate means so that it can be removed from said base plate means without necessitating a removal of said upper part from said base plate means and, similarly, said upper part can be removed from said base plate means without necessitating a removal of said lower part, rigid mounting means for rigidly mounting said lower part to said closure member, said input shaft sealingly extending through said closure member into the interior of said hull, and an elastic coupling connecting said driving shaft to said input shaft.

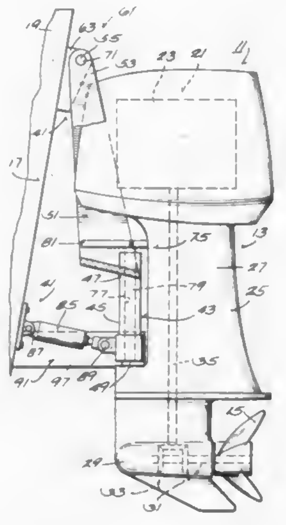
4,354,847
HIGH TILT PIVOT MOUNTING ARRANGEMENT FOR AN OUTBOARD MOTOR

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 9, 1980, Ser. No. 167,338

Int. Cl.^{3} B63H *21/26*

U.S. Cl. 440—61 **25 Claims**



1. A marine propulsion device comprising transom bracket means adapted to be fixed to a boat transom, a swivel bracket including a vertical leg having upper and lower ends, and a pair of arms extending upwardly in laterally spaced relation from said upper end of said swivel bracket vertical leg and in rearward relation to the boat transom, said pair of arms including respective upper ends, first pivot means connecting said upper ends of said arms and said transom bracket means for vertical swinging of said swivel bracket relative to said transom bracket means about a first axis which is fixed relative to said transom bracket means and which is horizontal when said transom bracket means is boat mounted, a propulsion unit including a powerhead and a lower unit fixedly connected to said powerhead and including, at the lower end thereof, a propeller, and second pivot means connecting said propulsion unit and said swivel bracket vertical leg for movement of said propulsion unit in common with said swivel bracket about said first axis and for steering movement of said propulsion unit relative to said swivel bracket about an axis which extends transversely to said first axis.

4,354,848
OUTBOARD MOTOR WITH TILT LINKAGE INCLUDING PIVOT LINK

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

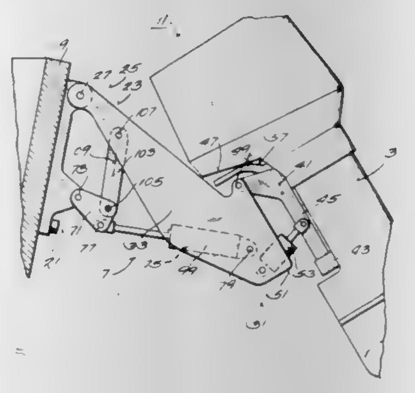
Filed Jul. 28, 1980, Ser. No. 173,159

Int. Cl.^{3} B63H *21/26*

U.S. Cl. 440—61 **14 Claims**

1. An outboard motor comprising a transom bracket means adapted to be fixedly mounted to a boat transom, second bracket means, means connecting said second bracket means to

said transom bracket means for pivotal movement of said second bracket means in a vertical plane about a first axis which is horizontal when said transom bracket means is boat mounted, a pivot link, means pivotally connecting said pivot link to said transom bracket means for pivotal movement about a second axis parallel to said first axis, an extensible link having opposite ends, means pivotally connecting one of said opposite ends of said extensible link to said pivot link about a third axis parallel to said first axis, means pivotally connecting the other of said opposite ends of said extensible link to said second bracket means about a fourth axis parallel to said first axis, means including a member connected to said pivot link and operable, in response to extension of said extensible link, for pivoting said pivot link so as to additionally increase the distance from said second axis to said fourth axis, a propulsion unit including a propeller, and means connecting said propulsion unit to said second bracket means for pivotal steering movement of said propulsion unit in a horizontal plane relative to said second bracket means and independently of said member.



4,354,849
EXHAUST GAS DISCHARGE AND COOLING MEANS FOR OUTBOARD ENGINES

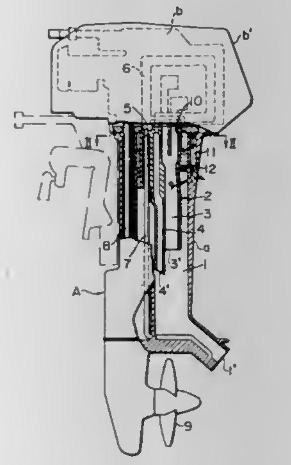
Yasumaru Sanmi; Norimichi Harada, and Yasuhiro Nishida, all of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 841,585, Oct. 12, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,156

Claims priority, application Japan, Oct. 13, 1976, 51-138054; Oct. 13, 1976, 51-138055

Int. Cl.^{3} B63H *23/32*

U.S. Cl. 440—88 **12 Claims**



1. In combination: a casing adapted to mount an outboard internal combustion engine, said casing forming an internal discharge chamber with an opening at its top end, and a discharge passage having a discharge port near is lower end;

an exhaust pipe in said discharge chamber having its inlet near the said top end and its outlet in said discharge chamber, said exhaust pipe being adapted to be connected to an exhaust port of said engine;

a cooling water discharge pipe having its inlet connected to the outlet of a cooling system for said engine and its outlet in said internal discharge chamber; and

a water storage chamber formed between the casing and the exhaust pipe and extending fully peripherally around the exhaust pipe in heat transfer relationship to the exhaust pipe, cooling water inlet means to, and cooling water outlet means from, said water storage chamber, whereby during engine operation circulation of water through said water storage chamber cools the exhaust pipe; said cooling water outlet means extending from near the bottom of said water storage chamber to the outside of the casing, and including a restricted discharge passage which is so proportioned as to maintain in said water storage chamber a sufficient quantity of cooling water during engine operation to keep the exhaust pipe temperature at an acceptable value, water from said water storage chamber discharging from said water storage chamber only through said restricted discharge passage.

4,354,850
GEAR CLUTCH

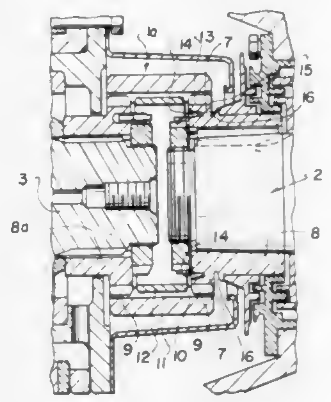
Ernst Piepenbreier, Essen, and Hansjochen Girod, Mülheim, both of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 206,972

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947389

Int. Cl.^{3} F16D *9/00*

U.S. Cl. 464—32 **3 Claims**



1. A gear clutch comprising, an annular clutch casing with a plurality of internal teeth, a clutch hub having a plurality of external teeth meshed with said internal teeth, said clutch hub being coaxial with said clutch casing, said external teeth having a load bearing part and a root, said clutch hub having an annular axially extending groove extending into said root from one side of said external teeth and ending below said external teeth and an annular radially extending groove on an opposite side of said external teeth and defining with said axially extending groove a cylindrical annular break section of a size smaller than that of said load bearing part, whereby said break section breaks before said load bearing part breaks when the gear clutch is overloaded.

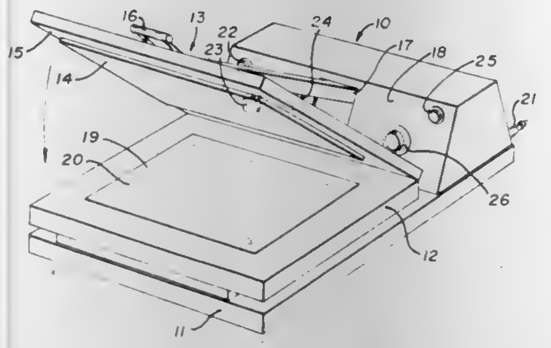
CHEMICAL

4,354,851

METHOD FOR MAKING A DECORATED, WATER-RESISTANT, RIGID PANEL AND THE PRODUCT MADE THEREBY: TRANSFER DYE PROCESS ONTO RIGID PANEL

Daniel H. Hix, Pittsburg, Kans., and Daniel D. Closser, Port Washington, Wis., assignors to United States Gypsum Company, Chicago, Ill.

Filed Feb. 17, 1977, Ser. No. 769,753
Int. Cl.^{3} D06P *1/76*
U.S. Cl. 8—471 **9 Claims**



1. A method for making a decorated, water-resistant, rigid panel which is a cured, pre-coated rigid panel having a clear, water-resistant, polymeric top coating on one surface of the panel and at least one substrate polymeric coating under the clear, polymeric top coating with the substrate coating adjacent to the clear top coating containing a colored pigment and a polymeric binder which comprises (1) bringing said cured, pre-coated rigid panel into contact with a printed transfer sheet having a decoration formed by a sublimable coloring agent, (2) placing the side of the transfer sheet containing the coloring agent in direct contact with the clear top coating on the panel, (3) applying light pressure ranging from about 1 to about 50 psi to the transfer sheet and rigid panel to mantain intimate contact between their surfaces, (4) applying heat to the surfaces of the transfer sheet and rigid panel for a short period of time ranging from about 10 seconds to about 3 minutes whereby the temperature at the transfer sheet surface ranges from about 150° C. to about 220° C. which causes the coloring agent to sublime and penetrate into the polymeric top coating on the panel, (5) removing the heat and pressure from the transfer sheet and rigid panel surfaces, and (6) recovering a decorated, water resistant, rigid panel after readily stripping the transfer sheet from the coated surface of the rigid panel.

4,354,852

PHASE SEPARATION OF HYDROCARBON LIQUIDS USING LIQUID VORTEX

Paul H. Kydd, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

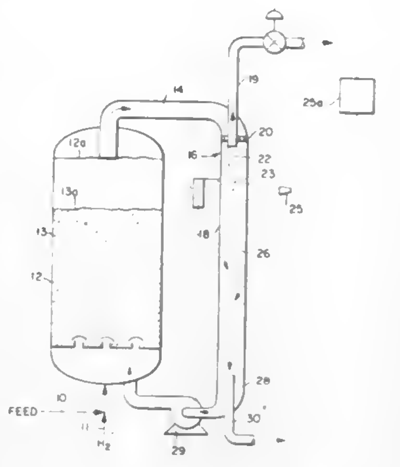
Filed Apr. 24, 1981, Ser. No. 257,435
Int. Cl.^{3} G01N *23/00*
U.S. Cl. 23—230 A **8 Claims**

1. A phase separation process for heavy hydrocarbon liquids containing a gas portion at elevated temperature and pressure conditions, comprising:

(a) introducing the liquid-gas mixture into a separation zone containing at least one flow passageway oriented to produce a swirling vortex flow pattern;

(b) passing the mixture through the flow passageway and forming a vortex flow pattern within the separation zone, with said vortex having an inner gas core portion;

(c) monitoring location of the downstream end of the vortex gas core, and withdrawing a gas stream from within the vortex core at a rate sufficient to maintain said gas core downstream end within a desired location range; and



(d) withdrawing the swirling liquid portion downstream from the vortex and passing it to further processing.

4,354,853

KARL FISCHER REAGENT AND ITS USE

Harald Dahms, 472 Madison Ave., Toms River, N.J. 08753

Filed May 11, 1981, Ser. No. 262,173
Int. Cl.^{3} G01N *31/16, 33/18*
U.S. Cl. 23—230 R **17 Claims**

1. A method for determining water by a Karl Fischer type reaction, including the titration of a vessel solution containing a water sample with a halogen-containing titrant, including the steps of:

combining said water containing sample and a vessel solution including a reducing substance and a first solvent for said reducing substance, said solvent having a high solubility for water,

adding a titrant to said vessel solution-water sample combination, said titrant including a halogen and a second solvent for said halogen wherein said second solvent is different than said first solvent, has a very low solubility for water, and includes as said second solvent at least a substance selected from the group consisting of xylene, toluene, and mixtures thereof, said titrant reacting with said vessel solution-water sample combination on a stoichiometric basis, the amount of titrant used being related to the amount of water in said sample.

4,354,854

APPARATUS FOR COLORIMETRICALLY MEASURING TRACES OF GAS

Ulrich Fritze; Gerd Janser, both of Cologne; Heinz Herschinger, Leverkusen, and Dieter Kitzelmann, Bonn, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

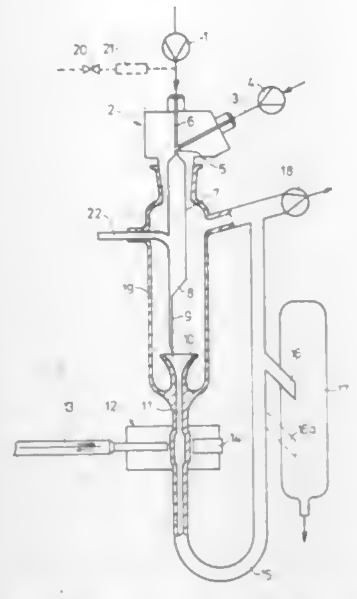
Filed Jun. 11, 1981, Ser. No. 272,804
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024847
Int. Cl.^{3} G01N *31/06, 31/20*
U.S. Cl. 23—232 R **11 Claims**

5. In a method for the colorimetric measuring of traces of gas wherein the gas to be measured is absorbed in a reaction liquid and enters into a color reaction, the improvement comprising the steps of:

absorbing a gas in a reaction liquid by atomizing the liquid with the gas;

passing the liquid and absorbed gas downwardly through a separation pipe as a thin film on the wall thereof;

communicating the thin film downwardly from the pipe into a micro-flow cuvette while stabilizing the flow of the reaction liquid with the absorbed gas through the cuvette by passing the reaction liquid and absorbed gas from the pipe along a thin hydrophilic rod-like liquid guide, thereafter through a funnel separated from said guide and then



into the cuvette, siphoning off the reaction liquid with the absorbed gas from the outlet of the cuvette and outletting the siphoned off liquid above the level of the cuvette.

4,354,855

MOTOR FUEL

W. Alan Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 30, 1980, Ser. No. 155,029
Int. Cl.³ C10L *1/18*

U.S. Cl. 44—56 **5 Claims**

1. A motor fuel comprising a major portion of gasoline-boiling-range compounds and from 0.1 to 49 volume percent t-butyl t-butoxyacetate, said motor fuel containing gasoline.

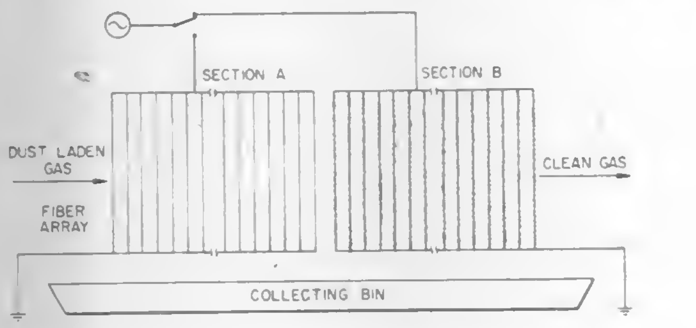
4,354,856

METHOD AND APPARATUS FOR RECOVERING MAGNETIC PARTICLES

Robert T. Lewis, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 26, 1981, Ser. No. 228,654
Int. Cl.³ B03C *1/00*

U.S. Cl. 55—3 **18 Claims**



1. A method for recovering magnetic paticles from a fluid comprising

(a) contacting said fluid with a ferromagnetic element to cause the attraction and collection of magnetic particles from said fluid;

(b) heating said ferromagnetic element to a temperature near or above the Curie temperature of at least one of (1) the ferromagnetic element and (2) collected magnetic particles; and

(c) disengaging collected magnetic particles from said ferromagnetic element.

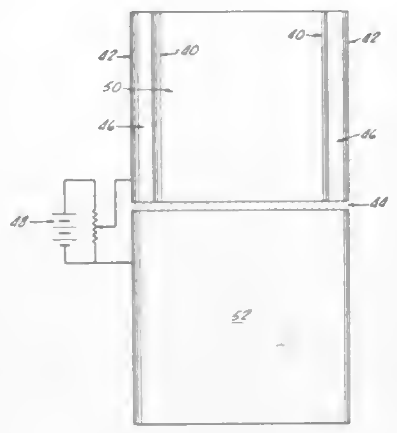
4,354,857

METHOD AND APPARATUS FOR SEPARATING GAS MOLECULES USING A BIPOLAR MEMBRANE AS A MOLECULAR SIEVE

Howard Reiss, La Jolla, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 974,158, Dec. 28, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,487
Int. Cl.³ B01D *53/22*

U.S. Cl. 55—6 **15 Claims**



5. A process for separating one type of gaseous molecules from a mixture of different types of gaseous molecules comprising the steps of: applying a mixture of different types of gaseous molecules to one side of a porous bipolar membrane having a pore size distribution dependent upon an applied electric field, wetting both sides of the porous bipolar membrane with a liquid medium, applying an electric field across the porous bipolar membrane, and adjusting the electric field to a level causing the pore size distribution of the porous bipolar membrane to pass one type of molecule and to block the passage of other types of molecules in said mixture of different types of molecules, the passage of one type of molecule through the porous bipolar membrane being by diffusion.

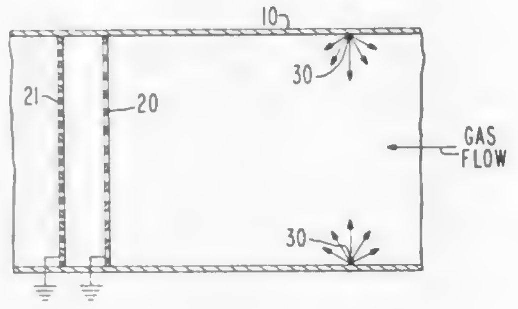
4,354,858

METHOD FOR FILTERING PARTICULATES

Tribhawan Kumar, Oakland, Calif., and Kris E. Wolpert, Harrisburg, Pa., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 172,326, Jul. 25, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,614
Int. Cl.³ B01D *53/00*

U.S. Cl. 55—6 **6 Claims**



1. An improved method for filtering particulates from a stream of particulate-laden gas comprising the steps of:

(a) moving the gas including the particulates to be filtered as a stream;

(b) imparting electrostatic charges to the particulates in the stream;

(c) positioning across the path of the stream and downstream of the location at which the electrostatic charges are imparted to the particulates therein a metallic electrically grounded foraminous collecting structure having apertures of sizes larger than the average size of particulates to be filtered from the stream by more than an order of magnitude,

(d) directing the gas stream containing the charged particulates through said collecting structure such that the electrostatically charged particulates are quickly accumulated as a porous filter cake by said collecting structure and are filtered from the gas stream.

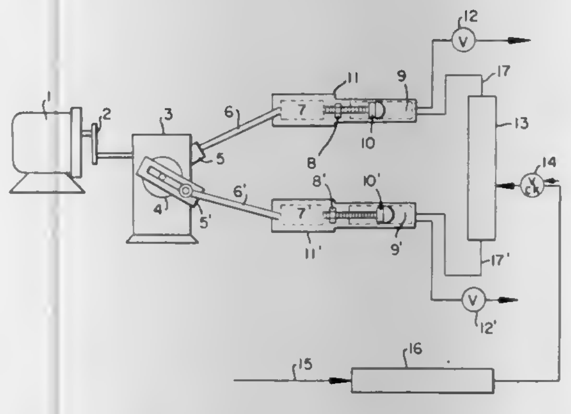
4,354,859

ENHANCED GAS SEPARATION BY SELECTIVE ADSORPTION

George E. Keller, II, South Charleston, and Chia-Huei A. Kuo, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 6, 1981, Ser. No. 290,484
Int. Cl.³ B01D *53/04*

U.S. Cl. 55—25 **19 Claims**



1. An improved pressure swing adsorption process for separating a more readily adsorbable gas component(s) from less readily adsorbable gas component(s) of a gas mixture comprising:

(a) introducing said gas mixture to an adsorption column, containing an adsorbent capable of selectively adsorbing the more readily adsorbable gas component(s) of said gas mixture, at a point between the opposite ends of the column;

(b) imposing cyclic gas flow and pressure variations on the gas mixture in said column from a first end thereof by a first, larger, cyclic volume displacement means;

(c) imposing cyclic gas flow and pressure variations on the gas mixture in said column at the same time from the second end thereof by a second, smaller, cyclic volume displacement means, the ratio of the volume displacement produced by said second means to that of said first means being from about 0.15 to about 0.65, the second means imposing said cyclic flow and pressure variations relative to the flow and pressure variations of said first means at a phase angle within the range of from about 30° lag to about 90° lead;

(d) withdrawing a gas stream enriched in one said gas component from the first end of the column; and

(e) withdrawing a gas stream enriched in the other said gas component(s) from the second end of the column, whereby the gas mixture passes rapidly back-and-forth within said column, achieving an enhanced separation of the gas mixture and production of the desired product.

13. An improved apparatus for the pressure swing adsorption separation of a more readily adsorbable gas component(s) from a less readily adsorbable gas component(s) of a gas mixture comprising:

(a) an adsorption column containing an adsorbent capable of selectively adsorbing the more readily adsorbable gas components from less readily adsorbable gas components of a gas mixture;

(b) inlet means for introducing said gas mixture to the adsorption column at an injection point intermediate between the opposite ends of the column;

(c) a first, larger, cyclic volume displacement means adapted to impose cyclic gas flow and pressure variations on the gas mixture in said column from a first end portion thereof;

(d) a second, smaller, cyclic volume displacement means adapted to impose cyclic gas flow and pressure variations on the gas mixture in said column from the second, opposite end portion thereof, the ratio of the volume displacement produced by said second means to that of said first means being from about 0.15 to about 0.65, said second means being adapted for cyclic operation at a phase angle within the range of from about 30° lag to about 90° lead relative to the cyclic flow and pressure variations of said first means;

(e) discharge means for withdrawing a gas stream enriched in one said gas component(s) from the first end of the column; and

(f) discharge means for withdrawing a gas stream enriched in the other said gas component(s) from the second end of the column,

whereby the cyclic volume displacement means having the indicated relative volume displacements and phase angles cause a gas mixture introduced to the column to pass rapidly back-and-forth within said column, achieving an enhanced separation of the gas mixture and production of the desired product.

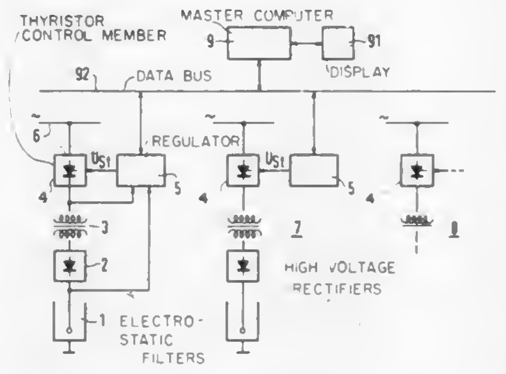
4,354,860

METHOD FOR DETERMINING THE FILTER CURRENT LIMIT OF AN ELECTROSTATIC FILTER

Helmut Herklotz, Neu Isenburg; Günter Mehler, Frankfurt am Main; Franz Neulinger, Dietzenbach; Helmut Schummer, Heusenstamm; Horst Daar, Erlangen; Walter Schmidt, Uttenreuth, and Heinrich Winkler, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,620
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949786
Int. Cl.³ B03C *3/68*

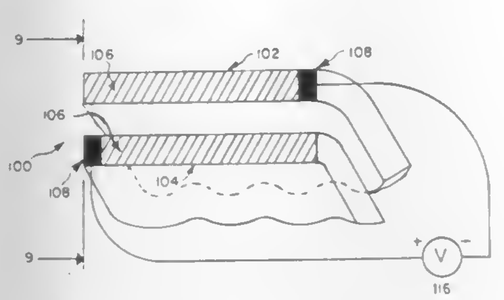
U.S. Cl. 55—105 **5 Claims**



1. In a method for determining the filter current limit of an electrostatic filter which is fed from an alternating current source via a control element and in which the control voltage of the control element can be varied up to a given filter current limit as a function of filter operating data, the improvement comprising, during the operation of the filter, at given intervals of time, varying the control voltage in given steps to a minimum and then again to its original value, while at the same time continuously calculating the ratios of change of filter voltage to change of control voltage and change of filter voltage to change of filter current and, if given limit values of these ratios are not reached, or if there is a sign change of two successive ratio values using the respective associated filter current to determine the filter current limit.

4,354,861
PARTICLE COLLECTOR AND METHOD OF MANUFACTURING SAME

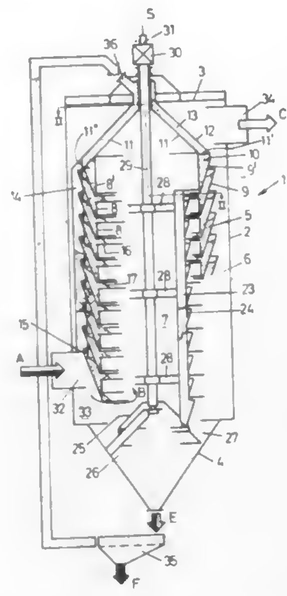
Charles G. Kalt, 29 Hawthorne Rd., Williamstown, Mass. 01267
Filed Mar. 26, 1981, Ser. No. 227,576
Int. Cl.^{3} B03C *3/04, 3/45*
U.S. Cl. 55—130 **4 Claims**



4. An electrostatic particle collector, comprising a first paper support member having a length and width, and a thickness much smaller than said length and said width, said first paper support member having two longitudinal sides, said first paper support member including a narrow first region, said narrow first region having a length and a width and being positioned adjacent one of said longitudinal sides and opposite the other of said longitudinal sides, and a wide second region having a length and a width and positioned adjacent said narrow first region and in contact therewith, said narrow first region having a width narrower than the width of said wide second region, said narrow first region being impregnated with a first concentration of a conductive material and said wide second region being impregnated with a second concentration of a conductive material, said first concentration containing a higher concentration of said conductive material than does said second concentration, a second paper support member having a length and width, and a thickness much smaller than said length and said width, said second paper support member having two longitudinal sides, said second paper support member being positioned in facing spaced relationship to said first paper support member, said second paper support member including a narrow third region having a length and a width adjacent one of said longitudinal sides and a wide fourth region having a length and a width and positioned adjacent said narrow third region and in contact therewith, said narrow third region having a width narrower than the width of said wide fourth region, said narrow third region being impregnated with a first concentration of a conductive material and said wide fourth region being impregnated with a second concentration of a conductive material, said first concentration containing a higher concentration of said conductive material than does said second concentration, said second paper support member being positioned with its wide fourth region in facing spaced relationship to said wide second region of said first paper support member to define a passage therebetween, said second paper support member being further positioned, configured and dimensioned to lie adjacent said first paper support member with said narrow third region adjacent said other longitudinal side of said first paper support member opposite said narrow first region of said first paper support member, voltage means coupled to said first region and said third region for applying a voltage potential difference between said first and said second paper support members.

4,354,862
FILTER FOR CLEANING GASES

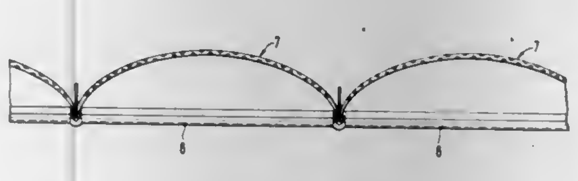
Friedrich Sgaslik, Regensburg, Fed. Rep. of Germany, assignor to Andre Büechl Kalk-und Portandzementwerk, Regensburg, Fed. Rep. of Germany
Filed Jan. 21, 1981, Ser. No. 226,885
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002773
Int. Cl.^{3} B01D *46/04*
U.S. Cl. 55—296 **17 Claims**



1. Apparatus for the treatment of substances in a gas stream comprising:
- (a) a casing;
- (b) a plurality of annular cells concentrically arranged with respect to a common vertical axis one above the other in said casing, a bottom portion of each cell, except the lowermost, extending into the cell situated thereunder;
- (c) an inner gas chamber formed by an area of the interior of the casing, which area is surrounded by said plurality of annular cells, and an outer gas chamber formed by an area of the interior of the casing, which area surrounds said plurality of cells, said inner chamber having gas inlet means and said outer chamber having a gas outlet means;
- (d) a medium inlet means disposed at the top of said casing and channel means for channeling medium to each said cell from said medium inlet;
- (e) each said annular cell comprising:
  - (i) inner and outer annular wall means;
  - (ii) said inner annular wall means and said outer annular wall means of each cell separating each cell from said inner and outer gas chambers respectively;
  - (iii) an opening in the bottom portion for communication with the annular cell situated thereunder;
  - (iv) a cell medium inlet means for receiving medium from said channel means;
  - (v) an annular opening at a lower part of said inner wall means defining a gas inlet and medium outlet from each cell;
  - (vi) said cell having an upper gas outlet at an upper portion thereof for outlet of gas therefrom;
  - (vii) a substantially horizontally disposed ring wall means having an inner edge and being disposed adjacent and below said annular opening and extending into the interior of said inner gas chamber, an upper surface of said substantially horizontally disposed ring wall means being adapted to support thereon a talus of medium discharged from said cell through said annular opening; and
  - (viii) the annular opening of each cell, except for the lowermost cell, being situated below the upper gas outlet of the cell situated thereunder;
- (f) a plurality of sweeping means in said inner gas chamber, said sweeping means being mounted for rotation about a common vertical axis, at least one of said sweeping means being located at each annular opening and disposed above said upper surface; and
- (g) a plurality of collection pockets in said inner gas chamber, said pockets being mounted for rotation about said common vertical axis, each of said pockets being located below one of said sweeping means and below one of said horizontally disposed ring wall means, said sweeping means being operable when rotated, to move across said upper surface of said horizontally disposed ring well means and is operative for sweeping medium deposited on said horizontally disposed ring wall means across an inner edge of the ring wall means into said pockets.

4,354,863
FALSE CEILING

Johann Oleszak, Schleiermacherstrasse 25, D-4630 Bochum 6, Fed. Rep. of Germany
Filed Dec. 3, 1980, Ser. No. 212,428
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949235
Int. Cl.^{3} B01D *45/08, 53/00;* **F23J** *11/02*
U.S. Cl. 55—436 **3 Claims**

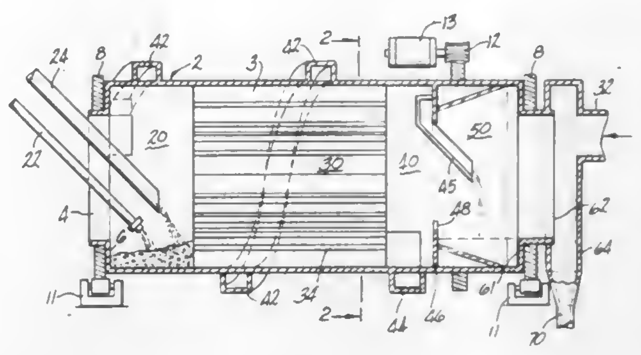


1. A false ceiling for use in removing and/or dissipating contaminants including condensible contaminants in a room comprising:
- a. a plurality of ceiling panels of arcuate configuration, the concave surfaces of which are directed downwardly, each of said panels being substantially defined by a pair of spaced apart substantially parallel lower and upper walls which define a substantially unobstructed continuous open passage in each of said panels, each of said lower and upper walls having spaced openings therein to permit the flow of air in said passages, said openings having flanges therearound which extend inwardly in the respective panels thereof, the openings in one of said walls being in staggered relation to the openings in the other of said walls, whereby air passing through said panels is deviated in its flow in said passages and contaminants from said air condensing on the inner surfaces of said walls gravitate downwardly in substantially continuous flow through said passages and are prevented from passing through the openings in said lower walls by said flanges;
- b. a plurality of collecting channels adjacent the lower edges of said panels in communication with the respective passages thereof for receiving said condensed contaminants for disposition thereof; and
- c. a plurality of support members for supporting said panels at the corners thereof and for detachably supporting said channels to permit the removal thereof for cleaning.

4,354,864
PROCESS FOR PRODUCTION OF LAYERED GLASS BATCH PELLETS

Walter C. Saeman, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.
Continuation-in-part of Ser. No. 123,153, Feb. 21, 1980, Pat. No. 4,293,324. This application Feb. 25, 1981, Ser. No. 238,256
The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.
Int. Cl.^{3} C03B *1/00;* **C03C** *1/02*
U.S. Cl. 65—27 **10 Claims**

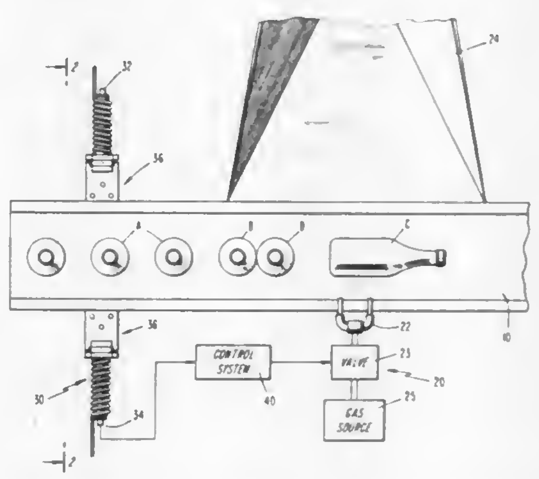
1. A continuous process for the production of layered pellets for glass production, which comprises the following steps:
- (a) maintaining in a pelletizing zone of a rotary apparatus a moving bed of recycle pellets,
- (b) feeding sand and particles of a calcium carbonate source into said pelletizing zone,
- (c) feeding a Na_2O source comprised of a solution of sodium hydroxide into said pelletizing zone, said recycle pellets being coated with a layer comprised of said solution of sodium hydroxide, said sand and said calcium carbonate source and forming layered pellets,



- (d) passing said layered pellets into a heated drying zone to form dried layered pellets, said dried layered pellets having a residual moisture content of from about 4 to about 12 percent by weight,
- (e) passing said dried layered pellets from the drying zone to a recycle zone,
- (f) recycling a portion of said dried layered pellets to said pelletizing zone as said recycle pellets, and
- (g) recovering a portion of said dried layered pellets from said recycle zone.

4,354,865
AUTOMATIC GLASS WARE FORMING MACHINE WITH AUTOMATIC DOWN AND/OR STUCK BOTTLE REJECTION

William J. Poad, Brockport; Urbano J. DeSantis, and Lewis W. McFadden, both of Brockway, all of Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.
Filed May 1, 1981, Ser. No. 259,568
Int. Cl.^{3} C03B *35/00*
U.S. Cl. 65—29 **6 Claims**



1. The combination, an automatic glass were forming machine comprising a conveyor on which a single line of normally upright, still plastic wares of substantially uniform size and having a greater length than diameter are transported for further processing in spaced relationship with respect to each other, and automatic stuck and down ware rejection apparatus comprising:

detecting means for sensing the passage of normal ware, stuck ware and down ware past an inspection location and for producing a first signal for each item of sensed normal ware, stuck ware and down ware having a duration corresponding to the time required for the corresponding sensed item to be conveyed past said inspection location;

means responsive to each of said first signals for producing a second signal having a predetermined duration corresponding to the time required for a normal upright and spaced ware to be conveyed past said inspection location;

means responsive to each of said first and second signals for producing a reject signal when said first signal exceeds said second signal in duration, which corresponds to the detection of stuck ware or down ware; and

removal means responsive to said reject signal for removing the stuck ware or down ware which generated said reject signal.

5. A method of detecting and removing stuck ware and down ware from a moving conveyor line of normally upright, spaced and still plastic wares of substantially uniform size and having a greater length than diameter, the method comprising the steps of:

producing a first signal for each item of normal ware, stuck ware and down ware which is conveyed past an inspection location, each of said first signals having a duration corresponding to the time required for passage of the corresponding item past said inspection location,

producing a second signal simultaneously with the production of each of said first signals, said second signals having a predetermined duration corresponding to the time required for a normal upright and spaced item of ware to be conveyed past said inspection location;

inhibiting the generation of a reject signal during the duration of each of said second signals and generating said reject signal if a first signal is present after the termination of the corresponding second signal; and

actuating signal responsive automatic ware removal means in response to said reject signal.

4,354,866

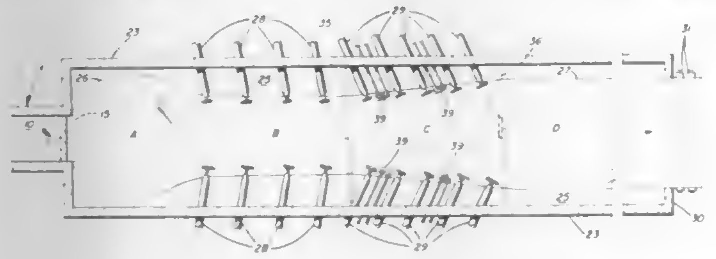
METHOD OF BIDIRECTIONALLY ATTENUATING GLASS IN A FLOAT PROCESS WITH EDGE COOLING

Raymond J. Mouly, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 137,329, Apr. 4, 1980, Pat. No. 4,305,745. This application Oct. 2, 1981, Ser. No. 307,815

Int. Cl.^{3} C03B *18/06*

U.S. Cl. 65—99.5 **12 Claims**



1. A method of making a continuous sheet of glass of below equilibrium thickness comprising the steps of:

delivering a stream of molten glass at a first end of a longitudinally extending pool of molten metal onto a first zone of the molten metal pool at a rate such that the glass thickness in the first zone is maintained greater than equilibrium thickness;

drawing a ribbon of glass in a horizontal longitudinal direction from the first zone onto a second zone of the molten metal pool and stretching the ribbon in the second zone in a longitudinal direction while being restrained against shrinkage in the transverse direction so that substantial reduction of the glass thickness to a thickness below equilibrium is effected in the second zone, and deviations from surface flatness of the ribbon are drawn into elongated distortions extending substantially longitudinally;

further drawing the ribbon of glass in the longitudinal direction from the second zone onto a third zone of the molten metal pool, cooling marginal edge portions of the ribbon below the temperature of adjacent center portions of the ribbon, engaging the cooled marginal edge portions with attenuating means, and stretching the ribbon by said attenuating means in the third zone in the transverse direction so that additional reduction of glass thickness is effected, and the longitudinally extending surface distortions are stretched in the transverse direction, thereby reducing their spatial frequencies;

further drawing the ribbon of glass in the longitudinal direction from the third zone onto a fourth zone and cooling the glass in the fourth zone sufficiently to be dimensionally stable; and

withdrawing the dimensionally glass ribbon of less than equilibrium thickness from a second end of the pool of molten metal, whereby a ribbon of glass is produced in which light transmitted through the glass is affected by optical distortion of reduced optical power.

4,354,867

3-PERHALOALKYLHYDROXY-OXAXOLIDINES AND THIAZOLIDINES HERBICIDAL ANTIDOTES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

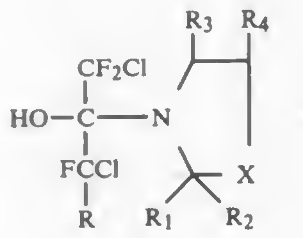
Division of Ser. No. 77,889, Sep. 21, 1979, Pat. No. 4,259,500. This application Sep. 26, 1980, Ser. No. 191,218

Int. Cl.^{3} A01N *25/32*

U.S. Cl. 71—88 **15 Claims**

1. A composition comprised of

(a) an antidotally effective amount of a compound of the formula



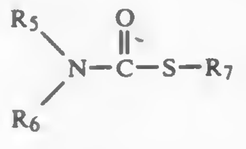
in which

R is selected from the group consisting of chloro and fluoro;

R_1–R_4 are each independently selected from the group consisting of hydrogen and 1–4 carbon alkyl; and

X is oxygen; and

(b) an herbicidally effective amount of a thiocarbamate of the formula



$$\mathrm{R_5(R_6)N{-}C({=}O){-}S{-}R_7}$$

in which

R_5 is selected from the group consisting of 1–6 carbon alkyl and 2–6 carbon alkenyl;

R_6 is selected from the group consisting of 1–6 carbon alkyl, 2–6 carbon alkenyl, cyclohexyl and phenyl; or

R_5 and R_6 together form a hexamethylene group; and

R_7 is selected from the group consisting of 1–6 carbon alkyl, 1–6 carbon haloalkyl, 5–10 carbon alkylene ring, phenyl, substituted phenyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo, benzyl and substituted benzyl, wherein the substituents are 1–4 carbon alkyl, 1–4 carbon haloalkyl, and halo.

4,354,868

PROCESS FOR THE DESILICONIZATION OF MANGANESE ALLOYS

Michel Demange, and Louis Septier, both of Le Fayet, France, assignors to Societe Francaise d'Electrometallurgie-SOFREM, Paris, France

PCT No. PCT/FR79/00123, § 371 Date Aug. 11, 1980, § 102(e) Date Aug. 11, 1980, PCT Pub. No. WO80/01170, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 6, 1979, Ser. No. 202,446

Claims priority, application France, Dec. 11, 1978, 78 35300

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.^{3} C22B *47/00*

U.S. Cl. 75—60 **13 Claims**

1. A process for desiliconization of manganese base alloys containing silicon characterized by injection into said alloy which is liquid and disposed in a reactor, an amount of carbon dioxide which is from about 1 to about 3 times the stoichiometric amount which permits oxidation of silicon in accordance with the reaction: $Si+2CO_2 \rightarrow SiO_2+2CO$, thereby removing silicon and affecting an alloy having a very low silicon content.

4,354,869

PROCESS FOR PURGING ALUMINUM AND ALUMINUM ALLOY MELTS OF SMALL QUANTITIES OF ALKALI AND ALKALINE EARTH METALS

Roland Hummer; Joseph Reinisch, and Wolfgang A. Thury, all of Leoben, Austria, assignors to Metals & Alloys Company Limited, Canada

Filed May 19, 1981, Ser. No. 265,172

Claims priority, application Austria, May 27, 1980, 2793/80

Int. Cl.^{3} C22B *21/06*

U.S. Cl. 75—63 **11 Claims**

1. Process for the removal of small quantities of an impurity selected from the group consisting of alkali metals, alkaline earth metals, and mixtures thereof, from an aluminum or aluminum alloy melt, comprising introducing into the melt at a temperature not substantially in excess of about 700° C. a source of sulfur other than sulfurhexafluoride substantially free from any content of metal ion, permitting the sulfur to react with said small quantities of impurity to form an impurity-containing slag, purging the melt with a gas in quantities sufficient to remove residual sulfur remaining in the melt, and separating the purified melt from the impurity-containing slag.

4,354,870

METALS BENEFICIATION PROCESS

Theodore P. Goldstein, Yardley, Pa., and Louis D. Rollmann, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 225,158, Jan. 15, 1981, abandoned. This application Oct. 15, 1981, Ser. No. 311,581

Int. Cl.^{3} C22B *3/00, 11/04;* C01F *7/28*

U.S. Cl. 75—108 **6 Claims**

1. A process for recovering a clay from an aqueous suspension comprising same, the process comprising contacting said aqueous suspension with H_2S for a time sufficient to selectively precipitate the clay portion, said clay having platinum, palladium or gold associated therewith.

6. The process of claims 1 and 5 wherein, upon treatment with H_2S, precipitation of the clay is accompanied by detachment of the metal therefrom and the formation of colloidal suspension thereof in water.

4,354,871

CLEANER-POLISH COMPOSITIONS

David C. Sutton, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Oct. 13, 1981, Ser. No. 310,557

Int. Cl.^{3} C09G *1/04*

U.S. Cl. 106—3 **12 Claims**

1. A surface-treating emulsion composition comprising from about 66 to 97 percent by weight water, from about 1 to 25 percent by weight of a hydrocarbon solvent having a kauri-butanol value within the range of about 20 to 50 and having a boiling range within the range of 80° to 200° C.; from 0.2 to 1.20 percent by weight surfactant, from about 1 to 5 percent by weight of a film-former, and from about 0.50 to 6.0 percent by weight of a monomeric alpha-olefin containing from 10 to about 18 carbon atoms.

4,354,872

METAL OXIDE OIL SLURRIES

George T. Kekish, Chicago; Mei-Jan L. Lin, Naperville, and John H. Collins, Bloomingdale, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 101,938, Dec. 10, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 226,302

Int. Cl.^{3} C04B *9/00, 9/02, 9/04;* C23F *11/00*

U.S. Cl. 106—14.27 **6 Claims**

1. A metal oxide slurry consisting essentially of:

(a) about 50% by weight of magnesium oxide or the entity of magnesium oxide plus alumina

(b) about 1% by weight of an oil-soluble emulsifier and wetting agent

(c) about 4% by weight of an oil-soluble dispersant

(d) about 2% by weight of an insoluble thickening agent

(e) about 43% by weight, or a balance, of a hydrocarbon oil.

4,354,873

UNDERWATER ANTIFOULANT COMPOSITION

Robert F. Supcoe, Annapolis, Md., and Thomas Radakovich, Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1981, Ser. No. 264,904

Int. Cl.^{3} C09D *5/08, 5/14*

U.S. Cl. 106—18.32 **2 Claims**

1. An antifouling material having a viscosity of between about 25,000 and 45,000 cps. at 25° C. for application to submerged surfaces consisting essentially of, by weight percent, of

from about 2% to about 10% of fumed silica thixotropic thickening agent;

from about 50% to about 80% dimethylpolysiloxane having a molecular weight between about 1,200 and 12,000 and a viscosity between about 10 and 1,000 centistokes at 25° C.;

from about 20% to about 45% of antifoulant selected from the group of 2, 4, 5, 6-tetrachloroisophthalonitrile, copper oxides and copper 2-ethyl hexoate

from about 0.2% to about 4.0% of a surfactant for improving the displacement of the water molecules from the submerged surface, wherein the surfactant is selected from the group of anionic and amphoteric surfactants.

4,354,874

COMPOSITION AND PROCESS FOR CONSOLIDATING SOIL

Thomas M. Vickers, Willoughby, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 30, 1981, Ser. No. 316,854

Int. Cl.^{3} C09J *1/02*

U.S. Cl. 106—74 **10 Claims**

1. In a liquid alkali metal silicate composition curable to a solid upon standing and comprising water, an alkali metal silicate and glyoxal, the improvement which comprises incorporating into said composition a sodium bisulfite/sodium metabisulfite mixture as a retarder for silicate gelling, whereby gelling of the resulting composition is significantly inhibited by comparison to that of a liquid alkali metal silicate-glyoxal composition, and it is easily pumpable at an application temperature of 100° F. or higher.

4,354,875

CONTROLLING THE CURING TIME OF ALKALI METAL SILICATES USING DERIVATIVES OF GLYOXAL

Larry J. Powers, Madison, and Thomas M. Vickers, Willoughby, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 30, 1981, Ser. No. 316,857

Int. Cl.^{3} C09J *1/02*

U.S. Cl. 106—74 **12 Claims**

1. In a liquid alkali metal silicate composition curable to a solid upon standing and comprising water, an alkali metal silicate and silicate acidogen, the improvement which comprises incorporating as the silicate acidogen, a glyoxal derivative which is 2,3-dihydroxy-1,4-dioxane or glyoxal trimer, whereby gelling of the resulting composition is inhibited sufficiently so that it is easily pumpable at an application temperature of 100° F. or higher.

4,354,876

UTILIZATION OF DRY SCRUBBER WASTE MATERIALS

William C. Webster, Norristown, Pa., assignor to Webster & Assoc. Ltd., Norristown, Pa.

Filed Sep. 26, 1980, Ser. No. 191,065

Int. Cl.^{3} C04B *1/00*

U.S. Cl. 106—85 **38 Claims**

1. A process for preparing a cured compacted product from dry flue gas scrubbing waste materials, said process comprising the steps of:

(a) providing a substantially dry fly ash-containing powder obtained from the dry scrubbing of fly ash-containing flue gas with lime, said fly ash-containing powder comprising fly ash in intimate admixture with microparticulate crystallites of scrubber reaction materials selected from the group consisting of calcium sulfite, calcium sulfate, hydrates of calcium sulfite and calcium sulfate, calcium oxide, calcium hydroxide and mixtures thereof;

(b) contacting said fly ash-containing powder with a predetermined amount of water to produce a powder/water mixture;

(c) mixing said powder/water mixture in a manner and for a time sufficient to produce a uniform distribution of said water without the formation of large agglomerates or a sticky plastic mass;

(d) placing said mixture in the desired configuration at the utilization site;

(e) compacting the placed mixture within a predetermined time subsequent to the contacting step to a density of at least about 70% of the laboratory dry density of said mixture; and

(f) curing the compacted material in place to form said cured compacted product.

4,354,877

DEMOLITION AGENT, ITS PREPARATION AND ITS USE

Toshio Kawano, Ichihara; Shiro Ishii, Zushi; Koichi Soeda, Tokyo, and Jyunichiro Migita, Yokohama, all of Japan, assignors to Onoda Cement Company, Ltd., Onoda, Japan

Filed Oct. 31, 1980, Ser. No. 202,786

Int. Cl.^{3} C04B *7/02*

U.S. Cl. 106—90 **6 Claims**

1. A method of demolition of a brittle material in which one or more holes are drilled in the brittle material, and the holes are filled with an aqueous slurry of a demolition agent which acts by generating expansive stress upon hydration, characterized in that the demolition agent comprises a powdery material of 30 to 95 parts by weight of a powdery hard-burned quick lime whose crystal sizes are 10 to 100 microns, 5 to 70 parts by weight of a hydraulic material and 0.1 to 5 parts by weight of an admixture comprising a water reducing agent to 100 parts by weight of said mixture of the powdery hard-burned quick lime and the hydraulic material.

4,354,878

MINERAL ARTICLE SUCH AS THERMAL INSULATION CONTAINING VISUAL IDENTIFICATION MEANS

Ralph M. Hutchison, Evergreen; Phillip C. Martin, Conifer, and Francis Y. Willingham, Littleton, all of Colo., assignors to Manville Service Corporation, Denver, Colo.

Continuation of Ser. No. 76,657, Sep. 18, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,932

Int. Cl.^{3} C04B *1/00*

U.S. Cl. 106—120 **4 Claims**

1. An asbestos-free mineral article containing particulate indicating material incorporated into the mineral matrix in an amount effective to provide visual indicia contrasting in color and appearance with the color and appearance of said matrix, said matrix comprising synthetic calcium silicate or synthetic calcium silicate hydrate, said indicating material being present in said matrix as 0.5 to 5 percent by weight of said article, being thermally stable at the service temperature of said article and having no significant adverse effects on the thermal and physical properties of said article.

4,354,879

UTILIZATION OF FIBROUS WASTE

Gerald J. L. Griffin, 2 Waldemar Ave., Ealing, London W13 9PY, and Adrian J. Emck, Unit 1, Lea Green Colliery, Lowfield La., St. Helens, Merseyside WA9 5BG, both of England

Filed Jan. 21, 1981, Ser. No. 226,838

Int. Cl.^{3} C08B *1/00;* **C08L** *1/00*

U.S. Cl. 106—163 R **8 Claims**

1. A board or solid product made from fibrous material compacted with a settable binder characterised in that the fibrous material consists essentially of raw hop waste which is fibrous in character and contains natural resin which provides at least part of the binder.

4,354,880

METHOD OF FORGE-CONDITIONING NON-FERROUS METALS PRIOR TO ROLLING

Ronald D. Adams, and E. Henry Chia, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 80,368, Oct. 1, 1979. This application Mar. 30, 1981, Ser. No. 248,189

Int. Cl.^{3} C22F *1/08*

U.S. Cl. 148—2 **12 Claims**

1. In a method of continuously casting a high-impurity copper in a wheel-belt machine and hot forming said cast metal in substantially its as-cast condition at a hot-forming temperature by a plurality of substantial rolling compressions, the improvement comprising the steps of:

following casting of said metal and prior to said substantial rolling compression of said metal, forming a layer of finely distributed recrystallized grains at least at the surface of said metal by at least one tension-free forging compression of said metal.

4,354,881

METHOD FOR ANTIRUST TREATMENT OF STEEL STOCKS

Keiichi Tanikawa, Yokohama; Tatsurou Obi, Tokyo; Susumu Otsuka, Hikari; Isao Manabe, Tokushima; Akiyoshi Inubushi, Tokushima, and Chiaki Maeda, Tokushima, all of Japan, assignors to Nippon Steel Corporation, Japan

PCT No. PCT/JP80/00254, § 371 Date May 5, 1981, § 102(e) Date May 5, 1981, PCT Pub. No. WO81/01157, PCT Pub. Date Apr. 30, 1981

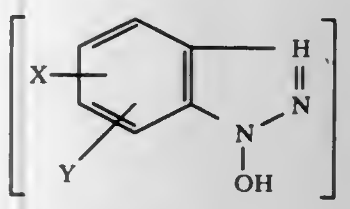
PCT Filed Oct. 22, 1980, Ser. No. 261,219

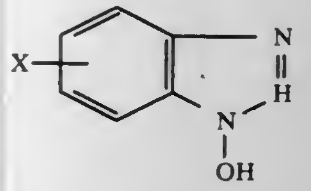
Claims priority, application Japan, Oct. 23, 1979, 54-136875

Int. Cl.^{3} C23F *7/00*

U.S. Cl. 148—6.14 R **3 Claims**

1. A method for antirust treatment of steel stock which comprises treating the steel stock with an aqueous solution or an emulsion containing 0.01–10% by weight of a 1-hydroxybenzotriazole compound represented by the general formula:





where X and Y represent hydrogen atoms, hydroxy, alkyl, carboxyl, nitro or sulfonic groups, and further containing 0.01–5% by weight of one or more of C_8–C_{13} dialkanoic acids, and having a pH within the range of 7–10.

4,354,882

HIGH PERFORMANCE TUBULARS FOR CRITICAL OIL COUNTRY APPLICATIONS AND PROCESS FOR THEIR PREPARATION

James B. Greer, Houston, Tex., assignor to Lone Star Steel Company, Dallas, Tex.

Filed May 8, 1981, Ser. No. 261,919

Int. Cl.^{3} C21D *9/08*

U.S. Cl. 148—12 R **23 Claims**

1. A process for manufacturing high performance tubulars having minimum yield strengths ranging from 80,000 to 140,000 psi characterized by improved sulfide stress cracking resistance comprising the steps of providing a killed steel, comprising in amounts by weight 0.20 to 0.35 percent carbon, 0.35 to 0.90 percent manganese, 0.80 to 1.50 percent chromium, 0.15 to 0.75 percent molybdenum, 0.25 percent maximum nickel, 0.35 percent maximum copper, 0.04 percent maximum phosphorus, 0.04 percent maximum sulfur, 0.35 percent maximum silicon, and the balance iron, except normal steel making impurities, forming the steel into tubular form, wherein the cross-sectional area of the tubular form is in the range of 10 to 40 percent larger than the cross-sectional area of the finished tubular, subjecting the tubular form to a first intercritical heat treatment to recrystallize and refine the grain structure, removing surface defects by grinding, sizing the ground, heat-treated tubular form by cold working to the finished tubular dimensions, subjecting the sized tubular to a second intercritical heat treatment to recrystallize and refine the grain structure, and subjecting the finished tubular to a quench and temper process wherein the tubular is austenitized, quenched, and tempered to produce a substantially tempered martensitic structure having a minimum yield strength in the range of 80,000 to 140,000 psi.

4,354,883

METHOD FOR IMPROVING THE RESIDUAL STRESS IN AUSTENITIC STAINLESS STEEL PIPES AND THE LIKE BY INDUCTION HEATING

Masanori Terasaki, Yokohama, Japan, assignor to Daiichi Kashuha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,490

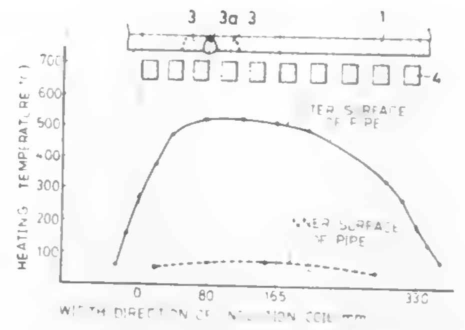
Claims priority, application Japan, Jun. 7, 1978, 53/67626

Int. Cl.^{3} C21D *9/50*

U.S. Cl. 148—127 **9 Claims**

1. In the method for improving the residual stress of the weld in a welded austenitic stainless steel pipe to thereby reduce stress corrosion cracks, in which method the welded pipe is heated in the vicinity of the welded portion thereof from the radial outside thereof by an induction heating element while a fluid coolant is passed through the pipe to cool the inside of the pipe to thereby provide a temperature differential between the radial inside and radial outside of the pipe, the improvement:

wherein the induction heating element is multiturn, and



wherein one of (a) the axial spacing between adjacent turns of the induction heating element and (b) the radial distance between the pipe and the heating element is varied so as to produce a predetermined temperature over the area of the weld.

4,354,884

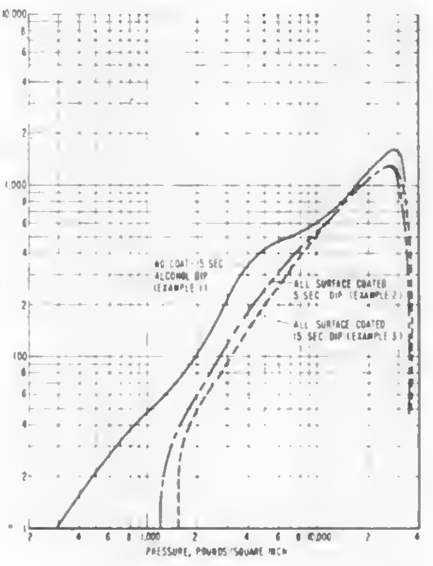
PROCESS FOR PREPARING PROGRESSIVE BURNING PROPELLANT GRANULES

Rafelix A. Williams, Radford, Va., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 28, 1980, Ser. No. 144,143

Int. Cl.^{3} C06B *45/28*

U.S. Cl. 149—10 **4 Claims**



1. A process for preparation of progressive burning propellant granules of the single base, double base and triple base types from solvent-wet granules cut from propellant strands coming from the extrusion step in the propellant manufacturing process and prior to drying the solvent wet granules to remove processing solvents, said process comprising:

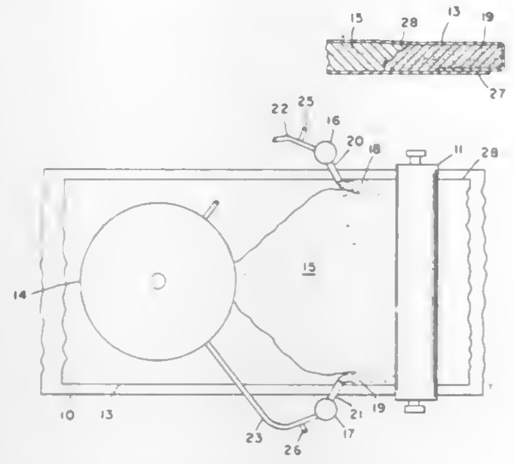
(a) wetting all surfaces of the solvent-wet propellant granules with a mixture of burning rate deterrent and solvent, said burning rate deterrent being selected from dimethyl diphenyl urea, diethyl diphenyl urea, ethylene dimethacrylate, lead-2-ethyl hexoate and linear polyesters capable of diffusing into said propellant granule, said polyesters having a weight average molecular weight of from about 1,500 to about 30,000, melting point not exceeding 190° F. and being substantially nonmigrating within said propellant strand at temperatures below 150° F., and continuing wetting for a time sufficient to permit the burning rate deterrent to penetrate into the propellant granule,

(b) promptly washing the resulting deterrent coated propellant granules with water to remove excess mixture of burning rate deterrent and solvent from the surfaces of said propellant granules, and

(c) drying the resulting deterrent coated granules.

4,354,885
HARD-EDGE WALLBOARD

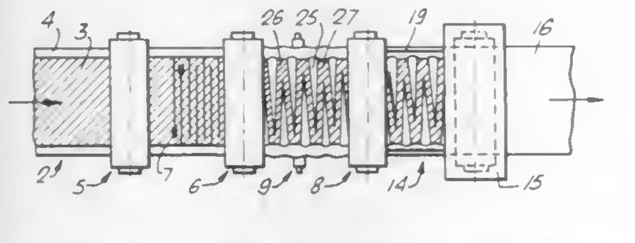
George H. White, North Tonawanda, N.Y., assignor to National Gypsum Company, Dallas, Tex.
Filed Jun. 15, 1981, Ser. No. 273,587
Int. Cl.³ B32B *13/00;* **B05D** *5/00;* **B32B** *3/26;* **B29H** *7/20*
U.S. Cl. 156—39 9 Claims



1. In a method of manufacturing gypsum wallboard which comprises depositing a central stream of foamed plastic gypsum on a table and depositing separate streams of relatively unfoamed plastic gypsum along opposite sides of the central stream, leveling the combined streams to form a single flat slab, and drying to produce a unitary monolithic core having edge portions of greater density than the main central portion of the monolithic core, the improvement wherein said separate streams of relatively unfoamed plastic gypsum are formed by diverting a portion of foamed plastic gypsum to at least one agitator and admixing with said diverted portion, prior to a subsequent agitation of said diverted portion, a freshly added material wherein said added material is of the group consisting of gypsum set retarders and water reducing agents and which has properties which result in increasing the fuuidity of the subsequently agitated material without adversely affecting the setting characteristics thereof and without causing any decrease in the density thereof, subjecting said diverted portion to said agitation, said agitation being of sufficient intensity to cause the loss of a substantial volume of foam causing a substantial increase of density therein whereby said deposited stream of relatively unfoamed plastic gypsum is of substantially greater density relative to said deposited central stream of foamed plastic gypsum, said separate streams of relatively unfoamed plastic gypsum amounting in volume to sufficient material to form continuous elongate core edge portions at each edge of said wallboard of from about one-half inch to about four inches wide.

4,354,886
METHOD FOR MAKING ELECTRICAL HEATING MATS FROM AN EXPANDED FOIL-INSULATION COMPOSITE

Hans A. Bergersen, Oslo, Norway, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Mar. 10, 1981, Ser. No. 242,492
Int. Cl.³ H01B *7/02, 13/00;* **H01C** *17/28*
U.S. Cl. 156—50 6 Claims

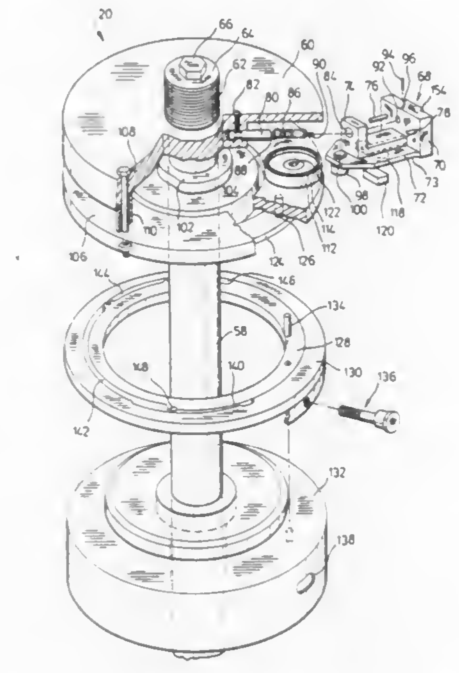


1. In an improved method for manufacturing an electrical heating foil or mat structure comprising a metal strip arranged in a meander like pattern to constitute an electrical resistance element (27) bonded to at least one insulating carrier film (10, 11) and comprising the steps of making cuts in a raw material metal foil (3) and expanding the cuts to form the meander like pattern before undertaking the bonding process, and where the cuts, which are made in a substantially transverse direction relating to the longitudinal direction of the raw material metal foil (3), are expanded by passing the transversally cut metal foil through two sets of longitudinal foil moving devices (6, 8), the latter moving at a higher speed than the former, so as to stretch the foil in a controlled manner, wherein in the foil stretching process effected by the foil moving devices, the improvement comprises the step of;

bonding the raw material metal foil (3) to a stretchable insulation film (4) which is wider than the metal foil (3), prior to passing of the composite metal/insulation foil (2) to the first one of the two foil moving devices (6), so that in the composite foil (2) the insulation film (4) is extended on both sides of the metal foil (3), which extended side areas are left uncut during the process in which the metal foil (3) and the film (4) are cut so as to only stretch these side areas during the cut expanding process.

4,354,887
LABEL TRANSFER VACUUM DRUM FOR LABELLER

Robert V. Total, St. Marys, Pa., assignor to Canadian Stackpole Limited, Scarborough, Canada
Filed Dec. 8, 1981, Ser. No. 327,881
Int. Cl.³ B05B *1/00*
U.S. Cl. 156—64 32 Claims

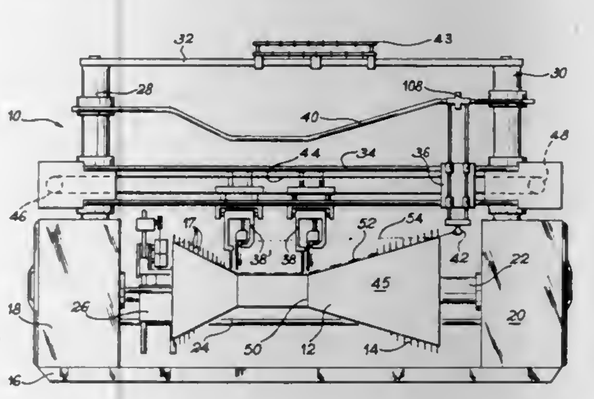


1. An apparatus for labelling conveyed articles comprising means for transferring a label from a supply of labels onto a face of a pad mounted on a revolving drum, with the label's front against said pad face, means for controlling a supply of vacuum to an outlet means on said pad face, said control means providing a vacuum to hold a transferred label on said face and removing the vacuum as a label is applied to a conveyed container to release a label from said pad face, said revolving drum passing such held label by means for applying glue to the label back and contacting such glued label back to a conveyed article in a manner to deposit such glued released label on such article, said pad being movable relative to said drum from an extended position which contacts a label back with said glue applying means to retracted position which avoids contact with said glue applying means, as said drum rotates, means for biasing said pad toward said retracted position, means for extending said pad from its biased retracted position to said extended position, said extending means positioning said pad in said extended position with a label on said pad's face and in the absence of a label allowing said biasing means to retract said pad to its retracted position before said pad passes said glue applying means, means in response to a vacuum being maintained by a label on said pad face for retaining said pad in said extended position to apply glue to a label back and apply the glued label to a conveyed article, said retaining means being inactive in response to a loss of vacuum on said pad face due to the absence of a label over said outlet means thereby sllowing said biasing means to retract said pad to its retracted position and avoid contact with said glue applying means.

31. In a method for applying glue to a label preparatory to contacting such glued label to an article, comprising transferring a label onto a pad and holding such label on said pad by using vacuum, passing said pad by a means for applying glue to such label and contacting said pad to an article to place such glued label on the article and removing the vacuum to release the label at the time of contacting label to article, normally withdrawing said pad as it is passed by said glue applying means when no label is present on said pad to avoid applying glue to said pad and using the vacuum maintained by the presence of a label on said pad to actuate a brake means which precludes withdrawing said pad to apply thereby glue to the label on said pad.

4,354,888
PROCESS AND MACHINE FOR MANUFACTURING PIECES OF REVOLUTION MADE OF THREE-DIMENSIONAL MATERIAL OF WHICH THE GENERATRIX HAS AT LEAST ONE CONCAVE PART

Bruno Bompard, and Alain Bruyere, both of Lyons, France, assignors to Commissariat a l'Energie Atomique, Paris and Societe J. Brochier & Fils., Villeurbanne, both of, France
Filed Apr. 9, 1981, Ser. No. 252,324
Claims priority, application France, Apr. 11, 1980, 80 08178
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—175 6 Claims



1. Process for manufacturing pieces of revolution made of three-dimensional material of which the generatrix has at least one concave part, said process consisting in making a support mandrel provided with rows of pins defining therebetween longitudinal corridors and circumferential corridors, in disposing superposed layers of yarns in said corridors by winding and by filling, in densifying the assembly thus obtained and finally in eliminating the support mandrel,

wherein the longitudinal yarns are deposited in corresponding corridors,

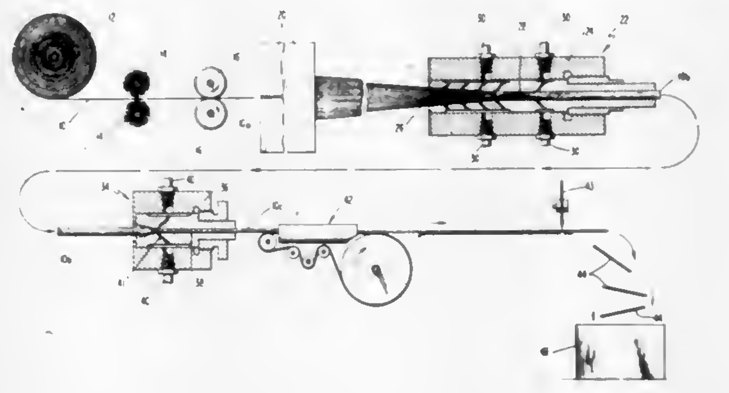
these yarns are maintained in the corridors at the level of said concave part, wherein the longitudinal yarns are maintained in the corresponding corridors by winding at least one yarn in at least one of the circumferential corridors located at the level of said concave part and wherein the longitudinal yarn which is disposed in one of the longitudinal corridors is temporarily maintained by means of a retractable member before it is maintained by winding said yarn in said corresponding circumferential corridor.

2. Machine for manufacturing pieces of revolution made of three-dimensional material of which the generatrix has at least one concave part, said machine comprising means for supporting, in rotation, a mandrel provided with rows of pins defining therebetween longitudinal corridors and circumferential corridors, winding means and filing means adapted to deposit in said corridors superposed layers of yarns,

wherein said machine comprises, in addition, at least one device for maintaining the longitudinal yarns, disposed at the level of said concave part and provided to apply the longitudinal yarn in the bottom of the concave part when this yarn is deposited in a longitudinal corridor by the filling means, and to maintain in this position the longitudinal yarns deposited previously in the other longitudinal corridors wherein the device for maintaining the filling yarns comprises a retractable member ensuring the holding of the longitudinal yarn in the corresponding corridor after the passage of the filling means, and a winding system depositing at least one yarn in at least one of the circumferential corridors in order to maintain the longitudinal yarns previously deposited by the filling means in the other longitudinal corridors.

4,354,889
INK RESERVOIR ELEMENT FOR USE IN A MARKING INSTRUMENT, AND METHOD AND APPARATUS FOR PRODUCING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.
Division of Ser. No. 17,106, Mar. 5, 1979, Pat. No. 4,286,005. This application Feb. 11, 1981, Ser. No. 233,309
Int. Cl.³ D04H *3/14*
U.S. Cl. 156—180 10 Claims



1. A method for producing ink reservoir elements of predetermined length and cross-sectional size and shape for use in marking instruments, comprising the steps of:

(a) uniformly embossing at least one surface of a continuous web of flexible thermoplastic fibrous coherent sheet material compatible with formic acid with a series of parallel longitudinally extending grooves forming capillaries capable of transporting ink which extend longitudinally from end to end of the finished elements, said sheet material being composed of an interconnecting network of randomly arranged, highly dispersed, continuous-filament thermoplastic fibers which are bonded together at the filament junctions;

(b) compacting the embossed web together into a rod-like formation whose longitudinal axis extends parallel to said embossed grooves;

(c) passing the compacted embossed web through a heated confined area, and introducing a heated gas into said compacted embossed web during its passage through said confined area, thereby bonding the compacted embossed web into a dimensionally stable rod-shaped body; and

(d) transversely cutting said rod-shaped body into said predetermined lengths.

4,354,890

METHOD OF PRODUCING REINFORCED PAPER

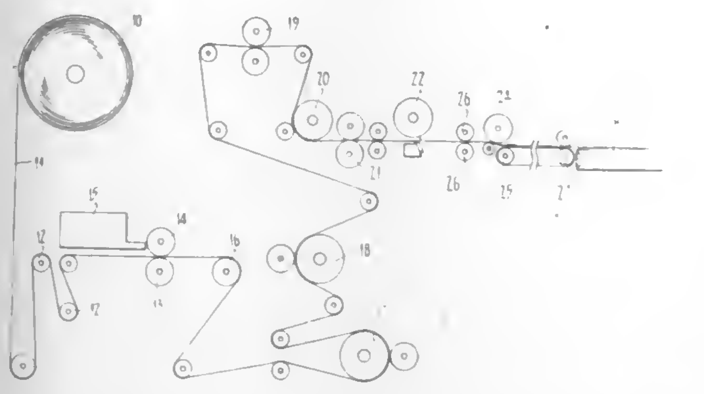
Peter M. Maffey, Wantirna, Australia, assignor to Bowater Tutt Industries, Pty. Ltd., Melbourne, Australia

Filed Mar. 23, 1981, Ser. No. 246,905

Claims priority, application Australia, Mar. 24, 1980, PE2878

Int. Cl.^{3} B32B *31/00, 7/14*

U.S. Cl. 156—264 7 Claims



1. A method of producing sheets of reinforced paper comprising printing a hot-melt adhesive onto the surface of a continuously moving web of paper in a configuration comprising two annuli of reinforcement joined by a neck portion, cooling the adhesive, cutting the web across the neck portion, and trimming the web into sheets of paper.

4. The method according to claim 1 comprising an additional step of reblocking the sheets of paper and securing the sheets together by heating the edges of the sheets adjacent the reinforcement to melt the adhesive.

4,354,891

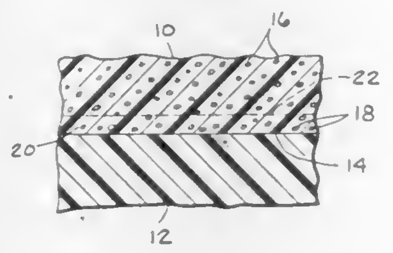
METHOD OF CURING POLYESTER RESIN IN THE PRESENCE OF RUBBER

Charles Lostak; John L. Sznopek, both of Littleton, and Manfred Klepetar, Denver, all of Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed May 30, 1978, Ser. No. 910,920

Int. Cl.^{3} B29H *9/10;* B32B *25/08*

U.S. Cl. 156—307.3 6 Claims



1. A process for achieving full cure of a peroxide cured polyester resin body which is in contact on at least one surface with a surface of a rubber body, which comprises maintaining reaction conditions during curing such that the effective rate of the curing reaction of the polyester resin in the presence of a peroxide curing agent associated therewith is sufficiently faster than the effective rate of a competing reaction between said rubber surface and said peroxide curing agent that said polyester resin body becomes essentialy fully cured in the interfacial region adjacent to the contact interface between said surface of said resin and said surface of said rubber body wherein said conditions comprise utilizing as said rubber body an elastomeric material with an effective rate of surface reaction with said peroxide curing agent which is inherently slower than said effective rate of said polyester curing reaction under the reaction conditions prevailing.

4,354,892

APPARATUSES FOR APPLYING ELASTOMERIC FILLERS TO TIRE BEAD-CORES

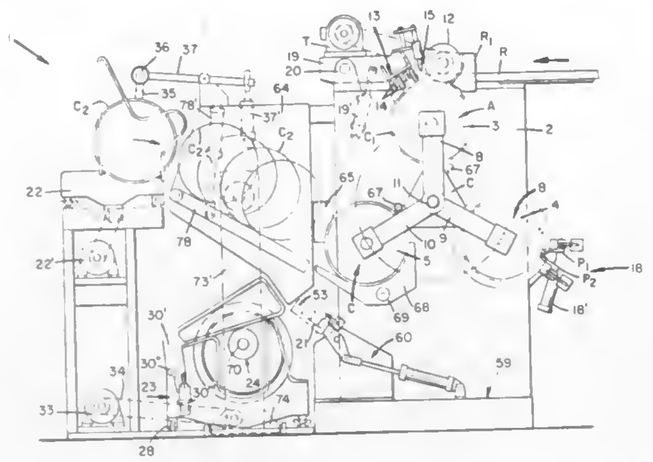
Luciano Tarantola, and Cesare Migliarini, both of Milan, Italy, assignors to Societa Pneumatici Pirelli S.p.A., Milan, Italy

Filed Oct. 1, 1980, Ser. No. 192,862

Claims priority, application Italy, Oct. 9, 1979, 26329 A/79

Int. Cl.^{3} B29H *17/32*

U.S. Cl. 156—398 19 Claims



1. An automatic apparatus for assembling an elastomeric filler with a vehicle tire bead-core comprising a frame, and associated with the frame at least one drum rotating around its own axis adapted to provide a seat for a bead-core, a disc having an axis of rotation substantially parallel to the axis of the drum for initiating rotation of the drum with the relative periphery and for assembling the filler with the bead-core, means for butt-splicing the ends of the filler together, and means for loading the bead-core, said apparatus being characterized by the fact of comprising, first means for orienting and maintaining the filler assembled with the bead-core before it is discharged substantially on the drum midline, second means for discharging the bead-core with the orientation of the filler determined by the first means, unchanged, said first means comprising a plurality of bodies having contoured surfaces with a sliding characteristic corresponding to that of a metal in contact with the elastomeric material of the filler, said bodies being assembled to idle on its own small shaft of rotation associated with a support of the frame with an arrangement originating an undulated path through which passes the filler associated to the drum in rotation around its own axis thereby stretching the filler and opposing elastic return and bending with respect to the drum midline, said second means comprising, a discharging device at localized action on the opposite sides of the filler with relative advancing mechanism of said device in the plane of the drum midline.

4,354,893

COMBINATION ROOFING MATERIAL UNROLLING AND HEAT APPLYING APPARATUS

William E. Kugler, 2989 S. Detroit Way, Denver, Colo. 80210, and James M. Pacello, 7330 Poppy Way, Golden, Colo. 80401

Filed Aug. 24, 1981, Ser. No. 295,734

Int. Cl.^{3} B32B *31/26*

U.S. Cl. 156—497 10 Claims

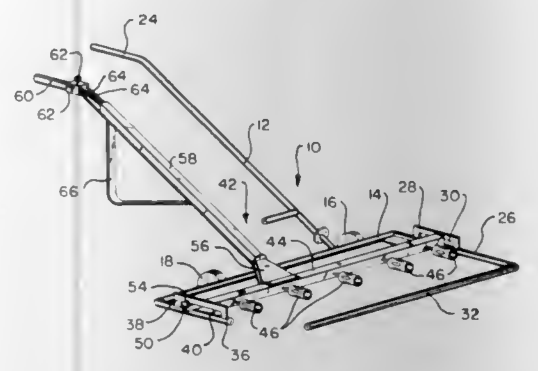
1. A combination roofing material unrolling and heat applying apparatus, comprising:

frame means;

heating means connected to said frame means, said heating means having a first end and a second end, said heating means adapted to emit a fluid to be ignited;

first means for engaging a roll of the roofing material; and

connecting means for interconnecting said frame means and said first means so that the roll of roofing material and said frame means move simultaneously together, said connecting means including guide means which supports said first and second ends of said heating means, said first end of said heating means being movable independently of said second end of said heating means relative to said guide means, said heating means outputting heat for softening an an adhesive layer formed on the roofing material while the roofing material is unrolled.



4,354,894

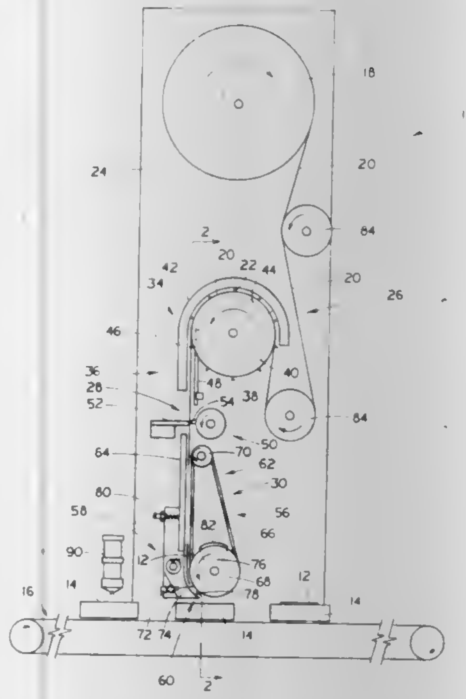
APPARATUS FOR DEPOSITING A COUPON ON A PACKAGE

Robert T. Lewis, Louisville, and John H. Sexstone, Anchorage, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Aug. 4, 1981, Ser. No. 289,931

Int. Cl.^{3} B32B *31/00*

U.S. Cl. 156—517 10 Claims



1. An apparatus for depositing a coupon onto a package as the package moves past the apparatus, comprising:

a supply web of a plurality of coupons;

a rotatably mounted and driven coupon advance drum adapted to engage said supply web of coupons in overlaying relationship around at least a portion of its periphery for advancing said coupon web as the advance drum rotates;

web hold down means adjacent the periphery of said advance drum over which said coupon web is overlaid for assuring said coupon web does not separate from its overlaying relationship on the periphery of said advance drum;

coupon web stripper means for stripping said coupon web from the periphery of said advance drum;

web cutting means located next to said stripper means for cutting said coupon web into individual coupons;

conveyor means for moving individual coupons, one at a time, from said web cutting means;

coupon alignment means operatively cooperating with said conveyor means for interrupting the movement of a coupon with said conveyor means and aligning the coupon web with the path of the package upon which it is to be deposited; and,

coupon discharge means for transporting individual coupons, one at a time, from said alignment means and depositing the coupon onto the package moving past it, said coupon discharge means comprising a coupon release plate adjacent said conveyor means mounted for movement toward and away from said conveyor means, and a coupon engagement shoe operatively associated with said conveyor means for movement therewith and adapted to periodically register with said coupon release plate whereupon said coupon engagement shoe moves said release plate away from said conveyor means and contacts a coupon at said coupon alignment means moving the coupon past said coupon alignment means and depositing the coupon onto the moving package.

4,354,895

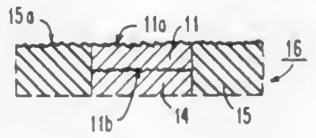
METHOD FOR MAKING LAMINATED MULTILAYER CIRCUIT BOARDS

Theron L. Ellis, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,614

Int. Cl.^{3} C23F *1/02*

U.S. Cl. 156—631 12 Claims



1. A method for fabricating multilayer laminated printed circuit apparatus, said method comprising the steps of:

providing a thin conductive first layer having first and second opposite surfaces, and temporary base member means having an outer surface peelably adhered to said first surface,

said temporary base member means having a predetermined surface profile characteristic on said outer surface for providing a conformal surface profile characteristic on at least said first surface of said conductive first layer,

additively plating plural printed circuit members to said second surface in a predetermined printed circuit pattern,

removing any portions of said first layer not plated to by said circuit members to expose the underlying parts of said outer surface of said base member means and thereby to expose the sides between said first and second surfaces of the remaining portions of said first layer plated to by said circuit members,

thereafter providing an uncured dielectric member means over said printed circuit members of said pattern,

thereafter curing in a predetermined manner said dielectric member means into an integral dielectric second layer having a predetermined surface in contact with said underlying parts of said outer surface of said temporary base member means, said dielectric second layer embedding therein said circuit members and said sides of said remaining portions of said first layer and having said first surfaces of said remaining portions in flush mounting relationship with respect to said predetermined surface, and

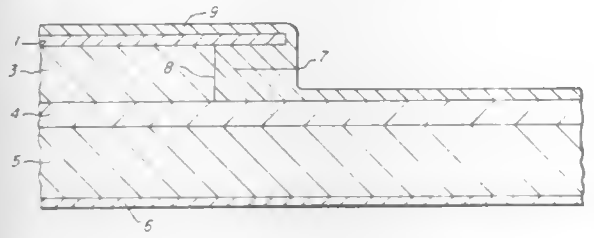
thereafter peeling away said temporary base member means to expose said predetermined surface of said dielectric second layer and said first surfaces of said remaining portions of said first layer, said predetermined surface of said dielectric second layer being adapted for lamination to another predetermined dielectric third layer of said board, and said conformal surface characteristic of said first surfaces of said remaining portions providing an adhering surface to said dielectric third layer to prevent delamination between said dielectric second and third layers.

4,354,896

FORMATION OF SUBMICRON SUBSTRATE ELEMENT

William R. Hunter, Garland; Al F. Tasch, Jr., Richardson, and Thomas C. Holloway, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 5, 1980, Ser. No. 175,470
Int. Cl.^{3} H01L *21/302*
U.S. Cl. 156—643 **22 Claims**



1. A method for patterning a submicrometer substrate element which comprises:

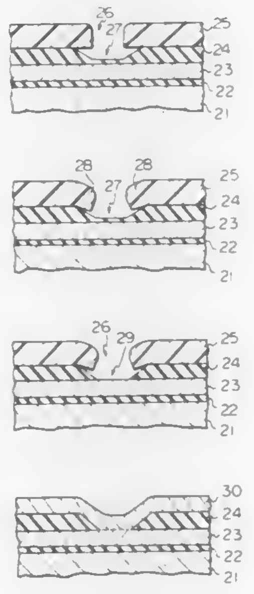
(a) sequentially depositing a plurality of layers on the substrate surface;
(b) forming a laterally extending submicrometer cavity by selectively removing an intermediate portion of said surface layers;
(c) depositing a conformal layer of a material which fills said cavity; and
(d) removing remaining portions of said surface layers and substrate material not covered by remaining conformal layer.

4,354,897

PROCESS FOR FORMING CONTACT THROUGH HOLES

Makoto Nakajima, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 13, 1981, Ser. No. 234,194
Claims priority, application Japan, Feb. 14, 1980, 55-16858
Int. Cl.^{3} B44C *1/22;* H01L *21/306*
U.S. Cl. 156—643 **9 Claims**



1. A process for forming a through-hole in an insulating layer for providing a connection between an upper conductor layer and a lower conductor layer respectively disposed on the upper and lower surfaces of said insulating layer comprising the steps of:

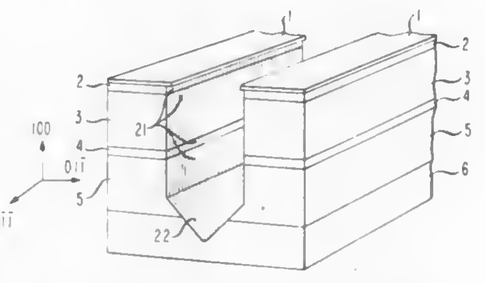
forming a patterned photoresist layer on the upper surface of said insulating layer comprising a mask having at least one aperture therein for selectively exposing said insulating layer at a portion of said upper surface thereof at which a through-hole is to be formed;
wet-etching said exposed portion of said insulating layer to form a preceding hole having a sloped sidewall and a floor within said insulating layer, wherein the preceding hole is wider at the upper surface than at the floor, said wet-etching undercutting said insulating layer at its upper surface beneath the photoresist layer mask;
heating said photoresist layer to a temperature sufficiently close to the softening point of the photoresist material of said photoresist layer to bend the end portion of said photoresist layer around the said upper surface of said preceding hole, but not into contact with the sloped sidewall of said preceding hole; and
dry-etching said insulating layer through said aperture in said photoresist layer mask to complete said through-hole through said insulating layer to said lower surface thereof while maintaining the slope of said sloped sidewall thereof.

4,354,898

METHOD OF PREFERENTIALLY ETCHING OPTICALLY FLAT MIRROR FACETS IN INGAASP/INP HETEROSTRUCTURES

Larry A. Coldren, Holmdel, and Kazuhito Furuya, Hazlet, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 24, 1981, Ser. No. 276,942
Int. Cl.^{3} H01L *21/308*
U.S. Cl. 156—647 **17 Claims**



1. A method for etching a multilayer semiconductor heterostructure body having alternating layers of InGaAsP and InP on a substrate layer, the method comprising the steps of:

contacting a predetermined area on a given surface of the semiconductor body with a chemical etchant solution of $HCl:HNO_3=(1:\alpha)$ for a time period sufficient to expose a crystallographic surface through the alternating layers of the semiconductor body substantially perpendicular to the given surface, α is in the range $1<\alpha\leqq 5$, and
contacting the exposed crystallographic surface with HCl for a time period sufficient to expose a preferred crystallographic plane as an optically flat mirror facet of the semiconductor heterostructure body.

4,354,899

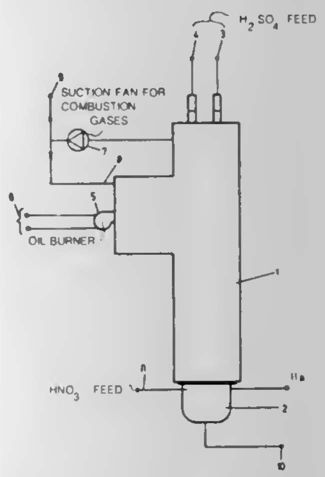
DEVICE FOR CONCENTRATION AND POSSIBLE PURIFICATION OF MINERAL ACIDS, PARTICULARLY SULPHURIC ACID

Hans Broberg, Drostvägen; Lars Douren, Noravägen, and John Troeng, Gesällgatan, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 41,168, May 21, 1979, abandoned. This application Dec. 12, 1980, Ser. No. 215,978
Claims priority, application Sweden, Jun. 21, 1978, 7807068
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.^{3} B01D *1/06*
U.S. Cl. 159—13 A **25 Claims**

1. An improved apparatus for concentrating and purifying liquids, comprising:

a source of hot gases;
at least one elongated evaporating tube arranged upright in position to be heated by said gases, said at least one evaporating tube having an inner diameter and a height;
means for feeding liquid at the top of said at least one evaporating tube so that the liquid runs down the inner wall of said at least one evaporating tube;
packing pieces filling said at least one tube to a fraction of its height, each of said pieces having a maximum dimension in the range of from one-twentieth to one-fifth of said inner diameter, said fraction of said height being chosen so that the velocity of gases moving upward past said pieces at said fraction of said height is in the range of 1.5 to 2.0 meters per second, whereby liquid flowing down the inner wall of said at least one tube spreads over said packing pieces without flooding;



means for collecting concentrated and purified liquid at the bottom of said at least one tube;
means for conveying said gases adjacent at least a portion of said at least one evaporating tube to provide transfer of heat therebetween, said conveying means comprising inner and outer flow channels each at least partially surrounding said portion of said at least one evaporating tube, a lower portion of said outer channel being in fluid communication with a lower portion of said inner channel and an upper portion of said outer channel being in fluid communication with said source of hot gases; and
means mounted in at least one of said inner and outer channels for causing turbulation of hot gases flowing therethrough, to enhance heat transfer between said hot gases and said at least one elongated evaporating tube.

4,354,900

STRENGTHENED FIBEROUS ELECTROCHEMICAL CELL DIAPHRAGM AND A METHOD FOR MAKING

Rodney R. Bailey, Greenville, S.C.; Carl W. Brown, Painesville, Ohio; Shan P. Tsai, Mentor, Ohio, and Louis W. Hruska, Geneva, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Dec. 1, 1980, Ser. No. 211,694
Int. Cl.^{3} C25B *13/00*
U.S. Cl. 162—106 **15 Claims**

1. A method for making a porous asbestos diaphragm for use in an electrochemical process including the steps of:

(1) slurrying a mixture of fibers including primarily asbestos fibers in an aqueous solution of at least one of NaCl within a concentration range of from about 5 percent of saturation to about 50 percent of saturation and NaOH within a concentration range of from about 4 weight percent to about 50 weight percent;
(2) drawing the slurry through a porous surface;
(3) depositing the fibers upon the porous surface to a desired thickness;
(4) drawing a substantial quantity of wash water through the diaphragm;
(5) dissolving a basic compound selected from a group consisting of $(NH_4)_2CO_3$, NH_4OH, $KHCO_3$, K_2CO_3, Na_2CO_3, $NaHCO_3$, weak caustic and brine in water to form a basic solution;
(6) drawing the basic solution through the diaphragm at least until a pH of between 7 and 11 is achieved generally uniformly throughout the diaphragm,
(7) drawing an aqueous solution of ammonium zirconium carbonate within a range of concentration of between about 3 weight percent and about 50 weight percent through the diaphragm to thoroughly saturate the diaphragm;
(8) withdrawing excess ammonium zirconium carbonate solution from the diaphragm;
(9) heating the diaphragm to remove a substantial portion of water remaining in the diaphragm; and
(10) further heating the diaphragm to between 110° C. and 400° C. to remove further moisture and to oxidize the ammonium zirconium carbonate to ZrO_2 and combustion by-products.

4,354,901

FLEXIBLE ABSORBENT BOARDS

Steven L. Kopolow, Plainsboro, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Oct. 5, 1979, Ser. No. 82,400
Int. Cl.^{3} D21H *3/00, 5/24*
U.S. Cl. 162—158 **10 Claims**

1. A method for producing an absorbent, relatively thick flexible absorbent board of fiberous material comprising:

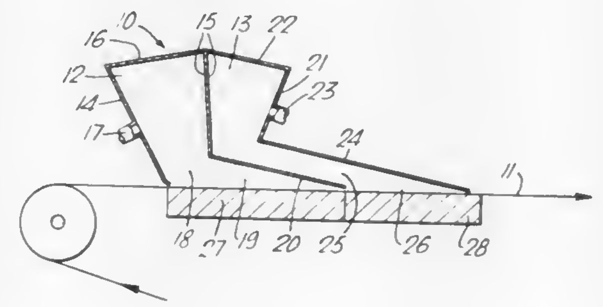
forming a slurry of water with no more than about 0.1% by weight solids, said solids comprising cellulosic fibers and particulate hydrocolloidal material in a ratio of at least 0.01 grams of hydrocolloidal material per gram of cellulosic fibers; forming a wet web from said slurry; drying said web to a water content of less than 10.0% by weight to form a undensified dry web; and increasing the density of said dry web by at least 10.0%;
whereby said densified, dry web has a high tensile strength, and low stiffness relative to said undensified dry web, said densified web having a tensile of at least 10 kg/cm^2, a Gurley Stiffness of less than 40 gms, and a thickness of more than 0.3 millimeters.

4,354,902

FLOWBOX SYSTEM FOR WET-LAYING A MULTIPLY FIBROUS WEB

Brian W. Attwood, 155 Memorial Rd., Hanham, Bristol, England

Filed May 27, 1981, Ser. No. 267,530
Claims priority, application United Kingdom, Jun. 21, 1980, 8020411
Int. Cl.^{3} D21F *1/02, 1/04*
U.S. Cl. 162—300 **1 Claim**



1. An integral flowbox system for wet-laying a multiply fibrous web on a moving foraminous wire, comprising a pair of enclosed explosion chambers arranged respectively upstream and downstream with regard to the direction of movement of the wire, the downstream wall of the upstream chamber being in common with the upstream wall of the downstream cham-

ber, the downstream and upstream walls of each chamber converging from a top wall towards the wire, each chamber being provided with a stock inlet directed at their common wall and a stock outlet at the bottom of the chamber, the stock outlets comprising slice plates defining respective shear flow passages for delivering the stock from the explosion chambers onto the wire, one said slice plate being common to both flow passages and an extension of said common wall of the explosion chambers, and suction means below the wire under each stock outlet extending from the upstream wall to the downstream wall of each stock outlet whereby the layer of stock from the upstream outlet is immediately dewatered prior to the layer from the downstream outlet being laid thereon.

4,354,903

PROCESS FOR DRYING AND PREHEATING COAL UTILIZING HEAT IN DRY COOLING OR QUENCHING OF COKE

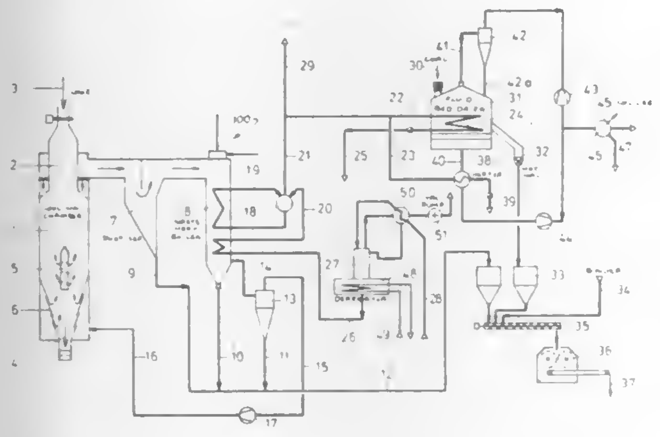
Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen, and Horst Dungs, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,155

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013325

Int. Cl.³ C10B *39/02, 45/00*

U.S. Cl. 201—6 **6 Claims**



1. A process for drying and preheating coking coal using heat from coke to be cooled comprising:

passing a cooling gas over hot coke in a coke cooling chamber to cool the coke and heat the cooling gas;

recycling the heated cooling gas through a waste heat boiler and back to the coke cooling chamber to form a first closed cycle;

supplying water to the waste heat boiler to form steam by heating the water indirectly with the heated cooling gas;

feeding steam formed in the waste heat boiler to a fluidized bed of wet coal to indirectly preheat and dry the wet coal in a second cycle;

fluidizing the wet coal using a fluidizing gas supplied to the bed indirectly of the steam fed to the bed for preheating and drying the wet coal, the fluidizing gas converting water in the wet coal into steam;

feeding the fluidizing gas plus steam converted by the fluidizing gas from the bed and into a further heater;

condensing at least some of the steam converted by the fluidizing gas;

returning the fluidizing gas less the at least some condensed steam to the bed in a third closed cycle;

indirectly heating the returning fluidizing gas using steam from the waste heat boiler in the further heater before it returns to the bed;

said three cycles for transferring heat from the coke to be cooled, to the wet coal to be preheated and dried being conducted in a temperature range of between 90° and 250° C., so that no desulfurization of the coal takes place.

4,354,904

ELECTROCHEMICAL OXIDATION OF ALKYL AROMATIC COMPOUNDS

Thomas P. Malloy, Lake Zurich, Ill.; Mark A. Halter, Columbia, Md., and David W. House, Arlington Heights, Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 61,210, Jul. 27, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,516

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—59 R **12 Claims**

1. A process for the preparation of an aromatic aldehyde comprising subjecting a methyl-substituted aromatic compound to an electrical energy including direct electric current in an electrochemical cell in the presence of a nucleophile consisting essentially of an organometallic oxide representative of:

$$R—O—M$$

wherein R is either an alkyl or an aryl moiety and M is an alkali metal selected from the group consisting of sodium, lithium and potassium; in the presence of a solvent consisting essentially of an aliphatic alcohol, an aliphatic diol, a ketone, or mixtures thereof; and in the presence of a reaction initiator selected from the group consisting of an alkali metal hydroxide and a quaternary ammonium hydroxide, at reaction conditions to produce an acetal and thereafter subjecting said acetal to said hydrolysis to produce said resultant aromatic aldehyde, which is recovered.

4,354,905

METHOD FOR THE ELECTROLYSIS OF AN AQUEOUS SOLUTION OF AN ALKALI METAL CHLORIDE AND AN ANODE THEREFOR

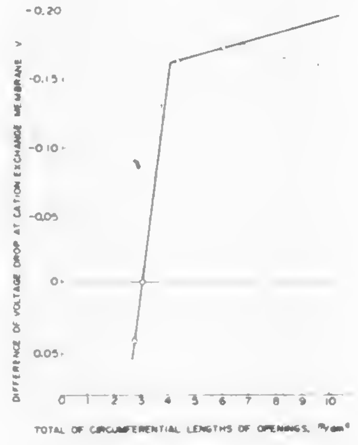
Mitsuo Yoshida, and Hiroyoshi Matsuoka, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1981, Ser. No. 253,664

Claims priority, application Japan, Apr. 15, 1980, 55-48634; Dec. 10, 1980, 55-173126

Int. Cl.³ C25G *1/34, 11/03, 9/00, 11/08*

U.S. Cl. 204—98 **19 Claims**



1. A method for the electrolysis of an aqueous solution of an alkali metal chloride in an electrolytic cell partitioned by means of a cation exchange membrane into an anode chamber adapted to accomodate therein an anode and a cathode chamber adapted to accomodate therein a cathode, the improvement which comprises: using a flat perforated plate anode in the anode chamber wherein the value obtained by dividing the total of the circumferential lengths of the openings formed in the perforated plate anode at the portion opposite to the cation exchange membrane by the total area of said portion including the area of said openings is 3 m/dm^2 or more.

4,354,906

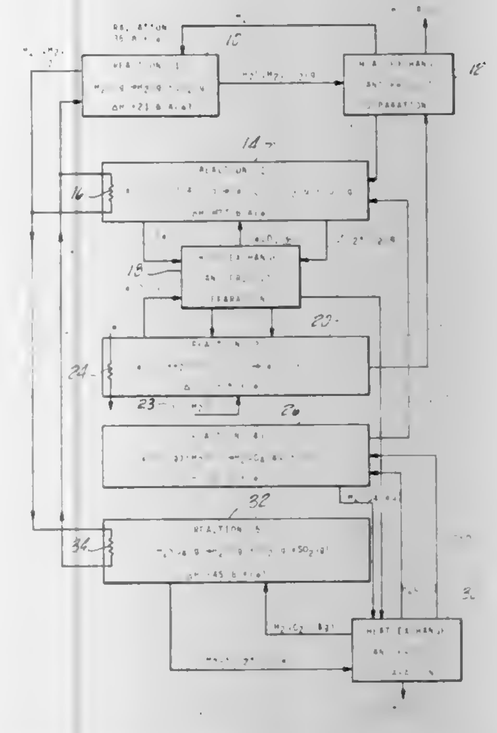
COMBINED RADIOLYTIC AND THERMOCHEMICAL PROCESS FOR GENERATION OF HYDROGEN

Henry J. Gomberg; Rupert A. Lee, and John G. Lewis, all of Ann Arbor, Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Feb. 21, 1980, Ser. No. 123,375

Int. Cl.³ B01J *19/08*

U.S. Cl. 204—157.1 H **8 Claims**



1. A combined thermochemical and radiolytic process for generation of hydrogen comprising the steps of:

(a) subjecting hydrogen sulfide at 1100° K. and 40 atmospheres pressure to radiation energy such that at least a portion of said hydrogen sulfide is dissociated into hydrogen and sulfur,

(b) separating the hydrogen product of step (a),

(c) reacting the sulfur product of step (a) with calcium carbonate at 525° K. and 40 atmospheres pressure to form calcium sulfide, sulfur dioxide and carbon dioxide,

(d) reacting the calcium sulfide and carbon dioxide products of step (c) with water at 350° K. and 40 atmospheres pressure to form calcium carbonate and hydrogen sulfide,

(e) reacting the sulfur dioxide product of step (c) with water at 573° K. and 204 atmospheres pressure to produce sulfuric acid and sulfur,

(f) reacting the sulfuric acid product of step (e) at 1100° K. and one atmosphere pressure to produce water and oxygen,

(g) recycling the sulfur product of step (e) and the calcium carbonate product of step (d) to said step (c), and

(h) recycling the hydrogen sulfide product of said step (c) to said step (a) to form a closed cycle process utilizing hydrogen sulfide as a working fluid for generating hydrogen from water.

4,354,907

RADIATION POLYMERIZATION OF CATIONIC MONOMER IN AQUEOUS ALCOHOL

Sueo Machi, Takasaki; Isao Ishigaki, Meabashi; Toshimi Okada, Kakogawa, and Shigeaki Washio, Kobe, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Taki Chemical Co., Ltd., Kakogawa, both of, Japan

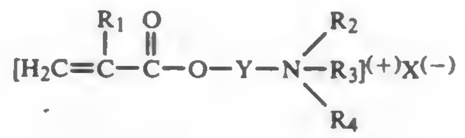
Filed Feb. 5, 1980, Ser. No. 118,967

Claims priority, application Japan, Feb. 5, 1979, 54-11977

Int. Cl.³ C08F *2/46*

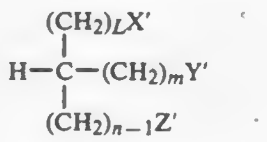
U.S. Cl. 204—159.22 **5 Claims**

1. A process for the production of water-soluble, substantially solid cationic polymers comprising the step of irradiating an aqueous solution containing (1) at least 50% by weight but below the saturation point of one, or two or more of amino esters selected from those compounds having the generic formula:



$$[\mathrm{H_2C}{=}\overset{R_1}{\overset{|}{C}}-\overset{O}{\overset{\|}{C}}-O-Y-\underset{R_4}{\overset{R_2}{N}}-R_3]^{(+)}X^{(-)}$$

wherein R_1 represents a hydrogen atom or a methyl group; R_2 represents a hydrogen atom or an alkyl group having 1–4 carbon atoms; R_3 and R_4 each represents an alkyl group having 1–4 carbon atoms; Y represents an alkylene group having 1–4 carbon atoms; and $X^{(-)}$ represents an anion; or a mixture of said amino ester or esters with acrylamide; and (2) at least 0.1% by weight of an alcohol having the generic formula:



$$H-\underset{(CH_2)_{n-1}Z'}{\overset{(CH_2)_L X'}{C}}-(CH_2)_m Y'$$

wherein X′, Y′ and Z′ each represents H or OH, providing at least one of X′, Y′ and Z′ is OH, and L, m and n each represents a positive integer; said irradiation being carried out at an initial reaction temperature in the range of 0°-60° C. with ionizing radiation rate in the range of 500–200,000 rads/Hr, and a total irradiation dose rate in the range of 1,000–300,000 rads.

4,354,908

PROCESS FOR THE PRODUCTION OF MAGNETIC RECORDING MEMBERS

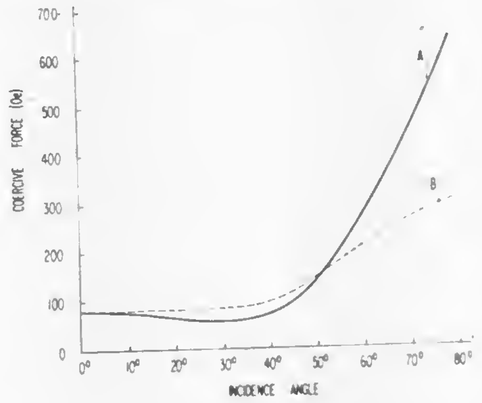
Ryuji Shirahata; Tatsuji Kitamoto; Yasuo Tamai, and Masaaki Suzuki, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 688,192, May 20, 1976, abandoned. This application Jul. 11, 1978, Ser. No. 923,752

Claims priority, application Japan, May 23, 1975, 50/61628

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 N **8 Claims**



1. A process for producing a magnetic recording member, comprising the steps of:

generating ferromagnetic metal vapor particles from a vaporization source in a reduced pressure of about 10^{-4} Torr to about 10^{-7} Torr;

ionizing said ferromagnetic vapor particles by means of an electron beam; and

accelerating said ionized ferromagnetic metal vapor particles, by means of an electric field between said vaporization source and a support having a field strength of at least about 5 kv/m, toward said support to form a vapor beam which has an angle of incidence of at least about 50° with respect to said support, thereby producing a magnetic film on said support.

4,354,909
PROCESS FOR PRODUCTION OF MAGNETIC RECORDING MEDIUM

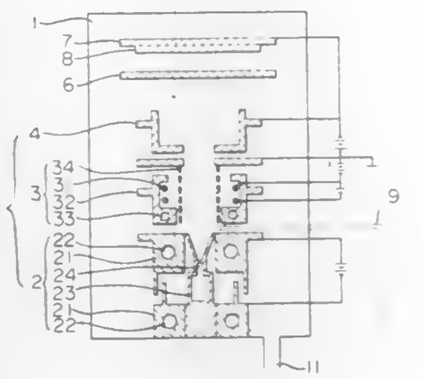
Toshinori Takagi, Nagaokakyo; Shinsaku Nakata, Toyonaka; Kazuhiko Kanki, Uji, and Masahiro Hotta, Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1980, Ser. No. 124,235

Claims priority, application Japan, Feb. 23, 1979, 54-20957; Apr. 2, 1979, 54-39685; Apr. 2, 1979, 54-39686

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 N **6 Claims**



1. A process for producing a magnetic recording medium, which comprises heating a closed type crucible having an injection nozzle and containing at least one ferromagnetic material selected from the group consisting of cobalt, cobalt-containing alloys and mixtures of cobalt with other elements in a vacuum chamber kept at 10^{-3} to 10^{-8} torr thereby to generate a cluster of the atoms of the ferromagnetic material from the injection nozzle, impinging electron beams generated by an electron beam generator against the cluster to ionize it, accelerating the generated cluster ions in an electric field, and depositing the ions on a substrate composed of a non-magnetic material.

4,354,910
METHOD AND APPARATUS FOR THE PARTIAL COATING OF A SUBSTRATE BY CATHODE SPUTTERING

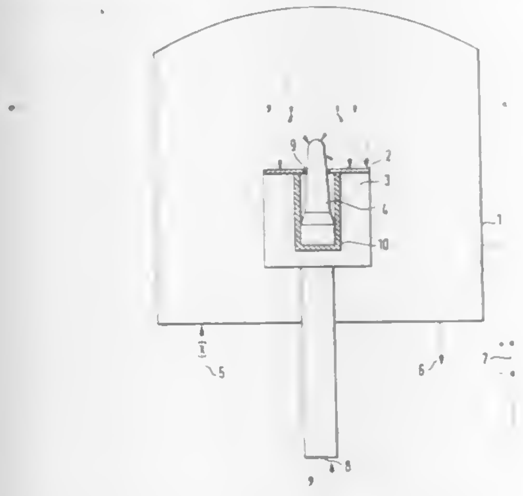
Horst Rordorf, Weiningen, Switzerland, assignor to Berna AG Olten, Olten, Switzerland

Filed Jan. 8, 1981, Ser. No. 223,285

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002194

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **6 Claims**



6. A method for coating a plurality of substrates by cathode sputtering, comprising providing cathode means having a plurality of cavities therein and a sputtering surface, providing an anode, forming a chamber enclosing at least one of said cathode and anode, supplying a carrier gas to and withdrawing said carrier gas from said chamber, maintaining a condition of vacuum within said chamber, characterized by insulatingly mounting said substrates in said cavities in such manner that the parts thereof which are not to be coated are disposed within their respective cavities and the parts to be coated extend beyond the cathode means sputtering surface, and in that by means of a glow discharge in the anomalous cathode fall in a pressure range of about 0.1-5 Torr, the coating is performed at about 300 to 1000 V.

4,354,911
METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE BY MEANS OF SPUTTERING

Thomas C. Dodd, Millstone Township, Somerset County, and John A. Emerson, Alexandria Township, Hunterdon County, both of N.J., assignors to Western Electric Company Inc., New York, N.Y.

Filed Aug. 7, 1981, Ser. No. 291,155

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 EC **20 Claims**

1. A method of selectively depositing a metallic pattern on a substrate including the steps of:

coating the substrate with a suitable ink in accordance with the negative of the desired pattern;

cleaning the negative patterned substrate in a plasma comprising at least 60% oxygen and an inert gas;

sputtering a catalytic metal coating onto the substrate in a plasma comprising at least 60% oxygen and an inert gas; and

electrolessly depositing a metallic coating on the substrate in accordance with the desired metallic pattern.

4,354,912
SOLID ELECTROCHEMICAL SENSOR

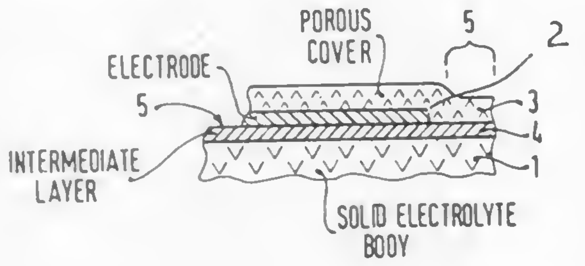
Karl-Hermann Friese, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,407

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904069

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **15 Claims**



1. Solid electrolyte sensor element for electrochemical sensing of composition of a gas to which the element is exposed comprising

an electrode (**2**) positioned to contact said gas;

an oxygen ion conductive solid electrolyte body (**1**) which comprises partially stabilized ZrO_2; and

an ion conductive solid electrolyte intermediate layer (**4**) having a higher specific oxygen ion conductivity than said solid electrolyte body (**1**) and which does not contain metal and which consists essentially of fully stabilized ZrO_2 which is stabilized with a stabilizer oxide comprising at least one of the materials of the group consisting of Y_2O_3, Yb_2O_3, Sc_2O_3, oxides of heavy rare earth other than the foregoing, CaO and MgO,

said intermediate layer (**4**) being located between and integral with the electrode (**2**) and the surface of the solid electrolytic body (**1**) thereby positioning the electrode (**2**) out of direct contact with the solid electrolyte body (**1**) to form the three phase boundary of said sensor element between (i) ion conductive solid electrolyte, (ii) electrode, and (iii) gas, at the contact of said electrode (**2**) and said ion conductive solid electrolyte intermediate layer (**4**).

4,354,913
MOLECULE SELECTIVE ENZYME ELECTRODE

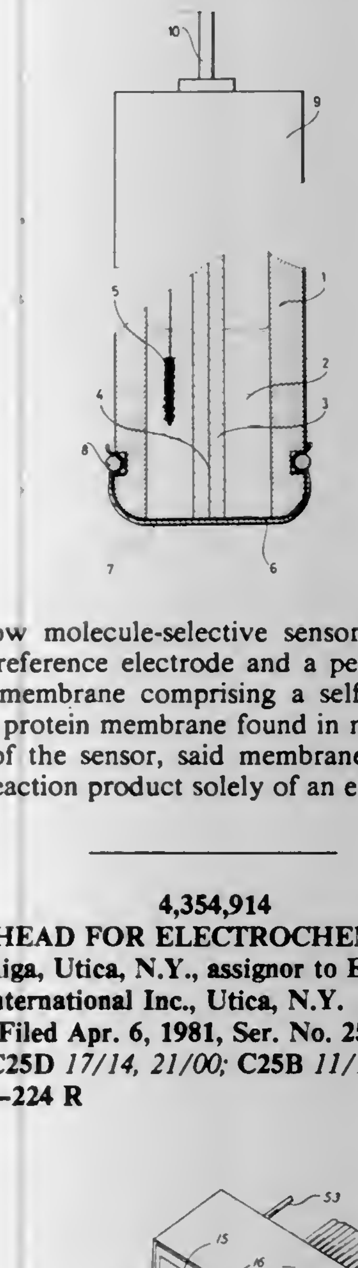
Erno Pungor; Jeno Havas; Geza Nagy, and Emma Porjesz, all of Budapest, Hungary, assignors to Radelkis Elektrokemiai Müszergyarto Szövetkezet, Budapest, Hungary

Continuation of Ser. No. 49,337, Jun. 18, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,104

Claims priority, application Hungary, Jun. 21, 1978, RA 683

Int. Cl.³ C12Q *1/00;* G01N *27/30*

U.S. Cl. 204—195 P **2 Claims**



1. A hollow molecule-selective sensor having a sensing electrode, a reference electrode and a permeable, enzymatically active membrane comprising a self-supporting, 10–15 micron thick protein membrane found in nature which closes the bottom of the sensor, said membrane containing on its surface the reaction product solely of an enzyme and glutaric aldehyde.

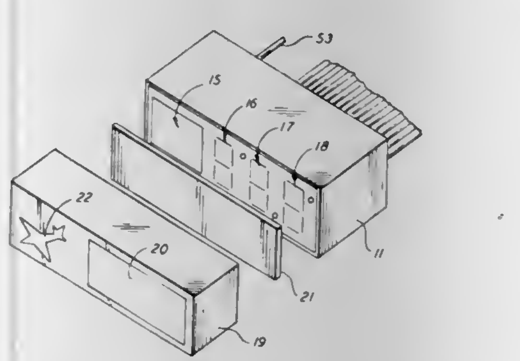
4,354,914
MARKING HEAD FOR ELECTROCHEMICAL PROCESS

Philip C. Szeliga, Utica, N.Y., assignor to Electromark, Div. of Mohawk International Inc., Utica, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,380

Int. Cl.³ C25D *17/14, 21/00;* C25B *11/12;* G01D *15/10*

U.S. Cl. 204—224 R **11 Claims**



1. A marking head for use in an electrochemical marking process of the type wherein an electrode is fired against a receiving surface in the presence of an electrolyte to record an image upon the receiving surface, said marking head including a non-conductive board having at least one character generating module position on the front face thereof that contains a plurality of individual electrically isolated electrode segments, each of said electrode segments including a highly conductive metal substrate seated in contact against the front face of the board and a carbon coating covering the outer surface of the substrate, and electrical means connected to each individual electrode segment for independently firing the connected segment whereby the segments may be fired in different patterns to record images of selected characters upon the receiving surface.

4,354,915
LOW OVERVOLTAGE HYDROGEN CATHODES

John Z. O. Stachurski, Amherst; Dirk Pouli, Williamsville; John A. Ripa, Lancaster, and Gerald F. Pokrzyk, Lewiston, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,235

Int. Cl.³ C25B *9/00, 11/06, 11/10*

U.S. Cl. 204—242 **17 Claims**

1. A cathode for use in electrochemical processes, at least part of the surface portion of said cathode comprising a codeposit of a first metal selected from the group consisting of iron, cobalt, nickel, and mixtures thereof, a leachable second metal or metal oxide selected from the group consisting of molybdenum, manganese, titanium, tungsten, vanadium, indium, chromium, their oxides and combinations thereof, and from about 0.5 to about 25 atomic percent of a substantially nonleachable third metal selected from the group consisting of cadmium, mercury, lead, thallium, bismuth, and mixtures thereof.

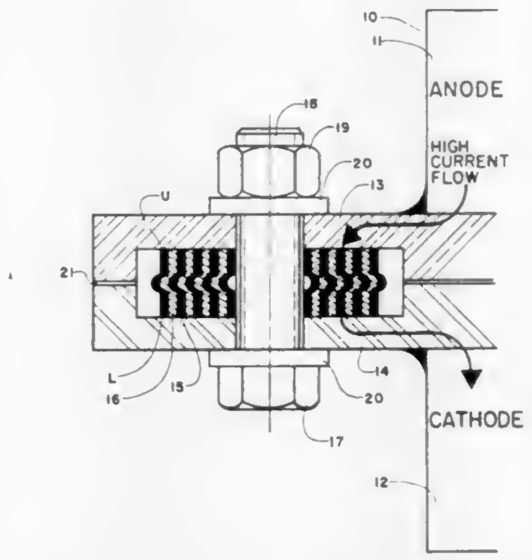
4,354,916
HIGH CURRENT DENSITY ELECTRICAL CONTACT DEVICE

Gerald R. Pohto, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 4, 1981, Ser. No. 259,814

Int. Cl.³ C25B *9/04*

U.S. Cl. 204—253 **12 Claims**



1. A fluid and air tight, high current density-stable, electrical contact device for conductively joining components of an electrolytic cell comprising a spring-like spiral or coil of electroconductive metal or metal alloy having a nonconductive or conductive, oxidation-resistant filler (seal) between the spiral rings of the contact and wherein said spiral is positioned so that the edges and common longitudinal axis thereof are substantially perpendicular to the faces of the cell components to be electrically contacted.

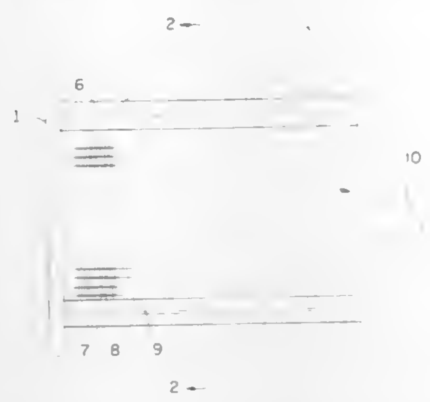
4,354,917
GAS ELECTRODE WITH ASYMMETRIC CURRENT DISTRIBUTOR

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,574

Int. Cl.^{3} C25B *11/03, 9/04, 11/12;* **H01M** *4/86*

U.S. Cl. 204—284 **4 Claims**



1. An improved gas electrode having an active surface layer of activated carbon particles bound together by a carbon black-fibrillated polytetrafluoroethylene mixture with a current conductor content therewith, said current conductor comprising an asymmetric woven wire mesh having more conductive wire strands in the direction generally perpendicular to the major current feed to said conductor than in the direction generally parallel to said direction of major current feed.

4,354,918
ANODE STUD COATINGS FOR ELECTROLYTIC CELLS

Larry G. Boxall, and Dennis C. Nagle, both of Baltimore, Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Jan. 14, 1981, Ser. No. 225,066

Int. Cl.^{3} C25C *3/06, 3/08, 7/02*

U.S. Cl. 204—286 **4 Claims**

1. An anode assembly for the electrolytic production of aluminum, said assembly comprising a steel anode stud, an intermediate coating thereon of a corrosion resistant material selected from the group consisting of titanium diboride zirconium diboride, titanium carbide, zirconium carbide, and mixtures thereof, and a carbon anode body.

4,354,919
PROCESS FOR THE LIQUEFACTION OF COAL

Shoichi Oi; Noriaki Ohnishi, both of Ogawamachi; Shinya Mori, Tsubukuhonmachi; Tadanobu Takata, Kumamoto, and Keiichiro Koba, Ohtanimachi, all of Japan, assignors to Mitsui Coke Co., Ltd. and Mitsui-Kozan Coking Industry Co., Ltd., both of, Japan

Filed Feb. 4, 1981, Ser. No. 231,273

Claims priority, application Japan, Feb. 19, 1980, 55-18591

Int. Cl.^{3} C10G *1/06*

U.S. Cl. 208—10 **7 Claims**

1. In a process for the liquefaction of coal by heating a slurry composed of the coal, a solvent and a catalyst under an elevated pressure of hydrogen, the improvement in which the catalyst is an iron ore consisting mainly of a hydrate of iron oxide, said iron ore containing from 20 to 70 percent by weight of iron, not more than 3 percent by weight of sulfur, and from 5 to 20 percent by weight of bound water, based on the weight of the iron ore freed of adhesive moisture.

4,354,920
COAL LIQUEFACTION PROCESS

Joel W. Rosenthal, El Cerrito, and Arthur J. Dahlberg, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 754,198, Dec. 27, 1976, Pat. No. 4,330,389. This application Mar. 9, 1981, Ser. No. 241,898

Int. Cl.^{3} C10G *1/06, 1/00*

U.S. Cl. 208—10 **24 Claims**

1. A process for liquefying coal, which comprises:
(a) forming a coal-solvent slurry by mixing subdivided coal with a solvent;
(b) substantially dissolving said coal in said solvent by heating said slurry in a dissolving zone in the presence of added hydrogen, thereby forming a mixture comprising solvent, dissolved coal, and insoluble solids;
(c) contacting at least a portion of said mixture containing insoluble solids with hydrogen in a reaction zone by passing said portion with hydrogen upwardly through a fixed bed of hydrocracking catalyst at a slurry hourly space velocity of 0.1–2, and a temperature below 800° F. and below the temperature to which the slurry was heated in said dissolving zone, and
(d) withdrawing an effluent stream from said reaction zone.

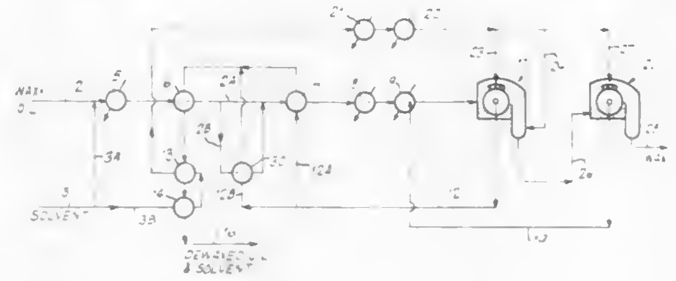
4,354,921
SOLVENT DEWAXING PROCESS

Herbert J. Pitman, Nederland, and Charles W. Harrison, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 27, 1981, Ser. No. 286,946

Int. Cl.^{3} C10G *73/06, 73/32*

U.S. Cl. 208—33 **10 Claims**



1. In a process for dewaxing a waxy lubricating oil stock by cooling said oil stock in the presence of a dewaxing solvent to a temperature effective for removal of wax therefrom by filtration wherein said oil stock is diluted prior to cooling with a portion of said dewaxing solvent to form a prediluted oil stock, the improvement which comprises cooling a major portion of said prediluted oil stock to a temperature above its cloud point, cooling a minor portion of said prediluted oil stock to a temperature below its cloud point thereby forming wax crystals dispersed in an oil-solvent mixture, combining said minor portion with said major portion to form a wax-oil-solvent composite mixture at a temperature substantially at the cloud point of said mixture, further cooling said mixture to dewaxing temperature, separating solid wax particles from resulting dewaxed oil and solvent, and recovering oil of diminished wax content therefrom.

4,354,922
PROCESSING OF HEAVY HYDROCARBON OILS

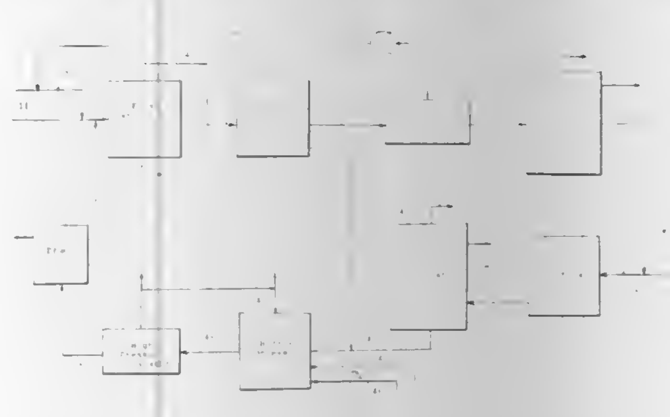
Francis J. Derbyshire, Ewing; Philip Varghese, Trenton, and Darrell D. Whitehurst, Titusville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,576

Int. Cl.^{3} C10G *11/16, 21/06*

U.S. Cl. 208—68 **25 Claims**

1. An integrated process for upgrading diverse refractory hydrocarbon oils which comprises (1) contacting a heavy hydrocarbon oil feedstock in a first extraction zone with a dense-gas fluid solvent under supercritical conditions of temperature and pressure for said solvent to dissolve a portion of said oil feedstock and form a first solvent extract phase containing the dissolved oil portion and an undissolved residual solids-enriched phase; (2) passing the said first solvent extract phase into a second extraction zone, and adjusting supercritical conditions of temperature and pressure to change the solubility of said oil portion in said dense-gas fluid solvent and cause formation of a second solvent extract phase containing dissolved hydrocarbon solute having a metals factor of less than about 30 and a Conradson Carbon Residue content of less than about 10, and condense or precipitate from said first solvent extract phase a separate asphaltic phase comprising heavy hydrocarbon constituents; (3) fractionating the second solvent extract phase in a separation zone to recover the dense-gas solvent, light hydrocarbon constituents having a boiling point below about 500° F., and a hydrocarbon oil fraction having a boiling point range above about 500° F., and recycling the dense-gas solvent; (4) subjecting said above 500° F. range hydrocarbon oil fraction to cracking conditions to form a crackate product mixture, and fractionally distilling the crackate product mixture to yield 100°–650° F. range distillates, and a refractory hydrocarbon bottoms fraction; (5) charging said bottoms fraction, together with the asphaltic phase produced and separated in step (2), into a heating zone, wherein said charge under hydrogen pressure is converted by hydrocracking to a lighter hydrocarbon effluent having a boiling range of about 100°–700° F.; and (6) fractionating the lighter hydrocarbon effluent to remove gaseous light ends and provide a liquid hydrocarbon fraction boiling above about 200° F., and recycling said liquid hydrocarbon fraction as part of the feedstock to the first extraction zone in step (1).



4,354,923
CARBO-METALLIC OIL CONVERSION WITH LIQUID WATER, BALLISTIC SEPARATION AND CONTROLLED CO:CO$_2$ RATIO DURING CATALYST REGENERATION

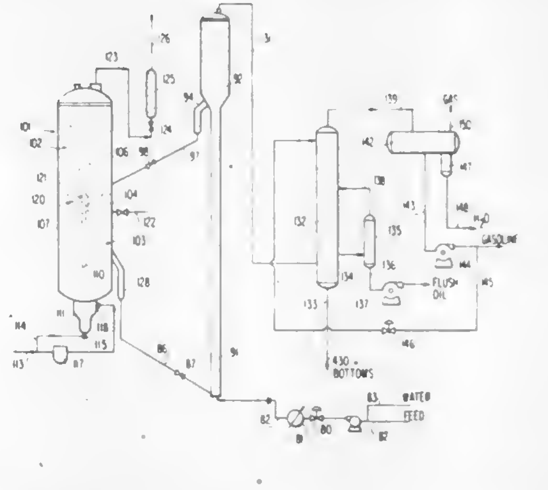
George D. Myers, and Lloyd E. Busch, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 14, 1979, Ser. No. 94,227

Int. Cl.^{3} C01G *11/18*

U.S. Cl. 208—113 **66 Claims**

1. A process for economically converting carbo-metallic oils to lighter products, comprising:
I. providing a converter feed containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);
II. bringing said converter feed together with cracking catalyst bearing an accumulation of heavy metal(s) on said catalyst corresponding to substantially more than 600 ppm Nickel Equivalents, by weight, expressed as metal(s) on regenerated equilibrium catalyst;
III. bringing said converter feed together with liquid water in a weight ratio relative to feed in the range of about 0.04 to about 0.15;
IV. forming a stream containing a mixture of said converter feed, said catalyst and steam resulting from the vaporization of said liquid water and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined at a lineal velocity of at least about 25 feet per second for a vapor residence time in the range of about 0.5 to about 10 seconds at a reaction chamber outlet temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;
V. at at least one location along the elongated reaction chamber, including an outlet means at the downstream end of the elongated reaction chamber or an extension thereof, ballistically separating said catalyst from at least a substantial portion of the stream comprising said catalyst, steam and resultant cracking products formed in the elongated reaction chamber, by projecting catalyst particles in a direction established by said elongated reaction chamber or said extension thereof, diverting vapors in said stream, including said steam and said products, by an abrupt change of direction relative to the direction in which said catalyst particles are projected and interposing wall means between the thus projected catalyst and the diverted steam and products;
VI. stripping hydrocarbons from said separated catalyst;
VII. regenerating said catalyst by burning the coke in at least one regeneration zone with oxygen-containing combustion-supporting gas while forming combustion product gases comprising CO and/or CO$_2$, and maintaining the CO:CO$_2$ molar ratio of the combustion product gases formed from the burning of at least the major weight portion of the coke at a level of at least about 0.25 while such gases are in heat exchange contact with the catalyst; and
VIII. recycling the regenerated catalyst to the reactor for contact with fresh feed.



4,354,924
DUAL COMPONENT CHROMIA SILICATE CRACKING CATALYST

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 160,618, Jun. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 68,847, Aug. 22, 1979, and Ser. No. 76,891, Sep. 19, 1979. This application Sep. 29, 1980, Ser. No. 191,574

Int. Cl.^{3} C10G *11/05*

U.S. Cl. 208—120 **19 Claims**

10. A process for catalytically cracking a hydrocarbonaceous feedstock comprising the step of contacting the feedstock under catalytic cracking conditions in a reaction zone in the absence of added hydrogen with a catalyst composition

comprising an essentially alumina-free crystalline chromia silicate component having an internal pore structure which will allow entry of normal aliphatic and slightly branched aliphatic compounds, yet substantially exclude all compounds having a molecular dimension equal to or substantially greater than a quaternary carbon atom and at least one large pore size crystalline aluminosilicate cracking component.

4,354,925

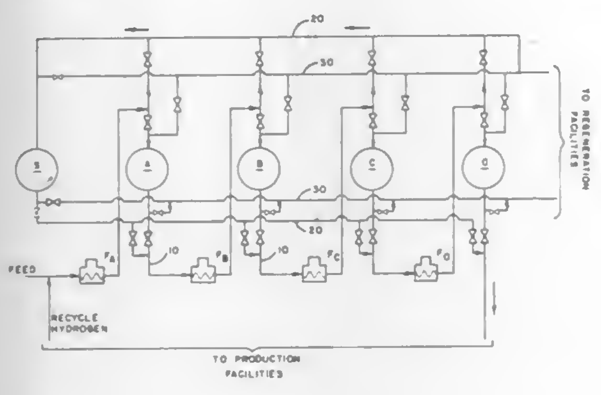
CATALYTIC REFORMING PROCESS

James J. Schorfheide, Baton Rouge, La., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 30, 1981, Ser. No. 288,318

Int. Cl.^{3} B01J *23/90*

U.S. Cl. 208—140 **8 Claims**



1. In a process for reforming, with hydrogen, a naphtha feed which is contacted at reforming conditions in a reforming unit constituted of one or more on-stream reactors connected in series, each of which contains a noble metal catalyst which is deactivated by coke which is deposited on the catalyst,

the improvement comprising

burning the coke from the catalyst by the use of a gas comprising an admixture of from about 0.1 percent to about 10 percent oxygen, and at least about 20 percent carbon dioxide, based on the total volume of the gas.

4,354,926

CATALYTIC COMPOSITE AND PROCESS FOR USE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

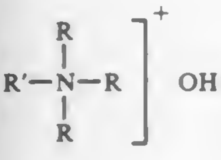
Division of Ser. No. 109,934, Jan. 4, 1980, Pat. No. 4,295,993. This application Dec. 10, 1980, Ser. No. 214,855

The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.

Int. Cl.^{3} C10G *27/06*

U.S. Cl. 208—207 **14 Claims**

1. A method of treating a mercaptan-containing sour petroleum distillate by contacting said distillate at oxidation conditions in the presence of an oxidizing agent with a catalytic composite comprising a metal chelate, an alkali metal hydroxide, and a quaternary ammonium hydroxide disposed on a molecular sieve support, the quaternary ammonium hydroxide represented by the structural formula:



$$\left[\begin{array}{c} R \\ | \\ R'-N-R \\ | \\ R \end{array}\right]^{+} OH^{-}$$

wherein R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl, and R′ is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, said alkali metal hydroxide comprising at least about 10 wt. % of said catalytic composite.

4,354,927

METHOD OF REMOVING CONTAMINANTS FROM HYDROCARBONACEOUS FLUIDS USING HIGH-SODIUM ALUMINA

Stuart S. Shih, Cherry Hill; Philip J. Angevine, West Deptford, and Stephen M. Oleck, Moorestown, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 6, 1981, Ser. No. 222,851

Int. Cl.^{3} C10G *45/04, 29/04*

U.S. Cl. 208—251 H **12 Claims**

1. A method for reducing contaminant content of a hydrocarbonaceous fluid, said contaminant being selected from the group consisting of arsenic and selenium, said method comprising:

contacting said fluid with a particulate, porous catalyst consisting essentially of alumina having a sodium content between 0.1 and 10 percent by weight, in the presence of hydrogen, at a temperature ranging between about 230° and 475° C. and a pressure ranging between about 10 and 200 atmosphere.

4,354,928

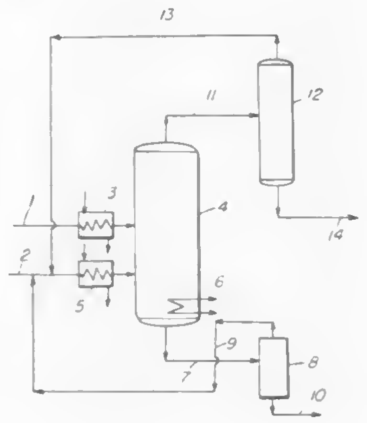
SUPERCRITICAL SELECTIVE EXTRACTION OF HYDROCARBONS FROM ASPHALTIC PETROLEUM OILS

Costandi A. Audeh, Princeton, N.J., and Tsoung Y. Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,728

Int. Cl.^{3} C10C *3/00*

U.S. Cl. 208—309 **3 Claims**



1. A process for extracting a hydrocarbon oil from an asphaltic feedstock, said process comprising the steps of contacting said feedstock with a low molecular weight organic solvent selected from the group consisting of ethylene glycols and thiophenes at a temperature and pressure equal to, or slightly greater than the critical temperature and critical pressure of said solvent so as to effect separation of said hydrocarbon oil from said feedstock by way of vapor-liquid phase separation and to form two immiscible phases comprising a heavy asphalt phase and a solvent phase containing said hydrocarbon oil, said hydrocarbon oil being substantially free of said asphalt and having a reduced metal content; separating said two immiscible phases and recovering said hydrocarbon oil from said solvent phase.

2. A process for extracting a hydrocarbon oil from an asphaltic feedstock, said process comprising the steps of contacting said feedstock with a low molecular weight organic solvent selected from the group consisting of naphthas, catalytically cracked gasolines, coker gasoline, FCC cycle oil, ethylene glycols and thiophenes, in the presence of a catalyst comprising a Group VI or Group VIII metal, or mixtures thereof, on an alumina support, at a temperature and pressure equal to, or slightly greater than the critical temperature and critical presure of said solvent so as to effect separation of said hydrocarbon oil from said feedstock by way of vapor-liquid phase separation and to form two immiscible phases comprising a heavy asphalt phase and a solvent phase containing said hydrocarbon oil, said hydrocarbon oil being substantially free of said asphalt and having a reduced metal content; separating said two immiscible phases and recovering said hydrocarbon oil from said solvent phase.

4,354,929

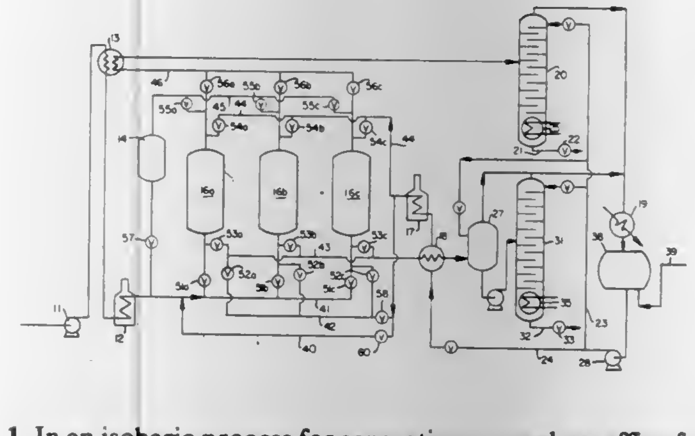
PROCESS FOR SEPARATING NORMAL PARAFFINS FROM HYDROCARBONS MIXTURES

Anton Wessels, Brasschaat, and Andrija Fuderer, Antwerp, both of Belgium, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1980, Ser. No. 189,351

Int. Cl.^{3} C10G *25/03*

U.S. Cl. 208—310 Z **7 Claims**



1. In an isobaric process for separating normal paraffins from non-normal hydrocarbons in a gas oil-containing vapor feedstream by (1) the selective adsorption of normal paraffins by passage of said feedstream through a molecular sieve adsorbent bed, (2) cocurrent purge with n-hexane to sweep out void space vapor containing a high concentration of non-normal hydrocarbons from the effluent end of the bed, (3) countercurrent purge with n-hexane to desorb normal paraffin adsorbate from the bed, (4) recovery of n-hexane from said separated normal paraffins and non-normal hydrocarbons, and (5) recycling of said n-hexane for purging and desorbing of said bed and to dilute the gas oil-containing feedstream for adsorption at less than 700° F., the improvement comprising diluting said gas oil-containing feedstream with cocurrent purge effluent as a source of n-hexane used to enable said selective adsorption to be carried out at less than 700° F. without capillary condensation, wherein the initial portion of the cocurrent purge effluent containing essentially non-normal hydrocarbon is not employed for said feedstock dilution, and the remaining portion of said cocurrent purge effluent comprising about the last 10% to 80% of the total cocurrent purge effluent is used as a source of n-hexane for said feedstream dilution purposes, whereby the equipment size and energy consumption for processing of said recycle n-hexane are reduced and the utilization of said adsorbent and the efficiency of the adsorption process can be enhanced.

4,354,930

DEVICE FOR SEPARATING MIXTURE

Takato Nakajima, Sakakimachi, Japan, assignor to Kanetsu Kogyo Kabushiki Kaisha, Nagano, Japan

Division of Ser. No. 204,809, Nov. 7, 1980, Pat. No. 4,318,804. This application Jul. 9, 1981, Ser. No. 281,824

Claims priority, application Japan, Nov. 16, 1979, 54-147618; Dec. 12, 1979, 54-160343

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

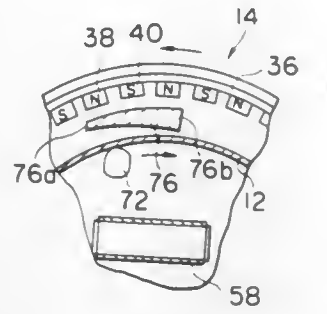
Int. Cl.^{3} B03C *1/12*

U.S. Cl. 209—221 **7 Claims**

1. A device for separating a mixture material comprising:

a drum disposed in a non-vertical posture and revolving in one direction about a longitudinal central axis thereof, said drum being formed of a nonmagnetic substance and supplied with a mixture material being treated;

an annular magnetic means surrounding said drum at a spacing from the outer peripheral surface thereof, and generating a magnetic field rotating in a reverse direction to the direction of rotation of said drum, so as to attract a magnetic material of said mixture material to the inner peripheral surface of said drum and exert on a nonmagnetic conductive material of said mixture material an electromagnetic force acting in the reverse direction to the direction of rotation of said drum;



a means for releasing said magnetic material from the inner peripheral surface of said drum in a predetermined rotational region in said drum; and

a means for receiving the magnetic material released from the inner peripheral surface of said drum.

4,354,931

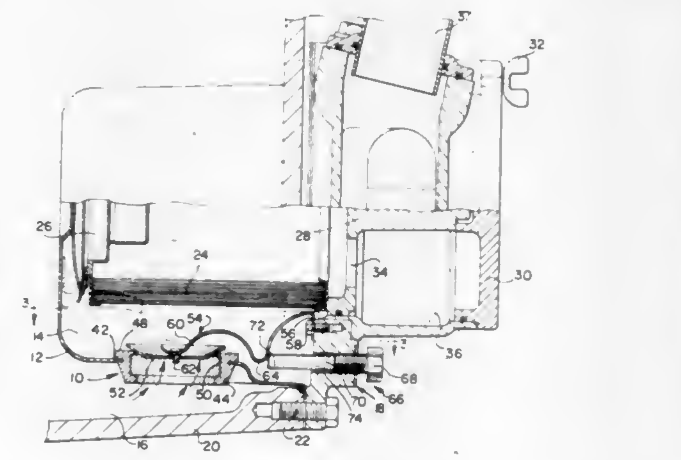
CHECK VALVE ASSEMBLY WITH ACTUATOR

Aldo Allori, Brookfield; John A. Wilger, Chicago, and Thomas F. Reiff, Bridgeview, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,960

Int. Cl.^{3} B01P *35/02*

U.S. Cl. 210—136 **14 Claims**



1. In a hydraulic filter system housing with a fluid reservoir, a removable filter cartridge chamber and a check valve assembly disposed therebetween and comprising:

a chamber enclosure wall rigidly attached to the housing and separating said filter chamber from said fluid reservoir;

said enclosure wall having an inlet opening;

a valve seat extending about said opening and removably attached to said enclosure wall;

said valve seat having a central bore serving as a fluid flow conduit between said reservoir and said chamber;

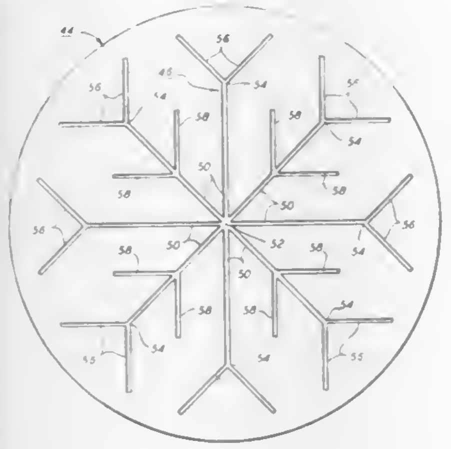
a valve element movable between bore open and closed positions and engageable with said valve seat in the bore closed position, thereby regulating the volume of the fluid flow moving from said reservoir to said chamber;

biasing means removably attached to said housing at one end and connected with said valve element at another for urging said valve element to engage with said valve seat;

tension adjusting means mounted on said housing and movable therethrough for regulating tension in and actuating said biasing means thereby causing the associated valve element to move between said open and closed positions without compromising the housing leak integrity; and

said tension adjusting means being able to place said valve element in a plurality of spatially fixed positions via said biasing means.

4,354,932
FLUID FLOW CONTROL DEVICE
Roderick J. McNeil, New Milford, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Oct. 15, 1980, Ser. No. 197,302
Int. Cl.^{3} B01A *15/08*
U.S. Cl. 210—198.2 **12 Claims**



8. An assembly comprising:

a liquid chromatography column, said column having packing material therein;

first means for retaining said packing material in said column, said first means having the same permeability as said packing material of said column; and

a fluid flow control device at one end of said column adjacent said retention means thereof, said device including a radial distribution plate having a patterned aperture therethrough which aperture being characterized in that all annuluses thereof having the same area have the same permeability and a means between said plate and said retention means for creating a fluid backpressure, said backpressure means having a comparatively lower permeability than said retention means.

4,354,933
IMPLANTABLE ARTIFICIAL KIDNEY
James P. Lester, 3506 Granny White Pike, Nashville, Tenn. 37204
Filed Feb. 23, 1981, Ser. No. 236,801
Int. Cl.^{3} B01D *31/00;* A61M *1/03*
U.S. Cl. 210—257.2 **13 Claims**

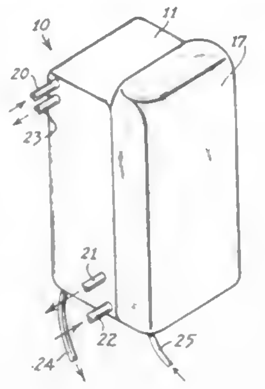
1. An artificial kidney comprising:

(a) a least one elongated microtubule having first and second end portions,

(b) said microtubule having longitudinally co-extensive arterial and venous passages and a urinary passage longitudinally co-extensive between said arterial and venous passages,

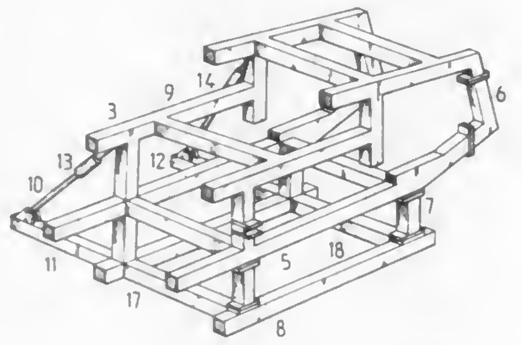
(c) said urinary passage having first and second opposed walls separating respectively said arterial passage and said venous passage from said urinary passage, said opposed walls being permeable to the flow of waste products in the bloodstreams respectively from said arterial and venous passages into said urinary passage,

(d) means for connecting the first and second end portions of said microtubule to an artery and a vein in a human body to cause arterial blood to flow in one direction through said arterial passage and venous blood to flow in the opposite direction through said venous passage, and



(e) means for discharging the contents of said urinary passage.

4,354,934
FILTER PRESS
Raimo Kohonen, Savonlinna, Finland, assignor to Enso-Gutzeit Osakeyhtio, Helsinki, Finland
Filed Mar. 26, 1981, Ser. No. 247,749
Int. Cl.^{3} B01D *33/04*
U.S. Cl. 210—386 **1 Claim**

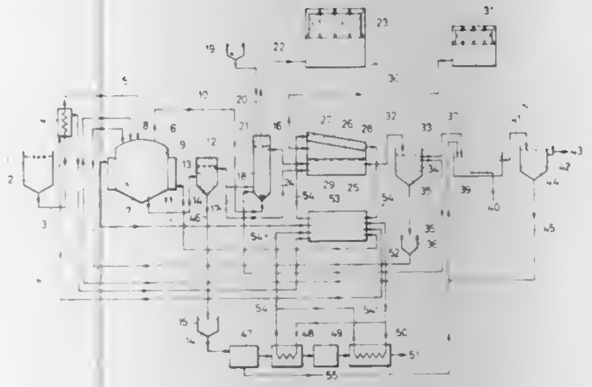


1. Improvements in a filter press for separating the liquid from the slit in a sludge comprising a girder frame having a pair of opposite sides and a pair of opposite ends extending transversely of said opposite sides, rollers extending between said opposite sides, bearings in said girder frame with said rollers journalled in said bearings, endless filter strips fitted over said rollers and extending in the direction between the opposite ends of said girder frame, removable frame sections located in one of said opposite sides so that with said frame sections removed said filter strips can be removed from said rollers and out of said girder frame, pull rods secured to the other one of said opposite sides for supporting said girder frame during the removal of said filter strips when said removable frame sections are removed from said girder frame, each of said opposite sides having an upper part and a lower part, each of said pull rods having a first end and a second end with said first ends secured to said upper part of the other one of said opposite sides, a support extension corresponding to each said pull rod telescopically mounted in the lower part of said girder frame and movable telescopically outwardly and inwardly relative to the other one of said opposite sides so that said support extensions can be extended outwardly transversely of the direction of said filter strips, the second ends of said pull rods secured to said support extensions outwardly from the other one of said opposite sides, and rigging screws in said pull rods intermediate the first and second ends thereof for adjusting said pull rods when said supports extensions are extended so that said pull rods are secured for supporting said girder frame when said filter strips are being exchanged.

4,354,935
APPARATUS FOR THICKENING SLUDGE
Eric P. Austin, Sandbach, and Howard J. Worrall, Kidsgrove, both of England, assignors to Simon-Hartley Limited, Stoke-on-Trent, England
Filed Jan. 5, 1981, Ser. No. 222,661
Claims priority, application United Kingdom, Jan. 23, 1980, 8002271
Int. Cl.^{3} B01D *33/04*
U.S. Cl. 210—396 **6 Claims**

1. Apparatus for thickening sludge comprising a driven foraminous belt having a conveying run arranged at least substantially horizontally, a chute for feeding a mass of sludge onto the belt at one end of the conveying run, and a plurality of generally parallel strips attached to and extending from the output end of the feed chute in the direction of travel of the belt, part way along the latter, the strips resting freely on the belt and being spaced apart thus to cause sludge to be fed onto the belt in a number of discrete parallel paths and thus to leave a plurality of zones of the belt free of sludge to permit drainage of water from the parallel paths of sludge through the belt.

4,354,936
ANAEROBIC DIGESTION PROCESS
Masahiko Ishida; Ryoichi Haga, and Yoji Odawara, all of Hitachi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan
Filed Mar. 6, 1981, Ser. No. 241,056
Claims priority, application Japan, May 20, 1980, 55-65909
Int. Cl.^{3} C02F *3/28, 3/32*
U.S. Cl. 210—602 **16 Claims**



1. A process for the treatment of organic wastes, comprising the steps:

(a) anaerobically digesting organic wastes at a temperature of 30°–75° C. and a pH of 6.5–7.5 to obtain a digested slurry and fermentation gas containing methane or hydrogen, carbon dioxide and hydrogen sulfide;

(b) subjecting the digested slurry obtained in step (a) to a solid/liquid separation treatment to obtain separated digested water and digested sludge;

(c) adding calcium hydroxide to a part of the separated digested water obtained in the step (b) until the water becomes alkaline;

(d) contacting the alkaline digested water obtained in step (c) with the fermentation gas obtained in step (a) to absorb carbon dioxide and hydrogen sulfide in the digested water to produce a purified methane gas and thereby increase the concentration of hydrogen or methane in the gas;

(e) supplying a part of the digested water obtained in step (d) to a culturing system wherein photo-synthetic algae is cultured under illumination, thereby obtaining oxygen and algae culture, said culturing system being conducted at a pH of 7.5–9.5 and at a temperature of 30°–40° C.;

(f) subjecting the algae culture liquid obtained in step (e) to a solid/liquid separation treatment for obtaining algae and algae culture liquid supernatant;

(g) recycling and adding part of the algae culture liquid supernatant to the alkaline digested water of step (d) for absorbing carbon dioxide and hydrogen sulfide from the fermentation gas;

(h) subjecting additional alkaline algae culture liquid supernatant obtained in step (f) to an aerobic microbial treatment to reduce the BOD; and

(i) recycling algae obtained in step (f) into step (a) as feedstock for fermentation.

4,354,937
PROCESS FOR PRECIPITATING HEAVY METALS FROM WASTEWATER
Rolf O. Hallberg, Tyreso, Sweden, assignor to Vyrmetoder AB, Täby, Sweden
PCT No. PCT/SE80/00121, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02281, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 22, 1980, Ser. No. 220,058
Claims priority, application Sweden, Apr. 24, 1979, 7903598
Int. Cl.^{3} C02F *1/62*
U.S. Cl. 210—607 **7 Claims**

1. A process for precipitating heavy metals from wastewater containing sulfate ions, wherein the water is treated with sulfate reducing bacteria which reduce the sulfate ions to hydrogen sulfide which in its turn precipitates the metal ions in the form of metal sulfides, wherein the bacteria are cultured in one or more culturing vessels in the presence of a nutritive solution and a portion of the wastewater, and that the resulting aqueous solution containing hydrogen sulfide produced by the bacteria is introduced into a precipitation vessel together with the remaining major portion of the wastewater.

4,354,938
HEMODIALYSIS MEMBRANE AND PROCESS AND APPARATUS FOR USING SAME IN HEMODIALYSIS
Axel Walch, Frankfurt; Max Bytzek, Wiesbaden; Jürgen Wildhardt, Wallrabenstein, and Klaus-Dieter Hammer, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 10, 1978, Ser. No. 932,550
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736569
Int. Cl.^{3} B01D *13/00, 31/00*
U.S. Cl. 210—637 **12 Claims**

1. In a method for performing hemodialysis, including the step of contacting blood with one side of a regenerated cellulose membrane and a rinsing fluid on the other side of said membrane, wherein the improvement comprises said membrane comprising the viscose membrane produced by a process consisting essentially of the steps of:

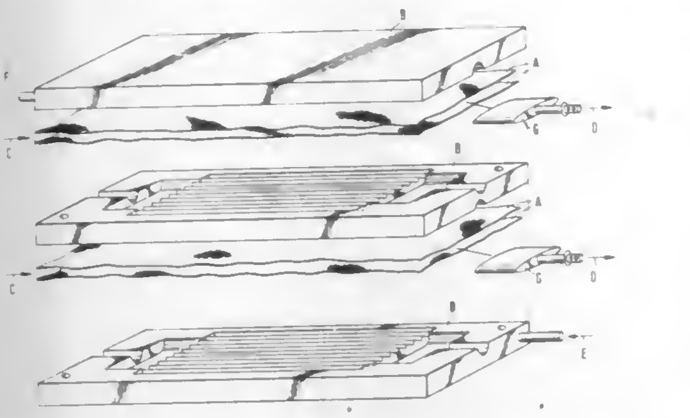
providing a viscose solution by xanthogenation;

spinning the viscose solution by extrusion through a slot die to produce a viscose membrane;

regenerating the extruded viscose membrane to produce a membrane of cellulose hydrate gel;

freeing the membrane of cellulose hydrate gel through a bath containing a plasticizer for the cellulose hydrate to plasticize the membrane;

subsequent to said regeneration step and prior to the hereinafter recited drying step, transversely stretching the cellulose hydrate gel membrane by an amount between about 40 and 120 percent sufficient to compensate for any longitudinal stretching which occurs inherently in the foregoing steps and to produce, upon drying, a cellulose hydrate membrane substantially equally oriented in the longitudinal and in the transverse directions; and



thereafter drying the transversely stretched membrane, to produce a viscose membrane substantially equally oriented in the longitudinal and in the transverse directions and having in the dry state a birefringence of not more than about 6×10^{-3} and a phase difference of not more than about 150 nm.

4,354,939

REVERSE OSMOSIS DESALINIZATION UTILIZING PLURAL FLOW WORK EXCHANGE VESSELS

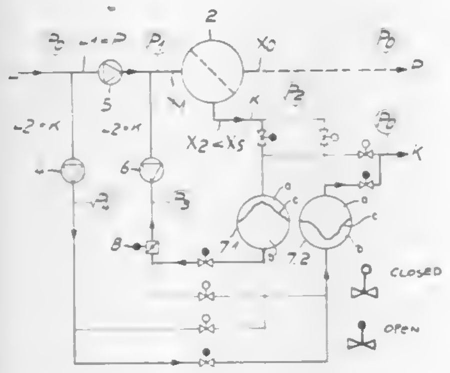
Kurt M. Pohl, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Continuation of Ser. No. 56,926, Jul. 12, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,186

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830987; Jun. 21, 1979, 2924971

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—637 **1 Claim**



1. A method for efficiently separating a salt-containing solution of sea water having a salt content of 38,000 ppm at an initial pressure (P_0) into a low salt permeate having a salt content of 500 ppm at pressure (P_0) and a high salt concentrate having a salt content of 57,000 ppm at a final pressure equal to (P_0) by pressuring the solution to a high pressure (P_1) in an input line upstream of a reverse osmosis permeable membrane of a reverse osmosis vessel, wherein the efficiency of the process is increased by utilizing first and second displacement vessels with each displacement vessel having rigid internal surfaces divided by a flexible wall into a first chamber connected to said reverse osmosis vessel and a second chamber connected to the input line of said reverse osmosis vessel; the method comprising the steps of:

A. pumping the solution to the pressure (P_1) and supplying the solution to said reverse osmosis vessel at pressure (P_1) to produce the low salt premeate downstream of the membrane at pressure (P_0) and high salt concentrate upstream of the membrane at pressure (P_2) less than (P_1);

B. applying the concentrate from said reverse osmosis vessel only to the first chamber of the first displacement vessel at the pressure (P_2) while opening the first chamber of the second displacement vessel to ambient pressure (P_0); pumping the solution in the second chamber of the first displacement vessel into the input line by overcoming the pressure difference between the pressure (P_3) of the solution in the second chamber of the first vessel and the pressure (P_1) of the solution in the input line with a pump disposed between the displacement vessel and input line, and pumping solution to the second chamber of the second displacement vessel at a pressure (P_4) considerably lower than the pressure required to pump solution from the first displacement vessel to the input line in order to move the wall in the second displacement vessel and push the concentrate from the first chamber of the second displacement vessel to evacuate concentrate from the second displacement vessel;

C. reversing the processes of step B by applying the concentrate from said reverse osmosis vessel only to the first chamber of the second displacement vessel at the pressure (P_2) while opening the first chamber of the first vessel to ambient pressure (P_0), pumping the solution in the second chamber of the second displacement vessel into the input line by overcoming the pressure difference between the pressure (P_3) of the solution in the second chamber of the second displacement vessel and the pressure (P_1) of the solution in the input line with a pump disposed between the displacement vessel and input line, and pumping solution to the second chamber of the first displacement vessel at the pressure (P_4) to move the wall in the first displacement vessel and push the concentrate from the first chamber of the first displacement vessel to evacuate concentrate from the first displacement vessel;

D. repeating step B and C while continuously performing step A with the pressures maintained as follows:

$P_0=1$ bar

$P_1=80$ bar

$P_2=75$ bar

$P_3=73$ bar

$P_4=3$ bar,

whereby the efficiency of the method is enhanced while avoiding the possibility that the low salt permeate will be contaminated by either the salt-containing solution or the high salt concentrate, should either of the displacement vessels rupture or fail.

4,354,940

SODIUM ALUMOGLUCOHEPTONATE, A PROCESS FOR ITS PREPARATION AND ITS USE AS SEQUESTERING AGENT

Peter Suhac; Natasa Hafner-Milac, and Bozidar Dolenc, all of Ljubljana, Yugoslavia, assignors to LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o., Ljubljana, Yugoslavia

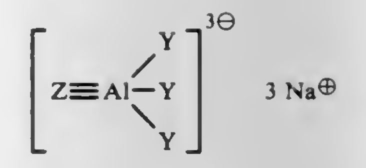
Filed Jul. 9, 1981, Ser. No. 281,744

Claims priority, application Yugoslavia, Feb. 14, 1979, 354/79

Int. Cl.³ C02F *5/10*

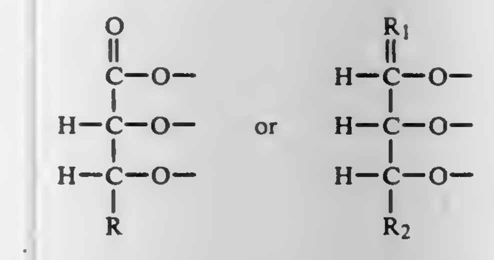
U.S. Cl. 210—698 **18 Claims**

3. A method for sequestering iron ions or calcium ions which comprises contacting said ions with sodium alumoglucoheptonate of the formula:



wherein

Z represents a residue of the formula



wherein

R represents a residue of a molecule of sodium D-glycero-D-gulo-heptonate or of sodium D-glycero-D-ido-heptonate, and

R_1 and R_2 represent moieties of a molecule of sodium D-glycero-D-gulo-heptonate or of sodium D-glycero-D-ido-heptonate,

Y represents a hydroxy group or three Y are joined to represent the residue Z.

4,354,941

PROCESS FOR CONTINUOUS SEPARATION OF POLLUTING MATTER FROM A CARRIER FLUID

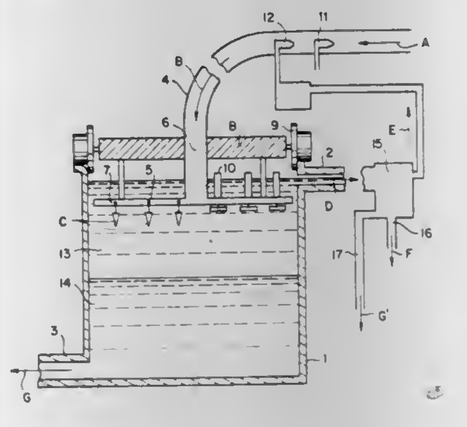
Georg Ronge, Schuhbauerstrasse #11, D-8311 Adlkofen, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,720

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009160

Int. Cl.³ C02F *1/24, 1/52*

U.S. Cl. 210—706 **15 Claims**



1. The process for separating contaminating matter from a contaminated carrier liquid through filtration wherein said contaminating matter comprises dissolved or particulate matter or oil with dissolved or particulate matter or oil, which comprises adding to said contaminated carrier liquid oil particles having been formed by subjecting a body of liquid oil to a pressure of at least about 600 atmospheres, said particles having a size between about 0.5 and 15 microns, said particles having an electrostatic charge and having a density lower than said carrier liquid and a composition to induce formation of insoluble hydroxide flocs in said contaminated carrier liquid, passing the resultant mixture into a chamber wherein it separates into an upper clean oil layer, an intermediate filtering layer comprising said formed flocs which contain the contaminants other than the oil in said oil layer and a third layer of cleaned carrier liquid substantially free of said contaminating matter whereby contaminating matter is filtered from said carrier liquid by said filtering layer and recovering said cleaned carrier liquid and said oil in the clean oil layer.

4,354,942

STABILIZATION OF MERCURY IN MERCURY-CONTAINING MATERIALS

Jerry J. Kaczur, Cleveland; James C. Tyler, Jr., Athens, and John J. Simmons, Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 26, 1980, Ser. No. 210,493

Int. Cl.³ B09B *1/00;* **C02F** *1/62*

U.S. Cl. 210—712 **18 Claims**

1. A process for stabilizing in situ soluble mercury in land or submarine deposits having mercury-containing materials which comprises applying to said deposits a stabilizing amount of an inorganic sulfur compound selected from the group consisting of potassium sulfide, alkaline earth metal sulfides, sulfides of transition elements number 25–30, aluminum sulfides, cadmium sulfides, antimony sulfides, Group IV sulfides, alkali metal thiosulfates, alkaline earth metal thiosulfates, iron thiosulfates, alkali metal dithionites and mixtures thereof, which react with said soluble mercury to convert it to insoluble mercury compounds and substantially inhibit its removal by elution from said deposits.

4,354,943

CLARIFICATION OF AMMONIUM POLYPHOSPHATE SOLUTIONS

Alan M. Dobry, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 781,625, Mar. 28, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 950,974

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—727 **2 Claims**

1. A process for the removal of suspended carbonaceous material from an aqueous ammonium polyphosphate solution wherein (i) said solution contains from about 10 to about 90% by weight of the total P_2O_5 in a polyphosphate form, (ii) said solution has a pH above about 4.5, (iii) said solution is prepared by the molecular dehydration and subsequent or concurrent ammoniation of wet-process phosphoric acid, (iv) said solution ranges in grade from about 8-27-0 to about 13-37-0, and (v) said carbonaceous material results from organic impurities in said wet-process phosphoric acid which char during said molecular dehydration, which process comprises the steps of:

(a) mixing said ammonium polyphosphate solution with an aqueous solution of a polyvinyl imidazoline bisulfate having a high charge density and a molecular weight in excess of one million, wherein the amount of said polyvinyl imidazoline bisulfate is from about 0.001 to about 0.5% by weight based on the weight of said ammonium polyphosphate solution, and wherein said aqueous polyvinyl imidazoline bisulfate solution contains from about 0.1 to about 5% by weight of said polyvinyl imidazoline bisulfate;

(b) holding the resulting mixture for a period of time effective to permit the separation of said mixture into an upper layer of flocculated carbonaceous material and a lower layer of clarified ammonium polyphosphate solution; and

(c) separating said lower layer of clarified ammonium polyphosphate solution from said upper layer of flocculated carbonaceous material.

4,354,944

CLARIFICATION OF AMMONIUM POLYPHOSPHATE SOLUTIONS

Alan M. Dobry, Chicago, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

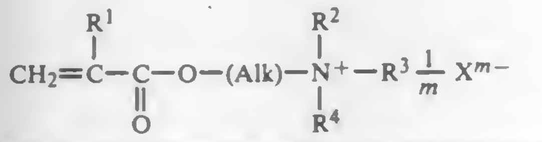
Continuation-in-part of Ser. No. 950,974, Oct. 13, 1978, which is a continuation-in-part of Ser. No. 781,625, Mar. 28, 1977, abandoned. This application Apr. 6, 1981, Ser. No. 251,295

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—727 **10 Claims**

1. A process for the removal of suspended carbonaceous material from an aqueous ammonium polyphosphate solution wherein (i) said solution contains from about 10 to about 90% by weight of the total P_2O_5 in a polyphosphate form, (ii) said solution has a pH above about 4.5, (iii) said solution is prepared by the molecular dehydration and subsequent or concurrent ammoniation of wet-process phosphoric acid, (iv) said solution ranges in grade from about 8-27-0 to about 13-37-0, and (v) said carbonaceous material results from organic impurities in said wet-process phosphoric acid which char during said molecular dehydration, which process comprises the steps of:

(a) mixing said ammonium polyphosphate solution with an aqueous solution of a cationic homopolymer,



$$CH_2{=}\overset{\displaystyle R^1}{\overset{|}{C}}{-}\underset{\underset{\displaystyle O}{\|}}{C}{-}O{-}(Alk){-}\underset{\underset{\displaystyle R^4}{|}}{\overset{\overset{\displaystyle R^2}{|}}{N^+}}{-}R^3\,\frac{1}{m}\,X^{m-}$$

wherein said homopolymer is poly(β-methacryloyloxyethyltrimethylammonium methyl sulfate) having a molecular weight in excess of about 10,000, and wherein the amount of said homopolymer is effective to promote the flocculation of said carbonaceous material and said mixing is carried out at a temperature in the range from about 35° to about 200° F.;

(b) holding the resulting mixture at a temperature in the range from about 35° to about 200° F. for a period of time effective to permit the separation of said mixture into an upper layer of flocculated carbonaceous material and a lower layer of clarified ammonium polyphosphate solution; and

(c) separating said lower layer of clarified ammonium polyphosphate solution from said upper layer of flocculated carbonaceous material.

4,354,945

CLARIFICATION PROCESS WITH THIAZINE QUATERNARY AMMONIUM SALTS OF POLYEPIHALOHYDRIN

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,036, Apr. 23, 1979, Pat. No. 4,316,007. This application Jun. 9, 1981, Ser. No. 271,894

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—736 **7 Claims**

1. A process of clarifying aqueous systems containing suspended particles of matter which comprises adding to such systems a thiazine quaternary ammonium salt of polyepihalohydrin wherein the nitrogen atom of the thiazine moiety is attached to the polymeric chain through a —CH_2— group in an amount sufficient to clarify said aqueous system, and flocculating said suspended particles of matter to clarify said aqueous system.

4,354,946

OIL RECONDITIONING APPARATUS AND METHOD

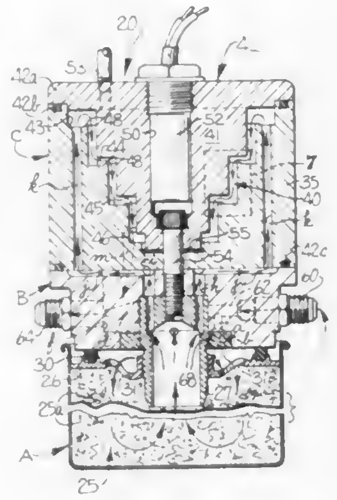
Frank M. Warlick, 7126 Hopeton Rd., Charlotte, N.C. 28210, and Carl J. Eloff, Catawba, S.C., assignors to Frank M. Warlick, Charlotte, N.C.

Filed Jul. 22, 1981, Ser. No. 285,849

Int. Cl.³ B01D *35/18, 3/28*

U.S. Cl. 210—774 **13 Claims**

1. In an oil reconditioning apparatus for use with an internal combustion engine having a conventional oil filter through which all the oil pumped through the engine flows before the oil is again pumped and recycled through the engine, said reconditioning apparatus having a housing provided with an oil inlet and an oil outlet, said oil inlet being adapted to be connected to the high pressure side of the engine's oil circulating system so as to deliver a stream of pressurized oil to the apparatus, said housing also having a filter chamber containing a filter medium therein, and a vaporization chamber positioned above the filter chamber and having an inlet side communicating with the filter chamber so as to receive filtered oil therethrough from the filter chamber and to vaporize any liquid contaminants within the filtered oil so as to thereby recondition the oil, said vaporization chamber also having an outlet side through which the reconditioned oil gravitates from the vaporization chamber, the combination therewith of oil flow control means for



(a) directing a first portion of the stream of pressurized oil from the engine into said oil filter chamber so that the oil may flow therethrough and into said vaporization chamber thereabove, and for

(b) concurrently directing the remaining portion of the stream of pressurized oil in bypassing relation to said oil filter chamber and said vaporization chamber and out of said oil outlet and back into the engine, and for

(c) directing reconditioned oil from the vaporization chamber into the pressurized unreconditioned portion of the stream of oil that has bypassed the oil filter and vaporization chambers so the reconditioned oil will return to the engine under pressure along with the pressurized unreconditioned portion of the stream of oil.

4,354,947

PROCESS FOR FILTERING SLUDGE-LIKE MATERIALS IN A FILTER PRESS

Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Continuation of Ser. No. 53,387, Jun. 29, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 175,343

Int. Cl.³ B01D *25/30*

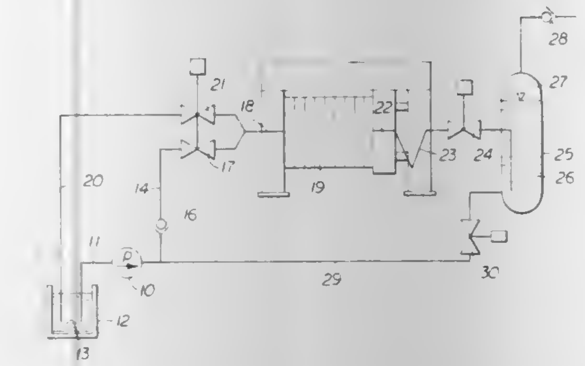
U.S. Cl. 210—790 **2 Claims**

1. A process for the batch-wise filtering of a sludge-like material in a filter press having a pump connected to the filter press for feeding the sludge-like material from a sludge-like material source into the filter press for filtration therein, and having a pressure vessel with an air cushion therein with said vessel being connected selectively to the filter press and to the pump and being periodically filled by the pump with sludge-like material under the pressure of said air cushion, with this sludge-material being stored in said vessel and fed into the filter press at the beginning of a filtering batch, each batch comprising the following steps in the sequence named:

(a) loading said filter press with at least a portion of said sludge-like material being stored under pressure in said pressure vessel,

(b) conveying sludge-like material by said pump from said sludge-like material source into the filter press for filtration therein, with the connection between said filter press and said pressure vessel being closed at least during the final stage of the filtration step,

(c) closing the connection between said pump and said filter press and opening the connection between said pump and said pressure vessel while continuously running said pump to convey sludge-like material directly from said source into said pressure vessel, and



(d) opening said filter press and discharging filter cake therefrom while continuing to supply sludge-like material to said pressure vessel with the connection between said pump and said filter press closed and the connection between said pump and said pressure vessel open.

4,354,948

LUBRICATING VARNISHES HAVING A GRAPHITE FLUORIDE BASE AND METHOD OF PREPARING SAME

Elisabeth Schoch, Sonchamp, and Michel Rebiffe, Houilles, both of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Oct. 17, 1980, Ser. No. 197,944

Claims priority, application France, Nov. 13, 1979, 79 27887

Int. Cl.³ C10M *7/04*

U.S. Cl. 252—22 **9 Claims**

1. A process for preparing graphite fluoride lubricating varnishes which comprises (a) mixing a graphite fluoride powder with glycerine, (b) separately forming an aqueous dispersion of graphite fluoride with a salt of a condensate of naphthalene sulfonic acid and formol and then (c) intermixing (a) and (b) to form an aqueous dispersion in which the total amount of graphite fluoride and glycerine is in a weight ratio of between about 0.3 to 1 and the condensate is present in a sufficient amount to stabilize the dispersion.

7. An aqueous graphite fluoride lubricating composition comprising a graphite fluoride powder and glycerine having a total graphite fluoride/glycerine ratio of between about 0.3 to 1 and a salt of a condensate of naphthalene sulfonic acid and formol in a sufficient amount to stabilize the composition.

4,354,949

HYDRAULIC FLUID, HYDRAULIC EQUIPMENT CONTAINING THIS FLUID AND A CONCENTRATE OF THIS FLUID

Carl A. Eggers, Tarvin-near Chester, and Gerald D. Galvin, Upton-by-Chester, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 21, 1981, Ser. No. 226,675

Claims priority, application United Kingdom, Jan. 24, 1980, 8002478

Int. Cl.³ C10M *3/04, 3/10, 3/16, 3/22*

U.S. Cl. 252—39 **21 Claims**

1. A hydraulic fluid which is an oil-in-water emulsion and comprises from 90–99% w of water, from 0.5–5% w of a lubricating oil with a kinematic viscosity at 40° C. of at least 300 cS, and 10–80% w of the amount of oil of at least one non-ionic emulsifier.

14. A hydraulic fluid according to claim **1** which comprises at least one anti-rust additive.

16. A hydraulic fluid according to claim **14** which comprises an overbased calcium salt of an alkyl salicylic acid.

4,354,950

MANNICH BASE DERIVATIVE OF HYDROXYARYL SUCCINIMIDE AND HYDROCARBON OIL COMPOSITION CONTAINING SAME

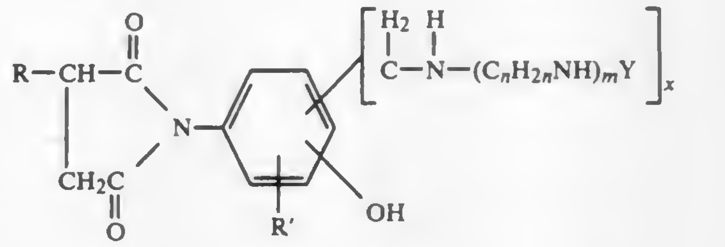
Kenneth G. Hammond, Poughkeepsie, and Garren E. Maas, Wappinger Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,071

Int. Cl.³ C10M *1/32*

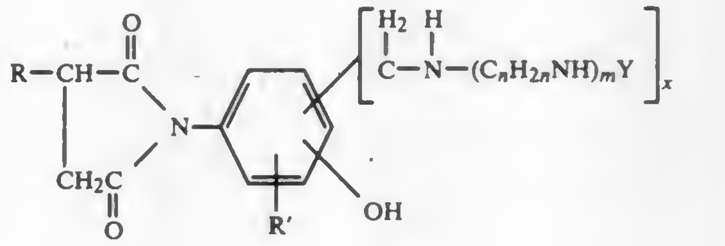
U.S. Cl. 252—51.5 A **13 Claims**

1. A Mannich base derivative of a hydroxyaryl succinimide represented by the formula:



in which R is a hydrocarbyl radical having from about 25 to 200 carbon atoms, R′ is hydrogen, an alkyl radical or a halogen radical, n has a value of 2 or 3, m has a value from 1 to 5, Y is hydrogen or a methylene hydroxyaryl succinimide radical, and x has a value of 1 to 2 when Y is hydrogen and a value of 1 when Y is a methylene hydroxyaryl succinimide radical.

7. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a Mannich base derivative of a hydroxyaryl succinimide represented by the formula:



in which R is a hydrocarbyl radical having from about 25 to 200 carbon atoms, R′ is hydrogen, an alkyl radical or a halogen radical, n has a value of 2 or 3, m has a value from 1 to 5, Y is hydrogen or a methylene hydroxyaryl succinimide radical, and x has a value of 1 to 2 when Y is hydrogen and a value of 1 when Y is a methylene hydroxyaryl succinimide radical.

4,354,951

MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFIN EPOXIDES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR ARTICLES

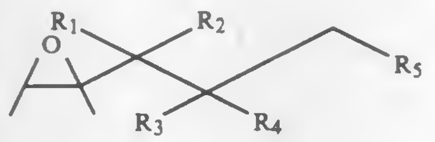
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 18, 1982, Ser. No. 350,091

Int. Cl.^{3} B32B *33/00;* **D04H** *1/40*

U.S. Cl. 252—8.9 **3 Claims**

1. A process for augmenting or enhancing the aroma of a fabric treated with a fabric softener composition or a fabric softener article comprising the steps of adding to a fabric softener composition or a component of a fabric softener article a quantity of at least one epoxide compound defined according to the structure:



wherein R_1, R_2, R_3, R_4 and R_5 are the same or different and each represents hydrogen or methyl with the proviso that (i) the sum total of carbon atoms in R_1, R_2, R_3, R_4 and R_5 is three, and (ii) R_1 and R_2 represent hydrogen when R_5 represents methyl, and (iii) when either R_1 or R_2 is methyl, R_5 is hydrogen, whereby the aroma of the fabric softened using said fabric softener composition or fabric softener article is augmented or enhanced.

4,354,952

CONTACT LENS DISINFECTING AND PRESERVING SOLUTION COMPRISING CHLORHEXIDINE AND SALTS THEREOF

Thomas M. Riedhammer, and Francis X. Smith, both of Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

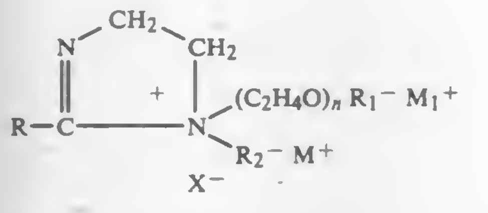
Filed Mar. 12, 1981, Ser. No. 242,964

Int. Cl.^{3} C11D *1/84, 3/48*

U.S. Cl. 252—106 **10 Claims**

1. An aqueous solution for preserving and/or disinfecting soft contact lenses having as the active antimicrobial agent a combination 0.0005 to 0.01 weight percent of said composition chlorhexidine or salt thereof, 0.0035 to 0.04 weight percent of said composition of amphoteric surfactant and 0.002 to 15 weight percent of said composition of a nonionic surfactant having a hydrophiliclipophile balance between 12.4 and 18.8,

said amphoteric surfactant being selected from the group consisting of:



(1)

wherein

R is a fatty acid radical having 6 to 18 carbon atoms

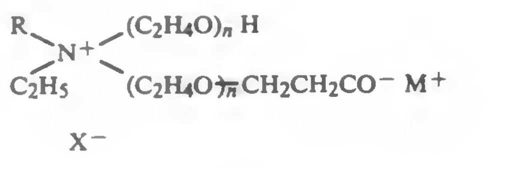
R_1 is H or $—CH_2C(O)O$ provided that when R_1 is H then M_1 is absent

R_2 is $—CH_2C(O)O$ or $CH(OH)CH_2SO_3$

M and M_1 are cation salt forming groups

X is OH or the acid group of an anionic surface active agent

n is an integer from 1 to 40;



$$\begin{matrix}R\\C_2H_5\end{matrix}\!>\!N^+\!<\!\begin{matrix}(C_2H_4O)_nH\\(C_2H_4O)_nCH_2CH_2CO^-\,M^+\end{matrix}\qquad X^-$$

(2)

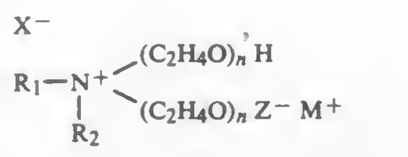
wherein

R is a hydrophobe radical

M is an alkali metal

X is selected from CH_3OSO, $C_2H_5OSO_3$, Cl or Br

n is an integer from 1 to 40;



$$X^-\qquad R_1-\underset{R_2}{\underset{|}{N^+}}\!<\!\begin{matrix}(C_2H_4O)_nH\\(C_2H_4O)_nZ^-\,M^+\end{matrix}$$

(3)

wherein

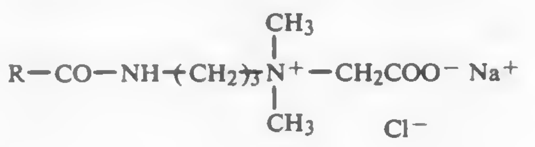
R_1 is a fatty acid or hydrophobe radical

R_2 is alkyl or substituted alkyl

Z is sulfate or sulfonic

M is alkali metal

X is CH_3OSO_3, $C_2H_5OSO_3$, Cl or Br; or



$$R-CO-NH\!-\!(CH_2)_3\!-\!\overset{CH_3}{\overset{|}{\underset{\underset{CH_3}{|}}{N^+}}}-CH_2COO^-\,Na^+\qquad Cl^-$$

(4)

wherein

R is alkylene of 12–13 carbon atoms,

said nonionic surfactant being selected from polyethylene glycol esters of fatty acids, polyoxyethylene ethers of higher alkanes and polyoxypropylene ethers of higher alkanes.

4,354,953

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS USING 1-N-BUTOXY-1-ETHANOL ACETATE

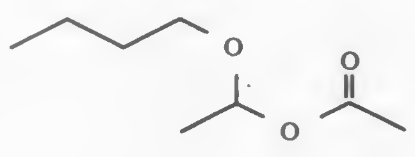
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 217,810, Dec. 18, 1980, Pat. No. 4,296,137, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1970, Pat. No. 4,296,138. This application Jul. 29, 1981, Ser. No. 287,891

Int. Cl.^{3} C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **1 Claim**

1. The process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, an aroma augmenting, modifying or enhancing quantity of 1-n-butoxy-1-ethanol acetate having the structure:



4,354,954

METHOD FOR SOLIDIFYING AQUEOUS RADIOACTIVE WASTES FOR NONCONTAMINATING STORAGE

Rainer Köster, Karlsruhe; Knut Scheffler, Eggenstein-Leopoldshafen, and Ulrich Riege, Linkenheim-Hochstetten, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschränkter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,534

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819085

Int. Cl.^{3} G21F *9/08, 9/12, 9/16*

U.S. Cl. 252—629 **20 Claims**

1. Method for solidifying high radioactivity aqueous waste concentrates, medium radioactivity aqueous wastes concentrates, actinide containing aqueous waste concentrates, or suspensions of fine-grained solid wastes suspended in water, which concentrates or suspensions contain a metal ion and/or metal oxide, for final noncontaminating storage in which the waste concentrates or the suspensions are subjected, together with an absorbing and/or hydraulically binding inorganic material, to a ceramic firing process so as to produce a solid sintered body comprising the steps of:

(a) treating the waste concentrates or suspensions by evaporation, to form an evaporate having a water content in the range between 40 and 80 percent by weight and a solid content whose metal ion and/or metal oxide concentration lies between 10 and 30 percent by weight of the evaporate being formed, and adjusting the pH of the evaporate to between 5 and 10;

(b) pelletizing by spraying 1 part by weight of the evaporate obtained from step (a) onto 2 to 6 parts by weight of a mixture containing a clay-like substance disposed on a moving pelletizing plate, to form pellets said mixture further containing (1) 10% to 90% cement based on the total weight of the clay-like substance and cement, or (2) an effective amount of at least one suppressing additive, or (3) mixtures thereof, the suppressing additive being an additive for suppressing the volatility of alkali metals or alkaline earth metals and/or an additive for suppressing the volatility of any decomposable anions selected from the group consisting of sulfate, phosphate, molybdate and uranate ions which may be present in the evaporate,

(c) heat treating said pellets including drying at temperatures between room temperature and 150° C., calcining at temperatures up to 800° C., and subsequently firing at temperatures between 800° C. and 1400° C. to form practically undissolvable mineral phases; and

(d) enclosing said pellets containing the fired mineral phases on all sides in a dense, continuous ceramic or metallic matrix.

4,354,955

PROCESS AND APPARATUS FOR PRODUCING PROPELLANT OF REDUCED COMBUSTIBILITY

Augustinus J. M. Wittenhorst, Westerburg, Fed. Rep. of Germany, assignor to von TREU AG, Switzerland

Division of Ser. No. 929,199, Jul. 28, 1978, Pat. No. 4,233,177. This application May 14, 1980, Ser. No. 149,688

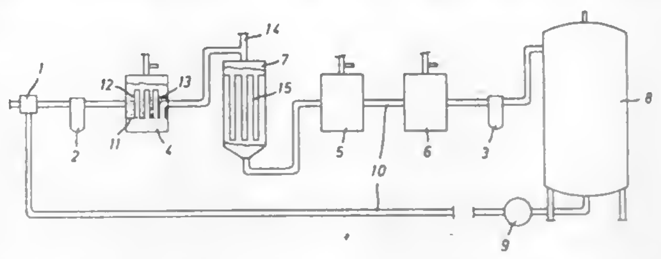
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734490

Int. Cl.^{3} C09K *3/30;* **B01F** *3/20;* **B01J** *13/00*

U.S. Cl. 252—305 **11 Claims**

1. A process for producing a propellant having as the predominant component at least one liquified hydrocarbon of the group consisting of propane, butane and isobutane and 2 to 20 weight % of at least one chlorohydrocarbon of the group consisting of dichloromethane and 1,1,1-trichloroethane comprising passing hydrocarbon liquified under pressure having an industrial degree of purity first through a coarse filter to separate oily impurities and then passing the purified hydrocarbon through a fine filter to remove odor causing impurities while simultaneously feeding into the hydrocarbon the chlorohydrocarbon and mixing them together, subsequently trickling the mixture, filtering it and collecting it.

8. An apparatus for carrying out the process of claim 1 comprising in order in the direction of flow (1) feeding means, (2) coarse filtering means, (3) fine filtering means, (4) gas sterilization filtering means, (5) a pair of additional fine filtering means, (6) a pressure container, (7) pumping means on the outlet side of said pressure container and a pressure line connecting (1), (2), (3), (4), (5), (6) and (7), means for supplying chlorohydrocarbon to each of said fine filtering means at the tops thereof and means for supplying inert gas to the gas sterilization filtering means.



4,354,956

THICKENING AQUEOUS SYSTEMS WITH ALPHA-OLEFIN OXIDE-MODIFIED LIQUID POLYETHER THICKENERS

Ronald L. Camp, Riverview, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 86,837, Oct. 22, 1979, Pat. No. 4,288,639. This application Jul. 21, 1980, Ser. No. 170,498

Int. Cl.^{3} B01J *13/00;* **C09K** *5/00*

U.S. Cl. 252—316 **12 Claims**

1. The process of thickening aqueous systems comprising the addition of an effective thickening amount of a liquid polyether thickener having a molecular weight of about 1000 to about 25,000 to said aqueous systems, said polyether consisting of at least one of

(A) polyethers prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one monohydric alcohol active hydrogen compound initiator containing no more than one active hydrogen and about 12 to about 18 aliphatic carbon atoms to prepare a heteric or block copolymer and further reacting said copolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether each having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener, and

(B) polyethers prepared by reacting ethylene oxide with at least one monohydric alcohol active hydrogen compound initiator to prepare a homopolymer and further reacting said homopolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether wherein said initiator is an aliphatic or alkylaromatic compound which contains no more than one active hydrogen, has a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether has a carbon chain length of about 12 to about 18 aliphatic carbon atoms, and is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener.

10. A composition comprising water and a polyether thickener having a molecular weight of about 1000 to about 25,000 wherein said polyether is selected from the group consisting of at least one of

(A) polyethers prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one monohydric alcohol active hydrogen compound initiator containing no more than one active hydrogen and about 12 to about 18 aliphatic carbon atoms to prepare a heteric or block copolymer and further reacting said copolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether each having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener, and

(B) polyethers prepared by reacting ethylene oxide with at least one monohydric alcohol active hydrogen compound initiator to prepare a homopolymer and further reacting said homopolymer with at least one alpha-olefin oxide or aliphatic glycidyl ether wherein said initiator is an aliphatic or alkylaromatic compound which contains no more than one active hydrogen, has a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide or aliphatic glycidyl ether has a carbon chain length of about 12 to about 18 aliphatic carbon atoms, and is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener.

4,354,957

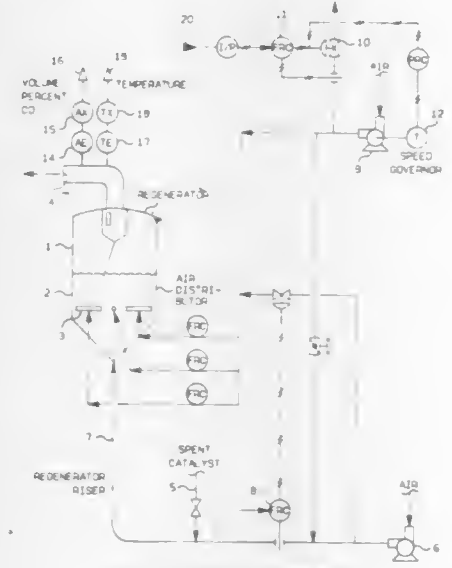
REGENERATOR TEMPERATURE CONTROL

Harold J. Swindell, Kansas City, and Randall G. Thompson, Odessa, both of Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 3, 1980, Ser. No. 193,870

Int. Cl.³ B01J *29/38, 21/20;* **C10G** *11/18;* **C06G** *7/58*

U.S. Cl. 252—419 **9 Claims**



FLUID CAT CRACKING UNIT REGENERATOR TEMPERATURE CONTROL SYSTEM

1. A regenerator control process wherein the flow of the free oxygen containing gas into a regeneration zone is controlled responsive to the temperature in the dilute phase of the regeneration zone, said process comprising

(a) determining the amount of combustibles on the cracking catalyst particles in the regeneration zone and generating a combustibles signal responsive thereto.

(b) automatically comparing said combustibles signal and a combustibles set point to generate a switch signal,

(c) manipulating the flow of said free oxygen containing gas into said regeneration zone under a first regeneration control mode when said switch signal represents an amount of combustibles at or above said combustibles set point and manipulating the flow of said free oxygen containing gas into said regeneration zone under a second regeneration control mode when said switch signal represents an amount of combustibles below said combustibles set point,

said first regeneration control mode being characterized by

(aa) generating a temperature signal representative of the temperature in the dilute phase of the generator

(bb) automatically comparing said temperature signal with a temperature set point,

(cc) reducing the flow of free oxygen containing gas into the regeneration zone when said temperature signal represents a temperature in excess of the temperature set point,

(dd) increasing the flow of free oxygen containing gas into the regeneration zone when said temperature signal represents a temperature in the dilute phase below said temperature set point,

said second regeneration control mode being characterized by

(aa) generating a temperature signal representative of the dilute phase temperature,

(bb) automatically comparing said temperature signal with a temperature set point signal, and

(cc) reducing the flow of free oxygen containing gas into the regeneration zone when said temperature signal represents a temperature below said temperature set point.

2. Process in accordance with claim 1 wherein said combustibles signal and said dilute phase temperature signal are automatically converted in a computer to one control signal used to manipulate the flow of free oxygen containing gas into the regenerator.

3. Process in accordance with claim 1 wherein said combustibles signal is generated by measuring the carbon monoxide content in the flue gas in the dilute phase and wherein said first control mode is utilized when the carbon monoxide is equal to or above a given set point and wherein the second control mode is used when the carbon monoxide content is below a set point.

4,354,958

FIBRILLATED MATRIX ACTIVE LAYER FOR AN ELECTRODE

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,578

Int. Cl.³ C25B *11/06, 11/02*

U.S. Cl. 252—425.3 **5 Claims**

1. A method of preparation of matrix active layer for an electrode comprising intimately mixing carbon black particles having a particle size of from about 50 to about 3000 Angstroms and having a surface area of from about 25 to about 300 square meters per gram, with an aqueous dispersion of fibrillatable polytetrafluoroethylene particles; said mixture containing from 65 to about 75 percent carbon black particles and 25 to 35 percent polytetrafluoroethylene by weight; drying said mixture at temperatures in the range from about 250° to 325° C. from 10 to about 90 minutes; combining the thus dried PTFE/-carbon black particulate component with deashed active carbon catalyst particles to form an intimate mix said catalyst particles amounting from between 40 to 80 weight percent of the entire mix; fibrillating said intimate mix and forming said fibrillated mixture into an active layer containing active carbon particles present within a network of carbon black and fibrillated polytetrafluoroethylene.

4,354,959

CATALYST FOR POLYMERIZING OLEFINS

Ronald A. Epstein, and Robert I. Mink, both of Yonkers, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 3, 1981, Ser. No. 289,446

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **44 Claims**

1. A catalytic system for polymerizing olefins comprising:

(a) a component containing an organoaluminum compound, and

(b) a component containing a titanium halide obtained by:

(i) copulverizing a magnesium compound containing halogen compound or manganese compound containing halogen with at least one electron-donor compound to produce a copulverized product,

(ii) treating the copulverized product with an ether to produce a treated product, and

(iii) reacting the treated product with a titanium halide compound.

4,354,960

PROCESS FOR THE PRODUCTION OF BORON-CONTAINING NICKEL-ALUMINUM OXIDE CATALYSTS

Hans Hammer, An Adamshäuschen 3, and Heinz Jacobi, Jacobstr. 184, both of 5100 Aachen, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,825

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907943

Int. Cl.³ B01J *21/02*

U.S. Cl. 252—432 **9 Claims**

1. A process for the production of boron-containing nickel-aluminum oxide catalysts, comprising the steps of reacting solutions containing nickel and aluminum, with aqueous sodium borohydride and forming a precipitate while cooling to about 0° C., and maintaining a pH value of about 7 to 10, and drying and compressing the resultant precipitate into catalyst shapes.

4,354,961

METHOD OF PREPARING A CATALYST FOR SYNTHESIZING UNSATURATED ESTERS

Setsuo Kamiyama, Kawagoe; Kouji Shiozawa, Hatoyama; Eiichiro Nishikawa, and Katsumi Kaneko, both of Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,166

Claims priority, application Japan, Jan. 24, 1980, 55-6331

Int. Cl.³ B01J *27/02, 21/18, 29/16, 29/00*

U.S. Cl. 252—439 **4 Claims**

1. A method of preparing a catalyst for synthesizing unsaturated esters, comprising:

supporting on activated carbon a compound of palladium applied in the form of a solution in an organic solvent containing a mineral acid; then

supporting on said carrier at least one element selected from the group of tellurium and tin or a compound thereof, applied in the form of a solution in an organic solvent; and

treating the catalyst so prepared to reduce its metal components.

4,354,962

METHOD FOR PREPARING A HYDROCARBON CONVERSION CATALYST

Georges Szabo, Le Havre, France, assignor to Compagnie Francaise de Raffinage, Paris, France

Continuation of Ser. No. 45,623, Jun. 5, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,378

Claims priority, application France, Jun. 5, 1978, 78 16755

Int. Cl.³ B01J *21/04, 21/06, 23/62, 27/08*

U.S. Cl. 252—442 **12 Claims**

1. In a method for the preparation of a hydrocarbon conversion catalyst comprising zirconium deposited on a refractory oxide mineral carrier comprised of alumina, the improvement in said method comprising impregnating said carrier with a solution of at least one complex zirconium ion, the latter having been formed by means of at least one organic acid selected from the group consisting of oxalic acid and/or its salt, the impregnating zirconium solution having a ratio of concentration of oxalic acid ions to the concentration of zirconium-containing ions of at least fifteen, the zirconium ion concentration of the solution being between M/10 and M/100, then drying the zirconium-impregnated solid between 100° and 300° C. and thereafter calcining said solid at between 400° and 700° C.

4,354,963

CONVERSION OF SYNTHESIS GAS WITH IRON-CONTAINING CATALYST

Stephen A. Butter; Arthur W. Chester, both of Cherry Hill, N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 120,243, Feb. 11, 1980, Pat. No. 4,298,695, and a continuation-in-part of Ser. No. 970,300, Sep. 18, 1978, abandoned. This application Apr. 24, 1981, Ser. No. 257,301

Int. Cl.³ B01J *29/30*

U.S. Cl. 252—455 Z **13 Claims**

1. A catalyst composition prepared by forming a homogenous mixture of either metallic iron powder or iron oxide powder having a particle size no greater than about 200 microns, a hydrogel matrix and an acidic crystalline aluminosilicate zeolite having a silica-to-alumina ratio of at least 12, a pore size greater than about 5 Angstrom units, and a constraint index of about 1 to 12, drying said mixture and treating it with carbon monoxide or synthesis gas mixtures containing carbon monoxide at elevated temperatures.

4,354,964

CERMET MATERIALS

Peter Hing, Birstall, and Ronald Kay, East Goscote, both of England, assignors to Thorn Emi Limited, London, England

Filed Nov. 10, 1980, Ser. No. 205,094

Claims priority, application United Kingdom, Nov. 12, 1979, 7939090

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **12 Claims**

1. An electrically conducting cermet comprising a sintered compact of granules of refractory oxide selected from the group consisting of aluminum oxide, yttrium oxide and a spinel, said granules having diameters of from 50 to 800 microns, said granules being dispersed within a conductive network extending throughout the cermet, wherein said conductive network is constituted by a layer of particles surrounding said granules, said particles being of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, iron, cobalt and nickel, and being of a particle size of from 0.1 to 12 microns, said layer constituting a volume fraction of from 0.04 to 0.2 of the total cermet, wherein there is dispersed, within the refractory oxide granules, (a) particles of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten, iron, cobalt and nickel, of a particle size of from 0.1 to 15 microns and in a volume fraction of from 0.01 to 0.15 of the total volume of the granules, and (b) from 0.01 to 0.25 percent by weight of the refractory oxide of finely divided magnesium oxide.

4,354,965

POLYETHERAMIDEIMIDE RESINS AND ELECTRICAL CONDUCTORS INSULATED THEREWITH

Yue-Guey L. Lee, and Otto S. Zamek, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 138,198, Apr. 7, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 246,039

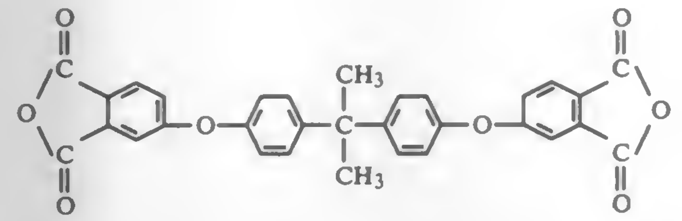
Int. Cl.³ C08G *18/00*

U.S. Cl. 524—104 **30 Claims**

1. A high molecular weight polyetheramideimide resin prepared by subjecting

(A) a combination of anhydrides comprising:

(i) from 1 to 99 parts by weight of a dianhydride of the formula



or a mixture thereof with at least one other dianhydride of an organic tetracarboxylic acid, and

(ii) from 99 to 1 parts by weight of a tribasic acid anhydride, and

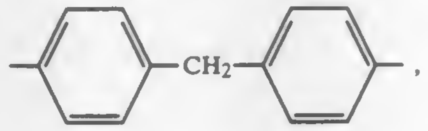
(B) 0.99 to 1.01 moles, per mole of the anhydride, of a difunctional organic nitrogen compound of the formula

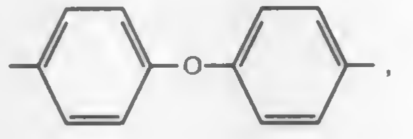
(i) O=C=N—R—N=C=O,

(ii) $H_2N—R—NH_2$, or

(iii) a mixture of (i) and (ii), wherein

R is divalent alkylene of 2 to 20 carbon atoms,





or a mixture thereof, to polycondensation at a temperature of about 60° to 200° C. in the presence of an inert solvent.

4,354,966
PEPTIDES, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Yoshihiko Kitaura, Sakurai; Osamu Nakaguchi, Toyonaka; Keiji Hemmi; Matsuhiko Aratani, both of Suita; Hidekazu Takeno, Tenri; Satoshi Okada, Takatsuki; Hirokazu Tanaka, and Masashi Hashimoto, both of Takarazuka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

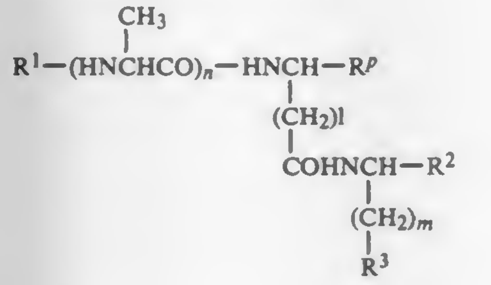
Filed Oct. 3, 1980, Ser. No. 193,453

Claims priority, application United Kingdom, Oct. 11, 1979, 7935401; Oct. 15, 1979, 7935730; Oct. 17, 1979, 7936000; Mar. 28, 1980, 8010459

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **9 Claims**

1. A compound of the formula or its pharmaceutically acceptable salt:



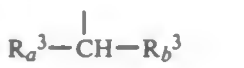
$$\begin{array}{l} \qquad\quad CH_3 \\ \qquad\quad | \\ R^1-(HNCHCO)_n-HNCH-R^p \\ \qquad\qquad\qquad\qquad | \\ \qquad\qquad\qquad\quad (CH_2)l \\ \qquad\qquad\qquad\qquad | \\ \qquad\qquad\qquad\quad COHNCH-R^2 \\ \qquad\qquad\qquad\qquad\qquad | \\ \qquad\qquad\qquad\qquad\quad (CH_2)_m \\ \qquad\qquad\qquad\qquad\qquad | \\ \qquad\qquad\qquad\qquad\qquad R^3 \end{array}$$

wherein

R^1 is hydrogen or acyl;

R_2 is carboxy or protected carboxy or a group of the formula: $—COHN—R_a^2$ wherein R_a^2 is carboxy(lower-)alkyl or protected carboxy(lower)alkyl;

R^3 is carboxy, protected carboxy, lower alkyl, hydroxyphenyl, carbamoyl or a group of the formula:



$$\begin{array}{c} | \\ R_a^3-CH-R_b^3 \end{array}$$

wherein R_a^3 is hydrogen, amino, protected amino or acylamino, R_b^3 is carboxy or protected carboxy;

R^p is carboxy, protected carboxy, carbamoyl, carboxy(lower)alkyl or protected carboxy(lower)alkyl;

l is an integer 2,

m is an integer 0 to 2 and

n is an integer 1,

provided that,

when R^p is carbamoyl, then R^1 is acyl.

4,354,967
ANTIGENIC LINEAR PEPTIDE COMPOUND

Erwin Goldberg, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Jun. 26, 1981, Ser. No. 277,623

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **2 Claims**

1. The antigenic linear peptide compound having the formula: N-Ser-Leu-Asn-Pro-Ala-Ile-Gly-Thr-Asp-Lys-C wherein N-Ser is N-terminal serine and Lys-C is C-terminal lysine, and Leu, Asn, Pro, Ala, Ile, Thr, and Asp are the L-Amino acid forms, respectively of leucine, asparagine, proline, alanine, isoleucine, threonine, and aspartic acid. and Gly is glycine.

4,354,968
AZO REACTIVE DYESTUFFS HAVING AN ARYL-TRIAZINYL-ARYL DIAZO COMPONENT

Erich Krämer; Horst Nickel, both of Leverkusen, and Karl-Heinz Schündehütte, Opladen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

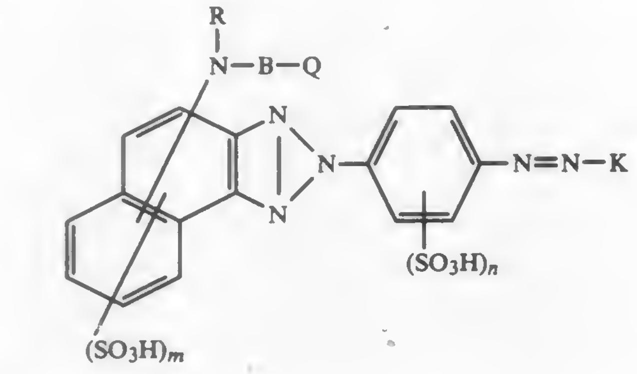
Continuation of Ser. No. 827,374, Aug. 24, 1977, abandoned, which is a continuation of Ser. No. 335,247, Feb. 23, 1973, abandoned. This application Mar. 26, 1979, Ser. No. 23,750

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1972, 2208972

Int. Cl.³ C09B *45/00, 45/24, 29/22*

U.S. Cl. 260—146 T **2 Claims**

1. Metal-free or metalized azo dyestuff which in the form of the free acid has the formula



wherein

K is the radical of a coupling component of the acetoacetic acid arylide, pyrazolone or pyrimidone series;

Q is fiber-reactive radical of the pyrimidine, triazine or quinoxaline series;

B is a direct bond, —CO— or $—SO_2—$;

R is H or C_1–C_4-alkyl;

m is 0, 1 or 2; and

n is 0, 1 or 2.

4,354,969
DYE MIXTURES

Georg Henning; Bertold Honigmann, both of Ludwigshafen, and Gunther Lamm, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

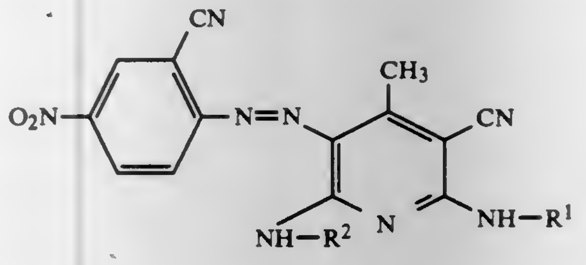
Filed Jun. 30, 1980, Ser. No. 163,946

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929848

Int. Cl.³ C07C *107/00;* **C09B** *29/36*

U.S. Cl. 260—156 **3 Claims**

1. A dye mixture which contains dyes of the formula I



where R^1 and R^2 have the following meanings:

Dye	R^1	R^2
1	C_2H_4OH	$(CH_2)_3OC_2H_4OC_6H_5$
2	$(CH_2)_3OC_2H_4OC_6H_5$	C_2H_4OH
3	$(CH_2)_3O(CH_2)_4OH$	H
4	H	$(CH_2)_3O(CH_2)_4OH$.

4,354,970
INDOLINE COUPLED ISOTHIAZOLE AZO DYES

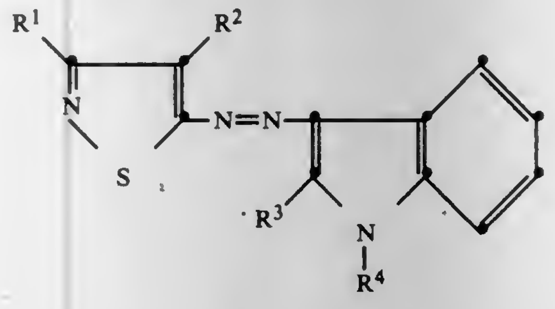
Jean C. Fleischer; Gary T. Clark, and Max A. Weaver, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,209

Int. Cl.³ C07C *107/00;* **C09B** *29/039, 29/36*

U.S. Cl. 260—158 **2 Claims**

1. A compound having the formula:



wherein R^1 and R^2 are each selected from cyano, formyl, lower alkoxycarbonyl, lower alkylsulfonyl, thiocyanato, carbamoyl, lower alkylcarbamoyl, and lower alkanoyl, and one of R^1 and R^2 is also selected from lower alkyl; and R^3 and R^4 are each selected from hydrogen, lower alkyl, benzyl and phenyl.

4,354,971
NON-EXTRACTIVE PENICILLIN V RECOVERY PROCESS

John M. Edmundowicz, Carmel, and Ernest E. Allanson, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1981, Ser. No. 276,446

Int. Cl.³ C07D *499/18, 499/20, 499/16;* **C07C** *51/50*

U.S. Cl. 260—239.1 **14 Claims**

1. A method for recovering penicillin V acid from penicillin V-containing fermentation broth which comprises:

a. adjusting said broth of a pH of between about 4.0 and about 4.3 while maintaining the temperature of the broth in the range from about 15° to about 30° C.;

b. separating the acidified liqid phase from insolubles; and

c. acidifying the liquid phase to a pH of between about 2.0 and about 2.5.

4,354,972
SYNTHESIS OF STEROIDS

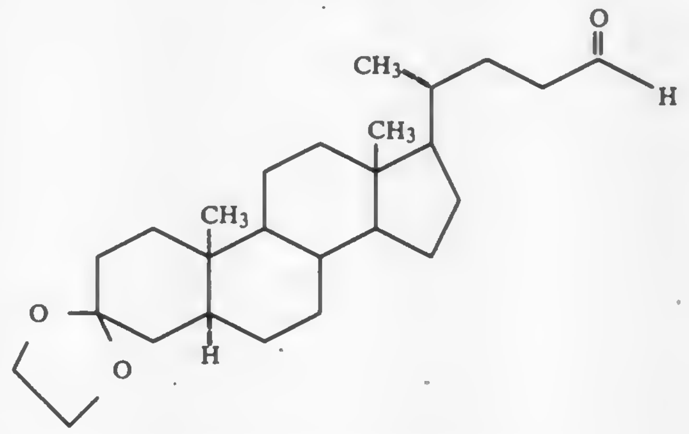
Emil T. Kaiser, 5634 S. Woodlawn Ave., Chicago, Ill. 60637

Continuation-in-part of Ser. No. 236,160, Feb. 20, 1981, abandoned, and Ser. No. 278,838, Jun. 29, 1981. This application Aug. 10, 1981, Ser. No. 291,435

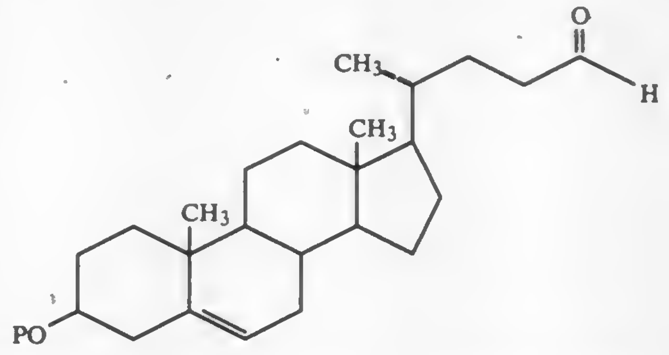
Int. Cl.³ C07J *71/00*

U.S. Cl. 260—239.55 R **24 Claims**

6. A steroid 24-aldehyde having the structure:



7. A steroid 24-aldehyde having the structure:



in which P is 2-tetrahydropyranyl, t-butyloxycarbonyl, trimethylsilyl, or dimethyl-t-butylsilyl.

4,354,973
PYRROLO[3,4-d][2]BENZAZEPINES

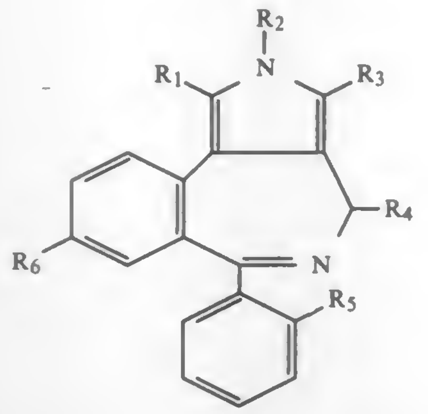
Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 175,555, Aug. 5, 1980. This application Jul. 23, 1981, Ser. No. 286,124

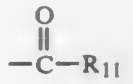
Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.7 **11 Claims**

1. A compound of the formula

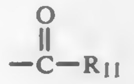


wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl or alkynyl, hydroxymethyl, the group



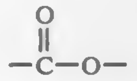
$$-\overset{\overset{\displaystyle O}{\|}}{C}-R_{11}$$

wherein R_{11} is hydrogen, hydroxy, alkoxy, amino and mono- or di-lower alkylamino; and R_3 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl or alkynyl, hydroxymethyl, the group



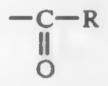
$$-\overset{\overset{\displaystyle O}{\|}}{C}-R_{11}$$

wherein R_{11} is hydrogen, hydroxy, trihalomethyl, alkoxy, amino and mono- or di-lower alkylamino; R_2 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl or alkynyl, the group



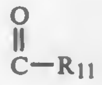
$$-\overset{\overset{\displaystyle O}{\|}}{C}-O-$$

lower alkyl, a radical of the formula —C_1 to C_6 lower alkyl —COR_{21} wherein R_{21} is hydroxy, lower alkoxy, amino or mono- or di-lower alkyl substituted amino, hydroxy C_2 to C_7 alkyl and amino or mono- or di-lower alkyl amino C_2 to C_7 alkyl; R_4 is selected from the group consisting of hydrogen, acyloxy



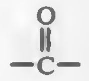
$$-\underset{\underset{\displaystyle O}{\|}}{C}-R$$

wherein R is C_1 to C_6 alkyl, halo alkyl, phenyl or hydrogen, straight chain lower alkoxy and hydroxy; R_5 is halogen or hydrogen; R_6 is halogen with the proviso that if one of R_1 or R_3 is hydroxymethyl or the group



$$\overset{\overset{\displaystyle O}{\|}}{C}-R_{11}$$

wherein R_{11} is as above then the remaining substituent is selected from the group consisting of hydrogen, lower alkyl and C_3 to C_7 alkenyl or alkynyl, and R_2 is hydrogen and the further proviso that (A) when R_4 is acyloxy then R_1 and R_3 are hydrogen, lower alkyl, C_3 to C_7 alkenyl or C_3 to C_7 alkynyl, and R_2 is the group



$$-\overset{\overset{\displaystyle O}{\|}}{C}-$$

lower alkoxy, (B) when R_4 is hydroxy then R_1 and R_3 are hydrogen, lower alkyl, C_3 to C_7 alkenyl or C_3 to C_7 alkynyl, and R_2 is hydrogen or (C) when R_4 is alkoxy then R_1 and R_3 are hydrogen, lower alkyl, C_3 to C_7 alkenyl or C_3 to C_7 alkynyl,

and the pharmaceutically acceptable salts thereof.

4,354,974

CLAVUDIENES

Irene Stirling, Worcester Park, England, assignor to Beecham Group Limited, England

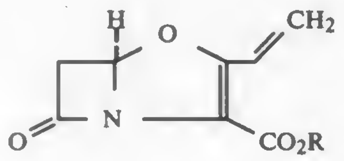
Filed Dec. 6, 1976, Ser. No. 747,640

Claims priority, application United Kingdom, Dec. 16, 1975, 51516/75

Int. Cl.^{3} C07D *498/04;* A61K *31/42*

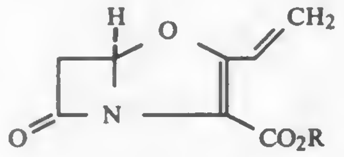
U.S. Cl. 260—245.3 **17 Claims**

1. A compound of the formula:



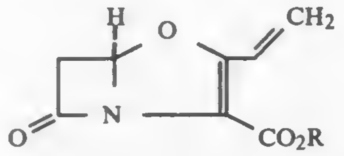
wherein R is unsubstituted alkyl, alkenyl or alkynyl of not more than 16 carbon atoms.

4. A compound of the formula:



wherein R is alkyl containing a total of not more than 16 carbon atoms substituted by up to 3 halo atoms, or mono-substituted by alkoxy of up to 6 carbon atoms, hydroxy, alkylamino of up to 6 carbon atoms or dialkylamino of up to 6 carbon atoms in each alkyl group.

8. A compound of the formula:



wherein R is benzhydryl, phenylethyl, naphthylmethyl, 6-methoxynaphth-2-ylmethyl, benzyl, p-nitrobenzyl, p-chlorobenzyl, p-methoxybenzyl, p-bromobenzyl or m-chlorobenzyl.

4,354,975

PROCESSES FOR MAKING PHOSPHORUS DERIVATIVES OF AMINOTHIOMETHYLCARBAMATES

Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

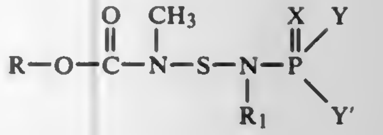
Continuation of Ser. No. 43,277, Jun. 1, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,342

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.^{3} C07D *307/88;* C07F *9/24*

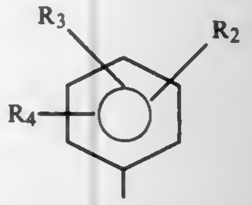
U.S. Cl. 549—220 **51 Claims**

1. A process for preparing a compound having the formula



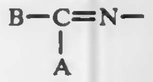
I

wherein R is selected from the group consisting of:



a.

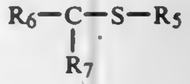
wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and $N{=}CHN(CH_3)_2$;



$$B-\underset{\underset{\displaystyle A}{|}}{C}=N-$$

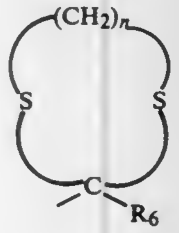
b.

wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, cyano, alkoxy having one to five carbon atoms, inclusive, phenyl, and hydrogen, with the proviso that when A is hydrogen, B is of the formula:

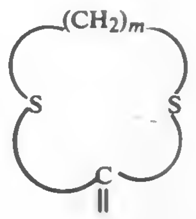


$$R_6-\underset{\underset{\displaystyle R_7}{|}}{C}-S-R_5$$

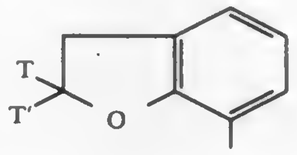
wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5, and taking R_5 and R_8 together with the atoms to which they are attached form a dithio heterocyclic of the formula:



wherein n is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one or two methyl groups; A and B taken together with the carbon atoms to which they are attached form a dithio heterocyclic of the formula:



wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups; and



c.

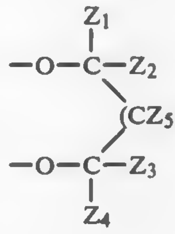
wherein T and T′ can be the same or different and are selected from the group consisting of hydrogen and lower alkyl of from one to six carbons; R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cyclo- alkyl; X is oxygen or sulfur; Y and Y′ are the same or different and are selected from the group consisting of:

Y_1 and Y'_1 I_1

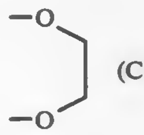
and

Y and Y′

taken together to form a functionality selected from the group consisting of:

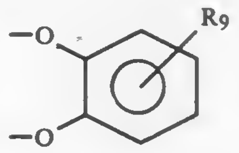


I′



I″

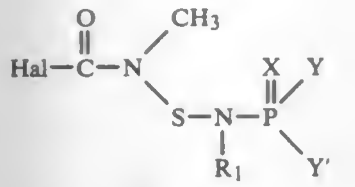
and



I‴

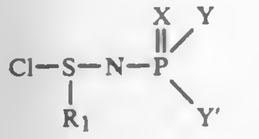
wherein Y_1 and Y'_1 are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy, Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1, p is three or four and R_9 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and halogen; which comprises

step (1) preparing an intermediate having the formula



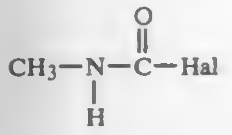
II

in a process wherein a compound having the formula



III

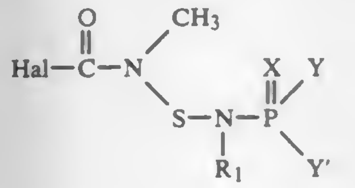
is reacted with a compound having the formula



$$CH_3-\underset{\underset{H}{|}}{N}-\overset{\overset{O}{\|}}{C}-Hal$$

and,

step (2) contacting the intermediate



wherein R_1, X, Y and Y' are as defined above, and Hal is fluorine or chlorine;

with a compound having the formula ROH wherein R is the same as above.

4,354,976
PROCESS FOR THE PREPARATION OF AZIDOBENZAL COMPOUNDS

Michael Römer, Rodgau, Fed. Rep. of Germany, assignor to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

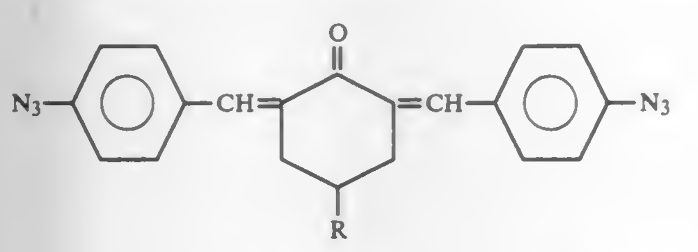
Filed Dec. 19, 1980, Ser. No. 218,250

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951101

Int. Cl.^{3} C07C *117/00*

U.S. Cl. 260—349 3 Claims

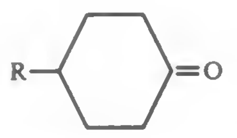
1. A process for preparing a 2,6-bis-((4-azidophenyl)-methylene)-cyclohexanone of the formula



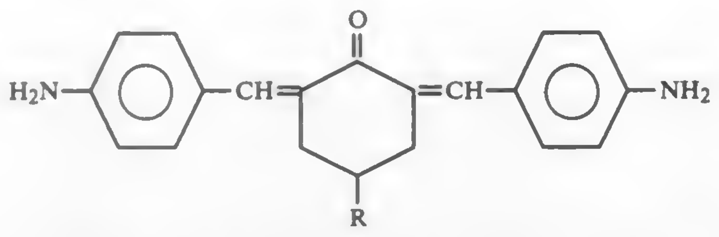
wherein R is hydrogen or alkyl of 1-6 C atoms, comprising

(a) freshly preparing 4-aminobenzaldehyde by reacting 4-nitrotoluene with sodium sulfide and sulfur in aqueous-alcoholic sodium hydroxide solution and removing unreacted 4-nitrotoluene, whereby there is produced 4-aminobenzaldehyde substantially uncontaminated by products of self-condensation;

(b) directly after step (a), condensing the residual 4-aminobenzaldehyde, without purification, with a cyclohexanone of the formula



wherein R is as defined above, in the presence of an alkaline condensing agent, whereby there is prepared a 2,6-bis-((4-aminophenyl)-methylene)-cyclohexanone of the formula



wherein R is as defined above, which is substantially uncontaminated by products derived from the self condensation of 4-aminobenzaldehyde; and

(c) diazotizing the 2,6-bis-((4-aminophenyl)-methylene)-cyclohexanone product and reacting the diazotization product with an alkali metal azide.

4,354,977
PHOSPHONOTHIOATE IMMUNOGENS

Ronald M. Hoskinson, Normanhurst; Ronald I. Cox, Beecroft, and Michael S. F. Wong, North Epping, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

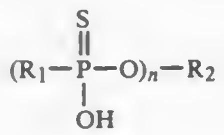
Filed Mar. 11, 1980, Ser. No. 129,450

Claims priority, application Australia, Mar. 15, 1979, PD8046

Int. Cl.^{3} C07J *1/00*

U.S. Cl. 260—397.4 14 Claims

1. A lower alkyl phosphonothioate of a steroid alcohol or phenolic steroid, having the formula



$$(R_1-\overset{\overset{S}{\|}}{\underset{\underset{OH}{|}}{P}}-O)_n-R_2$$

wherein R_1 is lower alkyl; R_2 is a steroid residue, each phosphonothioyloxy group being joined to a carbon atom of the steroid nucleus other than one of the carbon atoms forming a ring junction, or to a side chain carbon atom; and n is an integer from 1 to 4.

4,354,978
PROCESS FOR PREPARING ALPHA-METHYL MONOBASIC ACID AND ESTERS THEREOF

Orville D. Frampton, Wyoming, and William D. Baugh, Cincinnati, both of Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,954

Int. Cl.^{3} C11C *3/02, 1/00*

U.S. Cl. 260—410.9 R 13 Claims

1. A process for preparing alpha-methyl monoalkanoic acid of from 4 to 9 carbon atoms, and/or the monoester thereof, wherein said branched acid and/or ester predominates over any unbranched acid and/or ester which may also be produced, which comprises reacting an alpha- monoolefin of from 3 to 8 carbon atoms, carbon monoxide and water and/or monoalkanol in the presence of a catalytically effective amount of a heterogeneous catalyst composition comprising (i) a zero-valent Group VIII metal or metal alloy in which the Group VIII metal is the major component by weight thereof, (ii) an aryl ligand selected from the group consisting of arylarsine, arylstibine and arylbismuthine and (iii) a Lewis acid and/or hydrochloric acid to provide a liquid reaction product containing said monoalkanoic acid and/or monoester thereof.

4,354,979
PREPARATION OF ALIPHATIC ISOCYANATES

Volker Schwendemann, Wiesenbach, and Dietrich Mangold, Neckargemuend, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 307,725

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040692

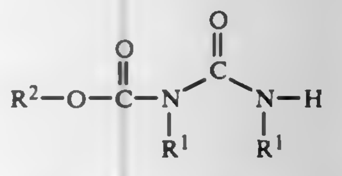
Int. Cl.^{3} C07C *118/00*

U.S. Cl. 260—453 P 5 Claims

1. A process for the preparation of an aliphatic isocyanate of the formula

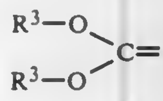
R^1-NCO I

where R^1 is an aliphatic radical, by thermal cleavage, wherein an N,N'-disubstituted allophanic acid ester of the formula



II

where the R^1 may be identical or different and have the above meanings and R^2 is an aromatic radical derived from an unsubstituted or substituted phenol which is distillable at below 250° C. is thermally cleaved at from 150° to 400° C. in the presence of a diester of carbonic acid, of the formula



III

where the R^3's may be identical or different and each is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, or the R^3's together are an unsubstituted or substituted alkylene or phenylene radical.

4,354,980
PROCESS FOR PRODUCING ALKYL XANTHOGEN ALKYLFORMATES

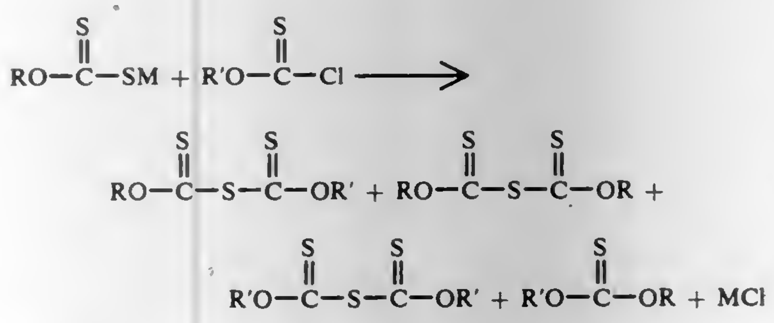
Ronald D. G. Crozier, 4 Daisy La., Ridgefield, Conn. 06877

Filed Jun. 4, 1981, Ser. No. 270,363

Int. Cl.^{3} C07C *154/02*

U.S. Cl. 260—455 B 8 Claims

1. In a process for producing alkyl xanthogen alkyl formates by reaction of an alkaline alkyl xanthate and an alkyl chloroformate according to the generalized reaction:



$$RO-\overset{\overset{S}{\|}}{C}-SM + R'O-\overset{\overset{S}{\|}}{C}-Cl \longrightarrow$$
$$RO-\overset{\overset{S}{\|}}{C}-S-\overset{\overset{S}{\|}}{C}-OR' + RO-\overset{\overset{S}{\|}}{C}-S-\overset{\overset{S}{\|}}{C}-OR +$$
$$R'O-\overset{\overset{S}{\|}}{C}-S-\overset{\overset{S}{\|}}{C}-OR' + R'O-\overset{\overset{S}{\|}}{C}-OR + MCl$$

where R and R' are selected from the group consisting of linear, branched and substituted alkyl groups with one to six carbon atoms and M is an alkali metal, the improvement comprising:

adding soluble calcium salt to an aqueous xanthate solution to provide 2-5% Ca^{++} by weight as $CaCl_2$ compared to xanthate;

adding to said xanthate solution said chloroformate in proportion of 1 mole chloroformate to 1-2 moles xanthate; and

maintaining the reaction temperature in the range of 35° to 60° C., depending on the size of the xanthate alkyl group;

whereby the amount of dialkyl xanthic anhydride produced as a by-product may be controlled within the range of 13-60%.

4,354,981
METHOD FOR SYNTHESIZING DINITRILES, PRODUCTS OBTAINED THEREBY AND THEIR DERIVATIVES

Aldo Prevedello, San Donato Milanese; Maurizio Brunelli, Milan, and Edoardo Platone, Asti, all of Italy, assignors to Anic, S.p.A., Milan, Italy

Division of Ser. No. 113,093, Jan. 17, 1980, Pat. No. 4,279,834, which is a continuation of Ser. No. 899,797, Apr. 27, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,086

Claims priority, application Italy, Apr. 26, 1977, 22806 A/77; Feb. 24, 1978, 20560 A/78

Int. Cl.^{3} C07C *121/30, 121/20, 121/46*

U.S. Cl. 260—465.8 R 1 Claim

1. 2,3,7-trimethyl-3-cyanomethyl-6-octenenitrile.

4,354,982
PRODUCTION OF ORGANOLITHIUM COMPOUNDS AND LITHIUM HYDRIDE

Borislav Bogdanovic, Mulheim an der Ruhr, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle m.b.H., Mulheim an der Ruhr, Fed. Rep. of Germany

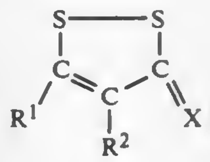
Filed Mar. 4, 1980, Ser. No. 127,011

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908928

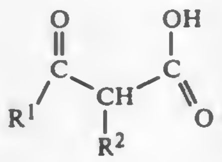
Int. Cl.^{3} C07F *1/02*

U.S. Cl. 260—665 R 19 Claims

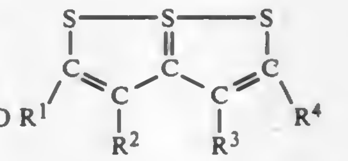
1. A process for the preparation of organolithium compounds and lithium hydride comprising reacting lithium with an α-olefin or an α, w-diolefin in the presence of a catalyst formed by contacting hetero-compounds of the general formula



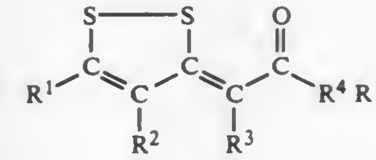
III



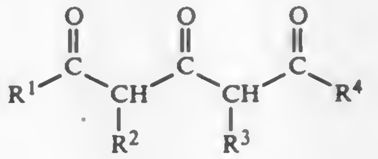
IV



V



VI



VII

in which X is sulfur or oxygen;

R^1, R^2, R^3 and R^4 represent hydrogen, alkyl of up to 20 carbon atoms, cycloalkyl, aralkyl or aryl groups and/or two or more of such groups are closed into an aliphatic or aromatic ring system; or a polycyclic aromatic selected from the group consisting of anthracene, naphthalene, biphenyl with halides of transition metals from group I_b, II_b, IV_b-VII_b and VIII of the periodic system.

4,354,983

PROCESS FOR THE PURIFICATION OF O,O-DIALKYLTHIONOPHOSPHORIC ACID CHLORIDES

Hilmar Roszinski, Kendenich near Cologne, and Heinz Harnisch, Lövenich near Cologne, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Hurth Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 862,924, Oct. 1, 1969, abandoned. This application Feb. 4, 1976, Ser. No. 655,076

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1968, 1801432

Int. Cl.³ C07F *9/20*

U.S. Cl. 260—990 1 Claim

1. A process for the purification of a dialkylphosphorochloridothionate which comprises:

(a) providing a mixture containing said phosphorochloridothionate and difficult to separate impurities containing sulfur, chlorine and phosphorus associated with the preparation of a dialkylphosphorochloroidothionate by the reaction of a chlorinating agent and a dialkylphosphorodithoic acid, selected from the group consisting of dimethyl and diethyl;

(b) admixing and reacting with said mixture for a period of at least one minute at a temperature between about 0° C. and 75° C. a sufficient amount of said dialkylphosphorodithionic acid to react with at least one of the impurities therein to form more of the phosphorochloridothionate; and

(c) separating and removing the phosphorochloridothionate in a substantially pure state from the impurities in the mixture.

4,354,984

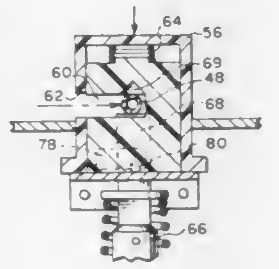
LIQUID LEVEL CONTROLLER FOR A HUMIDIFIER

Gerry D. Richardson, and Joseph A. Cairo, both of Marietta, Ga., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 3, 1981, Ser. No. 289,558

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—66 15 Claims



1. A tube clamp assembly which comprises:

an inner housing defining a first transverse slot for receiving tubing to be clamped;

a hollow outer housing surrounding said inner housing and manually movable relative to said inner housing between first and second positions, said outer housing defining a second transverse slot positioned in registry with the first slot in the first position, and spring means to bias said outer housing into the second position;

clamp means positioned to releasably clamp tubing in said first slot; and

means causing said clamp to so release said tubing from clamping relation when said outer housing is in the first position and to actuate said clamping relation when the outer housing is in the second position.

9. In a humidifier for oxygen gas and the like to be administered to a patient for respiratory therapy, a liquid level sensing device for detecting a liquid level in a canister having an optical probe therein, said sensing device comprising a bracket carried by a frame, said brakcet carrying a light source and a light sensing member for determining liquid level in the canister in conjunction with said probe, and a tube clamp for controlling the flow of replacement liquid to the canister mounted in the humidifier, the improvement comprising, in combination:

said bracket defining first and second parallel arms having free ends, hinge means between the parallel arms and frame to permit rotation of said bracket into and out of probe-engaging relation, whereby the canister may be removed and replaced while the bracket is out of probe-engaging relation, the first arm of said bracket being more flexible than the second arm, and snap-fit means adjacent said first arm positioned to mate with corresponding snap-fit means on the frame, to releasably retain said bracket in a position out of probe-engaging relation;

said tube clamp assembly comprising an inner housing defining a first transverse slot for receiving tubing to be clamped;

a hollow outer housing surrounding the inner housing and manually movable relative to said inner housing between said first and second positions, said outer housing defining a second transverse slot positioned in registry with the first slot in the first position, and spring means to bias said outer housing into the second position;

clamp means positioned to releasably clamp tubing in said first slot; and

means causing said clamp means to so release said tubing from clamping relation when said outer housing is in the first position and to actuate said clamping relation when the outer housing is in the second position.

4,354,985

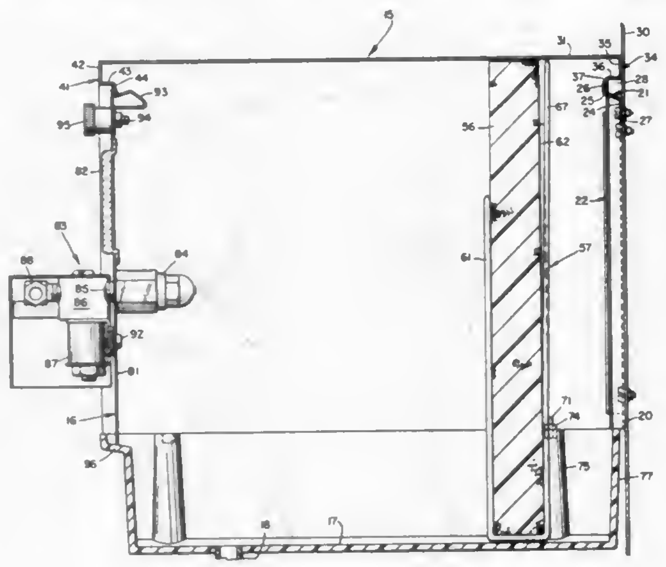
WATER WASH HUMIDIFIER ASSEMBLY

Thomas Johnson, Williamstown, W. Va., assignor to Skuttle Mfg. Co., Marietta, Ohio

Filed Mar. 20, 1981, Ser. No. 246,093

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—100 5 Claims



1. In a humidifier assembly comprising a humidifier housing having an open bottom, a rear wall opening adapted to be aligned with an opening in ducting containing air to be humidified and a front wall opening over which is mounted an openable door; a water collection pan removably mounted on the housing to close said bottom of said housing, a retaining frame removably mounted in socket means on said pan, said frame being a unitary wire frame forming an open top channel structure, an essentially flat block of substantially uniform thickness synthetic plastic material mounted in said frame and extending from said pan upwardly into said housing adjacent said rear wall opening and extending at least across the area of said opening, said frame having portions engagable with the opposite sides of said pad to support said pad against collapse or distortion, a spray nozzle having a remotely controlled valve mounted on said door and arranged to spray water onto said pad, and means in the wall of said housing for admitting air under pressure into the space between said nozzle and said pad to pass through said pad and discharge through said rear wall opening of the housing.

4,354,986

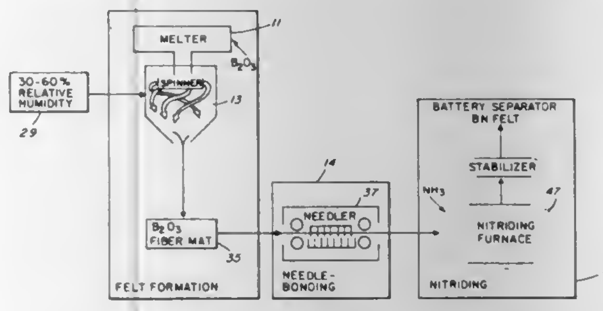
PROCESS FOR MANUFACTURING BORON NITRIDE FIBER MATS USING A NEEDLER

Jacob W. Maczuga, Amherst, N.Y., and Daniel C. Wilhelm, Waltham, Mass., assignors to Kennecott Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 134,904, Mar. 28, 1980, abandoned. This application Jun. 4, 1980, Ser. No. 156,332

Int. Cl.³ B29C *6/00*

U.S. Cl. 264—8 12 Claims



1. A process for producing a non-woven, mechanically intertwined boron nitride fiber mat, comprising the steps of:

centrifugally spinning molten boron oxide into strands;

attenuating said strands with a gas stream into fibers;

compacting said fibers into a mat;

passing said mat through a needler to reorient and intertwine the fibers; and

heating said mat in an anhydrous ammonia atmosphere at a sufficient temperature and for a sufficient time to convert boron oxide in the fibers into boron nitride.

4,354,987

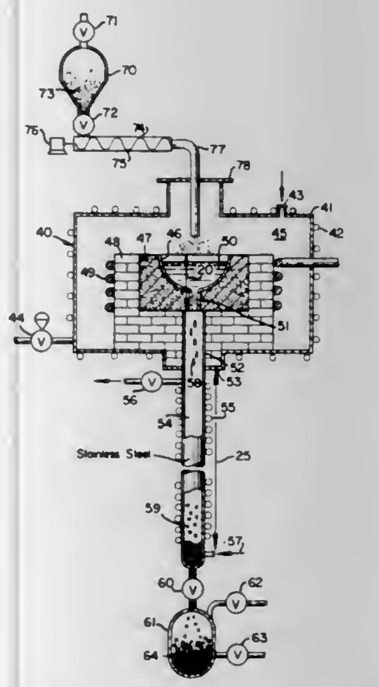
CONSOLIDATION OF HIGH PURITY SILICON POWDER

Sridhar K. Iya, Williamsville, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1981, Ser. No. 249,443

Int. Cl.³ B01J *2/04*

U.S. Cl. 264—13 6 Claims



1. Method for obtaining high purity silicon in shotted form by consolidating a powder formed of fine size particles of high purity silicon formed by the pyrolysis of high purity silane, said method comprising:

(i) introducing a flow of powder formed of said particles into a heated zone which is at a temperature sufficient to melt the particles,

(ii) collecting the particles in a crucible which is positioned in the heated zone and which is essentially inert to melted silicon particles so as to establish a pool of molten silicon in said crucible, into which pool additional particles are added and melted,

(iii) providing an aperture in said crucible below the surface of the pool of molten silicon,

(iv) establishing a pressure differential between the upper surface of said pool of molten silicon and said aperture sufficient to cause molten silicon to exit said aperture in a relatively steady jet which breaks up into a train of discrete molten droplets, having a diameter about two times that of said aperture,

(v) causing said discrete molten droplets to pass through a cooling zone containing a cooling gas which is essentially non-reactive with said molten droplets and which is at a temperature sufficient to solidify at least the outer peripheral portion of said droplets to provide silicon in shotted form having a purity essentially the same as that of said powder.

4,354,988

PROCESS FOR MAKING VIDEO DISCS

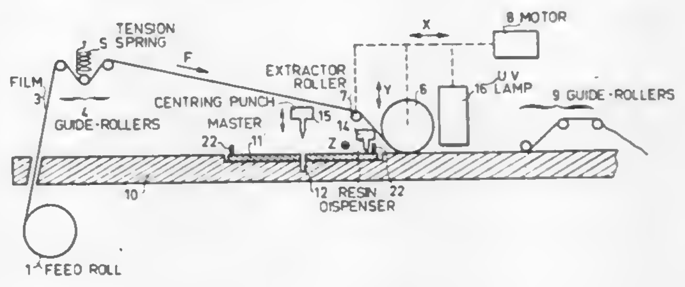
Claude Bricot, and Gerard Robin, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Mar. 4, 1980, Ser. No. 127,116

Claims priority, application France, Mar. 6, 1979, 79 05733

Int. Cl.³ H05B *1/00;* **B29D** *17/00*

U.S. Cl. 264—22 10 Claims



1. A process for making at least a single faced video disc having an engraved zone carrying information in the form of surface micro-reliefs from at least one master utilizing a pressure roller and a flexible film of transparent substrate which comprises:

positioning said film above said master;

depositing a fillet of resin on said at least one master outside said engraved zone and below said film;

advancing said roller in a direction perpendicular to said fillet of resin so as to contact said film with said fillet or resin to drive said fillet of resin in front of said roller and said film and to uniformly spred said fillet of resin between said at least one master and said film so as to form a layer of said resin on said film;

retracting said roller from said engraved zone;

removing said combined film and layer of resin from said at least one master; and

curing said layer of resin so as to form said disc.

4,354,989

EXTRUSION OF INSULATING PLASTIC

Shirley Beach, North Vancouver, Canada, assignor to Phillips Cables Limited, Brockville, Canada

Filed Apr. 2, 1981, Ser. No. 250,166

Claims priority, application Canada, Jun. 17, 1980, 354140

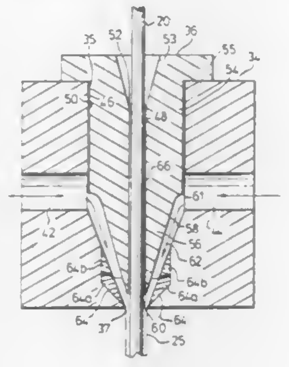
Int. Cl.³ B29D *27/00;* **B29F** *3/10*

U.S. Cl. 264—40.6 28 Claims

1. A method of extruding an insulating plastic covering around an advancing core which comprises:

guiding an advancing core through an extrusion die,

forcing a stream of molten insulating material to said die, transversely of said advancing core,
dividing said stream into a pair of streams, flowing in opposite directions, along paths spaced circumferentially from the advancing core,
directing said streams radially inwardly towards each other,
deflecting said radially inwardly directed streams directly along a fixed annular path, to form a tubular stream flowing in the direction of the advancing core and spaced around the advancing core, said tubular stream flowing towards said advancing core and decreasing in cross-section in the direction of flow as it approaches said advancing core,
contacting said advancing core and the flowing tubular stream to form a continuous coating of said molten material on said advancing core, and
cooling said molten material to form a solidified covering of insulating plastic on said core.



14. A die assembly for the extrusion of molten insulating plastic around an advancing core, including:
an extrusion die comprising a cylindrical body having a centrally disposed die bore therethrough defining an inlet and an outlet opposed to said inlet for an advancing core,
circumferential channel means spaced around said bore in an outer surface of said body, for flow of molten plastic,
a pair of radially inwardly directed passages communicating said channel means with said bore, and
a core guide having a continuous bore therethrough for an advancing core, adapted to be removably seated in a fixed position in the die bore,
said core guide including a deflecting surface which defines with said die bore an annular space, said deflecting surface being adapted to deflect molten plastic delivered through said passages along said annular space towards said die bore outlet, said annular space decreasing in cross-section towards said outlet.

4,354,990
PROCESS FOR SINTERING SILICON NITRIDE COMPACTS

Pier C. Martinengo; Angelo Giachello; Giuseppe Tommasini, all of Turin, Italy, and Paul Popper, Newcastle, England, assignors to Fiat Societa per Azioni, Turin, Italy

Continuation of Ser. No. 970,592, Dec. 18, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 180,725

Claims priority, application Italy, Dec. 23, 1977, 69899 A/77; Dec. 23, 1977, 69900 A/77; Dec. 5, 1978, 69777 A/78

Int. Cl.^{3} C04B *35/58*

U.S. Cl. 264—65 **32 Claims**

1. A process for increasing the density of a reaction bonded silicon nitride article, which comprises the step of sintering the reaction bonded silicon nitride article of a density of at least 2.2 g/cm^3 in an atmosphere consisting essentially of nitrogen at substantially atmospheric pressure at a temperature of 1600° to 2000° C., while the article is embedded in a protective powder comprising silicon nitride, boron nitride, or a mixture of silicon nitride and boron nitride, and one or more sintering additives for silicon nitride, said sintering additives being present in the protective powder in an amount of from 3 to 20% by weight, wherein said sintering additives are selected from the group consisting of MgO, Y_2O_3, Mg_3N_2, CeO_2 and mixtures thereof with Fe.

4,354,991
DENSE SINTERED SILICON CARBIDE CERAMIC

Keiichiro Suzuki; Takuro Ono, and Nobuhiro Shinohara, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 283,238

Claims priority, application Japan, Jul. 17, 1980, 55-96828; Aug. 29, 1980, 55-118460

Int. Cl.^{3} C04B *35/56*

U.S. Cl. 264—65 **21 Claims**

1. A process for producing a dense sintered silicon carbide ceramic having high strength and a flexural strength of at least 25 kg/mm^2 at room temperature at 1400° C. which comprises: molding a mixture of an oxygen-containing aluminum compound which can be converted into aluminum oxide by heating in a non-oxidative atmosphere at a ratio of 0.5 to 35 wt.% as Al_2O_3 with the remaining ceramic material substantially being silicon carbide; and pressureless sintering said mixture in a non-oxidative atmosphere at 1900° to 2300° C.

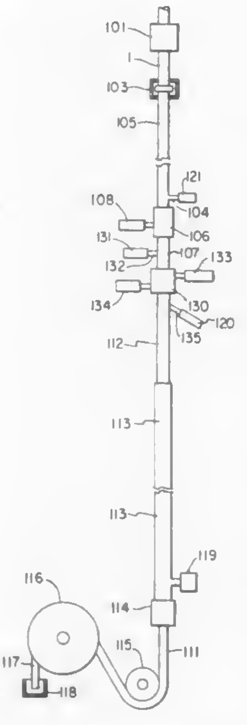
4,354,992
ELECTROCHEMICAL TREE RESISTANT POWER CABLE

George Bahder, Edison, N.J., assignor to Cable Technology Labs., Inc., New Brunswick, N.J.

Continuation-in-part of Ser. No. 147,212, May 6, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 235,090

Int. Cl.^{3} B29D *9/04*

U.S. Cl. 264—85 **21 Claims**



1. A method for fabricating an electrochemical tree resistant high voltage electrical cable in a fluid-tight environment, said method comprising the steps of:
successively extruding under pressure an insulation structure comprising a conductor shield layer, an insulation layer and an insulation shield layer over a continuously advancing stranded cable conductor by passing said conductor through a first extrusion head and a second extrusion head, each of said heads including at least one die for extruding one of said layers over said conductor, wherein said heads and said dies apply external pressure inwardly against the layers;
applying internal pressure through said conductor outwardly against the insulation structure;
applying reduced external pressure inwardly against the insulation structure such that the extruded conductor exiting each of said heads and dies has a diameter greater than the inner diameter of the previous extrusion die, and wherein said external pressure and said reduced external pressure is always higher than said internal pressure;
curing the conductor shield layer, the insulation layer and the insulation shield layer by applying a heated pressurized curing medium to the outer surface of the insulation shield layer, and
gradiently cooling the insulated cable to approximately room temperature with a pressurized cooling fluid while maintaining the internal pressure throughout said curing and cooling steps at a level lower than the external pressure applied during curing and cooling.

4,354,993
METHOD OF MANUFACTURING A MAGNET BODY

Franciscus X. N. M. Kools, and Sytse Strijbos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 609,014, Aug. 29, 1975, abandoned. This application May 27, 1977, Ser. No. 801,029

Claims priority, application Netherlands, Sep. 17, 1974, 7412288

Int. Cl.^{3} C04B *35/26*

U.S. Cl. 264—86 **2 Claims**

1. In a method of manufacturing a sintered permanent magnetisable body essentially consisting of a ferrite of formula $MeO.6Fe_2O_3$, wherein Me is at least one of the metals barium, strontium and lead, wherein a suspension of the powdered ferrite in an aqueous liquid is formed, the suspension being compressed while removing the liquid to form a compact product and the compact product thereafter being sintered into a coherent body, the improvement wherein an acid is added to the suspension to dissolve small particles and thereby reduce the time required to compress the suspension into a compact body.

4,354,994
SPINNING PROCESS FOR ANTIMONY OXIDE/HALOGENATED AROMATIC POLYESTER COMPOSITION

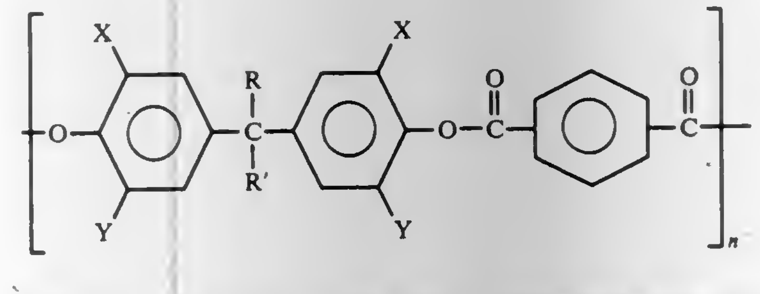
Albert G. Williams, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,203

Int. Cl.^{3} D01D *1/10*

U.S. Cl. 264—169 **9 Claims**

1. An improved process for dry spinning into fiber a composition consisting essentially of a halogenated aromatic polyester having recurring units of the structural formula:



wherein X, which may be the same or different, may be chlorine or bromine, Y, which may be the same or different, may be hydrogen, chlorine, or bromine, R and R′ may be the same or different and represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and n equals at least 10, and an oxide of antimony, said process comprising spinning said composition through a spinneret having one or more holes which have a diameter of from about 60 to about 200 microns.

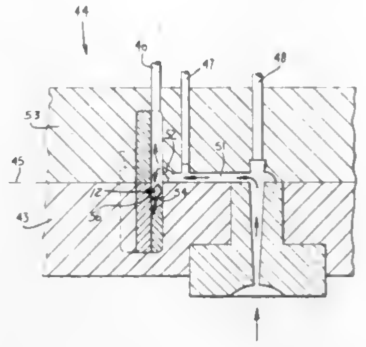
4,354,995
METHOD FOR MAKING A CONNECTOR CONDUCTOR CUTTER

Charles A. Wiechard, Tucker, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,628

Int. Cl.^{3} B29D *3/00;* **B29F** *1/00*

U.S. Cl. 264—250 **5 Claims**



1. A method of making a tool having a cutting blade, said method comprising the steps of:
supporting a blade member, having a cutting edge, in a cavity of a first mold to position the blade member with the cutting edge and adjacent portions of the blade member extending from the cavity and into a recess of the first mold;
injection molding a hardenable polymeric plastic material about portions of the blade member within the cavity and hardening the plastic material to form a polymeric plastic framework having two generally opposed edges with the cutting edge and the adjacent portions of the blade member extending from the framework;
disposing the blade member and the framework in one portion of a cavity of a second mold with the two edges of the framework and the cutting edge of the blade member contacting internal surfaces of the second mold; and
injecting additional hardenable polymeric plastic material into the cavity of the second mold to cause the framework and the cutting edge to be seated in relatively firm engagement with the contacting surfaces of the second mold and to encapsulate the framework with the additional plastic material, and hardening the additional plastic material to form a tool having a cutting blade precisely positioned in a polymeric plastic housing with the cutting edge projecting a predetermined distance from the housing.

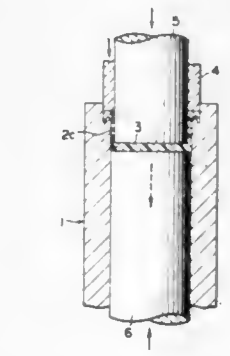
4,354,996
METHOD FOR MAKING A PLASTIC CONTAINER

Seiichi Nishiyama, Kawasaki, and Muneki Yamada, Ebina, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jan. 9, 1981, Ser. No. 223,794

Int. Cl.^{3} B29C *3/00*

U.S. Cl. 264—322 **11 Claims**



1. A method for making a molecularly oriented plastic con-

tainer with a flange portion, a side wall portion and a bottom wall portion, a ratio of the height of said side wall portion to the diameter thereof being about 2 to 3, comprising:

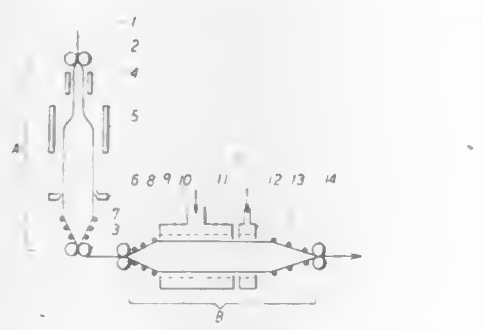
a. preparing a blank of molecularly orientable plastic resin;
b. preparing a die having a first cavity, the inside diameter and height of which are not smaller than the inside diameter and thickness of said blank, respectively, and a second cavity having an inside diameter substantially equal to the outside diameter of said side wall portion and a height larger than the height of said side wall portion, said second cavity merging through a shoulder portion with said first cavity;
c. preparing a hollow pad adapted to compress a portion of said blank on said shoulder portion to form said flange portion, a first plunger having an outside diameter substantially equal to the inside diameter of said side wall portion and adapted to slide through said hollow pad into said second cavity, and a second plunger having an outside diameter substantially equal to the inside diameter of said second cavity and slidable in said second cavity in confrontation with said first plunger;
d. placing a portion of said blank, which is to be formed into said flange portion, on said shoulder portion; and
e. maintaining said blank at a molecularly orientable temperature while compressing said blank between said first and second plungers and between said pad and said shoulder portion, said first and second plungers being simultaneously introduced into said second cavity for a distance about 2 to 3 times as large as the inside diameter of said second cavity;
f. so that the thickness of said portion which is to be formed into said flange portion is reduced to the thickness of said flange portion of said plastic container, the thickness of said portion of said blank which has been placed on said second cavity is reduced to the thickness of said bottom wall portion, and said side wall portion is formed with the molecularly oriented resin extruded out of between said first and second plungers, in the gap between said first plunger and said second cavity.

4,354,997

HEAT SHRINKABLE FILM AND PROCESS FOR PREPARING THE SAME

Tomoji Mizutani; Hitoshi Fukushima, and Yoshihiro Sakamoto, all of Yatsushiro, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,185
Claims priority, application Japan, Aug. 20, 1979, 54/105067
Int. Cl.^{3} B29D *7/24*
U.S. Cl. 264—560 6 Claims



1. A process for preparing a heat shrinkable ethylene polymer film which comprises the steps of

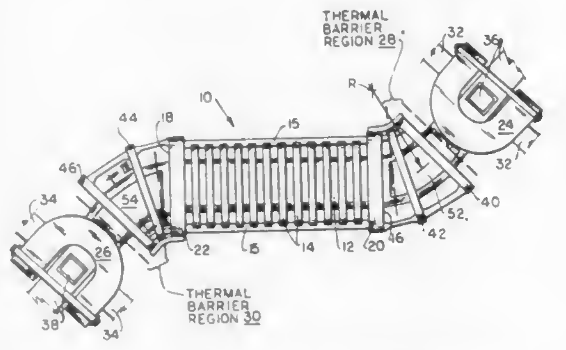
(1) introducing a non-stretched tubular film of an ethylene polymer having a density of 0.91 to 0.93 g./cm.^{3} at 25° C. into a tubular biaxial stretching apparatus, a film obtained by melt-extruding said ethylene polymer and cooling the extrudate to solidify without stretching it showing a tensile strength at 300% elongation of not less than 15 kg./cm.^{2} at a temperature of 15° C. below the melting point of said ethylene polymer,
(2) biaxially stretching said non-stretched tubular film to give a biaxially oriented film by means of an internal gas pressure at a temperature within the orientable temperature range under the following conditions:
  (a) the surface temperature of the film at a starting point of expansion being within the range of 15° to 25° C. below the melting point of said polymer,
  (b) the film in a stretching zone extending from the starting point to a finishing point of expansion having a temperature gradient such that the surface temperature of the film at a position of $\frac{1}{4}$ to $\frac{1}{3}$ the length of the stretching zone from the starting point is maximum, and the difference between the maximum surface temperature and the surface temperature of the film at the starting point being not more than 5° C.,
  (c) the temperature drop of the film from the maximum temperature position to the finishing point being within the range of 15° to 20° C., and
  (d) the film being cooled while traveling from the finishing point to a distance of 1.0 to 1.5 times the vertical distance of the stretching zone so that the surface temperature of the film drops by 30° to 40° C., and
(3) recovering the resulting biaxially oriented film.

4,354,998

METHOD AND APPARATUS FOR REMOVING IONS TRAPPED IN A THERMAL BARRIER REGION IN A TANDEM MIRROR FUSION REACTOR

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sep. 17, 1979, Ser. No. 76,466
Int. Cl.^{3} G21B *1/00*
U.S. Cl. 376—140 6 Claims



1. In a tandem mirror fusion reactor having an elongated central cell extending substantially straight longitudinally along an axis and surrounded by magnetic confinement means providing magnetic flux extending in a column axially between the two ends of said cell for confining plasma ions to motion in a column substantially axially of said cell between the ends thereof, and an end plug at each end of said cell providing an electrostatic potential that reflects plasma ions substantially axially toward the other end of said cell for containing a high temperature plasma in said central cell, and including a mirror coil positioned about the axis of said cell between said central cell and each of said end plugs for generation thereby of a thermal barrier region between said mirror coil and the adjacent end plug, in which barrier region plasma ions are trapped upon collision with each other, a method for removing ions trapped in said barrier region comprising the steps of:

(a) applying magnetic field by means of at least one turning coil positioned about the axis of said flux column between each said mirror coil and the respective end plug, with said at least one turning coil being not coaxial with said central cell, to deflect lines of flux passing through said mirror coil to bend the axis of the column of flux in the respective said thermal barrier region in a plane, in which region trapped ions moving substantially axially are thereby caused to drift out of the plasma column perpendicularly to the plane of said bending; and

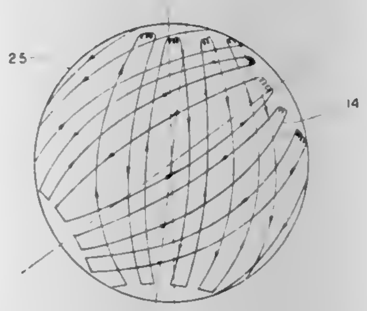
(b) collecting said ions that drift from the plasma column in said thermal barrier region.

4,354,999

PLASMA CONFINEMENT

Robert V. Priest, 337 N. Cassingham Dr., Columbus, Ohio 43209

Continuation of Ser. No. 752,392, Dec. 20, 1976, abandoned.
This application Sep. 24, 1979, Ser. No. 77,996
Int. Cl.^{3} G21B *1/00*
U.S. Cl. 376—142 3 Claims



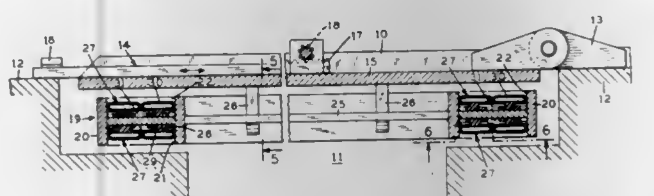
1. An improved plasma confining apparatus of the type having electromagnetic Ioffe bar windings, wherein the improvement comprises a plurality of interconnected Ioffe bar windings each winding being would in a spherical configuration about a plurality of different transverse axes of said spherical configuration, said axes being offset from the center of the spherical configuration, said spherical configuration comprising two adjacent concentric spherical surfaces, each said spherical surface having different finite radii, said Ioffe bar windings lying between said two adjacent concentric spherical surfaces, each said winding being composed of arcuate portions, said Ioffe bar windings forming a closed curve, at least one of said portions extending in said spherical configuration for a distance substantially one half the circumference of said spherical configuration.

4,355,000

LIGHTWEIGHT, REMOVABLE GATE SEAL

Adrian Lumelleau, Bronxville, N.Y., assignor to The Presray Corporation, Pawling, N.Y.

Continuation of Ser. No. 954,978, Oct. 26, 1978, abandoned.
This application May 19, 1980, Ser. No. 151,323
Int. Cl.^{3} G21C *13/00*
U.S. Cl. 376—205 11 Claims



1. In a nuclear fuel reactor well or the like including an access passageway provided with an openable gate structure for closing said access passageway, a removable pneumatic action sealing means associated with said gate structure and operable to form a leak-tight seal between the gate structure and reactor well, which comprises

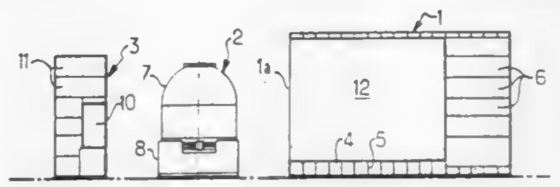
(a) said gate structure being movable between open and closed positions in relation to said access passageway,
(b) a lightweight frame structure independent of the gate structure, removably mounted between said gate structure and said reactor well and defining an elongated support means generally congruent in outline with the outer perimeter of said gate structure when mounted between said gate structure and the access passageway,
(c) inflatable sealing means mounted on said support means and operable to expand between said gate structure when in said closed position and said reactor well to form a leak-tight seal therebetween, and
(d) means whereby the frame structure may be lifted and removed from its mounted position between the gate structure and reactor well.

4,355,001

REACTOR UNIT AND A NUCLEAR INSTALLATION WHICH USES SAID REACTOR UNIT

Robert Pierart, Nantes, France, assignor to Societe Anonyme dite: Ateliers et Chantiers de Bretagne A.C.B., Nantes, France

PCT No. PCT/FR79/00095, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00893, PCT Pub. Date May 1, 1980
PCT Filed Oct. 18, 1979, Ser. No. 224,223
Claims priority, application France, Oct. 20, 1978, 78 29963
Int. Cl.^{3} G21C *23/00*
U.S. Cl. 376—317 3 Claims



1. A modular stationary nuclear boiler including:
a nuclear reactor;
at least one steam generator connected to said reactor;
a metal casing housing said reactor and said generator;
and auxiliary boiler equipment;
the improvement comprising:
  a horizontally movable stand supporting said casing such that said stand and its contents constitutes a horizontally transportable modular reactor unit, and wherein said stand insures the stability of the reactor unit during both operation and transport;
  said modular nuclear boiler further including a horizontally transportable metal structure container unit, said metal structure transportable container unit comprising an internal chamber sized to receive said stand installed metal casing bearing said at least one steam generator and said nuclear reactor and to encompass the same, an opening within a side of said metal structure container unit sized to permit passage of said stand bearing said casing therethrough into said internal chamber;
  a horizontally transportable closing component sized to said opening for closing off said opening with said metal casing borne by said stand within said internal chamber, and wherein at least part of said auxiliary equipment is integrated into walls of said container unit such that:
  the three components formed by the transportable reactor unit casing and stand, said container unit and said closing component may be transported horizontally either together or separately to allow firstly the container unit to be installed, secondly the reactor unit to be inserted therein by horizontal movement through said container unit opening and the opening of the container unit closed off by a further horizontal movement of said closing component.

4,355,002

NUCLEAR FUEL ASSEMBLY

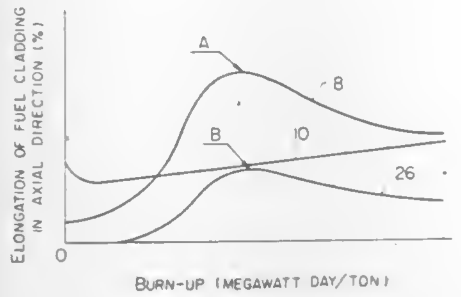
Takanori Hosokawa, Hitachi; Hideo Maki, and Katsutoshi Shinbo, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 626,275, Oct. 28, 1975, abandoned. This application Oct. 13, 1977, Ser. No. 841,738

Claims priority, application Japan, Oct. 28, 1974, 49-123378

Int. Cl.^{3} G21C *3/00*

U.S. Cl. 376—419 **18 Claims**



1. In a nuclear fuel assembly including first nuclear fuel elements containing fissionable material and a non-fissionable burnable poison, and second adjacent nuclear fuel elements containing the same fissionable material as contained in said first nuclear fuel elements but being free of said non-fissionable burnable poison, the improvement comprising the enrichment of said fissionable material in said first nuclear fuel elements at zero megawatt.day/ton burn-up being less than the enrichment of said same fissionable material in said second adjacent nuclear fuel elements at zero megawatt.day/ton burn-up, whereby the danger of damage to said first nuclear fuel elements is reduced.

4,355,003

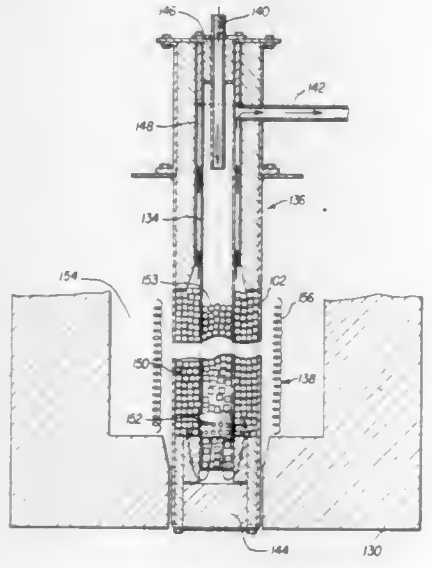
TWO PASS ENDOTHERMIC GENERATOR

Edward W. Grobel, Libertyville, Ill., assignor to General Signal Corporation, New York, N.Y.

Filed Oct. 7, 1980, Ser. No. 194,895

Int. Cl.^{3} F28D *21/00*

U.S. Cl. 422—206 **12 Claims**



1. An apparatus for carrying out a reaction having an initial exothermic phase and a subsequent endothermic phase, said apparatus comprising:

- a first conduit having a top and bottom, an upper recuperator portion, a lower reactor portion, a reaction product outlet means in said recuperator portion;
- a second conduit within said first conduit, said second conduit being coaxial with said first conduit and having a diameter less than that of said first conduit by an amount sufficient to create an annular space between said conduits, said second conduit extending from adjacent said top of said first conduit through at least a portion of said lower reactor portion, said second conduit having reaction gas inlet means and means in said reactor portion for communicating the interior of said second conduit with said annular space;
- a catalyst bed in at least a portion of said reactor portion; and heating means surrounding only the reactor portion of said first conduit.

4,355,004

BENZIMIDAZOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Barrie C. C. Cantello, Redhill, and Susan M. White, Little Bookham, both of England, assignors to Beecham Group Limited, Great Britain

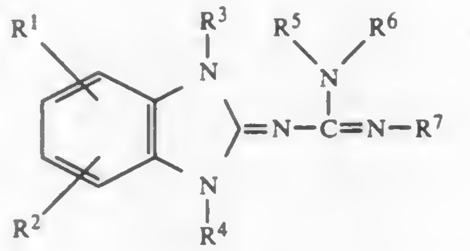
Filed Oct. 23, 1980, Ser. No. 199,733

Claims priority, application United Kingdom, Nov. 10, 1979, 7938997

Int. Cl.^{3} A61K *31/415;* C07D *233/48*

U.S. Cl. 422—246 **10 Claims**

1. A compound selected from the group consisting of a benzimidazoline of formula:



pharmaceutically acceptable acid addition salts thereof and pharmaceutically acceptable quaternary ammonium salts thereof

wherein

- R^1 and R^2 are the same or different and each is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy or halo;
- R^3 and R^4 are the same or different and each is hydrogen or alkyl of 1 to 6 carbon atoms;
- R^5 is hydrogen or alkyl of 1 to 6 carbon atoms;
- R^6 is alkyl of 1 to 6 carbon atoms, phenyl unsubstituted or substituted with up to 3 groups selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, and alkoxy of 1 to 6 carbon atoms; or benzyl unsubstituted or substituted with up to 3 members selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms and alkoxy of 1 to 6 carbon atoms; or
- R^5 and R^6 together with the nitrogen atom to which they are attached are pyrrolidino, piperidino, morpholino, thiamorpholino, or piperazino, unsubstituted or substituted with alkyl of 1 to 6 carbon atoms, carboxy or alkoxy-carbonyl of 1 to 6 carbon atoms; and
- R^7 is phenyl, unsubstituted or substituted with up to 3 members selected from the group consisting of halo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxycarbonyl of 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms, alkanoyloxy of 1 to 6 carbon atoms, nitro, hydroxy, amino and carboxy.

8. A pharmaceutical composition which comprises an anti-hyperglycemic effective amount of a compound according to claim 1 in combination with a pharmaceutical carrier.

4,355,005

PROCESS FOR THE TREATMENT OF A RAW MATERIAL WHICH CONTAINS OXIDE AND FERRITE OF ZINC, COPPER AND CADMIUM

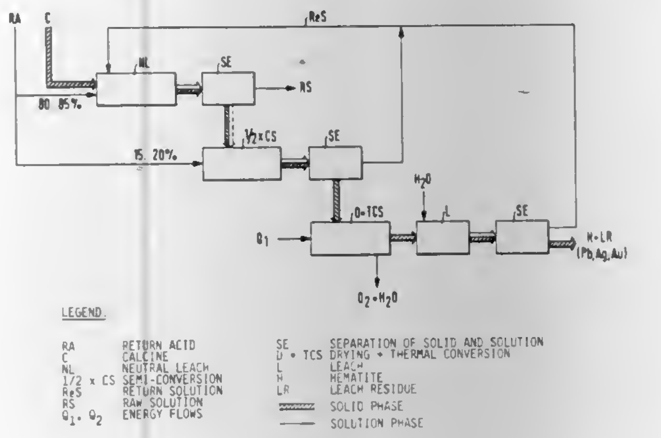
Jussi K. Rastas, Pori; Pekka J. Saikkonen, Espoo, and Risto J. Honkala, Vanha-Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Sep. 29, 1981, Ser. No. 306,706

Claims priority, application Finland, Sep. 30, 1980, 803098

Int. Cl.^{3} C22B *19/00;* C01G *49/06*

U.S. Cl. 423—41 **3 Claims**



1. A process for the treatment of a raw material which contains oxides and ferrites of at least one element selected from the group comprising zinc, copper and cadmium, comprising neutral leaching the raw material with a sulfuric-acid-bearing solution in order to leach the oxides without substantially dissolving of the ferrites; a ferrite-bearing residue is separated; mixing a solution of sulfuric acid or ferrisulfate or both with the residue in order to leach the ferrite and to precipitate the iron as jarosite in the presence of alkali ions or ammonium ions under atmospheric conditions at 80°-105° C., the sulfuric acid or ferrisulfate solution being added to the ferrite-bearing residue in such an amount that approximately 50-60% of the ferrite dissolves and its iron precipitates as jarosite; drying the solid phase and heating it to a temperature high enough to convert the zinc of the solid phase to zinc sulfate and its iron to hematite according to the following reaction:

(8) $3ZnFe_2O_{4(s)}+2A[Fe_3(SO_4)_2(OH)_6]_{(s)}\rightarrow 3ZnSO_{4(s)}+A_2SO_{4(s)}+6Fe_2O_{3(s)}+6H_2O_{(g)}$, (A=Na, K)

and finally slurrying the so treated solid phase in water in order to leach the sulfates and separate them from hematite.

4,355,006

PROCESS FOR THE OXIDATIVE DISSOCIATION OF CHROME-CONTAINING ORES

Jakob Rademachers, Krefeld, and Ingo Pflugmacher, Meerbusch, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,551

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935718

Int. Cl.^{3} C01G *37/14*

U.S. Cl. 423—61 **4 Claims**

1. A process for the oxidative dissociation of chrome-containing ores comprising agglomerating a mixture of a chrome-containing ore, an alkaline substance and a moist dissociated leached material containing about 15 to 25% by weight of water from a preceding dissociation operation as a leaning agent, the moist dissociated leached material being added in such a quantity that the agglomerates obtained have a moisture content of between about 5 and 20% by weight, said moisture being obtained solely from the quantity and moisture content of said dissociated leached material, dissociating the agglomerate and then leaching to form a solution of chromate and a solid residue, and separating said solution from said solid residue still wet with said solution.

4,355,007

TWO STAGE CHLORINATION PROCESS FOR ALUMINUM VALUE CONTAINING SOURCE

Wendell E. Dunn, Jr., Star Rte. 68D, Lead, S. Dak. 57754

Filed Apr. 20, 1981, Ser. No. 255,552

Int. Cl.^{3} C01G *35/00, 33/08;* C01F *7/56;* C01G *49/10*

U.S. Cl. 423—79 **1 Claim**

1. A two stage process for chlorinating aluminum value containing materials which also contain iron, titanium and silica comprising the steps of:

- (A) dehydrating the material at a temperature of between about 500° and about 1300° K.;
- (B) chlorinating the product of step (A) in the presence of chlorine and carbon at a temperature below about 1200° K. and under conditions which provide chlorination of a majority of the iron present in the aluminum value containing material without substantial chlorination of titania values present therein with concommittant formation of an iron chloride cloud above the surface of the chlorination reaction mixture;
- (C) introducing oxygen into the iron chloride cloud under conditions to cause oxidation of a majority of the iron chloride contained in the cloud; and
- (D) chlorinating the non-gaseous product of step (B) in the presence of chlorine and carbon at a temperature above about 1300° K. but below the fusion temperature of silica containing components and under conditions sufficient to chlorinate substantially all the alumina, titania and silica values contained therein.

4,355,008

CHLORINATION PROCESS

Wendell E. Dunn, Jr., Spearfish, S. Dak., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 20, 1981, Ser. No. 255,553

Int. Cl.^{3} C01G *35/00, 33/08;* C01F *7/56;* C01G *49/10*

U.S. Cl. 423—79 **2 Claims**

1. A method for producing alumina from a material containing alumina, titania, silica and iron values via a chlorination step which process comprises the steps of:

- (A) dehydrating the material at a temperature of between about 500° and 1300° K.;
- (B) chlorinating the product of step (A) in the presence of chlorine and carbon at a temperature below about 1200° K. and under conditions which provide chlorination of a majority of the iron present in the material without substantial chlorination of titania values present therein with concommittant formation of an iron chloride cloud above the surface of the chlorination reaction mixture;
- (C) introducing oxygen into the iron chloride cloud under conditions to cause oxidation of a majority of the iron chloride contained in the cloud;
- (D) chlorinating the non-gaseous product of step (B) in the presence of chlorine and carbon at a temperature above about 1300° K. but below the fusion temperature of silica containing components and under conditions sufficient to chlorinate substantially entirely the alumina, titania and silica values contained therein;
- (E) reducing and condensing any iron chloride contained with the aluminum chloride in one or more partial iron chloride condensation stages;
- (F) absorbing the aluminum chloride under high temperature conditions with an alkali chloride or mixture of alkali chlorides to form an ionic alkali metal aluminum chloride complex;
- (G) selectively condensing any impurity chlorides contained in the product of step (F) to produce a purified aluminum chloride-alkali chloride complex;
- (H) hydrolysing the alkali metal/aluminum chloride complex with steam to produce alumina and hydrochloric acid.

4,355,009

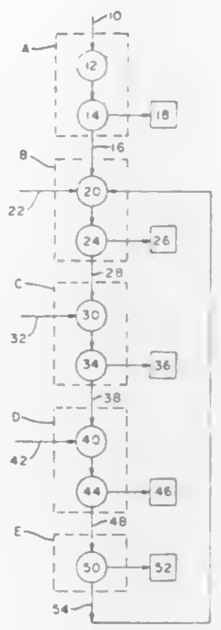
SEPARATIVE TREATMENT OF ZINC-BEARING FLUE DUST

Maxson L. Stewart, Bremen, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 29, 1980, Ser. No. 154,345

Int. Cl.³ C01G *9/06*

U.S. Cl. 423—101 15 Claims



1. A hydrometallurgical process for separative treatment of zinc-bearing metallurgical flue dust, comprising:

(a) providing as a starting material a zinc-bearing flue dust containing significant amounts of lead, chlorine, and iron;

(b) leaching said starting material in sulfuric acid solution of concentration at least about sufficient for substantially complete dissolution of soluble metal oxide constituents; then selectively adjusting the pH of the loaded leach solution to at least a sufficiently acidic condition corresponding to the selected extent of subsequent chloride removal; and separating undissolved residue from the leach solution; then

(c) removing chloride from said leach solution to selected extent corresponding to said selected acidic pH by precipitating cuprous chloride while suppressing formation of cuprous oxide, cuprous ions being provided in at least stoichiometric amount by reduction in deoxidized solution of cupric ions with metallic copper, the ratio of metallic copper to cupric copper being at least about 1; and after sufficient reaction time separating precipitate from the leach solution; then

(d) cementing residual copper from said solution with zinc powder; then

(e) precipitating iron from said solution by the addition of an oxidant and a neutralizer in at least about stoichiometric amounts while maintaining pH of said solution acidic; followed by separating precipitate from said solution; and then

(f) crystallizing zinc sulfate from said solution.

4,355,010

PROCESS FOR REMOVING PHOSPHORUS IN VAPOR FORM AND PHOSPHANES FROM GAS MIXTURES

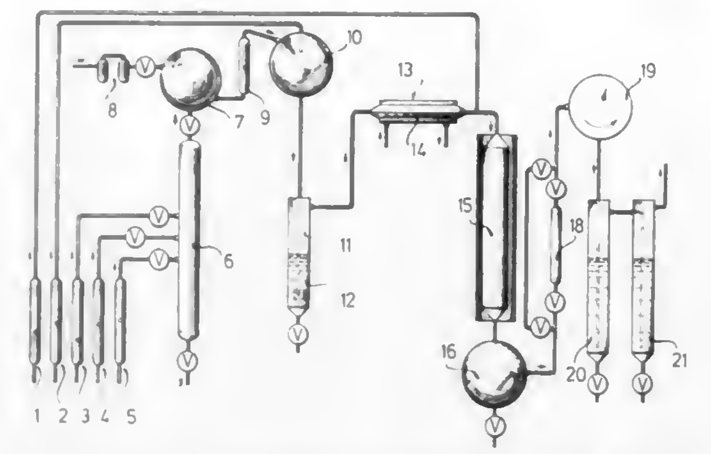
Klaus Jödden; Friedrich-Wilhelm Dorn, both of Hürth; Gero Heymer, Erftstadt, and Hans-Werner Stephan, Cologne, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,761

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944288

Int. Cl.³ B01D *53/34;* C01B *25/12*

U.S. Cl. 423—210 4 Claims



1. In a process for removing phosphorus vapor and one or more phosphines from carbon monoxide-containing off-gas generated in the furnace production of elemental phosphorus by oxidizing, with at least a stoichiometric amount of oxygen or an oxygen-containing gas necessary to achieve conversion of the total phospohorus present to oxidation stage V, for 0.5–20 seconds in a reaction zone heated to 200–700° C, the improvement which comprises:

scrubbing the oxidized off-gas with an aqueous alkaline solution to separate the resulting phosphorus-V compounds from the oxidized off-gas.

4,355,011

SUPPRESSING DECOMPOSITION OF ALKALINE SOLUTIONS OF SALTS OF ANTHRAQUINONEDISULFONIC ACID

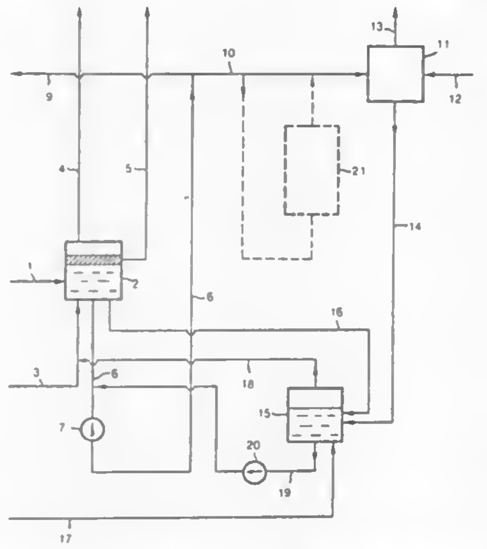
Günter Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,370

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016240

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—224 11 Claims



1. In a process for the suppression of the decomposition of an aqueous alkaline solution of salts of anthraquinonedisulfonic acid, said solution containing alkali sulfates, wherein a main stream of said solution is provided, and a partial stream of the solution is removed from said main stream and is subjected to combustion taking place under reducing conditions to remove said sulfates, and withdrawing a liquid product from the combustior, the improvement which comprises contacting the liquid product withdrawn from the combustion with an oxygen-containing gas to convert alkali sulfides and/or alkali hydrogen sulfides contained therein to alkali thiosulfate, and admixing a sufficient concentration of the alkali thiosulfate formed with said main stream of aqueous alkaline solution of salts so as to suppress decomposition of said salts of anthraquinonedisulfonic acid.

4,355,012

MIXED ANTHRAQUINONEDISULFONIC ACIDS

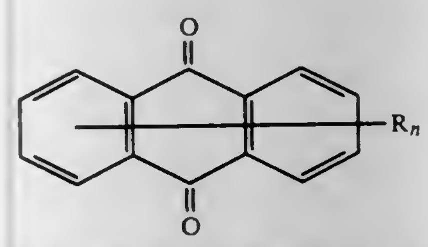
Edgar E. Renfrew, Flemington, and Dominic A. Zanella, Lock Haven, both of Pa., assignors to American Color & Chemical Corporation, Lock Haven, Pa.

Continuation of Ser. No. 919,776, Jun. 28, 1978, abandoned, which is a continuation of Ser. No. 715,636, Aug. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,917, Sep. 12, 1975, abandoned. This application Mar. 14, 1979, Ser. No. 20,326

Int. Cl.³ C07C *143/36, 143/665*

U.S. Cl. 423—226 6 Claims

1. A mixture of disulfoanthraquinonecarboxylic acids suitable for use in the Stretford Process and which is the reaction product of the direct sulfonation of an anthraquinone of the formula:



wherein n is an integer of 1–4 and each R is independently selected from alkyl of 1–4 carbon atoms and chloro, at least one R being alkyl, with the proviso that substitution in a single ring is limited to mono-, di- or trisubstitution and substitution in two rings is limited to mono- or di-substitution in each ring.

4,355,013

PROCESS FOR REMOVING SULPHURIC ACID COMPONENTS FROM FLUE GASES

Horst Bechthold, Erftstadt-Friesheim, and Ulrich Mohn, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Buckau R.Wolf AG, Grevenbroich, Fed. Rep. of Germany

Filed Feb. 7, 1980, Ser. No. 120,074

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905719; Jul. 14, 1979, 2928526

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 11 Claims

1. A process for removing sulphuric polluting components from flue gases exhausted from a boiler installation and thereafter being passed through an air preheating means, dust separating means and therefrom through desulfurization means operating with a washing liquid, comprising the steps of branching the exhausted flue gases upstream of the air preheating means into a first branch conducting a main current, and a second branch conducting a smaller current passing the main current through a first dust separating means into washing means operated with an absorption liquid wherein formation of salts by reaction of neutralizing agents with the sulphuric components of the main current takes place and, simultaneously, passing the smaller current in an additional heat separator and then treating the smaller current in a spray drier operating with a washing liquid in which no reaction occurs and thereafter reuniting the treated smaller current with the main current downstream of said air preheating means and upstream of said washing means.

4,355,014

STABLE CALCIUM HYPOCHLORITE COMPOSITION AND METHOD FOR MANUFACTURE THEREOF

Tsugio Murakami; Kazushige Igawa, and Yoichi Hiraga, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed May 23, 1980, Ser. No. 152,720

Claims priority, application Japan, May 29, 1979, 54-65554; Jul. 17, 1979, 54-89777

Int. Cl.³ C01F *11/24;* C01B *11/06;* C09K *3/00*

U.S. Cl. 423—265 11 Claims

1. A stable calcium hypochlorite composition having a calcium hypochlorite anhydride and/or a calcium hypochlorite dihydrate as main constituent thereof, said composition comprising at least 60 wt % of calcium hypochlorite, at least 5 wt % of calcium hydroxide, at least 4 wt % of water content and 5 wt % or less than that of calcium chloride.

4,355,015

PROCESS FOR THE PRODUCTION OF FINELY DIVIDED OXIDES OF METALS

Emil Heckel, Essen, Fed. Rep. of Germany; Freddy Seys, Brasschaat; Rene Baeckelmans, Willebroek, both of Belgium, and Wolfgang Heilmann, Bremen, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,242

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923064

Int. Cl.³ C01B *33/18*

U.S. Cl. 423—336 9 Claims

1. In a process for the production of a finely divided oxide of a metal or silicon or a mixture of such oxides by the hydrolytic reaction of a volatile chloride of the metal or silicon or a mixture of volatile chlorides of the metal and silicon in a flame wherein said chloride is supplied in admixture with the gases to be burned and air or oxygen to the flame burning out of a burner into a reaction space and brought into reaction with the formation of water and subsequently the aerosol oxide formed together with a residual gas containing chlorine is allowed to pass through a subsequent cooling system and separated off from the residual gas in a separatory apparatus the improvement comprising passing the residual gas containing 300 mg/Nm³ to 1 g/Nm³ of chlorine, into an aqueous solution consisting essentially of water and a reducing agent selected from the group consisting of hydrogen peroxide alkali metal hydrogen sulfite, and alkali metal thiosulfate, wherein the chlorine content in the residual gas leaving the solution is reduced to less than 10 mg/Nm³ and the aqueous solution through which the residual gas has passed contains formed hydrochloric acid.

4,355,016

FEED FORWARD CARBON BLACK REACTOR CONTROL

Galen D. Stacy, and Merle R. Likins, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 9, 1980, Ser. No. 195,710

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—450 6 Claims

1. A process to produce carbon black by decomposition of a hydrocarbon feed heated to carbon black formation temperatures by the heat developed by the combustion of a fuel and a free oxygen-containing gas, said process comprising

a. determining the content of water in the free oxygen-containing gas,

b. generating at least two control signals, each representative of one of at least two process parameters that can be manipulated, with the proviso that these control signals are generated so that the respective manipulation of the corresponding process parameter would counteract the effect any change in said water content would have on a given first carbon black property or first carbon black process property,

c. automatically calculating a value for a further carbon black property or further carbon black process property for each of said at least two process parameters,

d. responsive to the results of the calculation in step c selecting at least one of said at least two control signals for actual control,

e. manipulating the process parameter or parameters responsive to the so selected respective control signal or signals such as to maintain said given first carbon black property or respectively first carbon black process property essentially constant.

4,355,017
ALUMINUM ELECTROLYTIC CELL CATHODE WASTE RECOVERY

Bernard W. Gamson, Potomac, Md., and Howard W. Hayden, Jr., The Dalles, Oreg., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed May 14, 1981, Ser. No. 263,438
Int. Cl.^{3} C01B *7/19*
U.S. Cl. 423—484 **14 Claims**

1. A process for the decomposition of carbon cathode waste material containing cryolite, aluminum fluoride, calcium fluoride, and sodium fluoride which comprises heating the waste material in the presence of water, oxygen, and sulfur dioxide to a temperature at which hydrogen fluoride is generated.

4,355,018
ASSAY FOR VITAMIN B_{12}

Hans J. Hansen, Allendale, N.J., and Gustavo Reynoso, Endwell, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J. and The Ideal Wilson Medical Center, Johnson City, N.Y.

Filed May 21, 1980, Ser. No. 151,796
Int. Cl.^{3} G01N *33/56*
U.S. Cl. 424—1 **8 Claims**

1. In a radioassay for vitamin B_{12} wherein a serum or tissue extract sample is mixed with a known amount of radiolabeled vitamin B_{12} and an intrinsic factor preparation, the intrinsic factor bound radiolabeled vitamin B_{12} is separated from the unbound radiolabeled vitamin B_{12}, the amount of radiolabeled vitamin B_{12} in the bound or unbound form is determined and compared to a standard curve obtained with samples of known, varying amounts of vitamin B_{12} whereby the amount of vitamin B_{12} in the sample can be determined, the improvement comprising using as said intrinsic factor preparation mouse or rat derived intrinsic factor.

4,355,019
HEPATITIS A TESTING AND GROWTH IN TREE SHREW AS ANIMAL MODEL

Peter Lorenz, Frankfurt am Main, and Anita Schwaier, Eschborn, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,490
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935634
Int. Cl.^{3} A61K *39/29, 47/00;* **C12Q** *1/18, 1/22, 1/70;* **G01N** *33/54*
U.S. Cl. 424—9 **16 Claims**

1. Process for the growth and collection of viral hepatitis antigen type A from a tree shrew (*Tupaia belangeri*), which is used as an animal model, comprising:

(a) infecting said tree shrew with viral hepatitis type A;

(b) performing at least one antibody determination at specific intervals over a period of about 150 days after infection of said tree shrew; and

(c) obtaining said viral hepatitis antigen type A from said infected tree shrew.

6. Process for testing the effectiveness of a disinfectant against viral hepatities type A comprising:

(a) admixing a specific quantity of said viral hepatitis type A to form a suspension;

(b) removing said viral hepatitis type A from said suspension;

(c) admixing said viral hepatitis type A from step (b) with a physiological buffer to form a suspension;

(d) vaccinating a tree shrew (*Tupaia belangeri*), which is used as an animal model, with the suspension from step (c); and

(e) performing at least one antibody determination at specific intervals over a period of about 150 days after infection of said tree shrew, whereby said disinfectant is determined to be effective or ineffective against said viral hepatitis type A if said tree shrew, respectively, does not contract viral hepatitis or does contract viral hepatitis.

9. Process for testing the antiviral effectiveness of a chemotherapeutic agent against viral hepatitis type A comprising:

(a) infecting a tree shrew (*Tupaia belangeri*), which is used as an animal model,

(b) administering said chemotherapeutic agent to said infected tree shrew; and

(c) performing at least one antibody determination at specific intervals over a period of about 150 days after infection of said tree shrew,

whereby said chemotherapeutic agent is determined to be ineffective against said viral hepatitis type A if said antibody determination detects HAAg antibody in said tree shrew.

4,355,020
THIXOTROPIC ALUMINUM HYDROXIDE CHLORIDE AND MEDICAL AND OTHER APPLICATIONS THEREOF

Bert Kuy, Holzestrasse 28, Zurich 8042, Switzerland

Continuation-in-part of Ser. No. 957,333, Nov. 3, 1978, abandoned. This application Jul. 15, 1980, Ser. No. 169,479
Claims priority, application United Kingdom, Nov. 12, 1977, 47179/77
Int. Cl.^{3} A61K *9/70, 33/08, 7/38, 31/79*
U.S. Cl. 424—28 **17 Claims**

1. A composition for medical application comprising thixotropic aluminum hydroxide chloride having an aluminum to chlorine ratio in the range of 5:1 to 6:1 which is the chlorination product of pseudoboehmite, and from 1–5 g per 100 g of additional ingredients selected from the group consisting of lanolin, a C_{8-22} fatty acid, a C_{8-20} fatty alcohol, collagen, polyalkylene, disinfectants, fungicides, bacteriostats, bactericides, fungistats, antimycotics, tartaric acid and glycerol.

4,355,021
VIRUCIDAL WIPE AND METHOD

Mearl C. Mahl, Racine; Elliot C. Dick, Madison, and George R. Walter, Jr., Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Oct. 29, 1980, Ser. No. 201,960
Int. Cl.^{3} A61K *9/70;* **A61F** *13/00;* **A61L** *15/03;* **A61K** *33/18*
U.S. Cl. 424—28 **13 Claims**

1. In a method for removal of respiratory viral infection-related nasal secretions of the type including the step of wiping nasal surfaces with a dry, flexible, absorbent wipe material, the improvement comprising:

providing such wipe material having substrate means with impregnant therein which in contact with moisture will release iodine on said substrate means in an amount sufficient to provide virucidal activity, said wipe material being substantially free of moisture before use and said impregnant retaining the iodine from escape from said wipe material before use;

contacting said wipe material with nasal surfaces to remove nasal discharge therefrom, thereby moistening said wipe material to release on said wipe material a virucidally sufficient amount of iodine; and

thereby killing with said iodine viruses on the contacted surfaces,

whereby transmission of respiratory viral infection is interrupted without significantly modifying behavioral patterns of infected persons.

4,355,022
METHOD OF DENTAL TREATMENT

Dietmar P. Rabussay, Gaithersburg, Md., assignor to Interon, Inc., Potomac, Md.

Filed Jul. 1, 1981, Ser. No. 279,536
Int. Cl.^{3} A61K *7/28, 37/48*
U.S. Cl. 424—50 **6 Claims**

1. The method of dental caries and gum treatment and for removing plaque and calculus comprising applying periodically in situ in the oral cavity on the plaquecalculus substrate or the gums an active material including an enzyme solution containing lysozyme of controlled purity and concentration of the class that materially degrades the peptidoglycan gram (+) cell walls of bacteria forming the substrate, so that bacteria are removed from the site including the step of using a lysozyme concentration in the solution of the order of one tenth milligram per milliliter, and applying the lysozyme in situ in the oral cavity in that concentration on the substrate thereby to remain resident on the substrate for a few minutes.

4,355,023
ANTIBODY FRAGMENT COMPOSITIONS AND PROCESS

Paul H. Ehrlich, White Plains, N.Y.; Gary R. Matsueda, Winchester, Mass.; Michael N. Margolies, and Edgar Haber, both of Weston, Mass., assignors to The Massachusetts General Hospital, Boston, Mass.

Filed Sep. 30, 1980, Ser. No. 192,696
Int. Cl.^{3} A61K *39/395*
U.S. Cl. 424—85 **9 Claims**

1. The process for producing an immunogenic fragment of rabbit immunoglobulin G antibody which comprises the following steps A and/or B and C:

A. isolating a composition rich in light variable chain by:
  a. recovering the light chain from a non-immune rabbit immunoglobulin G,
  b. reducing and alkylating said light chain,
  c. acid cleaving said light chain between aspartic acid at position 109 and proline at position 110 of said chain,
  d. purifying said acid cleaved light chain to recover a fraction rich in a fragment comprising positions 110 to 211,
  e. applying said purified fraction to a chromatographic column to effect binding of a subfraction rich in light constant chain of said rabbit immunoglobulin G,
  f. cross-linking a portion of said acid cleaved light chain,
  g. administering said cross-linked light chain into an animal species other than a rabbit,
  h. recovering anti-serum from said animal,
  i. applying said anti-serum to said column containing the light constant chain in order to attach the anti-light constant chain to said column,
  j. eluting said anti-light constant chain from said column,
  k. applying said anti-light constant chain to a second chromatographic column,
  l. acid cleaving and reducing a portion of said light chain,
  m. reacting the product of step l with ρ-chloromercuribenzoate and applying the product of step m to the column of step k and recovering a solution rich in said anti-light variable chain,

B. isolating a composition rich in heavy variable chain by:
  a. isolating the heavy chains of non-immune rabbit immunoglobulin G,
  b. amino ethylating said heavy chain,
  c. reducing said heavy chain either concomitantly with said amino ethylation or subsequent to said amino ethylation,
  d. purifying said amino ethylated and reduced heavy chain,
  e. contacting said reduced amino ethylated heavy chain with activated cathepsin B to cleave the heavy chain at two adjacent cysteine residues at positions 133 and 134 on the peptide chain,
  f. attaching said heavy chain fragment to a chromatographic column,
  g. forming antibody to said heavy chain by injecting an animal species other than a rabbit with said heavy chain and recovering anti-sera from said animal,
  h. passing said anti-sera through said column to attach the anti-heavy constant fragment to said column,
  i. recovering an eluant rich in anti-heavy variable chain fragment;

C. forming an immunoglobulin G fragment having substantial antibody activity by combining (1) said recovered anti-light variable chain with the complementary heavy variable chain of said rabbit immunoglobulin, (2) combining said anti-heavy variable chain fragment to the complementary light chain of said rabbit immunoglobulin G or (3) combining said anti-light variable fragment with said anti-heavy variable fragment.

4. The process of claim 1 comprising steps A, B and C.

7. An immunologically active composition comprising anti-light variable fragment of rabbit immunoglobulin G and anti-heavy variable fragment of immunoglobulin G prepared by the process of claim 4.

4,355,024
METHOD AND FEED FOR STIMULATING THE GROWTH OF ANIMALS

Joseph H. Cort, 300 E. 54 St., New York, N.Y. 10022

Filed Jan. 25, 1979, Ser. No. 6,799
Int. Cl.^{3} A61K *37/00*
U.S. Cl. 424—177 **5 Claims**

1. A method for stimulating the rate of growth of an animal comprising administering to said animal the methyl ester of aspartyl-phenylalanine in an amount sufficient to stimulate said rate of growth.

4,355,025
BIOLOGICALLY ACTIVE AMIDES

Norman R. Lazarus, Gravesend, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 851,706, Nov. 15, 1977, Pat. No. 4,175,122, which is a continuation-in-part of Ser. No. 676,645, Apr. 14, 1976, abandoned. This application Feb. 6, 1979, Ser. No. 10,081
Claims priority, application United Kingdom, Apr. 15, 1975, 15414/75
Int. Cl.^{3} A61K *37/00;* **C07C** *103/52*
U.S. Cl. 424—177 **27 Claims**

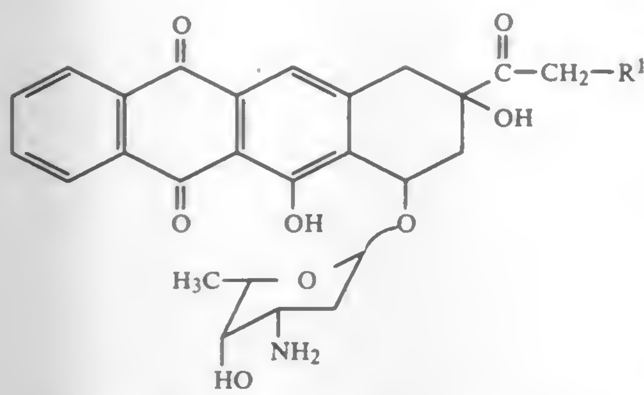
1. A method of treating a mammal for obesity comprising the parenteral administration to the mammal suffering from obesity of a non-toxic obesity-reducing, treatment effective amount of a polypeptide designated Pancreatic Hormone III or a pharmaceutically acceptable salt or metal complex of said polypeptide.

4,355,026
4-DEMETHOXY,11-DEOXY ANTHRACYCLINE DERIVATIVES

Hamao Umezawa; Tomio Takeuchi; Hiroshi Naganawa, and Kuniaki Tatsuta, all of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Sep. 11, 1981, Ser. No. 300,874
Claims priority, application Japan, Sep. 22, 1980, 55-130645
Int. Cl.^{3} A61K *31/71;* **C07H** *15/24;* **A61K** *31/65*
U.S. Cl. 424—180 **21 Claims**

1. An anthracycline glycoside of the general formula



I

wherein R^1 represents hydrogen, hydroxyl or (lower)alkanoyloxy, or a nontoxic acid addition salt thereof.

20. A pharmaceutical composition for use in therapeutically treating a mammalian host affected by a microbial infection comprising a therapeutically effective amount of a compound as claimed in claim 1 and a pharmaceutical carrier or diluent.

4,355,027

PROCESS AND COMPOSITION FOR TREATING DISORDERS BY ADMINISTERING PIRACETAM AND CHOLINE

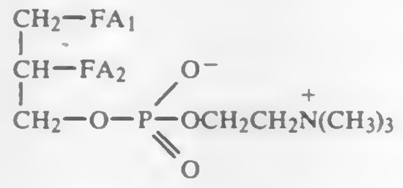
John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 229,704, Jan. 30, 1981, which is a continuation-in-part of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Oct. 25, 1979, abandoned, which is a continuation of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Jul. 20, 1981, Ser. No. 284,768

Int. Cl.^{3} A61K *31/40, 31/685*

U.S. Cl. 424—199 **10 Claims**

1. The process of reducing or eliminating undesirable effects of piractam administered to a human which side effects result from inadequate release of brain acetylcholine, which comprises administering concomitantly with the piracetam an amount of a compound effective to raise the bloodstream choline level of a patient to between 10 and 15 nanomoles/ml and to release adequate amounts of brain acetylcholine selected from the group consisting of choline, a salt of choline, lysolecithin, an acyglycerophosphocholine, having the formula:



$$\begin{array}{l} CH_2-FA_1 \\ | \\ CH-FA_2 \qquad O^- \\ | \qquad\qquad / \qquad + \\ CH_2-O-P-OCH_2CH_2N(CH_3)_3 \\ \qquad\qquad \| \\ \qquad\qquad O \end{array}$$

wherein FA$_1$ and FA$_2$ can be the same or different and are fatty acid residues having from 6–26 carbon atoms, glycerophosphatidyl choline and mixtures thereof.

4,355,028

COMPOSITION FOR TREATING ACNE VULGARIS

Albert M. Kligman, Philadelphia, Pa.; Walter L. McKenzie, Williamsville, and Peter F. Ciesla, Lancaster, both of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Continuation of Ser. No. 48,197, Jun. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 893,239, Apr. 4, 1978, Pat. No. 4,318,907. This application Apr. 30, 1981, Ser. No. 259,327

The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.

Int. Cl.^{3} A61K *31/60, 31/075*

U.S. Cl. 424—230 **16 Claims**

1. A topical, therapeutic composition comprising from about 3% to about 7% salicylic acid and from 3% to about 20% benzoyl peroxide in a pharmaceutically acceptable vehicle comprising an aqueous gel containing an amount sufficient to produce a stable gel of a gelling and thickening agent selected from the group consisting of a mixture of about 1 to about 3% by weight magnesium aluminum silicate with about 1 to about 3% by weight of methyl cellulose, wherein the combined amount of the magnesium aluminum silicate and the methyl cellulose does not exceed about 5% by weight; about 7 to about 9% by weight of magnesium aluminum silicate; about 2 to about 5% by weight methyl cellulose; about 1 to about 3% by weight pectin; about 2 to about 4% by weight xanthan gum; about 4 to about 6% by weight polyethylene oxide having an average molecular weight of about 400,000; about 5 to about 7% by weight polyethylene oxide having an average molecular weight of about 300,000; about 3 to about 5% by weight polyethylene oxide having an average molecular weight of about 600,000; about 1 to about 3% by weight polyacrylamide; and about 2 to about 4% by weight of a 1:1 mixture of hectorite and hydroxyethylcellulose.

4,355,029

COMBINATION THERAPY FOR RHEUMATOID ARTHRITIS

Anthony S. Ridolfo, Zionsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 1, 1981, Ser. No. 269,145

Int. Cl.^{3} A61K *31/625*

U.S. Cl. 424—232 **2 Claims**

1. A treatment method for rheumtoid arthritis which comprises administering to a patient suffering from rheumatoid arthritis a combination of from 200 to 820 mg. of benoxaprofen and 325 to 1170 mg. of aspirin once a day, from 325 to 1170 mg. of aspirin alone three times a day, all dosages to be administered at approximately six hour intervals; and then repeating the above daily dosage schedule on succeeding days.

4,355,030

ANTIVIRAL COMBINATIONS

Donald C. DeLong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 206,748, Nov. 14, 1980, Pat. No. 4,289,773, which is a division of Ser. No. 95,804, Nov. 19, 1979, Pat. No. 4,271,162, which is a division of Ser. No. 49,671, Jun. 18, 1979, Pat. No. 4,210,647. This application Apr. 17, 1981, Ser. No. 255,073

Int. Cl.^{3} A61K *31/495, 31/13*

U.S. Cl. 424—250 **1 Claim**

1. A method of suppressing influenza virus infections in mammals which comprises orally administering to a mammal exposed to influenza virus a virus-suppressing amount of a 1:1 (by weight) ratio of ethyl 6,7-bromo-4-dihydro-3-oxoquinoxaline carboxylate and dicyclooctylamine.

4,355,031

2,3-DIHYDRO-3-[4-(SUBSTITUTED)-1-PIPERAZINYL]-1H-ISOINDOL-1-ONES

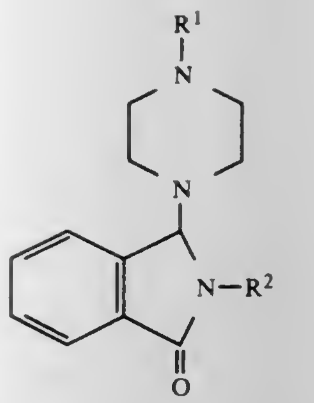
Christopher A. Demerson, and Ivo L. Jirkovsky, both of Montreal, Canada, assignors to American Home Products Corp., New York, N.Y.

Filed May 11, 1981, Ser. No. 262,717

Int. Cl.^{3} C07D *403/04, 403/14;* **A61K** *31/41*

U.S. Cl. 424—250 **16 Claims**

1. A compound of formula I



(I)

wherein R^1 is lower alkyl, phenyl, diphenylmethyl, or pyridinyl; and R^2 is hydrogen, lower alkyl or di(lower)alkylamino(-lower) alkyl; or a therapeutically acceptable acid addition salt thereof.

4,355,032

9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)GUANINE AS ANTIVIRAL AGENT

Julien P. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 21, 1981, Ser. No. 267,210

Int. Cl.^{3} C07D *473/18;* **A61K** *31/52*

U.S. Cl. 424—253 **5 Claims**

1. The compound 9-(1,3-dihydroxy-2-propoxymethyl)guanine and the pharmaceutically acceptable salts thereof.

4,355,033

2-IMINO-IMIDAZOLIDINE DERIVATIVES

Henri Ramuz, Birsfelden, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

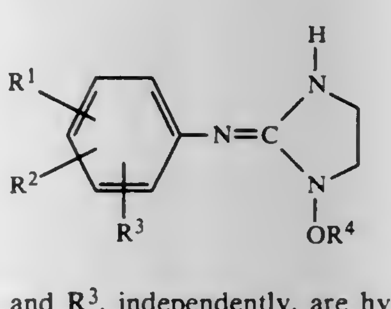
Division of Ser. No. 958,300, Oct. 24, 1978, Pat. No. 4,244,957. This application Aug. 14, 1980, Ser. No. 178,223

Claims priority, application Luxembourg, Nov. 7, 1977, 78467; Switzerland, Sep. 15, 1978, 9668/78

Int. Cl.^{3} C07D *403/12, 491/04;* **A61K** *31/415;* **C07D** *417/12*

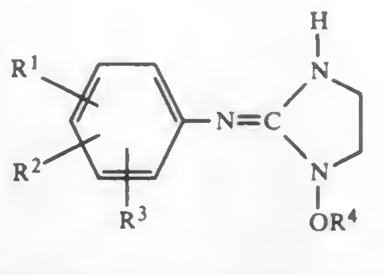
U.S. Cl. 424—256 **25 Claims**

1. A compound of the formula



wherein R^1, R^2 and R^3, independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and R^4 is hydrogen, alkyl, cycloalkyl, cycloalkenyl, alkenyl, alkynyl, carboxyalkyl, carboxyalkenyl, hydroxyalkyl, cyanoalkyl, phenylalkyl, chlorophenylalkyl, tolylalkyl, alkylthioalkyl, alkoxycarbonylalkyl, alkoxyalkoxyalkyl, aminocarbonylalkyl, monoalkylaminocarbonylalkyl, dialkyl-aminocarbonylalkyl, alkoxycarbonylalkenyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, phenyl, chlorophenyl, tolyl, (2,2,8-trimethyl-4H-m-dioxino[4,5-c]-pyridin-5-yl)methyl, α-carboxybenzyl, α-alkoxycarbonyl-α-alkylphenyl, or an aromatic heterocyclic residue selected from the group consisting of thienyl, furyl, thiazolyl, oxazolyl, pyrazolyl, imidazolyl, isoxazolyl and isothiazolyl, which is bonded via a —CH(R^5)— group and is optionally substituted by alkyl or the group —COOR, wherein R^5 is hydrogen, methyl, ethyl or n-propyl and R is hydrogen or alkyl, and wherein above, each occurrence, the alkyl, alkoxy and alkylthio groups, independently, are of 1–6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

25. A method of treating hypertension which comprises administering to a warm-blooded animal requiring such treatment a hypotensively effective amount of a compound of the formula



wherein R^1, R^2 and R^3, independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and R^4 is hydrogen, alkyl, cycloalkyl, cycloalkenyl, alkenyl, alkynyl, carboxyalkyl, carboxyalkenyl, hydroxyalkyl, cyanoalkyl, phenylalkyl, chlorophenylalkyl, tolyalkyl, alkylthioalkyl, alkoxycarbonylalkyl, alkoxyalkoxyalkyl, aminocarbonylalkyl, monoalkylaminocarbonylalkyl, dialkylaminocarbonylalkyl, alkoxycarbonylalkenyl, alkoxyalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, phenyl, chlorophenyl, tolyl, (2,2,8-trimethyl-4H-m-dioxino[4,5-c]-pyridin-5-yl)methyl, α-carboxybenzyl, α-alkoxycarbonyl-α-alkylphenyl, or an aromatic heterocyclic residue selected from the group consisting of thienyl, furyl, thiazolyl, oxazolyl, pyrazolyl, imidazolyl, isoxazolyl and isothiazolyl, which is bonded via a —CH(R^5)— group and is optionally substituted by alkyl or COOR, wherein R^5 is hydrogen, methyl, ethyl or n-propyl and R is hydrogen or alkyl, and wherein above, each occurrence, the alkyl, alkoxy and alkylthio groups, independently, are of 1–6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4,355,034

ETHENYL DERIVATIVES OF MERCAPTOALKYLPYRIDINES AS ANTI-INFLAMMATORY AGENTS

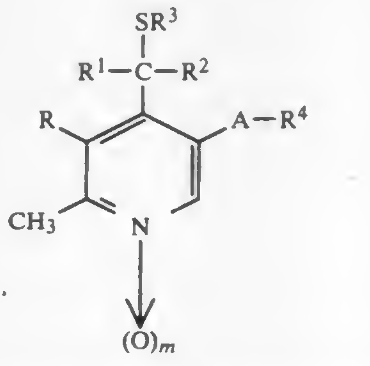
Tsung-Ying Shen, Westfield; Howard Jones, Holmdel, and Conrad P. Dorn, Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 10,099, Feb. 7, 1979, Pat. No. 4,217,352, which is a division of Ser. No. 842,692, Oct. 17, 1977, Pat. No. 4,144,342, which is a division of Ser. No. 706,033, Jul. 16, 1976, Pat. No. 4,061,759, which is a division of Ser. No. 578,692, May 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 464,011, Apr. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 368,772, Jun. 15, 1973, abandoned. This application Jul. 25, 1980, Ser. No. 172,104

Int. Cl.^{3} C07D *213/32, 213/34;* **A61K** *31/44*

U.S. Cl. 424—263 **9 Claims**

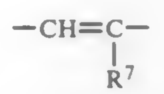
1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof wherein

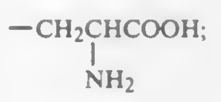
m is 0 or 1;

A is



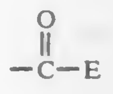
$-CH=\underset{R^7}{\underset{|}{C}}-$

where R^7 is hydrogen, chloro or fluoro;
R^1 and R^2 are independently hydrogen or C_{1-3}alkyl;
R^3 is
(a) SO_3H;
(b) PO_3H_2;



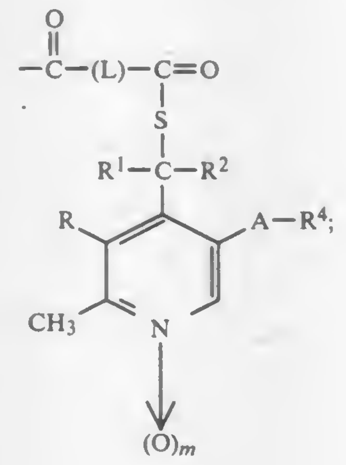
$-CH_2\underset{NH_2}{\underset{|}{C}}HCOOH;$

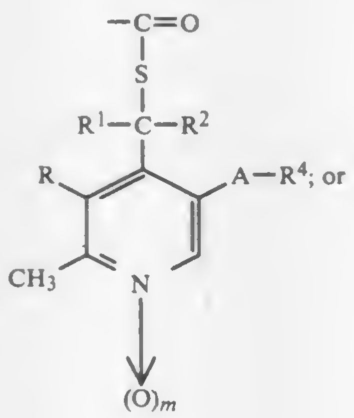
(d) ethoxycarbonylmethyl;



$-\overset{O}{\overset{\|}{C}}-E$

where E represents
(1) phenyl;
(2) 2-acetoxyphenyl;
(3) 2-hydroxy-4-(2,4-difluorophenyl)phenyl;
(4) 3-chloro-4-allyloxybenzyl;
(5) α-methyl-4-isobutylbenzyl;
(6) α-methyl-3-phenoxybenzyl;
(7) α-methyl-3-benzoylbenzyl;
(8) 1-(6-methoxynaphth-2-yl)ethyl;
(9) α-methyl-3-fluoro-4-phenylbenzyl;
(10) 2-(3-chloro-4-cyclohexylbenzoyl)ethyl;
(11) 2-(3-trifluoromethylanilino)phenyl;
(12) 2-(2,3-dimethylanilino)phenyl;
(13) 2-(2,6-dichloro-3-methylanilino)phenyl;
(14) 2-(3-trifluoromethylanilino-3-pyridyl; or
(15) 2-(2-methyl-3-chloroanilino)-3-pyridyl;





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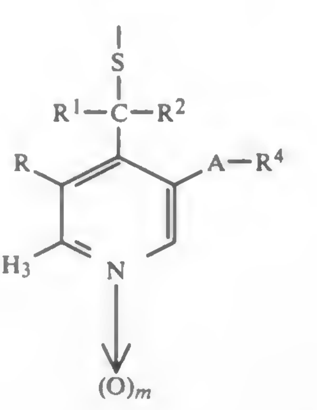
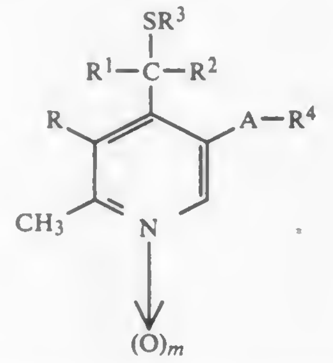
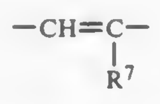


R^4 is
(a) hydrogen; or
(b) C_{1-3}alkyl;
R is
(a) hydroxy; or
(b) hydroxy-C_{1-3}alkyl.

7. A method of treating inflammation which comprises the administration to a warm-blooded animal or human in need of such treatment an effective amount of a compound having the structural formula

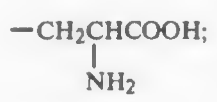


or a pharmaceutically acceptable salt thereof wherein
m is 0 or 1;
A is



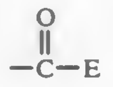
$-CH=\underset{R^7}{\underset{|}{C}}-$

where R^7 is hydrogen, chloro or fluoro;
R^1 and R^2 are independently hydrogen or C_{1-3}alkyl;
R^3 is
(a) SO_3H;
(b) PO_3H_2;



$-CH_2\underset{NH_2}{\underset{|}{C}}HCOOH;$

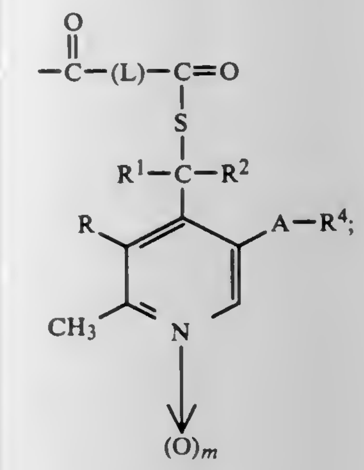
(d) ethoxycarbonylmethyl;

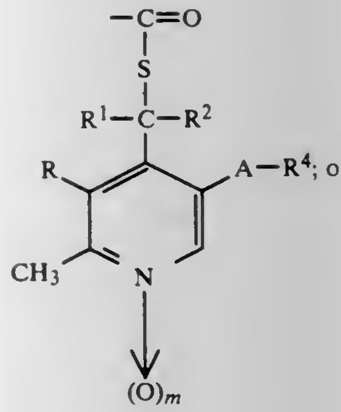


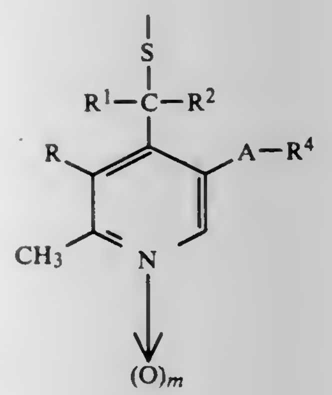
$-\overset{O}{\overset{\|}{C}}-E$

where E represents
(1) phenyl;
(2) 2-acetoxyphenyl;
(3) 2-hydroxy-4-(2,4-difluorophenyl)phenyl;
(4) 3-chloro-4-allyloxybenzyl;
(5) α-methyl-4-isobutylbenzyl;
(6) α-methyl-3-phenoxybenzyl;
(7) α-methyl-3-benzoylbenzyl;
(8) 1-(6-methoxynaphth-2-yl)ethyl;
(9) α-methyl-3-fluoro-4-phenylbenzyl;

(10) 2-(3-chloro-4-cyclohexylbenzoyl)ethyl;
(11) 2-(3-trifluoromethylanilino)phenyl;
(12) 2-(2,3-dimethylanilino)phenyl;
(13) 2-(2,6-dichloro-3-methanilino)phenyl;
(14) 2-(3-trifluoromethylanilino-3-pyridyl; or
(15) 2-(2-methyl-3-chloroanilino)-3-pyridyl;







R^4 is
(a) hydrogen; or
(b) C_{1-3}alkyl;
R is
(a) hydroxy;
(b) hydroxy-C_{1-3}alkyl.

4,355,035
DERIVATIVES OF CERTAIN PYRIDYLIMINOMETHYLBENZENES

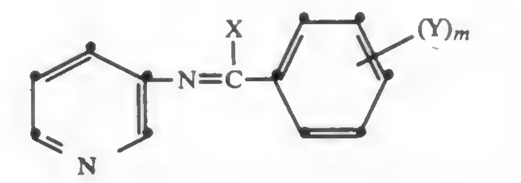
Pieter Ten Haken, Eastling, Nr. Faversham, and Shirley B. Webb, Sheldwich Nr. Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 130,681, Mar. 17, 1980, abandoned. This application Jan. 26, 1981, Ser. No. 228,427

Int. Cl.³ A01N *43/40;* C07D *213/74*

U.S. Cl. 424—263 **3 Claims**

1. A compound of the formula



(I)

wherein X contains up to ten carbon atoms, and is alkoxy, haloalkoxy, cycloalkoxy, alkenyloxy, alkynyloxy, aryloxy, haloaryloxy, alkoxyaryloxy, aralkyloxy, haloaralkyloxy, or alkoxyaralkyloxy; m is 1 or 2; and Y contains up to ten carbon atoms, and is alkyl, haloalkyl, alkoxy, haloalkoxy, halogen, nitro, aryloxy, haloaryloxy, cyano or alkoxycarbonyl, and acid-addition salts thereof.

4,355,036
TRICYCLIC-SUBSTITUTED PIPERIDINE ANTIHISTAMINES

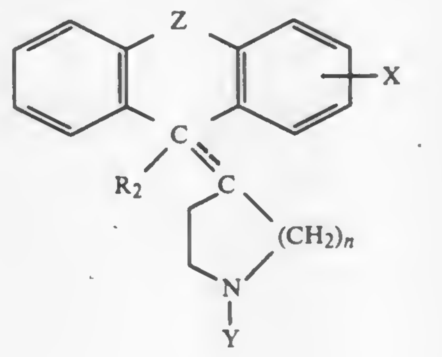
Frank J. Villani, West Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 160,795, Jun. 19, 1980, Pat. No. 4,282,233. This application Mar. 16, 1981, Ser. No. 243,681

Int. Cl.³ A61K *31/445;* C07D *211/14*

U.S. Cl. 424—267 **3 Claims**

1. A compound represented by the formula



wherein
n is 1 or 2;
R_2 is hydrogen or C_1 to C_3 alkyl;
X is hydrogen or halogen;
Z is an alklyene chain having 0 to 2 carbon atoms in the chain, said 2 carbon chain optionally having one double bond, said chain optionally having either a carbonyl oxygen or a hydroxy group as a substituent; and
Y is —COOR or —SO_2R, with the proviso that when Y is —COOR, R is C_1 to C_{12} alkyl, substituted C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, substituted C_2 to C_{12} alkenyl, phenyl, substituted phenyl, C_7 to C_{10} phenylalkyl or C_7 to C_{10} phenylalkyl wherein the phenyl moiety is substituted, or R is -2, -3, or -4 piperidyl or N-substituted piperidyl, wherein the substituents on said substituted C_1 to C_{12} alkyl and on said substituted C_2 to C_{12} alkenyl are selected from amino or substituted amino and the substituents on said substituted amino are selected from C_1 to C_6 alkyl, the substituents on said substituted phenyl and on said substituted phenyl moiety of the C_7 to C_{10} phenylalkyl are selected from C_1 to C_4 alkyl and halo, and the substituent on said N-substituted piperidyl is C_1 to C_4 alkyl, and with the proviso that when Y is —SO_2R, R is C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl, phenyl, substituted pheny, C_7 to C_{10} phenylalkyl, C_7 to C_{10} phenylalkyl wherein the phenyl moiety is substituted, wherein the substituents on said substituted phenyl and said substituted phenyl moiety of the C_7 to C_{10} phenylalkyl are selected from C_1 to C_4 alkyl and halo.

3. A method of effecting an anti-allergic response in an animal in need of such treatment comprising administering to the animal an effective amount of a compound as claimed in claim 1.

4,355,037

3-(4-PIPERIDYL)-1,2-BENZISOXALES

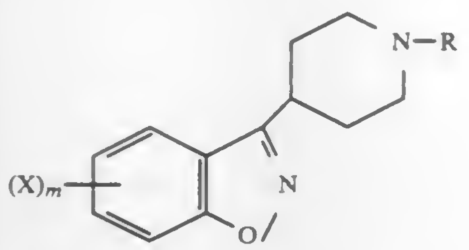
Joseph T. Strupczewski, Flemington, N.J.; Beth Ann Gardner, San Jose, Calif., and Richard C. Allen, Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Somerville, N.J.

Filed Nov. 12, 1981, Ser. No. 319,871

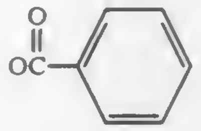
Int. Cl.^{3} A61K *31/445;* **C07D** *413/04, 413/14*

U.S. Cl. 424—267 **43 Claims**

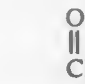
1. A compound of the formula



wherein R is hydrogen, loweralkyl, loweralkenyl, cycloalkylloweralkyl, phenyloweralkyl, hydroxy, diloweralkylaminoloweralkyl, cyano, cyanomethyl,



or a group of the formula



$\overset{O}{\overset{\|}{C}}R^1$

wherein R^1 is hydrogen, loweralkyl or a group of the formula OR^2 wherein R^2 is phenyl or benzyl; X is hydrogen, loweralkyl, loweralkoxy, halogen or hydroxy; m is 1 or 2; the geometrical isomers and optical antipodes thereof; or the pharmaceutically acceptable acid addition thereof.

42. A method of alleviating pain comprising administering to a mammal in need of pain alleviation a pain-alleviating, effective amount of a compound as defined in claim **1** or **2**.

4,355,038

α-SUBSTITUTED UREIDO-BENZYLPENICILLANIC ACIDS

Nobuhiro Oi, Houya; Bunya Aoki, Tanashi; Teizo Shinozaki, Hasuda; Kanji Moro, Kuki; Toshio Kuroki; Isao Matsunaga, both of Tokyo; Takao Noto, Machida; Toshiyuki Nebashi, Kawagoe; Yusuke Harada; Hisao Endo, both of Tokyo; Takao Kimura, Chiba; Kana Kojima, Mitaka; Masahiko Matsumoto, Kawasaki; Hiroshi Okazaki, Sayama; Haruki Ogawa, Chofu, and Minoru Shindo, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

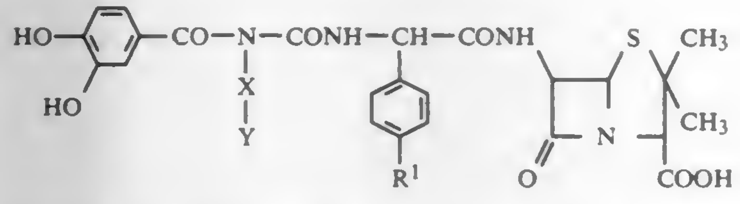
Filed Jul. 30, 1981, Ser. No. 288,402

Claims priority, application Japan, Aug. 5, 1980, 55-106775

Int. Cl.^{3} A61K *31/43;* **C07D** *499/68*

U.S. Cl. 424—271 **4 Claims**

1. A compound of the formula



wherein R^1 is a hydrogen atom or hydroxyl group; X is a lower alkyl group of C$_{2\text{-}3}$; and Y is bonded to a terminal carbon atom of the substituent of X and means the group —OR^2 wherein R^2 is a hydrogen atom, a lower alkyl group of C$_{1\text{-}2}$, a lower alkanoyl group of C$_{2\text{-}3}$ or a lower alkyl group of C$_{2\text{-}3}$ substituted with a hydroxyl group; or a pharmaceutically acceptable salt thereof.

4. A bactericidal composition comprising a pharmaceutically effective amount of a compound according to any one of claims **1**,**2** or **3**, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier.

4,355,039

ANTIINFLAMMATORY-4,5-DIARYL-2-SUBSTITUTED-THIO-IMIDAZOLES AND THEIR CORRESPONDING SULFOXIDES AND SULFONES

Ulrich Niedballa, and Irmgard Böttcher, both of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

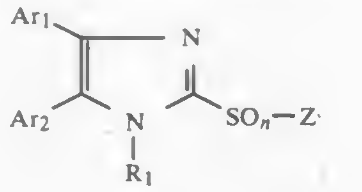
Division of Ser. No. 41,367, May 22, 1979, Pat. No. 4,269,847. This application Sep. 24, 1980, Ser. No. 190,309

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2823197

Int. Cl.^{3} A61K *31/415;* **C07D** *233/84*

U.S. Cl. 424—273 R **33 Claims**

1. An imidazole derivatives of the formula



wherein

- Z is C$_{1\text{-}6}$-alkyl substituted by one alkoxycarbonyl group;
- Ar$_1$ and Ar$_2$ are independently each phenyl; or phenyl substituted by halogen, C$_{1\text{-}4}$-alkyl, C$_{1\text{-}4}$-alkoxy or C$_{2\text{-}6}$-dialkylamino with the proviso that Ar$_1$ and Ar$_2$ are not both unsubstituted phenyl;
- R$_1$ is hydrogen, C$_{1\text{-}4}$ alkyl or C$_{1\text{-}4}$ alkyl substituted by hydroxy, C$_{1\text{-}4}$ alkoxy or C$_{1\text{-}6}$ alkanoyloxy; and
- n is 0, 1 or 2; or a physiologically acceptable salt thereof with an acid.

4,355,040

HYPOTENSIVE IMIDAZOLE-5-ACETIC ACID DERIVATIVES

Yoshiyasu Furukawa, Toyonaka; Shoji Kishimoto, Takarazuka, and Kohei Nishikawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 5, 1980, Ser. No. 204,357

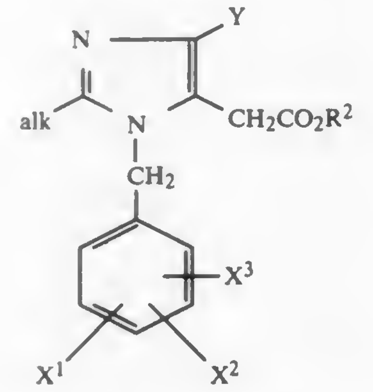
Claims priority, application Japan, Nov. 12, 1979, 54-146728

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.^{3} A61K *31/415;* **C07D** *233/68*

U.S. Cl. 424—273 R **17 Claims**

1. A compound of the formula:



wherein alk is lower alkyl or lower cycloalkyl; each of X^1, X^2 and X^3 is independently hydrogen, halogen, nitro, amino, lower alkyl, lower alkoxyl, benzyloxyl or hydroxyl; Y is halogen and R^2 is hydrogen or lower alkyl, or a pharmaceutically acceptable salt thereof.

4,355,041

4,5-BIS-(4-FLUOROPHENYL)-1-(4-NITROBENZYL)-2-[((1,1,2,2-TETRAFLUOROETHYL)SULFONYL]-1H-IMIDAZOLE, COMPOSITION AND USE

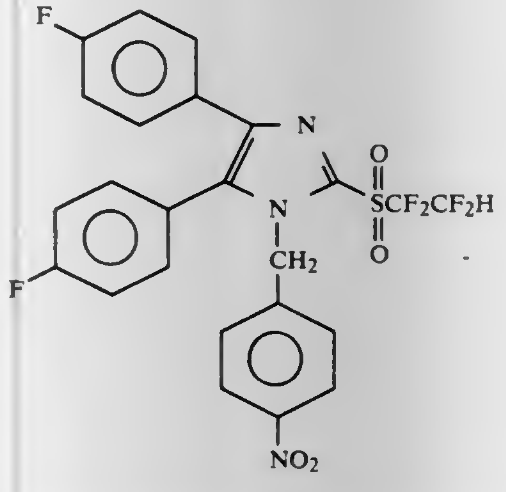
Melvyn J. Myers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 4, 1982, Ser. No. 336,764

Int. Cl.^{3} A61K *31/415;* **C07D** *233/84*

U.S. Cl. 424—273 R **3 Claims**

1. A compound of the formula:



2. A pharmaceutical composition consisting essentially of a suitable pharmaceutical carrier and an effective antiinflammatory amount of the compound of claim **1**.

4,355,042

INSECTICIDAL ESTERS

George Holan, Brighton, and David F. O'Keefe, Mt. Waverley, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

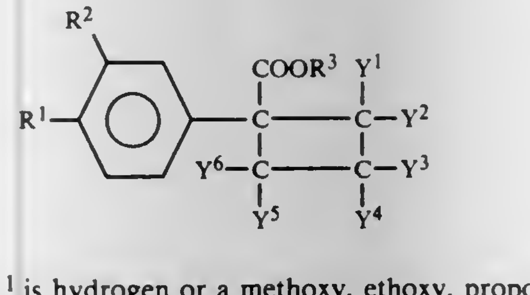
Division of Ser. No. 50,209, Jun. 20, 1979, which is a continuation-in-part of Ser. No. 969,862, Dec. 15, 1978, Pat. No. 4,235,926. This application Oct. 9, 1980, Ser. No. 195,600

Claims priority, application Australia, Dec. 19, 1977, PD2818/77

Int. Cl.^{3} A01N *43/08;* **C07D** *307/40*

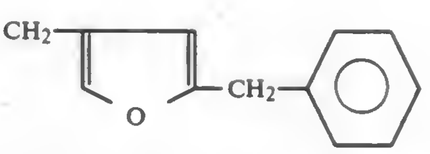
U.S. Cl. 424—285 **13 Claims**

1. The (+), (−) and (±) forms of the compounds of the general formula I



I

wherein R^1 is hydrogen or a methoxy, ethoxy, propoxy, butoxy, tetrafluoroethoxy, methylthio, ethylthio, propylthio, fluoro, chloro, bromo, methyl, ethyl, or nitro group, and R^2 is hydrogen or a methyl group; R^3 is the following group (b):



(b)

and Y^1, Y^2, Y^3, Y^4, Y^5, and Y^6 are the same or different groups and each is hydrogen or a fluoro, bromo or chloro group, with the proviso that one of Y^1 to Y^6 is other than hydrogen.

7. Insecticidal compositions comprising an insecticidally effective amount of one or more of the compounds of formula I as stated in claim **1**, incorporated in a suitable inert liquid or solid carrier.

13. The use as insecticides of an insecticidally effective amount of any of the compounds claimed in claim **1**.

4,355,043

NOVEL DERIVATIVES OF 3-AMINOPROPANESULFONIC ACID HAVING A REINFORCED ACTIVITY ON MEMBRANE

Jean P. Durlach, Paris, France, assignor to Les Laboratoires Meram, France

Filed May 19, 1980, Ser. No. 150,946

Claims priority, application France, May 23, 1979, 79 13207

Int. Cl.^{3} A61K *31/315;* **C07F** *3/06*

U.S. Cl. 424—289 **8 Claims**

1. Derivatives of 3-aminopropanesulfonic acid, represented by the formula

$$[CH_3CONH—(CH_2)_3SO_3]_nM$$

in which M represents a member selected from the group consisting of sodium, potassium, lithium, calcium, magnesium and zinc, n being equal to 1 or 2.

4,355,044

D-PHENYLALANINE TREATMENT

Bernardo Heller, 921 N. 35th St., Hollywood, Fla. 33021

Filed Dec. 19, 1980, Ser. No. 218,285

Int. Cl.^{3} A61K *31/195*

U.S. Cl. 424—319 **1 Claim**

1. A treatment for endogenous depression in human beings comprising the method of administering to said human beings daily oral dosages of D-phenylalanine in dosage amounts of between 50 mgs to 1000 mgs for the treatment of depression.

4,355,045

ANTI-INFLAMMATORY 1-PHENYLETHANOLAMINE DERIVATIVES PHARMACEUTICAL COMPOSITIONS THEREOF AND PROCESSES FOR THEIR MANUFACTURE

John Preston, and Austin J. Reeve, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

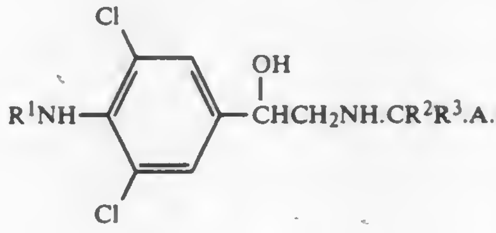
Filed Aug. 3, 1978, Ser. No. 930,859

Claims priority, application United Kingdom, Aug. 16, 1977, 34346/77

Int. Cl.^{3} A01N *47/28, 37/18*

U.S. Cl. 424—322 **7 Claims**

1. A 1-phenylethanolamine derivative of the formula:



I

wherein R^1 is hydrogen; R^2 and R^3 are both hydrogen or methyl; A is methylene; and Q is phenylacetyl, phenoxyacetyl, phenylaminocarbonyl or octadecanoyl; or a pharmaceutically acceptable acid-addition salt thereof.

6. A method of topical treatment of an area of inflammation in a warm-blooded animal requiring such treatment, which comprises administering topically an effective amount of a 1-phenylethanolamine derivative of formula I, or of a pharmaceutically acceptable acid-addition salt thereof, as defined in claim 1, to said area of inflammation affecting said animal.

4,355,046

DERMATOLOGIC AND COSMETIC OINTMENT BASE

Hans R. Süess, Engelbergstrasse 281, 4656 Starrkirch, Switzerland

Filed Mar. 9, 1981, Ser. No. 241,512

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010572

Int. Cl.^{3} A61K *31/01*

U.S. Cl. 424—355 **11 Claims**

1. Ointment base for use on the skin, in which at least 80 percent by weight thereof is composed of a mixture consisting of 10 to 90 percent by weight of petrolatum fractions in which the ratio by weight of solid constituents to constituents that are liquid at 20 to 50 C is greater than 3:1 and 90 to 10 percent by weight of a material serving as a solvent for said petrolatum fractions and selected from the group which consists of octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, hexamethyldisiloxane and mixtures of said siloxanes.

4,355,047

METHOD OF PREPARING A LOW CALORIE BEER

William F. Line, Greenfield, Wis.; Vinod K. Chaudhary, Manhattan, Kans.; Etzer Chicoye, Milwaukee, and Robert J. Mizerak, Waukesha, both of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 141,536, Apr. 18, 1980, abandoned, and Ser. No. 58,823, Jul. 19, 1979, abandoned. This application May 13, 1981, Ser. No. 263,156

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.^{3} C12C *9/00, 11/04;* **C12N** *9/44*

U.S. Cl. 426—13 **11 Claims**

1. In a method of producing a superattenuated beer by fermenting brewers malt wort with yeast, the improvement which comprises adding to the wort a rice pullulanase in an amount of at least about 2 units of pullulanase activity per liter of wort which is effective in hydrolyzing the alpha 1,6 linkages of wort limit dextrins to form alpha 1,4 dextrins, and adding an alpha 1,4 carbohydrase in an amount of at least about 20 units of amylase activity per liter of wort to convert the alpha 1,4 dextrins to fermentable sugars which are fermented by the yeast in the wort to alcohol thereby reducing by about 30% to about 80% the residual limit dextrins in the real extract to obtain a low calorie superattenuated beer which contains a greater proportion of alcohol to real extract and fewer calories per unit of volume when packaged at constant alcohol than a control beer prepared by the same process without the added pullulanase.

4,355,048

MANUFACTURE OF SEMI-HARD CHEESE BY ULTRAFILTRATION

Johannes E. Schaap, Lunteren; Paulus F. C. Nooy, Bennekom, and Rudolf De Boer, Wageningen, all of Netherlands, assignors to Stichting Bedrijven Van Het Nederlands Instituut voor Zuivelonderzoek, Ede, Netherlands

Continuation of Ser. No. 65,847, Aug. 13, 1978, abandoned. This application May 11, 1981, Ser. No. 262,637

Claims priority, application Netherlands, Aug. 14, 1978, 7808432

Int. Cl.^{3} A23C *19/028, 19/05*

U.S. Cl. 426—40 **4 Claims**

1. A method of manufacturing semi-hard cheese from skimmilk comprising:

(a) continuously feeding skimmilk to a first stage ultrafiltration whereby a first ultrafiltration concentrate is obtained;
(b) subjecting the first ultrafiltration concentrate to a second stage diafiltration until a diafiltration concentrate is obtained having a lactose content between 1.8% and 2.0%;
(c) subjecting the diafiltration concentrate to a third stage ultrafiltration carried out batchwise with tubular membranes at a temperature between about 50° C. and 55° C.;
(d) recovering a second ultrafiltration concentrate containing at least 31.5% solids, between about 27% to about 28% protein and between about 1.8% to 2.0% lactose;
(e) adding fat to the second ultrafiltration concentrate;
(f) mixing and cooling the combined fat and ultrafiltration concentrate in a first scraped heat exchanger;
(g) adding additives comprising rennet and starter to the mixture obtained in step (f);
(h) passing the mixture obtained in step (g) to a second scraped heat exchanger, whereby the additives for cheese are uniformly distributed; and
(i) placing the mixture of step (h) in molds for making cheese.

4,355,049

FLAVORING WITH 2-(α-MERCAPTOALKYL)-3-THIAZOLINE

Marcia D. Spencer, Valley Cottage; Thomas H. Parliment, New City, both of N.Y., and Denise A. Giordano, Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,624

Int. Cl.^{3} A23L *1/231*

U.S. Cl. 426—535 **8 Claims**

1. A process for imparting or enhancing a flavor in a foodstuff comprising adding an amount of a flavoring composition chosen from the group consisting of 2,4-dimethyl-2-(mercaptomethyl)-3-thiazoline and 2,4,5-trimethyl-2-(α-mercaptoethyl)-3-thiazoline, to the foodstuff effective to augment or impart a meaty, sauteed onion flavor.

4,355,050

PROCESS FOR PRODUCING A NATURAL FRUIT CANDY

Peter Butland, R.R. #1, Inglewood, Ontario, Canada (L0N 1K0)

Continuation of Ser. No. 134,909, Mar. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,761, Apr. 2, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 290,871

Int. Cl.^{3} A23L *1/212*

U.S. Cl. 426—615 **16 Claims**

1. A process for producing a natural fruit candy comprising the steps of:

(a) mixing enzyme deactivated dehydrated fruit having a moisture content no greater than 3% by weight and enzyme deactivated fruit juice concentrate to provide a mixture in the form of a plastic mass, the relative proportions of dehydrated fruit to fruit juice concentrate being such that said plastic mass has a moisture content in the range of 8 to 50% by weight,
(b) holding the plastic mass for at least four hours to permit equalization of the moisture content throughout the mass by reason of natural osmosis and
(c) forming individual candies from the plastic mass.

4,355,051

DIRECT EXTRACTION PROCESS FOR THE PRODUCTION OF A WHITE DEFATTED FOOD-GRADE PEANUT FLOUR

Joseph Pominski, Metairie; James J. Spadaro, New Orleans, and Henry M. Pearce, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 99,812, Dec. 3, 1979, abandoned, which is a continuation of Ser. No. 909,160, May 24, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,382

Int. Cl.^{3} A23L *1/36*

U.S. Cl. 426—632 **4 Claims**

1. A process for preparing a defatted peanut flour consisting essentially of the following steps:

a. heating shelled, raw, unblanched peanuts at a temperature of about 220° to 250° F. for a period of time sufficient to eliminate raw peanut taste, to enable the production of a white flour, and to reduce the moisture content of said peanuts to less than 5%;
b. blanching the peanuts resulting from step (a);
c. remoisturizing without heating the blanched peanuts resulting from step (b) to a moisture level of 8 to 10% to permit high acceptable mass velocities during subsequent solvent extraction and filtering of flaked peanuts in step (e);
d. flaking the peanuts resulting from step (c);
e. solvent extracting and filtering the flaked peanuts at high mass-velocities resulting from step (d);
f. desolventizing the extracted product of step (e); and
g. grinding the desolventized flakes resulting from step (f) into flour, said flour characterized as being white, having no raw peanut taste, and as having a nitrogen solubility of from about 88 to 90% at a pH of 7.5.

4,355,052

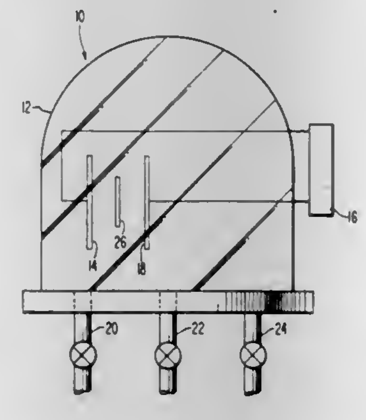
METHOD OF PREPARING AN ABRASIVE COATED SUBSTRATE

Grzegorz Kaganowicz, Princeton, N.J., and John W. Robinson, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,503

Int. Cl.^{3} B05D *5/02;* **E05D** *15/10*

U.S. Cl. 427—39 **14 Claims**



1. In a method for preparing an abrasive SiO_x coating, wherein $1 \leqq x \leqq 2$, comprising the steps of submitting SiH_4 and N_2O to a glow discharge and depositing the SiO_x product of the glow discharge onto a substrate;

the improvement comprising the additional step of adjusting the refractive index and thickness of the SiO_x coating by means of the glow discharge deposition process parameters so as to maximize the abrasiveness of the SiO_x coating.

8. In a method for lapping an article comprising the steps of submitting SiH_4 and N_2O to a glow discharge; depositing the product to obtain an abrasive SiO_x coating, wherein $1 \leqq x \leqq 2$, onto a substrate; establishing relative motion between the article and the substrate; and contacting the article with the abrasive SiO_x coating;

the improvement wherein the method comprises the additional step of adjusting the refractive index and thickness of the SiO_x coating by means of the glow discharge deposition parameters so as to maximize the abrasiveness of the SiO_x coating.

4,355,053

METHOD FOR IMPROVING THE ADHESIVENESS OF THE SURFACE OF A SYNTHETIC POLYMERIC SUBSTRATE TO COATINGS

Tuguo Nezu; Masuo Tsuchiya; Masahiro Sakamoto; Hiroyuki Nakayama, all of Hiratsuka, and Shigeo Tazuke, Yokohama, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Mar. 4, 1981, Ser. No. 240,365

Claims priority, application Japan, Mar. 10, 1980, 55-29231

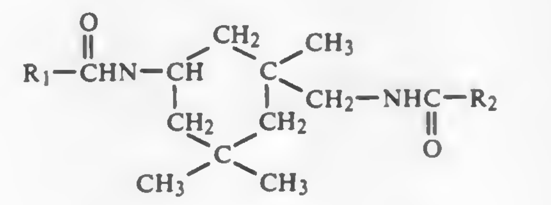
Int. Cl.^{3} B05D *3/06*

U.S. Cl. 427—54.1 **5 Claims**

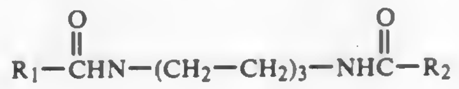
1. A method of forming an adhesive layer on the surface of a synthetic polymeric substrate, which comprises:

coating the surface of the synthetic polymeric substrate with a photopolymerizable composition comprising:

(A) a hydrophilic resin obtained by polymerization of a polymerizable unsaturated monomer composition containing at least 10% by weight of a hydrophilic unsaturated monomer,
(B) a radical-polymerizable mono-unsaturated monomer,
(C) a triplet state sensitizer having a triplet state energy of at least 50 Kcal/mole, and
(D) a radical-polymerizable poly-unsaturated compound selected from the group consisting of compounds of the formulae I, II and III:



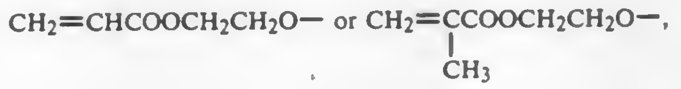
(I)



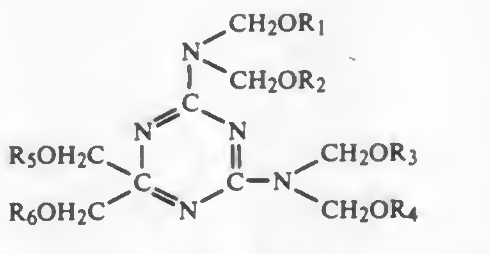
(II)

$$R_1-\overset{O}{\overset{\|}{C}}HN-(CH_2-CH_2)_3-NH\overset{O}{\overset{\|}{C}}-R_2$$

wherein, in formulae I and II, each of R_1 and R_2 represents

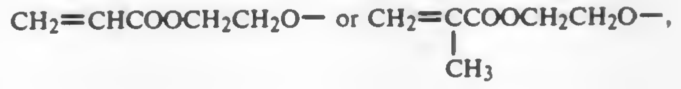


$$CH_2{=}CHCOOCH_2CH_2O- \text{ or } CH_2{=}\underset{CH_3}{\underset{|}{C}}COOCH_2CH_2O-,$$



(III)

wherein, in formula III, each of R_1 to R_6 represents H, $-CH_3$,



$$CH_2{=}CHCOOCH_2CH_2O- \text{ or } CH_2{=}\underset{CH_3}{\underset{|}{C}}COOCH_2CH_2O-,$$

and at least two of R_1 to R_6 represent the acrylic acid ester residue and/or the methacrylic acid ester residue, and

irradiating actinic rays to the coated surface of the polymeric substrate.

4,355,054
PROCESS FOR PRODUCTION OF A LOW HYDROGEN TYPE COVERED ARC-ELECTRODE

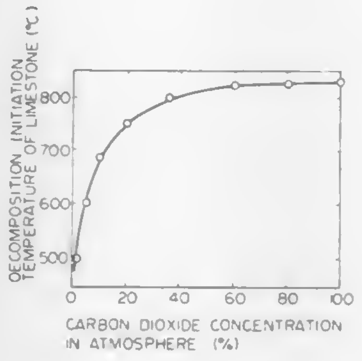
Kyoichi Nagano, Kamakura; Toshihiko Takami, Ebina, and Kunio Koyama, Machida, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,795

Claims priority, application Japan, Feb. 2, 1980, 55/11738

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—61 5 Claims



1. A process for the production of a low hydrogen type covered arc-electrode, which comprises coating on a core wire a covering which contains Na_2O and K_2O, at an Na_2O/K_2O weight ratio of at least 1, together with a carbonate and baking the thus applied covering at a temperature of from 500° to 800° C. in an atmosphere containing at least 2% of carbon dioxide gas and having a dew point not more than 5° C., said carbon dioxide gas being derived from a source other than the decomposition of said carbonate, wherein said carbon dioxide-containing atmosphere protects the carbonate from decomposition, the carbonate remaining intact in the coating after said baking step has been terminated.

4,355,055
USE OF PROLONGED TACK TONERS FOR THE PREPARATION OF MULTILAYER ELECTRIC CIRCUITS

Grant A. Beske, Princeton Junction; Abraham B. Cohen, Springfield, both of N.J., and Roger O. Uhler, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 124,607, Feb. 25, 1980, Pat. No. 4,303,698. This application Jul. 30, 1981, Ser. No. 288,401

Int. Cl.³ H05K *3/46*

U.S. Cl. 427—96 6 Claims

1. A process for the preparation of a multilayer conductive circuit which comprises connected electrically conductive patterns on at least two inert substrates with a dielectric layer between each pair of substrates, the improvement comprising (a) applying over each conductive substrate in the form of a layer with connector hole openings a particulate prolonged tack toner comprising organic polymer, solid plasticizer and particles of glass dielectric material, and optionally containing inorganic particles, (b) heating the layer containing prolonged tack toner to a temperature sufficient to activate the toner by rendering the toner tacky, (c) reducing the temperature of the layer below the activating temperature of the prolonged tack toner wherein the activated prolonged tack toner remains tacky, (d) repeating steps (a) to (c) at least one time, and (e) firing the dielectric layer to a temperature sufficient to form a smooth layer.

4,355,056
METHOD OF MANUFACTURING A COMBUSTIBLES SENSOR

Ralph A. Dalla Betta, Mountain View, Calif., and Sharon L. Zimmerlin, Chagrin Falls, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 31, 1981, Ser. No. 249,308

Int. Cl.³ G01N *31/12;* **B05D** *5/12;* **H01L** *7/00*

U.S. Cl. 427—126.4 10 Claims

1. A method of manufacturing a combustibles sensor which is relatively insensitive to sulfur poisoning comprising the steps of:

providing a first temperature measurement device which has a temperature varying electrical property;

coating said temperature measurement device with a gel to form a high surface area substrate with increased surface area over said temperature measurement device;

coating said gel high surface area substrate with a catalytic material; and

treating said catalytic material coating with H_2S to achieve a high surface area of the catalytic material.

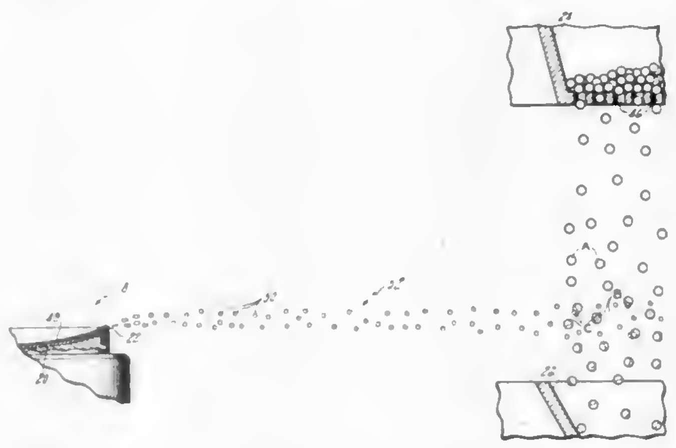
4,355,057
FORMATION OF ALLOY POWDERS THROUGH SOLID PARTICLE QUENCHING

Edward R. Slaughter, Palm Beach Shores, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1981, Ser. No. 239,231

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—216 4 Claims



1. A method for making rapidly quenched particles of metallic material, comprising the steps of:

providing solid, small diameter particles of said metallic material;

dispersing said particles in a ramdom array, falling freely through an annular space;

atomizing within said annular space a melt of metallic material and directing said material into an essentially planar stream of tiny droplets having a size significantly smaller than said particle;

traversing said tiny droplets in molten form radially across said annular space causing random collision of the droplets and the particles whereby each droplet in collision with one or more of said particles becomes solidified at least in part thereon to form coated solid particles of increased size.

4,355,058
POWDERY COATING MEDIA AND THEIR USE

Rainer Gras, Herne; Johann Obendorf, Dorsten, and Elmar Wolf, Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

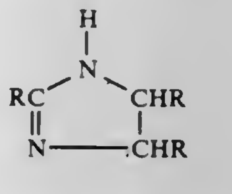
Filed Aug. 14, 1978, Ser. No. 933,583

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738270

Int. Cl.³ C08G *59/40, 59/56, 18/58*

U.S. Cl. 427—386 10 Claims

1. A curable finely divided solid composition comprising (1) an epoxy compound having more than one 1,2-epoxide group and having a lower fusion point of at least 40° C. and (2) 2–15%, by weight, based on the solid epoxy compound, of a blocked polyisocyanate formed by the reaction of a polyisocyanate with a compound of the formula



wherein each R is independently selected from hydrogen, alkyl, cycloalkyl, aralkyl, and aryl radicals.

4,355,059
POLY(ARYLENE SULFIDE) COMPOSITION CONTAINING A POLYOLEFIN

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 24, 1981, Ser. No. 256,874

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—388.2 15 Claims

11. A method for applying a smooth, continuous coating of a poly(arylene sulfide) to a substrate, the method comprising applying to the substrate a continuous layer of an aqueous slurry comprising a major amount of a curable poly(arylene sulfide) and a minor amount, effective to reduce surface defects in the cured coating, of a polyolefin dispersed in an aqueous medium, removing the aqueous medium, and curing the poly(arylene sulfide) on the substrate.

4,355,060
HIGH TEMPERATURE CEMENTITIOUS COATINGS WITH IMPROVED CORROSION RESISTANCE AND METHODS OF APPLICATION

Charles E. Cornwell, 7104 Marlan Dr., Alexandria, Va. 22307

Filed Aug. 13, 1981, Ser. No. 292,501

Int. Cl.³ B05D *1/02;* **C04B** *9/02*

U.S. Cl. 427—427 3 Claims

1. A method of coating a substrate comprising:
(a) establishing a mixture of
  (i) a refractory aggregate including magnesia and fly ash and other finely divided minerals and
  (ii) ammonium phosphate in aqueous solution, the composition of said phosphates being at best 20% polyphosphates, balance orthophosphate, the amounts of magnesia and phosphates in said mixture being effective to bond all of the aggregates into a solid continuous mixture and,
  (iii) metered liquid components;
(b) applying said mixture by air conveying said mixture to a static mixing device wherein said metered liquid components are introduced just before said mixing device, the mixture being conveyed through said mixing device by air pressure and discharged through a spray nozzle onto said substrate resulting in a coating of about 2 mils to about 40 mils thickness.

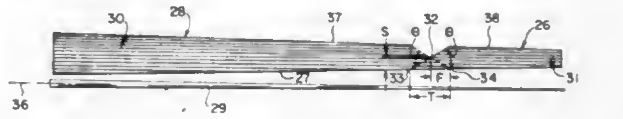
4,355,061
COMPOSITE TUBULAR ROD AND METHOD FOR MAKING SAME

Myron C. Zeigler, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.

Filed Aug. 13, 1981, Ser. No. 292,494

Int. Cl.³ A01K *87/00, 91/00;* **B32B** *9/00*

U.S. Cl. 428—36 12 Claims



1. A method for forming a hollow rod having a body portion and a relatively more flexible tip portion with a transition portion longitudinally therebetween and in which said body and tip portions are reinforced with distinctly different filaments that are overlappingly anchored within said transition portion comprising the steps of: providing a first flexible prepreg sheet incorporating a plurality of first reinforcing strands coated, and bonded together, with a flexible latently hardenable resin; providing a second flexible sheet incorporating a plurality of selected second reinforcing strands coated, and bonded together, with a flexible, latently hardenable resin compatible with the resin in said first prepreg sheet; cutting each said sheet to a tapered apex; longitudinally overlaping said tapered apices; simultaneously wrapping said sheets upon a mandrel; and, hardening the resin in said sheets.

4,355,062
BIS(HYDROXYALKYL)DISILOXANES AND LUBRICANT COMPOSITIONS THEREOF

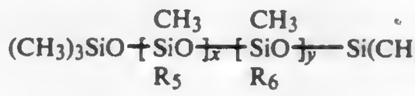
Chih C. Wang, Hightstown, and Ronald F. Bates, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,859

Int. Cl.³ B32B *3/02;* **G01D** *15/34*

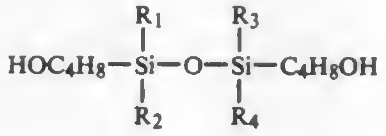
U.S. Cl. 428—64 4 Claims

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record being coated with a methyl alkyl siloxane lubricant having the formula



$$(CH_3)_3SiO\left[\overset{CH_3}{\underset{R_5}{Si}}O\right]_x\left[\overset{CH_3}{\underset{R_6}{Si}}O\right]_y Si(CH_3)_3$$

wherein R_5 and R_6 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x and y is 4 or less, the improvement which comprises adding to said lubricant a bis(hydroxyalkyl)disiloxane having the formula



$$HOC_4H_8-\overset{R_1}{\underset{R_2}{Si}}-O-\overset{R_3}{\underset{R_4}{Si}}-C_4H_8OH$$

wherein R_1 and R_3 are methyl or ethyl and R_2 and R_4 are linear alkyl groups of up to 20 carbon atoms.

4,355,063

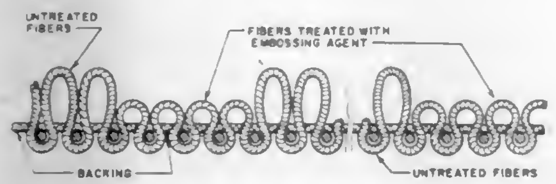
CHEMICALLY EMBOSSED CARPET AND THE METHOD OF CARRYING OUT CHEMICAL EMBOSSING WHILE PRESERVING TEXTURE

Leon B. Palmer, Little Falls, and Robert P. Conger, Park Ridge, both of N.J., assignors to Congoleum Corporation, Kearny, N.J.

Continuation of Ser. No. 760,845, Jan. 21, 1977, abandoned, which is a continuation of Ser. No. 666,692, Mar. 15, 1976, abandoned, which is a continuation of Ser. No. 429,949, Jan. 2, 1974, abandoned. This application Aug. 15, 1980, Ser. No. 178,572

Int. Cl.³ B32B *33/00*

U.S. Cl. 428—89 9 Claims



1. In a process for producing an embossed effect on nylon pile fabric having a surface of nylon fibers which process comprises,

applying to defined areas of the piled surface of said fabric a chemical embossing agent for said fibers, said agent having the capacity to reduce said fibers in the length to an extent of at least 10 percent of their length,

the improvement which comprises incorporation into a chemical composition with said embossing agent a protective agent for said fibers compatible with the chemical ingredients of said embossing composition and allowing said embossing composition to remain in contact with said fibers for the same total time and temperature employed to reduce the height of said pile and, thereafter, selectively removing said embossing agent from said fabric, said protective agent suppressing the development of hardness, harshness and stiffness in the shrunk fibers.

4,355,064

COVERING MATERIAL

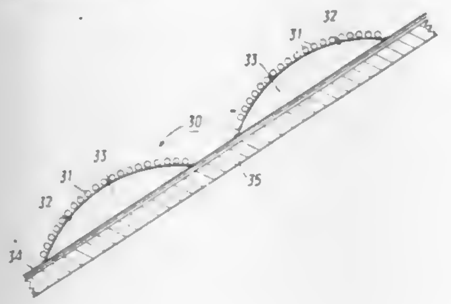
Jörg Imhof, 9601 Arnoldstein Nr. 202, (Kärnten), Austria

Filed Jan. 14, 1980, Ser. No. 112,018

Claims priority, application Austria, Jan. 19, 1979, 400/79

Int. Cl.³ B32B *1/08;* F24J *3/02*

U.S. Cl. 428—178 7 Claims



1. A covering for walls, facades and roofs comprising webs which for the absorption of radiant and environmental heat having flow channels running parallel to each other for a heat transfer medium which flows through the channels and are made of flexible synthetic material, the improvement wherein

additional channels (33, 42) are formed in the webs running approximately parallel to said flow channels (e.g. 31, 37), a flow through medium being contained in the additional channels, the external shape of the webs and the size of the cross section of the additional channels are variable by means of change of the pressure of the medium in said additional channels,

an expandable base foil defining an outer peripheral wall of each of said additional channels, respectively,

a plurality of said flow channels being attached to each of said base foil of said additional channels, respectively, and

a support foil being connected to ends of said base foils, respectively, said support foil forms a bottom peripheral wall of all of said additional channels.

4,355,065

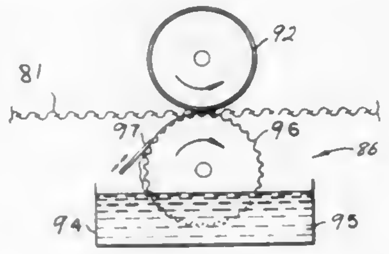
SOIL-RESISTANT TEXTILE MATERIALS

Roy P. DeMott, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 144,152, Apr. 28, 1980, abandoned. This application Apr. 7, 1981, Ser. No. 251,693

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 8 Claims



1. A textile material suitable for use as an automotive upholstery fabric which comprises:

(a) a body portion having a face and a back comprised of synthetic, thermoplastic fibers;

(b) said body portion being provided with a substantially oil and water-repellent fluoropolymer substantially evenly distributed on the face thereof and remaining substantially on or near the face surface of said textile material, said fluoropolymer being provided in a minor amount sufficient to improve soil resistance characteristics but less than an amount which would cause said material to burn at a rate in excess of about 2 inches per minute or to support such burning for longer than about one minute as determined by United States Government Department of Transportation Motor Vehicle Standard Test Number 302; and

(c) said textile material further having been backcoated with a flame-retardant backcoating in an amount sufficient to improve the flammability characteristics of said textile material.

4,355,066

SPOT-BONDED ABSORBENT COMPOSITE TOWEL MATERIAL HAVING 60% OR MORE OF THE SURFACE AREA UNBONDED

Nicholas S. Newman, Cohasset, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 8, 1980, Ser. No. 213,820

Int. Cl.³ B32B *5/26, 7/14, 23/08, 23/10*

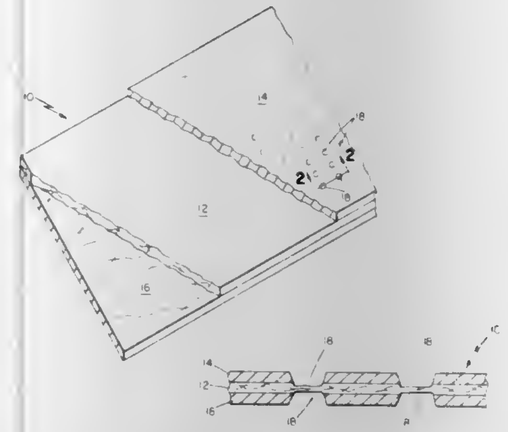
U.S. Cl. 428—198 6 Claims

1. An absorbent hydrophilic and oleophilic multipurpose composite towel material comprising:

an inner hydrophilic absorbent layer of cellulosic material; and,

outer layers of microfibrous polyolefin material on opposite sides of said inner layer;

said outer layers being fusion bonded through said inner layer in discreet spot areas said spot bonded areas leaving the unbonded areas more than 60% of the whole and as large as possible consistant with requirements of material integrity, to produce a bonded composite material having low density and exceptionally high void volume for improved liquid absorbency.



4,355,067

SCOURING MATERIAL

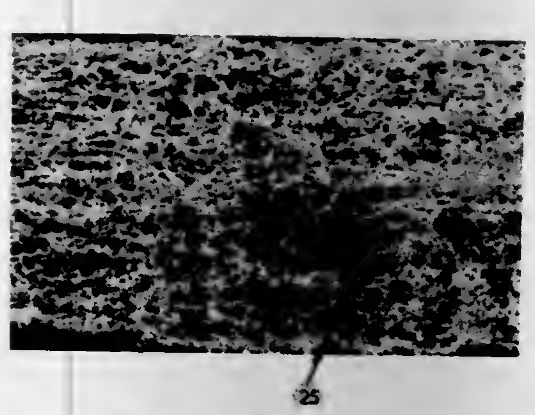
Jean-Louis Neveu, Plerin, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR) and Institut Textile Boulogne-Sur de France, both of Seine, France

Filed Sep. 12, 1980, Ser. No. 186,467

Claims priority, application France, Sep. 20, 1979, 79 23875

Int. Cl.³ B24D *11/02*

U.S. Cl. 428—253 5 Claims



1. An improved fibrous scouring material, comprising a fibrous band having a structure of a three-dimensional lattice formed of drawn irregular fibrillated fibers obtained by fibrillation of a polypropylene-based bilaminar film, said fibers being helically crimped and self-bonded together at their mutual contact points and being interconnected by fibrils which are also helically crimped, wherein:

the fibrillated fibers are heat shrunk and include at least one sharp edge,

the thickness of the fibrillated fibers is between 100 and 200 microns, and

the fibrous band has a cavity proportion of at least 75%.

4,355,068

IMPREGNATED GASKET AND METHOD OF PRODUCING

Horst Beyer, and Hans-Reiner Zerfass, both of Burscheld, Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

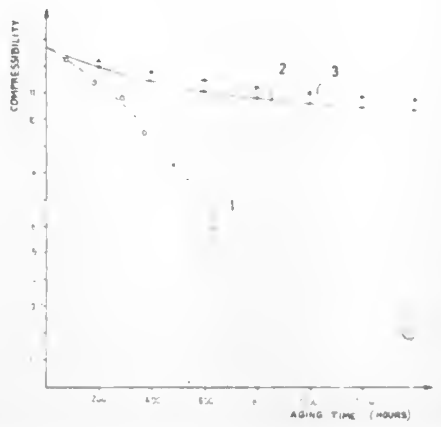
Filed Nov. 13, 1981, Ser. No. 321,202

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042912

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—290 9 Claims

1. In a gasket made of a fibrous and/or porous material impregnated with a polymerizable saturating agent which is partially polymerized only to a plastically deformable consistency, the improvement comprising an additive which prevents complete polymerization and hardening applied to the surfaces of said material after impregnation with said saturation agent and partial polymerization.



4,355,069

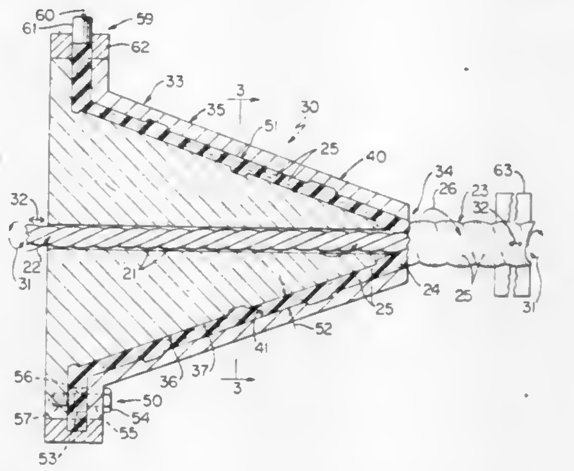
FLEXIBLE LOAD-CARRYING CORD, APPARATUS AND POLYMERIC CONSTRUCTION UTILIZING SAME

Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 17, 1981, Ser. No. 244,530

Int. Cl.³ D02G *3/36;* B60C *9/00*

U.S. Cl. 428—292 13 Claims



1. In a flexible load-carrying cord which is adapted for embedment in a polymeric construction said cord comprising a plurality of elements which are twisted in one direction and normally have a tendency to untwist, the improvement comprising a polymeric sleeve bonded around said elements, said sleeve comprising a polymeric matrix having a plurality of discrete randomly arranged fibers embedded therein, said fibers being disposed in a helical pattern which extends in a direction opposite from said one direction, and said sleeve with its fibers serving to substantially eliminate said tendency of said elements to untwist.

9. In a construction made primarily of polymeric material and having a flexible load-carrying cord embedded in at least a portion thereof, said cord comprising a plurality of elements which are twisted in one direction and normally have a tendency to untwist, the improvement comprising a polymeric sleeve bonded around said elements and defining the outer part of said cord, said sleeve comprising a polymeric matrix having a plurality of discrete randomly arranged fibers embedded therein, said fibers being disposed in a helical pattern which extends in a direction opposite from said one direction, and said sleeve with its fibers serving to substantially eliminate said tendency of said elements to untwist.

4,355,070

HEAT-SENSITIVE RECORD MATERIAL

Yoshitaka Oeda, Nara, Japan, assignor to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,655

Int. Cl.^{3} B41M *5/18*

U.S. Cl. 428—323 **7 Claims**

1. In a heat-sensitive record material comprising a base sheet and a color developing layer formed on at least one surface of said base sheet, said color developing layer comprising
   (a) electron donating color forming material,
   (b) acceptor which is reactive with said color forming material to develop a color,
   (c) a heat fusible material having a melting point within the range of 60° C. to 200° C., and
   (d) oil absorptive pigment having an oil absorption within the range of between 80 and 800 ml/100 g, the improvement in said pigment existing in said color developing layer in the form of finely divided particles each having a coating thereon, said coating being formed of said acceptor or said heat fusible material.

4,355,071

CLEAR COAT/COLOR COAT FINISH CONTAINING ULTRAVIOLET LIGHT STABILIZER

David C. Chang, Troy, Mich., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 60,255, Jul. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 902,416, May 3, 1978, Pat. No. 4,208,465. This application May 5, 1980, Ser. No. 146,261

The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.

Int. Cl.^{3} B32B *15/08;* **B44D** *1/14*

U.S. Cl. 428—334 **71 Claims**

1. A substrate having a finish of a clear coat top layer in firm adherence to a color coat layer in adherence with the substrate; wherein
the clear coat contains no ultraviolet light stabilizer and consists essentially of a transparent film-forming binder; and
the color coat consists essentially of a film-forming binder and pigment in a pigment-to-binder weight ratio of about 1/100 to 150/100 and initially contains about 1–20% by weight, based on the weight of the binder, of ultraviolet light stabilizer; wherein the ultraviolet light stabilizer migrates from the color coat to the clear coat and continues to do so as ultraviolet light stabilizer is lost from the clear coat due to exposure to weathering, thereby providing an adequate level of ultraviolet light stabilizer to retard deterioration from weathering of the clear coat.

8. The substrate of claims 1, 2, 3, 4, 5, 6, or 7 wherein the color coat is about 0.4–1.5 mils thick and the clear coat is about 0.5–5.0 mils thick.

4,355,072

MAGNETIC HEXAGONAL FERRITE LAYER ON A NONMAGNETIC HEXAGONAL MIXED CRYSTAL SUBSTRATE

Dieter Mateika, Ellerbek, and Günter Bartels, Pinneberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,030

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005195; Feb. 12, 1980, 3005219

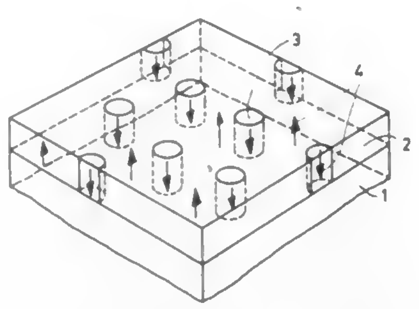
Int. Cl.^{3} G11B *5/62*

U.S. Cl. 428—336 **8 Claims**

1. A magnetic device comprising a monocrystalline, magnetic layer of a hexagonal ferrite material on a surface of a monocrystalline, nonmagnetic substrate, characterized in that the substrate consists essentially of a hexagonal alkaline-earth gallate mixed crystal with the formula

$$A^{2+}{}_{1+y}\,Ga_{12-2x-y}B^{2+}{}_{x}\,C^{4+}{}_{x}\,O_{19},$$

where A is one or more elements selected from the group consisting of barium and strontium, B is one or more elements selected from the group consisting of magnesium, manganese, zinc, iron, copper, nickel, cobalt, and chromium, C is one or more elements selected from the group consisting of zirconium, hafnium, titanium, and tin, and $0.1 \leqq x \leqq 1.2$ and $0 \leqq y \leqq 0.8$.



4,355,073

ADHESIVE COATINGS OF PREPASTED WALL COVERINGS

Jack A. Knightley, Bozeat, England, assignor to Scott Bader Company Limited, Northamptonshire, England

Filed Jun. 13, 1980, Ser. No. 159,105

Claims priority, application United Kingdom, Jun. 26, 1979, 7922187

Int. Cl.^{3} C09J *7/02*

U.S. Cl. 428—350 **10 Claims**

1. A prepasted wall covering comprising a substrate and a dry coating, upon said substrate, said coating being activatable as an adhesive paste of said covering upon immersion in water, said coating being microscopically discontinuous and comprising particles of a water soluble synthetic polymer of molecular weight of at least 500,000, said polymeric coating having been prepared by applying to the substrate, a water-in-oil emulsion of said polymer.

4,355,074

BONDING SHEET-LIKE MATERIAL TO A SUBSTRATE FROM WHICH IT CAN BE DRY-STRIPPED

Hermann Stemmler, Walluf, and Volker Knittel, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 24, 1980, Ser. No. 162,666

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926481

Int. Cl.^{3} C09J *7/02*

U.S. Cl. 428—350 **21 Claims**

1. Dry-strippable sheet-like material in juxtaposition to and coextensive over a substantial proportion of surface area with two contiguous adhesive layers, adhesive of each layer comprising film-forming water-soluble or water-swellable polysaccharide derivative polymer, one layer being that of at least one non-ionic polysaccharide derivative and the other layer being that of at least one ionic polysaccharide derivative; one of the two adhesive layers being interposed between and in direct contact with both the sheet-like material and the other adhesive layer.

4,355,075

NOVEL FILAMENT-LIKE FIBERS AND BUNDLES THEREOF, AND NOVEL PROCESS AND APPARATUS FOR PRODUCTION THEREOF

Susumu Norota; Tsutomu Kiriyama; Tadashi Imoto, and Toshinori Azumi, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 24, 1980, Ser. No. 133,288

Claims priority, application Japan, Mar. 27, 1979, 54/35008; Mar. 27, 1979, 54/35009; Jul. 16, 1979, 54/89315; Sep. 4, 1979, 54/112370

Int. Cl.^{3} D02G *3/00*

U.S. Cl. 428—369 **8 Claims**

1. A melt-spun filament composed of at least one thermoplastic synthetic polymer, said filament being characterized by having
   (1) a non-circular cross-section varying irregularly in both the size and shape of the cross-section at irregular intervals along its longitudinal direction, and
   (2) a coefficient of intrafilament cross-sectional area variation [CV(F)] of 0.08–0.7.

4,355,076

DRY LAMINATION

Duggan J. Gash, Lower Froyle, near. Bentley, England, assignor to Koninklijke Emballage Industrie Van Leer, B.V., Amstelveen, Netherlands

Continuation of Ser. No. 820,893, Aug. 1, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 935,007

Claims priority, application United Kingdom, Aug. 4, 1976, 32559/76

Int. Cl.^{3} B32B *9/04;* **C09J** *5/02*

U.S. Cl. 428—411 **10 Claims**

1. A two-step method of laminating at least two plastic films of same or different nature, comprising contacting intimately said films by means of pressure rolls at a temperature in the range from ambient up to the melting temperature of the film having the lowest melting point of said films in order to form a low peel strength composite, and subsequently subjecting said composite to a treatment at a temperature within the range from 60° to 180° C., said 60° to 180° C. temperature being below the melting or softening temperature of the constituents in the composite having the lowest melting or softening temperature, in order to form a high peel strength laminate, non-surface treated films being used and the composite of the first step being subjected to the treatment of the second step in a condition substantially free of tension and pressure.

4,355,077

PHOTOCURED LAMINA OF UNSATURATED URETHANE/MONOMER ADHESIVE BLEND WITH A TRANSPARENT LAYER

Pierre Chevreux, St. Jean de Gonville, France; Van T. Nguyen, Petit-Lancy, Switzerland; Alain Roman, Bossey, France, and Daniel Turpin, Nyon, Switzerland, assignors to Deltaglass S.A., Geneva, Switzerland

Division of Ser. No. 76,780, Sep. 19, 1979, Pat. No. 4,297,185. This application Jun. 29, 1981, Ser. No. 278,711

Claims priority, application Switzerland, Sep. 20, 1978, 9815/78

Int. Cl.^{3} B32B *15/20, 17/10, 21/08, 27/08*

U.S. Cl. 428—412 **49 Claims**

1. A method of bonding a glass face to another face which is of glass or a thin flexible film of transparent plastics, characterised by the steps of:
   (i) providing between said faces a layer of a photohardenable composition which is polymerizable by irradiation under u.v. light to provide an adhesive and comprises:
   from 10–95% by weight of at least one olefinic photopolymerizable prepolymer which has an olefinic double bond activated by an electrophilic substituent and a molecular weight from about 500 to 10,000, is a substantially linear product derived from an α,β-ethylenically unsaturated acid selected from the group consisting of acrylic acid and alpha-substituted derivatives of acrylic acid, at least one flexible diol and at least one substantially rigid diisocyanate, and has on average one olefinic unsaturation due to the acid per 800 to 3000 of molecular weight,
   from 0.001 to 10% by weight of benzophenone,
   from 1 to 10% by weight of equimolar amounts of dimethyl aminoethyl methacrylate and acrylic acid, and
   more acrylic acid, in an amount of from 0.001 to 60% by weight of the composition, and
   (ii) subjecting the layer to u.v. radiation to cure the composition and bond the faces together.

4,355,078

NITRILE ELASTOMER SURFACES RECEPTIVE FOR BONDING BY EPOXY ADHESIVES AND METHOD THEREFOR

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1980, Ser. No. 147,815

Int. Cl.^{3} B32B *25/02, 25/04, 27/38*

U.S. Cl. 428—414 **6 Claims**

1. A composite structure comprising a nitrile elastomer member portion secured to a second nitrile elastomer member of the composite structure by epoxy adhesive, the surface of the elastomer member portion secured to the second member being treated by a method comprising the steps of:
   providing a treating solution comprising a concentration of less than 1.0 N of a mineral acid in a carrier comprising water and one of alcohol and ketones, and
   treating the elastomer surface with the treating solution.

3. A method of preparing nitrile elastomer surfaces for bonding by epoxy adhesives comprising the steps of:
   providing a treating solution comprising a concentrate of less than 1.0 N of a mineral acid in a carrier comprising water and one of alcohol and ketones, and
   treating the elastomer surface with the treating solution.

4,355,079

CORROSION INHIBITION

Arnold M. Rosenberg, Potomac, and James M. Gaidis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 77,218, Sep. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 700,344, Jun. 28, 1976, abandoned. This application Apr. 21, 1981, Ser. No. 256,221

Int. Cl.³ B32B *9/00, 15/04*

U.S. Cl. 428—469 **13 Claims**

1. An article consisting essentially of a metal piece coated with a thin film of from about 0.005 to about 0.375 inch thick consisting essentially of calcium nitrite and a cement-free carrier, said composition being applied as a film on the metal piece and said metal being iron, steel, aluminum or aluminum-steel alloy.

4,355,080

POLYESTER-ACRYLIC COMPOSITE SHEET HAVING IMPROVED WEATHERABILITY

Joseph S. Zannucci, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,784

Int. Cl.³ B32B *27/08, 27/18, 27/36*

U.S. Cl. 428—483 **7 Claims**

1. A polyester-polyacrylic composite article comprising a substrate of an amorphous, essentially unoriented polyester material having an inherent viscosity of at least 0.4, having laminated to its surface a film of polyacrylic material prepared from either or both of the monomers $H_2C{=}CHCO_2R$ and $H_2C{=}C(CH_3)CO_2R^1$ wherein R and R^1 are each selected from C_1–C_{12} linear or branched alkyl groups.

4,355,081

CURING OF RESIN IMPREGNATED CELLULOSICS WITH CONTINUOUSLY SUPERHEATED STEAM

Homan B. Kinsley, Jr., Powhatan, Va., assignor to James River Corporation, Richmond, Va.

Filed May 30, 1980, Ser. No. 155,117

Int. Cl.³ B32B *27/42*

U.S. Cl. 428—526 **25 Claims**

1. A process for curing a curable, organic solvent soluble and thermosetting resin impregnated non-textile cellulosic substrate comprising contacting such substrate with an effective amount of a gaseous medium consisting essentially of steam, said steam being in superheated state, and maintaining said substrate in contact with the superheated steam, while also maintaining the steam in said superheated state, for a period of time sufficient to cure the resin impregnated substrate without concomitant condensation of said superheated steam thereon.

22. The product obtained upon curing a phenol-aldehyde resin impregnated non-textile substrate by contacting such substrate with an effective amount of a gaseous medium consisting essentially of steam, said steam being in superheated state, and maintaining said substrate in contact with the superheated steam, while also maintaining the steam in said superheated state, for a period of time sufficient to cure the resin impregnated substrate without concomitant condensation of said superheated steam thereon.

4,355,082

ULTRA-THIN WIRE FOR SEMICONDUCTOR CONNECTIONS

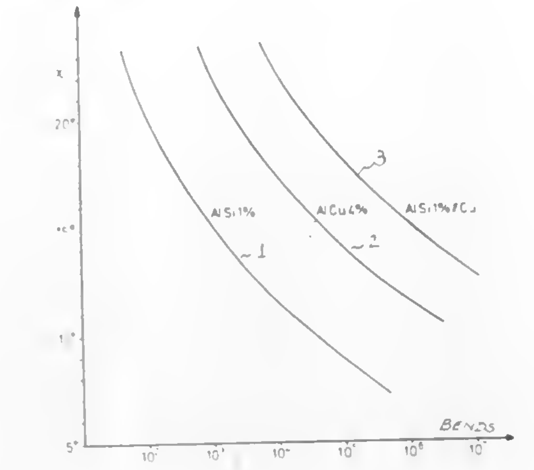
Albrecht Bischoff, Bruchköbel, and Fritz Aldinger, Rodenbach, both of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,528

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023528

Int. Cl.³ H10L *23/48*

U.S. Cl. 428—607 **10 Claims**



1. Ultra-thin bonding wire, particularly for connection to a semiconductor, and having a diameter in the order of about 0.01 to 0.06 mm

comprising, in accordance with the invention,

a core of a material of the group consisting of: copper; copper alloy of at least 60% copper content;

and a jacket of a material of the group consisting of: aluminum, or aluminum alloy of at least 95% aluminum;

all percentages by weight.

4,355,083

ELECTROLESSLY METALLIZED SILVER COATED ARTICLE

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 803,777, Jun. 6, 1977, Pat. No. 4,181,760. This application Dec. 26, 1979, Ser. No. 106,499

Int. Cl.³ B32B *15/04;* **C23C** *3/02*

U.S. Cl. 428—621 **7 Claims**

1. A metallized article, said article being a silver coated ceramic substrate, produced by the steps comprising,

(a) contacting said silver coated ceramic substrate with a composition thereby rendering said substrate receptive to conventional electroless plating and wherein said composition comprises metal ions and only a single reducing agent and wherein said reducing agent is capable of chemically reacting with said silver coated ceramic substrate and the metal ions within said composition and wherein the metal ions are selected from the group consisting of nickel, cobalt, and iron and mixtures thereof, and wherein the relative molar concentration of the reducing agent to the metal ions is so adjusted as to permit the initial chemical interaction of the reducing agent with said silver coated ceramic substrate and then the heterogeneous reduction of some of the metal ions present in said composition and then,

(b) contacting the treated silver coated ceramic substrate with a conventional electroless plating bath thereby depositing a metallic layer and wherein said bath comprises hypophosphite.

4,355,084

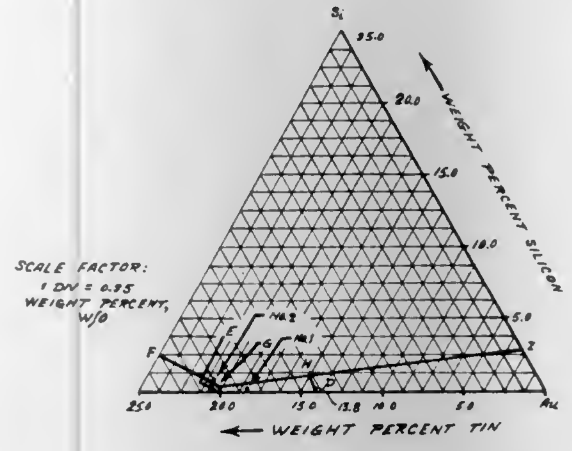
LOW TEMPERATURE BRAZE ALLOY AND COMPOSITE

Donald R. Kitchen, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1980, Ser. No. 132,453

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—672 **4 Claims**



3. An article of manufacture composed of a gold-plated lid bonded to a gold-plated substrate with a braze alloy consisting essentially of about 81.0 to 82.5 weight percent gold, about 0.20 to 0.45 weight silicon, and the balance substantially all tin.

4,355,085

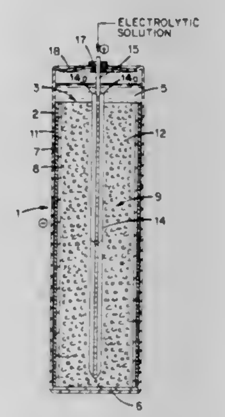
ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, Mass., assignor to GTE Products Corp., Stamford, Conn.

Filed Jul. 23, 1981, Ser. No. 286,212

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—101 **13 Claims**



1. A carbon cathode structure for an electrochemical cell, comprising:

an elongated porous carbon element having a guide opening extending therealong for a portion of its entire length; and

a unitary metal current collector element embedded within the porous carbon element, said metal current collector element comprising first and second elongated, spaced-apart, tapered, resilient spring members joined together at first ends thereby to define a tapered central opening therebetween and a generally V-shaped, tapered form for the current collector member, said first and second spring members lying along and within the guide opening in the porous carbon element and having portions at the tapered joined ends of the first and second spring members physically inserted within the material of the carbon element and extending beyond the termination of the guide opening in the carbon element, said first and second spring members being operative when embedded within the carbon element to exert an outwardly directed force against internal portions of the carbon element.

4,355,086

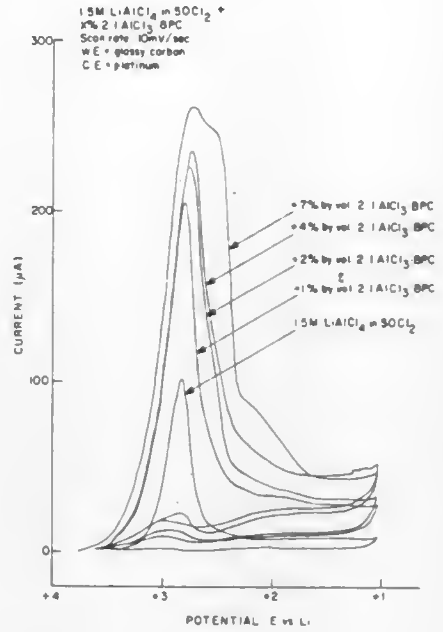
LITHIUM THIONYL CHLORIDE BATTERY

Deidrich J. Saathoff, Eagan, and Hanumanthiya V. Venkatasetty, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 1, 1981, Ser. No. 307,480

Int. Cl.³ H01M *4/36*

U.S. Cl. 429—105 **7 Claims**



1. In an electrochemical cell having a lithium anode, a cathode and an electrolyte including lithium aluminum chloride and thionyl chloride, the improvement comprising the addition of a mixture of aluminum chloride and n-butyl pyridinium chloride to the electrolyte.

4,355,087

COLOR IMAGING DEVICE HAVING A COLOR FILTER ARRAY USING A METAL SALT OF A LONG-CHAIN FATTY ACID AS A BARRIER

Thomas W. Martin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 4, 1981, Ser. No. 299,371

Int. Cl.³ G03F *5/00*

U.S. Cl. 430—7 **14 Claims**

1. A color imaging device comprising a support having a radiation-sensitive surface having superimposed thereon a color filter array having at least two sets of filter elements wherein at least one of said filter elements comprises a dyed element of a dyeable composition wherein:

said dyeable composition comprises at least one compound having coordination sites for metal ions and

the outermost surface of the elements of at least one set of filter elements comprises a metal salt of a long-chain fatty acid wherein the metal of the salt is coordinated to said coordination sites in said dyeable composition.

4,355,088

POLYETHYLENE PRESSURE FIXABLE ELECTROSCOPIC PRINTING POWDER AND PRESSURE FIXING METHOD

Virgil W. Westdale, Barrington, Ill., and John Novotny, Jr., Denville, N.J., assignors to Am International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 782,609, Mar. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 655,466, Feb. 5, 1976, abandoned, which is a division of Ser. No. 437,273, Jan. 28, 1974, abandoned. This application Apr. 23, 1979, Ser. No. 32,647

Int. Cl.^{3} G03G *13/20, 9/08*

U.S. Cl. 430—98 **15 Claims**

1. A method for producing a developed image of a graphic original on a photoconductive member comprising the steps of:

uniformly charging the photoconductive member;

exposing the charged member to a pattern of light and shadow to produce a differential charge pattern thereon;

developing the pattern by applying thereto a mixture of carrier particles and an electroscopic powder having an average particle size ranging from under 1 micron to about 50 microns, said developer powder including from about 70% to 95% by weight of a polyolefin having a density of about from 0.94 to about 0.98 gram per cubic centimeter, a degree of crystallinity in the range of about 75% to about 98%, and molecular weight in the range of from about 800 to about 5,000, and an orienting coloring agent in the range from about 1% to about 10% by weight of the powder, where the ratio by weight of the powder to the carrier is in the range of from about 1:15 to about 1:80, and

fixing the developed powder image by means of pressure alone.

4,355,089

PROCESS FOR PRODUCING A PHOTOCONDUCTIVE POLYIMIDE COATING UPON A SUBSTRATE

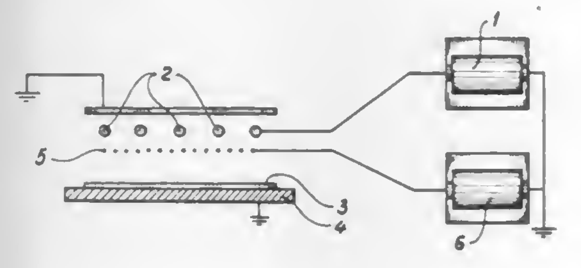
Jan van Turnhout, Pijnacker, and Ramesh C. Ahuja, Delf; both of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer, Delft, Netherlands

Filed Aug. 8, 1978, Ser. No. 931,919

Claims priority, application Netherlands, Aug. 9, 1977, 7708786

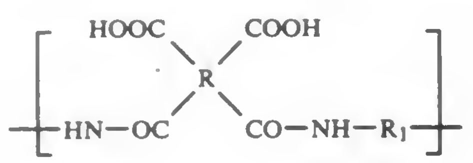
Int. Cl.^{3} C08G *63/04*

U.S. Cl. 430—130 **5 Claims**



1. A process for producing upon a substrate a photoconductive coating of polyimide containing as a photosensitizer a member selected from the group consisting of 2,4,7-trinitro-9-fluorenone (TNF) and 2,4,5,7-tetranitro-9-fluorenone, said process comprising:

(1) coating the substrate with a solution in an organic solvent of a polyamic acid having recurring units of the formula:



wherein

R is a tetravalent organic radical containing at least two carbon atoms, no more than two carbonyl groups being bonded to anyone carbon atom of R,

R_1 represents a divalent organic radical having at least two carbon atoms, which is bonded to two nitrogen atoms, the said nitrogen atoms being attached to different carbon atoms of said divalent radical, and R, R_1 or both contain at least one aromatic ring of six carbon atoms, as well as of a member of the group consisting of 2,4,7-trinitro-9-fluorenone (TNF) and 2,4,5,7-tetranitro-9-fluorenone in an amount of 1–50% by weight, based on the polyamic acid, and

(2) heating the coated substrate at a temperature not exceeding 150° C. to form on the substrate a polyimide coating containing a photosensitizer.

4,355,090

METHOD FOR MAKING A DIFFUSION TRANSFER LITHOGRAPHIC PRINTING PLATES WITH OXAZOLIDONES

Shoji Yamada; Eiji Kanada, both of Nagaokakyo, and Kozo Haino, Kyoto, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

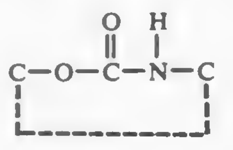
Filed Jul. 1, 1980, Ser. No. 164,938

Claims priority, application Japan, Jul. 4, 1979, 54/84744

Int. Cl.^{3} G03C *5/54*

U.S. Cl. 430—204 **8 Claims**

1. Method for making a lithographic printing plate by the silver salt diffusion transfer development process after exposure of the plate, characterized in that the diffusion transfer development processing is carried out in the presence of a compound having the ring structure of the formula:



$$\mathrm{C{-}O{-}\overset{O}{\overset{\|}{C}}{-}\overset{H}{\overset{|}{N}}{-}C}$$

4,355,091

POLYMERIC NEUTRALIZING LAYER WITH TEMPORARY CROSSLINKS FROM AN ORGANO-METALLIC CROSSLINKING AGENT

William T. MacLeish, North Andover, and Ehud Shchori, Brookline, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 25, 1980, Ser. No. 181,062

Int. Cl.^{3} G03C *1/400, 7/00, 5/54*

U.S. Cl. 430—216 **36 Claims**

1. An element adapted for use in a film unit of a photographic diffusion transfer process which comprises a sheet-like support and a polymeric neutralizing layer bonded to said support, said polymeric neutralizing layer being a polymeric acid formed by radiation polymerization of a radiation-polymerizable composition and containing, within the polymeric layer, temporary cross-links from an organometallic cross-linking agent which effect resistance to nonalkaline hydrolysis under film unit assembly conditions and which are subject to substantial degradation under conditions of alkali hydrolysis during film unit processing.

4,355,092

NOVEL PHENYLMERCAPTOAZOLE COMPOUNDS

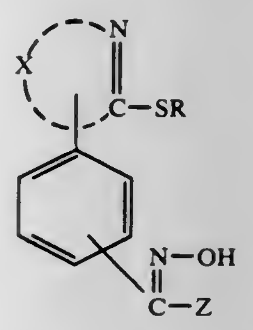
Avinash C. Mehta, Belmont; George H. Nawn, Westwood, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1981, Ser. No. 222,543

Int. Cl.^{3} G03C *5/54, 1/06*

U.S. Cl. 430—219 **25 Claims**

1. A photographic element comprising a support and at least one layer thereon containing a silver halide emulsion having associated therewith a compound represented by the formula



wherein X represents the nonmetallic atoms necessary to form a nucleus which completes a 5- or 6-membered heterocyclic ring, R is H, an alkali metal or a group which is cleavable in aqueous alkaline medium and Z is H, alkyl having from 1 to 10 carbon atoms, aralkyl, phenyl or substituted phenyl.

4,355,093

LAMINATE USEFUL FOR THE PRODUCTION OF PRINTING PLATES AND RELIEF PLATES

Heinrich Hartmann, Limburgerhof; Gerhard Hoffmann, Otterstadt; Werner Lenz, Bad Durkheim; John Lynch, Monsheim, and Herbert Naarmann, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,707

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015419

Int. Cl.^{3} G03C *1/68*

U.S. Cl. 430—275 **4 Claims**

1. A laminate suitable for the production of printing plates and relief plates, comprising

(a) a photosensitive layer of a mixture, soluble in water or in an aqueous solution, of

(a_1) at least one hydrophilic polymeric binder, together with

(a_2) at least one photopolymerizable ethylenically unsaturated monomer compatible therewith, and

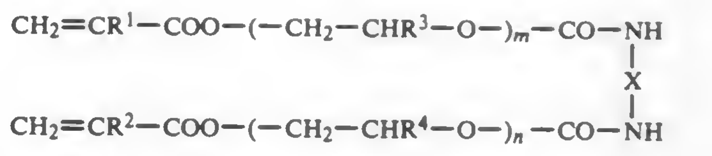
(a_3) a photoinitiator which can be activated by actinic light,

(b) a dimensionally stable base, and

(c) a thin intermediate layer between layers (a) and (b), which is formed from a mixture containing

(c_1) a polymeric binder which is compatible with the hydrophilic polymeric binder (a_1) of layer (a) and contains not less than 30% by weight, based on the total amount of binder (c_1), of a reaction product of a polyvinyl alcohol with acrylic anhydride and/or methacrylic anhydride, which reaction product possesses from 3 to 30%, of its weight, of lateral acrylyl and/or methacrylyl groups, and

(c_2) from 1 to 25% by weight, based on the mixture of (c_1) plus (c_2), of at least one photopolymerizable ethylenically unsaturated monomer compatible with (c_1) and selected from the group consisting of the hydroxyalkyl acrylates, where alkyl is of 2 or 3 carbon atoms, the hydroxyalkyl methacrylates, where alkyl is of 2 or 3 carbon atoms, and the monomers of the formula



$$\begin{array}{l} CH_2{=}CR^1{-}COO{-}({-}CH_2{-}CHR^3{-}O{-})_m{-}CO{-}NH \\ \hfill | \\ \hfill X \\ \hfill | \\ CH_2{=}CR^2{-}COO{-}({-}CH_2{-}CHR^4{-}O{-})_n{-}CO{-}NH \end{array}$$

where R^1, R^2, R^3 and R^4 may be identical or different and each is H or C_1–C_8-alkyl, X is C_2–C_7-alkylene, a divalent aromatic C_6–C_{10}-hydrocarbon radical or isophoronylene, and m and n are each integers from 1 to 4 and may be identical or different, the intermediate layer being formed by applying its constituent mixture to the base (b) and then curing it at from 110° to 220° C.

4,355,094

POSITIVE RADIATION SENSITIVE RESIST TERPOLYMERS

Thomas R. Pampalone, Belle Mead, and Kurt B. Kilichowski, Mercerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,104

Int. Cl.^{3} G03C *1/00;* **B05D** *3/06;* **C23F** *1/00*

U.S. Cl. 430—286 **8 Claims**

8. A positive recording medium comprising a substrate and a radiation sensitive film applied to a surface of the substrate, said film comprised of a terpolymer comprising an organic monomer component and sulfur dioxide in a 1:1 molar ratio, said monomer component being comprised of 3-methylcyclopentene, and an omega alkynoic acid represented by the formula

$$CH{\equiv}C{-}(CH_2)_n{-}COOH$$

wherein n is an integer from 1 to 20.

4,355,095

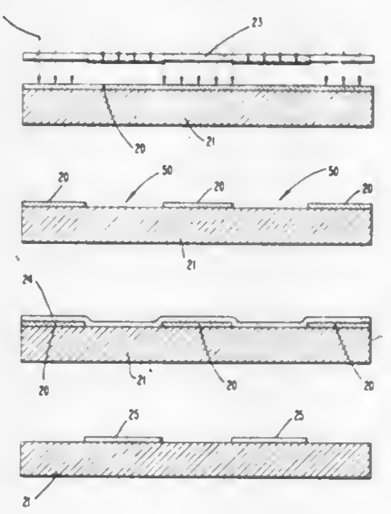
METHOD FOR PRODUCING A PHOTOMECHANICAL COLOR IMAGE USING A STRIPPABLE PHOTOSTENCIL AND WATER-PERMEABLE, WATER-INSOLUBLE COLOR MEDIA

William W. Cousins, 26 Norwich Dr., Apt. G, Rochester, N.Y. 14624

Filed Nov. 26, 1980, Ser. No. 210,748

Int. Cl.^{3} G03C *5/04*

U.S. Cl. 430—293 **31 Claims**



1. A method for directly forming a color reproduction of a graphic object pattern on a support medium, comprising the steps of:

(a) forming a coating layer of water-soluble photosensitive stencil material on at least a portion of said support medium, said water-soluble photosensitive stencil material being rendered water-insoluble by actinic radiation;

(b) single exposing said coating layer to actinic radiation imagewise of a graphic object pattern to thereby photographically produce an imagewise pattern of water-insoluble and water-soluble stencil material regions on said support medium;

(c) developing said imagewise pattern with water or an aqueous alkaline solution to remove the water-soluble stencil material regions of said imagewise pattern to thereby form a stencil image of said object pattern on said support medium, said image being of water-insoluble stencil material and defining areas having no stencil material on said support medium;

(d) overcoating with a layer of a water-permeable, water-insoluble color medium selected from the group consisting of inks, paints and dyestuff solutions of a desired image color at least a portion of said water-insoluble stencil material image and of said defined areas having no stencil material;

(e) treating the overcoated portion of said water-insoluble stencil material with water or an aqueous alkaline solution to permeate the color medium and soften the water-insoluble stencil material; and

(f) removing by mechanical action said softened water-insoluble stencil material along with the color medium layer overlying it, while leaving said color medium layer intact as a color image on said defined areas, whereby a color reproduction of said graphic object pattern is directly formed on said support medium.

4,355,096

PROCESS FOR HEATING EXPOSED AND DEVELOPED LIGHT-SENSITIVE LITHOGRAPHIC PRINTING PLATES WITH CARBOXYLIC ACID AND AMINE MOIETY CONTAINING COMPOUNDS ON SURFACE THEREOF

John E. Walls, Annandale, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Jul. 11, 1980, Ser. No. 167,615

Int. Cl.^{3} G03F *7/08, 7/10*

U.S. Cl. 430—302 **6 Claims**

1. A process for producing a lithographic printing plate comprising exposing and developing a light sensitive printing plate sensitized by a composition containing a compound selected from the group consisting of o-quinone diazides, diazonium salts, azide compounds, or photopolymerizable compounds; coating the exposed and developed surface of said plate with an aqueous solution of a composition comprising one or more compounds selected from the group consisting of ethylene diamine tetra acetic acid, hydroxyethyl ethylene diamine tri-acetic acid, diethylene tri-amine penta-acetic acid, nitrilo tri-acetic acid or the sodium, potassium, lithium, calcium or magnesium salts thereof, or any of the preceding compounds which are attached to an aliphatic compound comprising 2 to 8 carbon atoms or the sodium, potassium, lithium, calcium or magnesium salts thereof and then subjecting said coated plate to a burning-in treatment.

4,355,097

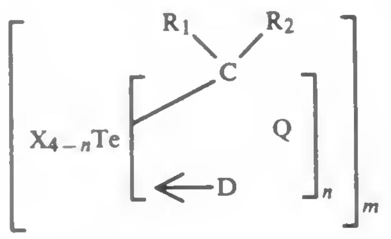
TELLURIUM (IV) COMPOUNDS AND COMPOSITIONS

Henry J. Gysling, and Sylvia A. Gardner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y. Division of Ser. No. 894,863, Apr. 10, 1978, Pat. No. 4,239,846. This application Aug. 25, 1980, Ser. No. 181,324

Int. Cl.^{3} G03C *1/00*

U.S. Cl. 430—495 **2 Claims**

1. A photographic element comprising a support having thereon a layer comprising a photosensitive tellurium(IV) compound represented by the formula:



wherein:

D is coordinated to a Te atom of the compound and comprises a radical incorporating one or two Lewis base functions, each function containing a group VA or VIA donor atom;

Q represents the atoms necessary to complete a 5- or 6-membered ring when taken together with C, D and Te when m is 1 and represents the atoms linking C and D when m is greater than 1;

R_1 and R_2 are independently selected from the group consisting of hydrogen, alkyl and aryl;

X is an anion;

n is 1 or 2; and

m is an integer from 1 to 500.

4,355,098

SUPERSENSITIZING DIRECT POSITIVE DYE COMBINATIONS

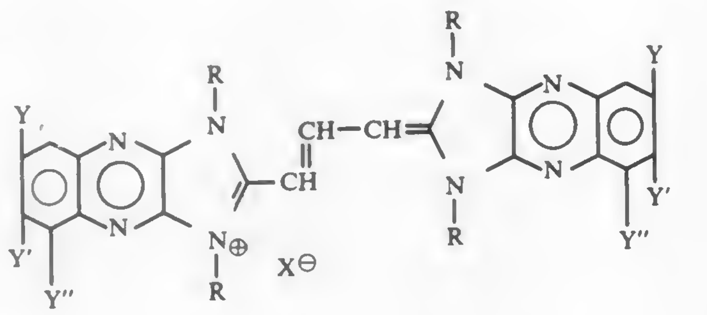
James W. Wheeler, Fairport, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1981, Ser. No. 233,657

Int. Cl.^{3} G03C *5/24*

U.S. Cl. 430—510 **5 Claims**

1. A direct positive silver halide element comprising a support and at least one direct positive silver halide emulsion coated thereon, said emulsion comprising fogged, gelatino-silver halide emulsion grains and a pair of sensitizing dyes providing improved spectral sensitivity in the green and red portion of the visible spectrum, characterized in that said dye pair consists of a supersensitizing amount of a spectral sensitizing dye (a) having a solution absorption maximum less than 495 nm, and with its lowest vacant energy band being less than −3.7 eV, and in combination therewith a sensitizing amount of a spectral sensitizing dye (b) having a lowest vacant energy band between −3.7 eV and 0.3 eV below the lowest vacant energy band of said supersensitizing dye (a) and with the highest occupied energy band of said dye (b) between −5.9 eV and 0.3 eV above the highest occupied energy level of dye (a), wherein dye (b) above is one of the following:



I.

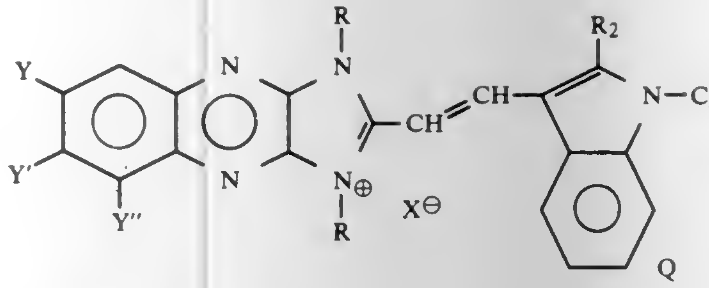
wherein

Y and Y′=—H, —Cl or —NO$_2$; Y″=—H, and

Y′ and Y″ together=phenyl;

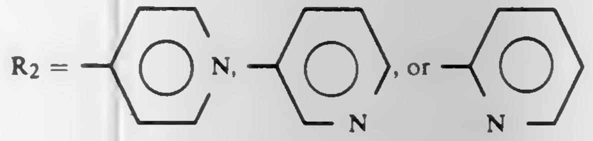
R=alkyl, phenyl, alkenyl, or hydroxyalkyl; and

X is an anion selected from the group consisting of Cl$^{\ominus}$, Br$^{\ominus}$, p-toluene sulfonate, (PTS$^{\ominus}$), ClO$_4$$^{\ominus}$, and tetraphenyl borane (BPh$_4$$^{\ominus}$);



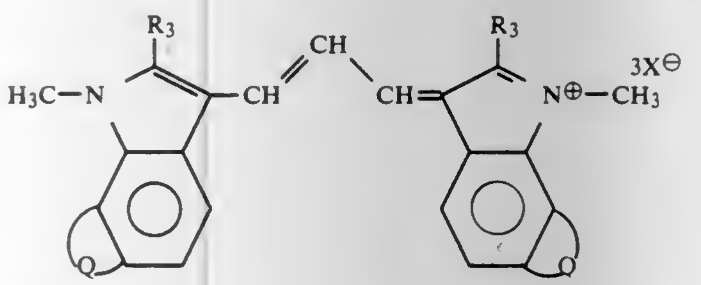
II.

wherein



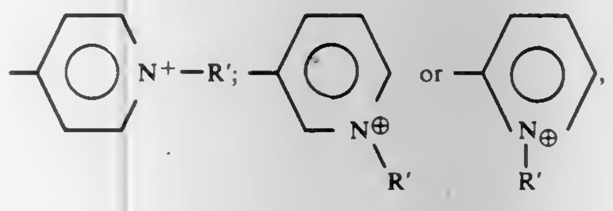
and

Q represents sufficient carbon atoms to form a phenyl group;



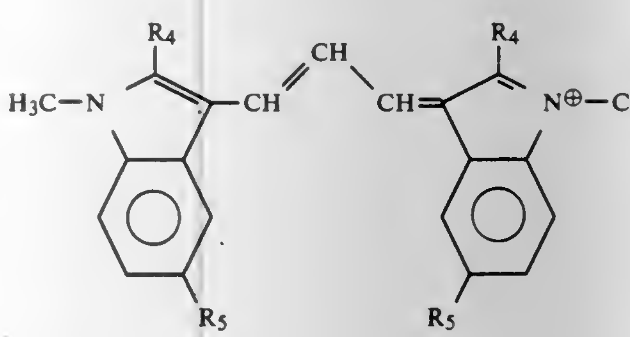
III.

wherein



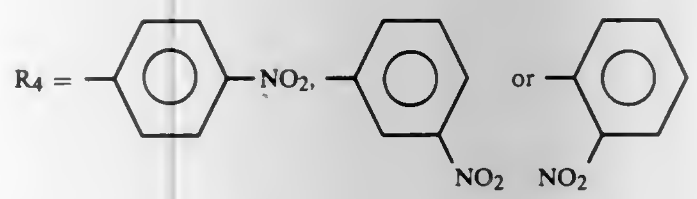
and

R′ is —H or alkyl, e.g., —CH$_3$;



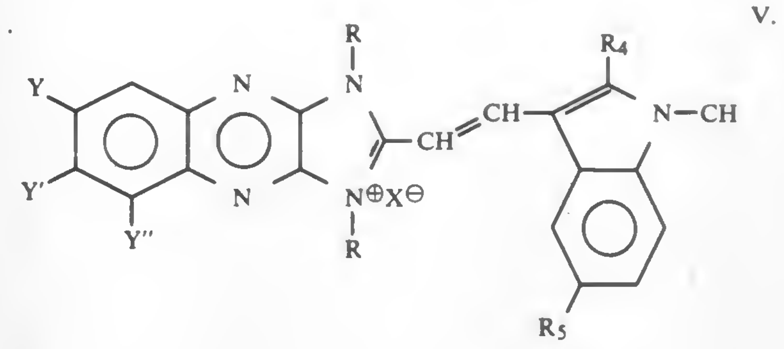
IV.

wherein



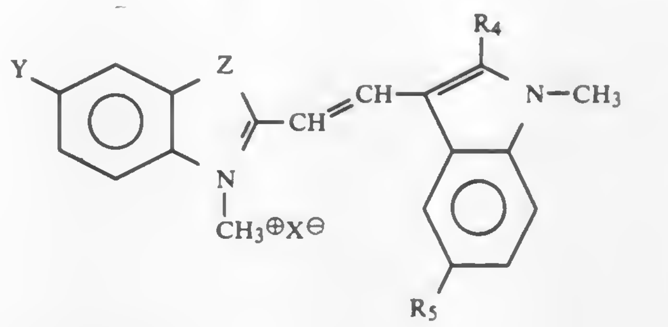
and

R$_5$=—H or —NO$_2$;

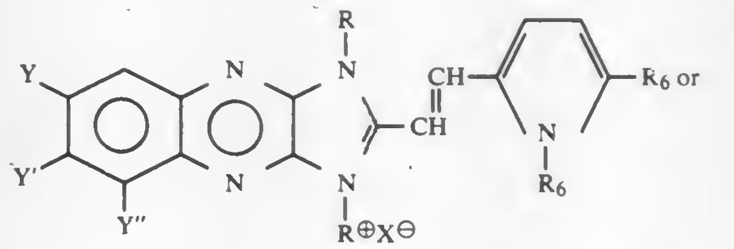


V.

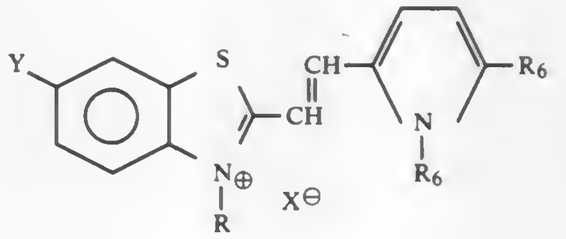
or



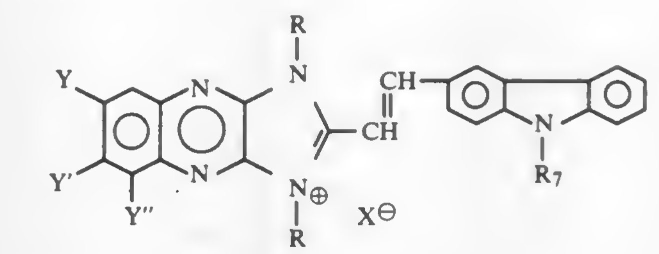
wherein Z=S or C(CH$_3$)$_2$;



VI.

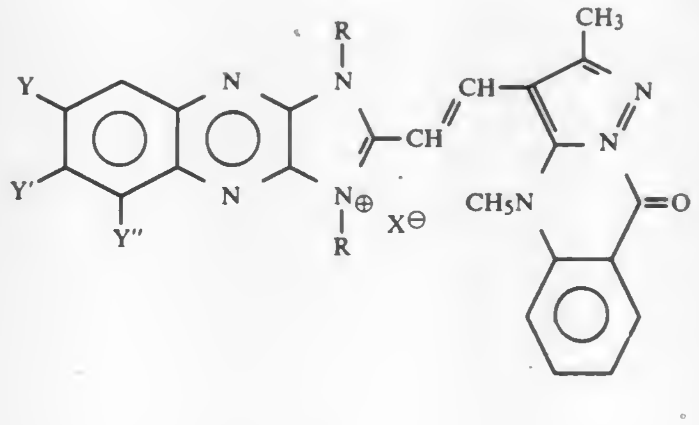


wherein R$_6$=H, —CH$_3$, or aryl;



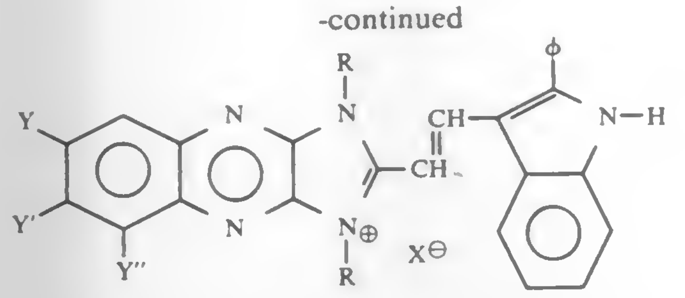
VIII.

wherein R$_7$=—CH$_3$ or —CH$_2$—CH$_3$;



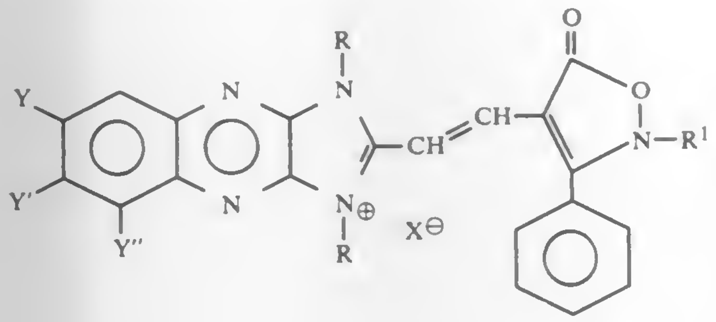
VIII.

-continued

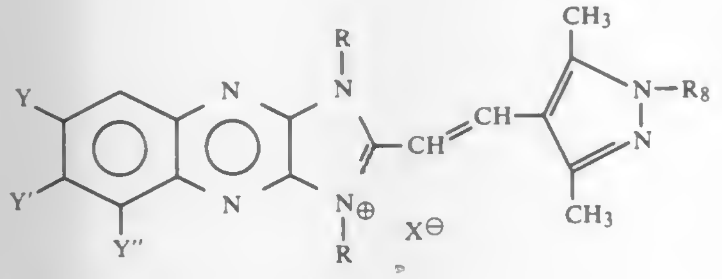


IX.

and supersensitizing dye (a) is one of the following:

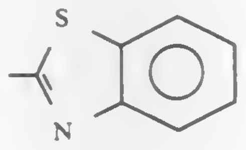


A.

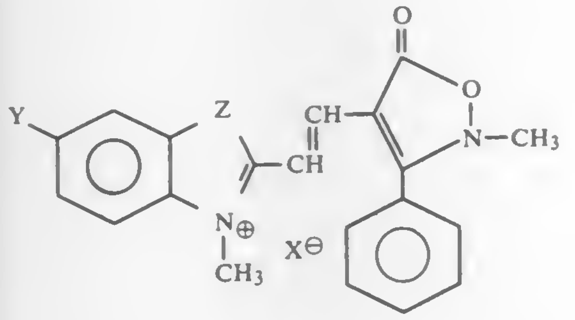


B.

wherein R_8=—CH_3, phenyl, or



and



C.

and wherein Y, Y', Y'', R, R', R_4, R_5, Z and X are as defined above.

4,355,099

COMPOSITE PHOTOGRAPHIC MATERIAL HAVING A THIN FLEXABLE SUPPORT AND A REFLECTING LAYER

Franz Trautweiler, Fribourg, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 54,044, Jul. 2, 1979, Pat. No. 4,296,198.
This application Nov. 29, 1981, Ser. No. 278,792
Claims priority, application Switzerland, Jul. 7, 1978, 7421/78
Int. Cl.³ G03C *1/78*

U.S. Cl. 430—531 **9 Claims**

1. A composite photographic material comprising a transparent support layer which is a flexuous layer having a thickness of from about 5μ to 50μ, a light reflective layer and a photosensitive layer said reflective layer being between the support layer and the photosensitive layer.

4,355,100

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hiroshi Sugita; Shizuo Saito, both of Hachioji; Ryosuke Sato, and Kiyoshi Yamashita, both of Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,243
Claims priority, application Japan, Jan. 16, 1980, 55-3163
Int. Cl.³ G03C *1/40*

U.S. Cl. 430—544 **6 Claims**

1. A color photographic material having a light-sensitive silver halide emulsion layer coated on a support, which comprises

(1) a DIR compound which releases a diffusive development-inhibiting substance, said substance having an amino group, by a coupling reaction with an oxidation product of an aromatic primary amine developing agent (DIR compound (I)) and

(2) a DIR compound which releases a diffusive development-inhibiting substance, said substance having no amino group, by a coupling reaction with an oxidation product of an aromatic primary amine developing agent (DIR compound (II)).

4,355,101

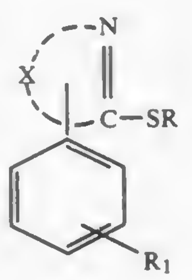
PHENYLMERCAPTOAZOLE COMPOUNDS

Avinash C. Mehta, Belmont; George H. Nawn, Westwood, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1981, Ser. No. 222,542
Int. Cl.³ G03C *5/54, 1/06*

U.S. Cl. 430—564 **5 Claims**

1. A photographic element comprising a support and at least one layer thereon containing a silver halide emulsion having associated therewith a compound represented by the formula



wherein X represents the nonmetallic atoms necessary to form a nucleus which completes a 5- or 6-membered heterocyclic moiety, R is a group which is cleavable in aqueous alkaline medium by hydrolysis or by quinone methide elimination or by hydrolysis followed by quinone methide elimination or by β-elimination and R_1 is either a group which has a pKa of from about 7 to 14 which is ionizable to an anion and wherein the silver salt of the mercaptan resulting from cleavage of —SR is more soluble in the pH range within which R_1 is ionized to an anion than it is below that pH range, or a precursor thereof.

4,355,102

AGGLUTINATION TESTS FOR DETECTING INFLUENZA VIRUSES, AND REAGENTS FOR CARRYING OUT THESE TESTS

Gerard Quash, Sainte Foy-Les Lyon, France, assignor to Institut National de la Sante et de la Recherche Medicale, INSERM, Paris, France

Filed Mar. 5, 1980, Ser. No. 128,232
Claims priority, application France, Mar. 6, 1979, 79 05703
Int. Cl.³ C12Q *1/70, 1/34;* **G01N** *33/00*

U.S. Cl. 435—5 **16 Claims**

1. A process for detecting influenza viruses by means of an agglutination test, comprising:

adding influenza virus or allantoic liquid containing said virus, to a reagent comprising a neuraminidase substrate capable of being hydrolyzed by neuraminidase and having at least one sialic acid group and being a mucoprotein, mucopolysaccharide, oligosaccharide or mucolipid, said substrate being fixed by covalent coupling to an insoluble solid support selected from the group consisting of latex spheres, agarose or dextran gel beads, and activated glass marbles;

incubating the influenza virus with the substrate for a time sufficient to permit an agglutination reaction to take place between the neuraminidase and the solid support-coupled substrate; and

then measuring the degree of agglutination.

4,355,103

NOVEL STRAIN OF *BACILLUS LICHENIFORMIS* USEFUL IN THE PRODUCTION OF GLUCOSE ISOMERASE AND METHOD OF SCREENING BACILLUS MUTANTS FOR ABILITY TO PRODUCE GLUCOSE ISOMERASE IN THE ABSENCE OF XYLOSE

George Boguslawski, and Michael J. Rynski, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 23, 1981, Ser. No. 227,686
Int. Cl.³ C12Q *1/04;* **C12N** *15/00, 9/92, 1/20*

U.S. Cl. 435—34 **7 Claims**

1. A biologically pure culture of an asporogenic bacterium from the genus and species *Bacillus licheniformis* ATCC 31667 which is further identified by being resistant to 2-deoxyglucose, is capable of producing glucose isomerase in greater quantities in a fermentation medium containing appropriate nutrients which medium is devoid of xylose than in a medium with xylose present and whose nutritional demands include the requirement of methionine and the vitamins niacin, riboflavin and thiamine for growth.

4. A method for screening a mutant strain of a microorganism from the genus Bacillus for the ability to produce glucose isomerase in a medium devoid of xylose which comprises the steps of:

(a) placing a culture of a nonpathogenic bacterium from the genus Bacillus on a growth support medium;

(b) allowing the culture to grow and isolating a single colony to obtain a pure clone;

(c) streaking a single colony of the pure clone on a growth support medium containing 2-deoxyglucose;

(d) recovering one or more 2-deoxyglucose resistant variants from the growth support medium used in step (c);

(e) purifying the 2-deoxyglucose resistant variant obtained in step (d) by restreaking it on a growth support medium containing 2-deoxyglucose to thereby eliminate nonresistant dormant cells;

(f) recovering the purified variant from the growth support medium used in step (e); and

(g) determining the ability of the purified variant to produce glucose isomerase in a growth support medium devoid of xylose.

4,355,104

BACTERIOLYTIC PROTEINS

Dan Hultmark, Nacka; Hakan Steiner, Vallentuna; Torgny Rasmuson, Umea, and Hans G. Boman, Stockholm, all of Sweden, assignors to Kabigen AB, Stockholm, Sweden

Filed Jun. 17, 1980, Ser. No. 160,393
Int. Cl.³ C12P *21/00, 21/02;* **C07C** *103/52;* **A61K** *37/02*

U.S. Cl. 435—70 **6 Claims**

1. A purified bactericidal protein that

(a) is capable of lysing *Escherichia coli;*

(b) loses essentially no activity in its action against *E. coli* after heating in boiling water for 30 minutes;

(c) separates from lysozyme by selective elution from a CM Sepharose column using a gradient of ammonium formate buffer;

(d) comprises the first 33 amino acid residues in the following sequence from the N terminal

N-LYS-TRP-LYS-LEU-PHE-LYS-LYS-ILE-GLU-LYS-VAL-GLY-GLN-ASN-ILE-ARG-ASP-GLY-ILE-ILE-LYS-ALA-GLY-PRO-ALA-VAL-ALA-VAL-VAL-GLY-GLN-ALA-THR-

(e) has a monomer molecular weight within 20% of 3564 daltons.

2. A purified bactericidal protein that

(a) is capable of lysing *Escherichia coli;*

(b) loses essentially no activity in its action against *E. coli* after heating in boiling water for 30 minutes;

(c) separates from lysozyme by selective elution from a CM Sepharose column using a gradient of ammonium formate buffer;

(d) the monomer has the N terminal amino acid sequence

N-LYS-TRP-LYS-VAL-(MET)-ILE-(PHE)-LYS-LYS-ILE-(PHE)-GLU-LYS- -GLY-ARG-ASN-ILE-(PHE)-ARG-ASN-(LYS)-GLY-

wherein the amino acid residue in parenthesis is an alternative to the immediately preceeding amino acid residue;

(e) has a dimer molecular weight within 20% of 7000 daltons.

4,355,105

GLUTARALDEHYDE/POLYETHYLENIMINE IMMOBILIZATION OF WHOLE MICROBIAL CELLS

Oreste J. Lantero, Jr., Goshen, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 30, 1981, Ser. No. 248,718
Int. Cl.³ C12P *19/24;* **C12N** *11/00, 9/90, 9/92*

U.S. Cl. 435—94 **8 Claims**

1. A method for the immobilization of whole cells of an enzyme producing microorganisms whose enzyme is selected from the group of sucrose mutase and glucose isomerase which method comprises the steps of:

(a) providing an aqueous medium containing whole cells of the microorganism;

(b) adding glutaraldehyde to the aqueous medium and allowing sufficient time for the formation of a reaction product between the glutaraldehyde and the microorganism cells; adding polyethylenimine to the aqueous medium said polyethylenimine having a molecular weight within the range of from 1,800 to 60,000 and in sufficient quantity so that the mole ratio of glutaraldehyde to polyethylenimine monomer ranges from 3.9:1 to 0.4:1 and the weight ratio of the combination of glutaraldehyde and polyethylenimine to the dry weight of the cells is within the range of from 0.20:1 to 0.7:1 to flocculate the reaction product; and

(d) recovering the flocculated reaction product from the aqueous medium by filtration.

4,355,106

CONTINUOUS PROCESS FOR THE PRODUCTION OF GELABLE EXOPOLYSACCHARIDE

Hugh G. Lawford, Mississauga, Canada, assignor to George Weston Limited, Toronto, Canada

Filed Jan. 12, 1981, Ser. No. 223,960

Int. Cl.^{3} C12P *19/04;* **C12R** *1/05*

U.S. Cl. 435—101 **5 Claims**

1. A two-stage continuous process for the production of a gelable curdlan-type exopolysaccharide in which
   (1) a stable, curdlan-producing strain of microorganism is grown aerobically under conditions of continuous culture at pH 6 to 8 and at a temperature of from 22° to 37° C. in an aerated, agitated culture medium containing assimilable carbon, nutrients, and inorganic salts and also containing nitrogen in an amount so limited that the effluent from the first stage contains substantially no inorganic nitrogen, and continuously
   (2) introducing the effluent into a constant volume fermenter wherein it is mixed with a nitrogen-free carbohydrate, the resultant mixture is aerated and mixed at pH 5.5. to 6.5 at a temperature of from 25° to 35° C., the volume and dilution rate in the reactor being selected so that the residence time of the microorganism in the fermenter does not exceed an equivalent to the maximum length of time during which the activity of a batch culture of the microorganism with respect to product synthesis is maximal, and subsequently isolating the product.

4,355,107

PRODUCTION OF MUCONIC ACID

Peter C. Maxwell, New Providence, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,343

Int. Cl.^{3} C12P *7/44*

U.S. Cl. 435—142 **9 Claims**

1. A process for the production and accumulation of muconic acid which comprises supplying toluene and molecular oxygen to a buffered aqueous medium containing a fluorescent Pseudomonas microorganism strain having the following identifying characteristics:
   (a) possesses catechol 1,2-oxygenase enzyme with activity that is not inhibited in the presence of a low level of muconic acid in a growth medium;
   (b) lacks active catechol 2,3-oxygenase enzyme;
   (c) lacks active muconate lactonizing enzyme;
   (d) cells are rod shaped, vigorously motile and polarly flagellated; and
   (e) cells grow well on p-hydroxybenzoate whereby muconic acid is produced and accumulated in a recoverable amount.

4,355,108

ETHANOL PRODUCTION WITH AN IMMOBILIZED CELL REACTOR

James L. Gaddy, Rolla, and Oliver C. Sitton, House Springs, both of Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed May 22, 1980, Ser. No. 152,365

Int. Cl.^{3} C12P *7/10;* **C12N** *11/14, 11/06;* **C12M** *1/40*

U.S. Cl. 435—165 **11 Claims**

1. A process for producing ethanol from cellulosic material containing pentosans and hexosans comprising treating the cellulosic material in a first hydrolysis stage with a dilute acid solution to hydrolyze the pentosans to xylose without substantial hydrolysis of hexosans to glucose, separating solids from the resultant hydrolyzate, treating the solids in a second hydrolysis stage with a concentrated acid solution to hydrolyze the hexosans to glucose, and fermenting the glucose to ethanol by passing a solution of the glucose over a fixed film of yeast organisms which ferment said glucose to ethanol, said film of organisms being prepared by coating a solid support with proteinaceous material having free amino groups, treating the proteinaceous material with a polyfunctional agent which is capable of reacting with free amino groups and inoculating the treated proteinaceous material with an inoculum of the yeast organisms, said yeast organisms having free amino groups and said polyfunctional agent reacting with free amino groups contained by the proteinaceous material and the yeast organisms said inoculum being added from solution before the reaction between the polyfunctional agent and the proteinaceous material has substantially gone to completion whereby the yeast organisms are attached to the proteinaceous coat by the polyfunctional agent such that a substantial number of bonds are formed between the yeast and the proteinaceous coat.

4,355,109

MICROBIOLOGICAL PRODUCTION OF NOVEL BIOSURFACTANTS

James E. Zajic, The University of Texas, El Paso, Tex. 79968; Donald F. Gerson, Basel Institute for Immunology, 487 Grenzacherstrasser, Ch-4005, Basel 5, Switzerland; Richard K. Gerson, Micro-Biology Department, MacDonald College, McGill University, St. Anne du-Bellevue, Montreal, Quebec, Canada (H3C 3G1), and Chandrakant J. Panchal, Brewery Research, Labatt Breweries, 150 Simcoe St., London, Ontario, Canada (N6A 4M3)

Filed Apr. 22, 1980, Ser. No. 142,779

Claims priority, application Canada, Apr. 23, 1979, 326112

Int. Cl.^{3} C12P *1/04*

U.S. Cl. 435—170 **6 Claims**

1. A process for microbiological production of surfactant materials, which comprises cultivating by aerobic fermentation, in a growth promoting medium and under growth promoting conditions, and on a carbon-containing substrate, the microbial strain *Corynebacterium Salvinicum* strain SFC, said microbial strain being characterised by ability to metabolize the waxy protective coating of the plant cuticles of Salvinica water plant under normal growth conditions for the microbial strain, to produce a surfactant material of microbiological origin in said fermentation medium, and recovering the surfactant material so produced from said fermentation medium.

4,355,110

PREPARATION OF DEBRANCHING ENZYME FROM RICE FOR PRODUCING A LOW CALORIE BEER

William F. Line, Greenfield, Wis.; Vinod K. Chaudhary, Manhattan, Kans.; Etzer Chicoye, Milwaukee, and Robert J. Mizerak, Waukesha, both of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 141,536, Apr. 18, 1980, abandoned, and Ser. No. 58,823, Jul. 19, 1979, abandoned. This application May 13, 1981, Ser. No. 263,154

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.^{3} C12N *9/44;* **C12C** *9/00, 11/04*

U.S. Cl. 435—210 **3 Claims**

1. The method of extracting a debranching enzyme of high specific activity from rice which comprises selecting as the starting material a member selected from the class consisting of polished rice and malted rice, slurrying the rice in a 0.1 M potassium phosphate-0.2 M sodium chloride buffer system having a pH of 6 at a temperature of about 50° C. for about 3 hours to obtain an extract containing the debranching enzyme, clarifying the extract by centrifugation and retaining the supernatant which contains the enzyme.

4,355,111

MICROORGANISM CULTURING DEVICE

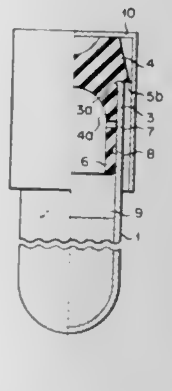
Masaki Shimizu, Tokyo, and Takeo Nomura, Hino, both of Japan, assignors to Terumo Corporation, Japan

Filed May 28, 1980, Ser. No. 153,919

Claims priority, application Japan, Jun. 4, 1979, 54/69713; Apr. 1, 1980, 55/42163

Int. Cl.^{3} C12N *1/00*

U.S. Cl. 435—243 **19 Claims**



1. A microorganism culturing device comprising:
a vessel with an opening, said vessel having a projection at the inner portion of said opening;
a culture medium contained in said vessel for culturing microorganisms; and,
a stopper member hermetically sealing said vessel in the opening thereof, said stopper member having a through hole for communicating with the inner atmosphere of said vessel, said through hole having one end open at a side wall of said stopper, said stopper member further having an annular groove around the peripheral well below the through hole engageable with the projection at the inner portion of the opening on the vessel;
wherein said stopper member is readily slidable along the inner wall of said vessel by means of gas pressure exerted on said stopper from within said vessel, to a point where said through hole establishes communication of the inside atmosphere of said vessel with the outside atmosphere at or above the tip end of said vessel;
whereby said through hole is in a state of being closed by the inner wall of said vessel at the start of the culturing, preventing communication of the inside atmosphere of said vessel with the outside atmosphere, and establishes communication of the inside atmosphere of said vessel with the outside atmosphere by forcing said stopper member upwards by means of the pressure on the gases produced during culturing to shift said one end of the through hole to or above a tip end of said vessel, thereby discharging said gases from the inside of said vessel to the outside through said through hole.

4,355,112

STREPTOMYCES CULTURE

Yasushi Okumura, Kamakura; Kazuhiko Okamura, Yamato; Yasuo Fugakawa, Kamakura; Tomoyuki Ishikura, Chigasaki; Kageaki Kouno, Tokyo, all of Japan, and Joseph Lein, Fayetteville, N.Y., assignors to Sanraku-Ocean Co., Ltd. and Panlabs, Inc., both of Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 803,922

Int. Cl.^{3} C12N *1/20*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of Streptomyces sp. P8648 (FERM-P3562; ATCC 31289).

4,355,113

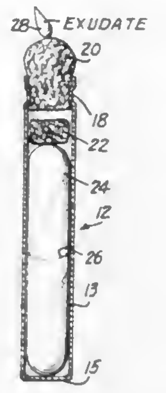
OVER THE COUNTER SWAB KIT FOR SELF DETECTION OF GONORRHEA IN THE MALE USING SALINE AMPULE

Frederick C. Mennen, 506 Clay St., La Porte, Ind. 46350

Filed Jun. 19, 1981, Ser. No. 275,170

Int. Cl.^{3} G01N *33/50*

U.S. Cl. 435—295 **5 Claims**



1. A self-contained swab cartridge apparatus for the detection and diagnosis of living gonorrhea bacteria by chromogenic reaction with a substantially colorless phenylenediamine hydrochloride salt impregnated pledget without transport of said bacteria from the sampling swab used for collecting the sample comprising of exudate from the penis of the male, said apparatus comprising:
a tubular flexible cartridge having a closed end and an open end holding a frangible ampul of sterile saline solution in a dosage volume sufficient to transport said chromogenic salt in solution;
an ampul made of frangible material filled with a unit dosage of about 1 milliliter of sterile saline for transporting said chromogenic salt brought into solution;
a pledget of fibrous material in the form of a wad containing said chromogenic salt between said ampul and said swab;
a swab protruding from the open end of said cartridge; and
indented holding means on said cartridge adjacent said pledget to hold said pledget in contiguous relation to said swab whereby the exudate sampled on said swab is detected after the breaking of said ampul which dissolves said chromogenic salt contained on said pledget by said saline solution to permeate said swab and provide a color diagnosis within less than 3 minutes for the presence of endogenous cytochrome oxidase constituting the metabolite of *Neisseria gonorrhea.*

4,355,114

PARTIALLY DEVITRIFIED PORCELAIN CONTAINING BAO.2MGO.$2SIO_2$ AND $2MGO.B_2O_3$ CRYSTALLINE PHASES OBTAINED FROM ALKALI METAL FREE DIVALENT METAL OXIDE BOROSILICATE GLASS

Kenneth W. Hang, Princeton Junction, and Wayne M. Anderson, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 91,091, Nov. 5, 1979, Pat. No. 4,256,796. This application Mar. 11, 1981, Ser. No. 242,418

Int. Cl.^{3} C03C *3/22, 3/10*

U.S. Cl. 501—5 **4 Claims**

1. A partially devitrified porcelain which is free to substantially free of alkali metal oxide, said porcelain having an oxide composition consisting essentially of:
   (a) from about 6 to about 25 mole percent of barium oxide;
   (b) from about 30 to about 60 mole percent of MO wherein MO is a member selected from the group consisting of magnesium oxide and mixtures comprised of at least 50–70 mole percent of magnesium oxide with the remainder being at least one member selected from the group consisting of zinc oxide and calcium oxide;
   (c) from about 13 to about 35 mole percent of B_2O_3; and

(d) from about 10 to about 25 mole percent of SiO_2 with about 50 to 90 volume percent of said partially devitrified porcelain being in a crystalline state and the remainder being in the state of a vitreous glass, wherein the principal crystalline phases are crystals of a first and second type, said first crystal being of the composition $BaO.2MgO.2SiO_2$ and said second crystal being of the composition $2MgO.B_2O_3$.

4,355,115

BOROSILICATE GLASS FRIT WITH MGO AND BAO

Kenneth W. Hang, Princeton Junction, and Wayne M. Anderson, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 91,091, Nov. 5, 1979, Pat. No. 4,256,796. This application Oct. 3, 1980, Ser. No. 193,712

Int. Cl.^{3} C03C *3/10*

U.S. Cl. 501—21 **2 Claims**

1. A devitrifiable glass frit which is free to substantially free of alkali metal oxide and which on firing is converted into a porcelain containing between 50 and 90 volume percent of crystalline material, said glass frit consisting essentially, on an oxide basis, of:

(a) from about 6 to about 25 mole percent of barium oxide;

(b) from about 30 to about 60 mole percent of MO wherein MO is a member selected from the group consisting of magnesium oxide and mixtures of magnesium oxide with at least one member selected from the group consisting of zinc oxide and calcium oxide in which MgO comprises from about 50 to about 75 mole percent of the mixture;

(c) from about 13 to about 35 mole percent of boron trioxide; and

(d) from about 10 to about 25 mole percent of silicon dioxide.

4,355,116

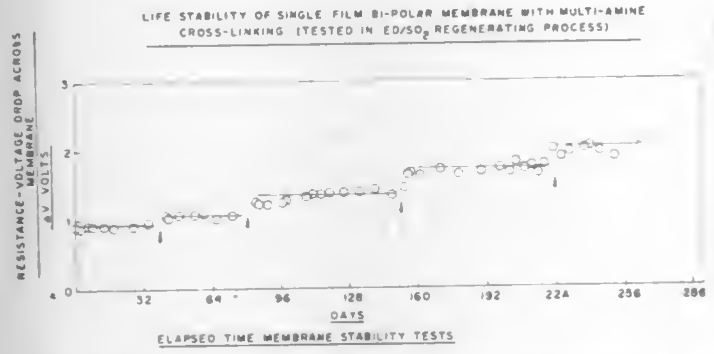
STABLE HIGH PERFORMANCE BIPOLAR MEMBRANE WITH CROSS-LINKED FUNCTIONAL GROUPS

Lester T. C. Lee, Taipei, Taiwan, and Kang-Jen Liu, Bridgewater, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 29, 1980, Ser. No. 220,568

Int. Cl.^{3} C08F *8/32;* **C08H** *5/22*

U.S. Cl. 521—27 **18 Claims**



1. In a process for manufacturing a high performance, durable single film bipolar membrane having a potential drop of 1.76 volts at 100 amp/ft^2 after 260 days wherein an olefinic polymeric film matrix is uniformly impregnated with a mixture of a vinylaromatic monomer and a cross-linking agent and said mixture is subsequently polymerized to obtain on the film intermittently dispersed therein at least 15 percent by weight of the vinyl-aromatic mixture based on the total weight of the membrane and said mixture is cross-linked and thereafter cationic and anionic functional groups are introduced in sequence thereon from opposite sides and wherein after chemically bonding from about 50% to about 99% of the membrane thickness with highly dissociable cationic exchange groups to the aromatic nuclei from one side only, highly dissociable anionic exchange groups are chemically bonded from the other side to the remaining aromatic nuclei in from about 1% to about 50% of the membrane thickness, the improvement which comprises using an anionic exchange reagent comprising from about 5 to about 95 weight percent of a cross-linkable multifunctional amine functionalizing agent and from about 95 to about 5 weight percent of a monofunctional tertiary amine.

4,355,117

PROCESS FOR PREPARING AGGLOMERATED FIBROUS CELLULOSE

Richard L. Antrim, and Louis S. Hurst, both of Clinton, Iowa, assignors to Nabisco Brands, Inc., New York, N.Y.

Filed Oct. 8, 1980, Ser. No. 195,214

Int. Cl.^{3} C08B *5/14, 11/145;* **B01J** *39/22, 41/16*

U.S. Cl. 521—28 **28 Claims**

1. In a process for preparing an agglomerated fibrous ion exchange cellulose composite capable of adsorbing or binding charged macro-molecules wherein a fibrous cellulose having ion exchange properties is agglomerated with a hydrophobic polymer, the improvement comprising first agglomerating a fibrous cellulose with a hydrophobic polymer to form a granular composite at a ratio of derivatizing agent to cellulose of greater than 0.7" has been added after and then derivatizing the agglomerated fibrous cellulose in the composite to impart ion exchange properties thereto, at least portions of the derivatized cellulose being free to adsorb charged macro-molecules, and maintaining the composite in granular form.

4,355,118

PROCESS FOR THE PRODUCTION OF INORGANIC-ORGANIC COMPOSITIONS

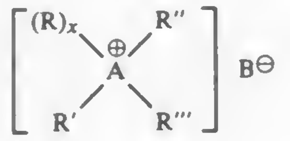
Miltiadis I. Iliopulos, Coraopolis, and Gert F. Baumann, Pittsburgh, both of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 223,593, Jan. 9, 1981, abandoned. This application Sep. 30, 1981, Ser. No. 307,053

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—108 **5 Claims**

1. In a process for the production of an inorganic-organic foam composition comprising reacting an organic, nonionic hydrophilic polyisocyanate with an aqueous alkali metal silicate in the presence of a catalyst and a blowing agent, the improvement wherein said aqueous alkali metal silicate contains from 0.1 to 15% by weight, based on the weight of the aqueous alkali metal silicate, of a compound of the formula:



$$\left[\begin{matrix} (R)_x & & R'' \\ & \overset{\oplus}{A} & \\ R' & & R''' \end{matrix}\right] B^{\ominus}$$

wherein A is selected from the group consisting of N, P and S,

wherein R, R′, R″ and R‴ may be the same or different and are selected from the group consisting of allyl, vinyl, C_1 to C_{17} alkyl or mono- or polyhydroxy substituted alkyl, C_6 to C_{10} aryl or mono- or polyhydroxy substituted aryl, C_7 to C_{22} aralkyl or mono- or polyhydroxy substituted aralkyl, and C_7 to C_{22} alkaryl or mono- or polyhydroxy substituted alkaryl,

wherein x is 0 when A is S,

wherein x is 1 when A is N or P, and

wherein B is selected from the group consisting of OH, halogen and OR⁗ wherein R⁗ represents a C_1 to C_{12} alkyl, with the proviso that when A is S, B is not OR⁗.

4,355,119

OLIGOMERIC FORMAL DIOLS OF POLY(TETRAMETHYLENE ETHER) GLYCOL AND POLYURETHANES PREPARED THEREFROM

Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 180,878, Aug. 25, 1980, Pat. No. 4,340,719. This application Nov. 6, 1981, Ser. No. 318,946

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—159 **4 Claims**

1. A polyurethane which is the reaction product of

(a) an oligomeric formal diol having a number average molecular weight of 2000–12,000, made by coupling up to four poly(tetramethylene ether) glycol segments, each having a number average molecular weight of 1000–3000, with formaldehyde;

(b) an organic polyisocyanate; and

(c) a chain extender.

4,355,120

POLYIMIDE FOAMS

John Gagliani, Schaumburg; Raymond Lee, and Usman A. K. Sorathia, both of Elk Grove Village, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Division of Ser. No. 252,902, Apr. 10, 1981, Pat. No. 4,332,656. This application Dec. 7, 1981, Ser. No. 327,930

Int. Cl.^{3} C08G *69/26;* **C08J** *9/02*

U.S. Cl. 521—189 **3 Claims**

1. A polyimide foam precursor which is a resinoid obtained by combining at least one alkyl ester of 3,3′,4,4′-benzophenonetetracarboxylic acid; a meta- or para-substituted aromatic diamine which is free of aliphatic moieties; and a heterocyclic diamine, said ester(s) and said diamines being present in concentrations such that the imide forming functionalities are substantially equimolar, and the molar ratio of heterocylic diamine to tetracarboxylic acid diester being in the range of about 0.4–0.42 to 1.0.

4,355,121

HEAT STRENGTH CURABLE SILICONE RUBBER COMPOSITIONS

Edwin R. Evans, Clifton Park, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,659

Int. Cl.^{3} C08L *83/06*

U.S. Cl. 523—213 **35 Claims**

1. A high strength heat curable silicone rubber composition comprising (A) 100 parts by weight of vinyl-terminated diorganopolysiloxane base polymer having a viscosity varying from 1,000,000 to 300,000,000 centipoise at 25° C. where the organo groups are selected from a mixture of fluoroalkyl groups and monovalent hydrocarbon radicals wherein the aliphatic type unsaturation on the polymer is 0.7 weight percent or less; (B) from 5 to 80 parts by weight of vinyl-terminated diorganopolysiloxane additive polymer having a viscosity varying from 1,000,000 to 300,000,000 centipoise at 25° C. where the organo groups are a mixture of fluoroalkyl radicals and monovalent hyrocarbon radicals wherein the vinyl-on chain content of the additive polymer varies from 0.05 to 10 mole percent of organo, vinyl siloxy units and (C) from 0.1 to 10 parts of a curing catalyst.

4,355,122

WATER-BORNE THERMOPLASTIC POLYHYDROXYETHER COMPOSITIONS

You-Ling Fan, East Brunswick, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 15, 1980, Ser. No. 216,639

Int. Cl.^{3} C08L *63/10*

U.S. Cl. 523—423 **16 Claims**

1. Method of preparing thermoplastic polyhydroxyethers which can be dispersed in water which comprises:

(1) grafting onto normally solid thermoplastic polyhydroxyether one or more ethylenically unsaturated hydrocarbon monomers having 3 to about 8 carbons at least one of said monomers containing sufficient carboxyl, —COOH, groups to provide from about 1 carboxyl group per 10 monomeric units of thermoplastic polyhydroxyether to about 10 carboxy groups per each monomeric unit of polyhydroxyether; and

(2) blending said grafted thermoplastic polyhydroxyether in a high turbulence field with:

  (a) water,

  (b) a water-miscible base, and

  (c) a water-miscible organic solvent in which said thermoplastic polyhydroxyether is soluble until an ionomer of the grafted thermoplastic polyhydroxyether is obtained as a colloidal dispersion,

said thermoplastic polyhydroxyether having the general formula:

$$\left[D—O—E—O \right]_n$$

wherein D is the radical residuum of a dihydric phenol, E is an hydroxyl containing radical residuum of an epoxide and n represents the degree of polymerization and is at least 30.

4,355,123

CURED POLYESTER COMPOSITIONS AND PROCESS FOR THEIR PRODUCTION

Charles D. Dudgeon, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,902

Int. Cl.^{3} C08K *5/05*

U.S. Cl. 523—511 **11 Claims**

1. In a process for the production of a cured polyester resin composition comprising formulating a curable such composition and then curing said curable composition, the improvement wherein said composition contains an amount of aliphatic polyol having a molecular weight of at least about 2000 sufficient to reduce polyester resin shrinkage incident to curing.

4,355,124

AIR- AND/OR OVEN-DRYING LUBRICANT PAINT COMPOSITION FOR PRODUCING DRY-FILM LUBRICANTS

Gilbert Baumann, Noice Le Roy, France; Paul Deyber, Munich, Fed. Rep. of Germany; Wilhelm Huber, Landshut, Fed. Rep. of Germany; Werner Läpple, Karlsfeld, Fed. Rep. of Germany, and Horst Trautmann, Geretsried, Fed. Rep. of Germany, assignors to Dow Corning GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,456

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018873

Int. Cl.^{3} C08K *5/34*

U.S. Cl. 524—104 **17 Claims**

1. An air- and/or oven-drying lubricant paint composition for preparing dry-film lubricants, said composition comprising

(a) a binder selected from the group consisting of polyarimide resins and polyaramidimide resins,

(b) a solid lubricant selected from the group consisting of polyalkylene waxes and modified polyalkylene waxes, and

(c) an organic solvent for the binder, optionally containing an extender.

4,355,125

METHOD FOR PREPARING STABLE AQUEOUS DISPERSIONS OF IONOMER RESINS

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 209,812, Nov. 24, 1980, Pat. No. 4,324,872. This application Oct. 22, 1981, Ser. No. 313,554

Int. Cl.^{3} C08L *23/26, 33/02*

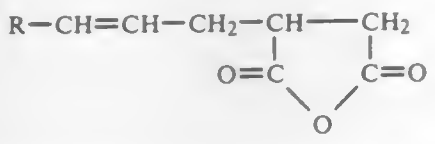
U.S. Cl. 524—401 **9 Claims**

1. A method for preparing a stable aqueous dispersion of an ionomer resin which consists essentially of heating and stirring a mixture of at least 10 parts by weight of an alkali-soluble, ionomer-containing polymeric composition and 100 parts by weight of an aqueous alkaline medium for a time sufficient to disperse the polymer solids throughout the aqueous medium and form a low viscosity, compositionally uniform dispersion; the quantity of alkali in the alkaline medium being sufficient to provide a pH of at least 9 in the final dispersion; said alkali-soluble, ionomer-containing polymeric composition consisting essentially of an intimate fusion blend of;

(a) 100 parts by weight of an ionomer resin, and

(b) about 5 to 900 parts by weight of an alkenyl succinic anhydride;

said ionomer resin being a metal salt of an ethylene-acid copolymer which is a copolymer of ethylene and acrylic or methacrylic acid having an acid content of about 1–10 mol % and having a high load melt index of at least about 1.0 and a normal load melt index of up to about 50; and said alkenyl succinic anhydride having the structure:



where R is an alkyl group containing about 13 to 49 carbon atoms.

4,355,126

FLAME RETARDANT, NON-DRIPPING COMPOSITIONS OF POLYPHENYLENE ETHER AND ACRYLONITRILE-BUTADIENE-STYRENE

William R. Haaf, Voorhesville, N.Y., and Donald L. Reinhard, Lenox, Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 530,373, Dec. 6, 1974, abandoned. This application Feb. 26, 1979, Ser. No. 15,103

Int. Cl.^{3} C08K *3/10, 3/16*

U.S. Cl. 524—411 **15 Claims**

1. A flame retardant, one-dripping thermoplastic molding composition which comprises:

(a) from 10–95 parts by weight of normally flammable polyphenylene ether resin;

(b) from 5–90 parts by weight of a vinyl aromatic resin;

(c) a flame retardant additive in a minor proportion based on said thermoplastic molding composition but in an amount sufficient to render said thermoplastic composition non-burning or self-extinguishing; and

(d) A polytetrafluoroethylene resin in a minor proportion based on said thermoplastic molding composition in an amount at least sufficient to render said thermoplastic molding composition non-dripping.

4,355,127

PHYSICAL PROPERTY IMPROVEMENT IN NITRILE RESINS BY USE OF CERTAIN PROCESSING AIDS AND FILLERS

Ralph E. Isley, Northfield, Ohio, assignor to SOHIO, Cleveland, Ohio

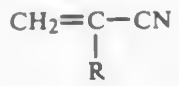
Division of Ser. No. 70,591, Aug. 29, 1979, Pat. No. 4,292,228. This application Apr. 30, 1981, Ser. No. 258,864

Int. Cl.^{3} C08F *8/46*

U.S. Cl. 524—423 **10 Claims**

1. The composition comprising a blend of a resin, from 2 to 50 parts by weight per hundred parts by weight of resin of an polycarboxylic acid anhydride processing aid, and from 11.7 to 336 parts by weight per hundred parts by weight of a resin of a filler, selected from the group consisting of calcium carbonate, magnesium carbonate, basic lead carbonate, zinc carbonate, aluminum hydroxide (hydrated), calcium hydroxide, lead hydroxide, zinc chromate, aluminum oxide, calcium oxide, chromium oxide, iron oxide, magnesium oxide, lead oxides, titanium dioxide, zinc oxide, aluminum silicate (hydrated), magnesium aluminum silicate, potassium aluminum silicate, sodium aluminum silicate, amorphous silica, calcium meta silicate, calcium silicate, diatomaceous silica, magnesium silicate, basic lead sulfate, barium sulfate, calcium sulfate, cadmium sulfide, mercuric sulfide and lead sulfide, said resin being a polymer which results from the polymerization of

(A) from 60 to 90% by weight of at least one nitrile having the structure

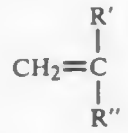


$$\underset{\displaystyle R}{CH_2{=}\overset{}{C}}{-}CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen,

(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) an alpha-olefin having the structure



$$CH_2{=}\underset{\displaystyle R''}{\overset{\displaystyle R'}{C}}$$

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(2) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

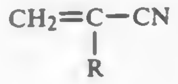
(3) vinyl acetate,

(4) styrene, and

(5) indene

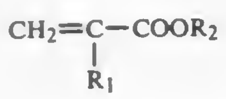
in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



$$CH_2{=}\underset{\displaystyle R}{C}{-}CN$$

wherein R has the foregoing designation, and an ester having the structure



$$CH_2{=}\underset{\displaystyle R_1}{C}{-}COOR_2$$

wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

4,355,128

DURABLE MOLDED ARTICLES

James B. Mercer, Henderson, N.C., assignor to Facet Enterprises, Inc., Henderson, N.C.

Filed May 15, 1981, Ser. No. 263,988

Int. Cl.^{3} C08L *61/24*

U.S. Cl. 524—423 **28 Claims**

1. A durable molded article of a hardened mixture comprising

a resin system comprising at least one hardenable resin,

gypsum filler which is a by-product of phosphate refining and which includes gypsum, water, and phosphate, and

glass fibers which are a by-product of bulk filter media manufacturing.

4,355,129

ORGANOPOLYSILOXANE ELASTOMER-FORMING COMPOSITIONS

Michael J. Dams, Pontyclun, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Apr. 13, 1981, Ser. No. 253,414

Claims priority, application United Kingdom, Apr. 16, 1980, 8012461

Int. Cl.^{3} C08L *83/04*

U.S. Cl. 524—435 **6 Claims**

1. A composition curable to an organopolysiloxane elastomer and which comprises (A) a polydiorganosiloxane convertible to the solid elastic state wherein the organic substituents are selected from monovalent hydrocarbon groups and monovalent fluorinated organic groups, at least 40 percent of the total number of substituents being methyl groups any groups having aliphatic unsaturation being present in a proportion of not more than 2 percent of the total number of substituents, the ratio of organic substituents to silicon atoms in the polydiorganosiloxane being in the range from 1.98 to 2.01, (B) a filler, (C) an organic peroxide curing agent, and (D) from 0.01 to 10 parts by weight per 100 parts by weight of (A) of a pigment which is an inorganic calcined complex oxide containing Co and Al.

3. A composition as claimed in claim **1** or claim **2** wherein the filler comprises from 10 to 60 parts by weight per 100 parts by weight of (A) of a reinforcing silica.

4,355,130

POLYALPHAOLEFIN EXTENDED POLYURETHANE SYSTEMS

Richard E. Heinze, Mason, Mich., assignor to Communications Technology Corporation, Los Angeles, Calif.

Continuation of Ser. No. 176,729, Aug. 11, 1980, abandoned. This application Oct. 16, 1981, Ser. No. 311,950

Int. Cl.^{3} C08K *5/01*

U.S. Cl. 524—491 **14 Claims**

1. A polyalphaolefin extended polyurethane system consisting essentially of the low viscosity liquid reaction product of an isocyanate terminated polyisocyanate with a polyol in the presence of a low viscosity liquid polyalphaolephin homopolymer of decene-1 and optionally, an ester coupling agent, the polyisocyanate-polyol reaction product being present in a range of from bout 8–99 parts by weight, said polyalphaolefin in a range of from about 1–40 parts by weight and said ester in a range of from 0–50 parts by weight.

4,355,131

ADHESION OF RUBBER TO GLASS FIBERS

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 228,844, Jan. 26, 1981, abandoned. This application Dec. 17, 1981, Ser. No. 331,549

Int. Cl.^{3} C08L *61/10, 51/00*

U.S. Cl. 524—504 **21 Claims**

13. A composition of matter comprising an aqueous alkaline dispersion of from about 30 to 50% by weight of solids comprising on a dry weight basis 100 parts by weight of a rubbery graft copolymer of a seed of (1) a polymer of an acrylate monomer, said polymer having a glass transition temperature of not above about −20° C., said polymer optionally additionally containing copolymerized with said acrylate monomer a very minor amount by weight of a crosslinking polyunsaturated monomer, and a shell of (2) a copolymer of a vinyl pyridine monomer having from 7 to 9 carbon atoms and a conjugated diene monomer having from 4 to 6 carbon atoms, wherein in said graft copolymer the total amount of said monomers forming said graft copolymer is from about 8 to 20% by weight of said acrylate monomer, from 3 to 20% by weight of said vinyl pyridine monomer and from 60 to 89% by weight of said conjugated diene monomer and about 3 to 15 parts by weight of a water soluble thermosetting phenolic-aldehyde resin.

4,355,132

ANISOTROPIC MELT PHASE FORMING POLY(ESTER-AMIDE) DERIVED FROM P-HYDROXYBENZOIC ACID, 2,6-NAPHTHALENEDICARBOXYLIC ACID, AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE, AND, OPTIONALLY, HYDROQUINONE AND ADDITIONAL CARBOCYCLIC DICARBOXYLIC ACID

Anthony J. East, Madison; Gordon W. Calundann, North Plainfield, and Larry F. Charbonneau, Chatham, all of N.J., assignors to Celanese Corporation, New York, N.Y.

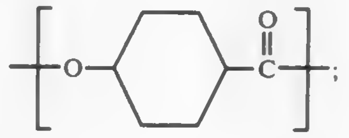
Filed Apr. 7, 1981, Ser. No. 251,819

Int. Cl.^{3} C08G *69/44*

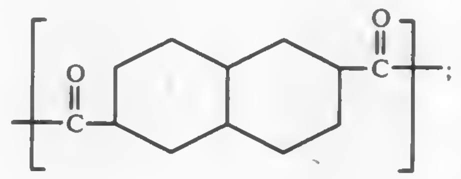
U.S. Cl. 524—602 **45 Claims**

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, and, optionally, IV and V wherein:

I is

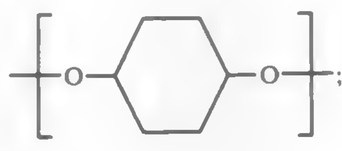


II is



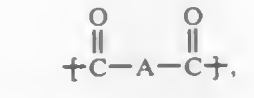
III is $\{Y—Ar—Z\}$, where Ar is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group;

IV is



; and

V is



$$-\!\!\left[\overset{O}{\overset{\|}{C}}-A-\overset{O}{\overset{\|}{C}}\right]\!\!-,$$

where A is a divalent carbocyclic radical other than naphthylene,

wherein at least some of the hydrogen atoms present upon the rings optionally may be replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration within the range of approximately 20 to 70 mole percent, moiety II is present in a concentration within the range of approximately 5 to 35 mole percent, moiety III is present in a concentration within the range of approximately 5 to 35 mole percent, moiety IV is present in a concentration within the range of approximately 0 to 35 mole percent, and moiety V is present in a concentration within the range of approximately 0 to 30 mole percent, and with said poly(ester-amide) being wholly aromatic with the possible exception of said carbocyclic moiety V in the sense that each moiety present contributes at least one aromatic ring.

4,355,133

POLYESTER OF 6-HYDROXY-2-NAPHTHOIC ACID, 4-HYDROXY BENZOIC ACID, 1,4-CYCLOHEXANEDICARBOXYLIC ACID, AND AROMATIC DIOL CAPABLE OF READILY UNDERGOING MELT PROCESSING TO FORM ARTICLES POSSESSING HIGH IMPACT PROPERTIES

Anthony J. East, Madison, and Gordon W. Calundann, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

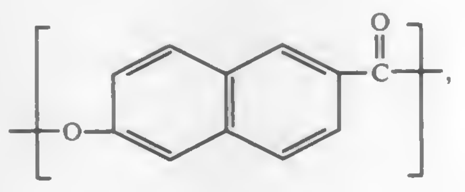
Filed Jul. 27, 1981, Ser. No. 287,345

Int. Cl.^{3} C08G *63/60*

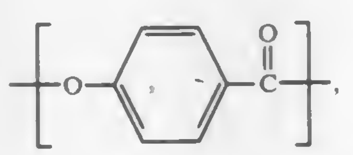
U.S. Cl. 524—604 **23 Claims**

1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I, II, III, and IV which optionally may include substitution of at least some of the hydrogen atoms present upon an aromatic ring wherein:

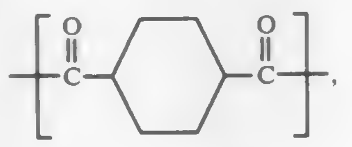
I is



II is



III is



wherein at least approximately 90 percent of said III units are in the trans-configuration, and

IV is a dioxyaryl moiety of the formula

$$-\!\!\left[O-Ar-O\right]\!\!-$$

where Ar is a divalent radical comprising at least one aromatic ring,

with said optional substitution if present being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, a phenyl group, and mixtures of the foregoing, and wherein said polyester comprises approximately 10 to 70 mole percent of moiety I, approximately 10 to 60 mole percent of moiety II, approximately 10 to 45 mole percent of moiety III, and approximately 10 to 45 mole percent of moiety IV.

4,355,134

WHOLLY AROMATIC POLYESTER CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE AT AN ADVANTAGEOUSLY REDUCED TEMPERATURE

Larry F. Charbonneau, Chatham, and Gordon W. Calundann, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

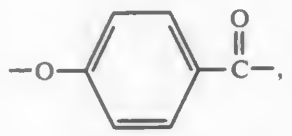
Filed Jun. 4, 1981, Ser. No. 270,440

Int. Cl.^{3} C08G *63/60*

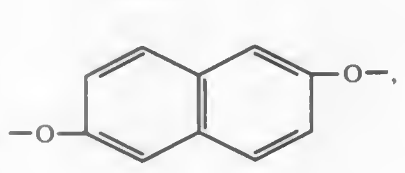
U.S. Cl. 524—605 **22 Claims**

1. A melt processable wholly aromatic polyester capable of forming an anisotropic melt phase consisting essentially of the recurring moieties I, II, III, and IV having the structural formulas wherein:

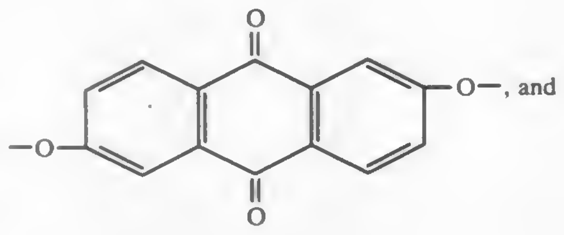
I is



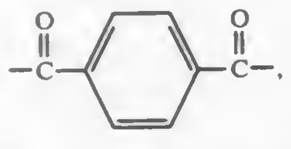
II is



III is



IV is



wherein said wholly aromatic polyester is substantially free of aromatic rings possessing ring substitution and meta disposed linkages in the polymer chain, wherein said wholly aromatic polyester comprises approximately 20 to 80 mole percent of moiety I, approximately 5 to 20 mole percent of moiety II, approximately 5 to 20 mole percent of moiety III, and approximately 10 to 40 mole percent of moiety IV, and wherein said wholly aromatic polyester can be melt processed at a lower minimum temperature when compared to a similarly formed wholly aromatic polyester wherein moiety III is omitted and is replaced by an additional concentration of moiety II which corresponds to the concentration of moiety III.

4,355,135

TINTABLE ABRASION RESISTANT COATINGS

James R. January, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

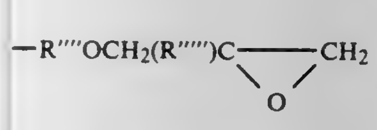
Filed Nov. 4, 1981, Ser. No. 318,240

Int. Cl.^{3} C08K *3/20*

U.S. Cl. 524—767 **63 Claims**

1. A composition comprising

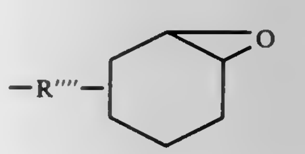
(A) a base resin consisting of an aqueous-alcoholic dispersion of
  - (i) 5 to 75 weight percent, based on the total solids of (A), of colloidal silica,
  - (ii) 0 to 50 weight percent, based on the total solids of (A), of a partial condensate of a silanol which is selected from a group consisting of silanols having the formula
    - (a) $RSi(OH)_3$ wherein R is methyl,
    - (b) $R'Si(OH)_3$ wherein R′ is a mixture of methyl with a radical selected from the group consisting of vinyl, phenyl, ethyl, propyl, 3,3,3-trifluoropropyl, gamma-methacryloxypropyl, gamma-mercaptopropyl and gamma-chloropropyl wherein the ratio of methyl radicals to the other radicals in the mixture is at least 1:1, and
    - (c) $R''Si(OH)_3$ wherein R″ is selected from a group consisting of vinyl, phenyl, ethyl, propyl, 3,3,3-trifluoropropyl, gamma-methacryloxypropyl, gamma-mercaptopropyl and gamma-chloropropyl and mixtures thereof, wherein when (c) is selected, the amount of (c) in (A) cannot exceed 10 weight percent based on the total weight of (A);
  - (iii) 10 to 55 weight percent, based on the total solids of (A), of a partial condensate of a silanol of the formula $R'''Si(OH)_3$ wherein R‴ is selected from the group consisting of
    - (a)



$$-R''''OCH_2(R''''')\underset{\diagdown\;O\;\diagup}{C\text{———}CH_2}$$

wherein R'''' is an alkylene radical containing 1 to 4 carbon atoms, R''''' is a hydrogen atom or an alkyl radical of 1 or 2 carbon atoms and

(b)



wherein R'''' has the meaning set forth above;

(B) a crosslinker for (A) and,

(C) a curing catalyst.

4,355,136

SOLVENT-RESISTANT UNSATURATED POLYESTER COMPOSITIONS

John R. Dombroski, and Fred W. Light, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,034

Int. Cl.^{3} C08G *63/76;* **C08L** *67/00*

U.S. Cl. 525—35 **15 Claims**

1. Composition comprising a polyester derived from 100 mole % of an acid component and 100 mole % of a glycol component, said acid component comprising about 30–90 mole % of at least one α,β-ethylenically unsaturated dicarboxylic acid and about 70–10 mole % of a compound containing a cinnamic acid moiety, and said glycol component comprising at least one saturated aliphatic glycol containing from 2 to 10 carbon atoms.

10. Molding composition comprising the polymer composition of claim 1 combined with from about 10 to about 90%, based on the weight of the mixture, of an ethylenically unsaturated monomeric crosslinking agent.

4,355,137

RECOVERY OF HEAVY METALS FROM SOLUTION BY EXTRACTION WITH CROSS-LINKED VEGETABLE PROTEIN

George Winter, Beaumaris, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Continuation-in-part of Ser. No. 84,614, Oct. 15, 1979, Pat. No. 4,261,819. This application Oct. 29, 1980, Ser. No. 202,006

Claims priority, application Australia, Oct. 16, 1980, 63282/80

Int. Cl.^{3} C08L *89/00*

U.S. Cl. 525—54.1 **7 Claims**

1. A method of abstracting heavy metal ions from solution in which a solution containing heavy metal ions is brought into contact with a cross-linked vegetable protein.

3. A method of separating a mixture of heavy metal ions whereby a solution containing at least two heavy metal ions is brought into contact with a cross-linked vegetable protein under conditions such that one of the said heavy metal ions is selectively adsorbed onto said cross-linked vegetable protein.

4,355,138

POLYISOCYANATE ADDUCTS WITH APOLAR SOLVENT COMPATIBILITY AND GOOD STORAGE STABILITY

Peter Markusch, McMurray, Pa.; George A. Hudson, deceased, late of Venetia, Pa., and by Richard L. White, administrator, Leverkusen, Fed. Rep. of Germany, assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 10, 1981, Ser. No. 282,285

Int. Cl.^{3} C08G *18/78;* **C07C** *127/24*

U.S. Cl. 525—127 **17 Claims**

1. A light stable polyisocyanate adduct mixture with an average functionality greater than about 2.0 and an isocyanate content of between about 4 and 19 percent by weight based on solids, which has good compatibility with apolar solvents and good storage stability in a solution of polyisocyanate solvents comprising the reaction product of
  - (a) a polyisocyanate with an average functionality greater than about 2.0 and containing only aliphatically or cycloaliphatically bound isocyanate groups with
  - (b) about 0.05 to 0.5 moles per equivalent of isocyanate groups of a saturated, straight or branched, aliphatic or cycloaliphatic monohydric alcohol which contains at least 8 carbon atoms and
  - (c) about 0.05 to 0.5 moles per equivalent of isocyanate groups of a monohydroxy compound which contains one or more polarity inducing groups comprising a member selected from the group consisting of ester groups, ether groups aromatic rings or mixtures thereof,

and/or the reaction product of (a) and
  - (d) about 0.05 to 0.5 moles per equivalent of isocyanate groups of a monohydroxy compound which contains
    - (1) a saturated, straight or branched hydrocarbon chain having at least about 8 carbon atoms, and
    - (2) one or more polarity inducing groups comprising a member selected from the group consisting of ester groups, ether groups, aromatic rings or mixtures thereof.

4,355,139

COMPATIBILIZED POLYMER BLENDS

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 128,704, Mar. 10, 1980, Pat. No. 4,299,931. This application Jun. 22, 1981, Ser. No. 276,276

Int. Cl.^{3} C08F *8/00*

U.S. Cl. 525—133 **4 Claims**

1. A compatibilized polymer composition prepared by melt mixing about 90–10 parts by weight of thermoplastic olfein polymer, and correspondingly about 10–90 parts by weight of solid nitrile rubber having an average molecular weight of 50,000 or more, and a compatibilizing amount of an olefin polymer containing at least one graft forming functional group.

4,355,140

BORANE REDUCING RESINS

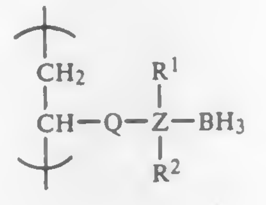
Larry Manziek, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 749,560, Dec. 10, 1976, abandoned. This application Jan. 21, 1981, Ser. No. 226,656

Int. Cl.^{3} C08F *8/42*

U.S. Cl. 525—329.4 **4 Claims**

1. A nonionic borane reducing resin which comprises a solid, crosslinked copolymer containing a plurality of amine of phosphine borane adducts of the formula:



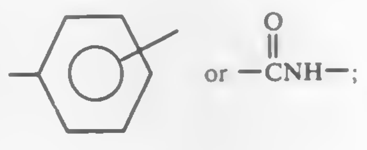
wherein

Q is a group of the formula

$$-(CH_2)_m-T-(CH_2)_n-;$$

m and n are independently integers from 0 to 3;

T is the group



$$\text{or } -\overset{\overset{\displaystyle O}{\|}}{C}NH-;$$

R^1 and R^2 are independently
- (a) hydrogen,
- (b) (C_1–C_8) optionally substituted alkyl,
- (c) (C_6–C_{12}) optionally substituted aryl, and
- (d) (C_7–C_{12}) optionally substituted aralkyl; and

Z is nitrogen or phosphorous.

4,355,141

POLYMERIZING VINYL CHLORIDE IN REACTOR TREATED WITH CONDENSATES

Hiroshi Okada; Seiichi Masuko; Kuniyuki Gotoh, all of Nagoya, and Takehiko Mogi, Tokai, all of Japan, assignors to Mitsui Toatsu Chemical, Inc., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,498

Int. Cl.^{3} C08F *2/20, 2/02*

U.S. Cl. 526—62 **4 Claims**

1. A process for the homopolymerization of vinyl chloride or the copolymerization thereof with a monomer copolymerizable therewith in an aqueous medium or by mass polymerization technique, characterized in that the inner walls of a polymerization tank and other parts of a polymerization apparatus system which are to be contacted with the monomer(s) are previously coated with a layer of a copolycondensate obtained by reacting a resol type phenol/aldehyde precondensate prepared in the presence of a basic catalyst with a nitrogen-containing compound selected from the group consisting of nitrophenols, nitrobenzoic acids, nitrobenzenesulfonic acids, aminophenols, aminobenzoic acids and aminobenzenesulfonic acids.

4,355,142

METHOD FOR HOMOGENIZING MONOMER MIXES FOR VINYL LATEX PRODUCTION

Sohan L. Khungar, Houston, Tex., and Suresh R. Shah, Sheffield Lake, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 27, 1981, Ser. No. 238,919

Int. Cl.^{3} C08F *2/22*

U.S. Cl. 526—88 **17 Claims**

1. A method for homogenizing a monomer mix for making a latex, said mix containing ingredients selected from vinyl halide, vinylidene halide, mixtures thereof, mixtures thereof with one or more copolymerizable monomers, and other ingredients, said method comprises passing said mix through a first stage of a homogenizer which includes the steps of shearing the mix by means of a rotating shearing means as the mix is forced into a plurality of centrifugally rotating channels in the shearing means, conveying the mix from the rotating channels into stationary channels, repeating the shearing and the conveying steps at least once through successive rotating and stationary channels, conveying the mix from the first stage to a polymerization reactor where the latex is prepared.

4,355,143

PROCESS FOR THE POLYMERIZATION OF ETHYLENE AND THE RESULTING PRODUCTS

Dominique Lassalle, and Laszlo Havas, both of Martigues, France, assignors to Naphtachimie, Courevoie, France

Filed Sep. 17, 1979, Ser. No. 75,897

Claims priority, application France, Sep. 22, 1978, 78 27168

Int. Cl.^{3} C08F *4/64, 10/02*

U.S. Cl. 526—119 **13 Claims**

1. A process for the production of polyolefins with a wide range of distribution in respect of molecular masses comprising polymerizing, in the presence of hydrogen, monomers selected from the group consisting of ethylene and ethylene and one or more olefins having the formula $CH_2{=}CHA$, in which A is an alkyl radical containing from 1 to 8 carbon atoms, in contact with a catalytic system comprising
- (a) a catalyst comprising a solid compound of titanium, magnesium and a halogen produced by reacting at a temperature within the range of −20° to 150° C.
  - (1) one or more compounds of tetravalent titanium having the formula $TiX_{(4-n)}(OR)_n$ wherein X is a halogen, R is an alkyl radical which contains from 2 to 8 carbon atoms, and n is an integer or a fraction which can be any value from 0 to 4
  - (2) magnesium as a metal or in the form of an organomagnesium compound having the formula RMgX, in which X and R are as defined above, or having the formula MgR_2 in which R is as defined above, and
  - (3) an alkyl halide having the formula RX wherein R and X are as defined above,

  these various compounds being used in the molar ratio such that

  $0.1 \leqq$ component (1)/component (2) $\leqq 0.5$

  $1 \leqq RX/RMgX \leqq 2$

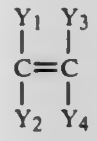
  or

  $2 \leqq RX/MgR \leqq 4$

  or

  $0.5 \leqq RX/Mg \leqq 10$
- (b) one or more organometallic compounds of a metal of Groups II and III of the periodic table of elements, and
- (c) one or more halogenated hydrocarbons,

the process being characterized in that the halogenated hydrocarbon(s) is selected from the compounds having the general formula:



$$\begin{array}{cc} Y_1 & Y_3 \\ | & | \\ C & \!\!=\!\! C \\ | & | \\ Y_2 & Y_4 \end{array}$$

wherein:

$Y_1 = F$, Cl or Br

Y_2, $Y_3 = F$, Cl, Br or C_nH_{2n+1},
n being an integer of from 0 to 6

$Y_4 = C_nH_{2n+1}$

wherein n being an integer of from 0 to 6 and the molar ratio of the halogenated hydrocarbon(s) to the organometallic compounds is within the range of 0.01 to 1.

4,355,144

PROCESS FOR PRODUCING A PROPYLENE-ETHYLENE COPOLYMER HAVING IMPROVED STRETCHABILITY

Akinobu Shiga; Kiyoshi Matsuyama; Masahiro Kakugo; Yukio Naito; Seiichiro Ima, and Katsuyoshi Yamashita, all of Niihama, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 181,319, Aug. 25, 1980, abandoned. This application Apr. 24, 1981, Ser. No. 257,431

Claims priority, application Japan, Aug. 24, 1979, 54-108341

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 526—137 **3 Claims**

1. In a process for producing a propylene-ethylene copolymer comprising copolymerizing propylene and a small amount of ethylene in the presence of hydrogen and a catalyst system comprising (A) titanium trichloride obtained by reducing titanium tetrachloride with an organoaluminum compound and reacting the reduced solid with an ether represented by the formula:

$$R^1—O—R^2$$

wherein R^1 and R^2 are each a straight chain, branched chain or cyclic alkyl group having 1 to 10 carbon atoms, and a halogen compound selected from the group consisting of

(i) halogen or interhalogen compounds of the formula:

$$X^1X^2{}_a .$$

wherein X^1 and X^2 are each a chlorine, bromine or iodine atom and a is a number from 1 to 3;

(ii) titanium halides; and

(iii) organic halogen compounds,

simultaneously or successively and (B) an organoaluminum compound, the improvement which comprises supplying ethylene together with propylene to the polymerization system such that the ethylene concentration in the vapor phase of the system based on the total amount of propylene, ethylene and hydrogen in the vapor of the system is 0.15 to 1.5 mol% to obtain a propylene-ethylene copolymer having an ethylene content of from 0.1 to 1.0 wt%.

4,355,145

FURAN RESINS OF IMPROVED FIRE RESISTANCE

Nicolas Meyer, Bully Les Mines, and Michel Cousin, Loison Sous Lens, both of France, assignors to Societe Chimique des Charbonnages SA, Paris La Defense, France

Filed Apr. 22, 1981, Ser. No. 256,367

Claims priority, application France, Apr. 24, 1980, 80 9194

Int. Cl.^{3} C08F *4/52;* **C08J** *3/24*

U.S. Cl. 526—195 **10 Claims**

1. In a process of hardening furan resins by using acidic catalysts, the improvement which comprises using as the acidic catalyst a substantially anhydrous concentrated boric anhydride solution comprising at least 5 percent by weight of boric anhydride, at least one organic solvent and at least one concentrated acid.

4,355,146

PROCESS FOR REMOVING WATER-SOLUBLE PROTEIN FROM VINYL CHLORIDE RESIN

Mamoru Nakamura, and Akikatsu Kanayama, both of Takaoka, Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Apr. 29, 1980, Ser. No. 144,822

Claims priority, application Japan, May 2, 1979, 54/54487

Int. Cl.^{3} C08F *2/20, 6/24, 14/06*

U.S. Cl. 526—199 **4 Claims**

1. A process for producing a blending vinyl chloride resin which comprises subjecting a vinyl chloride monomer or a mixture of vinyl chloride and a monomer copolymerizable therewith to suspension polymerization in an aqueous medium using a water-soluble protein, selected from the group consisting of casein and gelatin, as a suspending agent, and treating the resulting polymer with a proteolytic enzyme selected from the group consisting of pepsin, trypsin, chymotrypsin, cathepsin, papain, bromelin, pancreatin, ficin and proteolytic enzymes derived from microorganisms at a temperature of 20° to 70° C., the amount of the proteolytic enzyme used being 0.0001 to 5 parts by weight per 100 parts by weight of the polymer, to decompose the protein.

4,355,147

POLYSILOXANE WITH POLYCYCLIC MODIFIER COMPOSITION AND BIOMEDICAL DEVICES

William G. Deichert, Macedon; Gary D. Friends, Ontario; John B. Melpolder, Hilton, and Joon S. Park, Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,524

Int. Cl.^{3} C08F *220/12, 226/06*

U.S. Cl. 526—264 **17 Claims**

1. A shaped article suitable for use in biomedical applications being a polymer formed by polymerizing (a) one or more polysiloxane monomers α,ω terminally bonded through divalent hydrocarbon groups to an activated unsaturated group with (b) a polycyclic modulus modifier and (c) a tear film stabilizer to form a crosslinked three-dimensional polymeric network,
- said modulus modifier being selected from the group consisting of isobornyl acrylate, isobornyl methacrylate, dicyclopentandienyl acrylate, dicyclopentadienyl methacrylate, adamantanyl acrylate, adamantanyl methacrylate, isopinocamphyl acrylate and isopinocamphyl methacrylate and is present in an amount from 90 to 30 parts per 10 to 70 parts of polysiloxane monomers and the sum of parts equals 100,
- said stabilizer being selected from the group consisting of hydroxyethylmethacrylate, hydroxyethylacrylate, hydroxypropylmethacrylate, hydroxypropylacrylate and mixtures thereof and is present in an amount from 2 to 20 parts per 100 parts of modulus modifier and polysiloxane monomers,
- said polymer having a flexural modulus of at least 1,500 Kg/cm^2.

4,355,148

NORBORNENE POLYMERS CONTAINING BOUND PHENOLIC ANTIOXIDANT

Robert W. Layer, Cuyahoga Falls, and Linwood P. Tenney, Hudson, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

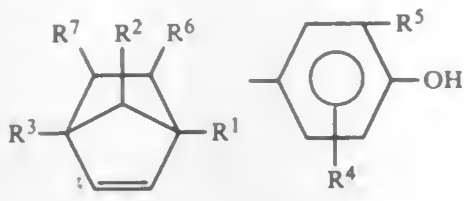
Filed Sep. 18, 1980, Ser. No. 188,397

Int. Cl.^{3} C08F *232/00, 234/00*

U.S. Cl. 526—281 **5 Claims**

1. A polymeric composition of matter comprising a reaction product obtained by ring opening polymerization using a me-

tathesis catalyst of a norbornene-type monomer and 0.05 to 10 parts by weight per 100 parts of said norbornene-type monomers of a norbornenyl phenolic antioxidant defined as follows:



where R^1, R^2, and R^3 are individually selected from hydrogen and alkyl groups of 1 and 3 carbon atoms; R^4 is selected from hydrogen, alkyl groups containing 1 to 12 carbon atoms, and alicyclic groups of 4 to 8 carbon atoms; R^5 is selected from alkyl groups of 1 to 6 carbon atoms, and alicyclic groups of 4 to 8 carbon atoms; R^6 is selcted from alkylene and alkenylene groups containing 1 to 8 carbon atoms; and R^7 is selected from hydrogen, alkyl and alkenyl groups of 1 to 8 carbon atoms, amount of said norbornenyl phenolic being sufficient to improve antioxidant properties of said reaction product.

4,355,149

CYCLOFLUOROSILICONE-CONTAINING COMPOSITIONS FOR THE TREATMENT OF FIBERS

Yoshinobu Koda, Chibashi; Isao Ona, Chiba, and Atsushi Takeda, Ichihara, all of Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,696

Int. Cl.^{3} C08G *77/06*

U.S. Cl. 528—18 **5 Claims**

1. A composition for the treatment of fibers, said composition being obtained by mixing components comprising

(A) a siloxane component comprising

(a) a cyclic organohydrogenpolysiloxane in which at least 5 percent of the total of organic radicals plus silicon-atom-bound hydrogen atoms are fluorinated monovalent hydrocarbon radicals and which contains at least two silicon-atom-bound hydrogen atoms per molecule, or

(b) a mixture comprising

(b)(1) the above-mentioned component (a) and

(b)(2) a substantially linear organopolysiloxane which consists of from 5 to 100 mol percent of $RQSiO_{2/2}$ units, from 0 to 95 mol percent of $R'R''SiO_{2/2}$ units and a silicon-atom-bound hydroxyl radical at each terminus, wherein R denotes an unsubstituted monovalent hydrocarbon radical having from 1 to 6 carbon atoms, Q denotes a fluorinated monovalent hydrocarbon radical and R′ and R″ denote monovalent hydrocarbon radicals, and

(B) a curing catalyst component for dehydrogenation condensation between silicon-atom-bound hydrogen atoms or between silicon-atom-bound hydrogen atoms and silicon-atom-bound hydroxyl radicals.

4. A composition according to claims **1**, **2** or **3** wherein component (B) is an acid salt of tin selected from the group consisting of dibutyltin diacetate, dibutyltin dilaurate, dibutyltin dioctylate, tin dioctylate and dioctyltin dilaurate and is present in the composition in an amount of from 0.1 to 20 parts by weight for every 100 parts by weight of component (A).

4,355,150

THERMOPLASTIC POLY(BISPHENOL A TERE- OR ISOPHTHALATE) COPOLYCARBONATE

Clive P. Bosnyak, Selly Oak; Robert N. Haward, Harborne, and Ian W. Parsons, Selly Oak, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 15, 1980, Ser. No. 169,211

Claims priority, application United Kingdom, Jul. 18, 1979, 7925845

Int. Cl.^{3} C08G *63/64*

U.S. Cl. 528—176 **4 Claims**

1. A thermoplastic composition comprising a copolymer which is a poly (bisphenol A tere-or iso-phthalate) copolycarbonate having a molar ratio of phthalate-to-carbonate units in the inclusive range of from 2 to 10.

4,355,151

AROMATIC COPOLYAMIDE CONTAINING 3,4′-DIAMINO DIPHENYLENE MOIETY

Keizo Shimada; Hiroshi Mera; Noriaki Sasaki, and Akihiro Aoki, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 13, 1980, Ser. No. 120,992

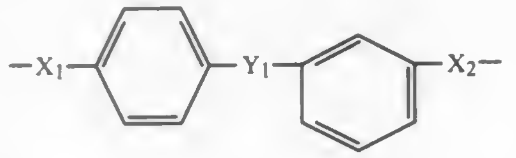
Claims priority, application Japan, Feb. 26, 1979, 54-20685

Int. Cl.^{3} C08G *69/32*

U.S. Cl. 528—183 **10 Claims**

1. A fiber- or film-forming aromatic copolyamide which comprises at least one recurring unit (A) of the formula (I), at least one recurring unit (B) of the formula (II) and at least one recurring unit (C) of the formula (III):

(I)

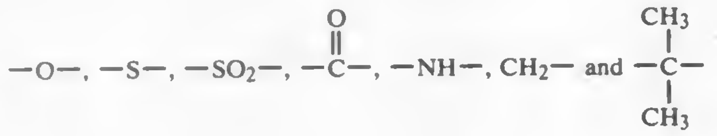


$$-X_3-Ar_1-X_4 \qquad (II)$$

and

$$-X_5-Ar_2-X_6- \qquad (III)$$

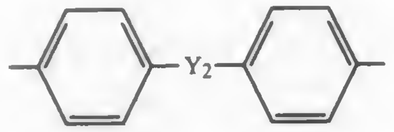
in which formulae (I), (II) and (III), Y_1 represents a divalent radical selected from the group consisting of



$$-O-,\ -S-,\ -SO_2-,\ -\overset{\overset{\large O}{\|}}{C}-,\ -NH-,\ CH_2-\ \text{and}\ -\underset{\underset{\large CH_3}{|}}{\overset{\overset{\large CH_3}{|}}{C}}-$$

Ar_1 represents a member selected from the group consisting of phenylene, naphthylene and biphenylene radicals, each having two valance bonds oriented meta; Ar_2 represents a member selected from the group consisting of phenylene, naphthylene and biphenylene radicals, each having two valence bonds oriented coaxially or in parallel to each other and radicals of the formula (IV):

(IV)



wherein Y_2 represents a divalent radical selected from the same group as that set forth above for Y_1 and is the same as or different from Y_1; and X_1 and X_2 respectively represent a -Co-moiety and X_3, X_4, X_5 and X_6 respectively represent a moiety —NH— or —CO— of an amide group —NHCO— or —CONH— and the molar proportions of said recurring units (A), (B) and (C) represented by a triangular composition diagram fall on or within the quadrilateral shown in FIG. 1 and defined by the co-ordinates:

P (A 50, B 5, C 45)
Q (A 5, B 5, C 90)
R (A 5, B 40, C 55) and
S (A 50, B 15, C 35).

except for the side defined by the coordinates P,Q.

4,355,152

SOLVENT RESISTANT HALOGENATED AROMATIC POLYESTER FIBERS AND PROCESS THEREFOR

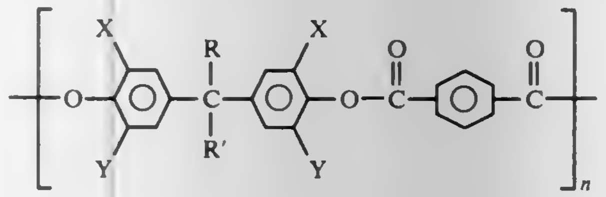
Albert G. Williams, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,363

Int. Cl.^{3} C08G *63/68*

U.S. Cl. 528—191 **24 Claims**

1. Improved solvent resistant halogenated aromatic polyester fibers of the recurring structural formula:



where X which may be the same or different is chlorine or bromine, Y which may be the same or different is hydrogen, chlorine or bromine, R and R′ may be the same or different and represent lower alkyl groups, hydrogen, or together constitute a cyclic hydrocarbon group, and n equals at least 10, produced by heat treating said fibers at substantially constant length at a temperature of from about 270° to about 295° C. for from about 5 to about 30 minutes.

4,355,153

PROCESS FOR THE POLYMERIZATION OF FORMALDEHYDE

Pierino Radici, Turate, and Paolo Colombo, Saronno, both of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

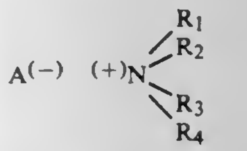
Filed Nov. 19, 1980, Ser. No. 208,457

Int. Cl.^{3} C08L *77/02*

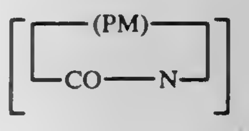
U.S. Cl. 528—243 **7 Claims**

1. A process for preparing polyformaldehyde which comprises polymerizing anhydrous monomeric formaldehyde in an organic diluent which is liquid under the polymerization conditions, which is a non-solvent for polyformaldehyde and is inert (unreactive) towards the other constituents of the polymerization medium, in the presence of a catalytic amount of a compound of the general formula:

(I)



wherein R1, R2, R3 and R4 independently are an alkyl, cycloalkyl, aryl or alkylaryl radical, and wherein $A^{(-)}$ is a lactamate group of the general formula:



in which PM is a linear polymethylene chain with from 3 to 13 carbon atoms, non substituted or having one or more hydrogen atoms replaced by an alkyl, cycloalkyl, aryl or alkylaryl radical.

4,355,154

METHOD FOR PREPARING CONDENSATION POLYMERS BY EMULSION POLYMERIZATION

John C. Saam, and Yungnien J. Chou, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 6, 1981, Ser. No. 308,961

Int. Cl.^{3} C08G *63/22*

U.S. Cl. 528—274 **40 Claims**

1. A polyester prepared by (1) combining a liquid aqueous medium with at least one emulsifiable precursor and an effective amount of at least one polycondensation catalyst and (2) reacting the resultant emulsion at a temperature at which the precursor is emulsifiable for a period of time sufficient to form said polyester;

wherein said precursor comprises at least one member selected from the group consisting of hydroxycarboxylic acids containing at least 8 carbon atoms and mixtures comprising a polyfunctional alcohol containing at least 6 carbon atoms and a polyfunctional carboxylic acid containing at least 5 carbon atoms or the corresponding carboxylic acid anhydride and

wherein said polycondensation catalyst comprises at least one member selected from the group consisting of mineral acids, organic sulfonic acids, esters of sulfuric acid, alkali metal salts and esters of organic sulfonic acids, alkali metal salts of sulfuric acid half esters wherein the alcohol residue contains at least 12 carbon atoms and mixtures comprising (a) an ester of sulfuric acid wherein the alcohol residue contains at least 12 carbon atoms, an alkali metal salt of a sulfuric acid half ester or a cationic surfactant and (b) an alkali metal salt of sulfuric acid.

4,355,155

THERMOPLASTIC COPOLYESTER ELASTOMER

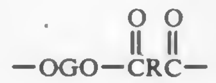
Suzanne B. Nelsen, Bergenfield, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,958

Int. Cl.^{3} C08G *63/54, 63/66*

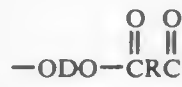
U.S. Cl. 528—301 **8 Claims**

1. A segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



$$-OGO-\overset{\overset{\large O}{\|}}{C}R\overset{\overset{\large O}{\|}}{C}-$$

and said short chain units being represented by the formula



$$-ODO-\overset{\overset{\large O}{\|}}{C}R\overset{\overset{\large O}{\|}}{C}-$$

where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4 butanediol or 1,4 butenediol; provided,

(a) said short chain segments amount to between about 30% and about 85% by weight of the copolyester, and

(b) between about 10% and about 40% of the D groups represent divalent radicals remaining after removal of hydroxyl groups from 1,4 butenediol.

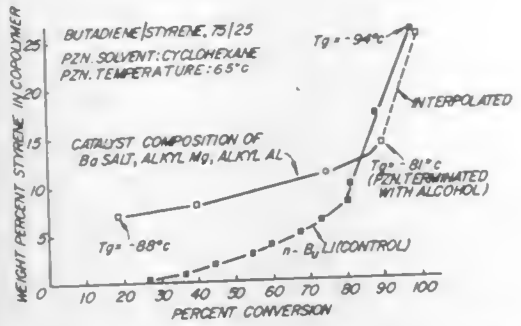
4,355,156
SOLUTION POLYMERIZATION

Robert E. Bingham, Cuyahoga Falls; Richard R. Durst, Stow; Hubert J. Fabris, Akron; Ivan G. Hargis, Tallmadge; Russell A. Livigni, and Sundar L. Aggarwal, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 124,373, Feb. 25, 1980, Pat. No. 4,302,568. This application Sep. 14, 1981, Ser. No. 301,691

Int. Cl.^{3} C08D *1/32;* **C08F** *1/74, 19/08*

U.S. Cl. 528—413 **13 Claims**



1. The method which comprises polymerizing under inert conditions in a hydrocarbon solvent at a temperature of from about 0° to 150° C. a polymerizable heterocyclic monomer with a catalyst in a minor effective amount sufficient to polymerize said monomer to obtain a polymer, said catalyst comprising (1) an alcoholate selected from the group consisting of barium alcoholate, calcium alcoholate and strontium alcoholate and mixtures thereof, (2) an organoaluminum compound selected from the group consisting of alkyl and cycloalkyl aluminum compounds and mixtures of the same in which the organic moities have from 1 to 20 carbon atoms and (3) an organomagnesium compound selected from the group consisting of alkyl and cycloalkyl magnesium compounds and mixtures of the same in which the organic moities have from 1 to 20 carbon atoms, where the mol ratio computed as metal of barium, calcium and/or strontium to magnesium is from about 1:10 to 1:2 and where the mol ratio computed as metal of magnesium to aluminum is from about 105:1 to 1.5:1.

4,355,157
HOT WATER PRECIPITATION OF RESINS CONTAINING MALEIC ANHYDRIDE

Richard W. Yanik, Twinsburg, and Albert J. Herold, Bedford, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 22, 1980, Ser. No. 218,654

Int. Cl.^{3} C08F *6/12*

U.S. Cl. 528—499 **7 Claims**

1. A method of precipitating a copolymer comprising maleic anhydride from a solution comprising an organic solvent selected from the group consisting of methyl ethyl ketone, acetone, acetonitrile, toluene and benzene, the method comprising mixing a solution of said organic solvent and a copolymer of maleic anhydride and a monomer copolymerizable therewith with hot water, the temperature of said hot water being in the range of about 40° C. to about 100° C., and agitating the resulting mixture for a sufficient period of time and at a sufficiently high shear rate to yield precipitated particles of said copolymer that are substantially free of internal organic solvent.

4,355,158
PROCESS FOR THE PREPARATION OF RIBOFLAVIN

Rudolf Wolf, Darmstadt; Fritz Reiff, Seeheim; Rolf Wittmann, Mühltal, and Jürgen Butzke, Dieburg, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 156,943

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923266; Jun. 8, 1979, 2923267; Jun. 8, 1979, 2923268; Feb. 6, 1980, 3004304

Int. Cl.^{3} C08G *83/00;* **C12P** *7/58*

U.S. Cl. 536—1 **27 Claims**

1. A process for preparing riboflavin from D-glucose, comprising the steps of:

(a) oxidizing D-glucose to D-gluconic acid or an alkali metal gluconate;
(b) oxidizing the resultant D-gluconic acid or gluconate to D-arabinose with hypochlorite;
(c) epimerizing the resultant D-arabinose to obtain substantially an equilibrium epimer mixture containing D-ribose, and coarsely separating at least 80% of the D-arabinose therefrom;
(d) directly catalytically hydrogenating the resultant D-ribose-rich epimer mixture in the presence of 4-nitro-1,2-xylene or 3,4-xylidine, and directly crystallizing substantially pure N-D-ribityl-3,4-xylidine from the resultant hydrogenation mixture;
(e) coupling the resultant N-D-ribityl-3,4-xylidene with a benzenediazonium salt to form 1-D-ribitylamino-3,4-dimethyl-6-phenylazobenzene; and
(f) reacting the resultant 1-D-ribitylamino-3,4-dimethyl-6-phenylazobenzene with barbituric acid to form riboflavin.

4,355,159
NICKEL COMPLEX PIGMENTS OF AZINES

Abul Iqbal, Ettingen; Paul Lienhard, Frenkendorf, and Andre Pugin, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

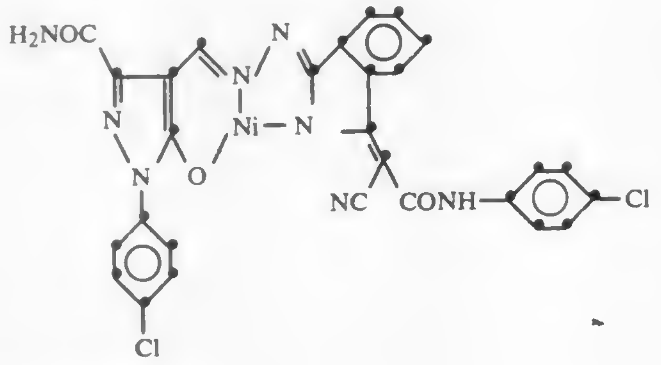
Filed May 13, 1980, Ser. No. 149,406

Claims priority, application Switzerland, May 23, 1979, 4842/79

Int. Cl.^{3} C07D *403/12*

U.S. Cl. 542—417 **2 Claims**

1. The nickel complex pigment having the formula



or a tautomer thereof.

4,355,160
THIAZOLYLACETAMIDO CEPHALOSPORIN TYPE COMPOUNDS

Michihiko Ochiai, Osaka; Taiiti Okada, Kyoto; Osami Aki, Hyogo; Akira Morimoto; Kenji Kawakita, both of Osaka, and Yoshihiro Matsushita, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Doshomachi, Japan

Division of Ser. No. 71,032, Aug. 28, 1979, Pat. No. 4,298,606, which is a division of Ser. No. 900,233, Apr. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 642,356, Dec. 19, 1975, Pat. No. 4,098,888. This application Mar. 4, 1981, Ser. No. 240,466

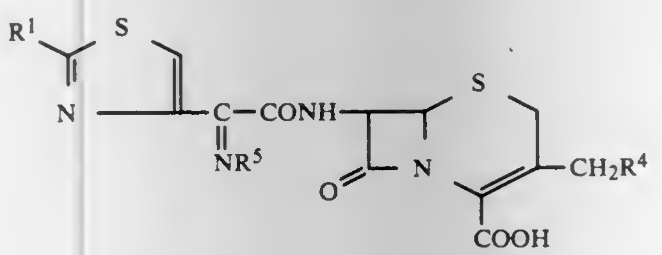
Claims priority, application Japan, Dec. 19, 1974, 49/146567

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.^{3} C07D *501/36;* **A61K** *31/545*

U.S. Cl. 544—027 **4 Claims**

1. A compound having antibiotic activity of the formula:



wherein

R^1 represents amino, protected amino, hydroxy or protected hydroxy;
R^4 represents heterocyclic thio wherein heterocyclic is a 5 to 6 membered hetero ring containing 1 to 4 hetero atoms from the group of oxygen, sulfur and nitrogen; and
R^5 is hydroxy or protected hydroxy;
or a pharmaceutically acceptable salt thereof.

4,355,161
MOLYBDENUM TRIOXIDE LAYERED COMPOUNDS

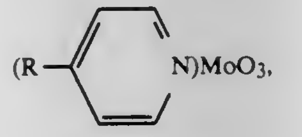
Jack W. Johnson, Fanwood, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1980, Ser. No. 205,142

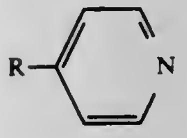
Int. Cl.^{3} C07F *11/00*

U.S. Cl. 544—181 **3 Claims**

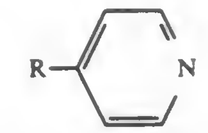
1. A composition of matter comprising layered compounds containing MoO_3 and nitrogen donor Lewis bases, said layered compounds having the formula



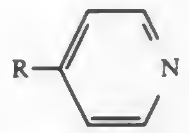
where R is halogen, C_1–C_{20} aliphatic hydrocarbon, C_6–C_{10} aryl which may be substituted by halogen or C_1–C_6 alkyl, C_7–C_{20} aralkyl, OR′ or SR′ wherein R′ is C_1–C_6 alkyl, the layered compounds being characterized in that



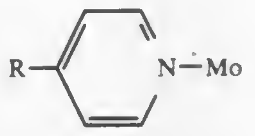
is covalently bound to a molybdenum atom in the molybdenum oxide layer and



has the steric requirement such that the maximum cross-sectional area of



perpendicular to an axis running through the



covalent bond is less than about 30 (A)^2.

2. A composition of matter comprising layered compounds containing MoO_3 and nitrogen donor Lewis bases, said layered compounds having the formula $LMoO_3$ where L is pyridine, pyridazine, pyrimidine, pyrazine and triazine, the layered compounds being characterized in that L is covalently bound to a molybdenum atom in the molybdenum oxide layer and L has the steric requirement such that the maximum cross-sectional area of L perpendicular to an axis running through the L-Mo covalent bond is less than about 30 (A)^2.

4,355,162
LAYERED COMPOUNDS OF MIXED OXIDES AND LEWIS BASES

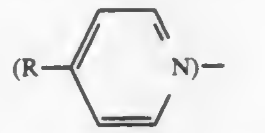
Jack W. Johnson, Fanwood, and Allan J. Jacobson, Princeton, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 10, 1980, Ser. No. 205,141

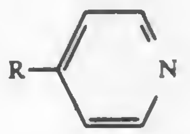
Int. Cl.^{3} C07F *11/00, 13/00*

U.S. Cl. 544—181 **9 Claims**

1. A composition of matter comprising the reaction product of a mixed oxide having layers of corner linked octahedra and tetrahedra and a nitrogen donor Lewis base, said reaction product forming a layered compound of the formula



where MOM′O$_4$ is a mixed oxide selected from the group consisting of $VOPO_4$, $VOSO_4$, $VOAsO_4$, $VOMoO_4$, $NbOPO_4$, $NbOAsO_4$, $TaOPO_4$ and $MoOPO_4$, and R is hydrogen; halogen; C_1–C_{20} aliphatic hydrocarbon, C_6–C_{10} aryl; C_7–C_{20} aralkyl; OR′ or SR′ where R′ is C_1–C_6 alkyl, the layered compound being characterized in that



is covalently bound to a metal atom in the MOM′O$_4$ layer.

2. A composition of matter comprising the reaction product of a mixed oxide having layers of corner linked octahedra and tetrahedra and a nitrogen donor Lewis base, said reaction product forming a layered compound of the formula LMOM-

'O_4 where MOM'O_4 is a mixed oxide selected from the group consisting of $VOPO_4$, $VOSO_4$, $VOAsO_4$, $VOMoO_4$, $NbOPO_4$, $NbOAsO_4$, $TaOPO_4$ and $MoOPO_4$, and L is pyridine, pyridazine, pyrimidine, pyrazine and triazine, the layered compound being characterized in that L is covalently bound to a metal atom in the MOM'O_4 layer.

4,355,163

ANTHRAQUINONE REACTIVE DYESTUFFS

Klaus von Oertzen, Cologne; Wolfgang Harms, and Klaus Wunderlich, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

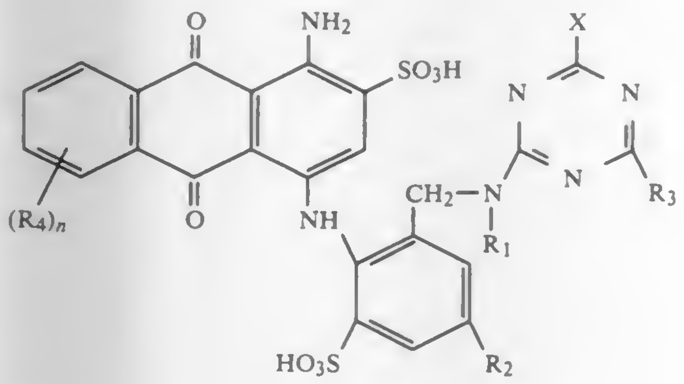
Filed Nov. 20, 1979, Ser. No. 96,084

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852672

Int. Cl.³ C07D *231/38;* C07C *143/665*

U.S. Cl. 544—189 **5 Claims**

1. Reactive dyestuffs of the formula



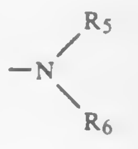
wherein

X=halogen

R_1=H or alkyl

R_2=alkyl

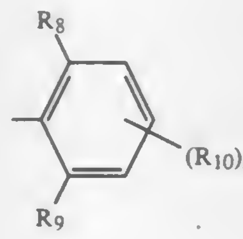
R_3=stands for halogen, OR_7, SR_7 or



wherein

R_7=low-molecular alkyl, low-molecular alkyl substituted by C_1-C_4-alkoxy, aryl or aralkyl and wherein

R_5 and R_6=independently of one another, H, alkyl, alkyl substituted by SO_3H, OSO_3H; or aralkyl, or together with N, a heterocyclic 5-membered or 6-membered ring, or as further R_5 and R_6



wherein

R_8 and R_9=H or SO_3H

R_{10}=SO_3H, halogen, COOH, CH_3, $SO_2CH_2CH_2OSO_3H$ or SO_2NH-CH_2-CH_2-OSO_3H,

n=0 to 2

R_4=SO_3H.

4,355,164

PYRIDOTHIENOPYRIDAZINE ANTI-ALLERGY COMPOUNDS

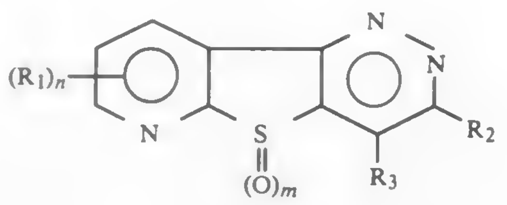
Raymond D. Youssefyeh, Tarrytown, N.Y., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed May 18, 1981, Ser. No. 264,756

Int. Cl.³ C07D *495/14, 495/04*

U.S. Cl. 544—234 **8 Claims**

1. A compound of the formula



wherein

R_1 is alkyl, alkenyl, alkynyl, halo, nitro, cyano, carboxy, carboxyalkyl, carbalkoxy, alkanoyl, trihalomethyl, aryl, aralkyl, alkylmercapto, hydroxy, hydroxyalkyl, alkoxy, amino, aminoalkyl, alkylamino, or methylenedioxy,

m is an integer from 0 to 2 inclusive,

n is an integer from 0 to 3 inclusive, and

R_2 and R_3 are independently hydrogen, alkyl, alkenyl, alkinyl, hydroxy, hydroxyalkyl, alkoxy, halogen, amino, aminoalkyl, alkylamino, alkanoylamino, alkylmercapto, carboxy, carbalkoxy, alkylsulfinyl, alkylsulfonyl, arylsulfinyl, or arylsulfonyl, wherein in R_1, R_2 and R_3 the alkyl groups contain from 1 to 6 the alkyl groups contain from 1 to 6 carbon atoms, the alkenyl and alkynyl groups contain from 2 to 6 carbon atoms, and the aryl groups contain from 6 to 10 carbon atoms.

4,355,165

AMINO-FUNCTIONALIZED PHTHALHYDRAZIDE INTERMEDIATES

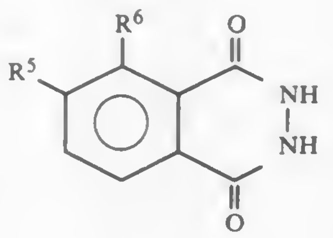
Robert C. Boguslaski; Robert J. Carrico, both of Elkhart, Ind., and James E. Christner, Birmingham, Ala., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 927,622, Jul. 24, 1978, which is a continuation-in-part of Ser. No. 894,836, Apr. 10, 1978, which is a continuation of Ser. No. 667,996, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Mar. 20, 1980, Ser. No. 131,881

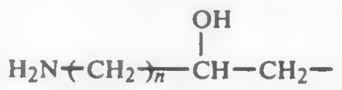
Int. Cl.³ C07D *237/32*

U.S. Cl. 544—237 **5 Claims**

1. A compound of the formula:



wherein one of R^5 and R^6 is hydrogen and the other is $—NR^7R^8$; R^7 is hydrogen or straight chain alkyl containing 1–4 carbon atoms and R^8 is



$$H_2N\text{—}(CH_2)_n\text{—}\underset{}{\overset{\displaystyle OH}{\overset{|}{C}H}}\text{—}CH_2\text{—}$$

wherein n=1–3.

4,355,166

QUINUCLIDINIC ESTER AND DERIVATIVES OF PHENOXYCARBOXYLIC ACIDS

Alberto Reiner, Como, Italy, assignor to D and D S.r.l., Milan, Italy

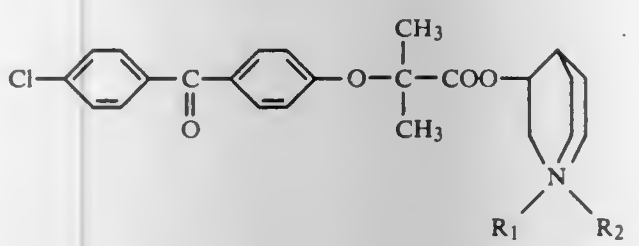
Filed Mar. 19, 1981, Ser. No. 245,273

Claims priority, application Italy, Mar. 19, 1980, 20764 A/80

Int. Cl.³ C07D *473/08, 453/02*

U.S. Cl. 544—268 **10 Claims**

1. Compound of the formula



(I)

wherein R_1 is hydrogen or methyl and R_2 is hydrogen, chlorine, bromine or a radical of an acid selected from the group consisting of oleic, pivalic, nicotinic, clofibric, 3-pyridineacetic and theophyllineacetic acids.

4,355,167

TELOMERIC QUATERNARY SALT COMPOSITIONS

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1981, Ser. No. 259,639

Int. Cl.³ C07C *97/10;* C07D *213/53*

U.S. Cl. 546—255 **8 Claims**

1. A telomeric quaternary salt composition of the formula

$$[A_xB_y]Z$$

wherein A is styrene, and B is selected from a quaternized salt prepared from 2-vinylpyridine, 3-vinylpyridine, 4-vinylpyridine, and dimethylaminoethylmethacrylate, x and y are numbers representing mole fractions of A and B, the sum of x and y being equal to 1, and Z represents the degree of polymerization, wherein there results a polymeric quaternary salt having a number average molecular weight of from about 1,000 to about 10,000.

4,355,168

PROCESS FOR PREPARING ARYL- OR HETEROARYLHEXADIENOIC ACIDS

Gian P. Chiusoli, Parma; William Giroldini, Bibbiano; Luciano Pallini, Fornovo Taro, and Giuseppe Salerno, Parma, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 2, 1980, Ser. No. 212,238

Claims priority, application Italy, Dec. 3, 1979, 27789 A/79

Int. Cl.³ C07D *213/55, 333/24;* C07C *57/42, 51/347*

U.S. Cl. 546—341 **14 Claims**

1. A process for preparing aryl- or heteroarylhexadienoic acids, characterized in that an aryl- or heteroarylacetylene of formula: $R—C\equiv CH$ (I), wherein R is an aryl group containing 1 or 2 rings or a heteroaryl group containing 1 or 2 rings and 1 to 2 heteroatoms selected from O, N, and S, in the radical, optionally substituted by substituents inert under the reaction conditions, and selected from halogen and alkyl, alkoxyl and carboalkoxy groups containing from 1 to 4 carbon atoms said aryl or heteroaryl acetylene containing a total of up to 20 carbon atoms, is reacted with 3-butenoic acid $CH_2═CH—CH_2—COOH$ (II), in an alcoholic medium and in an inert atmosphere, at a temperature approximately maintained between 50° C. and 120° C., at atmospheric pressure, in the presence of a catalyst selected from the group consisting of the phosphinic complexes of rhodium having the formulas: $Rh(PR'_3)_nL_mX$ (III) associated with alkaline salts of carboxylic acids having up to 4 carbon atoms, and $Rh(PR'_3)_nL_p{}^+Y^-$ (IV) wherein R' is a hydrocarbyl group having up to 12 carbon atoms; L is a linear or cyclic olefin selected from the olefins having a number of carbon atoms of from 2 to 10 and the chelating olefins having 6 to 8 carbon atoms, n is an integer from 1 to 3, m is an integer from 0 to 2 and such that n+m=2 or 3, and p is an integer from 0 to 3 and such that n+p=3 or 4; X is an anion selected from the haloid anions and the anions of carboxylic acids having up to 4 carbon atoms, and Y is a sparingly coordinating anion.

4,355,169

THIAZOLIDINYL-SUBSTITUTED PHENYL SULFONAMIDES

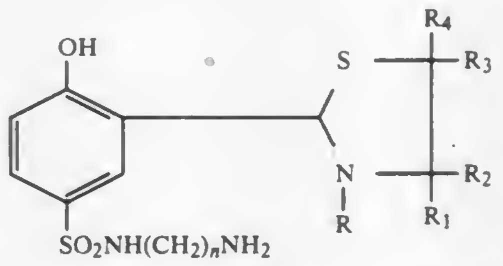
Donald A. McGowan, and Frank A. Meneghini, both of Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,357

Int. Cl.³ C07D *277/04*

U.S. Cl. 548—146 **5 Claims**

1. A compound of the formula



wherein R is selected from alkyl, aryl and aralkyl; R_1, R_2, R_3 and R_4 each are selected from hydrogen, alkyl and phenyl; and n is 2 to 10.

4,355,170

1-SUBSTITUTED IMIDAZOLE DERIVATIVES

Masaki Hayashi; Tadao Tanouchi, both of Takatsuki; Masanori Kawamura, Ibaraki, and Yoichi Iguchi, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka and Kissei Pharmaceutical Co., Ltd., Nagano, both of, Japan

Filed May 2, 1979, Ser. No. 35,180

Claims priority, application Japan, Jun. 9, 1978, 53-68892

Int. Cl.³ C07D *233/60*

U.S. Cl. 548—341 **6 Claims**

1. 1-[(7RS)-7-Ethoxycarbonyloctyl]imidazole or a non-toxic acid addition salt thereof.

4,355,171

PREPARATION OF POLYSILOXANE/POLYOXYALKYLENE COPOLYMER USEFUL AS STABILIZERS IN MAKING POLYURETHANE FOAMS

Armand de Montigny, Leverkusen; Hans-Walter Illger, Roesrath; Alberto C. Gonzalez-Doerner, Leverkusen, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,571

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929588

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—446 **2 Claims**

1. A process for the preparation of a polyorganopolysiloxane of the formula

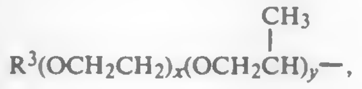
$$[R^1Si(OSiR_2)_n]_mZ_{m-1}(OR^2)_{m+2}$$

in which

R is an optionally halogen-substituted alkyl group with up to 4 C atoms,

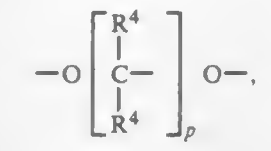
R^1 is the substituent R or a phenyl radical,

R^2 is an aliphatic, optionally unsaturated radical with up to 18 C atoms or a group of the formula



$$R^3(OCH_2CH_2)_x(OCH_2\overset{\overset{CH_3}{|}}{C}H)_y{-},$$

Z is the difunctional unit —O— or



$$-O\left[\begin{matrix}R^4\\ |\\ C-\\ |\\ R^4\end{matrix}\right]_p O-,$$

R^3 is a hydrocarbon radical with up to 4 C atoms,
R^4 each independently is a hydrogen atom or R^3,
n is from 3 to 30,
m is from 1 to 15,
x is from 0 to 68,
y is from 0 to 52,
x+y is from 1 to 68, and
p is from 2 to 12,

comprising reacting an organopolysiloxane of the formula

$$R^1Si(OSiR_2)_n\,U_{3-a-b}Cl_aW_b$$

in which
U is a radical of a lower monobasic carboxylic acid with up to 4 C atoms,
W is a radical of a fluorinated alkanesulphonic acid,
$a \leqq 1$, and
$b \leqq 0.5$,

with a mixture of R^2OH and H-Z-H, in the presence of a base in an organic solvent, the relative proportions of the reactants being determined by the value of m.

4,355,172
PROCESS FOR 4-(D-3-AMINO-3-CARBOXYPROPOXY)-PHENYLGLYOXYLIC ACID OXIME DERIVATIVES

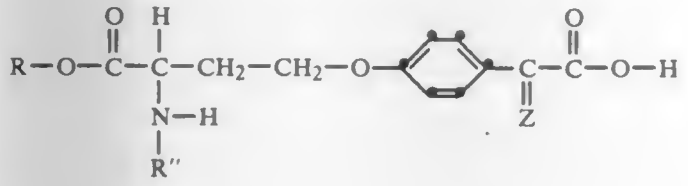
Gary A. Koppel, and Robin D. G. Cooper, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 739,160, Nov. 5, 1976, abandoned. This application Aug. 17, 1977, Ser. No. 825,344

Int. Cl.^{3} C07C *125/065, 125/067*

U.S. Cl. 560—29 **10 Claims**

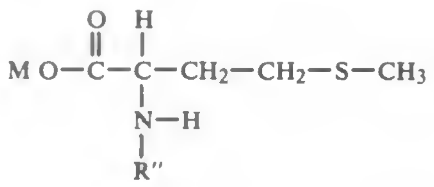
1. A process for preparing a compound of the formula



wherein
R is benzyl, 4-methoxybenzyl, 2,4,6-trimethylbenzyl, or diphenylmethyl;
R″ is t-butyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, cyclopentyloxycarbonyl, benzyloxycarbonyl, or 4-nitrobenzyloxycarbonyl; and
Z is ═O or a group of the formula

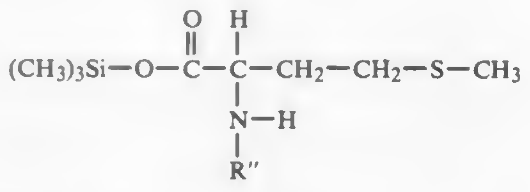
═N—O—Z′

wherein Z′ is hydrogen, acetyl, chloroacetyl, triphenylmethyl or p-methoxybenzyl; which comprises the steps of
(a) silylating an amino-protected D-methionine of the formula



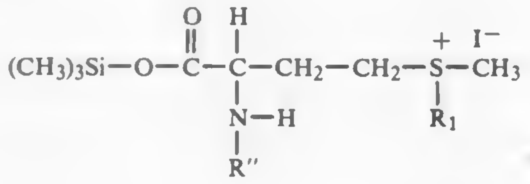
$$M\,O-\overset{\overset{O}{\|}}{C}-\underset{\underset{\underset{R''}{|}}{\overset{|}{N-H}}}{\overset{\overset{H}{|}}{C}}-CH_2-CH_2-S-CH_3$$

wherein M is hydrogen, an alkali metal cation or an ammonium cation derived from a primary or secondary C_1–C_4 alkyl, C_5 or C_6 cycloalkyl or benzyl amine, with a trimethylsilyl compound selected from the group of trimethylsilyl chloride, mono-trimethylsilylacetamide, bistrimethylsilylacetamide, and hexamethyldisilazane to form the trimethylsilyl ester of the formula



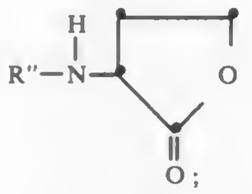
$$(CH_3)_3Si-O-\overset{\overset{O}{\|}}{C}-\underset{\underset{\underset{R''}{|}}{\overset{|}{N-H}}}{\overset{\overset{H}{|}}{C}}-CH_2-CH_2-S-CH_3$$

(b) alkylating said silyl ester with a C_1–C_4 alkyl iodide or benzyl iodide to form an alkylsulfonium iodide ester of the formula

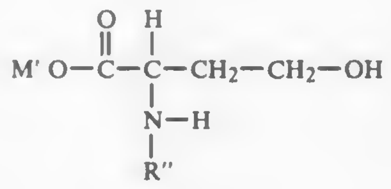


$$(CH_3)_3Si-O-\overset{\overset{O}{\|}}{C}-\underset{\underset{\underset{R''}{|}}{\overset{|}{N-H}}}{\overset{\overset{H}{|}}{C}}-CH_2-CH_2-\underset{\underset{R_1}{|}}{\overset{+\;\;I^-}{S}}-CH_3$$

wherein R_1 is C_1–C_4 alkyl or benzyl;
(c) heating said alkylsulfonium or benzylsulfonium iodide ester in an inert aprotic solvent at a temperature between about 25° C. and about 80° C. with a C_1–C_4 alkali metal alkoxide to form an amino-protected homoserine lactone of the formula

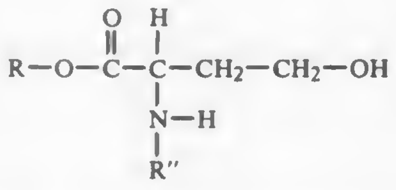


(d) hydrolyzing said lactone with an alkali metal hydroxide to form an amino-protected D-homoserine salt of the formula



$$M'\,O-\overset{\overset{O}{\|}}{C}-\underset{\underset{\underset{R''}{|}}{\overset{|}{N-H}}}{\overset{\overset{H}{|}}{C}}-CH_2-CH_2-OH$$

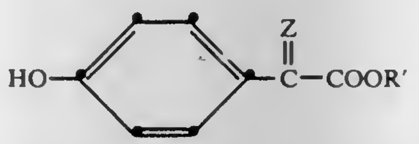
wherein M′ is an alkali metal cation;
(e) esterifying said amino-protected homoserine to form an ester of the formula



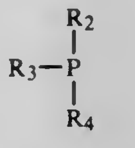
$$R-O-\overset{\overset{O}{\|}}{C}-\underset{\underset{\underset{R''}{|}}{\overset{|}{N-H}}}{\overset{\overset{H}{|}}{C}}-CH_2-CH_2-OH$$

wherein R and R″ have the same meanings as defined above;

(f) reacting said ester in an inert aprotic solvent with a 4-hydroxyphenylglyoxylic acid ester of the formula

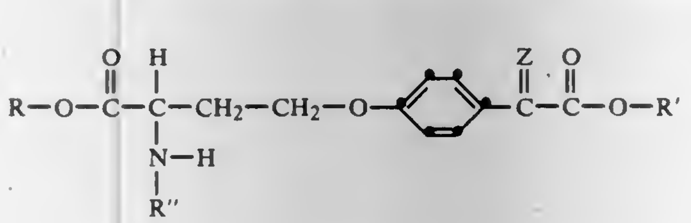


wherein R′ is 4-nitrobenzyl, 2,2,2-trichloroethyl or phenacyl, an equimolar amount of diethyl azodicarboxylate and an equimolar amount of a phosphine of the formula



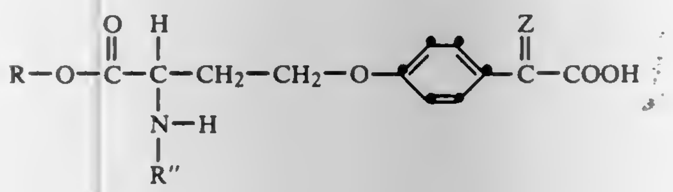
$$R_3-\underset{\underset{R_4}{|}}{\overset{\overset{R_2}{|}}{P}}$$

wherein R_2, R_3, and R_4 independently are C_1–C_4 alkyl, phenyl, or phenyl substituted with methyl or halogen, to form an amino-protected diester ether of the formula



(D)

wherein R, R′, R″ and Z have the same meanings as defined above; and
(g) selectively de-esterifying said ether to form an α-keto or α-oximino acid of the formula



(D)

4,355,173
PROCESS FOR THE PREPARATION OF ALKYL CARBOXYLATE

Nobuo Isogai; Takashi Okawa; Motoyuki Hosokawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,686

Claims priority, application Japan, Jun. 9, 1980, 55-77386

Int. Cl.^{3} C07C *69/76*

U.S. Cl. 560—103 **25 Claims**

1. A process for the preparation of an alkyl carboxylate of general formula $R^1COOCH_2R^2$ comprising reacting (i) an alkyl carboxylate starting material of the general formula R^1COOR^2, (ii) carbon monoxide and (iii) hydrogen, wherein R^1 is a hydrogen atom, a normal or branched chain alkyl group having 1 to 10 carbon atoms or an aromatic group having 6 to 14 carbon atoms and R^2 is a normal or branched chain alkyl group having 1 to 5 carbon atoms,

in the presence of a catalyst comprising (a) manganese or a manganese compound and (b) ruthenium or a ruthenium compound, and a promoter comprising at least one element or compound selected from the group consisting of iodine, bromine and compounds of iodine and bromine, at a temperature of from 140° to 300° C. under a pressure of from 50 to 600 Kg/cm^2, said carbon monoxide and hydrogen being in a molar ratio of CO/H_2 of from 1/10 to 10/1.

4,355,174
PREPARATION OF 5(HALOPHENYL)SALICYLIC ACID COMPOUNDS

Ulf H. Dolling, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

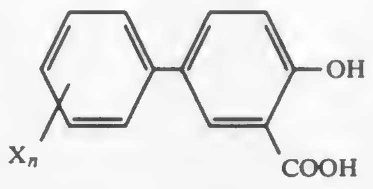
Continuation-in-part of Ser. No. 208,352, Nov. 19, 1980, which is a continuation of Ser. No. 90,792, Nov. 2, 1979, Pat. No. 4,237,315. This application Sep. 21, 1981, Ser. No. 304,449

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.^{3} C07C *65/105*

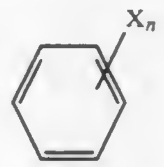
U.S. Cl. 562—469 **11 Claims**

1. A method of preparing compounds of the formula:

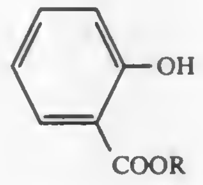


where
n is 1 or 2; and
X is chloro or fluoro

comprising the steps of:
(a) combining, in the presence of a palladium catalyst system, and at a temperature of from 80° to 150° C. and under an oxygen atmosphere at a pressure of from atmospheric to 750 p.s.i.g., a halobenzene compound of the formula:



where X is chloro or fluoro and n is 1 or 2, with a salicylic acid ester of the formula:



where R is lower alkyl; wherein said palladium catalyst system comprises:
A. a catalyst portion comprising:
(1) palladium together with
(2) $C_{1\text{-}6}COO^-$ ligands and a second ligand selected from the group consisting of halo, OH^-, H_2O, NO_3^-, ClO_4 and $SO_4^{=}$, such that the molar weight percent, based on total ligand molar weight, of the $C_{1\text{-}6}COO^-$ ligands is from 30 to 60%; wherein the $C_{1\text{-}6}COO^-$ ligands are provided as palladium, alkali metal or alkali earth metal carboxylates and the second ligands are provided as the appropriate salts of palladium, lithium, sodium, copper, mercury or tetra (alkyl) ammonium;

wherein the ratio of the total molar weight amount of the ligands to the molar weight amount of palladium utilized, is from 2:1 to 20:1; and
(3) optionally a reaction promoting acid;

and
B. a catalyst regeneration portion comprising:
(1) on a molar basis, from 0.1 to 8.0 parts per part of the palladium catalyst of a heteropolyacid of formula $H_{3+m}(PM_{12-m}V_mO_{40})$ wherein M is Mo or W; and m is 1 to 4; and
(2) a solubilizing agent; and
(b) hydrolyzing the product of Step (a) to give the compound of Formula I.

4,355,175

METHOD FOR RECOVERY OF TEREPHTHALIC ACID FROM POLYESTER SCRAP

Stephen F. Pusztaszeri, 14 Clark Pl., Port Chester, N.Y. 10573

Filed Apr. 6, 1981, Ser. No. 251,499

Int. Cl.^{3} C07C *51/00, 51/42, 27/26*

U.S. Cl. 562—483 **11 Claims**

1. A method for the recovery of purified terephthalic acid from terephthalate polyester scrap substantially free of metals, said method comprising the steps of:

(a) dissolving the polyester in a mixture of sulfuric acid and water in a volume ratio of 8.5–13 to 2 for a period of up to 30 minutes to form a precipitate of crude terephthalic acid;
(b) diluting the reaction mixture from step (a) with at least an equal volume of water and separating the crude terephthalic acid;
(c) treating the crude terephthalic acid from step (b) with water and a base selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide to form a solution of a water-soluble salt of the acid;
(d) filtering the solution from step (c) to remove solid impurities;
(e) acidifying the filtrate from step (d) with acid to form a precipitate of purified terephthalic acid;
(f) separating the purified terephthalic acid from step (e); and
(g) washing the terephthalic acid from step (f) until it is acid- and salt-free.

4,355,176

OXYDEHYDROGENATION PROCESS FOR PREPARING METHACRYLIC ACID AND ITS LOWER ALKYL ESTERS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 9, 1981, Ser. No. 319,353

Int. Cl.^{3} C07C *51/377, 57/05, 67/317, 69/54*

U.S. Cl. 562—599 **4 Claims**

1. In a process for the catalytic conversion of isobutyric acid or a lower alkyl ester thereof to the corresponding α,β-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at a temperature between about 300° and 500° C.: the improvement comprising using as catalyst a material having the gram-atom empirical formula $Fe_aAg_bNb_cP_dO_x$ wherein a is 0.05–1.0, b is 0.005–1.0, c is 0.001–1.0, d is 0.05–3.0, and x is determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,355,177

SUBSTITUTED 11-AMINO-UNDECA-4,8-DIENAL AND 11-AMINO-UNDECANAL DERIVATIVES AND PROCESSES FOR THEIR PREPARATION

Dieter Reinehr, Kandern, Fed. Rep. of Germany, and Josef Pfeifer, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 83,140, Oct. 9, 1979, Pat. No. 4,277,621.

This application Jan. 30, 1981, Ser. No. 230,081

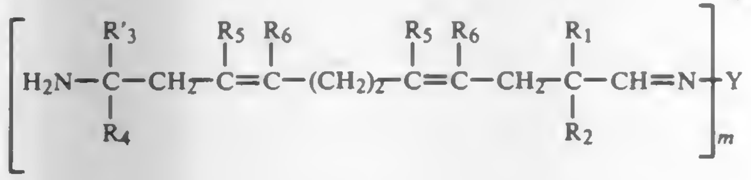
Claims priority, application Switzerland, Oct. 18, 1978, 10769/78

Int. Cl.^{3} C07C *109/16, 119/08, 119/10, 133/02*

U.S. Cl. 564—36 **9 Claims**

1. A compound of formula Ia

(Ia)

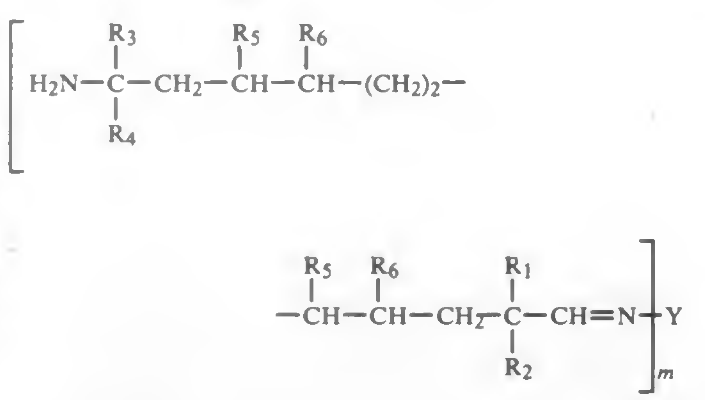


$$\left[H_2N-\underset{R_4}{\overset{R'_3}{C}}-CH_2-\overset{R_5}{C}=\overset{R_6}{C}-(CH_2)_2-\overset{R_5}{C}=\overset{R_6}{C}-CH_2-\underset{R_2}{\overset{R_1}{C}}-CH=N-\right]_m Y$$

or Ib

-continued

(Ib)



$$\left[H_2N-\underset{R_4}{\overset{R_3}{C}}-CH_2-\overset{R_5}{CH}-\overset{R_6}{CH}-(CH_2)_2-\overset{R_5}{CH}-\overset{R_6}{CH}-CH_2-\underset{R_2}{\overset{R_1}{C}}-CH=N-\right]_m Y$$

in which m is the number 1, Y is $—NHC_6H_5$, $—CH_2C_6H_5$ or $—NHCONH_2$, where C_6H_5 is phenyl, R_1 is alkyl having 1–12 C atoms, R_2 is hydrogen or alkyl having 1–12 C atoms, R_3 is alkyl having 1–12 C atoms, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms, phenyl, 1-naphthyl, 2-naphthyl, or said phenyl or said naphthyl substituted by alkyl having 1–4 C atoms, R_3' has the meaning defined for R_3 or, if R_4 is hydrogen, is also —CH═CH—alkyl or —C(alkyl)═CH—alkyl, each having 1–4 C atoms in the alkyl moiety, and R_4 is hydrogen, alkyl having 1–12 C atoms, cycloalkyl having 4–12 ring C atoms, aralkyl having 7 or 8 C atoms, phenyl, 1-naphthyl, 2-naphthyl, or said phenyl or said naphthyl substituted by alkyl having 1–4 C atoms, or R_1 and R_2, R_3 and R_4 or R_3' and R_4; or both R_1 and R_2; and R_3 and R_4; or both R_1 and R_2; and R_3' and R_4, together are alkylene having 3–11 C atoms, and R_5 and R_6 independently of one another are hydrogen or methyl.

4,355,178

PROCESS FOR THE PREPARATION OF SUBSTITUTED ACYL UREAS

László Tőke; István Bitter; Éva Kárpáti née Ádám, and Tódor Pfliegel, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

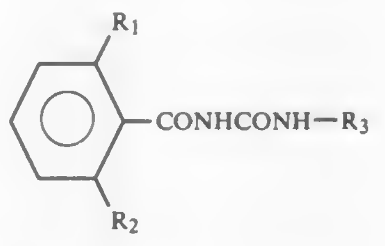
Filed Oct. 17, 1980, Ser. No. 198,050

Cláims priority, application Hungary, Oct. 19, 1979, CI-1977

Int. Cl.^{3} C07C *127/22*

U.S. Cl. 564—44 **3 Claims**

1. A process for the preparation of a compound of the formula:

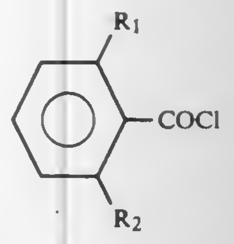


wherein

R_1 and R_2 are the same or different and each is halogen; and R_3 is a substituted aryl group, which comprises the steps of acylating a compound of the formula (II):

$R_3NHCONH_2$

with a compound of the formula (III):



in an inert organic solvent at a temperature of from 20° C. to 100° C. and isolating the product.

4,355,179

RADIOACTIVE NUCLIDE LABELED PROPIOPHENONE COMPOUNDS

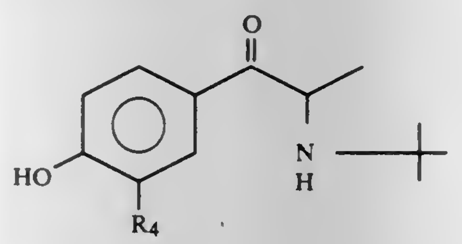
John W. A. Findlay, Chapel Hill; Robert F. Butz, Durham, and Richard M. Welch, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 14, 1980, Ser. No. 140,165

Int. Cl.^{3} C07C *25/024, 103/30;* **C07G** *7/00;* **G01N** *33/54*

U.S. Cl. 564—177 **4 Claims**

1. A compound of the formula



wherein R_4 is a radioisotope.

4,355,180

PREPARATION OF PRIMARY AROMATIC AMINES FROM CYCLIC ALCOHOLS AND/OR KETONES

Norbert Goetz, Worms; Leopold Hupfer, Friedelsheim; Werner Hoffmann, Neuhofen, and Manfred Baumann, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,908

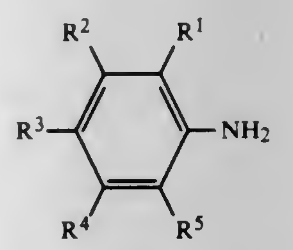
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 3039085

Int. Cl.^{3} C07C *85/08, 85/02, 85/18*

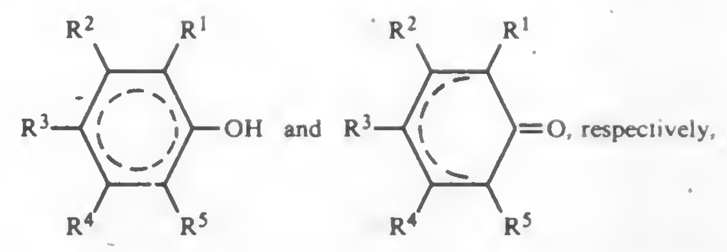
U.S. Cl. 564—398 **8 Claims**

1. A process for the production of an aromatic amine having the general formula

(I)



wherein at least one of R^1, R^2, R^3, R^4 and R^5 is different from hydrogen and may be a C_1 to C_{20} alkyl, cycloalkyl or alkoxy group, a substituted or unsubstituted aryl or alkylaryl group, by reacting a saturated or olefinically unsaturated cyclic alcohol or ketone of the general formula



R^1 to R^5 having the aforementioned meanings, with ammonia in the presence of a (de)hydrogenating catalyst and preferably hydrogen, wherein the (de)hydrogenating catalyst is palladium and zinc and/or cadmium.

4,355,181

PROCESS FOR ETHANOLAMINES

Stephen B. Willis, Jr., and Joseph D. Henry, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 27, 1981, Ser. No. 238,894

Int. Cl.^{3} C07C *89/02, 85/04*

U.S. Cl. 564—477 **4 Claims**

1. In a process for making alkanolamines by the reaction of an alkylene oxide and ammonia in the liquid phase, said ammonia being employed in stoichiometric excess and in which said excess is recovered from the reaction product and recycled to said reaction, the improvement which comprises (1) reacting said ammonia and said alkylene oxide in the presence of from about 0.05 mol to about 1.0 mol of water per mol of ammonia, (2) removing the reaction product from the reactor and flashing a portion of the ammonia in a distillation column under a pressure of from about 220 to about 350 psig, (3) condensing said portion of ammonia, (4) sending the remaining reaction product and remaining ammonia to a low pressure distillation column to remove said remaining ammonia overhead, (5) sending the bottoms of step 4 comprising water and alkanolamines to a reduced pressure distillation to remove said water, (6) sending said water to an ammonia absorber unit, (7) sending said ammonia removed overhead in step 4 to said absorber unit, (8) recycling said condensed ammonia from step 3, said absorbed ammonia from step 6 and said water removed in step 5 to said reaction.

4,355,182

HYDROXY-SUBSTITUTED PHOSPHORANES AND SALTS

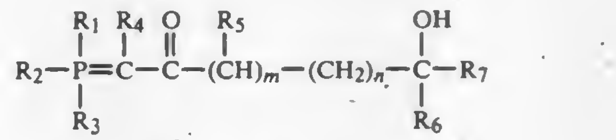
Richard A. Mueller, Glencoe, Ill., assignor to G.D. Searle & Co., Skokie, Ill.

Filed Jul. 28, 1980, Ser. No. 172,781

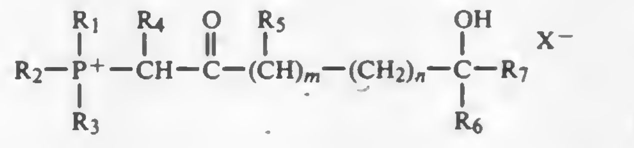
Int. Cl.^{3} C07F *9/50, 9/54*

U.S. Cl. 568—11 **26 Claims**

1. A compound represented by the formulae:

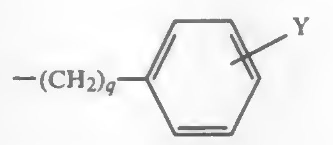


$$R_2-\underset{R_3}{\overset{R_1}{P}}=\overset{R_4}{C}-\overset{O}{\overset{\|}{C}}-(\overset{R_5}{CH})_m-(CH_2)_n-\underset{R_6}{\overset{OH}{C}}-R_7 \qquad I$$

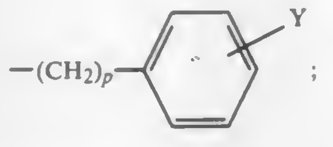


$$R_2-\underset{R_3}{\overset{R_1}{P^+}}-\overset{R_4}{CH}-\overset{O}{\overset{\|}{C}}-(\overset{R_5}{CH})_m-(CH_2)_n-\underset{R_6}{\overset{OH}{C}}-R_7 \quad X^- \qquad II$$

wherein R_1, R_2 and R_3 are the same or different members of the group consisting of lower alkyl, C_5–C_6 cycloalkyl, and



wherein q is an integer from 0 to 4 and Y is selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy; R_4 can be hydrogen or C_1–C_3 straight or branched chain alkyl; the sum of $n+m=2$–6; R_5 is hydrogen or lower alkyl; R_6 and R_7 are the same or different members of the group consisting of hydrogen, lower alkyl, and



;

p is an integer of 0 or 1; and X is an anion.

4,355,183

DECOLORIZATION TREATMENT

Martin E. Nash, and Edward E. Huxley, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 8, 1979, Ser. No. 64,967
Int. Cl.^{3} C07C *149/18*
U.S. Cl. 568—19 **7 Claims**

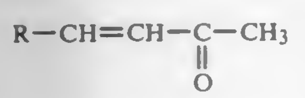
1. A process for decolorizing discolored sulfur-containing organic compounds having divalent sulfur and consisting essentially of sulfur, carbon, hydrogen, and, optionally, oxygen wherein the hydrocarbon portion of these compounds can be aliphatic, cycoaliphatic, or aromatic containing from 2 to about 30 carbon atoms per molecule which comprises contacting said discolored sulfur-containing compound with a small effective decolorizing amount of oxalic acid under conditions and for a period of time sufficient to decolorize said compounds.

4,355,184

SYNTHESIS OF α, β-UNSATURATED-KETONES

Tsutomu Kaku; Kiyoshi Katsuura, and Mikio Sawaki, all of Takaoka, Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan
Filed Apr. 27, 1981, Ser. No. 257,639
Claims priority, application Japan, May 2, 1980, 55/57953
Int. Cl.^{3} C07C *49/20*
U.S. Cl. 568—31 **3 Claims**

1. A method of synthesis of α, β-unsaturated-ketones having a following general formula:

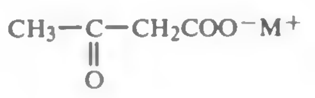


$$R-CH=CH-\underset{\underset{O}{\|}}{C}-CH_3$$

wherein, R is straight or branched alkyl group having 1 to 9 carbon atoms, alkylthioalkyl group, alkylsulfinylalkyl group, alkylsulfonylalkyl group, phenyl-or substituted phenylalkyl group, phenylthio- or substituted phenylthioalkyl group, phenylsulfinyl- or substituted phenylsulfinylalkyl group, phenylsulfonyl- or substituted phenylsulfonylalkyl group, or benzylthioalkyl group, in which the said ketones are synthesized by reacting with aldehydes having α-positing hydrogen atom shown as a following general formula:

R.CHO

wherein, R is the same as the above definition, and alkali metal salts of acetoacetic acid having a following general formula:



$$CH_3-\underset{\underset{O}{\|}}{C}-CH_2COO^-M^+$$

wherein, M^+ is sodium ion or potassium ion, in the presence of an aliphatic secondary amine, in mixed heterogeneous solvents with a water and an organic solvent which is able to produce a water layer and an oil layer by decantation, under conditions of atomospheric pressure and the temperature at 10° to 50° C., preferably, 20° to 40° C.

4,355,185

PROCESS FOR THE PREPARATION OF 2-MERCAPTOALKYL-SULPHIDES AND 2-MERCAPTOALKYLETHERS

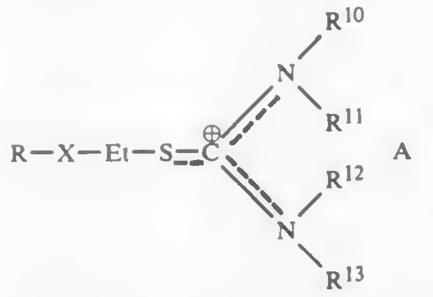
Peter Bergthaller, and Peter Wenzl, both of Cologne, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Aug. 25, 1980, Ser. No. 181,044
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934948
Int. Cl.^{3} C07C *148/00*
U.S. Cl. 568—50 **6 Claims**

1. A process for the preparation of a compound of the following structural formula

$$R-X-Et-SH \qquad (I)$$

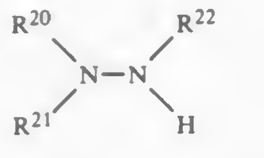
by treating a compound of the following structural formula

(II)



with a compound of the following structural formula

(III)



in which

R represents an organic radical comprising at least one alkyl, aralkyl or aryl group which may be substituted and which may be interrupted by S- and/or O-atoms,

X represents an oxygen atom or a sulphur atom,

Et represents an ethylene group which may be substituted and which may form part of a 5- or 6-membered ring system,

R^{10} to R^{13} which may be the same or different, represent H; an alkyl group having from 1–6 C-atoms which may be substituted or an aryl radical which may be substituted and/or at least one pair of the substituents R^{10} to R^{13} may represent the atoms required to complete a heterocyclic 5- or 6-membered ring,

R^{20} to R^{22} which may be the same or different, represent hydrogen, an alkyl group having from 1–5 C-atoms or aryl radical which may be substituted or

R^{20} together with R^{21} represent the atoms required to complete a ring,

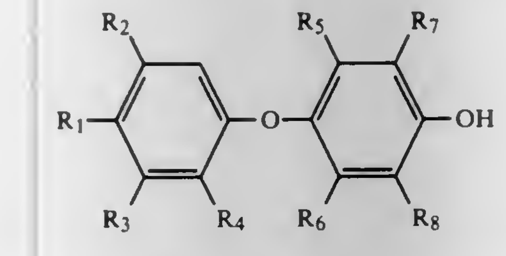
A represents an anion which may be multivalent.

4,355,186

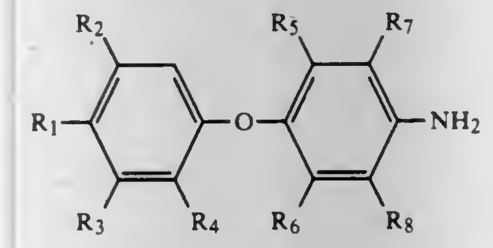
PROCESS FOR THE PREPARATION OF 4-PHENOXY-PHENOLS

Werner Becker, Frankfurt am Main; Klaus Dehmer, Kelkheim; Klaus Kaiser, Frankfurt am Main, and Karl Rehn, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jun. 25, 1981, Ser. No. 277,288
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024157
Int. Cl.^{3} C07C *149/34, 149/36, 41/26*
U.S. Cl. 568—52 **5 Claims**

1. In process for the preparation of a 4-phenoxyphenol of the formula



in which R_1 is hydrogen, methylthio, cycloalkyl, aryl or halogen, R_2 and R_3 independently of one another each is hydrogen, halogen or alkyl, R_4 is hydrogen, alkyl, cycloalkyl or halogen, R_5, R_6 and R_7 independently of one another each is hydrogen or alkyl and R_8 is hydrogen or alkyl, by diazotizing the corresponding aniline of the formula



and subsequently decomposing the resulting diazonium salt or salts by boiling with sulfuric acid, the improvement which comprises simultaneously adding the aniline, in the liquid or molten state, and aqueous nitrate-free sodium nitrite solution in a molar ratio of about 1:1 at 0°–50° to an excess of aqueous hydrochloric acid of 10 to 20% strength and introducing the diazonium chloride solution obtained into a boiling mixture of approximately half-concentrated sulfuric acid of 50 to 70% strength and an aromatic hydrocarbon, hydrochloric acid being distilled off simultaneously.

4,355,187

PROCESS FOR THE MANUFACTURE OF METHYL GLYOXAL

Herbert Baltes, Frankfurt am Main, and Ernst I. Leupold, Neu-Anspach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 247,914
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012004
Int. Cl.^{3} C07C *45/29, 45/32*
U.S. Cl. 568—471 **3 Claims**

1. A process for the manufacture of methyl glyoxal which comprises oxidizing propylene glycol-1,2 in the gaseous phase with an excess of oxygen and in the presence of a heterogeneous catalyst containing molybdenum in admixture with at least one element selected from the group consisting of vanadium, silver, copper, sodium, potassium, magnesium and barium.

4,355,188

METHOD FOR TREATING POLYPROPYLENE ETHER AND POLY-1,2-BUTYLENE ETHER POLYOLS

Robert J. Herold, and Robert E. Bingham, both of Akron, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 6,197,418, Oct. 16, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,432
Int. Cl.^{3} C07C *41/03*
U.S. Cl. 568—620 **5 Claims**

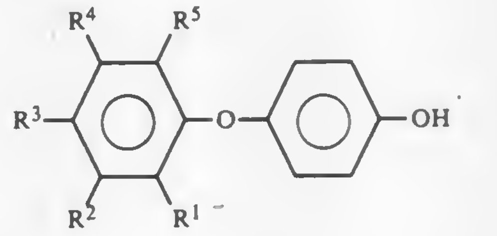
1. The method which comprises treating a polyol selected from the group consisting of polypropylene ether polyol and poly-1,2-butylene ether polyol and mixture of the same, said polyol containing catalyst residues of the double metal cyanide complex class, with a treating agent selected from the group consisting of sodium metal, potassium metal, sodium hydroxide and potassium hydroxide in an amount and at a temperature and for a time sufficient to convert said catalyst residues to ionic species, adding ethylene oxide to said polyol while said polyol is in admixture with said treating agent present in an amount at least sufficient to convert at least some of, preferably all of, the secondary hydroxyl groups of said polyol to primary hydroxyl groups and then removing said ionic species and said treating agent from said polyol, said polyol having been made by polymerizing propylene oxide or 1,2-butylene oxide or mixture of the same with a copolymerizable initiator or telogen consisting essentially of a polyol having from 2 to 8 hydroxyl groups, 2 to 21 carbon atoms and consisting of carbon.hydrogen and oxygen using a polymerization catalyst of the double metal cyanide complex class.

4,355,189

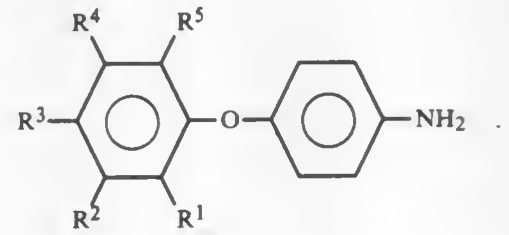
PROCESS FOR THE PREPARATION OF 4-PHENOXYPHENOLS

Gert Volkwein, Kelkheim; Hubert Schönowsky, Rödermark, and Konrad Baessler, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 6, 1981, Ser. No. 232,210
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004610
Int. Cl.^{3} C07C *41/26*
U.S. Cl. 568—637 **4 Claims**

1. In a process for the preparation of a 4-phenoxyphenol of the formula



in which R^1 through R^5, independently from each other, are hydrogen, halogen or lower alkyl, by diazotization of an amine of the formula



in which R^1 through R^5 are as defined above, in an aqueous mineral acid medium, and boiling, the improvement which comprises carrying out said diazotization in an acid medium consisting essentially of aqueous hydrochloric acid, and carrying out said boiling in aqueous sulfuric acid at a temperature of from 110° to 150° C. and in the presence of a water-immiscible solvent which dissolves said 4-phenoxyphenol.

4,355,190

PROCESS FOR RECOVERY OF RESORCINOL FROM AQUEOUS RESORCINOL SOLUTION CONTAINING HYDROQUINONE

Hirohiko Nambu; Fujihisa Matsunaga, and Hiroaki Nakagawa, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,123

Claims priority, application Japan, Dec. 13, 1979, 54-160878

Int. Cl.³ C07C *37/68*

U.S. Cl. 568—754 **3 Claims**

1. A process for recovery of resorcinol from an aqueous resorcinol solution containing hydroquinone which comprises oxidizing an aqueous resorcinol solution containing about 10 to about 60% by weight of resorcinol and up to about 1% by weight of hydroquinone with molecular oxygen at conditions of pH 6.5 to 9.5, and a temperature of about 50° to about 100° C., followed by recovering resorcinol from the resultant oxidation product.

4,355,191

Patent Not Issued For This Number

4,355,192

PROCESS FOR THE PRODUCTION OF ETHANOL AND N-PROPANOL FROM METHANOL

Boy Cornils, Dinslaken; Carl D. Frohning, Oberhausen; Gerhard Diekhaus, Oberhausen; Ernst Wiebus, Oberhausen, and Helmut Bahrmann, Hünxe, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 328,984

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046481

Int. Cl.³ C07C *29/00*

U.S. Cl. 568—902 **10 Claims**

1. In a process for the production of ethanol and n-propanol by conversion of methanol with carbon monoxide and hydrogen at temperatures of 150° C. to 250° C. in the presence of a catalyst containing cobalt, platinum, at least one halogen or halide, and an organic compound which is phosphine or phosphite, the improvement which comprises said halogen or halide being chlorine or a chloride, and said compound being bi-dentate, said conversion being carried out at pressures of 200 to 800 bars in the presence of 5 to 25% by weight of water, based on said methanol.

4,355,193

METHOD FOR THE PREPARATION OF CIS-NONEN-6-YL CHLORIDE

Akira Yamamoto; Toshinobu Ishihara, and Kenichi Taguchi, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 253,061

Claims priority, application Japan, Apr. 14, 1980, 55-48935

Int. Cl.³ C07C *17/26*

U.S. Cl. 570—217 **5 Claims**

1. A method for the preparation of cis-nonen-6-yl chloride which comprises reacting the Grignard reagent of cis-hexen-3-yl chloride with 1-bromo-3-chloropropane in the presence of a catalyst selected from the group consisting of lithium copper dichloride and dilithium copper tetrachloride.

4,355,194

METHOD FOR PREPARING HIGH DENSITY LIQUID HYDROCARBON FUELS

Richard V. Norton, Dublin; Dennis H. Fisher, Westerville; Garry M. Graham, Plain City, and Peter J. Frank, Westerville, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 6, 1980, Ser. No. 204,436

Int. Cl.³ C01L *1/04*

U.S. Cl. 585—14 **4 Claims**

1. In a method for preparing an isomeric mixture of the hexacylic dimer of norbornadiene containing a major amount of the endo, endo stereo isomer thereof wherein said diene is dimerized in the presence of a catalytic amount of a zero valent iron complex; the improvement of isomerizing said dimer mixture in the presence of an alumina silica catalyst to effect the reduction of the endo, endo isomeric content thereof to between about 10 and 35 weight percent.

ELECTRICAL

4,355,195

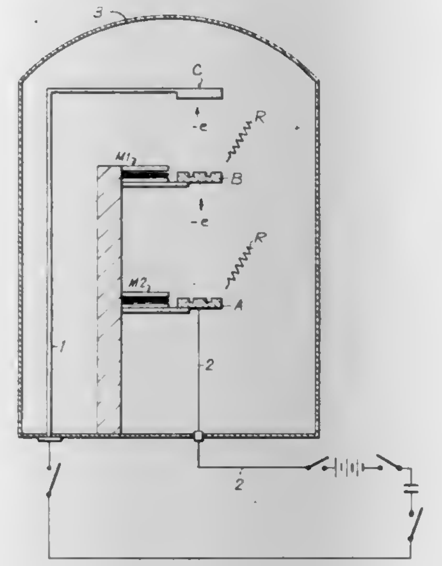
ELECTROMAGNETIC SOLAR CELL

Ralph Sansbury, GPO Box #1433, New York, N.Y. 10116

Continuation-in-part of Ser. No. 168,467, Jul. 14, 1980, abandoned. This application Mar. 30, 1981, Ser. No. 249,185

Int. Cl.³ H01C *31/04*

U.S. Cl. 136—254 **1 Claim**



1. A solar cell comprising an evacuated glass enclosure; at least one photoactive strip having an upper surface comprising photoemissive material on a crenulated substrate; a non-photoactive strip constituting an anode overlying and spaced from said photoemissive surface(s): wire conductor means attached to each of said anode and the lower, non-photoemissive surface of one of said photoactive strips and leading to the outside of said glass enclosure; shielded magnet means for providing magnetic lines of force coincident with the upper photoemissive surface of said photoactive strip(s); and as part of the glass enclosure or exterior to it a vertical polarization filter and frequency filters to restrict the polarization and frequency of the light impinging on the photoemissive surface(s).

4,355,196

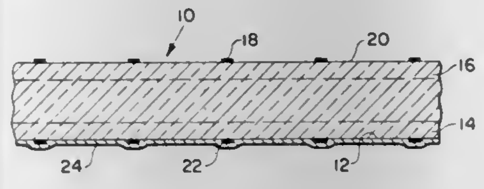
SOLAR CELL HAVING IMPROVED BACK SURFACE REFLECTOR

An-Ti Chai, North Ridgeville, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 11, 1981, Ser. No. 242,796

Int. Cl.³ H01L *31/04, 31/18*

U.S. Cl. 136—259 **6 Claims**



6. In a solar cell of the type comprising

a wafer of photovoltaic material having a front surface for receiving light and an oppositely disposed back surface, the improvement comprising

a plurality of electrodes of a first metal material having a finger pattern in good ohmic contact with said back surface, and

a layer of a second different metal reflective material covering said back surface in the spaces between said electrodes thereby forming a back surface reflector.

4,355,197

SERVICE LINE TERMINAL BOX SYSTEM, ESPECIALLY FOR SHIPS MOORED TO QUAYS

Lennart C. B. Jönsson, Höllviksnäs, Sweden, assignor to Ann-Marie Jönsson; Jane Jönsson and Asa Jönsson, all of Höllviksnäs, Sweden

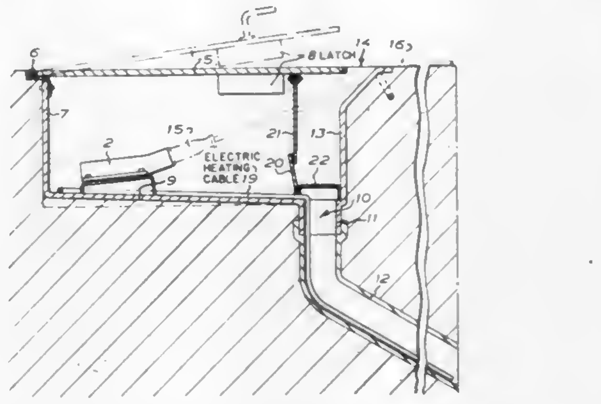
PCT No. PCT/SE79/00187, § 371 Date May 6, 1980, § 102(e) Date May 6, 1980, PCT Pub. No. WO80/00583, PCT Pub. Date Apr. 3, 1980

PCT Filed Sep. 13, 1979, Ser. No. 196,222

Claims priority, application Sweden, Sep. 15, 1978, 7809720

Int. Cl.³ E02B *3/20;* E03B *9/08;* H02G *9/00*

U.S. Cl. 174—37 **8 Claims**



1. A service line terminal box system for supplying facilities at predetermined points outdoors, comprising

a plurality of service line terminal boxes positioned at predetermined points in a surface located outdoors and each having four side walls and a bottom which is inclined towards a drain hole connected to a drain pipe,

a coverplate for each of the boxes countersunk in said surface at the predetermined points of the boxes, over which coverplates vehicles can be driven, each coverplate being self-locking and in closed position resting on the upper edges of three of the four side walls of the respective terminal box,

a service line socket outlet in each box, the upper part of the fourth side wall of each box being deflected outwardly to form an opening to the interior of the box to permit passing therethrough a line releasably connectible to the service line socket outlet in the box, the drain hole of each box being positioned adjacent the fourth side wall,

one or more service supply lines fixedly connected through holes in the walls of each box to the service line socket outlet in the box,

and each of the boxes having a splash plate extending from the bottom of the box toward the coverplate, said splash plate being situated between the drain hole and the service line socket outlet.

4,355,198

SCREW RETAINING AND ALIGNING COVER PLATE

Albert J. Gartland, Jr., Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jan. 19, 1981, Ser. No. 226,127

Int. Cl.³ H02G *3/14*

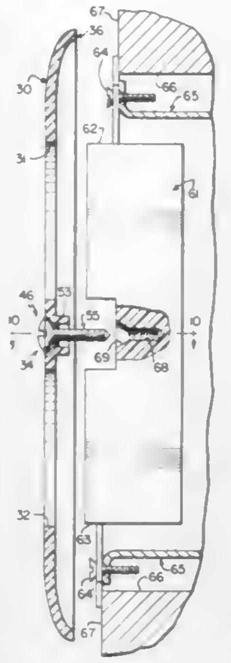
U.S. Cl. 174—66 **36 Claims**

1. A plate for completing the enclosure of an outlet box, the plate being adapted to be secured adjacent the box by means of a threaded member having a head, the member being receivable in a threaded bore coupled to the box, the plate comprising:

a generally planar body portion composed of a polymeric material;

means defining an aperture in said body portion for receiving the threaded member therethrough, said aperture having a countersink portion for seating the head of the threaded member thereon; and

flexible means integral with said body portion and extending into said aperture, for engaging a threaded portion of the threaded member when the member is fully inserted into said aperture to align the longitudinal axis of the threaded member substantially perpendicular to said body portion for ease of insertion of the threaded member into the threaded bore coupled to the box.



4,355,199
CONDUCTIVE CONNECTIONS

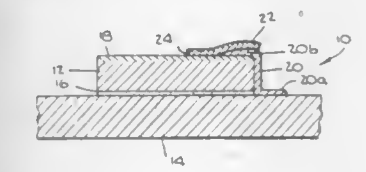
Penelope J. V. Luc, c/o 38 Church St., Bookham, Surrey, England

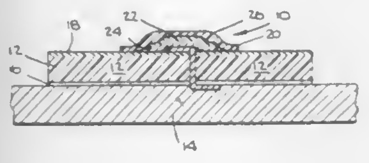
Continuation of Ser. No. 731,082, Oct. 8, 1976, abandoned. This application Jan. 4, 1980, Ser. No. 109,664

Claims priority, application United Kingdom, Oct. 10, 1975, 41691/75

Int. Cl.^{3} H05K *1/00*

U.S. Cl. 174—68.5 **3 Claims**





1. A conductive connection particularly for use in electrically grounding the exposed metal surface of a spacecraft comprising:
- (a) a structure having a metallic surface;
- (b) a first film material consisting of a non-conductive planar plastic base material to which is affixed an extremely thin metallized upper surface, said first film material being securably affixed, at its plastic base, to a predetermined area on said metallic surface of said structure such that the extremely thin metallized upper surface of said first film material faces away from the metallic surface of said structure and is separated therefrom by said plastic base;
- (c) a conductive member having a first portion securably bonded to, and in direct electrical contact with the metallic surface of said structure at an area removed from the area to which said first film material is applied, and a second portion disposed above, and securably bonded in electrical contact with, the extremely thin metallized surface of said first film material through a second thermoplastic film material interposed such that its entire surface lies between and in contact with said extremely thin metallized surface of said first film material and the second portion of said conductive member, said second film material consisting of a non-conductive plastic planar base material to which a thin metallized layer is affixed on at least one surface thereof.

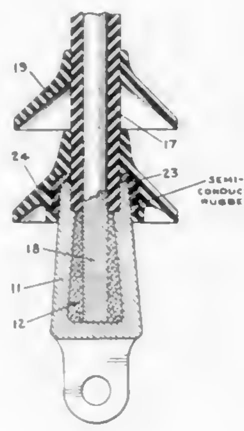
4,355,200
POLYMER ROD INSULATOR WITH IMPROVED RADIO NOISE AND CORONA CHARACTERISTICS

Edward S. Wheeler, Batavia, and Anthony J. Campagna, Amherst, both of N.Y., assignors to Interpace Corporation, Parsippany, N.J.

Filed Oct. 27, 1980, Ser. No. 201,136

Int. Cl.^{3} H01B *17/42, 17/12*

U.S. Cl. 174—140 S **3 Claims**



1. An elongated high voltage insulator, for use with voltages in excess of 138 kV in an outdoor environment, and comprised operatively of:
- an insulator member of nonconducting material,
- a high voltage metal fitting secured to the insulator member,
- a plurality of elastomeric segments on the insulator member with a proximal one of said segments contacting the high voltage metal fitting,
- a portion of said proximal segment composed of semiconductive elastomeric material bearing directly against and providing an equipotential surface in contact with said high voltage metal fitting,
- said proximal segment having nonconducting elastomeric material embracing said elastomeric semiconductive material to shield it from the environment.

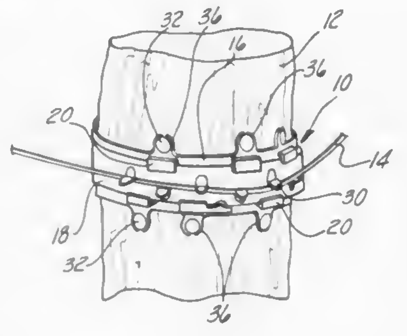
4,355,201
ELECTRIC FENCE WIRE MOUNTING STRUCTURE

Robert M. Wilson, Sr., 190 N. Eastway Dr., Battle Creek, Mich. 49016

Filed Mar. 6, 1981, Ser. No. 241,007

Int. Cl.^{3} H01B *17/24, 17/16*

U.S. Cl. 174—166 R **12 Claims**



1. An electric fence wire mounting structure for supporting a high tensioned and electrically charged wire from a generally cylindrical fence post at either a corner or at the end of a line of fencing, comprising: an elongated strap of electrically nonconductive material, an elongated metal retainer, means supporting said retainer in substantially parallel and engaging relation to said strap, and strap and retainer being longitudinally flexible, means on said strap spaced from said retainer to receive fasteners adapted to hold said strap and retainer as a unit around a portion of the circumference of a cylindrical post, said metal retainer including means to receive a wire to. extend substantially parallel to said retainer and strap and maintain it in position relative to a post.

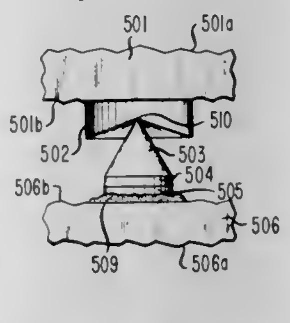
4,355,202
MOUNTING ARRANGEMENT FOR A POSITION LOCATING SYSTEM

John DeCosta, Jackson; James B. Mallos, Freehold, and David B. Roe, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1980, Ser. No. 214,173

Int. Cl.^{3} G08C *21/00;* **G01G** *3/14;* **H04N** *1/00*

U.S. Cl. 178—18 **21 Claims**



1. Apparatus for mechanically coupling a first rigid body (**501**) having a surface (**501***a* or **501***b*) associated therewith which is exposed to the application of a localized force (F), a second rigid body (**506**), and a force sensing member (**504**) positioned between the first and second rigid bodies
- characterized in that
- the coupling apparatus is associated with the force sensing member (**504**) so that the force sensing member detects a perpendicular component force (F_1) comprising a perpendicular component of the applied localized force (F) at a predetermined point of action (**510**), the coupling apparatus providing support to the first rigid body (**501**).

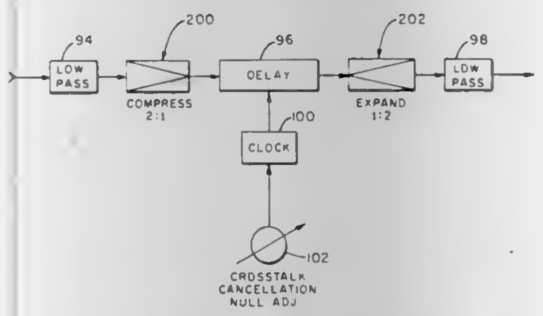
4,355,203
STEREO IMAGE SEPARATION AND PERIMETER ENHANCEMENT

Joel M. Cohen, P.O. Box 135, Brookline, Mass. 02146

Continuation-in-part of Ser. No. 129,971, Mar. 12, 1980, Pat. No. 4,308,423. This application Sep. 8, 1980, Ser. No. 185,135

Int. Cl.^{3} H04R *5/00*

U.S. Cl. 179—1 G **5 Claims**



1. Apparatus for noise limited stereo image separation and perimeter enhancement for use with stereophonic audio reproduction means having left and right channel outputs, comprising:
- means for deriving a difference signal from the signals in said left and right channel outputs;
- means for amplitude compressing said difference signal;
- a clocked bucket brigade device for delaying said amplitude compressed signal;
- means for amplitude expanding said delayed signal; and,
- means coupled to said expanding means for phase splitting said expanded signal and coupling the two phases of said expanded signal into said left and right channels so as to subtract delayed left minus right and right minus left components from the correspondingly opposite channels.

4,355,204
SPEECH SYNTHESIZING ARRANGEMENT HAVING AT LEAST TWO DISTORTION CIRCUITS

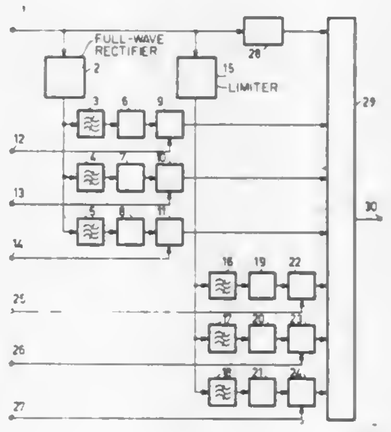
Karel Riemens, and Joannes G. M. Van Thuijl, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1980, Ser. No. 197,450

Claims priority, application Netherlands, Nov. 9, 1979, 7908213

Int. Cl.^{3} G10L *1/00*

U.S. Cl. 179—1 SA **2 Claims**



1. An arrangement for synthesizing speech from a band of low-frequency components of a speech signal and a plurality of narrow-band control signals which are characteristic of a plurality of sub-bands of high-frequency components of the speech signal, comprising means for generating a band of high-frequency components from the band of low-frequency components, means for dividing the band of high-frequency components into a number of sub-bands corresponding to the sub-bands of high-frequency components of the speech signal, means for correcting by means of the control signals the sub-bands derived from the generated band and means for combining the band of low-frequency components with the corrected sub-bands of the generated high-frequency components to form a speech output signal, characterized in that the means for generating a band of high-frequency components comprises at least two circuits, each generating a band of high-frequency components from the band of low-frequency components of the speech signal, a portion of the number of sub-bands being derived from each of the generated bands.

4,355,205
TELEMETERING SYSTEM

Harold R. Walker, Middlesex, N.J., assignor to Frank E. Lowe, Pittsburgh, Pa.

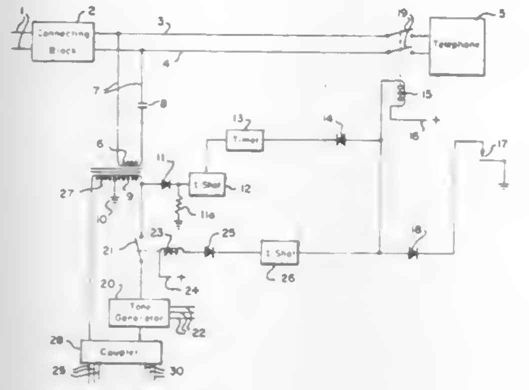
Filed Jul. 24, 1980, Ser. No. 172,028

Int. Cl.^{3} H04M *11/00*

U.S. Cl. 179—2 A **5 Claims**

1. A telemetering system for use with a telephone installation comprising normally open first switch means connected between a telephone set and telephone line, second switch means connected to the line and operable by a ringing signal on the

line, said second switch means being operated by a ringing signal to impose a responding signal on the line momentarily



and thereafter to close the first switch means and connect the telephone set to the line.

4,355,206

RINGING CONTROL DEVICE

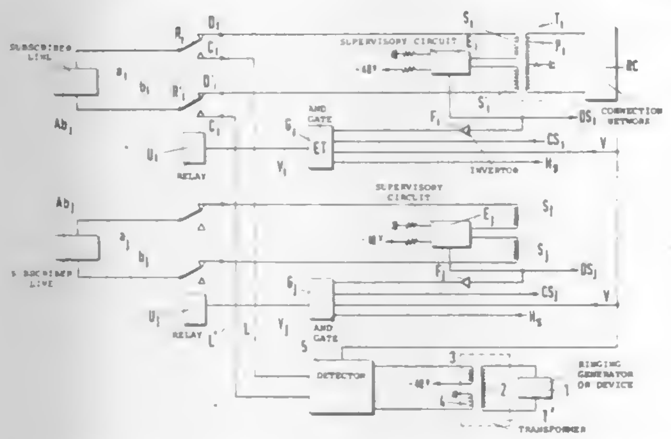
Renato G. Israel, Versailles; Jean-Louis Lavoisard, Joinville-le-Pont, both of France, and Jean-Claude Marchand, deceased, late of Saint Remy-les-Chevreuse, France (by Colette A. M. Marchand, legal representative), assignors to Societe Anonyme de Telecommunications, France

Filed Mar. 25, 1980, Ser. No. 133,871

Claims priority, application France, Mar. 30, 1979, 79 07999

Int. Cl.^{3} H04M *3/02*

U.S. Cl. 179—18 HB 5 Claims



1. A ringing control device for a group of subscriber lines served by a connection network, comprising a relay for each line, the connection network providing a ringing control signal and a timing signal for controlling the relay, a ringing generator common to the group of lines and providing an A.C. ringing current to a line when the corresponding relay occupies a first position, a supervisory circuit for each line, connected thereto in the second position of the relay and delivering a signal to the connection network if the receiver is lifted whilst the relay occupies said second position, and a common off-hook condition detector delivering a signal if a D.C. current appears, due to the receiver being lifted, on at least one of the lines of the group while a ringing current is being fed (first position of the relay), wherein the ringing control device comprises AND means receiving from the connection network the ringing control signal and the timing signal and connected to the supervisory circuit and to the off-hook condition detector and whose output signal controls the relay.

4,355,207

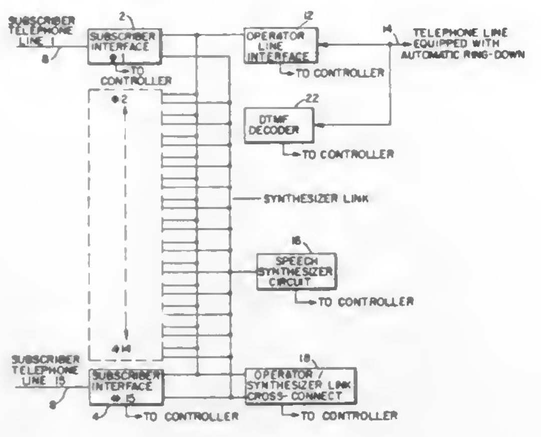
TELEPHONE ANSWERING SYSTEM

William J. Curtin, Madison, Wis., assignor to Amtel Communications, Inc., Madison, Wis.

Filed May 30, 1980, Ser. No. 154,914

Int. Cl.^{3} H04M *3/50*

U.S. Cl. 179—18 FC 19 Claims



1. A telephone answering system including a call concentrating means for concentrating a plurality of subscriber telephone lines coupled to said concentrating means through a single telephone circuit to a single answering station so that an operator at the answering station can be connected to and answer telephone calls to any one of the plurality of subscriber telephone lines, said concentrating means comprising: input means for coupling said concentrating means to a plurality of subscriber telephone lines; identifying means for generating an identification signal identifying each subscriber line when such line receives a call; output means for coupling said concentrating means to an answering station through a single telephone circuit with said identifying means first transmitting the identification for a subscriber line over the single telephone circuit before establishing a connection between a caller and the answering station, said output means allowing an operator at the answering station to select for reception between only the identification signal and the identification signal immediately followed by connection to the call coupled from the corresponding subscriber line; and remote hold means for answering incoming calls to the subscriber telephone lines that are coupled to said concentrating means and holding such calls when one of the other subscriber lines is already coupled to the answering station.

4,355,208

TELEPHONE CALL DENIAL SYSTEM

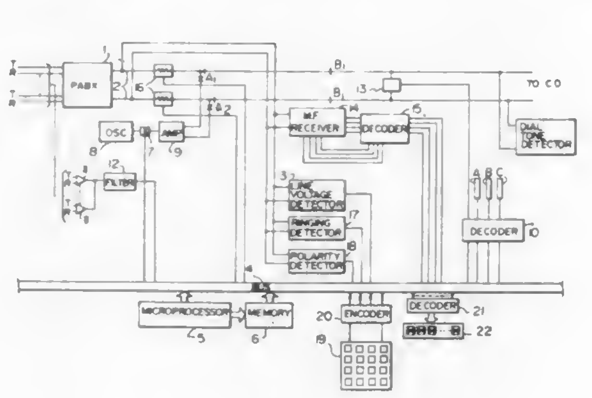
John A. Cribb, Ottawa; John R. Whitbread, Ashton; Graham Neathway, Ottawa, and Robert A. Durance, Kanata, all of Canada, assignors to Mitel Corporation, Kanata, Canada

Filed Nov. 5, 1980, Ser. No. 204,151

Claims priority, application Canada, Aug. 27, 1980, 359108

Int. Cl.^{3} H04M *1/66, 3/38*

U.S. Cl. 179—18 DA 11 Claims



5. Apparatus for detecting that a subscriber's line out of a group of subscribers' lines has accessed a trunk to initiate a call comprising means for detecting seizure of a trunk, a load switchable across the trunk, means for splitting the trunk at a location between the load and the subscriber's line, a tone generator for generating a tracer signal switchable to the trunk leading to the subscriber's line when the trunk is split, means for switching the load across the trunk, splitting the trunk and connecting the tone generator upon detection of seizure of the trunk, means for detecting the tracer signal on at least one of the subscribers' lines of the group, and means for releasing the load, reconnecting the trunk and disconnecting the tone generator upon detection of the tracer signal on said one of the subscribers' lines of the group.

4,355,209

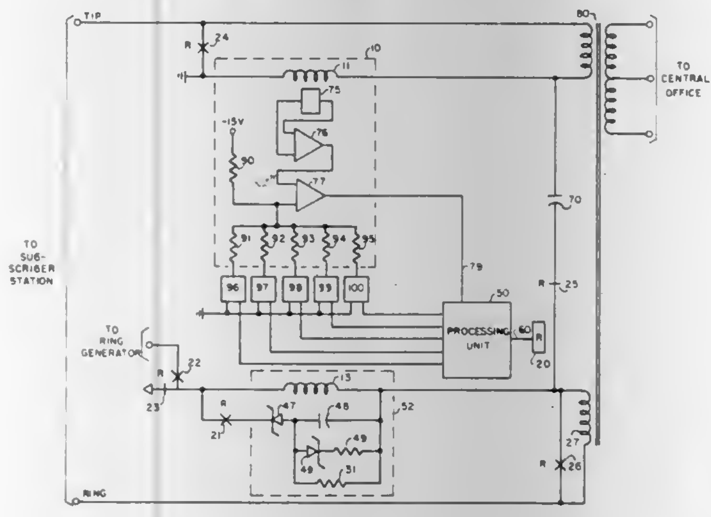
PROGRAMMABLE LINE CIRCUIT

Robert J. Sabon, Chicago, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,669

Int. Cl.^{3} H04G *1/30;* H04M *3/00*

U.S. Cl. 179—18 FA 9 Claims



1. A telephone supervision circuit for use in a telephone switching system, including battery and ground sources, a processing unit operated to provide a plurality of control signals, and a ringing relay connected to and periodically operated by said processing unit, said ringing relay including a first pair of contacts, and said supervision circuit connected to a subscriber station by a subscriber loop circuit, said supervision circuit comprising:

- magnetic flux generating means included in said subscriber loop operated in response to current flow from said battery to said ground in said subscriber loop to generate a magnetic flux of an intensity proportional to said current flow;
- magnetic flux detection means connected in magnetic field proximity to said magnetic flux generating means operated in response to said magnetic flux to generate a proportional detection signal;
- threshold means connected to said processing unit, operated in response to each of a plurality of combinations of said control signals to provide an associated threshold signal; and
- comparison means connected to said threshold means, operated in response to each threshold signal to compare said detection signal to said threshold signal; said comparison means further operated in response to said detection signal being greater than said threshold signal to generate a comparison signal of a first characteristic; said comparison means further operated in response to said threshold signal being greater than said detection signal to generate a comparison signal of a second characteristic.

4,355,210

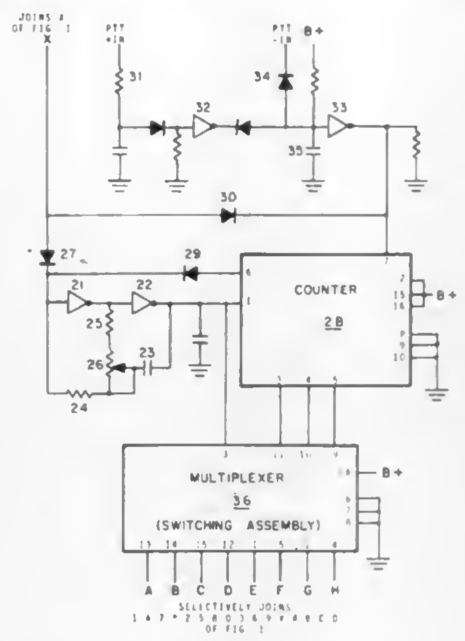
SUB-MINIATURE TONE ENCODER WITH AUTOMATIC NUMBER IDENTIFICATION

Charles Soulliard, Tucson, Ariz., assignor to Midian Electronics, Inc., Tucson, Ariz.

Filed Sep. 22, 1980, Ser. No. 189,206

Int. Cl.^{3} H04M *1/50*

U.S. Cl. 179—84 VF 10 Claims



1. A tone encoder, comprising:

- a selective switching means;
- a counter for providing incrementing pulses to said selective switching means;
- a clocking pulse train generator responsive to an output of said counter for incrementing said counter;
- a tone burst generator for simultaneously providing two audio tone bursts; and
- an isolation matrix for coupling said selective switching means to said tone burst generator whereby said selective switching means controls the frequency of the outputs of said tone burst generator.

4,355,211

PUSH BUTTON KEY MODULES

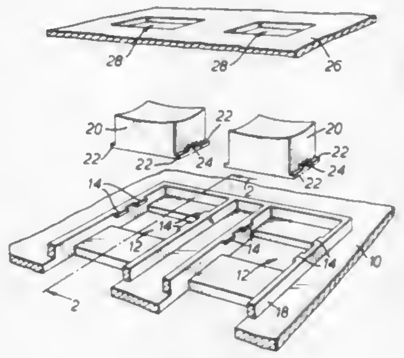
Frederick Steiner, Stapleford, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Feb. 10, 1981, Ser. No. 233,207

Claims priority, application United Kingdom, Feb. 13, 1980, 8004768

Int. Cl.^{3} H04M *1/23*

U.S. Cl. 179—90 K 5 Claims



1. A push button key module comprising a plate member with a plurality of orifices formed therein, said plate member having a plurality of projections spaced from the surface of said plate, two of said projections extending into line with each of said orifices from opposite sides thereof, a plurality of keys, each of said keys being capable of passing through an orifice in said plate member and being provided on opposite sides with

flanges, said two projections and said flanges being in alignment when said key is aligned with one of said orifices, spring means associated with each orifice such that when a key is aligned with an orifice said spring means urges said key until said flanges contact said two projections and said key passes into said orifice when moved to overcome said spring means, each key being displaceable in a direction parallel to the plane of said plate member until each key is out of alignment with an orifice and said flanges are out of alignment with said projections whereby said key is removeable from said plate member, and a further removeable plate member mounted on said plate member, said further plate member retaining said keys in alignment with said orifices in said plate member.

4,355,212

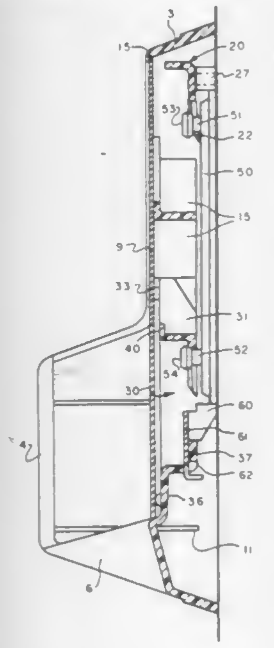
WALL TELEPHONE CRADLE ASSEMBLY

Richard B. Kosten, Huntsville, Ala., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jul. 25, 1980, Ser. No. 172,337

Int. Cl.^{3} H04M *1/04*

U.S. Cl. 179—100 C **5 Claims**



1. A wall-mounted assembly for receiving a telephone set, said assembly adapted to be secured to a wall-mounted receptacle plate having a front face and first and second mounting studs extending outwardly from said front face, said wall mounted assembly comprising:

a unitary housing having a front surface arranged for receiving said telephone set;

first receiving means integrally joined to said housing for engaging said first mounting stud;

flexible structure integrally joined to said housing and including second receiving means, said flexible structure adapted to be manually urged toward said receptacle plate allowing said second receiving means to engage said second mounting stud securing said wall-mounted assembly to said receptacle plate.

4,355,213

MICROPHONE ASSEMBLY

Richard E. Marsh, Chicago, Ill., assignor to Marsh Products, Inc., Batavia, Ill.

Filed Apr. 6, 1981, Ser. No. 251,376

Int. Cl.^{3} H04R *1/00*

U.S. Cl. 179—146 R **6 Claims**

1. A microphone mounting assembly for mounting a microphone module therein, said assembly comprising an elongated tubing, a mounting member having a channel therein for receiving said tubing, flexible means, means for retaining said flexible means in said mounting member and in position adjacent said channel, said flexible means compressingly engaging the surface of said tubing to thereby hold said tubing in a selected position.

4,355,214

ADAPTIVE ECHO CANCELLER FOR FULL-DUPLEX TRANSMISSION OF DATA

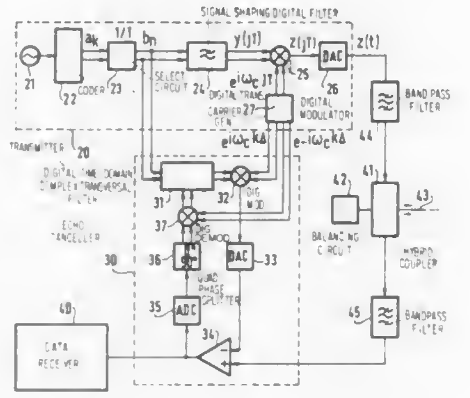
Michel Levy, Massy, and Jean-Philippe Haag, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jun. 23, 1980, Ser. No. 161,969

Claims priority, application France, Jun. 22, 1979, 79 16087

Int. Cl.^{3} H04B *3/24*

U.S. Cl. 179—170.2 **6 Claims**



1. An adaptive echo canceller for full-duplex synchronous data transmission on a modulated carrier between terminals each comprising a transmitter (20) and a receiver (40), the transmitter (20) comprising a coder (22) converting the stream of data to be transmitted into a stream of pairs of multivalent real symbols (a'_k and a''_k) separated by one Baud period Δ, each pair of multivalent real symbols (a'_k and a''_k) defining the real and imaginary parts of a single complex symbol (a_k), and a modulator (25) using a carrier frequency (f_c) to transpose the complex symbols at the output from the coder (22) into the passband, the echo canceller being connected in one terminal between the output of the coder (22) of the transmitter (20) and the input of the receiver (40), wherein the canceller comprises:

a time-domain complex transversal filter (31) with controlled weighting coefficients and intertap interval T which is a submultiple l of the Baud period (Δ), receiving on respective inputs the real and imaginary parts of a stream of complex symbols b_n at a transmission rate l/Δ comprising the complex symbols a_k delivered from the coder (22) of the transmitter interleaved with $l-1$ null symbols and providing the real and imaginary parts of a complex output signal at respective outputs, at a sampling rate l/Δ;

a digital modulator (32) connected to the output of the complex transversal filter (31), receiving the carrier frequency (f_c) of the modulator (25) of the transmitter (20) with instantaneous values updated once every Baud period Δ;

a circuit (34) subtracting the output signal of the digital modulator (32) from the received signal to provide the input signal to the receiver (40); and

a digital demodulator (37) receiving the input signal to the receiver (40) in digital form and the carrier frequency (f_c) of the modulator (25) of the transmitter (20) with instantaneous values updated once every Baud period Δ, and providing an output signal which is used to control the weighting coefficients of the complex transversal filter (31).

4,355,215

REMOTE CONTROL SYSTEMS FOR TELECOMMUNICATIONS LINKS

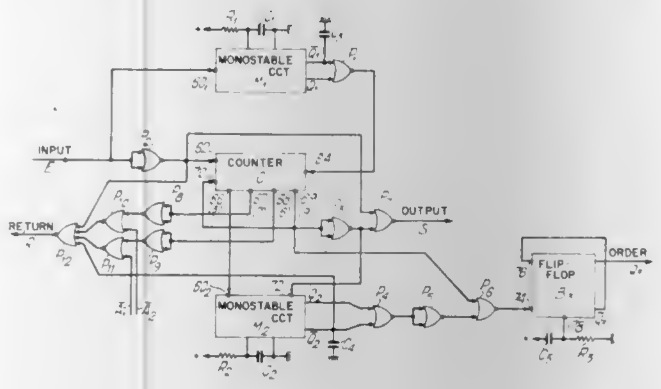
Jacques Legras, 18, rue E. Le Taillandier, and Patrice Pyronnet, Bat. 332 Zup Keruhel, both of 22300 Lannion, France

Filed Oct. 7, 1980, Ser. No. 194,788

Claims priority, application France, Oct. 8, 1979, 79 24979

Int. Cl.^{3} H04B *3/46*

U.S. Cl. 179—175.31 R **8 Claims**



1. A remote control system for a telecommunications link between two stations, one being a monitoring station and the other a monitored station, interconnected by an outward channel and a return channel, said channels having a plurality of signal regenerating member pairs, in each pair an outward member being allocated to the outward channel and a return member being allocated to the return channel, said link incorporating a low frequency remote supply channel and each regenerating member incorporating a detection and amplification circuit for a low frequency signal transmitted by the monitoring station, said circuit being connected between the output and input of each member, each pair of regenerating members comprising means for permitting a remote control operation of said pair from the monitoring station, each pair also having a control circuit of said remote control means, the monitoring station comprising means for transmitting by the low frequency channel and in the outward direction a sequence of P pulses, the number P being regulatable; the control circuit placed in each pair of regenerating members having an input connected to the detection and amplification circuit of the low frequency signal, a first output connected to the output of the outward member and a second control output, and comprising means for detecting the pulses received on said input, for counting the number n of said pulses, for comparing said last number with two predetermined numbers n_1 and n_3, with $n_3 \neq 0$ and $n_3 < n_1$ and when $n \geqq n_1$ transmitting to the first output $n - n_2$ the pulses received, n_2 being a given number > 1 and when $n_3 < n < n_1$ transmitting to the second output the control order and transmitting no pulse to the first output, the number P of pulses transmitted by the monitoring station being selected equal to $Nn_2 + n_i$, in which n_i is a number between n_3 and n_1 when a remote control order has to be transmitted to the member occupying rank N on the outward channel.

4,355,216

ELECTRIC SWITCH

Hugh Kane, Chagrin Falls, and Bradford J. Williams, Willowick, both of Ohio, assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 2, 1981, Ser. No. 221,962

Int. Cl.^{3} H01H *15/00, 1/20*

U.S. Cl. 200—16 A **19 Claims**

1. A switch module including in combination

a case of insulating material having walls defining a central compartment;

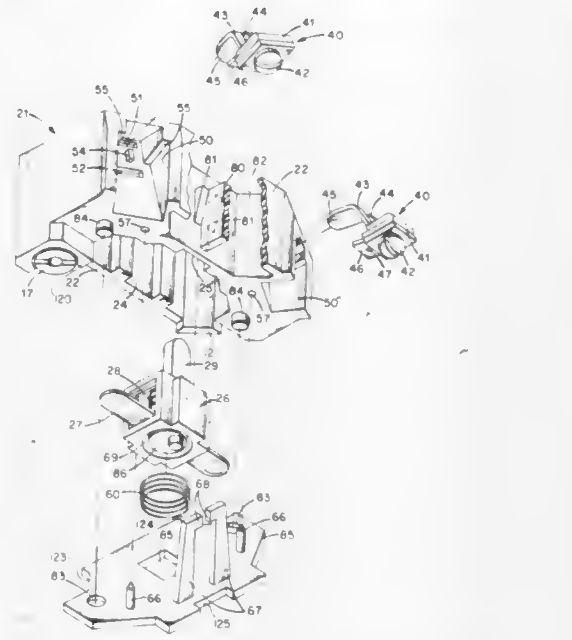
a contact carrier mounted in the compartment for guided reciprocal movement between a first and a second position;

biasing means for urging the contact carrier toward said first position;

first and second stationary contact members each having a contact surface adjacent to one end thereof and a field termination adjacent to the opposite end thereof;

the walls of the case having apertures therethrough for receiving the first and second stationary contact members with the contact surfaces within the compartment and with the field terminations exterior of the compartment;

a conductive contact bridge mounted on said contact carrier; said conductive contact bridge making contact with



the contact surfaces of the first and second stationary contact members to provide a closed circuit therebetween when the contact carrier is in one of said positions, and being spaced from the contact surfaces of the first and second stationary contact members to provide an open circuit therebetween when the contact carrier is in the other of said positions; and

a cover of insulating material attached to the case and forming a closure of the central compartment;

said cover having means engaging said first and second stationary contact members and securing them in fixed position with respect to the case.

4,355,217

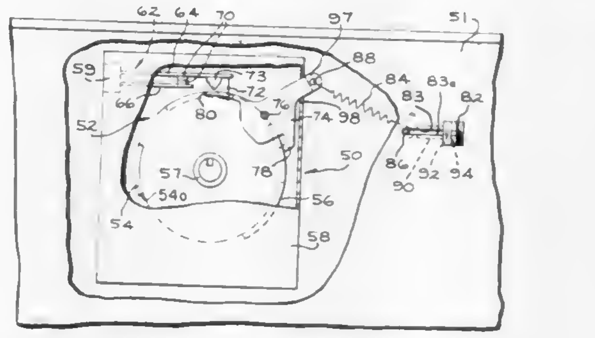
SWITCH INHIBITOR FOR TIMERS

Donald S. Cushing, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 7, 1981, Ser. No. 223,078

Int. Cl.^{3} H01H *43/10*

U.S. Cl: 200—38 R **11 Claims**



1. An electromechanical timer comprising:

a housing;

a control cam rotatably mounted in said housing, said control cam comprising a plurality of cam surfaces;

a timer motor mounted in said housing for rotating said control cam;

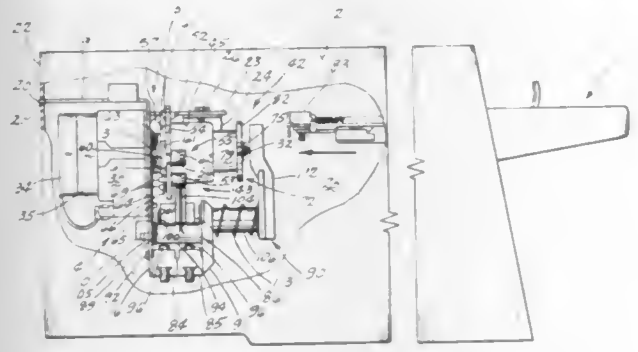
a plurality of cam-actuated switches mounted in said housing for actuation by associated ones of said cam surfaces, said cam surfaces being contoured to provide predetermined sequential actuation of said associated ones of said switches;

option selection means manually movable between a first position and a second position and operative in its first position to inhibit cam actuation of at least one of said plurality of cam-actuated switches and in its second position to enable cam actuation of said one switch;

whereby said predetermined sequential actuation of said one switch is prevented when said selection means is in its first position and permitted by user placement of said selection means is in its second position.

4,355,218
PRESETTABLE INDEX MECHANISM FOR SELECTIVELY ACTUATABLE TIMER

Daniel F. Wunderlich, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed Apr. 6, 1981, Ser. No. 251,153
Int. Cl.³ H01H *7/00*
U.S. Cl. 200—38 F **19 Claims**

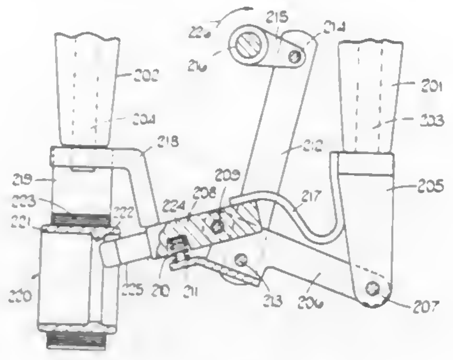


17. A selectively actuatable timing system for controlling an apparatus and presettable by a serviceman to one of a plurality of predetermined time periods for subsequent initiation of one time period by an operator, in combination comprising: a timer having cam means, switch means actuated by said cam means, and an output member rotatable at a timing speed, said cam means being rotatable with said output member and operable for actuating said switch means to provide an endless sequence of alternating intervals of apparatus-energizing and apparatus-deenergizing operation; auxiliary switch means in parallel circuit to said timer switch means; means drivingly connected to said output member and operable in a first posture for maintaining said auxiliary switch means in a closed position to provide an apparatus-energizing bypass circuit during all but the last apparatus-deenergizing interval of said cam means in said one time period and movable to a second posture responsive to a timed period of rotation of said output member for operating said auxiliary switch means to an open position for effecting deenergization of said apparatus during said last apparatus deenergizing interval; and actuatable means operable for releasing the driving connection with said output member and for moving said drivingly connected means relative to said output member to said first posture for initiating operation of said apparatus through said one time period.

4,355,219
ELECTRICAL SWITCHGEAR

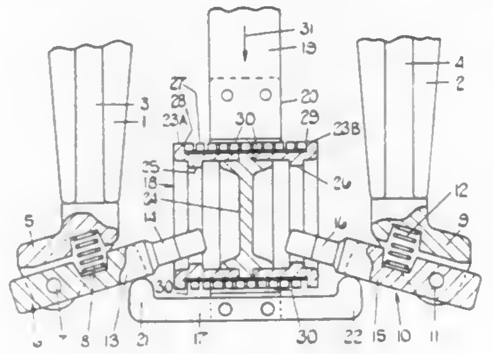
John Parry, Blackwood, Wales, assignor to South Wales Switchgear Limited, Blackwood, Wales
Filed May 20, 1980, Ser. No. 151,580
Claims priority, application United Kingdom, May 25, 1979, 7918466
Int. Cl.³ H01H *33/18*
U.S. Cl. 200—147 R **18 Claims**

1. Electrical switchgear comprising a contact set having first contact means and second contact means, and moving means operative to move said contact set between a closed position in which said first and second contact means are mutually engaged and an open position in which said first and second contact means are mutually separated, a tubular arcing electrode to which said first contact means forms an arc during movement of said contact set from said closed position to said open position, and a field coil connected to said tubular arcing electrode, said tubular arcing electrode and said field coil having respective axes which are substantially co-incident, a current produced by said arc flowing through said field coil to create a magnetic field which causes said arc to rotate and become extinguished, said first contact means having a part which engages said tubular arcing electrode before and for some time after said first and second contact means disengage and which moves to a position substantially on said axis of said tubular arcing electrode when said contact set moves to said open position, said first contact means having mounting means for said movement to be transversely of the axis of said field coil with said movement providing a lever action between said part and said second contact means for breaking any welds that may be formed between said contact means.



4,355,220
ELECTRICAL SWITCHGEAR OF THE ROTATING ARC, DOUBLE-BREAK TYPE

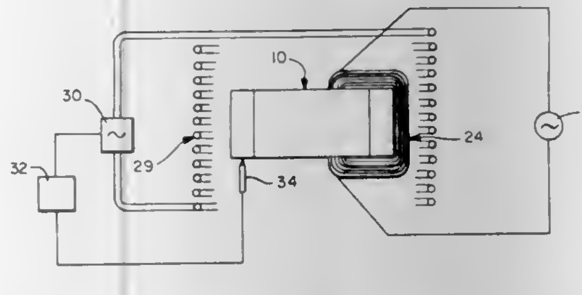
John Parry, Blackwood, Wales, assignor to South Wales Switchgear Limited, Blackwood, Wales
Filed May 20, 1980, Ser. No. 151,581
Claims priority, application United Kingdom, May 25, 1979, 7918466
Int. Cl.³ H01H *33/18*
U.S. Cl. 200—147 R **20 Claims**



1. Electrical switchgear comprising a contact set composed of a pair of first contact means, second contact means, and moving means operative to move said contact set between a closed position in which said second contact means is engaged with said pair of first contact means and an open position in which said second contact means is disengaged from said pair of first contact means, a field coil located between and common to said pair of first contact means, said common field coil having a pair of terminal connections and an axis, and a pair of arcing electrodes electrically connected to said terminal connections of said common field coil respectively, each of said pair of first contact means forming a respective arc to a respective one of said arcing electrodes when said moving means is operated to move said contact set from said closed position to said open position, a current flowing through said common field coil produced by said arcs creating a magnetic field which causes said arcs to rotate and become extinguished, said common field coil being electrically isolated from said first contact means in said open position of said contact set.

4,355,221
METHOD OF FIELD ANNEALING AN AMORPHOUS METAL CORE BY MEANS OF INDUCTION HEATING

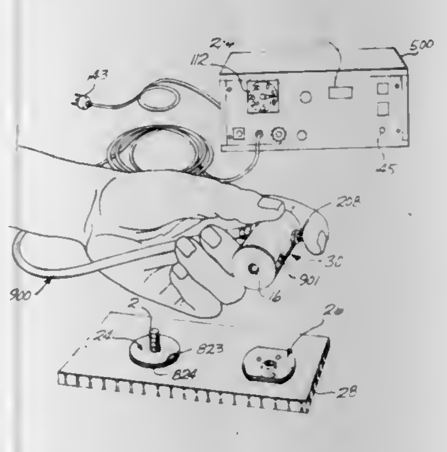
Kou C. Lin, Hermitage, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Apr. 20, 1981, Ser. No. 255,753
Int. Cl.³ H05B *6/40;* C21D *1/04*
U.S. Cl. 219—10.43 **7 Claims**



1. In an electrical transformer including a core initially formed from a continuous strip of amorphous metal wound about itself to form a closed-loop and at least one insulation coated transformer coil located around one circumferential section of said core, the material making up said coil being selected to have substantially lower electrical resistivity than said amorphous metal core, a method of annealing said core after said transformer coil has been positioned around said core section, said method comprising the step of placing said core and transformer coil in close proximity to an induction coil, exciting said induction coil with an alternating current for inducing current through said core and transformer coil to heat the core to satisfactory annealing temperatures for a period of time sufficient to anneal said core without heating said transformer coil to a temperature sufficient to damage its insulation coating during said period of time.

4,355,222
INDUCTION HEATER AND APPARATUS FOR USE WITH STUD MOUNTED HOT MELT FASTENERS

Glenn A. Geithman, Renton, and Donald F. Olsen, Hobart, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 8, 1981, Ser. No. 261,865
Int. Cl.³ H05B *6/14, 6/40*
U.S. Cl. 219—10.57 **5 Claims**



1. In combination:

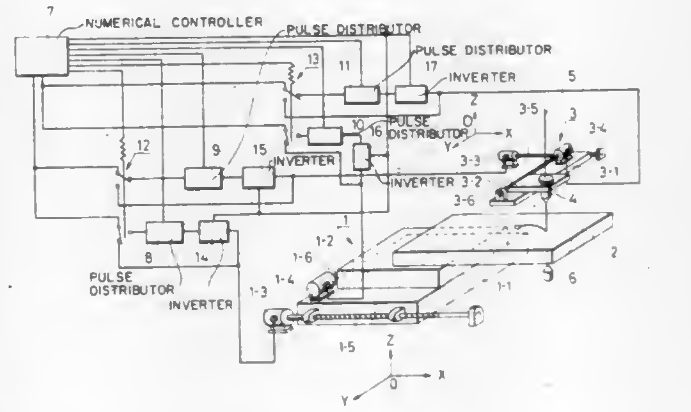
an induction heater probe having a ferrite core structure including an outer ferrite cup core portion surrounding an inner hollow cylinder-shaped portion surrounded by induction windings, said inner hollow cylinder-shaped portion adapted to receive a stud portion of a flat plate hot melt fastener;

an electromagnetic holding circuit for selectively applying an electromagnetic force to the flat plate portion of a flat plate hot melt fastener upon insertion of the stud portion of the flat plate hot melt fastener within said inner hollow cylinder-shaped portion of said flat plate hot melt fastener; and,

a power oscillator circuit for selectively generating eddy current flow in the flat plate portion of a flat plate hot melt fastener upon insertion of the stud portion of the flat plate hot melt fastener within said inner hollow cylinder-shaped portion of said flat plate hot melt fastener.

4,355,223
ELECTROEROSION METHOD AND SYSTEM FOR TAPER CUTTING WITH TRAVELLING WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, and Iwao Shibuya, Kawasaki, both of Japan, assignors to Inoue-Japax Research Inc., Yokohama, Japan
Continuation of Ser. No. 897,419, Apr. 18, 1978, abandoned. This application May 20, 1980, Ser. No. 151,723
Claims priority, application Japan, Apr. 25, 1977, 52-46761
Int. Cl.³ B23P *1/12*
U.S. Cl. 219—69 M **11 Claims**



1. An electroerosion method for taper-cutting an electrically conductive workpiece with a wire electrode, said wire electrode travelling axially through the workpiece and being supported under tension between a pair of guide members disposed on opposite sides of the workpiece, at least one of said guide members being movable transversely to said travelling wire electrode, said method comprising the steps of:

effecting a contour-machining feed of said workpiece relative to said travelling wire electrode with machining feed pulses so as to effect the relative displacement of the workpiece to the wire electrode in a plane comprised of X and Y axes along a prescribed path under numerical control based upon stored information describing said path;

effecting displacement of said at least one movable guide member with guide feed pulses along x and y axes with a predetermined angle of inclination to a direction normal to said plane; and

adding to said stored information of the numerical control for each portion of said path information (1) representing a pulse ratio between said machining feed pulses for said contour-machining feed and guide feed pulses for said displacement of the at least one movable guide member and information (2) representing the plus or minus sign indicative of the direction of advance of said at least one movable guide member so as to conrollingly effect X-Y axes contour-machining feed and x-y axes displacement of the at least one movable guide member simultaneously and thereby taper-cut the workpiece.

4,355,224
COATED ELECTRODE

Jack H. Mesick; Lewis E. Shoemaker, and Richard F. Freeman, all of Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

Filed Aug. 15, 1980, Ser. No. 178,497

Int. Cl.^{3} B23K *35/30*

U.S. Cl. 219—137 WM **8 Claims**

1. A coated welding electrode having a core wire comprising about 22% chromium, about 12.5% cobalt, 9% molybdenum, about 1.2% aluminum, about 0.07% carbon, about 1.5% iron, about 0.5% silicon, about 0.5% manganese, about 0.008% sulfur, about 0.3% titanium, about 0.2% copper, the balance being nickel and a flux coating disposed about the electrode including about 10–50% calcium carbonate, about 10–50% cryolite, about 5–35% titania, up to 30% silica, up to 15% wollastonite, about 5–20% chrome, about 2–15% manganese, up to 8% molybdenum, up to 2% nickel-carbon composite, up to 8% colloidal clay, up to 12% high melting oxide, up to 8% columbium and a silicate type binder.

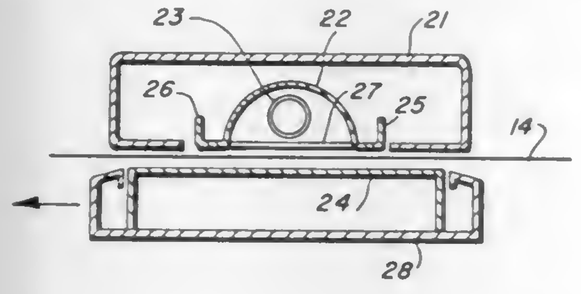
4,355,225
INSTANT-ON RADIANT FUSER

Dana G. Marsh, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1981, Ser. No. 248,136

Int. Cl.^{3} H05B *1/00*

U.S. Cl. 219—216 **14 Claims**



1. An instant-on radiant fuser apparatus, which comprises:
a first housing;
a low mass reflector means thermally spaced from said first housing, said reflector means being constructed to achieve operating temperature conditions within a few seconds without the use of standby heating device;
said first housing and said reflector means together forming a conduit for the passage of a cooling medium therein;
a second housing;
a low mass platen facing said reflector means and spaced therefrom, said platen being thermally spaced from said second housing and being constructed to achieve operating temperature conditions within a few seconds without the use of standby heating device;
said second housing and said platen together forming a conduit for the passage of a cooling medium therein; and
a source of radiant energy positioned adjacent said reflector means and between said reflector means and said platen.

4,355,226
APPARATUS FOR THE SPARK PERFORATION OF SHEET MATERIALS

Robert J. Hall, Flackwell Heath, Nr. High Wycombe, England, assignor to Wiggins Teape Group Limited, England

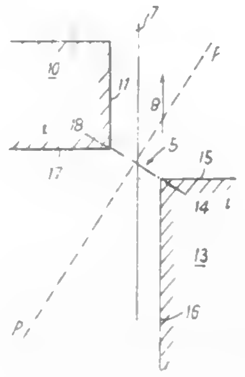
Filed Jun. 30, 1981, Ser. No. 279,210

Claims priority, application United Kingdom, Jul. 8, 1980, 8022239

Int. Cl.^{3} H05B *7/18*

U.S. Cl. 219—384 **19 Claims**

1. Apparatus for spark perforation of sheet material comprising spaced apart first and second electrodes which define between them a sparking zone through which sheet material to be perforated can be moved in a predetermined direction, and in which the portion of the first electrode which is nearest to the nearest portion of the second electrode is located between an overlap position upstream of the second electrode in the direction of movement of the sheet by a distance of 1 mm and an offset position also equal to 1 mm in the direction of movement of the sheet, and means for guiding the sheet through the sparking zone along a path closer to said second electrode than said first electrode.



4,355,227
APPARATUS FOR THE DESTRUCTION OF MICROFICHES AND THE LIKE

Jean-Claude Berard, Saint Chamond, France, assignor to SEB S.A., Selongey, France

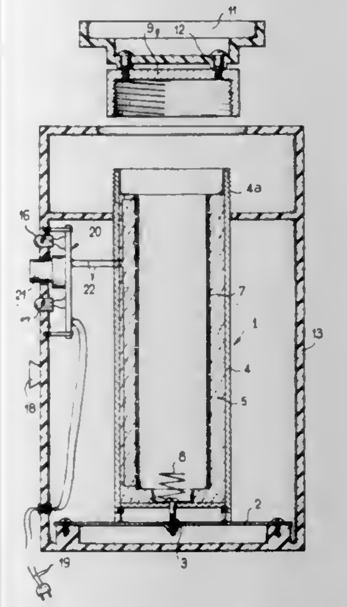
Filed Apr. 23, 1979, Ser. No. 32,473

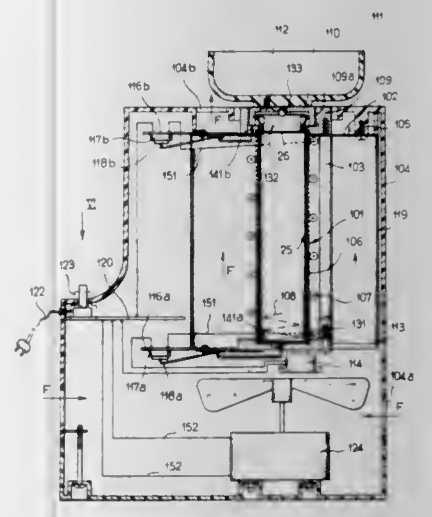
Claims priority, application Luxembourg, May 8, 1978, 79621

Int. Cl.^{3} H05B *3/00*

U.S. Cl. 219—390 **5 Claims**

1. An apparatus for the destruction of microfiches, comprising a tubular heating jacket housed within and spaced from an outer housing, said jacket fixed on a base plate which maintains said jacket in a vertical service position, an axial cylindrical housing formed in said tubular heating jacket, said housing having a cylindrical internal surface on which is mounted an electrical heating resistor, a cylindrical metallic disposable tube removably housed in said housing, the external diameter of said tube corresponding to the internal diameter of said housing, said tube having a size such that it can receive at least one microfiche to be destroyed when rolled up along the axis of the tube, said tube having a leaktight plug for preventing escape of gases generated during the destruction of microfiches, and said jacket comprising a cap which is adapted to be mounted on said jacket for closing said housing and for bearing on the plug of the tube.





4,355,228
IMAGE ANALYZER WITH LIGHT PEN OR THE LIKE AND SHADING CORRECTOR

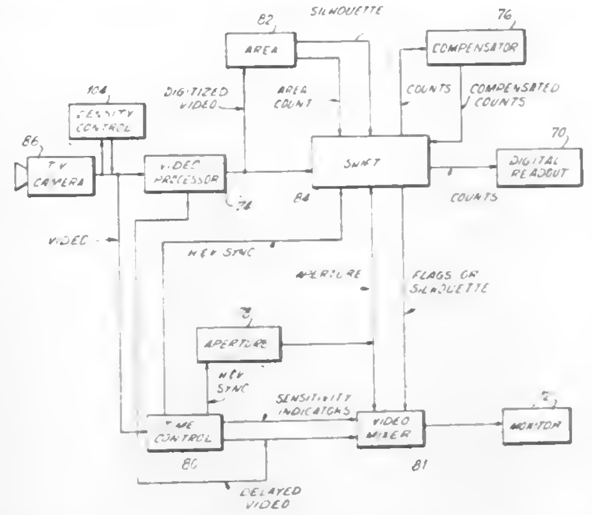
Stephen L. Sama, Seaford, and William R. Kitchener, Northport, both of N.Y., assignors to Artek Systems Corporation, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 883,996, Mar. 6, 1978, Pat. No. 4,203,029. This application Nov. 21, 1979, Ser. No. 96,437

Int. Cl.^{3} G06M *11/04*

U.S. Cl. 235—92 PC **8 Claims**

1. In an image analyzer for counting objects in a field, a shading corrector adapted for measuring the relative amount of chromophore in a scanned object comprising means to supply a stored video background signal, an attenuator for receiving and attenuating said signal, computer means for controlling said attenuator, means to supply an object-modulated video signal, comparator means for comparing the attenuated signal and the video signal to produce a comparator output signal, and area counter means to receive said output signal and develop a count proportional to the time-width of the scan across the chromophore to represent the area of the chromophore, said count being fed to said computer means.



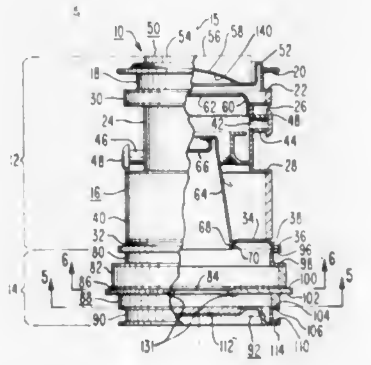
4,355,229
INTENSIFIED CHARGE COUPLED IMAGE SENSOR HAVING UNIVERSAL HEADER ASSEMBLY

Harlan S. Zimmerman, Columbia, and James L. Rhoads, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,350

Int. Cl.^{3} H01J *31/50*

U.S. Cl. 250—213 VT **16 Claims**

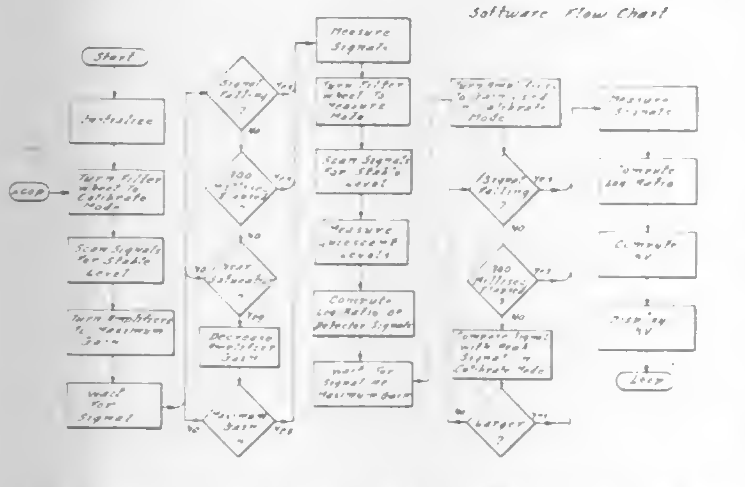


1. An intensified charge coupled image sensor of the type comprising:
- (a) an inverter image intensifier tube including:
  - (1) an evacuated envelope having a longitudinally extending optical axis, and
  - (2) a photoemissive cathode within said envelope for emitting electrons in a pattern corresponding to the intensity of radiation incident thereon, and
- (b) a universal header assembly comprising:
  - (1) a charge coupled device spaced from said cathode and disposed in a plane substantially orthogonal to said optical axis, said charge coupled device having an imaging area, an output register and a plurality of electrodes disposed on a surface of said device, said electrodes providing means for operating said sensor in one of a number of preselected modes,
  - (2) header means having a header aperture therethrough, said header aperture having a center slightly displaced in at least one dimension from said optical axis, said header means further having an electrode surface with a plurality of discrete electrode pads thereon, said plurality of electrode pads exceeding the number of electrodes required for the operation of said charge coupled device in any one of said number of preselected modes,
  - (3) securing means disposed between said cathode and said charge coupled device for resiliently holding said

charge coupled device, said securing means being attached to a surface of said header means opposite said electrode surface so that said charge coupled device is disposed within said header aperture of said header means, said securing means further having an imaging aperture therethrough that exposes at least a portion of the imaging area to said electron emission from said cathode, and

(4) bonding means for electrically connecting said electrodes of said charge coupled device to selected ones of said electrode pads.

4,355,230
METHOD AND APPARATUS FOR MEASURING THE APPLIED KILOVOLTAGE OF X-RAY SOURCES
Stephen S. Wilson, 620 Felch St., Ann Arbor, Mich. 48103, and Peter M. Joseph, 1804 Bolton St., Baltimore, Md. 21217
Filed Nov. 18, 1980, Ser. No. 208,019
Int. Cl.³ G01D *18/00;* G01J *1/42;* G06F *15/42;* G12B *13/00*
U.S. Cl. 250—252.1 8 Claims


Software Flow Chart
Start
Initialize
Measure Signals
Signal Falling ?
Yes
No
Turn Filter wheel to Measure Mode
Scan Signals for Stable Level
Turn Amplifiers to Maximum Gain
Wait for Signal
Decrease Amplifier Gain
Maximum Gain ?
Wait for Signal at Maximum Gain
Compare Signal with Peak Signal in Calibrate Mode
Larger ?
Signal Falling ?
Compute Log Ratio
Loop

1. A method for measuring the applied kilovoltage of an X-ray source using a pair of detector channels, each comprising a detector and associated processing circuitry, and a plurality of absorbers including the steps of:

taking a first measurement of the X-ray intensities detected by said detectors through a first pair of absorbers of equal thickness during a first X-ray exposure,

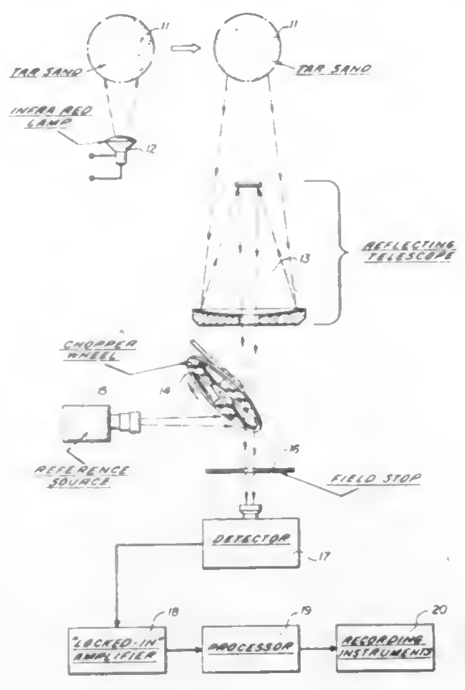
taking a second measurement of the X-ray intensities detected by said detectors through a second pair of absorbers of unequal thickness during a second X-ray exposure,

modifying said second measurement in accordance with said first measurement to compensate for any differences in the characteristics between the two detector channels, and

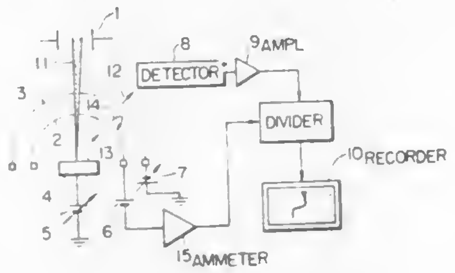
deriving the applied kilovoltage from the difference of said subtraction.

4,355,231
REMOTE ANALYSIS USING THERMAL RADIATION
James L. Lauer, Ballston Lake, and Keyser K. Lau, Troy, both of N.Y., assignors to Suncor Inc., Toronto, Canada
Filed Aug. 25, 1980, Ser. No. 178,954
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—253 9 Claims

1. A method for remotely determining the concentration of a component in a mixture where said component has thermal characteristics different from other components in said mixture which comprises raising the temperature of the mixture, detecting and measuring the integrated thermal radiation from the heated mixture and relating the measured flux to the concentration of said component.

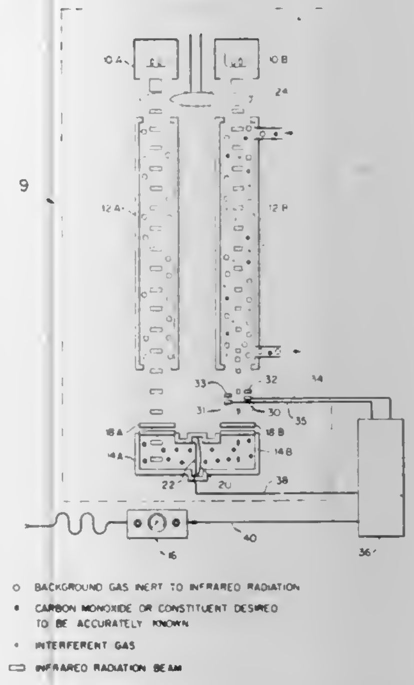


4,355,232
APPARATUS FOR MEASURING SPECIMEN POTENTIAL IN ELECTRON MICROSCOPE
Hideo Todokoro, Hinodemachi; Satoru Fukuhara, Kokubunji, and Yoshio Sakitani, Ohimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 23, 1980, Ser. No. 152,843
Claims priority, application Japan, May 28, 1979, 54-65029
Int. Cl.³ G01N *23/00;* H01J *37/00*
U.S. Cl. 250—310 11 Claims



1. An apparatus for measuring specimen potential in an electron microscope, comprising: first grid means arranged to at least partially enclose a specimen which is to be irradiated with a primary charged particle beam emitted from the electron source of the electron microscope; means for applying to said first grid means a first voltage sufficient to attract the secondary electrons emitted from said specimen; second grid means disposed on the side of said first grid means opposite said specimen; means for applying to said second grid means a second voltage so as to allow only those secondary electrons that have passed through the first grid means and which have an energy level greater than a selected value to pass through said second grid means; secondary electron detecting means for detecting the secondary electrons which have passed through the second grid means; current detecting means for detecting the current flowing through the first grid means; and dividing means for dividing the output of said secondary electron detecting means by the output of said current detecting means, whereby an output representing the potential at said specimen of said electron microscope is provided.

4,355,233
METHOD AND APPARATUS FOR NEGATING MEASUREMENT EFFECTS OF INTERFERENT GASES IN NON-DISPERSIVE INFRARED ANALYZERS
Dale F. Warnke, Irvine; Carl N. Cederstrand, Brea, and Charles A. Keenan, Irvine, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Continuation of Ser. No. 13,945, Feb. 22, 1979, abandoned. This application Jan. 31, 1980, Ser. No. 117,175
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—343 17 Claims


10A
10B
24
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36
○ BACKGROUND GAS INERT TO INFRARED RADIATION
● CARBON MONOXIDE OR CONSTITUENT DESIRED TO BE ACCURATELY KNOWN
• INTERFERENT GAS
▭ INFRARED RADIATION BEAM

1. In a non-dispersive infrared analyzer having a pneumatic detector measuring the concentration of a preselected component gas by infrared energy absorption and producing a first signal representing component concentration, apparatus for negating the measurement effects of interferent gases comprising:

response means responsive to infrared energy for detecting the infrared energy absorbed by an interferent gas which absorbs infrared energy in the bandwidth of said preselected component gas and producing a second signal in response thereto;

filter means associated with said response means for permitting passage of an infrared bandwidth absorbed by said interferent gases while rejecting infrared bandwidths absorbed by said preselected component gas;

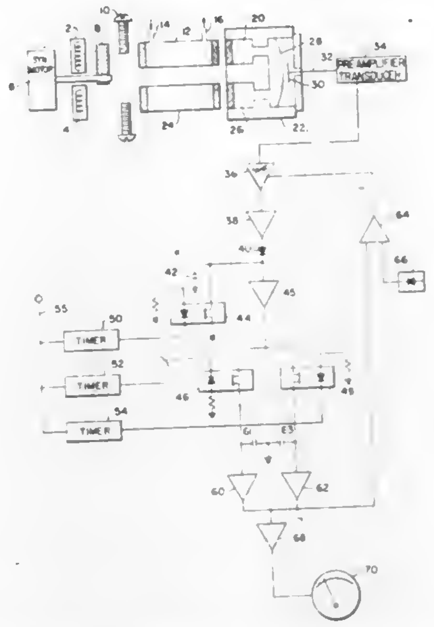
rectifier means connected to said response means for receiving said second signal and producing a substantially rectified third signal;

scaling means connected to said rectifier means for receiving said third signal and scaling said third signal to be compatible with said first signal; and

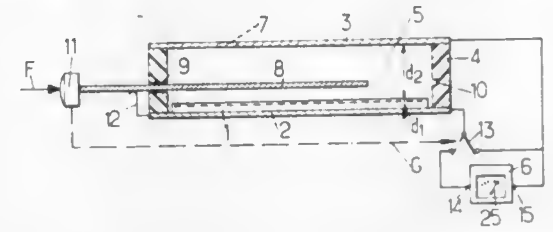
combining means connected to said scaling means and said pneumatic gas analyzer for combining said scaled third signal and said first signal and producing an output representative of said preselected component gas.

4,355,234
STABLE INFRARED ANALYZER
Glenn H. Fertig, Natrona Heights; Daniel R. Nardozzi, Gibsonia, and Richard N. Evanuik, Tarentum, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Sep. 19, 1980, Ser. No. 188,982
Int. Cl.³ G01N *21/26*
U.S. Cl. 250—343 7 Claims

1. An infrared analyzer of the type in which the radiation travels along two beam paths, one a sample beam path traversing a gas sample to be analyzed, the other a comparison beam path traversing a reference gas sample, wherein the presence of the component to be determined in the gas sample affects the relative intensity of the beams in a spectral region, the analyzer comprising a detector of the condenser microphone type responsive to changes in the beam intensity in the spectral region, means to cyclically modulate both beams such that in one portion of each cycle the sample beam is interrupted while the reference beam is not interrupted and in another but non-consecutive portion of each cycle the reference beam is interrupted while the sample beam is not, the non-consecutive cycle portions being separated by an intervening cycle portion in which both beams are simultaneously interrupted or simultaneously not interrupted, whereby the detector generates a series of alternate pulsed signals indicating the intensity of the reference beam and sample beam respectively, means to amplify the pulsed signals, means to store the peak value of the amplified comparison signal, feedback means responsive to the amplified comparison signal and controlling the magnitude of amplification to provide a predetermined peak amplitude of the comparison signal, and means to measure the difference between the peak comparison and the peak sample signal.



4,355,235
DEVICES FOR MEASURING PARAMETERS WHICH CAN MODIFY THE CHARGE OF AN ELECTRET
Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud; Gerard Dreyfus, Rue du Viaduc - Villebon s/Yvette, 91120 Palaiseau, and Didier Perino, 10, rue de Bellevue, 92150 Suresnes, all of France
Filed Apr. 22, 1980, Ser. No. 142,737
Claims priority, application France, Apr. 23, 1979, 79 10225; Feb. 11, 1980, 80 02967; Feb. 11, 1980, 80 02968
Int. Cl.³ G01T *1/18*
U.S. Cl. 250—376 28 Claims



1. Device for measuring a parameter capable of modifying the electrical charge borne by an electret, comprising, in addition to such an electret, two conductive electrodes framing this electret parallel to the latter, a separating part keeping one at least of these electrodes at a certain distance from the electret so as to preserve a chamber between them, means for enabling the parameter to be measured to exercise its influence in this chamber by modifying the charge of the electret, an electrical circuit for measuring the modifications of the electrical field

produced in the chamber, a conductive shutter and means for moving this shutter within the chamber parallel to itself and to the electrodes from a standby position to a measuring position and conversely, said device comprising in addition means for developing, on each movement of the shutter bringing it into its measuring position, information representing a difference between two electret charges, which difference is linked with the measurement to be carried out.

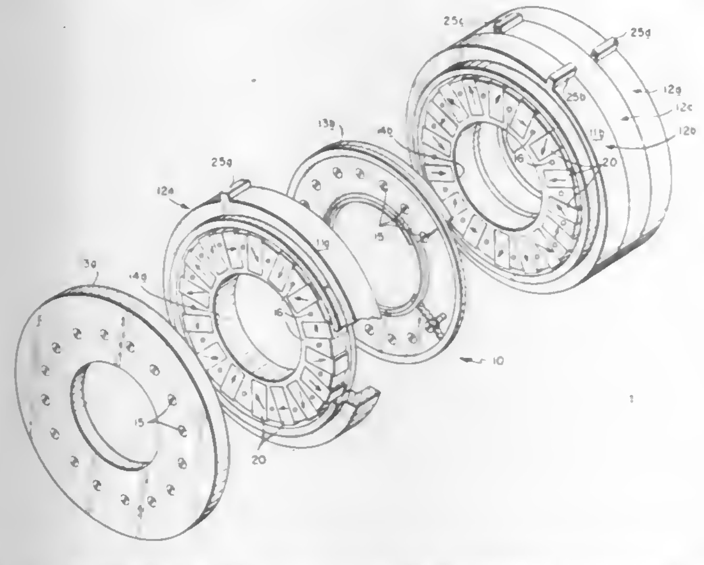
4,355,236
VARIABLE STRENGTH BEAM LINE MULTIPOLE PERMANENT MAGNETS AND METHODS FOR THEIR USE

Ronald F. Holsinger, Carlisle, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Apr. 24, 1980, Ser. No. 143,449

Int. Cl.^{3} G21K *1/08;* H01J *3/14*

U.S. Cl. 250—396 ML **46 Claims**



1. An adjustable strength multipole permanent magnet comprising a plurality of axial layers of magnetic material wherein one layer can be angularly displaced with respect to an adjacent layer, each of said axial layers comprising a plurality of segments comprising an oriented, anisotropic permanent magnet material arranged in a ring so that there is a substantially continuous ring of permanent magnet material, each segment having a predetermined easy axis orientation within a plane perpendicular to the axis of the magnet.

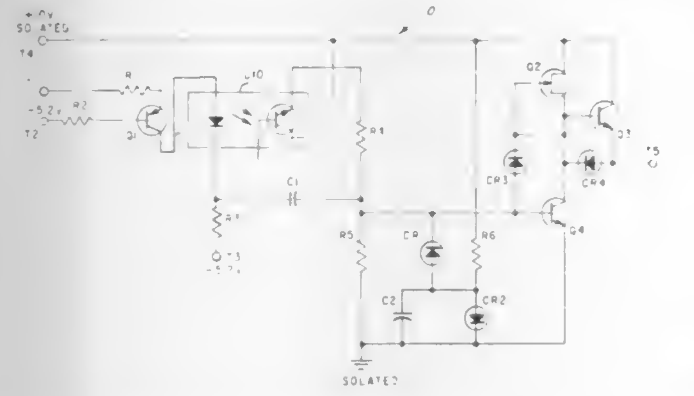
4,355,237
HIGH SPEED AC/DC COUPLER

William S. Harris, Jr., Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 4, 1980, Ser. No. 174,973

Int. Cl.^{3} G02B *27/00*

U.S. Cl. 250—551 **8 Claims**



1. A high speed AC/DC coupler comprising:
(a) input circuit means for receiving an electrical input signal;
(b) optical coupler circuit means electrically connected to the input circuit means for receiving the electrical input signals;
(c) AC coupling circuit means electrically connected to receive the input signal; and
(d) receiver circuit means electrically connected to receive the signal from the AC coupling circuit means and the signal from the optical coupler circuit means to provide an output signal.

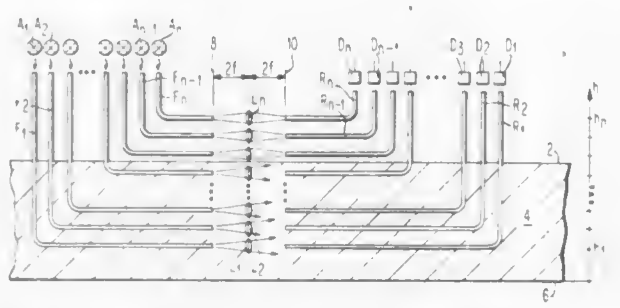
4,355,238
LIQUID LEVEL INDICATOR

Hartwig Ruell, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Siemens Corporation, Iselin, N.J.

Filed Feb. 20, 1981, Ser. No. 236,277

Int. Cl.^{3} G01N *15/06*

U.S. Cl. 250—577 **10 Claims**



1. A liquid level indicator, comprising in combination:
(a) a plurality of first light transmitting fibers each having a first light input end for receiving light and each having a first light output end for delivering light transmitted therethrough, said first light output ends being arranged one above the other for being immersed into said liquid;
(b) a plurality of second light transmitting fibers each having a second light input end for receiving light and a second light output end for delivering light transmitted therethrough, said second light input ends being arranged one above the other for being immersed into said liquid, and each of said second light input ends being associated with one of said first light output ends for receiving light therefrom;
(c) optical lens means interposed between each first light output end and its associated second light input end for receiving light from said first light output end and focussing said light onto said associated second light input end when said optical lens means is not immersed into said liquid, said optical lens means having substantially the same index of refraction as said liquid, thereby losing its focussing effect when being immersed into said liquid; and
(d) a plurality of light detectors each associated with one of said second light output ends of said second light transmitting fibers for receiving light therefrom.

4,355,239
ELECTRICAL POWER SUPPLY ARRANGEMENT

David C. Williams, Kings Langley, and Peter A. Walsh, Hemel Hempstead, both of England, assignors to Lucas Industries Limited, Birmingham, England

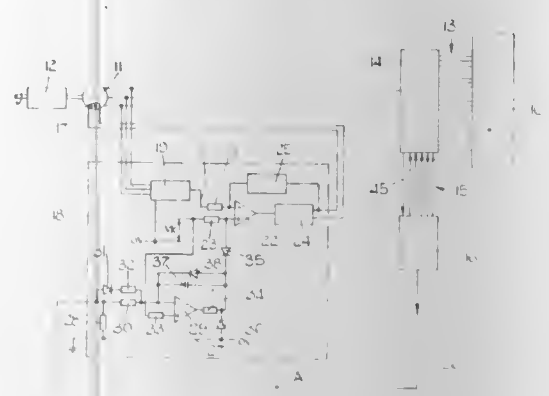
Filed Dec. 31, 1980, Ser. No. 221,537

Claims priority, application United Kingdom, Jan. 15, 1980, 8001255

Int. Cl.^{3} H02P *9/10*

U.S. Cl. 307—41 **5 Claims**

1. An electrical power supply arrangement comprising an electric generator having a field winding, means for regulating a voltage applied to said field winding, a plurality of switch means for sequentially controlling current supply from said generator to respective ones of a plurality of external loads, means for causing said field voltage to be cyclically reduced,



and means responsive to said cyclic reductions for causing operation of said switch means during said reduction.

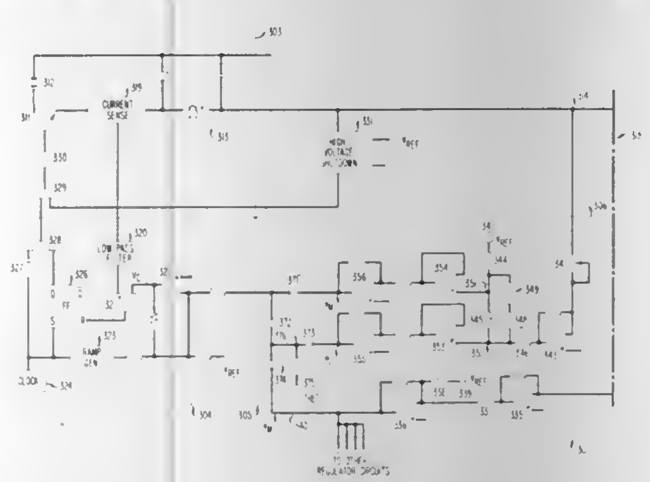
4,355,240
AUXILIARY BACKUP REGULATOR CONTROL FOR PARALLELED CONVERTER CIRCUITS CONTROLLED BY A MASTER REGULATOR

Billy H. Hamilton, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 22, 1981, Ser. No. 276,052

Int. Cl.^{3} H02J *1/10;* G05F *1/56*

U.S. Cl. 307—44 **10 Claims**



1. A power supply system comprising;
a central regulation circuit which senses a bus voltage and supplies a first error voltage to a plurality of converters coupled to the bus,
at least one of the converters including an auxiliary regulation circuit which senses an output voltage of that converter and establishes an error voltage band including a high level and low level error voltage which establishes limits within which the first error voltage is operative,
switch control circuitry for pulse-width modulating a switching device in the first converter in response to an error voltage, and
a signal selection circuitry interconnecting the central regulation circuit and the auxiliary regulation circuit to the switch control circuitry and operative for selectively applying one of said first, high and low error voltages to the switch control circuitry in response to relative magnitudes of the first, high and low error voltages.

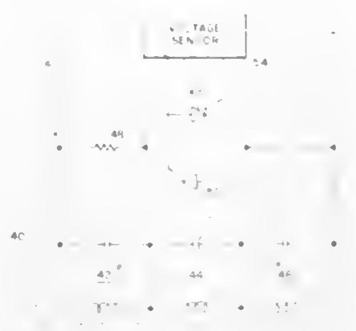
4,355,241
MEANS FOR DAMPING SUBSYNCHRONOUS OSCILLATIONS IN AN AC POWER SYSTEM INCLUDING OVERLOAD PROTECTION

Narain G. Hingorani, Los Altos Hills, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 15, 1980, Ser. No. 178,622

Int. Cl.^{3} H02J *3/18;* G05F *1/12*

U.S. Cl. 307—102 **6 Claims**



1. Apparatus for damping subsynchronous oscillations in an AC power line comprising
reactance means serially connected in said power line,
circuit means connected in parallel with said reactance means and including a resistor and a serially connected, selectably bi-directional conduction means,
means for triggering said selectably bi-directional conduction means in response to half cycle time periods of current waves on said power lines exceeding a desired half-cycle time period, and
means for triggering said selectably bi-directional conduction means in response to voltage across said reactance means exceeding a pre-selected value.

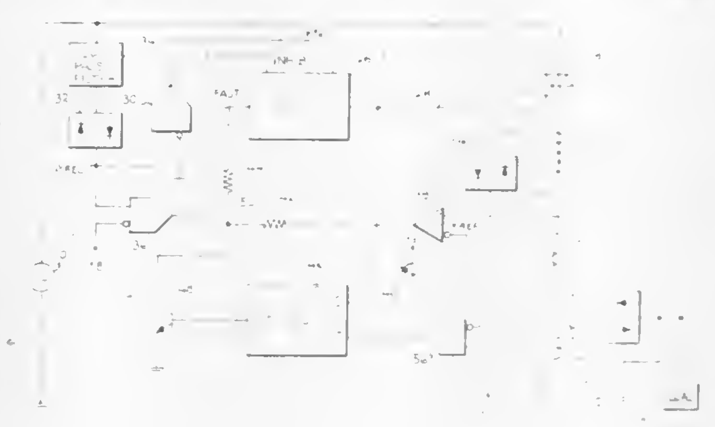
4,355,242
VOLTAGE REGULATING SYSTEM

Georges R. E. Lezan; Marvin W. Smith, both of Roanoke, and Loren H. Walker, Salem, all of Va., assignors to General Electric Company, Salem, Va.

Filed Jun. 19, 1978, Ser. No. 917,137

Int. Cl.^{3} H03K *17/60*

U.S. Cl. 307—252 N **12 Claims**



1. In a voltage control system, means for generating gating pulses operative to render conductive a triac to thereby control the electrical power supplied to a load from an a.c. voltage source comprising:
(a) an oscillator operable, to produce pulses effective to render said triac conductive, in first and second modes, said second mode being at a higher frequency of pulse occurrence than said first mode;
(b) means to generate a first signal indicative of the source voltage;
(c) means responsive to said first signal to apply a synchro-

nizing signal and additional means to apply a second signal indicative of the voltage across said load to said oscillator to initiate operation of said oscillator in said first mode;

(d) a feedback loop, connected to said oscillator, including means responsive to the first pulse produced in each half-cycle of said source voltage to generate a signal to place said oscillator in said second mode of operation; and,

(e) means responsive to said first signal operable to inhibit the production of said pulses when said source voltage has a magnitude less than a prescribed value in each half-cycle of said voltage source.

4,355,243
SINUSOIDAL OUTPUT GENERATOR

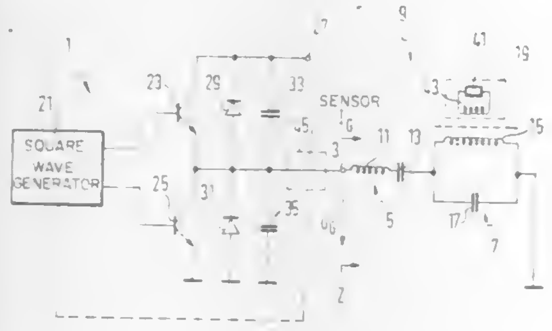
Rudy Tellert, Schweinfurt, Fed. Rep. of Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 2, 1980, Ser. No. 109,183

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901326

Int. Cl.^{3} H03K *5/08*

U.S. Cl. 307—261 2 Claims



1. Sinusoidal output generator, comprising a parallel resonant circuit, a series resonant circuit, a square wave voltage generator, a load, said parallel resonant circuit being connected in series with said series resonant circuit and together forming a network coupled to the output of said square wave voltage generator. the load being coupleable to said parallel resonant circuit, the resonant frequency of said parallel resonant circuit being substantially equal to the fundamental frequency of said square wave voltage generator and lower than the resonant frequency of said series resonant circuit wherein the resonant frequency of said series resonant circuit is lower than the frequency of the third harmonic of the fundamental frequency of said square wave voltage generator, the load coupleable to said parallel resonant circuit has a complex impedance including an active component and a reactive component, and said series and parallel resonant circuits have parameters relative to the impedance of said load so that during load operation, a phase displacement of about 20°–40° occurs between the fundamental frequency component of the output current and the fundamental frequency of the output voltage of said square wave voltage generator, and said square wave voltage generator includes frequency control means responsive to one of the output voltage and the output current of said square wave voltage generator and the voltage at said parallel resonant circuit for controlling the power consumption of the load, said frequency control means including a current sensor stage responsive to the amplitude of the output current of said square wave voltage generator and arranged to be switched at a predetermind phase angle of the square wave voltage to generate an error signal.

4,355,244
DEVICE FOR READING A QUANTITY OF ELECTRIC CHARGES AND CHARGE-FILTER EQUIPPED WITH SAID DEVICE

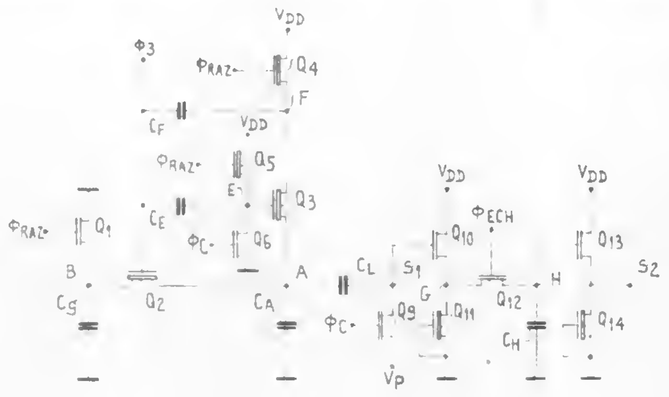
Roger Benoit-Gonin; Jean-Luc Berger, and Jean-Louis Coutures, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 28, 1979, Ser. No. 52,931

Claims priority, application France, Jul. 4, 1978, 78 19933

Int. Cl.^{3} H03K *3/353*

U.S. Cl. 307—304 11 Claims



1. A device for reading a quantity of electric charges, comprising a first transistor (Q_2) and a second transistor (Q_3), each having source, drain and gate, said transistors being connected at a common point (A) with the drain of one transistor being connected to the source of the other transistor in series connection, said series being connected to a point (B) of arrival of the quantity of charges to be read, a first capacitor (C_A) having one terminal connected to the common point (A) of the two transistors (Q_2, Q_3), control circuit means connected to the gates of the two transistors (Q_2, Q_3) for charging the first capacitor (C_A) and for maintaining the first transistor (Q_2) in the saturating mode, and thus maintaining an essentially constant potential at the point of arrival (B) at the time of inflow of the charges, the effect of said inflow being to produce a variation in potential at the common point (A) and thereby delivering the reading signal at the common point (A).

2. A device for reading a quantity of electric charges, comprising a first transistor (Q_2) and a second transistor (Q_3), each having source, drain and gate with the drain of one transistor being connected to the source of the other transistor in series, said series connection being connected to a point (B) of arrival of the quantity of charges to be read, a first capacitor (C_A) having one terminal connected to the common point (A) of the two transistors (Q_2, Q_3), control circuit means connected to the gates of the two transistors (Q_2, Q_3) for charging the first capacitor (C_A) and for maintaining the first transistor (Q_2) in the saturating mode, and thus maintaining an essentially constant potential at the point of arrival (B) at the time of inflow of the charges, the effect of said inflow being to produce a variation in potential at the common point (A) and thereby delivering the reading signal at the common point (A); wherein the control circuit receives a first constant potential (V_{DD}) and comprises: a third transistor (Q_4), connected between said constant potential (V_{DD}) and a second terminal of the second transistor (Q_3); a fourth transistor (Q_5) and a fifth transistor (Q_6), said transistors being connected in series between the first constant potential (V_{DD}) and a reference potential of the device; a second capacitor (C_E) connected between the gate of the first transistor (Q_2) and a common point (E) of the fourth (Q_5) and fifth (Q_6) transistors, the gate of the second transistor (Q_3) being connected to said common point (E); a third capacitor (C_F) connected between the gate of the first transistor (Q_2) and a common point (F) of the second (Q_3) and third (Q_4) transistors.

4,355,245
ELECTRONIC CIRCUIT

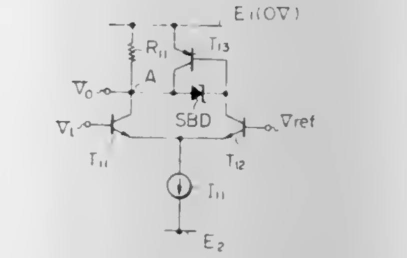
Hideaki Isogai, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 7, 1980, Ser. No. 137,958

Claims priority, application Japan, Apr. 12, 1979, 54-44640

Int. Cl.^{3} H03K *3/33*

U.S. Cl. 307—455 6 Claims



1. In an electronic circuit of a current switch construction in which the emitters of a first transistor and a second transistor are commonly connected to a constant-current supply, and a load resistor is connected to the collector of the first transistor thereby to provide an output from the collector, the improvement being a third transistor in which temporarily flows an electric current to a collector circuit of the first transistor when it is rendered non-conductive, said third inserted transistor being in a collector circuit of the second transistor, a load resistor being connected between the collector of said first transistor and a power supply, the base and emitter of said third transistor being connected between the collector of said second transistor and said power supply, the collector of said third transistor being connected to a connection point between the collector of said first transistor and said load resistor, an input voltage being applied to the base of said first transistor, a reference voltage being applied to the base of said second transistor, and an output being provided from the collector of said first transistor, a Schottky barrier diode being connected across the base and the collector of said third transistor.

4,355,246
TRANSISTOR-TRANSISTOR LOGIC CIRCUIT

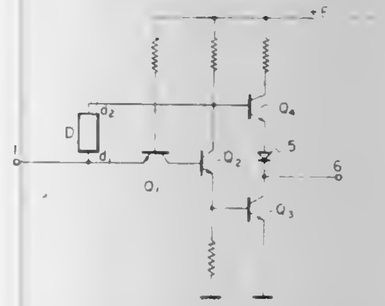
Yuzo Usui, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 8, 1978, Ser. No. 967,635

Claims priority, application Japan, Dec. 9, 1977, 52-148617

Int. Cl.^{3} H03K *3/26, 3/01*

U.S. Cl. 307—456 14 Claims



1. A three-state transistor-transistor logic circuit that is operable without a control input, said logic circuit comprising:

- an input stage for inputting a signal to said TTL circuit,
- a phase-split transistor stage connected to receive the output of said input stage,
- a totem-pole-connected circuit including an off-buffer transistor connected serially with an inverter transistor, the bases of said off-buffer and inverter transistors being connected to respective points of said phase-split transistor stage,
- a delay circuit having its output connected to the base of said off-buffer transistor and its input selectively connected to the input of said input stage or to a respective terminal of said phase-split transistor stage, said connection of said input and output of the delay circuit providing
- a low level output of said TTL circuit when the input to said TTL circuit is at a high level
- a high level output for a period equal to the delay time of said delay circuit, after said high level input returns to a low level input, and
- an open state output of the TTL circuit at other times,

wherein said TTL circuit is operable without said control input to produce said three outputs.

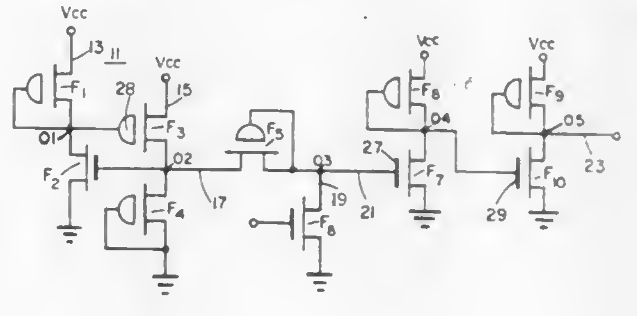
4,355,247
SENSE AMPLIFIER AND METHOD FOR SMALL BIT LINE SWING WITH SHORT PROPAGATION DELAY FOR HIGH SPEED MOS MEMORIES

Melvin L. Marmet, Norco, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 11, 1980, Ser. No. 120,239

Int. Cl.^{3} H03K *5/18* .

U.S. Cl. 307—530 14 Claims



1. A sense amplifier for determining presence or absence of an addressed memory cell semiconductor which amplifier is independent of a reference tracking the midpoint of the small voltage bit line swing comprising in combination;

- a constant low voltage variable current source for the bit lines;
- a semiconductor pull-up device for said lines connected thereto;
- said pull-up device and the memory cell semiconductor being in series and the pull-up device substantially matching the memory cell semiconductor in electrical resistance characteristics so the resistance ratio thereof determines the magnitude of the small voltage bit line swing;
- an inverter amplifier having at least two series connected multi-terminal semiconductor devices;
- one of said semiconductor devices having a high electrical resistance relative to the other, said one being connected to a junction between the series connected pull-up device and memory cell;
- said pull-up device and said memory cell semiconductor, when present, comprising means for subtracting the bit line small voltage swing from said constant low voltage of the variable current source; and
- said constant low voltage from the variable current source having a magnitude sufficient to trigger said one of said semiconductors into conduction but when diminished by the presence of a cell semiconductor said one semiconductor being biased into or toward non-conduction.

4,355,248
STEPPER MOTOR

Harry G. Manson, Princeton, Ind., assignor to IMC Magnetics Corp., Jericho, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,657

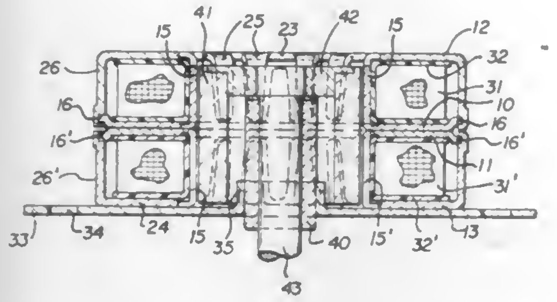
Int. Cl.^{3} H02K *37/00*

U.S. Cl. 310—42 7 Claims

1. A stepper motor comprising:

a pair of annular stator plates each having a central opening and a plurality of poles surrounding the opening and projecting from one face of the plate, the stator plates being fixed to each other in back-to-back relation with their poles projecting in opposite directions,

a pair of annular stator cups each comprising a back wall having a central opening, a peripheral side wall projecting from one face of the back wall, and a plurality of poles surrounding the opening and projecting from the same face of the back wall as the side wall,



the stator cups being arranged over opposite faces of the joined-together stator plates with the poles of each stator cup interleaved with the poles of its respective stator plate and the free edges of the stator cup side walls fitted over the peripheral edges of the stator plates,

the peripheral edges of the stator plates being separated from each other to define a gap between them, and

the free edges of the stator cup side walls being bent into the gap between the stator plate edges to mechanically join each stator cup to its respective stator plate.

4,355,249

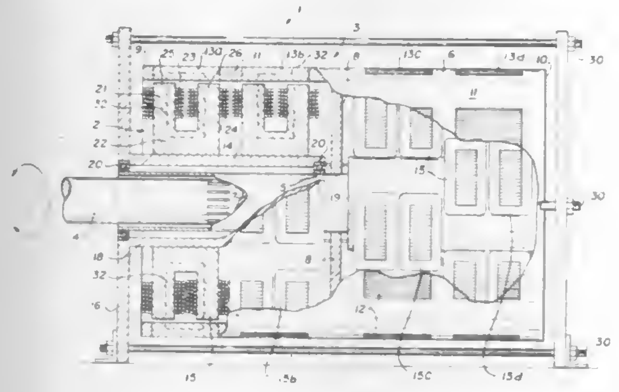
DIRECT CURRENT MOTOR HAVING OUTER ROTOR AND INNER STATOR

Rudolf F. Kenwell, 11143 - 50 Ave., Edmonton, Alberta, Canada (T6H 0J1)

Continuation-in-part of Ser. No. 955,984, Oct. 30, 1978, abandoned. This application Dec. 2, 1980, Ser. No. 212,148

Int. Cl.^{3} H02K *37/00*

U.S. Cl. 310—49 R **8 Claims**



1. A direct current motor comprising:

a stationary stator assembly comprising

a plurality of stator rings, each such stator ring comprising a plurality of individual electromagnetic components circumferentially arranged on the stator ring, each such electromagnetic component comprising a pair of poles, the poles of each pair being axially aligned and outwardly facing, and energizing means for magnetizing and de-magnetizing said pair of poles, each stator ring pole having individual energizing means;

means for supporting said stator rings;

said stator rings being cylindrically arranged on said support means in angularly offset configuration; and

a rotatable rotor assembly mounted to rotate outside the stator assembly comprising a plurality of longitudinally oriented and cylindrically arranged magnetic elements positioned around the assembly of stator rings;

whereby said stator rings may be sequentially magnetized and de-magnetized to rotate said rotor assembly, the energizing time for each stator ring may be varied, and the number of electromagnetic components energized in each stator ring may be varied.

4,355,250

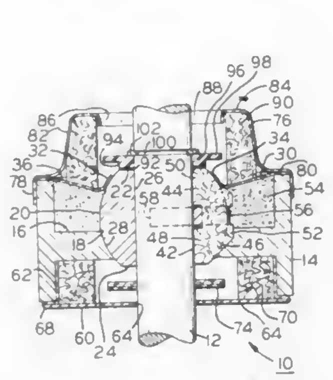
SELF-ALIGNING BEARING ASSEMBLY

Robert S. Langdon, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jul. 17, 1980, Ser. No. 169,824

Int. Cl.^{3} H02K *5/16*

U.S. Cl. 310—88 **5 Claims**



1. A bearing assembly for journaling a rotatable shaft of a dynamoelectric machine comprising a self-aligning bearing having a bore therethrough adapted to rotatably journal the shaft therein; a pair of opposite partial spherical outer surfaces of like configuration on said bearing; a housing surrounding and generally radially spaced from said bearing; a plurality of angularly spaced-apart and generally radially extending arms integral with said housing and having partial spherical end surfaces thereon arranged in conforming contact with one of said opposite partial spherical outer surfaces of said bearing, respectively; spring means for urging said one opposite partial spherical outer surface on said bearing into the conforming contact with said partial spherical end surfaces on said arms, said spring means including means for biased engagement with said housing, and means for conforming contacting engagement with the other of said opposite partial spherical outer surfaces on said bearing so as to effect free self-alignment of said one opposite partial spherical outer surface of said bearing on said partial spherical end surfaces of said arms; and means disposed in said housing and said bearing for supplying a lubricant to the shaft in said bore of said bearing.

4,355,251

TACHOMETRIC GENERATOR

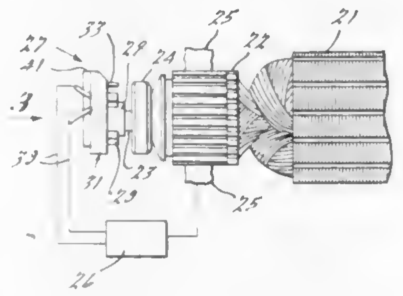
Lorenzo E. Alessio, Lecco, and Giuseppe Cuneo, Caloiziocorte, both of Italy, assignors to Black & Decker Inc., Newark, Del.

Filed Jun. 18, 1980, Ser. No. 160,733

Claims priority, application Italy, Jun. 28, 1979, 23953 A/79

Int. Cl.^{3} H02K *21/38*

U.S. Cl. 310—155 **7 Claims**



1. A portable power tool, comprising:

an electric motor having a rotatable armature shaft extending axially;

speed control means for adjusting the speed of said motor;

a tachometric generator for supplying an electrical signal to said speed control means indicative of the actual rotational speed of said motor, and comprising a toothed rotor with radially outwardly extending teeth and a sensor;

said rotor being of magnetically permeable material and being mounted on one end of said armature shaft for rotation therewith;

said sensor having a single magnet, a core member having a first end portion, an intermediate portion, and a second end portion which has said magnet mounted thereon, and a coil disposed about said intermediate portion and electrically connected to said speed control means;

said second end portion extending radially outwardly and being disposed in axial alignment with said teeth during rotation thereof;

said magnet having axially aligned poles and being directly interposed between said rotor and said second end portion at a first location in close proximity to said teeth during rotation thereof;

said first end portion extending in an axial direction relative to said armature shaft and being disposed radially outwardly and adjacent the teeth of said toothed rotor at a second location spaced from said first location; and

said entire sensor being encased in a protective covering of plastic except for the pole of said magnet adjacent said teeth and said first end portion;

whereby a series magnetic circuit is formed comprising said toothed rotor, said core member and said magnet, and said coil is responsive to changes in the intensity of flux passing through said magnetic circuit as said rotor rotates, said tachometric generator being compact and exhibiting a high signal to noise ratio.

4,355,252

SYNCHRONOUS MOTOR

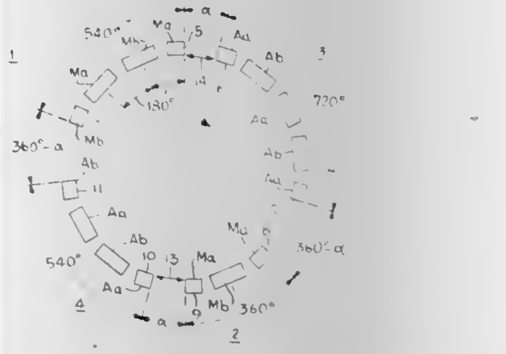
Hubert Lechner, Cham, and Benedikt Steinle, Zug, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed May 27, 1980, Ser. No. 153,693

Claims priority, application Switzerland, May 30, 1979, 5030/79

Int. Cl.^{3} H02K *19/00*

U.S. Cl. 310—162 **6 Claims**



1. In a self-starting unidirectional synchronous motor including a stator, an exciting coil being at least partly disposed within said stator, a permanent magnet rotor having a plurality of rotor poles being at least partly disposed within said coil, a space being defined between said rotor and said coil, said stator including a plurality of poles, said poles including groups of unshaded main poles and groups of shaded auxiliary poles alternating with each other, respective end zones being defined between adjacent groups, each pole generating a corresponding magnetic field,

said poles comprising pole arms extending into said space and including one half pole in each of said groups disposed at said end zones, respectively, and

wherein groups of shaded poles are displaced with respect to groups of non-shaded poles by respective substantially equal spatial electrical angles, and the magnetic fields of groups of shaded poles are shifted with respect to the magnetic fields of groups of non-shaded poles by respective substantially equal phase angles.

4,355,253

COMBINATION END BELL AND BRUSH HOLDER FOR A DYNAMOELECTRIC MACHINE

Kenneth A. Vollbrecht, Milwaukee, Wis., assignor to Briggs & Stratton Corp., Wauwatosa, Wis.

Filed Feb. 27, 1981, Ser. No. 238,827

Int. Cl.^{3} H02K *13/00*

U.S. Cl. 310—239 16 Claims

1. A one-piece end bell and brush holder for a dynamoelectric machine having a rotor with a shaft and a drum-like commutator secured to the shaft, comprising:

an annular cup-shaped cap member molded of electrical insulating material that includes a central axis with a base extending radially therefrom and a central opening formed therethrough at said axis for receiving the shaft of said machine, and a circumferential outer wall extending axially from one side of said base to be concentric with said central opening,

said cap member having circumferentially spaced apart radially elongated mounting boxes for slidably confining the brushes of said machine disposed on said one side of said base, each brush mounting box being open at axially opposite ends, said axial opening extending through the base of said cap member to expose at least a portion of the bottom face of a brush directly to the atmosphere, and includes,

a pair of opposing, spaced apart side walls extending radially along said one side of said base and extending axially therefrom to contain a brush against circumferential displacement,

an end wall extending between the radially outer ends of said side walls,

a flange on the axially outer edge of at least one of said side walls projecting circumferentially to partially enclose the axial opening along the top of said brush mounting box and to form a radially extending slot, said flange containing said brush against axial movement in one direction, and

a stop member located between said side walls which defines the axial opening in the bottom of said brush mounting box, said stop member in contacting engagement with said brush to contain said brush against axial movement in the other direction, whereby the side walls, flange and stop member of each box cooperate to provide guide ways opening radially inwardly in which the brushes of said machine are lengthwise and slidably received.

4,355,254

BRUSH HOLDING DEVICE FOR ELECTRIC ROTARY MACHINE

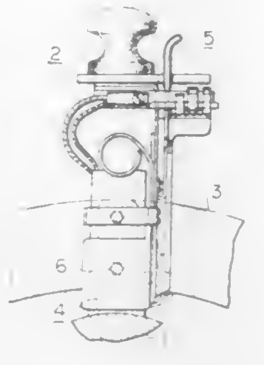
Norihiro Oki, Katsuta; Shoji Motegi, Hitachi; Yasuyuki Wachi, Takahagi; Yoshio Takikawa, Hitachi, and Norio Yamakawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Co., Ltd., both of Tokyo, Japan

Filed Nov. 4, 1980, Ser. No. 204,047

Claims priority, application Japan, Nov. 9, 1979, 54-145703

Int. Cl.^{3} H02K *13/00*

U.S. Cl. 310—242 7 Claims



1. A brush holding device for an electric rotary machine comprising a brush disposed to make sliding contact with the peripheral surface of a rotatable slip ring and having a pig tail extending from a portion thereof, and a brush holder releasably holding said brush while pressing said brush against the peripheral surface of said slip ring at a predetermined pressure, so that said brush can be removed from or installed in said brush holder at least during operation of the electric rotary machine, wherein said brush holder comprises a brush holding mechanism secured to a stationary part of the electric rotary machine and a brush replacement unit adapted to be locked to or unlocked from said brush holding mechanism together with said brush, said brush holding mechanism comprising a brush box secured to said stationary part for accommodating said brush therein so as to prevent the brush from being laterally displaced during operation of the rotary machine, a main post extending from a portion of said brush box, and an aperture formed in a portion of said main post to be engageable with a portion of said brush replacement unit, said brush replacement unit comprising a main wall, a brush spring anchored at one end thereof to a lower portion of said main wall, an insulated handle fixed to a top portion of said main wall, a resilient manipulating lever fixed at one end thereof to a portion of said main wall and protruding to terminate at the other end thereof on the same side as said handle, a latching member forming an integral part of said manipulating lever and having a finger engageable with said aperture of said main post in said brush holding mechanism, a brush locking element mounted on a lower portion of said main wall for engaging with said brush and locking said brush in position, and a brush retaining element in the form of a band loop supported on a portion of said main wall to loosely embrace a body portion of said brush, the brush retaining element being disposed on the main wall at a position such that the brush retaining element is located above an upper end of the brush box when the brush replacement unit is installed in the brush holding mechanism.

4,355,255

BRUSHLESS DIRECT CURRENT MOTOR AND CONTROL THEREFOR

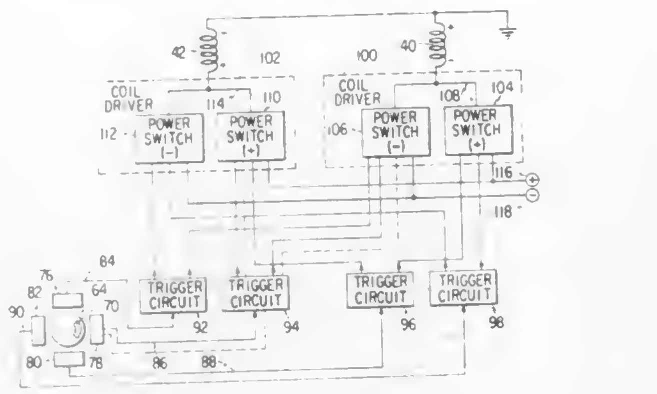
John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 28, 1979, Ser. No. 70,293

Int. Cl.^{3} H02K *29/00*

U.S. Cl. 310—254 7 Claims

1. A brushless direct current motor comprising:
a housing;
a winding frame member of nonmagnetic material fixedly mounted inside said housing;
at least two coils of wire wound on said winding frame member, each of said coils being substantially planar with the planes defined by the coils being equiangularly spaced;
a permanent magnet rotor mounted for rotation about an axis within said winding frame member, said axis being parallel to all of said coil planes and said permanent magnet rotor being magnetized in a direction orthogonal to said axis;
position sensing means responsive to the angular orientation of said rotor about said axis for providing a plurality of sequentially occurring position signals, said position sensing means including a plurality of angularly spaced switching devices which are sequentially switched in a nonoverlapping manner to provide said sequentially occurring position signals so that at any given time one and only one of said switching devices is providing a respective position signal;
a source of bidirectional direct current; and
coil energizing means responsive to said sequentially occurring position signals for selectively directing said bidirectional direct current simultaneously through all of said coils.



4,355,256

CERAMIC COMPOSITION FOR A PIEZOELECTRIC BODY AND ELECTROMECHANICAL TRANSDUCER

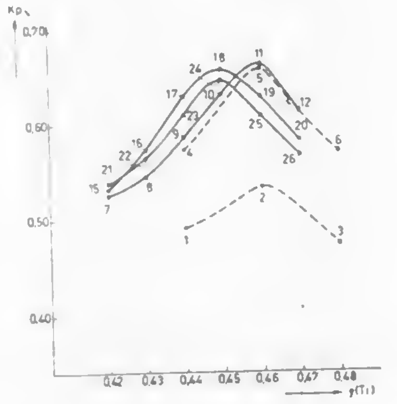
David J. Perduijn, and Jacobus Verberkt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,784

Claims priority, application Netherlands, May 21, 1979, 7903964

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—358 2 Claims



1. A piezoelectric body for an electromechanical transducer corresponding to the ternary system lead titanate-lead zirconate-$Pb(M_{1/3}^{II}M_{2/3}^{V})O_3$, characterized in that said piezoelectric body consists of $Pb_{1-a}M_a(Mg_{(1-b)/3}Mn_{b/3}Sb_{2/3})_x$-$Ti_yZr_zO_3$ wherein M is one or more of the alkaline earth metals Ca, Sr and Ba and wherein,

$$0 \leqq a \leqq 0.15,$$

$$0 \leqq b \leqq 0.20,$$

$$0.01 \leqq x \leqq 0.25,$$

$$0.40 \leqq y \leqq 0.55,$$

$$0.20 \leqq z \leqq 0.59$$

and

$$(x+y+z)=1.$$

4,355,257

THICKNESS SHEAR TYPE PIEZOELECTRIC VIBRATOR WITH INTEGRAL MOUNTING

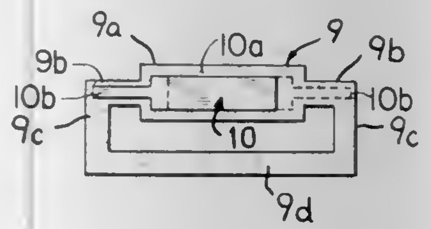
Hirofumi Kawashima; Akira Watanabe, and Yasunori Ebihara, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Continuation-in-part of Ser. No. 930,241, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 763,713, Jan. 28, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 168,133

Claims priority, application Japan, Feb. 29, 1976, 51/8636

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—361 10 Claims



1. A thickness shear type quartz crystal vibrator comprising a thin quartz plate of uniform thickness cut from the Y-plate rotated through an angle of 30° to 40° about the X-axis and shaped by etching to form a rectangular vibrating portion elongated along the X-axis and of uniform thickness throughout its width and length, and integral rectangular supporting portions extending respectively from opposite ends of said rectangular vibrating portion and of uniform width throughout their length, said vibrating portion and integral supporting portions being of the same uniform thickness, and the width of said supporting portions of said quartz plate being between one quarter and three quarters the width of said vibrating portion, and electrodes of conducting material having elongated rectangular active portions on the obverse and reverse surfaces of the vibrating portion of said plate respectively, the electrode on the obverse surface of said plate having an integral lead portion extending along the obverse surface of one only of said supporting portions and the electrode on the reverse surface of said plate having an integral lead portion extending along the reverse surface of the other body of said supporting portions, whereby an electric field is applied by said electrodes only to said vibrating portion of said plate and is not applied at all to said supporting portions.

4,355,258

PHOTOMULTIPLIER TUBE HAVING A STRESS ISOLATION CAGE ASSEMBLY

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

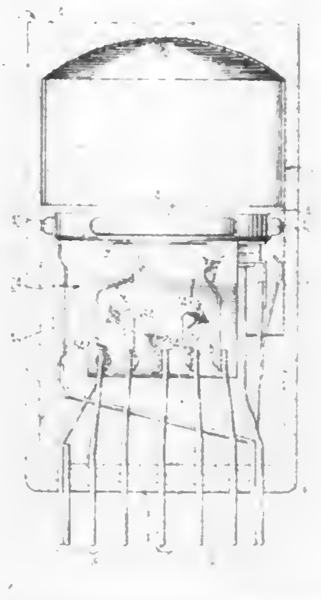
Filed Dec. 16, 1980, Ser. No. 216,906

Int. Cl.^{3} H01J *40/04, 40/02*

U.S. Cl. 313—95 6 Claims

1. In a photomultiplier tube having an evacuated envelope; a photomissive cathode within said envelope,
a cage assembly adjacent to said cathode, said cage assembly comprising;
  - i. an anode including at least one support rod,
  - ii. a plurality of closely spaced dynodes disposed between said cathode and said anode, each of said dynodes having a pair of dynode tabs formed in the end thereof,
  - iii. a pair of dynode support spacers having a plurality of electrode support apertures formed therethrough, said dynode tabs and said anode support rod extending through said electrode support apertures, and

a stem closing one end of said envelope, said stem including a plurality of relatively stiff cage assembly support leads extending therethrough, the improvement comprising;
said dynode support spacers having a plurality of stress isolation apertures therethrough,
a plurality of deformable stress isolation eyelets, each of said eyelets being disposed within a different one of said stress isolation apertures,
means for flexibly interconnecting a different one of each of said eyelets to one end of each of said dynodes and to one end of said anode support rod, and
means for attaching a different one of said cage assembly support leads to each of said eyelets.



4,355,259

HEATER FOR AN INDIRECTLY HEATED CATHODE

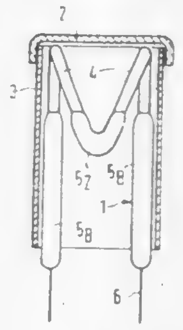
Eberhard Weiss, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 17, 1980, Ser. No. 187,865

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938248

Int. Cl.^{3} H01J *1/20*

U.S. Cl. 313—337 8 Claims



1. Heater for an indirectly heated cathode wherein a heating coil covered with an insulating coating is positioned within a cathode sleeve closed with a cap having an emitting coating thereon, one portion of the heating coil being adjacent to the cap, and the other being distant from the cap,
characterized in that that portion (4) of the heating coil (6) which is adjacent to the cap (2) has a lower heat radiating

capacity per unit length of the heating coil than the distant portion (5_Z, 5_B).

2. A heater for an indirectly heated cathode wherein a heating coil covered with an insulating coating is positioned within a cathode sleeve closed with a cap having an emitting coating thereon, one portion of the heating coil being adjacent to the cap, and the other being distant from the cap,

characterized in that in the portion (9) adjacent to the cap (2), the heating coil (1) has a smaller pitch than in the distant portion (8_Z, 8_B).

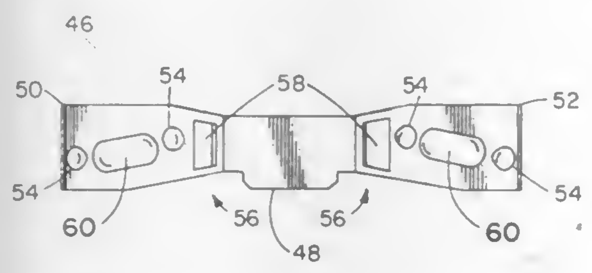
4,355,260
SHADOW MASK SUSPENSION MEANS FOR COLOR CATHODE RAY PICTURE TUBES

Lawrence W. Dougherty, Sleepy Hollow, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 14, 1980, Ser. No. 167,990

Int. Cl.^{3} H01J *29/07, 9/18*

U.S. Cl. 313—404 **7 Claims**



3. In a color cathode ray picture tube having a rectangular face panel and a substantially frameless relatively thin and torsionally flexible metallic shadow mask mounted in precise adjacency to said panel by corner-mounted suspension means, each suspension means including a relatively thick and inflexible metallic bracket having a planar central section and a pair of arms for the embracing of and attachment to an associated corner of said mask, said bracket further including at least two spaced-apart welding projections on each arm, said bracket being characterized by having a substantially rectangular perforated region in each arm adjacent to said central section which provides a reduction in cross-sectional area for increasing electrical resistance of said regions, such that when electrical current is routed through said bracket, the magnitude of said current and the reduction in cross-sectional area in said regions is effective to selectively resistively heat said regions to a plastic state, whereby said bracket can be conformed to the desired contour of said mask without spring-back and without deforming said mask.

4,355,261
DISCHARGE LAMP WITH INTEGRAL STARTER

Sheppard Cohen, Danvers, and Nikolaos Barakitis, Haverhill, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,875

Int. Cl.^{3} H01J *7/44*

U.S. Cl. 315—47 **11 Claims**

1. An arc discharge lamp comprising:

an hermetically sealed bulbous glass envelope having first and second external terminals;

an hermetically sealed arc tube disposed within said bulbous envelope, said arc tube enclosing a pair of spaced apart electrodes;

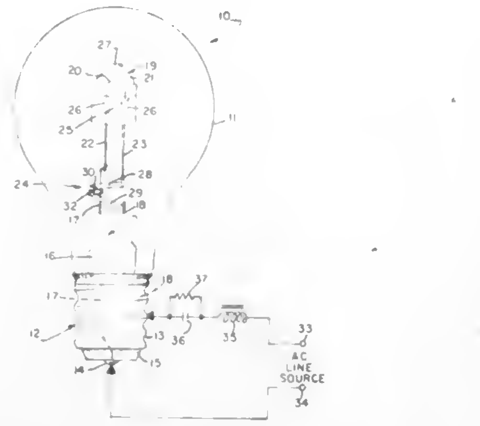
first substantially rigid conductor means within said bulbous envelope for electrically connecting one of said arc tube electrodes to said first external terminal;

second conductor means within said bulbous envelope electrically connected to the other of said arc tube electrodes;

third conductor means within said bulbous envelope spaced apart from said second conductor means and electrically connected to said second external terminal;

a glow starter means within said bulbous envelope comprising a first bimetal connected at one end to said second conductor means, a second bimetal connected at one end to said third conductor means, and a fixed first contact means disposed on said first conductor means, said bimetals being electrically connected together at the other end which makes a normally closed contact with said fixed contact in the quiescent state of said starter means; and

an inert gas within said bulbous envelope at subatmospheric pressure.



4,355,262
ELECTRIC ARC APPARATUS

Anthony K. F. Chan, 22a Brondesbury Rd., London NW6, England; John C. Hilliard, Apt. 1119 Metro Towers, 26450 Crocker, Mount Clemens, Mich. 48043; Alan R. Jones, 4 Fairholme Rd., Ashford, Middlesex, and Felix J. Weinberg, 59 Vicarage Rd., London SW14, both of England

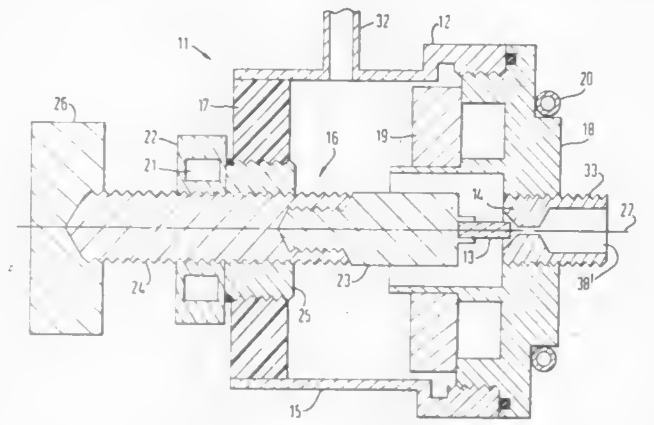
PCT No. PCT/GB78/00054, § 371 Date Aug. 13, 1979, § 102(e) Date Aug. 13, 1979, PCT Pub. No. WO79/00413, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 19, 1978, Ser. No. 154,394

Claims priority, application United Kingdom, Dec. 20, 1977, 52925/77; Sep. 28, 1978, 38578/78

Int. Cl.^{3} H01J *17/26*

U.S. Cl. 315—111.11 **57 Claims**



1. Apparatus for treating a flow of material by an electric arc comprising:

a cathode and an anode arranged for striking an arc across a gap between the cathode and the anode and arranged to provide a pathway for flow of material through the gap between the cathode and the anode,

means for producing movement of the arc around the anode-cathode gap, and

adjustment means for selectively increasing and decreasing the distance across the anode-cathode gap by rearward and forward axial movement of the cathode for fine control of the internal energy imparted to material passing through the anode-cathode gap,

the cathode being a substantially non-consumable cathode having an edge at an end thereof opposite the anode for providing a continuous closed path for the cathode root to travel around in operation,

the anode having an inwardly tapering frusto-conical surface arranged opposite the said edge on the cathode in a position such as to provide on the frusto-conical surface a continuous closed path for the anode spot to travel around in operation,

the distance across the anode-cathode gap being sufficiently small for the arc channel to be substantially straight between the cathode root and anode spot in normal operation during the said movement of the arc around the gap, and the angles of inclination of the surfaces forming the said edge on the cathode being such relative to each other and relative to the frusto-conical surface of the anode as to prevent the cathode root wandering from the edge along which it is intended to travel during the said movement of the arc around the anode-cathode gap,

the arrangement being such that the anode spot and cathode root travel around their respective paths in the same sense and in substantially the same time with the arc free from uncontrolled changes in arc length during travel of the anode spot and cathode root around the said respective paths.

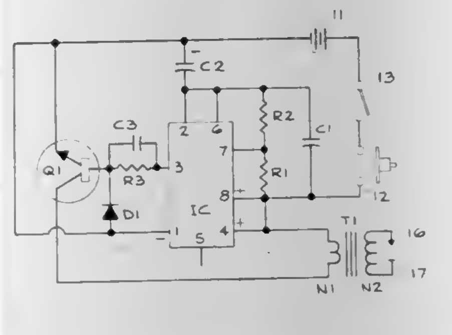
4,355,263
IGNITION CIRCUIT FOR EXPLOSIVE DEVICES AND THE LIKE

Harold Buhrlen, Flintridge, Calif., assignor to James E. Meagher, La Canada, Calif.

Filed May 15, 1981, Ser. No. 263,916

Int. Cl.^{3} H05B *37/02*

U.S. Cl. 315—209 T **5 Claims**



1. In an ignition circuit for an explosive or the like for producing an electric spark between spaced electrodes, the combination of:

a step-up transformer having a primary winding and a secondary winding on a ferrite core;

means for directly connecting said secondary winding to said spaced electrodes;

a transistor having a base and emitter and collector electrodes;

a battery having positive and negative terminals;

an on-off switch;

circuit means connecting said transistor electrodes, primary winding and switch in series with said battery;

an integrated circuit free running multi-vibrator having a first control voltage and reset input, a second trigger and threshold input, a circuit ground, a third discharge input, and an output, with said switch connecting said first input to one terminal of said battery and with said circuit ground connected to the other terminal of said battery;

a first capacitor connected between said other terminal of said battery and said second input;

first and second resistors connected in series between said first and second inputs, with said first and second resistors interconnected at said third input; and

a third resistor connected between said output and said transistor base.

4,355,264
STARTER CIRCUIT FOR DISCHARGE LAMP

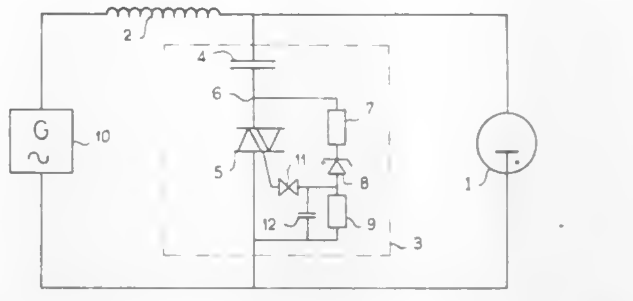
Gian F. Merli, Saint Gratien, France, assignor to Claude, S.A., Boulogne-Billancourt, France

Filed Feb. 9, 1981, Ser. No. 232,609

Claims priority, application France, Oct. 30, 1980, 80 23210

Int. Cl.^{3} H05B *41/16*

U.S. Cl. 315—289 **1 Claim**



1. A starter circuit for a high power discharge lamp connected to an AC source via an inductor, the starter circuit comprising, in combination:

a capacitor series connected with a triac across said lamp;

a branch including a first resistor connected in series with a zener diode and a second resistor between the junction point of said capacitor and triac and one of the outputs of the AC source; and,

a driving circuit for said triac including a diac connected between the triac and the junction point of said second resistor and zener diode.

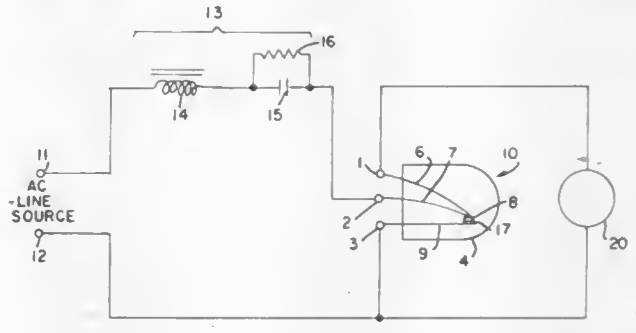
4,355,265
DISCHARGE LAMP STARTING AND OPERATING CIRCUIT

Sheppard Cohen, Danvers; Nikolaos Barakitis, Haverhill, and Alexander T. Zack, Danvers, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 15, 1980, Ser. No. 216,876

Int. Cl.^{3} H05B *37/00*

U.S. Cl. 315—290 **12 Claims**



1. A lamp starting and operating circuit comprising, in combination:

first and second input terminals for connection to a source of AC line voltage;

a glow starter device having a first terminal connected to a first bimetal, a second terminal connected to a second bimetal, and a third terminal connected to a rigid conductive member, said bimetals being electrically connected together at one end which makes a normally closed contact with said rigid member in the quiescent state of said device;

an inductive means and a capacitive means series connected in that order between said first AC input terminal and the second terminal of said starter device;

means connecting said second AC input terminal to the third terminal of said starter device; and

means for connecting the first and third terminals of said starter device across the terminals of a discharge lamp, whereby upon initial energization of said circuit, short circuit current through the second and third terminals of said starter device is operative to flex said second bimetal for separating said bimetals from said rigid member to provide an open circuit thereat and produce a high voltage pulse switching transient across the lamp, and upon starting of said lamp, the lamp current flow through the first and second terminals of said starter device is operative to maintain said bimetals separated from said rigid member.

4,355,266

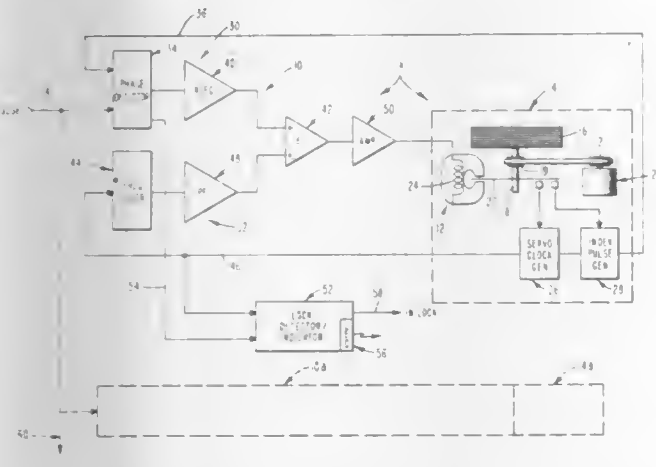
EDDY CURRENT SERVO SYSTEM FOR CONTROLLING THE ROTATION OF DISK PACKS

Willard C. Pearson, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jul. 31, 1980, Ser. No. 174,042

Int. Cl.³ H02P *7/74*

U.S. Cl. 318—85 2 Claims



1. A servo system for locking the rotation of at least two rotating apparatus together, the apparatus having an eddy current brake and associated eddy brake coil, comprising;

external reference clock generating means;

means operatively coupled to each rotating apparatus for rotating each apparatus at a speed slightly faster than the desired operating speed;

means coupled to each rotating apparatus for generating respective once-around index pulses indicative of an absolute rotational position of each rotating apparatus;

phase loop means including, a digital phase detector means for comparing the once-around index pulse with the external reference clock, and an integrator coupled to the phase detector means for generating a phase loop error signal indicative of any rotational positonal error between the apparatus in response to comparison of the once-around index pulses and the external reference clock;

means coupled to the rotating apparatus for generating a servo clock indicative of the speed of rotation thereof;

velocity loop means including a digital frequency to voltage converter and filter means for generating a velocity loop error signal proportional to the servo lock frequency and thus to the speed of rotation in response to the servo clock;

summing amplifier means coupled to the integrator and to the filter means to sum the error signals from the loops and to supply a continuous servo control current to each eddy brake coil to continuously brake the speed of the rotating apparatus to lock each of the absolute rotational positions to the external reference clock and thus to each other while maintaining the desired operating speed.

4,355,267

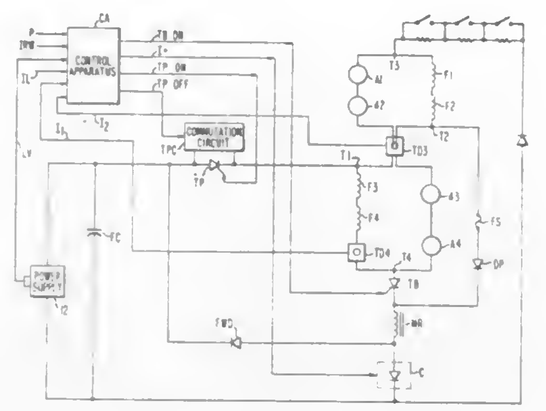
PROPULSION MOTOR CONTROL APPARATUS

James H. Franz, Jr., Murrysville, and Stanley W. Jones, McMurray, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1981, Ser. No. 258,509

Int. Cl.³ H02P *5/46*

U.S. Cl. 318—89 7 Claims



1. In control apparatus for a plurality of direct current motors operative with a voltage source and responsive to an effort request signal for determining one of a power mode of operation and a brake mode of operation for said motors, with each of said motors having an armature and a field, the combination of

circuit means having first and second terminals and a first circuit including the armature and field of a first motor and a second circuit including the armature and the field of a second motor connected between said first and second terminals, with said circuit means having third and fourth terminals and a third circuit including the first motor armature and the second motor field and a fourth circuit including the first motor field and the second motor armature connected between said third and fourth terminals,

first switch means connected between said voltage source and said first and second terminals to establish said power mode and provide power current in said first and second circuits to energize the first and second motor armatures in a first direction,

second switch means connected between said voltage source and said third and fourth terminals to establish the brake mode and provide brake current in said third and fourth circuits to energize the first and second motor armatures in a second direction,

first current sensing means connected with said circuit means to provide a first output signal in accordance with the power current in said first and second circuits and the brake current in said third and fourth circuits, and

second current sensing means connected with said circuit means to provide a second output signal in accordance with the power current in said second circuit and the brake current in said third circuit.

4,355,268

MOTOR CONTROL APPARATUS

Teruo Iwasawa, Mitaka, and Hitomi Tojiki, Hachioji, both of Japan, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,364

Claims priority, application Japan, Feb. 20, 1980, 55-20050

Int. Cl.³ H02P *5/16*

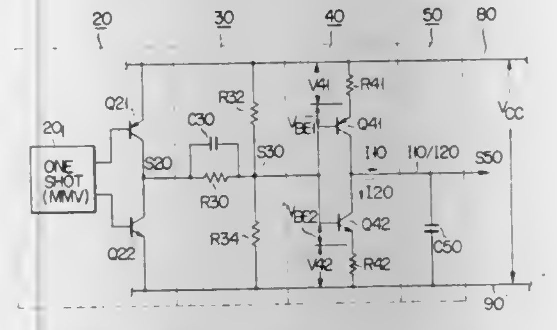
U.S. Cl. 318—314 8 Claims

1. A motor control apparatus comprising:

(a) first means for producing a first signal having a period corresponding to the rotational speed of a motor;

(b) second means for producing a second signal inverted to a first level in response to said first signal and subsequently inverted to a second level after the lapse of a predetermined period of time;

(c) third means for producing a third signal obtained through a phase advance type phase compensation for said second signal, said third means including a first compensation resistor provided between a point to which said second signal is applied and a point from which said third signal is derived, a capacitor connected in parallel with said first compensation resistor, and a second compensation resistor provided between said third signal supply end of said first compensation resistor and a fixed reference potential circuit for signal frequencies;



(d) fourth means for supplying and receiving a first current signal and a second current signal in accordance with the level of said third signal;

(e) fifth means for producing an output signal obtained through the integration of said first and second current signals; and

(f) sixth means for driving said motor in accordance with the level of said output signal.

4,355,269

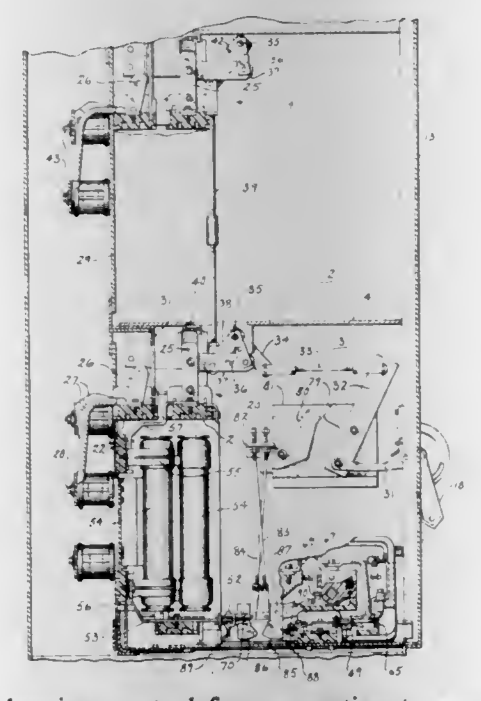
MOTOR HEATING CONTROL WITH INTERLOCKED DUAL ISOLATING SWITCHES

Lawrence A. Burton, Oconomowoc; David T. Rollay, Franklin, and Walter J. Lukitsch, New Berlin, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 23, 1981, Ser. No. 285,962

Int. Cl.³ H02P *7/00*

U.S. Cl. 318—436 6 Claims



1. A motor heating control for connection to a source of electrical current and to an electrical motor, the control comprising:

an enclosure having a door and an operating handle that is movable between a closed position and an open position to allow opening of the door for access to the interior of the enclosure;

first terminal means supported by the enclosure for connection to the power source;

second terminal means supported by the enclosure for connection to the electrical motor;

a plurality of current conducting paths formed within the enclosure, to conduct electrical current between the first terminal means and the second terminal means;

a motor heating contactor disposed within the enclosure, the motor heating contactor having a control coil and having a set of motor heating contacts electrically connected in the current conducting paths, the motor heating contacts being closed to conduct a heating current in response to the energizing of the control coil and the heating current being interrupted upon the opening of the motor heating contacts;

a first isolating switch electrically connected in the current conducting paths between the motor heating contactor and the first terminal means;

a second isolating switch connected into the current conducting paths between the motor heating contactor and the second terminal means;

a first interlock mechanism which connects both of the isolating switches to the enclosure operating handle and which is operable to open the two isolating switches when the handle is moved to its open position; and

a second interlock mechanism coupled to the motor heating contactor and cooperable with the first interlock mechanism in response to the closing of the motor heating contacts to prevent movement of the operating handle until the motor heating contacts are opened.

4,355,270

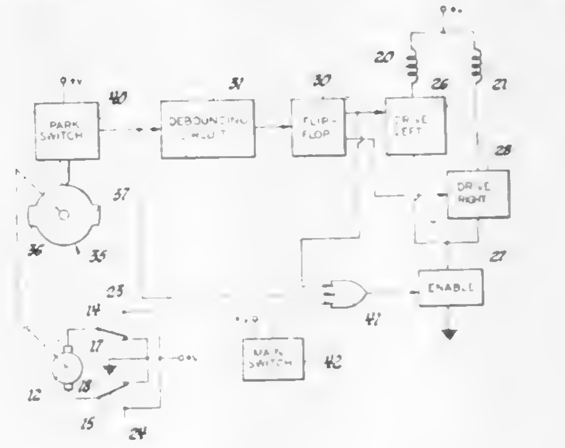
MOTOR REVERSING CIRCUIT FOR VEHICLE WINDSHIELD WIPER

Keith R. Cook, Xenia; John E. Pozenel, Miamisburg, and Donald E. Graham, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1981, Ser. No. 326,801

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 5 Claims



1. Windshield wiper drive apparatus for a motor vehicle comprising, in combination:

first means effective, when activated, to drive a windshield wiper across a motor vehicle window selectively toward or away from a predetermined park position;

cam means driven by said first means with the windshield wiper, said cam means having a first lobe defining said park position and a second lobe defining, with said first lobe, a wipe angle for said wiper;

a park switch adapted for actuation by said cam lobes;

second means responsive to each successive actuation of the park switch to reverse the drive direction of said first means, said second means being effective to generate a park signal when the drive direction is reversed away from the park position;

main switch means effective, while activated, to activate said first means; and

third means effective, when the main switch means is deactivated, to continue activation of the first means only until the next simultaneous concurrence of an actuation of the park switch and the existence of the park signal,

whereby the wiper is oscillated through the predetermined angle while the main switch means is activated and then automatically returned to the park position.

4,355,271

CONTROL APPARATUS

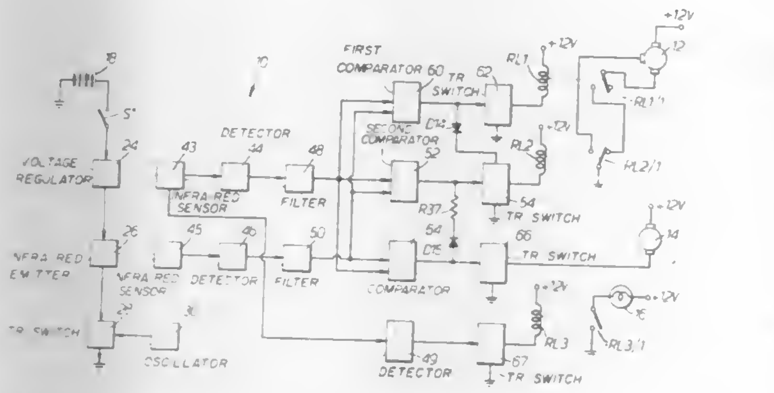
Raymond J. Noack, 10 Nicholls Pl., Higgins, Australian Capital Territory, Australia

Continuation-in-part of Ser. No. 78,624, Sep. 25, 1979, abandoned. This application Jan. 16, 1980, Ser. No. 112,510

Claims priority, application Australia, Sep. 25, 1978, PD6090; Oct. 3, 1978, PD6177

Int. Cl.^{3} G05B *5/00;* A47L *1/00*

U.S. Cl. 318—480 **28 Claims**



1. A control apparatus for a vehicle having a windscreen, windscreen wiper apparatus and windscreen washer apparatus; said control apparatus comprising:

(a) emitter means having an emitter device for generating energy and directing the generated energy away therefrom;

(b) first sensor means having a control sensor device for sensing energy directed thereto from said emitter means;

(c) first switch means for coupling to said windscreen wiper apparatus for effecting operation of said windscreen wiper apparatus pursuant to a change of stage of said first switch means;

(d) second switch means for coupling to windscreen washer apparatus for effecting operation of said windscreen washer apparatus pursuant to a change of state of said second switch means;

(e) support means supporting said emitter device and control sensor device for mounting these against the interior surface of said windscreen so that when energy is directed away from said emitter device portion of said energy may be reflected back to said control sensor device; said sensor means being responsive to the magnitude of said portion of said energy reflected back to said control sensor device to cause a first alteration of electrical condition of the sensor means when there is water on an outer surface of said windscreen opposite said interior surface and to cause a second alteration of said electrical condition when there is dust on said outer surface; and

(f) switch control means coupled to said sensor means and to said first and second switch means and being responsive to effect said change of state of said first switch means pursuant to occurrence of said first alteration of electrical condition of said sensor means for effecting said operation of said windscreen wiper apparatus, and said switch control means being responsive to effect said changes of state of both said first switch means and said second switch means pursuant to occurrence of said second alteration of said electrical condition of said sensor means, for effecting said operation of both said windscreen wiper apparatus and said windscreen washer apparatus.

4,355,272

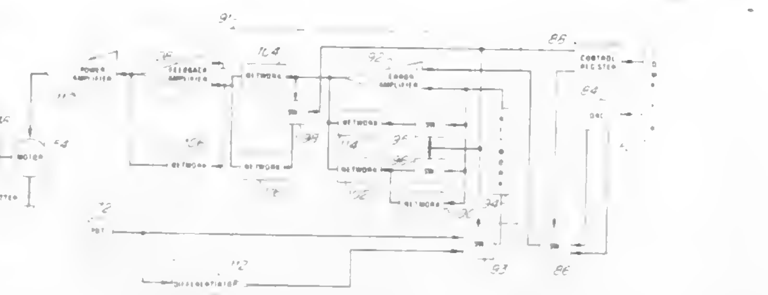
SHUTTER MECHANISM

Lawrence A. Wise, Sunnyvale, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Filed Oct. 9, 1979, Ser. No. 82,485

Int. Cl.^{3} G05B *5/01*

U.S. Cl. 318—561 **12 Claims**



1. A servo-control circuit for controlling both velocity and position of a utilization device, said circuit comprising:

drive means for moving the utilization device;

a reference source of velocity and position reference information indicative of the desired velocity and position of the utilization device;

a feedback source of velocity and position feedback information indicative of the actual velocity and position of the utilization device;

a feedback control loop coupled to the drive means and to the reference and feedback sources, said feedback control loop having a topology configurable for velocity control of the drive means to control the velocity of the utilization device in accordance with velocity reference and feedback information from the reference and feedback sources and differently configurable for position control of the drive means to control the position of the utilization device in accordance with position reference and feedback information from the reference and feedback sources; and

control means, coupled to the feedback control loop, for configuring the topology of the feedback control loop for velocity control of the drive means in response to a command signal and for differently configuring the topology of the feedback control loop for position control of the drive means in response to another command signal.

4,355,273

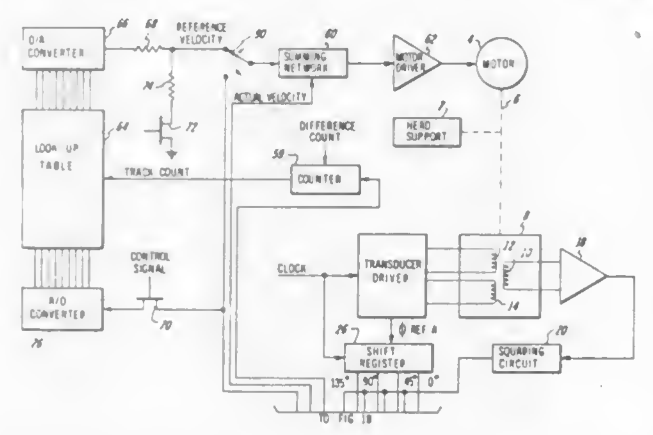
SERVO CAPTURE SYSTEM

Wilbur E. DuVall, Victorville, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 15, 1980, Ser. No. 187,264

Int. Cl.^{3} G05B *13/00*

U.S. Cl. 318—561 **3 Claims**



1. A closed loop servo system for moving a member past a plurality of positions to a desired position, comprising:

counting means for supplying a count signal indicative of the number of positions which said member must pass to reach said desired position;

first means for generating a first signal indicative of the position of said member;

a motor drive;

a storage device;

means for supplying said count signal to said storage device;

means for supplying a digital representation of said position signal to said storage device only when said count signeal is zero;

said storage means outputting a digital signal indicative of the reference velocity of said member in response to either input thereto:

a digital to analog converter coupled to the output of said storage means and outputting an analog signal indicative of the reference velocity of said member;

means for changing the scale of said converter when said digital representation of said position signal is being supplied to said storage device; and

means for supplying said position signal to said motor drive only after said storage device is receiving said digital representation of said position signal and said position signal is at a reference amplitude.

4,355,274

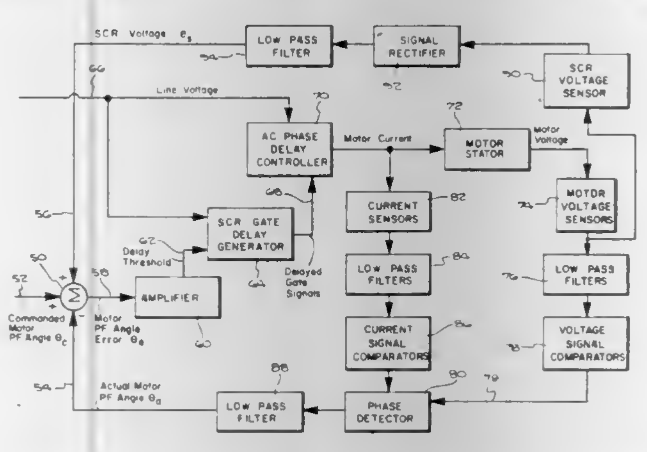
LOAD RESPONSIVE CONTROL SYSTEM FOR CONSTANT SPEED INDUCTION MOTOR

Frank J. Bourbeau, 5411 Toltec Dr., Santa Barbara, Calif. 93111

Filed Sep. 8, 1980, Ser. No. 184,969

Int. Cl.^{3} H02K *17/04;* H02P *5/40*

U.S. Cl. 318—812 **19 Claims**



1. An energy efficient control system for a constant speed induction motor, comprising:

means for sensing the fundamental component of the motor voltage directly from the motor,

means for sensing the motor current,

means for comparing the phase angles of the sensed fundamental motor voltage component and the motor current to produce a phase difference signal representative of the torque load on the motor, and

AC phase delay controller means responsive to said phase difference signal for adjusting the effective motor voltage to a level sufficient, but not substantially greater than necessary, to maintain substantially constant motor speed, thereby producing an energy efficient motor operation, and AC phase delay controller distorting an input sinusoidal line voltage to a non-sinusoidal motor voltage.

4,355,275

BATTERY CHARGER WITH CURRENT PULSE REGULATION

Russell E. Anglin, 6157 Cottle Rd., San Jose, Calif. 95123

Continuation-in-part of Ser. No. 85,279, Oct. 15, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,091

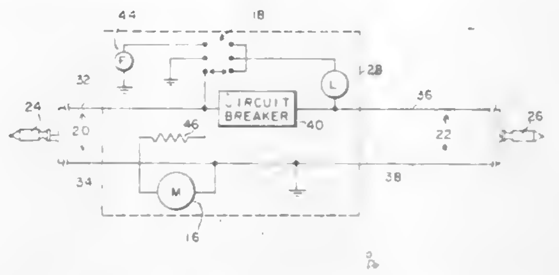
Int. Cl.^{3} H02J *7/00*

U.S. Cl. 320—21 **11 Claims**

1. A battery charger device with current pulse regulation comprising

first plug means engagable with the cigarette lighter socket of a first vehicle, said first plug means having a first negative contact and a first positive contact,

second plug means engagable with the cigarette lighter socket of a second vehicle, said second plug means having a second negative contact and a second positive contact, said first negative contact and said second negative contact defining a negative contact pair, and said first positive contact and said second positive contact defining a positive contact pair,



means coupling one of said negative contact pair and said positive contact pair together to create a first coupled pair, and

a self resetting, two terminal circuit breaker means coupling the other one of said negative contact pair and said positive contact pair together to create a second coupled pair, said circuit breaker means opening when the current through it exceeds a predetermined level and automatically closing thereafter.

4,355,276

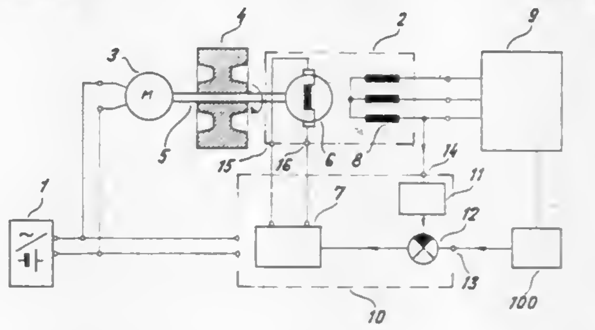
APPARATUS FOR SUPPLYING HIGH POWER ELECTRIC LOADS OPERATED IN A PULSE-LIKE MANNER, ESPECIALLY FOR X-RAY EQUIPMENT

Pal Vittay, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary

Filed Apr. 11, 1979, Ser. No. 29,352

Int. Cl.^{3} H02K *39/00;* H02P *9/12*

U.S. Cl. 322—4 **25 Claims**



1. An apparatus for supplying power for a high-power pulsatingly operated electric load comprising: a rotatably mounted shaft; a drive for rotating said shaft, said drive having substantially lower nominal power than operational power demand of a load; a flywheel coupled to and rotating with said shaft, said flywheel having a rotational energy corresponding to maximum energy demand of said load; a generator unit having field terminals and an output coupled to said load, said generator comprising an electric rotary machine, said rotary machine having a rotor connected to said shaft; a field power supply having an output connected to said field terminals of said generator unit and having a control input for determining the intensity of exciting current passed through said field terminals; and a control unit for adjusting operational parameters of said load, said control unit having unit output connected to said control input of said field power supply, said field power supply comprising a regulating input receiving a signal proportional to the electrical output of said generator unit to provide a field excitation for said rotary machine capable of maintaining said electrical output adjusted by said control unit.

4,355,277

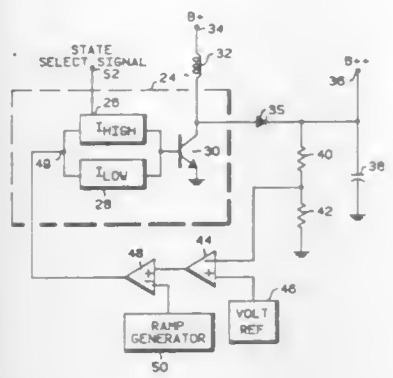
DUAL MODE DC/DC CONVERTER

Walter L. Davis, Plantation, and James E. Jacobson, Jr., Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Ft. Lauderdale, Fla.

Filed Oct. 1, 1980, Ser. No. 192,778

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 323—351 **20 Claims**



1. A dual state DC/DC converter for supplying power at two output current levels comprising:

power input means for receiving power at a first predetermined voltage;

current-controlled means coupled to the power input means for providing output power at a second predetermined voltage, the second predetermined voltage being greater than the first predetermined voltage, said output current level being directly related to the magnitude of control current;

first enabling means coupled to the current-controlled means for enabling sufficient control current for the lower of said two output current levels;

second enabling means coupled to the current-controlled means for enabling an amount of control current for the higher of said two output current levels; and

input circuit means for receiving an input signal indicative of the current level required of the current-controlled means, said input circuit means being coupled to the enabling means for selectively actuating either enabling means in response to a predetermined level of the input signal.

4,355,278

METHOD FOR TESTING AND ANALYZING SURFACE ACOUSTIC WAVE INTERDIGITAL TRANSDUCERS

Daniel J. Burns, Rome, N.Y.; James C. Sethares, Burlington, Mass., and Gerald G. Sweet, Rome, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,793

Int. Cl.^{3} G01R *31/04*

U.S. Cl. 324—158 R **6 Claims**

1. The method of testing and analyzing the electrical characteristics of interdigital transducers on surface acoustic wave substrates comprising the steps of

applying a surface treatment to the transducer bearing surface of a surface acoustic wave substrate for the purpose of producing a specific molecular alignment in liquid crystals applied to the surface,

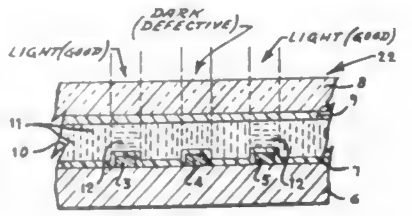
fabricating a glass cover plate that is substantially co-exten-

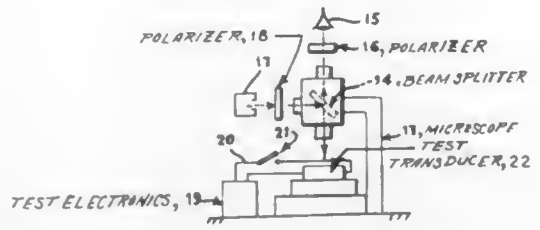
positioning the substrate-cover plate assembly for viewing under a microscope,

directing, from a light source, a light beam through said microscope and through said cover plate,

polarizing the light from said light source,

polarizing the light received through said microscope,





applying an electrical potential to the transducers,

viewing through said microscope the electro-optic effects produced in said liquid crystal by the electric field effects of said applied electrical potential; and

analyzing said electro-optic effects.

4,355,279

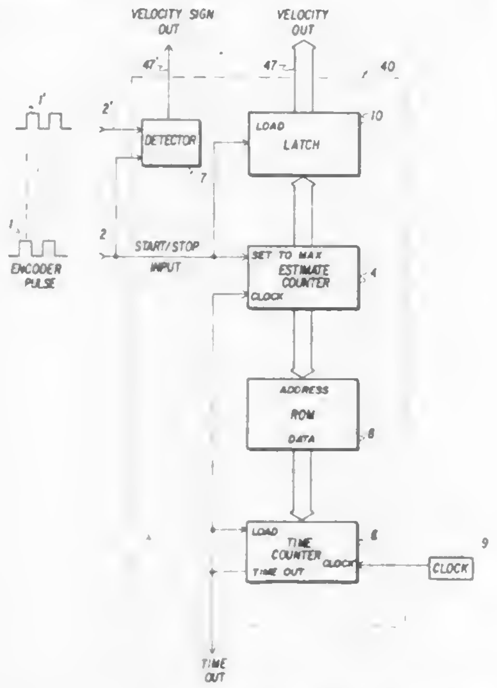
MEANS AND METHOD FOR VELOCITY DECODING

Robert G. Younge, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 29, 1980, Ser. No. 221,097

Int. Cl.^{3} G01P *3/56*

U.S. Cl. 324—161 **4 Claims**



1. A velocity decoding technique comprising the steps of:

a. applying periodic transitions having a period inversely

ity equals said actual velocity by having said measured period equal to said converted period; and

h. coupling said estimated velocity to an output when said estimated velocity equals said actual velocity.

4,355,280

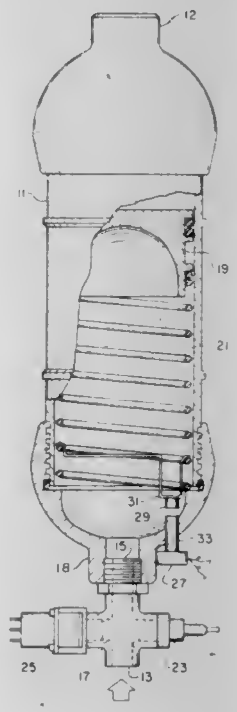
ACCUMULATOR CONDITION INDICATOR WITH SPRING BIASING TO INDICATE LINEAR DISPLACEMENT OF A PISTON

John J. Duzich, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 13, 1980, Ser. No. 149,309

Int. Cl.^{3} G01B *7/14;* **G01N** *27/72;* **G01R** *33/00*

U.S. Cl. 324—207 **12 Claims**



1. An accumulator condition indicator comprising:

an accumulator housing connected at a first end to a source of pressurized fluid;

a movable member disposed within said housing as to separate said pressurized fluid from a biasing pressurant, said member being adapted to traverse within said housing in response to the applied pressurized fluid;

spring biasing means interposed within said housing in the region of said pressurant and adapted to be compressed by the motion of said movable member so as to provide a motion that is representative on a smaller scale of the motion of the movable member;

magnetic field producing means attached to said spring means to traverse through a desired range within said

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4,355,281

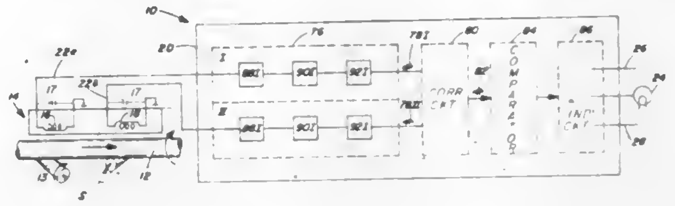
EDDY CURRENT SURFACE FLAW DETECTION EMPLOYING SIGNAL CORRELATION

James M. Toth, Lyndhurst, and Tyler W. Judd, Chardon, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 915,547, Jun. 14, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,387

Int. Cl.^{3} G01N *27/72;* **G01R** *33/12;* **G01N** *27/82*

U.S. Cl. 324—232 **6 Claims**



2. In an eddy current flaw inspection system for detecting workpiece surface flaws and the like including circuitry for inducing eddy current flow in a workpiece, the improvement comprising:

(a) a pair of substantially coplanar detection coils spaced along the workpiece for detecting flaw indicative variations in eddy current flow in a workpiece and adapted to produce flaw indicative output signals; and

(b) a coincidence circuit connected to the detection coils for rejecting a flaw indicative signal from one coil unless it is coincident with a signal from the other coil;

(c) the eddy current producing circuits characterized by different but similar resonant energization frequencies differing one from another by less than a ratio of about 1.5:1 to reduce inductive cross talk between detection coils.

4,355,282

NUCLEAR MAGNETIC RESONANCE SYSTEMS

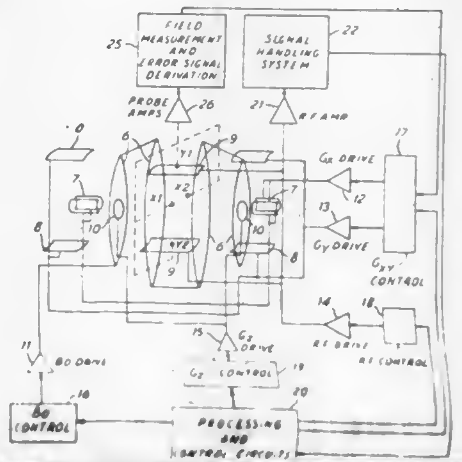
Ian R. Young, Sunbury-on-Thames, and Michael Burl, Iver, both of England, assignors to Picker International Limited, Wembley, England

Filed Jul. 29, 1980, Ser. No. 173,434

Claims priority, application United Kingdom, Aug. 3, 1979, 7927119

Int. Cl.^{3} G01N *27/00*

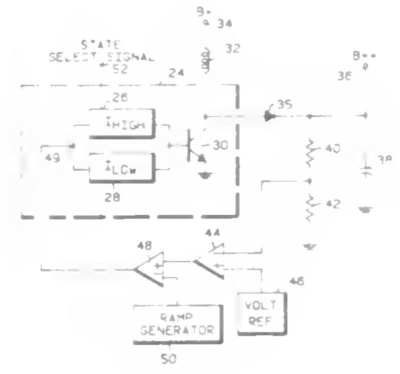
U.S. Cl. 324—309 **19 Claims**



4,355,277
DUAL MODE DC/DC CONVERTER

Walter L. Davis, Plantation, and James E. Jacobson, Jr., Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Ft. Lauderdale, Fla.

Filed Oct. 1, 1980, Ser. No. 192,778
Int. Cl.^{3} H02M *3/335*
U.S. Cl. 323—351 20 Claims



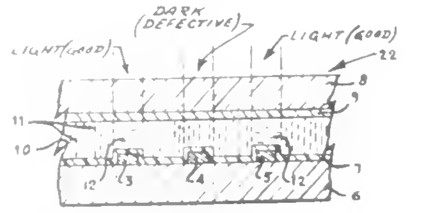
1. A dual state DC/DC converter for supplying power at two output current levels comprising:
- power input means for receiving power at a first predetermined voltage;
- current-controlled means coupled to the power input means for providing output power at a second predetermined voltage, the second predetermined voltage being greater than the first predetermined voltage, said output current level being directly related to the magnitude of control current;
- first enabling means coupled to the current-controlled means for enabling sufficient control current for the lower of said two output current levels;
- second enabling means coupled to the current-controlled means for enabling an amount of control current for the higher of said two output current levels; and
- input circuit means for receiving an input signal indicative of the current level required of the current-controlled means, said input circuit means being coupled to the enabling means for selectively actuating either enabling means in response to a predetermined level of the input signal.

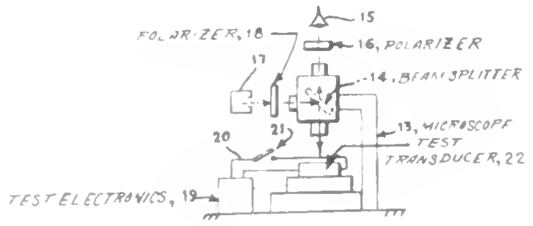
4,355,278
METHOD FOR TESTING AND ANALYZING SURFACE ACOUSTIC WAVE INTERDIGITAL TRANSDUCERS

Daniel J. Burns, Rome, N.Y.; James C. Sethares, Burlington, Mass., and Gerald G. Sweet, Rome, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,793
Int. Cl.^{3} G01R *31/04*
U.S. Cl. 324—158 R 6 Claims

1. The method of testing and analyzing the electrical characteristics of interdigital transducers on surface acoustic wave substrates comprising the steps of
- applying a surface treatment to the transducer bearing surface of a surface acoustic wave substrate for the purpose of producing a specific molecular alignment in liquid crystals applied to the surface,
- fabricating a glass cover plate that is substantially co-extensive with the transducer bearing surface of said substrate,
- applying a gold coat to one surface of said glass cover plate for the purpose of producing a specific molecular alignment in liquid crystals applied to the surface,
- placing said glass cover plate on the treated surface of said substrate, the gold coated glass cover plate surface being adjacent to said treated substrate surface,
- inserting liquid crystal material into the area between said glass cover plate and the substrate surface,
- positioning the substrate-cover plate assembly for viewing under a microscope,
- directing, from a light source, a light beam through said microscope and through said cover plate,
- polarizing the light from said light source,
- polarizing the light received through said microscope,



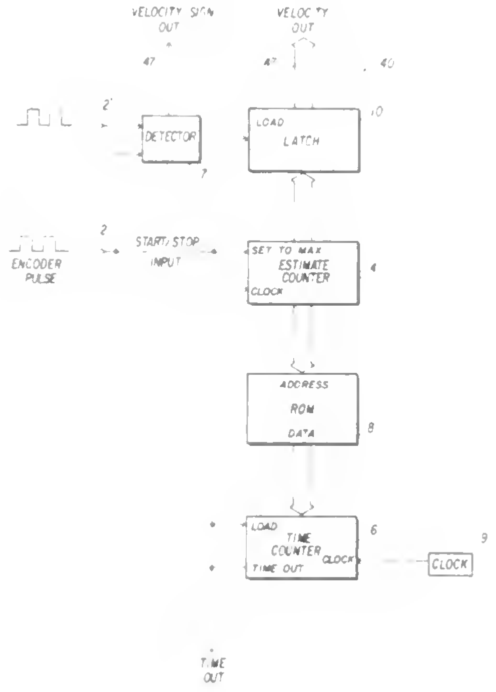


- applying an electrical potential to the transducers,
- viewing through said microscope the electro-optic effects produced in said liquid crystal by the electric field effects of said applied electrical potential; and
- analyzing said electro-optic effects.

4,355,279
MEANS AND METHOD FOR VELOCITY DECODING

Robert G. Younge, Menlo Park, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 29, 1980, Ser. No. 221,097
Int. Cl.^{3} G01P *3/56*
U.S. Cl. 324—161 4 Claims

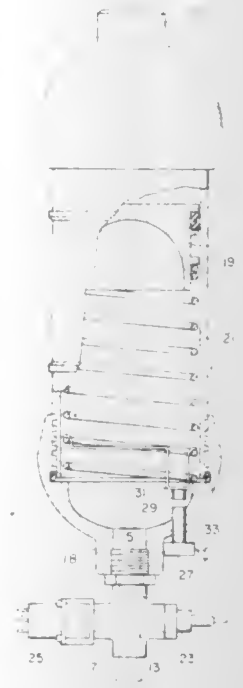


1. A velocity decoding technique comprising the steps of:
- a. applying periodic transitions having a period inversely proportional to a velocity;
- b. estimating said velocity as an estimated velocity;
- c. converting said estimated velocity to an equivalent period;
- d. measuring the actual period between said transitions;
- e. comparing said measured period with said equivalent period;
- f. manipulating said estimated velocity to a next estimated velocity in response to an unequal comparison in step e;
- g. repeating steps c through f until said next estimated velocity equals said actual velocity by having said measured period equal to said converted period; and
- h. coupling said estimated velocity to an output when said estimated velocity equals said actual velocity.

4,355,280
ACCUMULATOR CONDITION INDICATOR WITH SPRING BIASING TO INDICATE LINEAR DISPLACEMENT OF A PISTON

John J. Duzich, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 13, 1980, Ser. No. 149,309
Int. Cl.^{3} G01B *7/14;* G01N *27/72;* G01R *33/00*
U.S. Cl. 324—207 12 Claims



1. An accumulator condition indicator comprising:
- an accumulator housing connected at a first end to a source of pressurized fluid;
- a movable member disposed within said housing as to separate said pressurized fluid from a biasing pressurant, said member being adapted to traverse within said housing in response to the applied pressurized fluid;
- spring biasing means interposed within said housing in the region of said pressurant and adapted to be compressed by the motion of said movable member so as to provide a motion that is representative on a smaller scale of the motion of the movable member;
- magnetic field producing means attached to said spring means to traverse through a desired range within said housing in response to the movement of said movable member;
- magnetic sensor means attached to said housing and isolated from said fluid, said sensor means being adapted to provide an electrical signal responsive to the proximity of said field producing means, and
- magnetic transfer pole means positioned between said sensor means and said field producing means as to insure magnetic communication between said field and said sensor means.

4,355,281
EDDY CURRENT SURFACE FLAW DETECTION EMPLOYING SIGNAL CORRELATION

James M. Toth, Lyndhurst, and Tyler W. Judd, Chardon, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

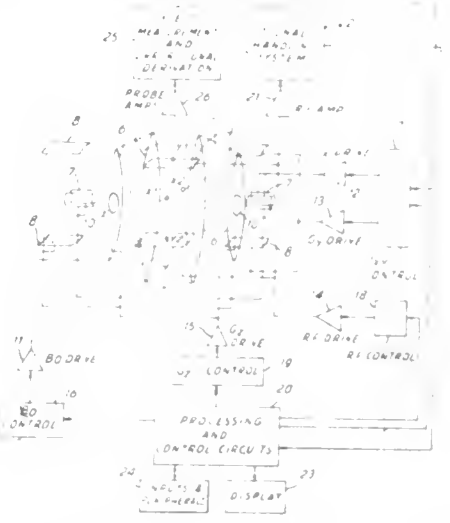
Continuation-in-part of Ser. No. 915,547, Jun. 14, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 66,387
Int. Cl.^{3} G01N *27/72;* G01R *33/12;* G01N *27/82*
U.S. Cl. 324—232 6 Claims

2. In an eddy current flaw inspection system for detecting workpiece surface flaws and the like including circuitry for inducing eddy current flow in a workpiece, the improvement comprising:
- (a) a pair of substantially coplanar detection coils spaced along the workpiece for detecting flaw indicative variations in eddy current flow in a workpiece and adapted to produce flaw indicative output signals; and
- (b) a coincidence circuit connected to the detection coils for rejecting a flaw indicative signal from one coil unless it is coincident with a signal from the other coil;
- (c) the eddy current producing circuits characterized by different but similar resonant energization frequencies differing one from another by less than a ratio of about 1.5:1 to reduce inductive cross talk between detection coils.

4,355,282
NUCLEAR MAGNETIC RESONANCE SYSTEMS

Ian R. Young, Sunbury-on-Thames, and Michael Burl, Iver, both of England, assignors to Picker International Limited, Wembley, England

Filed Jul. 29, 1980, Ser. No. 173,434
Claims priority, application United Kingdom, Aug. 3, 1979, 7927119
Int. Cl.^{3} G01N *27/00*
U.S. Cl. 324—309 19 Claims



1. A method of examining a slice of a body by nuclear magnetic resonance, the method including the steps of: applying magnetic fields to cause resonance preferentially in said slice; applying a first pulsed magnetic field having a gradient across the slice in a first direction to produce phase dispersion in said resonance in said direction in the slice, the direction of the field being periodically reversed; applying a second repetitively

pulsed magnetic field having a gradient across the slice in a second direction orthogonal to the first to produce a further phase dispersion in the second direction, the direction of said second field being the same during each pulse, the timing and magnitude of these field gradients being such that the slice is effectively divided into a matrix of elements, the nuclei within each of a plurality of parallel strips orthogonal to the direction of the gradient of the first pulsed magnetic field resonating within a unique frequency band and nuclei at different positions along each strip being distinguishable by phase dispersion caused by the second pulsed magnetic field; sensing free induction decay and rephasing signals emitted by the nuclei as the field gradient pulses are applied; reversing the rephasing signals to form in effect further free induction decay signals; arranging the first and further free induction decay signals in a two dimensional array to give free induction decays in the two orthogonal directions; and subjecting the signals of the array to a two dimensional Fourier Transform process.

4,355,283

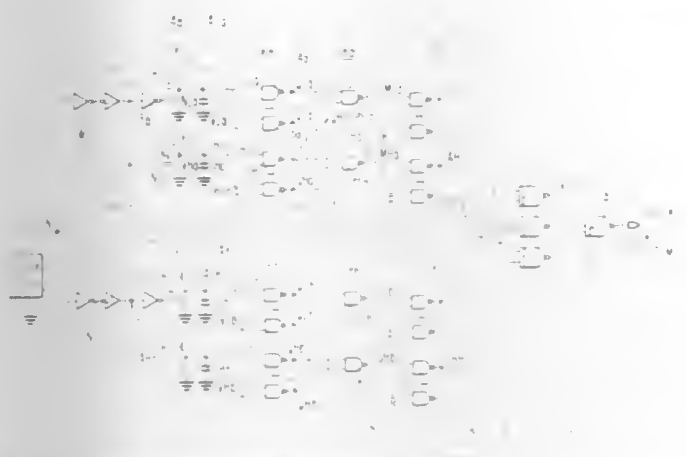
CIRCUIT AND METHOD FOR DUTY CYCLE CONTROL

Russell G. Ott, Cranford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,349

Int. Cl.^{3} H03K *5/04*

U.S. Cl. 328—61 **10 Claims**



1. The combination comprising:

an input terminal adapted to receive a repetitive input signal (C) having relatively positive portion of duration T_{HC}, and a relatively negative portion of duration T_{LC}, where T_{HC} plus T_{LC} equal a clock period T, and where the ratio of T_{HC} to T is unknown;

a pulse stretching circuit means coupled to said input terminal and responsive to said input signal for producing a first signal (A) having a relatively positive portion of duration T_{HA} longer than T_{HC} and a relatively negative portion of duration T_{LA}, where $T_{HA}+T_{LA}$ is equal to T;

a pulse narrowing circuit means coupled to said input terminal and responsive to said input signal for producing a second signal (B) having a relatively positive portion of duration T_{HB}, which is less than T_{HC}, and a relatively negative portion of duration T_{LB}, where $T_{HB}+T_{LB}$ is equal to T;

first comparator means coupled to said pulse stretching means and responsive to said first signal (A) for comparing the duration of T_{HA} to ZT_{LA} and producing a first control signal if T_{HA} is greater than ZT_{LA} and a second control signal if T_{HA} is less than ZT_{LA}; where $Z=K/(1-K)$ and K is a constant greater than zero and less than one;

second comparator means coupled to said pulse narrowing circuit means and responsive to said second signal (B) for comparing the duration of T_{HB} to ZT_{LB} and producing a third control signal if T_{HB} is greater than ZT_{LB} and a fourth control signal if T_{HB} is less than ZT_{LB};

an output terminal;

output signal selection means having an output connected to said output terminal;

means coupling said input terminal and said pulse stretching and pulse narrowing means to said output selection means for the application to the latter of said first (A), second (B), and input (C) signals; and

means for applying said first, second, third, and fourth control signals to said output signal selection means for producing at said output terminal a signal corresponding either to:

(a) the first (A) signal when T_{HA} is less than ZT_{LA};

(b) the input (C) signal when T_{HA} is greater than ZT_{LA} and T_{HB} is less than ZT_{LB}; or

(c) the second (B) signal when T_{HB} is greater than ZT_{LB}.

4,355,284

PHASE CORRECTION SYSTEM

William F. Acker, Seminole, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 100,781, Dec. 5, 1979, abandoned, which is a division of Ser. No. 829,705, Sep. 1, 1977, Pat. No. 4,207,523. This application Nov. 24, 1980, Ser. No. 209,616

Int. Cl.^{3} H03K *6/00;* **G01R** *25/04, 25/08*

U.S. Cl. 328—155 **9 Claims**

1. A phase correction system for adjusting a phase relationship of periodic data samples, each occurring in a data sample period, which constitute a data signal formed as a sequence of said data samples, said phase correction system adjusting in such a manner that certain of said data samples those intended to have a value substantially equal to a reference signal level at a certain point in a corresponding said data sample period-are adjusted toward occurring at said point in said corresponding data sample period, said phase correction system comprising:

an intended reference level crossing and crossing direction detector means, adapted to receive said data signal, and which has both a crossing detector output and a crossing direction detector output, said intended reference level crossing and crossing direction detector means being capable of determining as a countable data sample, those of said data samples which correspond to and which separate members of acceptable pairs of other said data samples, a said pair of said data samples being acceptable if (i) one said member thereof has a value that substantially exceeds that value of said separating data sample corresponding thereto, and if (ii) said member thereof remaining has a value that is substantially less than that value of said separating data sample corresponding thereto, said intended reference level crossing and crossing direction detector means being capable of providing (i) as a crossing detector output signal, an indication, at said crossing detector output, as to which of said data samples are said countable data samples, and being capable of providing (ii) as a crossing direction detector output signal, an indication, at said crossing direction detector output, as to which of said countable data samples, on a selected side thereof, has a said member of said acceptable data sample pair corresponding thereto either exceeding or, selectively, being less than that value held by said corresponding countable data sample;

a comparator means, adapted to receive said data signal, and which has a comparison output, said comparator means being capable of providing as a comparator output signal an indication, at said comparator output, as to which of said countable data samples have values which occur on a selected side of said reference signal level;

a counter means, connected to each of said crossing detector output, said crossing direction detector output, and to said comparator output, and which has a counter means output, said counter means being capable of keeping a count total therein and being capable of being enabled to alter said count total by said crossing detector output signal and said counter means being capable of being directed whether to increase or decrease said count total by both said crossing direction detector output signal and said comparator output signal, said counter means being capable of providing at said counter means output, as a counter output signal, a signal having a value which indicates whatever value said count total has reached in said counter means; and

a periodic timing means which has a periodic timing signal of a timing period having a substantially fixed relation to said data sample period, and which is connected to said counter means output, said periodic timing means being capable of varying in phase said data signal with respect to said timing period in response to said counter output signal.

4,355,285

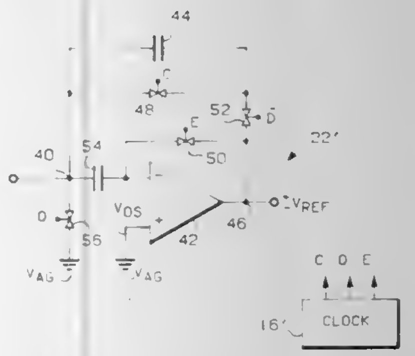
AUTO-ZEROING OPERATIONAL AMPLIFIER CIRCUIT

Stephen H. Kelley; Richard W. Ulmer, and Roger A. Whatley, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1981, Ser. No. 231,079

Int. Cl.^{3} H03F *1/02*

U.S. Cl. 330—9 **5 Claims**



1. In combination with an operational amplifier having a positive input terminal coupled to a reference voltage, a negative input terminal, and an output terminal, a circuit for compensating for the offset voltage of the operational amplifier, the circuit comprising:

offset capacitance means having first and second terminals, the first terminal being coupled to the negative input of the operational amplifier;

offset switching means for coupling the first terminal of the offset capacitance means to the output terminal of the operational amplifier, and coupling the second terminal of the offset capacitance means to the reference voltage during an offset compensation period; and

feedback capacitance means having first and second terminals, the first terminal being coupled to the second terminal of the offset capacitance means and, the second terminal being coupled to the output terminal of said operational amplifier.

4,355,286

RESONANT CIRCUIT ARRANGEMENT

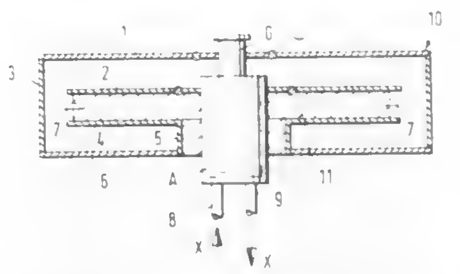
Karl-Heinz Knobbe, Ellerbek, and Hellmut Nöldge, Hamburg, both of Fed. Rep. of Germany, assignors to Herfurth GmbH, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,051

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947519

Int. Cl.^{3} H03F *3/60;* **H03B** *5/18*

U.S. Cl. 330—56 **10 Claims**



1. A resonant circuit arrangement for anode resonant circuits in output amplifiers of transmitters of high frequency and high radio-frequency power output comprising:

(a) a transmitter tube having a cylindrical grid electrode and coaxial therewith a hollow cylindrical anode member encircling the grid electrode to form therewith a coaxial line portion open at one end thereof;

(b) a first circular metal disk surrounding the grid electrode and in electrically conducting contact therewith, and extending perpendicularly with respect to the axis of the transmitter tube beyond the hollow cylindrical anode member;

(c) a second circular metal disk having a smaller external diameter than the first disk and arranged parallel thereto, and connected to the outer surface of the anode member in electrically conducting contact therewith;

(d) a hollow cylindrical metal covering connected to the peripheral edge of the first circular disk and extending beyond the second circular disk;

(e) a third circular metal disk connected to the cylindrical metal covering, on the side of the second metal disk opposite the first metal disk and parallel thereto, and having an internal diameter greater than the diameter of the hollow cylindrical anode member;

(f) a fourth circular metal disk between the second and third circular metal disks and parallel thereto, and having an internal diameter greater than the diameter of the hollow cylindrical anode member and an external diameter smaller than the external diameter of the third circular metal disk;

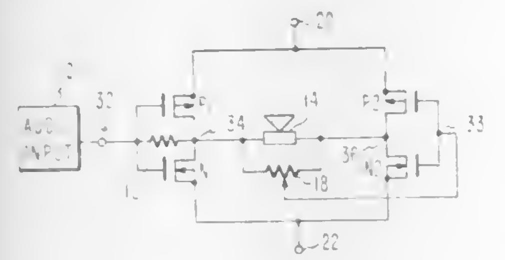
(g) a cylindrical metal wall interconnecting the third and fourth circular metal disks at the internal edges thereof;

(h) a plurality of isolating capacitors coupled between the outer edge of the second circular metal disk and the outer edge of the third circular metal disk and electrically connected through the fourth circular metal disk, the cylindrical metal wall, the third circular metal disk, the hollow cylindrical metal covering and the first circular metal disk to the cylindrical grid electrode;

whereby a disk-like, rotationally symmetrical line portion is formed between the first and second circular metal disks, terminating in a transition zone formed between the hollow cylindrical metal covering and the external edge area of the second circular metal disk, and a second disk-like rotationally symmetrical line portion is formed extending from the transition zone inwardly toward the center of the resonant circuit arrangement with an electrical length of a quarter-wavelength at the operating frequency of the resonant circuit arrangement, so that a current minimum is formed in the transition area between the first and second line portions in the case of the E_{010} wave mode occurring in said line portions, and in the area between the outer surface of the hollow cylindrical anode member, the second circular metal disk, the isolating capacitors, the fourth circular disk, and the cylindrical metal wall a substantially field-free gap is formed accessible through the area between the internal edges of the third and fourth circular metal disks and the outer surface of the hollow cylindrical anode member.

4,355,287
BRIDGE AMPLIFIERS EMPLOYING COMPLEMENTARY FIELD-EFFECT TRANSISTORS

Merle V. Hoover, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sep. 30, 1980, Ser. No. 192,363
Int. Cl.^{3} H03F *3/26*
U.S. Cl. 330—264 7 Claims



1. A bridge amplifier for driving a load device having first and second terminals, said bridge amplifier comprising:

first amplifier means connected to an input terminal for providing a signal at the first terminal of said load device;

second amplifier means for providing a signal at the second terminal of said load device, said second amplifier means comprising first and second field-effect transistors of opposite conductivity type, each having respective source, drain, and gate electrodes, the respective source electrodes of said first and second field-effect transistors being arranged for receiving an operating potential therebetween, the drain electrodes of said first and second field-effect transistors being connected to said second terminal of said load device, and the gate electrodes of said first and second field-effect transistors being interconnected without substantial intervening impedance; and

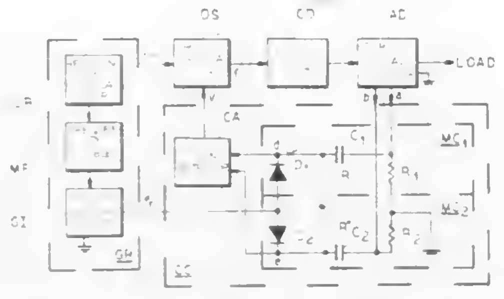
coupling means for direct coupling without intervening amplification the output signal of said first amplifier means to the interconnection of the gate electrodes of said first and second field-effect transistors;

wherein said load device exhibits an impedance, said second amplifier means exhibits a transconductance determined by respective transconductances of said first and second field-effect transistors, and said coupling means exhibits an attenuation factor:

said impedance, said transconductance and said attenuation factor being chosen so that their product is substantially equal to minus unity.

4,355,288
FREQUENCY-STABILIZING SYSTEM FOR GENERATOR OF MICROWAVE OSCILLATIONS

Ezio Cottatellucci, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.P.A., Milan, Italy
Continuation-in-part of Ser. No. 16,530, Mar. 1, 1979, abandoned. This application Apr. 22, 1980, Ser. No. 142,681
Claims priority, application Italy, Mar. 7, 1978, 20925 A/78
Int. Cl.^{3} H03L *7/08*
U.S. Cl. 331—12 7 Claims



1. A system for producing a microwave oscillation of stabilized frequency, comprising:

a reference generator emitting a sequence of timing pulses of constant cadence f_r;

a voltage-controlled oscillator generating the microwave oscillation to be stabilized, said oscillator having an operating frequency f_s deviating in a free-running state by less than $f_r/2$ from a nominal frequency equal to $K \cdot f_r$ where K is an integer greater than 1;

phase-comparison means with two circuit branches connected to said oscillator for deriving a pair of instantaneous amplitude samples of predetermined phase relationship from said microwave oscillation in nonconsecutive cycles thereof in the presence of each of said timing pulses and for extracting two low-frequency error signals from changes in the magnitudes of successive pairs of amplitude samples thus derived; and

deviation-detecting means including a differential amplifier with inputs connected to said circuit branches for converting differences between said error signals into a control voltage fed to said oscillator for modifying said operating frequency f_s.

4,355,289
PHASE SHIFT AND AMPLITUDE MODULATOR

James B. Beyer, Madison, Wis., and James B. Summers, Spokane, Wash., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Jul. 14, 1980, Ser. No. 168,502
Int. Cl.^{3} H03C *5/00;* H04L *27/20*
U.S. Cl. 332—17 21 Claims

1. A bi-phase modulator having independent phase shift and amplitude control, comprising:

(a) means for splitting a carrier frequency signal into two intermediate signals which are substantially equal in amplitude and 180° out of phase with each other;

(b) a pair of directional couplers each receiving one of the intermediate signals, each directional coupler providing an isolated output which is proportional to the amplitude of the signal received by the coupler;

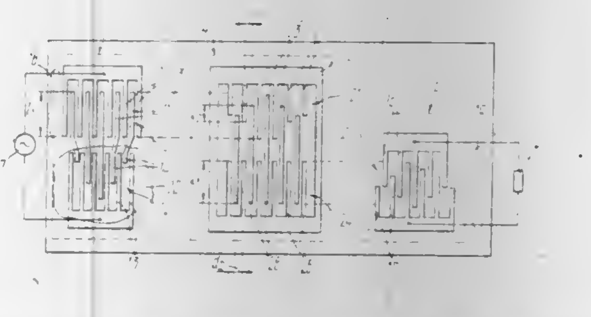
(c) a pair of diodes each connected to receive the isolated output signal from one of the directional couplers, the outputs of the diodes being connected together at a summing junction;

(d) biasing circuit means for providing a current to each of the directional couplers which is added to the isolated output signal from each coupler to allow the diodes to be biased to a null condition level at which the carrier frequency signals passed through the diodes substantially cancel each other at the summing junction; and

(e) bias return circuit means connected to the summing junction for providing a return for the bias current from the biasing circuit means while passing a signal at the junction which is substantially at the frequency of the carrier signal, whereby the output signal at the summing junction will be substantially zero at the null condition and whereby the output at the summing junction will be a carrier frequency signal at either a 0° reference phase or a 180° lagging phase if the bias current to one or the other of the diodes is reduced below the null condition current.

4,355,290
ACOUSTIC SURFACE WAVE FILTER

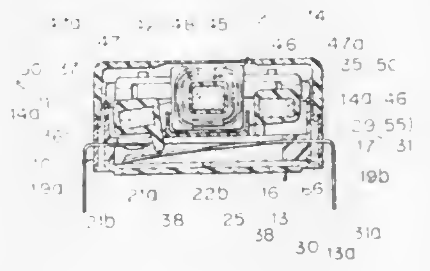
Alexandr S. Bagdasarian, ulitsa Popova,10,kv.12, Fryazino Moskovskoi oblasti; Jury V. Gulyaev, ulitsa Baikalskaya,23,kv.29, Moscow, and Anatoly M. Kmita, prospekt Mira,22,kv.231, Fryazino Moskovskoi oblasti; all of U.S.S.R.
PCT No. PCT/SU80/00037, § 371 Date Nov. 21, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO80/02090, PCT Pub. Date Oct. 2, 1980
PCT Filed Feb. 29, 1980, Ser. No. 216,995
Claims priority, application U.S.S.R., Mar. 21, 1979, 2733605
Int. Cl.^{3} H03H *9/64, 9/25*
U.S. Cl. 333—195 1 Claim



1. An acoustic surface filter comprising a piezoelectric substrate carrying an input interdigitated converter with electrodes having overlapping portions producing acoustic surface waves for propagation in a first acoustic channel; a coupling element transmitting acoustic surface waves from the first acoustic channel to a second acoustic channel and simultaneously forming the amplitude-frequency characteristic of the filter; and an output interdigitated converter with electrodes having overlapping portions receiving acoustic surface waves propagating in the second acoustic channel; wherein the coupling element contains two rows of electrodes whereof each is arranged in a respective acoustic channel and has two groups of electrodes parallel with the electrodes of the respective converter and arrranged so that the electrodes of one group are interposed between the electrodes of the other group, both forming overlapping portions of the electrodes of both groups of a variable length in at least one row, said length being determined by a prescribed pulse response of the filter, the electrodes of the converter arranged in the same acoustic channel as the row of electrodes of the coupling element, and having overlapping portions of a variable length, have overlapping portions of the electrodes of a constant length, the electrodes of one group of one row of the coupling element being galvanically interconnected and galvanically coupled to the electrodes of one group of another row, each electrode of the remaining group of one row having direct galvanic coupling to the respective electrode of the remaining group of the other row.

4,355,291
SEALED ELECTRIC ASSEMBLY WITH CONNECTING TERMINALS

Shunichi Agatahama, Osaka, Japan, assignor to Omron Tateisi Electronics Company, Kyoto, Japan
Filed Feb. 12, 1981, Ser. No. 233,706
Claims priority, application Japan, Feb. 26, 1980, 55-23240; Feb. 26, 1980, 55-23241; Dec. 10, 1980, 55-175146
Int. Cl.^{3} H01H *9/04*
U.S. Cl. 335—128 6 Claims



1. Electric assembly including an insert-molded base member carrying connecting terminals, an electric block member mounted on said base member, and an upper cover fitted onto said base member to cover said electric block member,

said base member comprising inner and outer walls which therebetween form an opening extending vertically through the entire thickness of the base member in such a manner that a lower portion of said upper cover and intermediate portions of said connecting terminals are exposed to said opening,

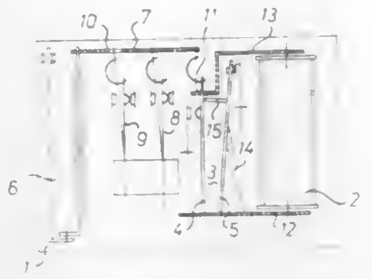
said opening being filled with a sealant from a bottom side thereof to thereby seal and secure in position said upper cover, connecting terminals and base member.

4,355,292
CONTROL DEVICE, PARTICULARLY FOR AUTOMATIC FURNACES

Roger Lüdi, Redigäcker, and Bernhard Hinni, Regensdorf-Watt, both of Switzerland, assignors to Satronic AG, Regensdorf, Switzerland
Filed Feb. 4, 1981, Ser. No. 231,432
Claims priority, application Switzerland, Mar. 11, 1980, 1909/80
Int. Cl.^{3} H01H *61/01*
U.S. Cl. 335—145 3 Claims

1. A control device for an apparatus having an ignition device, a fault clearing device, and a fuel valve, said control device comprising: a bimetallic element for actuating a contact connected to said ignition device and for actuating a contact connected to said fault clearing device; an electromagnetic relay having first and second yoke members and an armature supported on said first yoke member and cooperating with said second yoke member, said armature comprising a first part having a contact connected to said fuel valve and projecting into a recess in said second yoke member and being magnetically secured at one of two opposed edges of the recess when

the relay is energized, said first part being operably connected to said bimetallic element, said armature also comprising a second part having a contact connected to said bimetallic element and having a projecting bar defining the minimum space between said two parts, such that said second part is magnetically secured to said second yoke member to disconnect said bimetallic element when said first part is in the position to open said fuel valve.



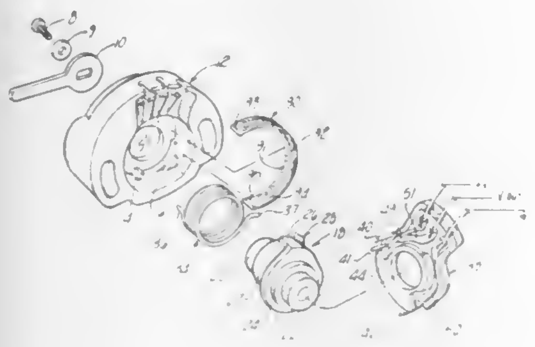
4,355,293
ELECTRICAL RESISTANCE APPARATUS HAVING INTEGRAL SHORTING PROTECTION

Barry J. Driscoll, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 86,911, Oct. 22, 1979, abandoned. This application Jul. 9, 1981, Ser. No. 281,804

Int. Cl.³ H01C *10/00*

U.S. Cl. 338—184 **11 Claims**



1. A flexible resistive element adapted for connection as a potentiometer comprising:

a flexible web;

a first track overlaid on said web and forming a potentiometer resistor, said first track having a first resistive layer between two limits on said track, a first conductive terminal pad and a second conductive terminal pad each respectively electrically connected to said track outwardly of said two limits;

a second track overlaid on said web and forming a signal terminal, said second track displaced from and substantially parallel to said first resistive layer, said second track including a third conductive terminal pad at one end thereof outwardly of one of said limits; and

resistive means integral with said second track and between said third conductive terminal and said one limit comprising a protection resistor thereby providing integral shorting protection between said third conductive terminal and at least one of said first and second conductive terminals.

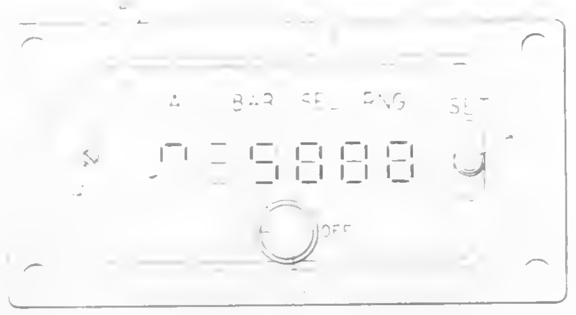
4,355,294
ALTITUDE ALERT SYSTEM

Menashe Ben-David, North Hollywood, and Russell E. Poffenberger, Arleta, both of Calif., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed May 2, 1980, Ser. No. 146,114

Int. Cl.³ G08G *5/00*

U.S. Cl. 340—27 R **3 Claims**



1. A method with the aid of a digital computer, of selectively energizing visual means when an aircraft attains certain altitudes which comprises the steps of:

providing the computer with a data base including at least the selected altitude, and a first pair of altitudes a fixed amount above and below the selected altitude, a second pair of altitudes above and below the selected altitude a prescribed range less than that of said first pair of altitudes;

continuously providing the computer with the aircraft actual altitude;

repetitively comparing in the computer the actual aircraft altitude and the second pair of altitudes, and energizing the visual means when there is comparison coincidence of the selected altitude and actual altitude, and thereafter energizing the visual means when the actual altitude lies between the first pair of altitudes and energizing an audio means when the actual altitude moves from between the second pair of altitudes to outside the altitude range between said second pair of altitudes; and

automatically energizing said visual means on comparison coincidence of the actual altitude and the selected altitude to provide a first visual symbol, on comparison of the actual altitude and the fixed altitude above the selected altitude to provide a second visual symbol indicating the aircraft should decrease its altitude, and on comparison of the actual altitude and the fixed altitude below the selected altitude to provide a third visual symbol indicating the aircraft should increase its altitude; and

selectively providing a visual digital display of the actual altitude, the selected altitude and the prescribed range.

4,355,295
METHOD AND DEVICE FOR CONNECTING TERMINALS OF A TRAFFIC CONTROL UNIT

Willard L. Kent, Austin, Tex., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

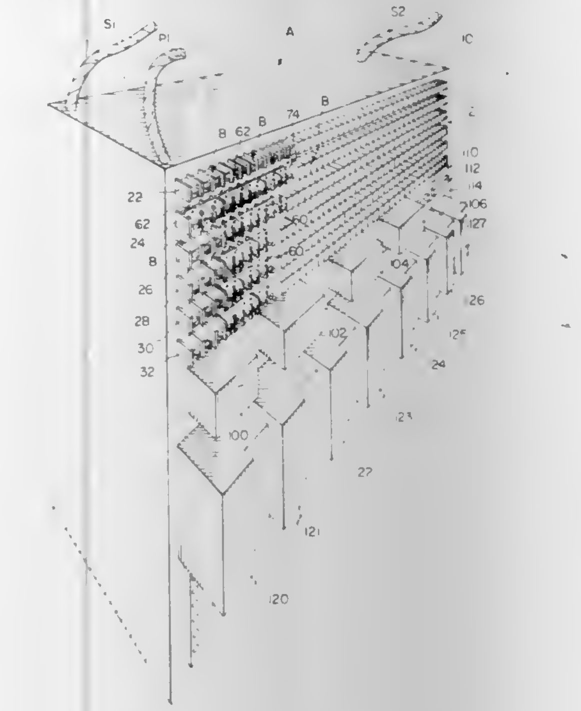
Filed Nov. 13, 1980, Ser. No. 206,442

Int. Cl.³ G08G *1/00;* **H01R** *9/00;* **G08B** *5/36*

U.S. Cl. 340—41 R **9 Claims**

1. In a traffic control unit for controlling signals displayed to at least two conflicting movements of traffic through an intersection, said control unit including a controller having a number of terminals controllable by applied voltages; load switches for controlling said displayed signals in response to voltages applied to certain load terminals of said load switches; mechanical signal controlling devices with input and output terminals; controller supervising devices having a number of control terminals; and means for allowing manual interconnection of selected ones of said terminals, the improvement comprising: said allowing means including

(a) a number of rows of spaced junction blocks, with each block being fixed onto a common display panel and including an inactive coupling element adapted to be permanently wired to a selected one of said terminals, a connector-receiving element and means for electrically connecting said inactive element and said connector-receiving element; and,



(b) a plurality of electrically separate means for electrically interconnecting selected ones of said connector-receiving elements of said junction blocks wherein said blocks on said common display panel are connected to selected terminals in a pattern not dictated by the pattern of terminals on origin devices of said terminals.

4,355,296
ELECTRIC VEHICLE PERFORMANCE SENSOR AND SHIFT POINT INDICATOR

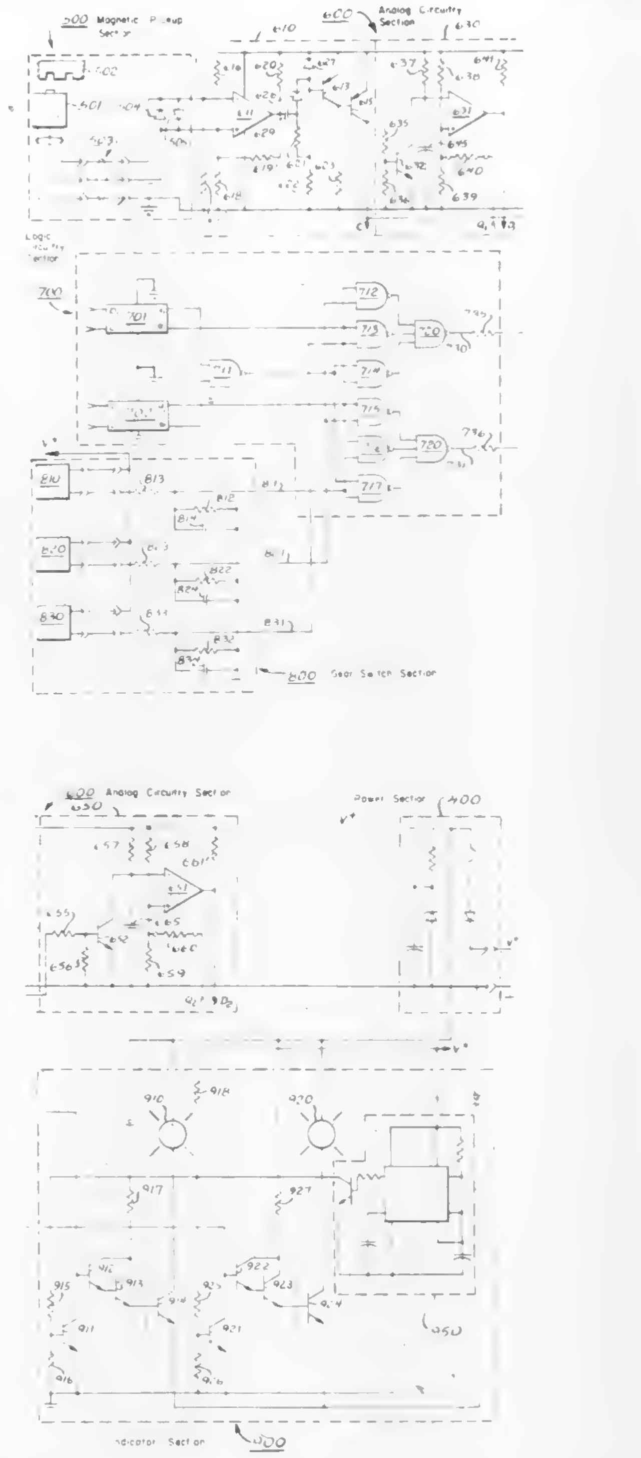
Gary A. Drone, Springfield, Ill., assignor to Fiat Allis North America, Inc., Deerfield, Ill.

Filed Oct. 3, 1980, Ser. No. 193,533

Int. Cl.³ B60K *23/00;* **G08B** *21/00*

U.S. Cl. 340—52 R **10 Claims**

1. A vehicle performance monitoring system for instructing a vehicle operator when and into which gear a vehicle transmission, having a plurality of gear ranges, should be shifted in order to maintain the vehicle operating within a desired range of performance for each gear in which the transmission is operated, comprising: detecting means operable in response to a pre-determined condition of an operating vehicle while the vehicle transmission is operating in a pre-determined gear range to generate a condition responsive signal representative of an operational condition of the vehicle while in the predetermined gear range; first circuitry means operatively coupled to a source of electrical power for receiving said condition responsive signal from said detecting means, said first circuitry means further generating a first and a second enabling signal in response to receiving said condition responsive signal, said first circuitry means further including comparator means for receiving said second enabling signal and comparing said second enabling signal with a pre-determined signal level for generating a command signal in response to said second enabling signal exceeding said pre-determined signal level, a first plurality of switching means operatively connected to said source of electrical power and actuable upon placing a vehicle transmission in the pre-determined gear range for generating a gear range signal corresponding to the gear range in which the transmission is operated; each one of said first plurality of switching means being mutually exclusively actuated upon the shifting of the vehicle transmission into one of the gear ranges in which the transmission is operated, a second circuitry means connected to said first circuitry means for receiving said first enabling signal and said command signal for generating at least one digital output; said second circuitry means, further including coincidence detecting means for generating an output signal upon receipt of said at least one digital output and said gear range signal, and indicator means for receiving said output signal from said coincidence detecting means for instructing the vehicle operator when and into which gear the vehicle transmission should be shifted to maintain the vehicle operating within a desired range of performance for the gear in which the transmission is operated.



4,355,297
DEVICE FOR INDICATING AIR PRESSURE IN VEHICLE TIRES

Brajnandan Sinha, 1 Spovgränd, Lulea, Sweden (S-951 47), and Sven-Erik Tiberg, Gammelstad, Sweden, assignors to Brajnandan Sinha, Lulea, Sweden

Filed Mar. 28, 1980, Ser. No. 135,151

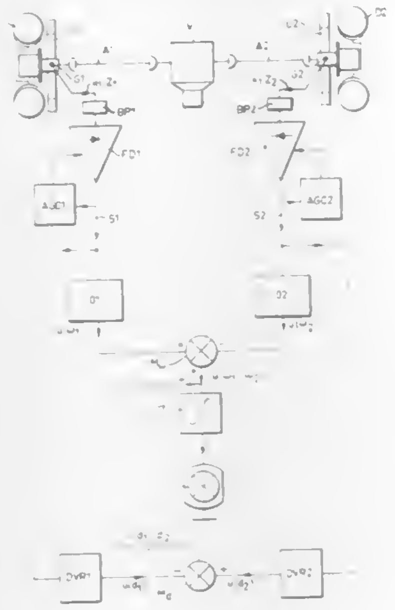
Claims priority, application Sweden, Apr. 3, 1979, 7902946

Int. Cl.³ B60C *23/00*

U.S. Cl. 340—58 **6 Claims**

1. A device for indicating pressure change in vehicle wheel tires, comprising transducers, which are fixed at wheel suspension means, adjacent the hub of an associated wheel, and continuously affected by the dynamic behavior of the wheel during drive of the vehicle, and electronic means for releasing a

warning signal when the dynamic properties of the wheel depending on its tire pressure pass a predetermined limit, characterized in that the transducers are accelerometers for measuring the vertical acceleration of the wheel, each accelerometer having an output connected to a different electronic unit for separately feeding to it a primary signal decreasing with dropping tire pressure, when the wheel passes an irregularity on the road, each electronic unit including means for transforming the primary signal to a secondary signal expressing the vertical acceleration value for the wheel in a certain frequency region of the tire oscillation in dependence on the tire pressure, comparing means being provided for receiving the secondary signal from each respective electronic unit, referring to two corresponding wheels, and comparing them with each other and feeding a difference signal to means arranged to release a warning signal when the difference signal amounts to a predetermined value.



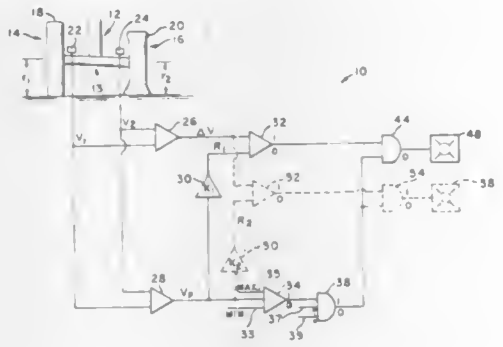
4,355,298
LOW OR FLAT TIRE WARNING SYSTEM

Gregory M. Jessup, Marion, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 67,868, Aug. 20, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,522

Int. Cl.^{3} B60C *23/00*

U.S. Cl. 340—58 **5 Claims**



1. An aircraft tire condition warning system for an aircraft bogie with two wheels having tires mounted thereon, said warning system comprising:
- a speed sensor associated with one of the wheels for generating a speed signal proportional to the angular velocity of said one wheel;
- a speed sensor associated with the other of said two wheels for generating a speed signal proportional to the angular velocity of said other wheel;
- means for differencing the two speed signals and for generating a differential signal proportional to the difference in angular velocity therebetween;
- means for comparing the two speed signals and for generating a ground speed signal which is the smaller of the two speed signals wherein said ground speed signal is proportional to the aircraft ground speed of a wheel having a properly inflated tire thereon;
- means for generating a reference signal by multiplying said ground speed signal times a proportionality constant indicative of a dangerous tire condition, said reference signal thereby varying with the ground speed of the aircraft;
- means for comparing said differential signal and said reference signal and for generating a warning signal when said differential signal exceeds said reference signal; and
- means for generating an operator identifiable warning indication in response to said warning signal.

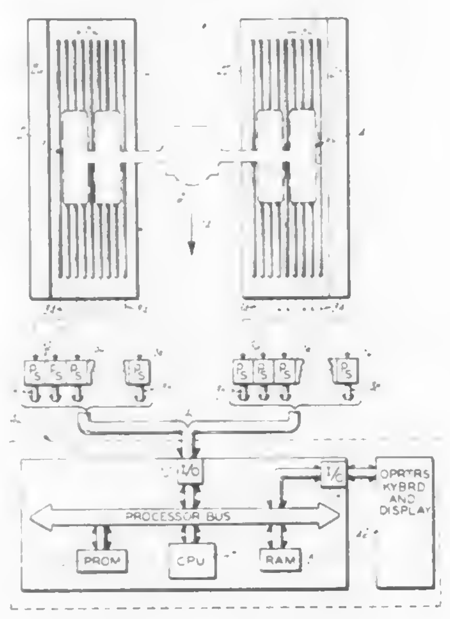
4,355,299
DUAL WHEEL, TIRE PRESSURE TESTER

Willard G. Cook, Jr., West Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,536

Int. Cl.^{3} B60C *23/00*

U.S. Cl. 340—58 **12 Claims**



1. Apparatus for automatically detecting tire pressures of dual wheel vehicles, comprising:
- plurality of fluid filled tire sensors arranged lengthwise in a spaced array parallel to the direction of vehicle travel across a selected section of roadway, the sensors each spaced relative to each other at a distance dependent on the vehicle tire tread width to ensure contact of at least two sensors with each tire footprint as the vehicle is driven along the length of said sensor array, each fluid filled sensor being sealed at one end and having a fluid port at the opposite end thereof, whereby said sensors each provide in response to surface contact thereof with a vehicle tire footprint a fluid pressure increase at said fluid port;
- plurality of pressure sensing devices, one for each of said tire sensors and each connected for response to said fluid port thereof, for providing an output signal indication at a magnitude indicative of the quiescent fluid pressure within said associated sensor; and
- means responsive to said output signal indications from all of said pressure sensing devices for determining, in response to the magnitude of said signal indications the state of tire pressure for each tire of each dual wheel pair.

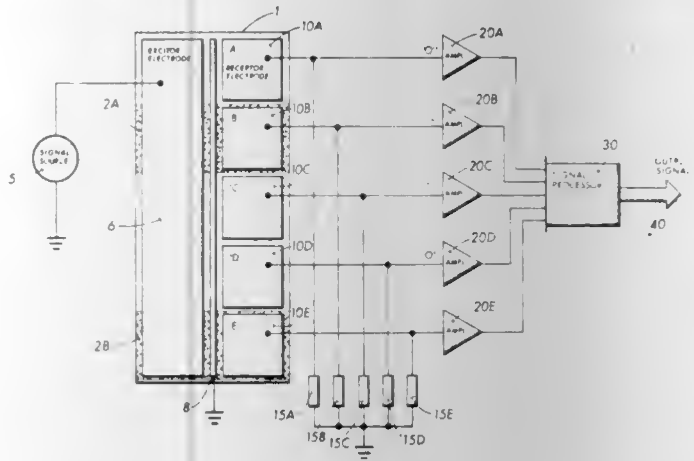
4,355,300
INDICIA RECOGNITION APPARATUS

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Feb. 14, 1980, Ser. No. 121,405

Int. Cl.^{3} G06K *7/08*

U.S. Cl. 340—146.3 C **29 Claims**



1. Sensing and/or recognition apparatus for determining the genuineness and/or value of a security document having encoding indicia applied to the substrate surface thereof as a thin, transparent coating normally invisible and including particles driven into the surface of said substrate to a substantial depth wherein the particles of indicia material are possessed of an electrical conductivity different from the surrounding portions of the substrate surface, said apparatus comprising a housing, first and second electrode means arranged within said housing and spaced apart to define a gap therebetween, a source of high frequency alternating current coupled to said first and second electrode means for imparting a primary a.c. signal thereacross, means for positioning the document to be tested proximate with and spaced from at least said first electrode means, the encoding indicia being electrically exposed to said first and second electrode means whereby capacitively to induce instantaneously a secondary a.c. signal to said second electrode means providing said encoding indicia is present, said secondary signal being different from said primary signal and means for sensing instantaneously said secondary signal and generating an output signal responsive thereto.

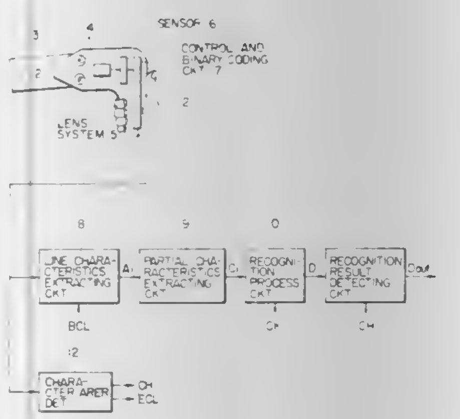
4,355,301
OPTICAL CHARACTER READING SYSTEM

Isao Isshiki; Akihiro Ohoka; Fukuma Sakamoto; Masatoshi Tanaka, and Koji Sato, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 27, 1980, Ser. No. 153,222

Int. Cl.^{3} G06K *9/00*

U.S. Cl. 340—146.3 D **10 Claims**


SENSOR 6
CONTROL AND BINARY CODING CKT 7
LENS SYSTEM 5
LINE CHARACTERISTICS EXTRACTING CKT
PARTIAL CHARACTERISTICS EXTRACTING CKT
RECOGNITION PROCESS CKT
RECOGNITION RESULT DETECTING CKT
Dout
BCL
CHARACTER AREA DET
ECL

1. An optical character reading system comprising: means for optically scanning a two-dimensional character pattern by a single sensor in a single sweep of said sensor past said character pattern for optically recognizing said character pattern at a plurality of different relative positions between said single sensor and said character pattern to provide a plurality of recognition results; and means for subjecting said plurality of recognition results to selection to provide a final single recognition result of said character pattern.

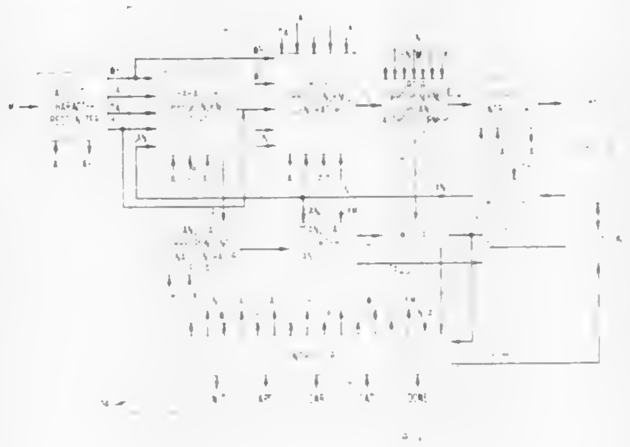
4,355,302
SPELLED WORD RECOGNIZER

Bernd Aldefeld, Hamburg, Fed. Rep. of Germany; Stephen E. Levinson, Westfield, and Thomas G. Szymanski, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J. and N. V. Philips Gloeilampenfabrieken, Eindhoven, Netherlands

Filed Sep. 12, 1980, Ser. No. 186,741

Int. Cl.^{3} G10L *1/00;* **G06K** *9/62*

U.S. Cl. 340—146.3 Q **24 Claims**



1. A circuit for recognizing an input character string comprising means for storing a plurality of reference character sets in predetermined groups; means for generating a set of signals representative of the correspondence of the input characters to the reference characters; and means responsive to the character correspondence signals for identifying the input character string as one of the stored reference character sets;

characterized in that

said character string identifying means (**104**) comprises means (**107**) responsive to the character correspondence signals for forming a set of signals each being representative of the correspondence of the input character string to one of said predetermined groups; and means (**117, 119, 121**) jointly responsive to said character correspondence signals, said reference character sets and said group correspondence signals for selecting the reference character set most closely corresponding to said input character string.

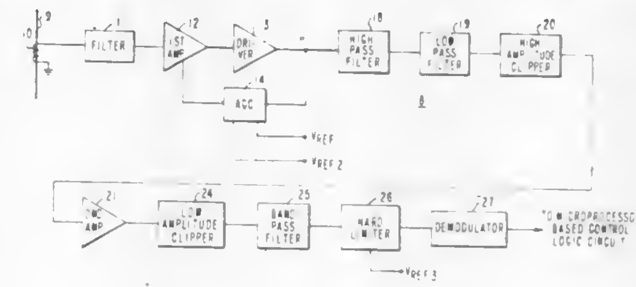
4,355,303
RECEIVER FOR A DISTRIBUTION NETWORK POWER LINE CARRIER COMMUNICATION SYSTEM

John S. Phillips, Raleigh, and Waymon A. Melvin, Jr., St. Matthews Twsp., both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1981, Ser. No. 252,664

Int. Cl.^{3} H04B *3/02, 15/00*

U.S. Cl. 340—310 A **20 Claims**



1. A receiver for receiving a carrier signal modulated by an

information signal which is transmitted over a distribution network power line carrier communication system comprising:
- coupling means for providing a first signal in response to the carrier signal;
- first amplifier means responsive to said coupling means for providing a second signal in response to said first signal, said first amplifier means including first feedback means for determining a gain of said first amplifier means;
- means for producing a first and a second reference DC voltages;
- first comparator means responsive to said first reference DC voltage and to said second signal;
- second comparator means responsive to both said second reference DC voltage and to said second signal;
- variable control means responsive to said first and said second comparator means, said variable control means cooperating with said first feedback means such that said gain of said first amplifier means is varied in response to the magnitude of said second signal;
- high amplitude clipper means responsive to said second signal for providing a third signal;
- second amplifier means responsive to said third signal for providing a fourth signal;
- low amplitude clipper means responsive to said fourth signal for providing a sinusoidal clipped signal;
- hard limiter means responsive to said sinusoidal clipped signal for providing a square wave signal; and
- demodulator means responsive to said square wave signal for separating the information signal from the carrier signal.

4,355,304
DIGITAL COMPANDOR

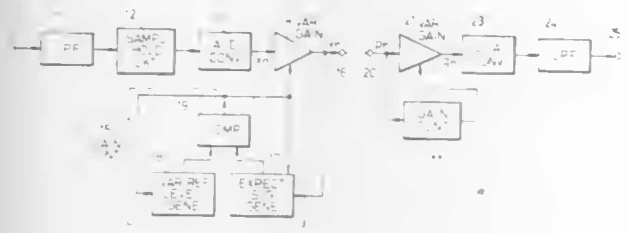
Masao Kasuga, No. 1-6-17, Komachi-Dori, Sagamihara-City, Kanagawa-Ken; Norio Hiyama, No. 202, 7298-1, Ikuta, Tama-Ku, Kawasaki-City, Kanagawa-Ken, and Yoshiyuki Tsuchikane, No. 3-27-10, Kamiikedai, Ohta-Ku, Tokyo, all of Japan

Filed Dec. 18, 1980, Ser. No. 217,949

Claims priority, application Japan, Dec. 17, 1979, 54-163858; Dec. 27, 1979, 54-173084; Jan. 9, 1980, 55-1149; Jan. 9, 1980, 55-1150; Apr. 15, 1980, 55-50081; May 30, 1980, 55-72522

Int. Cl.^{3} H03K ***13/24***

U.S. Cl. 340—347 DD **7 Claims**



1. A digital compandor capable of selectively increasing and decreasing the dynamic range of a digital input signal thereof comprising:

variable gain circuit means and control signal generating circuit means operatively connected to said variable gain circuit means for generating a control signal to change the gain of said variable gain circuit means, said variable gain circuit means delivering an m bit digital output signal (m being an integer) in response to an n bit digital input signal (n being an integer, where $m<n$) and said control signal when said compandor is operating as a compressor to decrease the dynamic range, and delivering an n bit digital output signal in response to an m bit digital input signal and said control signal when said compandor is operating as an expander to increase the dynamic range,

said control signal generating circuit means comprising: first means producing, in response to the output signal of said variable gain circuit, an expected signal Zn which satisfies the equation

$$Zn = \sum_{i=0}^{N} a_i \cdot | y_{n-i} |$$

where a_i is a weighting coefficient which is in the range between zero and an arbitrary natural number N, and yn is said digital input signal;

second means for producing a reference signal;

a comparator for comparing said reference signal and said expected signal; and

third means for producing said control signal in response to the output signal from said comparator, said third means further changing an equivalent analog value of said reference signal in response to an output signal level of said comparator.

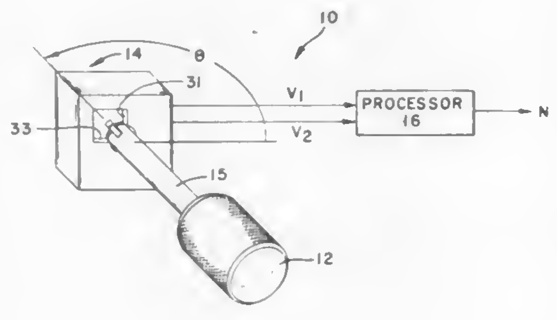
4,355,305
RESOLVER PROCESSOR WITH ERROR DETECTION

Richard W. Cording, Mishawaka, Ind., and Daniel D. Morton, Farmington Hills, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 24, 1980, Ser. No. 143,218

Int. Cl.^{3} H03K ***13/02***

U.S. Cl. 340—347 SY **16 Claims**



1. A processor for converting the angular position of a resolver into a digital representation thereof in response to a conversion request, wherein the resolver generates a pair of resolver signals as a function of the angular position of the resolver and valid resolver signals are limited to a predetermined range of angular position by physically restraining the resolver rotation to said range, said processor comprising:
- means, responsive to the resolver signals, for generating a pair of phase shifted signals with a relative phase shift proportional to the resolver angle;
- means for converting the relative phase shift between said phase shifted signals to said digital representations of the resolver angle; and
- means for indicating fault conditions in the resolver signals by generating digital representations of angular positions outside said predetermined range.

4,355,306
DYNAMIC STACK DATA COMPRESSION AND DECOMPRESSION SYSTEM

Joan L. Mitchell, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1981, Ser. No. 230,224

Int. Cl.^{3} H03K ***13/24***

U.S. Cl. 340—347 DD **11 Claims**

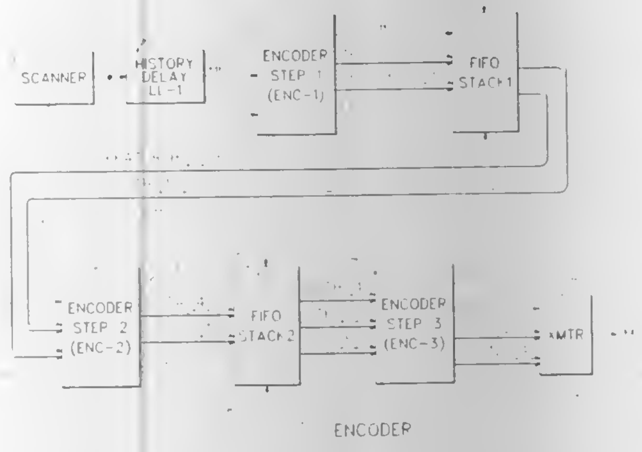
1. In a data compression apparatus wherein an image is scanned line-by-line to sense the characteristics thereof and the positions at which such characteristics are located, the combination of:

first encoding means for producing digital representations of

the sensed characteristics and their respective relationships to other characteristics;

at least one stack each having a plurality of addressable storage positions therein for storing a subset of said digital representations as they are produced by said first encoding means;

means for determining the location in at least one of said stacks, of a digital representation corresponding to a currently sensed characteristic;



second encoding means responsive to said location determining means for generating a coded representation of said stack location, which is provided to a utilization means;

control means functioning in response to each determination made by said location determining means for rearranging said digital representations in at least one of said stacks in accordance with a predetermined scheme.

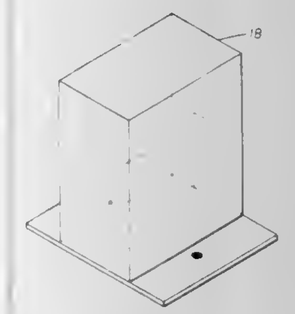
4,355,307
SAFETY STRESS SHUTDOWN SWITCH

Darrel R. Beck, 1601 Glenn Blvd., Duncan, Okla. 73533

Continuation-in-part of Ser. No. 674,301, Nov. 26, 1976, abandoned. This application Oct. 1, 1979, Ser. No. 80,439

Int. Cl.^{3} G08B ***21/00***

U.S. Cl. 340—679 **5 Claims**



1. An apparatus for indicating a pre-set amount of deflection of a load bearing beam member which is pivoted and reciprocated about an axis comprising:
- (a) a first mounting means attached to said beam member at a first selected location on said beam member;
- (b) an arm member having a fixed end and a moveably end attached to said first mounting means near the fixed end of said arm member at a predetermined distance from said beam member;
- (c) a second mounting means attached to said beam member at a second location spaced a pre-determined distance from the point of attachment of said first mounting means, said pre-determined distance being in a plane parallel to the plane of deflection of said beam member;
- (d) a first indicating means removeably and adjustably attached to said arm member near the moveably end;
- (e) a second indicating means removeably and adjustably attached to said second mounting means, with said first and second indicating means being moveably spaced from each other so that, as said beam member deflects they move relative to each other in a plane parallel to the plane of deflection of said beam member, said indicating means comprising sensors which produce a signal when said indicating means have moved in said parallel plane a pre-determined distance relative to each other; and wherein the indicating means comprise generally cylindrical electrically non-conductive sheaths holding electrically conductive sensors wherein at least one sensor is slideably adjustable.

4,355,308
CIRCUIT ARRANGEMENT FOR OPERATING OPTO-ELECTRONIC DISPLAY ELEMENTS ASSIGNED TO TERMINAL DEVICES, IN PARTICULAR IN TELEPHONE SYSTEM

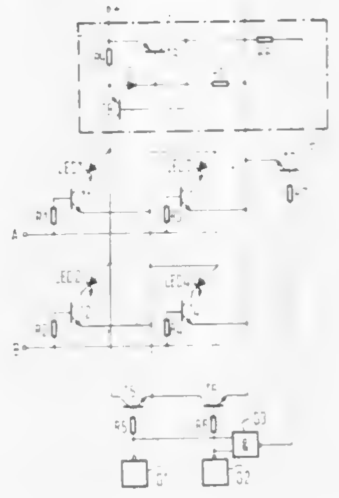
Dieter Blossfeldt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,042

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014845

Int. Cl.^{3} G09G ***3/32***

U.S. Cl. 340—781 **7 Claims**



1. A circuit arrangement for selectively operating a plurality of opto-electronic display elements, comprising:
- a plurality of row drive lines and a plurality of column drive lines each adapted to receive control signals of first and second values;
- a supply voltage;
- a plurality of opto-electronic display elements arranged in rows and columns and a plurality of control switches each connected to control conduction of a respective opto-electronic display element, said control switches distributed to and connected to said row drive lines and said opto-electronic display devices connected to said supply voltage;
- a plurality of controllable semiconductor switches each connected to a respective column drive line and connected in parallel across a respective column of said opto-electronic display devices;
- a current limiting circuit connecting said opto-electronic display elements to the supply voltage and operable in a low ohmic state and a high ohmic state;

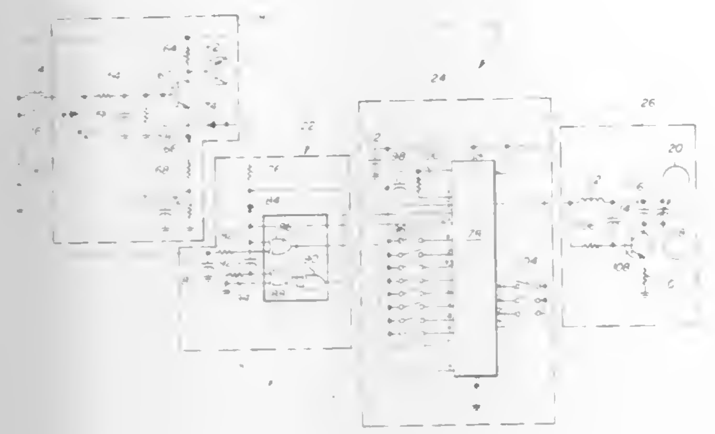
said control switches operable to switch the respective opto-electronic display elements conductive in response to a first value control signal on the respective row drive line and said controllable semiconductor switches operable to shunt the respective column of opto-electronic display devices in response to a first value control signal on the respective column drive line; and

current control switching means connected to each of said column drive lines and to said current limiting circuit and operable to switch the same into its high ohmic state in response to the second value control signals on all of said column drive lines.

4,355,309
RADIO FREQUENCY CONTROLLED LIGHT SYSTEM

Robert M. Hughey, Lewisville; James J. Fairchild, Carrollton, and James H. Brown, Dallas, all of Tex., assignors to Synergistic Controls, Inc., Carrollton, Tex.

Filed Sep. 8, 1980, Ser. No. 185,010
Int. Cl.^{3} H04Q *9/00;* H04B *7/00*
U.S. Cl. 340—825.53 10 Claims



1. A remote control light system for controlling the power applied to an electrical light source, comprising:

a battery operated transmission unit having a radio frequency oscillator for transmitting a radio frequency control signal;

a receiving unit energized by a power supply connected to the power source for energizing the electrical light, said receiving unit having an antenna and a radio frequency receiver for detecting signals transmitted from said transmission unit;

switching means located in said transmission unit for selecting the on/off control state for the electrical light attached to the receiving unit;

reprogrammable encoding means for selecting a receiver unit address code to be broadcast by said radio frequency oscillator;

reprogrammable encoding means for selecting the output address code of a receiving unit;

means for digitally encoding the control state signal from said switching means, receiver unit address code and output address code and pulse modulating said encoded data for transmission by said radio frequency oscillator to broadcast said encoded data to said receiver unit;

means for said receiving unit to decode a signal detected by said antenna and radio frequency receiver;

reprogrammable encoding means in said receiving unit for selecting a receiver unit address code to match the receiver unit address code set in said transmission unit;

reprogrammable encoding means in said receiving unit for selecting an output address of said receiver to match an address set in said transmission unit;

means for comparing said transmitted receiver unit and output address code with said receiver unit code and output address code encoded in said receiver;

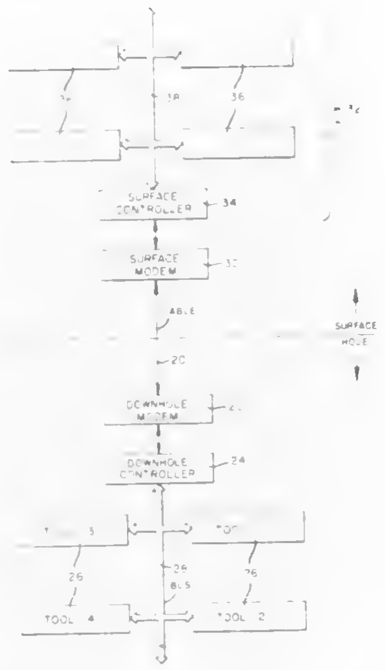
means for setting a latch with the on/off control signal from said digital decoder in response to said comparing means indicating said transmitted receiver unit address code and output address code is equivalent to the receiver unit address and output address code preset in said receiver; and

a relay settable in response to an output signal from a said latching means for connecting or disconnecting an electrical light to a power supply.

4,355,310
WELL LOGGING COMMUNICATION SYSTEM

Antoine Belaigues, Beynes; Alain Paumard, Chatillon Sous Bagneux; Yves Durand, Verrieres Le Buisson, all of France, and Thomas J. Calvert, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 872,504, Jan. 26, 1978. This application Aug. 6, 1979, Ser. No. 63,666
Claims priority, application France, Feb. 3, 1977, 77 02976
Int. Cl.^{3} G01V *1/40*
U.S. Cl. 340—858 25 Claims



19. A well logging system including surface apparatus having surface signal processing equipment and surface telemetry means connected thereto, a signal transmission cable connected to said surface telemetry means, and downhole apparatus, adapted to be supported in a borehole by said cable, said downhole apparatus comprising:

(a) a plurality of pressure-tight, modular housing sections arranged for interchangeable endwise connection;

(b) one of said housing sections comprising a downhole telemetry cartridge for data communication with said surface telemetry means;

(c) at least one other of said housing sections comprising a logging tool for subsurface investigation and for generating data representative thereof;

(d) a bus line extending lengthwise through all of said housing sections, with sealed connectors for electrical continuity between sections, for connecting each said logging tool via said downhole telemetry means to said cables; and

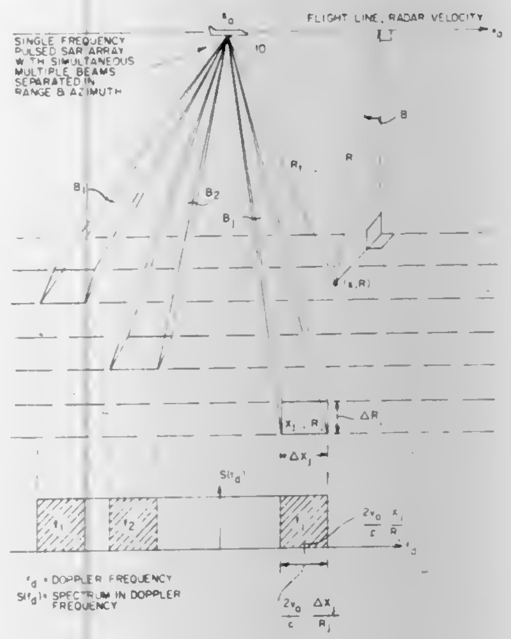
(e) means included in said downhole telemetry cartridge for formatting data received over said bus line from said at least one logging tool into data messages and for transmitting said data messages to said surface telemetry means in data frames, said downhole telemetry means further including means addressable from the surface for controlling the length of the data message to be transmitted per frame.

4,355,311
MULTIBEAM SINGLE FREQUENCY SYNTHETIC APERTURE RADAR PROCESSOR FOR IMAGING SEPARATE RANGE SWATHS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Atul Jain, La Canada, Calif.

Continuation-in-part of Ser. No. 17,885, Mar. 6, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,910
Int. Cl.^{3} G01S *13/00, 13/90*
U.S. Cl. 343—5 CM 15 Claims

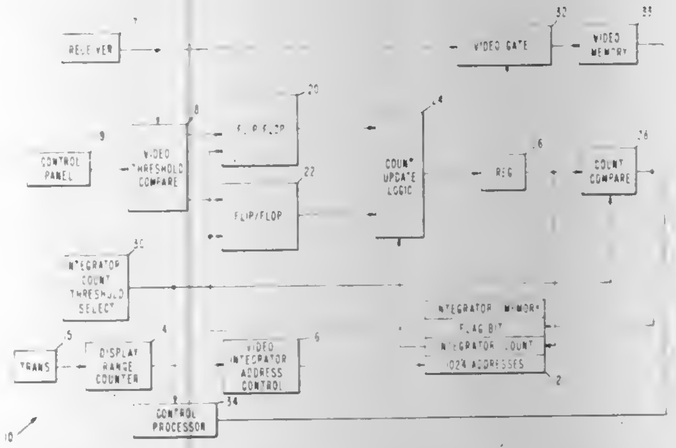
1. In a multibeam synthetic aperture radar system, wherein each beam is directed to a different range and azimuth defined target area, a method for processing return data from pulses periodically transmitted simultaneously in each beam at a single frequency, a method for imaging separate range swaths over a range greater than otherwise possible for the interval between periodic pulses comprising the steps of range correlating the return radar data separated in successive interpulse periods to form image data for a plurality of range swaths, and separating in azimuth the return radar data thus correlated in range by filtering a unique Doppler frequency spectrum for each beam to form a plurality of distinct range and azimuth defined beams for imaging a beam selected at a unique azimuth angle in each range swath defined by an interpulse period, said azimuth angle being an angle on either side of a direction from said radar system normal to said range swaths.


SINGLE FREQUENCY PULSED SAR ARRAY WITH SIMULTANEOUS MULTIPLE BEAMS SEPARATED IN RANGE & AZIMUTH
FLIGHT LINE, RADAR VELOCITY
10
fd = DOPPLER FREQUENCY
S(fd) = SPECTRUM IN DOPPLER FREQUENCY

4,355,312
RADAR SIGNAL PROCESSOR

Gerald L. Bosi; Randolph L. Hack, both of Fullerton; Thomas C. Cantwell, Yorba Linda, and Richard D. Wilmot, Buena Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 2, 1980, Ser. No. 193,199
Int. Cl.^{3} G01S *13/70*
U.S. Cl. 343—5 VQ 13 Claims



1. A processor for operating on video and azimuth signals from a radar system, having an antenna which scans in azimuth, such that the signal-to-noise ratio of the video signals being processed therethrough is enhanced while the delay in detecting the leading edge of the target in the azimuth dimension is substantially constant, said processor comprising:

first means for forming and storing a count indicative of the video signal history for each of a plurality of range zones;

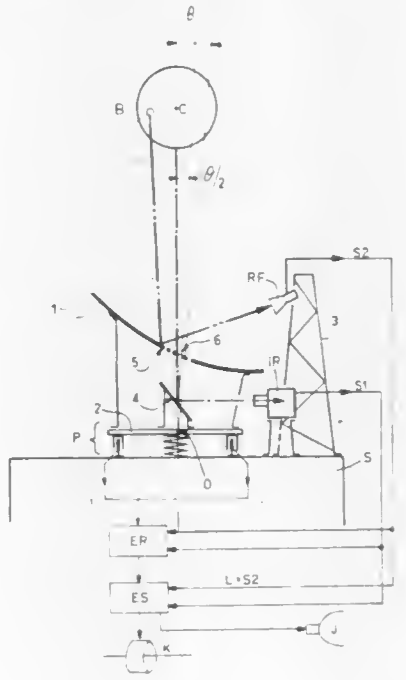
second means for providing a flag signal indicative of a leading edge of a target in the azimuth dimension when the stored count associated with a given range zone exceeds a preselected level and for removing said flag signal on a trailing edge of said target; and

gating means for allowing the radar video signals for a given zone to pass to a display memory during the presence of a flag signal associated with said given zone.

4,355,313
SATELLITE ANTENNA ORIENTATION CONTROL METHOD AND SENSOR CONFIGURATION APPLYING SAID METHOD

Bernard Hubert, Le Cannet, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jun. 18, 1980, Ser. No. 160,810
Claims priority, application France, Jun. 18, 1979, 79 15593
Int. Cl.^{3} H01Q *1/28*
U.S. Cl. 343—725 11 Claims



1. Method of controlling the orientation of an antenna on a satellite in space comprising the steps of

sensing a radio frequency signal reflected from a radio frequency reflector which delivers an error signal proportional to the sighting deviation relative to an earth beacon,

sensing an infra-red signal reflected from an infra-red reflector which sights the center of the earth as seen from the satellite,

controlling the movements of a pivotable orientable platform on which both said reflectors are mounted for movement in unison through use of at least one of said signals,

sensing a signal produced by the pivoting of said orientable platform with respect to the body of the satellite to limit the pivoting of said orientable platform,

controlling the movement of the body of the satellite on which the platform is mounted with at least one of said signals from said radio frequency signal and said infra-red signal, and with a signal relative to the position of the platform oriented in relation to the satellite.

4,355,314
WIDE-FIELD-OF-VIEW ANTENNA ARRANGEMENT

Edward A. Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 28, 1980, Ser. No. 211,104
Int. Cl.^{3} H01Q *19/19*
U.S. Cl. 343—779 3 Claims

1. A wide-field-of-view antenna system capable of transmitting or receiving a plurality of beams (**14**) comprising in combination:

a main focusing reflector (**10,20**) including a reflecting surface, a boresight axis (**12**) and a paraxial focus (P), said reflector producing a tangential focal region and a sagittal focal region associated with each beam of said plurality of beams;

a feed arrangement (**17,19**) disposed to permit the transmitting or receiving of each beam of said plurality of beams along a separate associated predetermined direction (Φ) with respect to said boresight axis over a wide-field-of-view; and

a subreflector (**18,24**) including a reflecting surface capable of directing said plurality of beams between said main reflector and said feed arrangement;

characterized in that

the subreflector is located in relation to the main reflector such that both the plurality of tangential focal regions and the plurality of sagittal focal regions remain on the same side of said subreflector as the paraxial focus and do not intersect the reflecting surface of said subreflector for any predetermined transmitting or receiving direction.

4,355,315

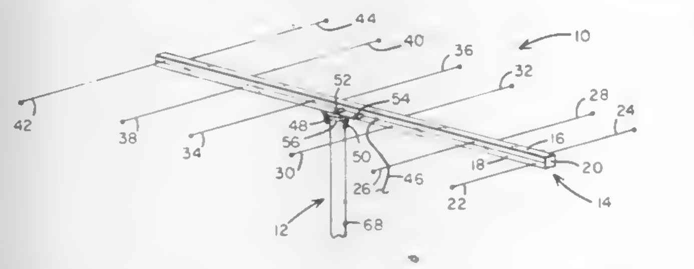
LOG PERIODIC DIRECTIONAL ANTENNA

James R. Zoulek, 5350 Strohm 21, North Hollywood, Calif. 91601

Filed Jan. 2, 1981, Ser. No. 222,244

Int. Cl.^{3} H01Q *11/10*

U.S. Cl. 343—792.5 **8 Claims**



1. In combination, a log periodic antenna and an antenna mounting for supporting said log periodic antenna, the combination comprising:

a. log periodic antenna including an upper and lower steel channel, rectangular boom, a wooden core disposed therebetween, a plurality of twelve log periodic alternatively offset steel elements affixed and electrically secured on opposing sides thereto along a longitudinal length of said boom, said elements alternatively positioned on opposing sides of said channel, coaxial feed line connected to two opposing short end elements, said coaxial line running through said interior wooden core of said boom and exiting at a substantially mid portion of said boom, and two bolts positioned parallel to said elements and exiting out at a mid portion from said boom, two bolts orthogonally positioned to said first bolts and exiting out substantially at said mid portion of said boom; and,

b. antenna mount including a substantially oval shaped member and including two holes for engaging said orthogonal pairs of bolts on said antenna boom, said oval member perpendicularly affixed to a cylindrical member, said cylindrical member having a diameter and frictionally engaged in a supporting member whereby said mount provides for mounting of said antenna for either horizontal polarization or vertical polarization thereby engaging said bolts in said boom through and protruding from said holes in said antenna mount and being secured thereby with nuts providing for balance of said antenna at first and second polarizations at mobile locations and said alternatively positioned elements on opposing sides of said channels of said boom and alternating along said length of said boom thereby providing a log period effect with wide bandwidth.

4,355,316

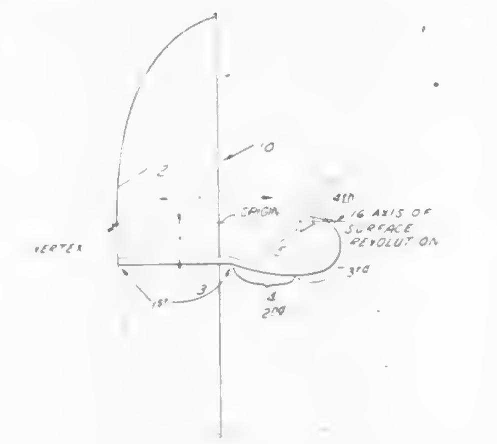
OFFSET J-HOOK REFLECTOR ANTENNA

Yeongming Hwang; Ching C. Han, both of Los Altos, and David F. Ford, San Jose, all of Calif., assignors to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Sep. 22, 1980, Ser. No. 189,437

Int. Cl.^{3} H01Q *1/02*

U.S. Cl. 343—840 **4 Claims**



1. A microwave antenna system comprising:

a reflective surface formed as a center section of a concave surface which is a paraboloid of revolution and having a central axis of symmetry;

an electromagnetic feed horn disposed along said axis of symmetry; and

a waveguide feed coupled to said horn which intersects said reflective surface at a position offset from said axis of symmetry, said waveguide feed having a first portion generally extending outward from said reflective surface parallel to said axis of symmetry, a second portion bending in a first direction away from said axis of symmetry, a third portion bending toward said axis of symmetry, a fourth section extending generally toward said reflective surface and coupling to said horn so that the electromagnetic radiation in the side lobe region is reduced.

4,355,317

DISH ANTENNA AND METHOD FOR MAKING

Andrew R. Muzio, Newnan, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed Nov. 24, 1980, Ser. No. 209,327

Int. Cl.^{3} H01Q *19/12*

U.S. Cl. 343—840 **11 Claims**

1. A method for the manufacture of a dish antenna, comprising:

preparing a mold having a parabolic glazed surface which defines a focal length along a focal axis;

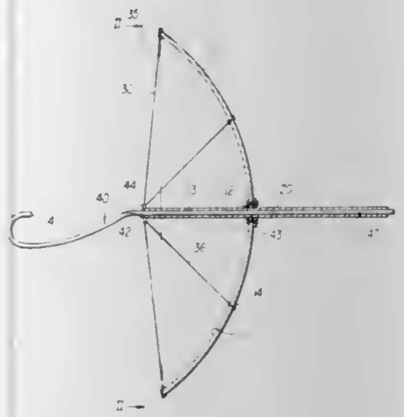
depositing a uniform thickness layer of a plastic material on said glazed surface to form a dish element having an aperture on said focal axis;

removing said dish element from said mold;

fixedly positioning a heavy wall structural tube along said focal axis, said tube extending through said aperture and having a distal end extending towards said focal point;

providing a parabolic reflective coating on said dish element;

fixing small diameter rigid rods between said distal end of said tube and said dish element in such a manner that said tube, rods and dish element form substantially triangular cross-sections;



extending an antenna feed from said distal end of said tube to said focal point; and

passing the transmission line for said antenna feed through said tube.

4,355,318

LASER RECORDING MONITORING SYSTEM

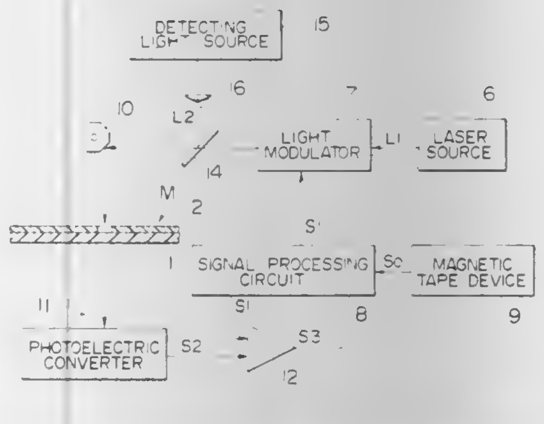
Akio Miyauchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 8, 1980, Ser. No. 213,906

Claims priority, application Japan, Dec. 27, 1979, 54-171915; Dec. 27, 1979, 54-171916

Int. Cl.^{3} G01D *15/14*

U.S. Cl. 346—76 L **1 Claim**



1. A monitoring system for monitoring laser beam recording, in which a recording laser beam is modulated in accordance with data signals representing information and the modulated laser beam is caused to scan a heat-mode recording medium to record the information thereon as a pattern of parts the optical density of which is reduced to permit light to pass therethrough upon being exposed to the recording laser beam, said monitoring system comprising:

a photo-electric converting means which receives light passing through the heat-mode recording medium and outputs electric signals in accordance with the received light,

a detecting light source which emits a detecting light beam, and means for causing the detecting light beam to scan said heat-mode recording medium along with the modulated laser beam, at least a part of the spot formed on the heat-mode recording medium by the detecting light beam preceding the spot formed by the recording laser beam in the direction of scanning, and

a comparator means which compares the electric signals with the data signals and outputs a deviation signal when the former deviate from the latter.

4,355,319

SYSTEM FOR THERMALLY RECORDING DATA BY PARTIALLY OVERLAPPING SUCCESSIVE DATA SEGMENT PERIODS

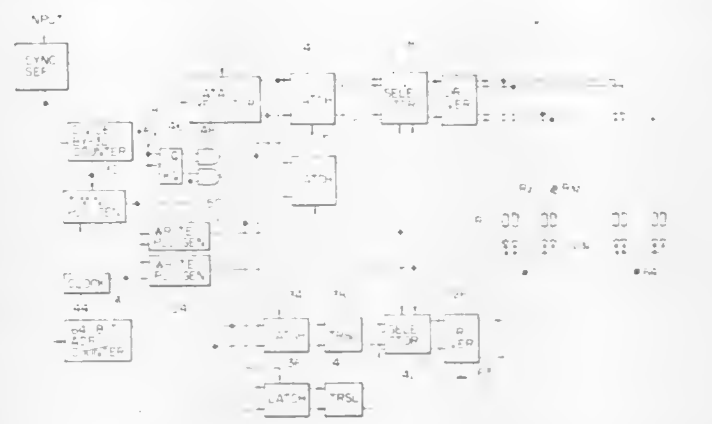
Tadasu Takeuchi, Chofu; Hidetsugu Ishikawa, and Masaaki Nagase, both of Tokyo, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 235,021

Claims priority, application Japan, Feb. 14, 1980, 55-17468

Int. Cl.^{3} G01D *15/10*

U.S. Cl. 346—76 PH **8 Claims**



1. A recording system adapted to receive signals organized into a plurality of data segments of equal data bits each and having a linear array of heating elements arranged in a plurality of identical blocks corresponding to said data segments, the heating elements of each block corresponding to said data bits, comprising:

means for alternately generating first and second pulses of a period greater than the period during which each of said data segments is received so that the period of said first pulse partially overlaps the period of said second pulse; and

means responsive to said first and second pulses for supplying the heating elements of successive ones of said blocks with heating currents corresponding to said data bits.

4,355,320

LIGHT-CONTROLLED TRANSISTOR

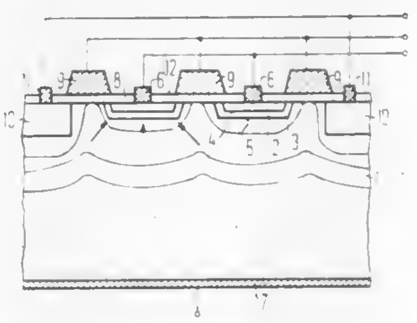
Jenö Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,900

Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922250

Int. Cl.^{3} H01L *27/14*

U.S. Cl. 357—30 **4 Claims**



1. Light-controllable transistor, comprising a semiconductor body having a surface including a given area intended for the incidence of light, a collector zone, and a base zone and an emitter zone each having a smaller area than said semiconductor body, each of said base and collector zones having at least a part thereof emerging to said surface, a pn-junction disposed between said base and emitter zones and a pn-junction disposed between said base and collector zones, each of said pn-junc-

tions emerging to said surface at said given area, at least one auxiliary electrode disposed on and electrically insulated from said surface, said auxiliary electrode covering at least said parts of said base and collector zones emerging to said surface, said auxiliary electrode being connectible to an auxiliary voltage having the same polarity as the emitter bias, and at least one auxiliary zone of the same conduction type as said base zone, said auxiliary zone being embedded in said semiconductor body and being spaced at a lateral distance from said emitter and base zones, and said auxiliary zone being connectible to an auxiliary voltage of the same polarity as the emitter bias.

4,355,321

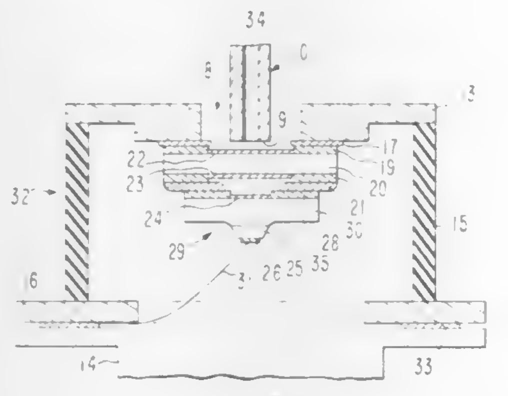
OPTOELECTRONIC ASSEMBLY INCLUDING LIGHT TRANSMISSIVE SINGLE CRYSTAL SEMICONDUCTOR WINDOW

Robert E. Yeats, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 2, 1981, Ser. No. 230,485

Int. Cl.^{3} H01L *27/14, 33/00*

U.S. Cl. 357—30 **6 Claims**



1. An optoelectronics assembly for obtaining an efficient coupling with an optical fiber, comprising:

a housing defining an interior cavity and having an opening in the surface thereof;

an active optoelectronic device mounted within said housing and oriented to emit or receive light transmitted through said opening; and

a light transmissive single crystal semiconductor window having an index of refraction greater than 2 within said housing in the vicinity of said opening so that efficient optical coupling is achieved but no physical contact is possible between said optical fiber, positioned exteriorly of said housing, and said active device within said housing.

4,355,322

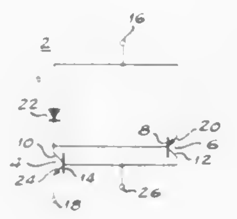
INTEGRATED GATE TURN-OFF DEVICE HAVING A VERTICAL POWER TRANSISTOR FORMING A REGENERATIVE LOOP WITH A LATERAL TRANSISTOR

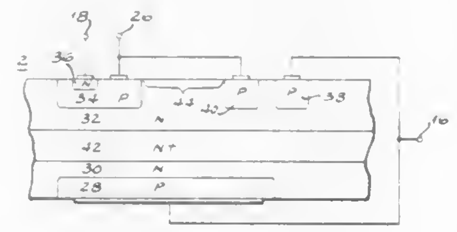
Gordon B. Spellman; Herman P. Schutten, and Stanley V. Jaskolski, all of 4201 N. 27th St., P.O. Box 463, Milwaukee, Wis. 53201

Continuation of Ser. No. 972,442, Dec. 22, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,844

Int. Cl.^{3} H01L *29/74*

U.S. Cl. 357—38 **3 Claims**





1. A monolithically integrated gate turn-off semi-conductor switching device comprising:

a pair of main terminals for carrying load current;

a control terminal which enable said device to be turned On by signal current of one polarity and be turned OFF by a signal current of the opposite polarity;

first non-regenerative switch means comprising a power transistor vertically formed in a substrate by first, second and third regions of alternating conductivity types,

a diode formed by fourth and fifth regions of opposite conductivity types in series with the aforementioned regions of said vertical transistor but separated therefrom by a sixth region of said substrate doped to provide low minority carrier lifetime therein and prevent vertical regenerative action between said diode and said vertical transistor;

said fourth region of said diode being disposed on a bottom surface of said substrate and ohmically connected to one of said main terminals and;

said third region of said vertical transistor being disposed on the top surface of said substrate and ohmically connected to the other of said main terminals;

second non-regenerative switching means comprising a transistor laterally formed in said substrate by said first region of said vertical transistor, and by a seventh region and an eighth region of alternating conductivity types, said eighth region being disposed on the top surface of said substrate and ohmically connected to said second region of said vertical transistor for delivering base drive current to the latter region when base drive current is applied to the common first region of said first and second switching means, said second non-regenerative switching means being non-conductive in the absence of the last mentioned base drive current;

said common first region of said vertical and lateral transistors having a portion disposed on said top surface of said substrate between said eighth region of said lateral transistor and said second region of said vertical transistor of laterally extended dimension to reduce to a negligible level parasitic interaction between said transistors; and

said control terminal being connected to said second region of said vertical transistor and said eighth region of said lateral transistor to provide a regenerative coupling between said first and second non-regenerative switching means such that application of said signal current of said one polarity to said control terminal initiates regenerative loop current between said first and second individually non-regenerative switching means to maintain conduction of said first such switching means upon removal of said signal current of said one polarity;

said first such switching means upon application of a small signal current of said opposite polarity to said control terminal being turned OFF by interruption of base drive to its said second region.

4,355,323

COUPLER COMPRISING A LIGHT SOURCE AND LENS

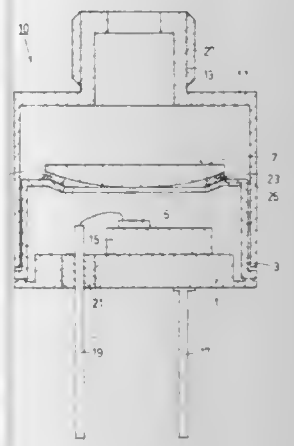
Hendrikus G. Kock, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 16, 1980, Ser. No. 150,386

Claims priority, application Netherlands, May 31, 1979, 7904283

Int. Cl.^{3} H01L *23/02*

U.S. Cl. 357—74 **7 Claims**



1. A coupling element comprising:

a support;

a cover secured to the support;

a light source mounted on the support inside the cover, said light source emitting a light beam when in operation; and

a lens connected to the cover at a location opposite the light source in the path of the light beam emitted by the light source;

characterized in that:

the cover has a flange;

the lens is connected to the cover at the flange, said lens being secured to the flange by way of a layer of plastic metal solder having a thickness of between 0.1 and 2 mm; and

the support, the cover, and the lens form a hermetically sealed space containing the light source.

4,355,324

SAMPLED OR DIGITIZED COLOR IN A HIGH SPEED SEARCH RECORD AND REPLAY SYSTEM

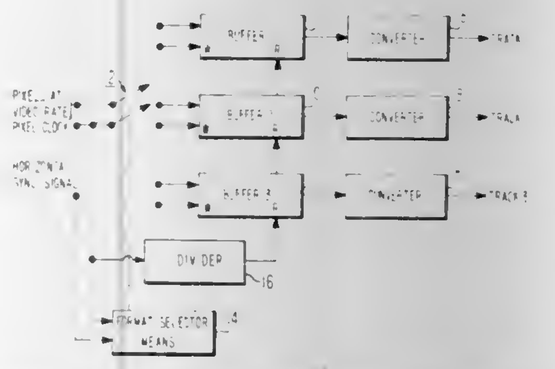
Glenn A. Reitmeier, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,150

Claims priority, application United Kingdom, Mar. 3, 1980, 8007163; Mar. 6, 1980, 8007669

Int. Cl.^{3} H04N *5/79*

U.S. Cl. 358—312 **17 Claims**



9. In a replay system of the type wherein digital color composite video sampled at a predetermined multiple of the color subcarrier frequency is recorded with each video field or frame disposed on a set of multiple tracks and with only a portion of the recorded information being intended for replay to reconstruct the color video signal during the Moviola mode, the improvement comprising:

replay formating and replication means for directing moviola entire color subcarrier cycle pixel groups from the multiple track set and repeating each moviola color subcarrier cycle pixel group a number of times to provide instantaneous coherent information during the Moviola mode.

4,355,325

WHITE BALANCE CONTROL SYSTEM

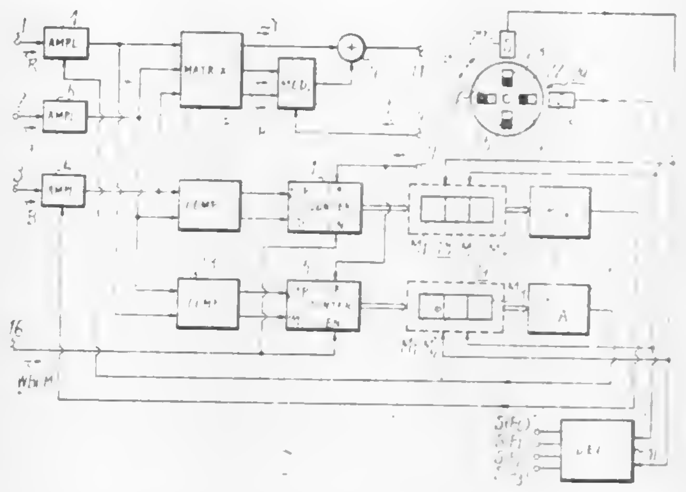
Takashi Nakamura, Hadano, and Akio Sakashita, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,612

Claims priority, application Japan, Mar. 24, 1980, 55-37154

Int. Cl.^{3} H04N *9/535*

U.S. Cl. 358—29 **10 Claims**



1. A white balance control system for a color television camera having a plurality of manually controllable color temperature compensating filters comprising:

(A) gain control means for electrically adjusting the white balance of a derived color video signal,

(B) level comparing means responsive to said color video signal and connected to said gain control means for producing and supplying a plurality of sets of level setting signals to said gain control means, and

(C) selection means for selectively supplying one of said plurality of sets of level setting signals to said gain control means.

4,355,326

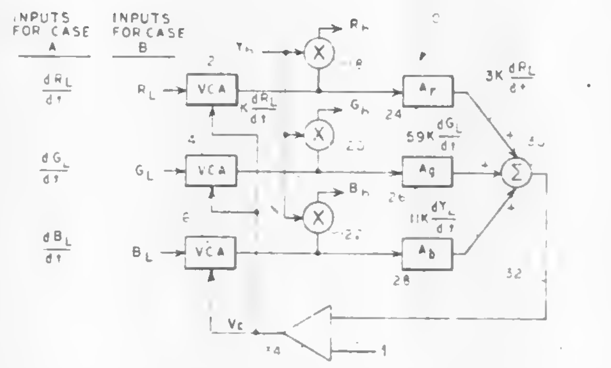
BANDWIDTH ENHANCEMENT NETWORK FOR COLOR TELEVISION SIGNALS

Ronald B. Lee, Skokie, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 11, 1981, Ser. No. 233,524

Int. Cl.^{3} H04N *5/21*

U.S. Cl. 358—37 **21 Claims**



1. In a television system which provides a luminance signal having high frequency and low frequency components and

which provides relatively narrow band color input signals, a feed-back network for enhancing the bandwidth of the color input signals, comprising:

multiplying means receiving the color input signals and the high frequency luminance components for multiplying at least the color input signals by a variable factor K and for developing high frequency color output signals such that each one of said color signals comprises the product of respective one of said input color signals, the factor K, and the high frequency luminance components;

means receiving at least the K multiplied color input signals for weighting each such received signal by a selected coefficient;

means for combining the weighted signals to develop a summed signal; and

means coupled to the combining means and to the multiplying means for sensing the value of the summed signal and for varying the value of the factor K as a function of the value of the summed signal such that the high frequency luminance components in the color output signals are substantially equal to the high frequency components of the luminance signal.

4,355,327

DIGITAL COLOR ENCODER

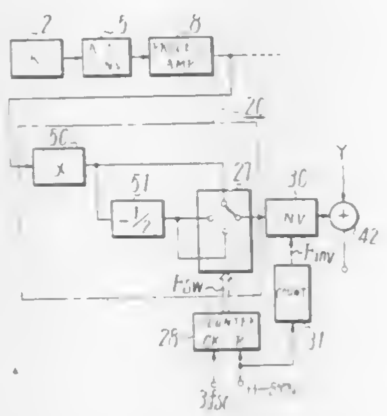
Fumio Nagumo, Yokohama, and Takashi Asaida, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1981, Ser. No. 231,440

Claims priority, application Japan, Jan. 31, 1980, 55-10672

Int. Cl.³ H04N *9/07, 9/18*

U.S. Cl. 358—44 **6 Claims**



6. A digital color television camera including a digital color encoder for producing a digital color signal having a predetermined color phase, comprising:

a. solid state image pickup means for reproducing a primary color signal,

b. analog-to-digital converters for converting said reproduced primary color signal to digital color signal components,

c. a digital color modulating circuit in which a carrier signal at $3f_{sc}$ is individually modulated with said digital color signal components at a first $\frac{2}{3}\pi$ offset carrier phase at N horizontal lines and a second $\frac{2}{3}\pi$ offset carrier phase at N+1 horizontal lines, where N is an integer and said first and second carrier phases having opposite phase relationship to each other,

d. a signal inverter for phase-inverting the output of said digital color modulating circuit during every one horizontal line interval, and

e. a drive signal generator for driving said digital color modulating circuit, said solid state image pickup means and analog-to-digital converter and the outputs of said drive signal generator being synchronized with each other.

4,355,328

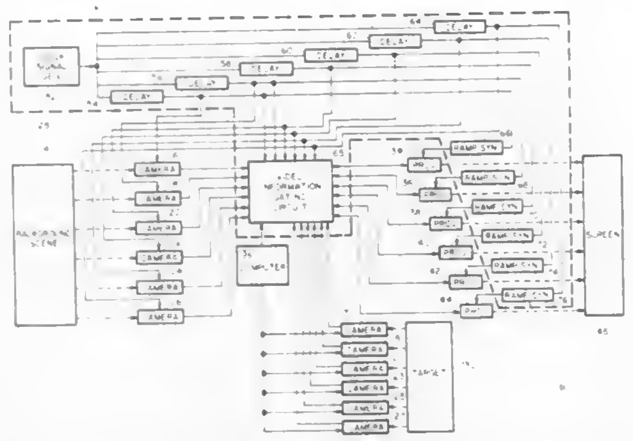
360 DEGREE CLOSED CIRCUIT TELEVISION SYSTEM

John J. Kulik, Longwood, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1981, Ser. No. 236,948

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—87 **16 Claims**



1. A 360 degree closed circuit television system comprising, in combination:

a 360 degree reflective display screen;

a background scene broadcast upon said 360 degree reflective display screen;

a plurality of background scene detecting means positioned within said 360 degree reflective display screen off the center thereof adapted for scanning said background scene with each of said detecting means scanning a predetermined angular segment in an azimuthal direction of said background scene, and providing, in response to the scanning of said background scene thereby, a background scene information signal, each of said background scene detecting means having a sync input and an output;

a target;

a plurality of target detecting means positioned adjacent to said target, each of said target detecting means having a sync input and an output adapted for scanning said target, and providing, in response to the scanning of said target thereby, a target information signal;

a transparent display screen having a plurality of rectangular shaped screen elements;

a plurality of projecting means, each projecting means of which has a sync input, a data input, and a blanking signal output, and each projecting means of which is positioned adjacent the outer surface of one of the screen elements of said transparent display screen for broadcasting upon the screen element of said transparent display screen positioned adjacent thereto one of the angular segments of said background scene, and said target for a predetermined time period such that an observer will observe the movement of said target upon said background scene around said transparent display screen;

master clock signal generating means having an output for producing a master clock signal having a series of uniformly spaced pulses of predetermined frequency;

a plurality of timing means, each timing means of which has an input connected to the output of said master clock signal generating means, and an output adapted for producing a plurality of sync signals, each sync signal of which is delayed for a predetermined time period from the master clock signal produced by said master clock signal generating means, and each sync signal of which activates one of said plurality of background scene detecting means so as to effect the scanning of said background scene thereby;

a plurality of waveform generating means, each of which has an input and an output with the inputs thereof respectively connected to the outputs of said plurality of timing means, and the outputs thereof respectively connected to the sync inputs of said plurality of projecting means adapted for producing, in response to the sync signals produced by said plurality of timing means, a plurality of segmental sawtooth waveform signals, each segmental sawtooth waveform signal of which activates one of said plurality of projecting means such that said plurality of projecting means will broadcast upon said transparent display screen said background scene and said target so as to eliminate from said background scene and said target any distortion therein, thereby improving the resolution thereof;

computing means having a plurality of sync outputs respectively connected to the sync inputs of said plurality of target detecting means, and a control output terminal for providing, in accordance with a target movement program utilized thereby, a plurality of sync signals so as to effect the activation of said plurality of target detecting means, for controlling the phase difference of the sync signals provided thereby with respect to the sync signals provided by said plurality of timing means so as to effect the movement of said target around said transparent display screen, and for producing at the control output terminal thereof a plurality of logic signals;

video information gating circuit means having a plurality of sync inputs respectively connected to the outputs of said plurality of timing means, a plurality of first data inputs respectively connected to the outputs of said plurality of background scene detecting means, a plurality of second data inputs respectively connected to the outputs of said plurality of target detecting means, a plurality of signal blanking inputs respectively connected to the signal blanking outputs of said plurality of projecting means, a control input terminal connected to the control output terminal of said computing means, and a plurality of outputs respectively connected to the data inputs of said plurality of projecting means adapted for synthesizing said target information signals with said background scene information signals so as to form a plurality of background scene-target information signals and thereby effect the broadcasting by said plurality of projecting means of said background scene and said target upon said transparent display screen, and for providing, in response to the logic signals produced by said computing means, for the blanking of multiple visual images of said target such that only one visual image of said target is visible upon said transparent display screen.

4,355,329

REMOTE STATION

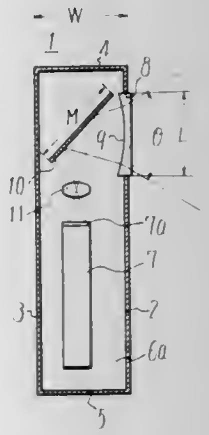
Shinichi Yoshida, Hino, and Kazutaka Kobayashi, Kokubunji, both of Japan, assignors to Nipon Interphone Co., Ltd., Japan

Filed Apr. 1, 1981, Ser. No. 250,052

Claims priority, application Japan, Apr. 14, 1980, 55-50513[U]

Int. Cl.³ H04N *7/18, 5/26*

U.S. Cl. 358—108 **5 Claims**



1. A remote station provided with a television camera and coupled to master station of an inter communication system comprising;

(a) a housing of a remote station, said housing including at a least front panel;

(b) a window formed through said front panel;

(c) an adaptor lens engaged with said window for introducing light from an object at a wide angle into said housing;

(d) a pick-up tube of a television camera disposed within said housing; and

(e) a reflector disposed within said housing between said adaptor lens and said pick-up tube so as to reflect the light from said object thereon and project thus reflected light on said pick-up tube.

4,355,330

X-RAY TELEVISION SYSTEM

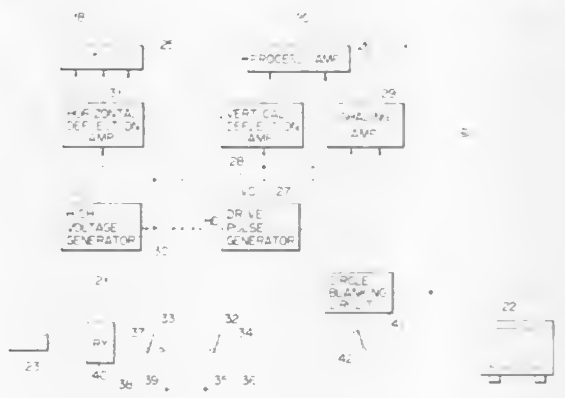
Hiroyuki Fukui, Nishinasuno, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 30, 1980, Ser. No. 116,921

Claims priority, application Japan, Feb. 5, 1979, 54-11392

Int. Cl.³ H04N *7/18, 5/32*

U.S. Cl. 358—111 **7 Claims**



1. An X-ray television system comprising:

an X-ray generator to emit X-rays;

an X-ray stop for selectively reducing the irradiation field of the X-rays emitted from said X-ray generator;

an image intensifier to convert the X-rays transmitted through a subject into an X-ray image;

a television camera including an image pickup surface to pick up the X-ray image from said image intensifier and a scanning means for scanning the scanning region of said image pickup surface and converting said X-ray image into a video signal;

a means for supplying a scanning signal to the scanning means of said television camera;

a means for blanking the video signal from said television camera;

a scanning region adjusting means for adjusting the size of the scanning region of said image pickup surface;

a means for selecting one of ordinary fluoroscopic photographing and cine-photographing; and

a means driving said blanking means in the ordinary fluoroscopic photographing and releasing said blanking means and driving said scanning region adjusting means in a direction to reduce said scanning region in the cine-photographing, in response to said selecting means.

4,355,331

X-RAY IMAGE SUBTRACTING SYSTEM

Jean-Pierre J. Georges, Waukesha; Gary S. Keyes, Hartland, and William H. Wesbey, New Berlin, all of Wis., assignors to General Electric Company

Filed Jan. 28, 1981, Ser. No. 229,249

Int. Cl.³ H04N *5/32*

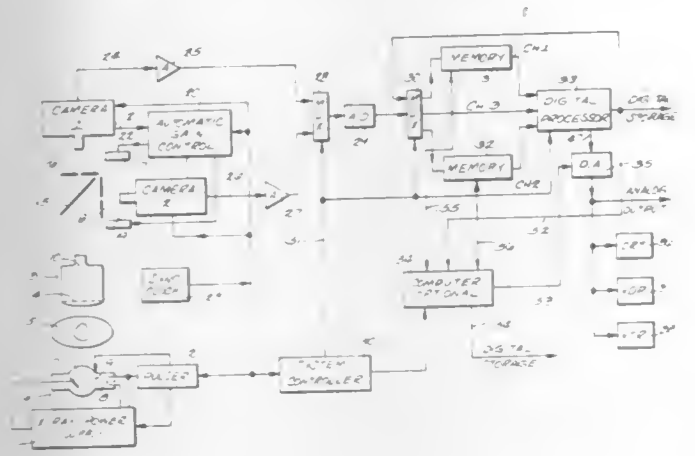
U.S. Cl. 358—111 **37 Claims**

1. A method of producing data representative of an image resulting from combining of x-ray images including the steps of:

projecting from an x-ray source through a subject alternate x-ray beam pulses that have different energies to produce successive x-ray images,

converting said x-ray images in coincidence with their occurrence to corresponding optical images,

providing a first video camera means having image pick-up means for receiving the optical image corresponding to the one energy x-ray beam energy and a second video camera means having image pick-up means for receiving the optical image corresponding to the other energy x-ray beam energy, said pick-up means each responding to being scanned by producing analog video signals representative of the images, respectively,



converting the analog video signals from the respective pick-up means to digital data corresponding to the respective images produced at the one and the other x-ray energies,

storing the digital data corresponding to the image at one x-ray energy at least until the digital data corresponding to the other x-ray energy are obtained, and

weighting the digital data representative of the respective images and combining the weighted digital data representative of the image at one energy with the data representative of the image at the other energy to yield digital data representative of the difference between the successive images.

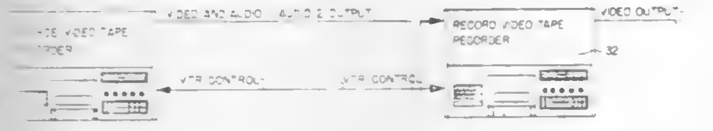
4,355,332
VIDEO TAPE EDITING CONTROL SYSTEM

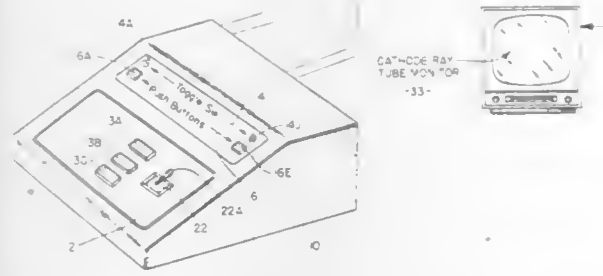
Gary H. Beeson, Santa Ana, Calif., assignor to Convergence Corporation, Irvine, Calif.

Continuation of Ser. No. 929,667, Jul. 31, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,657

Int. Cl.^{3} H04N ***5/76;*** **G11B** ***27/02***

U.S. Cl. 360—14.1 **5 Claims**





1. In a video editing control system for controlling the recording of successive frames of first video information from a video information source onto a video tape in a record video tape recorder up to a selected edit point on the tape, and for then controlling the recording of successive frames of second video information from the video information source onto the video tape in the record video tape recorder after the selected edit point on the tape, the combination of: circuit means coupled to the video information source and to the record video tape recorder for causing only the first video information to be recorded on the tape in the record video tape recorder up to the selected edit point, and for causing only the second video information from the video information source to be recorded on the tape in the record video tape recorder after the edit point; and a control system coupled to said circuit means for reducing the amplitude of the first video information from a particular value to a predetermined minimum value over a predetermined number of frames up to said edit point and terminating the recording of the first video information at the edit point, and for commencing the recording of the second video information at the edit point and for increasing the amplitude of the second video information from a predetermined minimum value to a particular value over a predetermined number of frames following the edit point.

4,355,333
VIDEO SIGNAL PROCESSING CIRCUIT WITH COMB FILTER

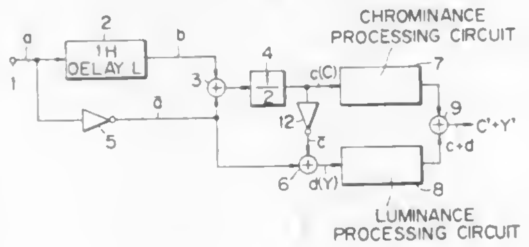
Ichitaro Sato, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,631

Claims priority, application Japan, Apr. 28, 1980, 55/56814

Int. Cl.^{3} H04N ***5/14, 5/21, 9/535***

U.S. Cl. 358—160 **8 Claims**



1. A video signal processing circuit comprising:

(A) an input circuit to which an incoming video signal is applied,

(B) a delay circuit connected to said input circuit for delaying said video signal corresponding to n horizontal scan intervals of said video signal, where n is 1 or 2,

(C) a first mixing means connected to an output of said delay circuit and said input circuit for mixing the non-delayed video signal and the delayed video signal in opposite polarity to each other,

(D) a second mixing means connected to an output of said first mixing means and to said input circuit for mixing said incoming video signal and an inverted output signal from said first mixing means, and

(E) a third mixing means connected to said output of said first mixing means and to an output of said second mixing means for deriving an output video signal without delay.

4,355,334
DIMMER AND DIMMER OVERRIDE CONTROL FOR A DISPLAY DEVICE

James J. Fitzgibbon, Lombard, and Leroy Sutton, Wheeling, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed May 29, 1981, Ser. No. 268,441

Int. Cl.^{3} H04N ***5/20, 5/58***

U.S. Cl. 358—168 **8 Claims**

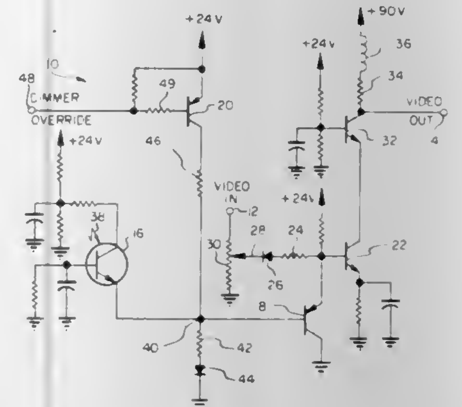
1. A dimmer and dimmer override control for adjusting the amplitude of a video signal received by a video display device, comprising:

an amplifier for receiving and amplifying the video signal;

a light sensor for generating a dimmer control signal corresponding to the intensity of ambient light;

first transistor means responsive to the dimmer control signal and coupled to the amplifier so as to clip the video signal and thereby reduce the amplitude of the amplified video signal as the intensity of ambient light decreases; and

second transistor means coupled to the first transistor means and adapted to receive a dimmer override signal for at least partially disabling the clipping action of the first transistor means so that a large amplitude video signal is output by the amplifier irrespective of the intensity of ambient light.



4,355,335
SIGNAL PROCESSING CIRCUIT FOR USE IN SOLID-STATE CAMERA

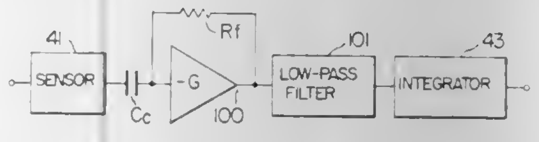
Takuya Imaide, Yokohama; Hiroaki Nabeyama, Kamakura; Masaru Noda, Fujisawa; Michio Masuda, Yokohama; Morishi Izumita, Inashiro, and Shinya Ohba, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 192,997

Claims priority, application Japan, Oct. 3, 1979, 54-126852

Int. Cl.^{3} H04N ***3/14***

U.S. Cl. 358—213 **15 Claims**



1. A signal processing circuit for use in a solid-state camera having a light receiving section for converting an optical image to an electrical signal, the circuit comprising:

means for sensing the electrical signal output of said light receiving section;

means for amplifying the output of said sensing means, said amplifying means including an amplifying section and a circuit section for narrowing the bandwidth of said amplifying means; and

means for integrating and sampling the output of said amplifying means,

wherein the parameters of circuit elements of said circuit section for narrowing the bandwidth of said amplifying means are set to suppress aliasing of noise inherent in said amplifying means due to said integrating and sampling means.

4,355,336
DIGITALLY CONTROLLED ELECTRO-OPTICAL IMAGING SYSTEM

Tomas Hirschfeld, Framingham, Mass., and Marvin Margoshes, Chevy Chase, Md., assignors to Block Engineering, Inc., Cambridge, Mass.

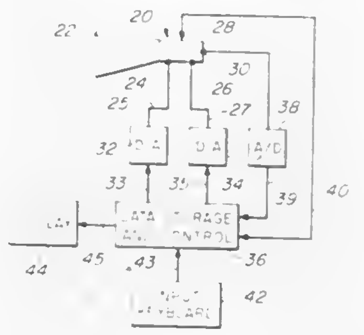
Filed Feb. 22, 1971, Ser. No. 117,285

Int. Cl.^{3} H04N ***3/00, 3/30***

U.S. Cl. 358—217 **3 Claims**

1. In combination with an electro-optical imaging device having target means for receiving an image and means for generating an electron-beam for reading the image formed on said target means in said device, said target being capable of integrating the radiation falling on each point thereof, means for controlling the lateral deflection of said electron beam, and means for providing output signals corresponding to the intensity of the image as read by said electron-beam means, a digital control system comprising:

means for storing a plurality of pairs of digital signals, each corresponding to a pair of coordinates of a corresponding predetermined point on said target;



means for converting selected pairs of said digital signals to corresponding pairs of analog-valued control signals;

means for applying said control signals to said means for controlling said lateral deflection, and;

means for activating said means for generating said beam at a repetition rate for each of said target points in relation to the intensity of the radiation falling on each of said target points for a unit time interval.

4,355,337
METHOD OF RESTORING PICTURES WITH HIGH DENSITY

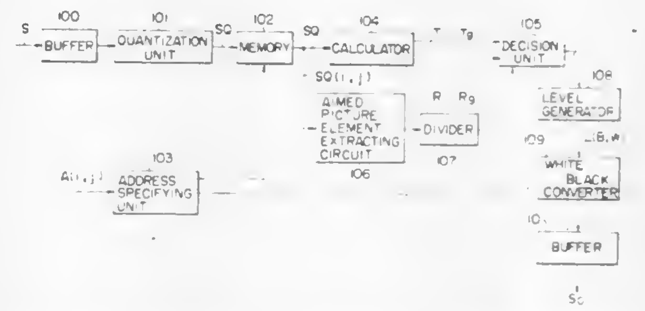
Keiji Sekigawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,484

Claims priority, application Japan, Feb. 22, 1979, 54-19989

Int. Cl.^{3} H04N ***7/12***

U.S. Cl. 358—284 **1 Claim**



1. A picture restoring method in which an original picture is read with low density into square picture elements arranged in the form of a grid, and the original picture is restored with high density by estimating the original picture with the density data of said picture elements, comprising the steps of:

(a) subjecting the density data of said picture elements thus read to decimal quantization, to provide the density levels of said picture elements;

(b) obtaining the density levels of eight sets of picture elements according to said decimal quantization density levels, with three adjacent picture elements among picture elements positioned around an aimed picture element making up one set;

(c) dividing said aimed picture element into nine square minute picture elements arranged in the form of a grid, to determine whether each of said minute picture elements are white or black according to the density levels of each of eight sets of picture elements adjacent to said minute picture elements, which have been obtained in said step (b); and

(d) converting, when there are more than four black minute picture elements around a minute picture element which has been decided white in said step (c), said white minute picture element into a black minute picture element.

4,355,338
DUPLICATOR

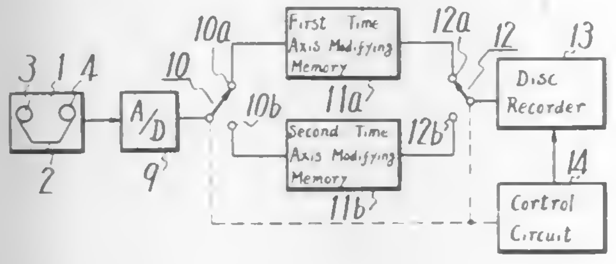
Tatuo Yamamoto; Yoshio Taguchi; Atsushi Miyashita; Shigeo Todoroki; Susumu Katayama, all of Mitaka, and Menoru Eeda, Kawasaki, all of Japan, assignors to Nippon Columbia K.K., Tokyo, Japan

Filed Feb. 11, 1980, Ser. No. 120,676

Claims priority, application Japan, Feb. 13, 1979, 54-15275; Feb. 13, 1979, 54-15276; Feb. 13, 1979, 54-15277; Feb. 13, 1979, 54-15278

Int. Cl.^{3} G11B *5/86*

U.S. Cl. 360—15 **5 Claims**


3
1
4
2
A/D
9
10
10a
10b
First Time Axis Modifying Memory
11a
Second Time Axis Modifying Memory
11b
12a
12
12b
13
Disc Recorder
14
Control Circuit

1. A duplicator for duplicating an analog signal, comprising:

at least first and second discs;

said first disc having recorded thereon a first digital representation of a first pair of said analog signal;

said second disc having recorded thereon a second digital representation of a second part of said analog signal contiguous to said first part;

means for simultaneously reproducing said first and second digital representations at a first rate;

first and second memory means effective respectively for storing the reproduced first and second digital representations;

means for sequentially reading out the stored first and second digital representations from said first and second memory means at a second rate substantially higher than said first rate; and

means for converting the first and second digital representations into a reconstructed analog signal suitable for recording.

4,355,339
TRANSDUCER CARRIAGE ASSEMBLY

Francis K. King, San Jose, Calif., and Donald J. Wanek, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 974,480, Dec. 29, 1978, abandoned. This application Jan. 9, 1980, Ser. No. 110,728

Int. Cl.^{3} G11B *5/58*

U.S. Cl. 360—105 **2 Claims**

1. A transducer-carriage assembly for use with a rotatable flexible disk having high frequency undulations and low frequency undulations as the disk rotates and comprising:

a pair of transducers,

a pair of rigid arms adapted to embrace the disk,

spring means for anchoring each of said transducers with respect to one of said arms adjacent an end of the arm for holding the transducers in register opposite each other on and in effective contact with opposite sides of the disk and effective to absorb the high frequency undulations of the disk as it rotates,

second spring means comprising a single leaf spring element connected to and between said arms adjacent their other ends and including a leaf spring portion that is fixed in face to face contact with one of said arms and extends through the other of said arms for moving said arms together so that they function as a unit and for moving said transducers into effective contact with the disk,

a carriage, and

means for hingedly mounting said arms with respect to said carriage so that said arms may swing as a unit to accommodate low frequency undulations of the disk as it rotates.

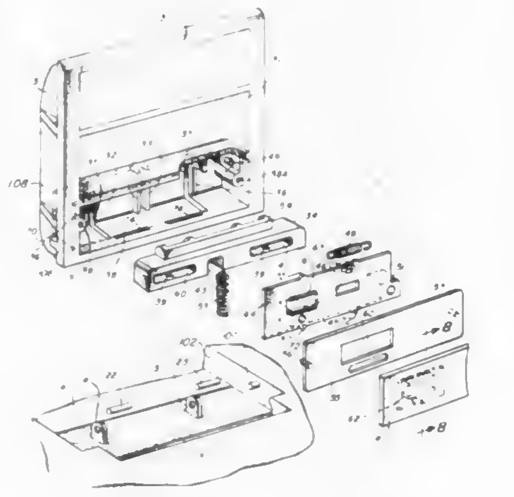
4,355,340
DISC PACK WITH SNAP ON HANDLE

David E. Butz, Littleton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 104,267, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 969,073, Dec. 13, 1978, abandoned. This application Dec. 29, 1980, Ser. No. 220,911

Int. Cl.^{3} G11B *23/04;* **B65D** *85/30*

U.S. Cl. 360—133 **30 Claims**



1. In a disc pack cartridge of the type having a top cover with a handle that can be raised from a horizontal position to a vertical position, a magnetic disc housed within the top cover, the magnetic disc being attached to a hub having a magnetizable armature plate, a removable bottom cover having magnets for latching the removable bottom cover to the top cover by the magnetic attraction between the magnets and the armature plate, a lift plate for lifting the hub away from the magnets of the removable bottom cover to unlatch the removable bottom cover, and lift arms attached to the lift plate and extending through the top cover into a chamber in the handle,

the improvement comprising

a yoke constantly housed in the chamber of the handle for sliding movement between an unlatch position and a carry position,

means securing the lift arms to the yoke in a manner enabling the lift arms to pivot on the yoke,

means urging the yoke to the unlatch position,

a slide member in the chamber, disposed above the yoke, the slide member having dependent blocking members adapted to block sliding movement of the yoke from the unlatch position toward the carry position, the slide member being movable to a carry station where the dependent blocking members do not block the sliding movement of the yoke.

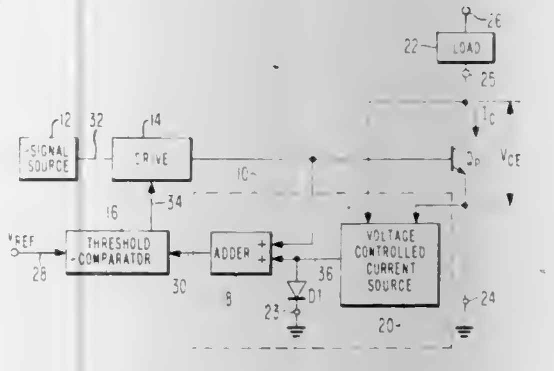
4,355,341
POWER PROTECTION CIRCUIT FOR TRANSISTORS

Leonard A. Kaplan, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,347

Int. Cl.^{3} H02H *3/26, 7/20*

U.S. Cl. 361—79 **9 Claims**



1. In an arrangement including a protected transistor having collector, base and emitter electrodes, said base electrode receiving a drive signal and in response an output voltage developing between said collector and emitter electrodes and an output current flowing in the conduction path between said collector and emitter electrodes, a power protection circuit comprising:

a first semiconductor junction;

means responsive to said output voltage for forward biasing said first semiconductor junction to develop a first voltage which is logarithmically related to said output voltage;

the base-emitter junction of said protected transistor being responsive to said output current for developing a second voltage thereacross which is logarithmically related to said output current;

means for adding said first and second voltages to produce their sum; and

control means for reducing said drive signal when said sum of said first and second voltages exceeds a predetermined limit.

4,355,342
POWER CIRCUIT INCLUDING MEANS FOR AUTOMATICALLY PROTECTING A CHOPPING TRANSISTOR THEREOF

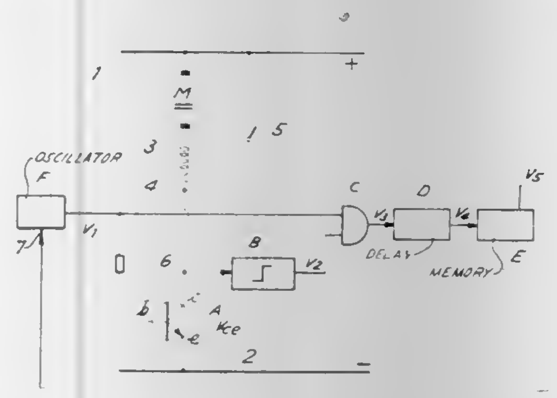
Luciano Franzolini, Milan, Italy, assignor to Sp. El. s.r.l., Milan, Italy

Filed Jan. 17, 1980, Ser. No. 113,234

Claims priority, application Italy, Jan. 30, 1979, 19751 A/79

Int. Cl.^{3} H02H *3/20*

U.S. Cl. 361—91 **2 Claims**



1. A power circuit comprising:

a chopping transistor connected in series with a load across a supply of direct current, said transistor having a collector connected to the load, an emitter connected to a terminal of said supply and a base;

an oscillator having an output connected to said base and further having a blocking input, said oscillator generating a train of control pulses periodically rendering said transistor conductive;

threshold means connected to said collector for emitting a train of monitoring pulses of the same polarity as said control pulses in response to the collector/emitter voltage exceeding a predetermined limit during periods of cutoff of said transistor, said limit being also exceeded by a collector/emitter voltage occurring during conduction of said transistor upon an accidental short-circuiting of the load;

an AND gate with inputs connected to the oscillator output and to said threshold means for emitting an off-normal signal in response to coincidence of a control pulse with a monitoring pulse;

delay means connected to said AND gate for suppressing spurious transients and emitting an alarm signal only in the presence of an off-normal signal of at least a predetermined minimum duration which is less than the width of a control pulse; and

memory means connected to said delay means for delivering a permanent disconnect signal to said blocking input upon being tripped by said alarm signal, thereby disabling said oscillator and preventing further conduction of said transistor.

4,355,343
SEMICONDUCTOR SWITCH FAILURE CONTROL CIRCUIT

Thomas A. O. Gross, Lincoln, Mass., assignor to Jet Spray Corp., Waltham, Mass.

Filed May 15, 1980, Ser. No. 150,201

Int. Cl.^{3} H02H *3/00*

U.S. Cl. 361—100 **14 Claims**

1. For a semiconductor bilateral switch having at least an input control electrode and an output electrode coupling to a load and an AC source intercoupling the bilateral switch and load means for interrupting power to the load in the event of a unilateral failure of the switch comprising, energy storage means and means coupling the energy storage means intermediate the semiconductor bilateral switch and load, said energy storage means responsive to a unilateral failure of the bilateral switch to thus couple uni-polarity voltage thereto to cause opening of the path to the load to thus interrupt power to the load.

4,355,344
PROTECTIVE DEVICE ELECTRONIC SEMICONDUCTOR COMPONENT

Maurizio Felici, Milan, and Pietro Menniti, Badolato, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Feb. 25, 1980, Ser. No. 124,624

Claims priority, application Italy, Feb. 27, 1979, 20551 A/79

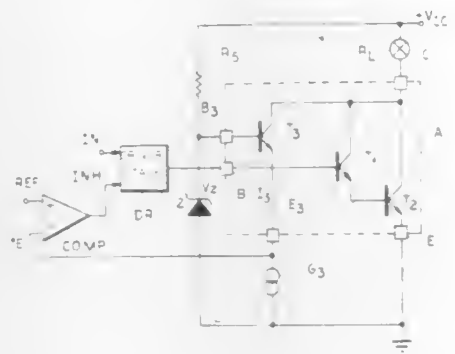
Int. Cl.^{3} H02H *5/04*

U.S. Cl. 361—103 **8 Claims**

1. A circuit arrangement comprising:

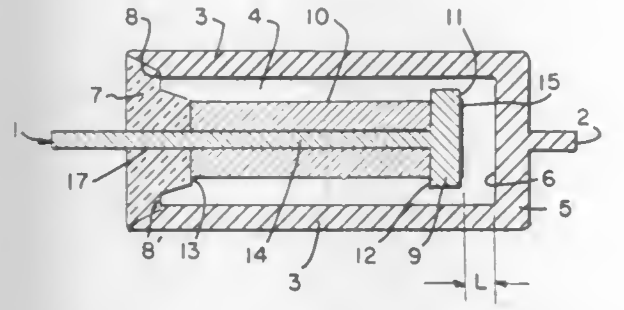
a semiconductor body incorporating an electronic component with first and second conductivity regions contacted

by two main electrodes and with an intervening third conductivity region adjoining a control electrode;
a load connected in series with a supply of operating current across said main electrodes;
a driver stage connected to said control electrode for establishing a selected rate of energization of said load;
temperature-sensing means including at least one ancillary transistor formed in said body with a collector zone, a base zone and an emitter zone, said collector zone being part of said first conductivity region, said body including a substrate and an overlying layer of one conductivity type constituting said first region, portions of opposite conductivity type in said overlying layer forming said third region and said base zone, and enclaves of said one conductivity type in said portions forming said second region and said emitter zone, one of said main electrodes overlying said substrate and being connected to a first terminal of said supply by way of said load, the other of said main electrodes being connected to a second terminal of said supply; and
protective circuitry connected to said emitter zone for deriving from the potential thereof, upon a biasing of said base zone to render said ancillary transistor conductive, a monitoring signal varying with the absolute temperature of said body, said protective circuitry having an output connection to said driver stage for reducing the current flow through said component upon detection of a departure of said monitoring signal from a predetermined range, said protective circuitry further including a constant-current generator inserted between said emitter zone and said second terminal.



4,355,345
HIGH CURRENT DRAINING CAPACITY MICRO-LIGHTNING ARRESTER

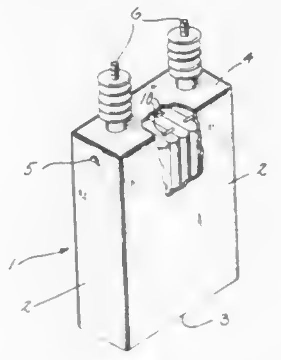
Leon G. Franchet, Boulogne-Billancourt, France, assignor to Claude, S.A., Boulogne-Billancourt, France
Filed Oct. 14, 1980, Ser. No. 196,512
Claims priority, application France, Oct. 19, 1979, 79 25990.
Int. Cl.^{3} H02H *3/22*
U.S. Cl. 361—117 **6 Claims**



1. A high current draining capacity micro-lightning arrester including an enclosure, an opening in said enclosure, a first electrode traversing said enclosure opening and having a first discharge surface within the enclosure with said first electrode having a relatively thin long cylindrical portion and a flat end portion presenting a relatively significant discharge surface and said entire first electrode composed of an electrically conducting metal capable of withstanding high temperatures which provide a high current draining capacity, a plug placed between the first electrode and the enclosure in order to hermetically seal the enclosure opening about said first electrode, a second electrode presenting a second discharge surface within said enclosure facing said first discharge surface, and a gaseous atmosphere filling the enclosure, characterized in that said first electrode is surrounded by a sleeve in electric and thermal contact with the rear face of said first electrode flat end portion, said sleeve being composed of fusible, electrically and thermally conducting material having a melting point such that any predetermined excessive heating of said first electrode due to abnormal operating conditions of the lightning arrester results in the melting of said sleeve, thereby ensuring the short-circuit of both electrodes.

4,355,346
ELECTRICAL APPARATUS HAVING AN IMPROVED DIELECTRIC SYSTEM

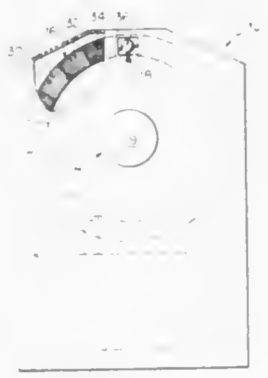
Gary A. Gauger, Franklin, and Marco J. Mason, Racine, both of Wis., assignors to McGraw-Edison Company, Elgin, Ill.
Continuation of Ser. No. 25,043, Mar. 29, 1979, abandoned. This application Oct. 21, 1980, Ser. No. 199,260
Int. Cl.^{3} H01G *4/22*
U.S. Cl. 361—318 **4 Claims**



1. An electrical capacitor, comprising a sealed casing and having alternate layers of an electrically conductive material and a dielectric material disposed within the casing, and a dielectric liquid impregnated into said dielectric material, said dielectric liquid consisting essentially of 1,1-bis(3,4-dimethylphenyl)ethane.

4,355,347
TEMPERATURE CONTROL DEVICE

Rachael M. Guthrie, 503 Raccoon Trail, Chattanooga, Tenn. 37419
Filed Jul. 11, 1980, Ser. No. 38,281
Int. Cl.^{3} G01D *11/28*
U.S. Cl. 362—30 **1 Claim**

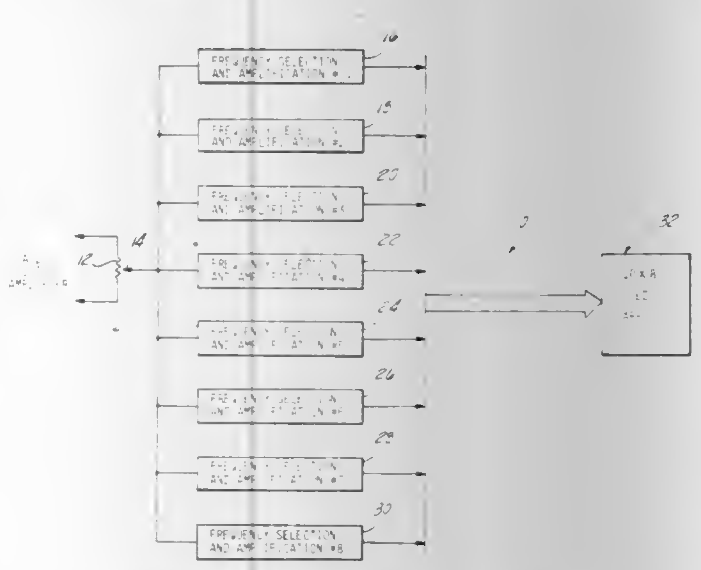


1. A temperature control device comprising:

a thermostatic control means for automatically controlling the temperature of a location to a predetermined temperature;
a stationary source of light shielded on both of its sides consisting of a set point, and a plurality of translucent temperature indicators through which the light shines which are mounted to be rotated manually to different settings of the control, each setting being indicated by a temperature indicator of a different shade of color, the shades of color ranging gradually from a light blue for a cool temperature to a dark red for a hot temperature.

4,355,348
AUDIO SIGNAL RESPONSIVE OPTICAL DISPLAY

Theodore R. Williams, 1927 Clifton, Royal Oak, Mich. 48073
Filed Jul. 30, 1980, Ser. No. 173,633
Int. Cl.^{3} H04M *1/22*
U.S. Cl. 362—86 **7 Claims**



FREQUENCY SELECTION AND AMPLIFICATION #1
16
18
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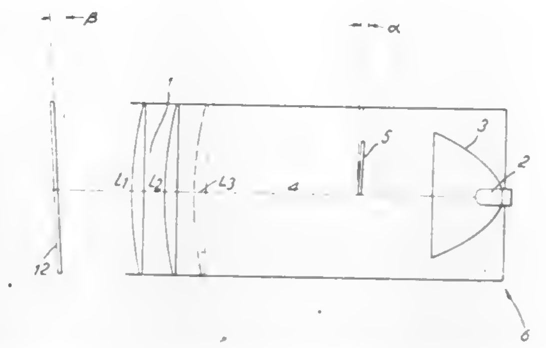
28
30
FREQUENCY SELECTION AND AMPLIFICATION #8
12
14
32

1. Apparatus for providing an optical display as a function of frequency and amplitude of audio music signals and the like comprising input means for connection to an audio signal source, frequency selection means connected to said input means for separating an audio signal into a plurality of frequency components and an optical display comprising a plurality of laterally adjacent parallel linear optical display segments individually connected to said frequency selection means, such that said optical display comprises a composite display with said plurality of linear display segments each having a display characteristic which varies as a function of amplitude of a corresponding said frequency component of said audio signal.

4,355,349
LIGHTING UNIT

Ronald H. Simons, Bishops Stortford, and Basil S. Wilkinson, Waltham Cross, both of England, assignors to Thorn Eni Limited, London, England
Filed Jul. 10, 1980, Ser. No. 168,241
Claims priority, application United Kingdom, Jul. 12, 1979, 7924352
Int. Cl.^{3} F21S *1/02*
U.S. Cl. 362—153 **8 Claims**

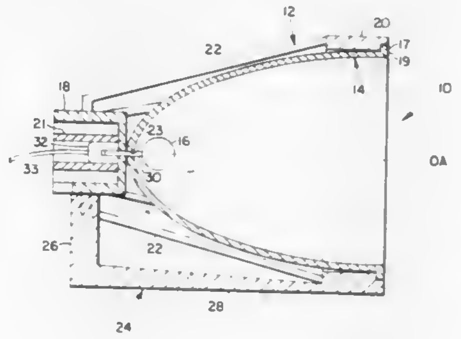
1. In a glide path lighting system a lighting unit comprising:
a lens
a light source positioned on the optical axis of the lens,
a planar interference filter extending part way across the light path between the light source and the lens and inclined at an angle to a plane normal to the optical axis,



and means for supporting said lens, light source and filter in their respective positions.

4,355,350
REFLECTOR FOR USE IN AN ARTIFICIAL LIGHTING DEVICE

John J. Mader, Tewksbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sep. 2, 1980, Ser. No. 183,105
Int. Cl.^{3} F21V *7/00*
U.S. Cl. 362—347 **8 Claims**



1. An artifical lighting assembly comprising:
an artifical source of illumination having spherical geometry;
a concave, open-ended reflector that is rotationally symmetric about a given axis and has a cross-sectional shape in the form of a 7th order polynomial curve given by the equation:

$$Y = \sum_{n=0}^{7} A_n X^n$$

where Y and X are, respectively, the dependent and independent variables in a Cartesian coordinate system and the terms, A_n, represent the coefficients of said polynomial and are nonzero for the first through seventh order terms, said polynomial curve having a radius of curvature, and hence optical power, which progressively changes in a gradual manner without discontinuities with distance along said curve, said curve being shaped so that the radius of curvature thereof increases with increasing distance from the apex thereof so as to reduce the optical power of said reflector in accordance with increasing distance along said curve; and
means for positioning said source within said reflector in a predetermined manner to project a beam of illumination of predetermined solid angle that is rotationally symmetric about said reflector axis of symmetry to illuminate any plane normal to said reflector axis of symmetry, spaced ahead of said assembly and within said beam angle of divergence and effective range, in a substantially uniform manner over another solid angle that is smaller than said

solid angle of said beam of illumination, said reflector operating to reflect light from said source in a manner whereby the intensity of the light reflected from said reflector progressively increases in a gradual manner, without discontinuities, in accordance with increasing angular divergence of light rays within said beam as measured away from said reflector axis of symmetry such that the intensity of illumination of points on any normal plane, which points are spaced away from said reflector axis of symmetry, is increased to compensate substantially exactly for natural losses in direct illumination from said source which would otherwise be present at those same points absent said reflector and to abruptly cause a reduction in the intensity of the illumination of light traveling at angles, as measured with respect to said axis of symmetry, which are greater than said other smaller solid angle.

4,355,351

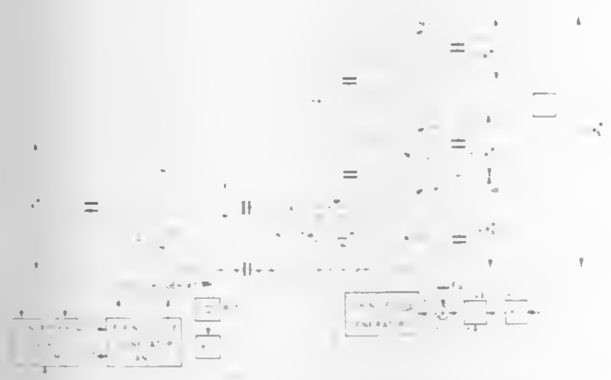
HIGH REPETITION RATE POWER PULSE GENERATOR

Francisc C. Schwarz, Round Hill Rd., Lincoln, Mass. 01773

Filed May 30, 1979, Ser. No. 43,882

Int. Cl.^{3} H02M *5/27, 7/19*

U.S. Cl. 363—9 **27 Claims**



1. A converter circuit for receiving electrical energy from an electrical power source having a varying or an unregulated electrical potential and for storing a preselected quantity of electrical energy for transfer to a load, comprising in combination:

controllable switch means connecting the electrical power source to receive electrical energy therefrom;

electrical storage means for receiving and storing electrical energy;

coupling means for transferring electrical energy between said controllable switch means and said electrical storage means;

termination means for terminating the transfer of electrical energy between said controllable switch means and said electrical storage means;

first sensor means for sensing the electrical energy in said electrical storage means;

second sensor means for sensing the state of the converter circuit to determine the electrical energy that will be conveyed relative to said electrical storage means after termination of transfer of electrical energy between said controllable switch means and said electrical storage means; and

control means receiving the output from said first and second sensor means for activating said termination means prior to the preselected quantity of electrical energy being established in said electrical storage means enabling the additional electrical energy transferred relative to said electrical storage means after activation of said termination means to produce the preselected quantity of electrical energy in said electrical storage means.

4,355,352

DC TO DC CONVERTER

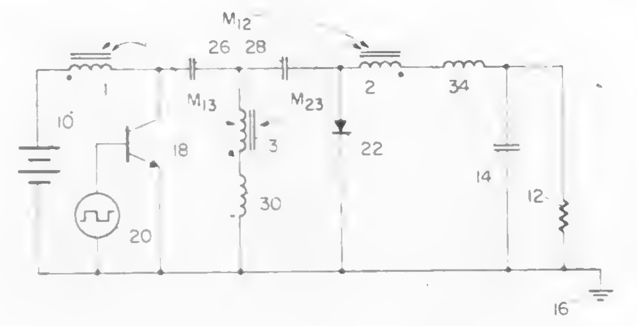
Gordon E. Bloom, 617 Hampshire Rd., West Lake Village, Calif. 91361, and Altan Eris, 30440 Sandtrap Dr., Agoura, Calif. 91301

Continuation-in-part of Ser. No. 63,226, Aug. 3, 1979, Pat. No. 4,262,328. This application May 27, 1980, Ser. No. 153,250

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—16 **3 Claims**



1. In a DC-to-DC converter having first input terminals for receiving a DC source and second output terminals for connecting a load thereto, said input and output terminals having a common terminal and inductively coupled and capacitively coupled together, first switching apparatus connected in a closed mode to deliver input current from said input terminals through a first inductor, second switching apparatus connected in a closed mode to deliver output current through a second inductor to said output terminals, apparatus for cycling said switching apparatus so that one is open when the other is closed, said capacitive coupling comprising a pair of capacitors in series connection, third inductor means connected to the junction between said capacitors and inductively coupled to said first and second inductors, the improvement comprising:

a fourth inductor substantially uncoupled from said first, second and third inductors, connected in series between said third inductor and said common terminal.

4,355,353

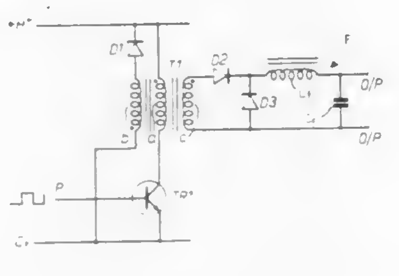
POWER SUPPLY APPARATUS

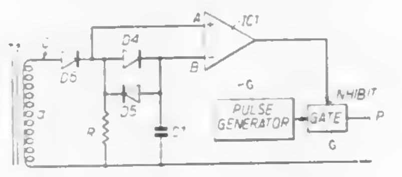
Michael Farrar, Bishops Stortford, England, assignor to Gould Advance Limited, Hainairt, England

Filed Jan. 5, 1981, Ser. No. 222,692

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—21 **7 Claims**





1. In a converter apparatus having a source of unidirectional current (HT, OV) a transformer (T1) including a primary winding (T1*a*) and an output winding (T1*c*), switching means (TR1) connecting said primary winding with said current source, and control means (PG) for periodically operating said switching means between conductive and non-conductive conditions, thereby to induct an alternating-current output voltage across said output winding;

the improvement which comprises

(a) inhibiting means (G) normally inhibiting operation of said control means; and

(b) sensing means (T1*d*) responsive to the initiation of transformer reset for disabling said inhibiting means, thereby to permit operation of the apparatus at maximum duty cycle without the risk of transformer saturation.

4,355,354

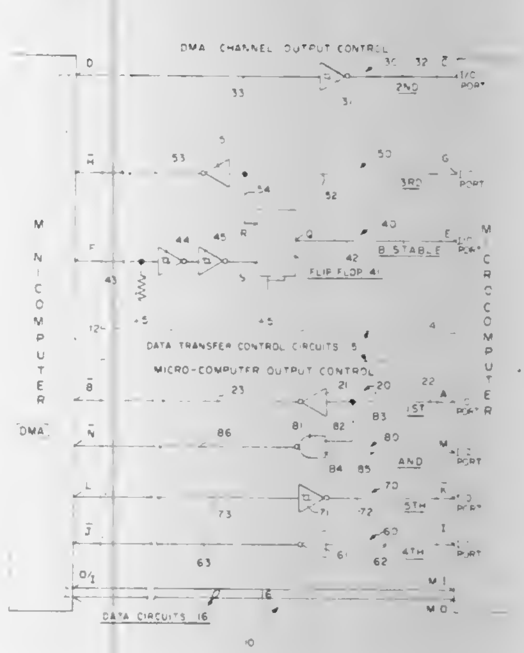
INTERFACE APPARATUS FOR COUPLING A MINICOMPUTER TO A MICROCOMPUTER FOR THE TRANSFER OF DATA BETWEEN THEM AND METHOD FOR USING SAME

Mark F. Kempf, Glen Ellyn; D'Arcy C. Randall, Winfield, and Timothy R. Walworth, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 29, 1978, Ser. No. 920,408

Int. Cl.^{3} G06F *3/00*

U.S. Cl. 364—200 **11 Claims**


DMA CHANNEL OUTPUT CONTROL
I/O PORT
MINICOMPUTER
MICROCOMPUTER
FLIP FLOP
BISTABLE
DATA TRANSFER CONTROL CIRCUITS
MICRO-COMPUTER OUTPUT CONTROL
DMA
DATA CIRCUITS 16

1. Interface apparatus for facilitating asynchronous parallel transfer of data at a speed of up to at least 1.6 megabits per second between a minicomputer and a microcomputer, said apparatus comprising a plurality of bidirectional data circuits parallel coupled between the computers for carrying data between the computers when either computer wants to send data to the other, and data transfer control circuit means coupled between the computers for permitting either computer, when it wants to send data, to:

(a) indicate by means of a control signal to the receiving computer that the sending computer wants to transmit data over the data circuits,

(b) resolve contention between the computers for access to the interface apparatus,

(c) enable the receiving computer to indicate to the sending computer that the receiving computer is ready to receive data over the data circuits,

(d) effect transfer of data from the sending computer to the receiving computer over the data circuits, and

(e) enable the receiving computer to indicate to the sending computer that the receiving computer has received the data, said data transfer control means including:

(A) a first circuit means coupled between the computers for receiving a first control signal from the microcomputer indicating that it wants to send data, which first control signal, as transmitted by said first circuit means, is readable by the minicomputer,

(B) second circuit means coupled between the computers for receiving a second control signal from the minicomputer indicating that it wants to send data, which second control signal, as transmitted by said second circuit means, is readable by the microcomputer,

(C) bistable circuit means coupled between the computers, said bistable circuit means including a bistable multivibrator which has a set input and which is preset to supply a "no" signal to the microcomputer indicating that no data is ready to be transmitted and, upon receiving a strobe signal from the minicomputer after the minicomputer has sensed that a first control signal is not present on said first circuit means and has then asserted a second control signal on said second circuit means and has presented data to said data circuits, then to provide a "yes" signal to the microcomputer indicating that data is ready to be transferred from the minicomputer to the microcomputer over said data circuits so that when the microcomputer reads the "yes" signal it can then input the data on said data circuits,

(D) third circuit means coupled between the computers and to said bistable circuit means for carrying a reset signal from the microcomputer, indicating that it has input the data, to a reset input of said bistable multivibrator to reset same and to indicate to the minicomputer that the data has been received and input by the microcomputer,

(E) fourth circuit means coupled between the computers for receiving a signal from the microcomputer and transmitting same to the minicomputer to indicate to the minicomputer that the microcomputer has data to send to the minicomputer,

(F) fifth circuit means coupled between the computers and receiving a signal from the minicomputer indicating that the minicomputer is ready to receive data from the microcomputer and for transferring the signal to the microcomputer, and

(G) AND circuit means coupled between computers and to said first circuit means and operable to receive the first control signal from the microcomputer at one input thereof which is coupled to said first circuit means and to receive a strobe signal at another input thereof from the microcomputer indicating that the microcomputer is ready to transmit data and upon receiving both signals to send a signal to the minicomputer that the data is ready to be transferred from the microcomputer to the minicomputer over the data circuits:

4,355,355

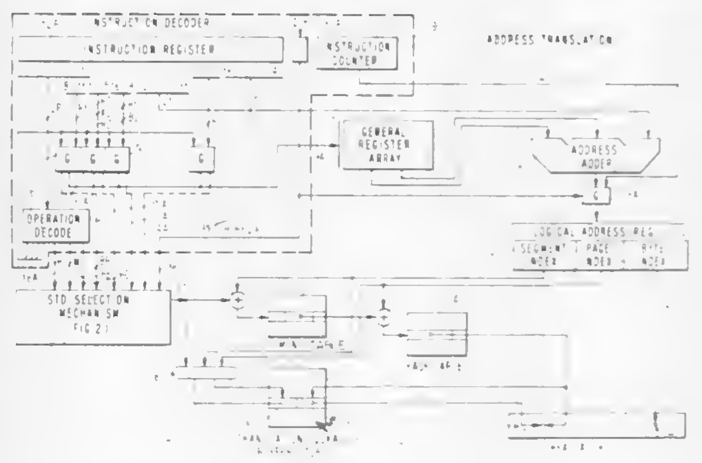
ADDRESS GENERATING MECHANISM FOR MULTIPLE VIRTUAL SPACES

Justin R. Butwell, Milton; Casper A. Scalzi, Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 19, 1980, Ser. No. 131,570

Int. Cl.^{3} G06F *9/36*

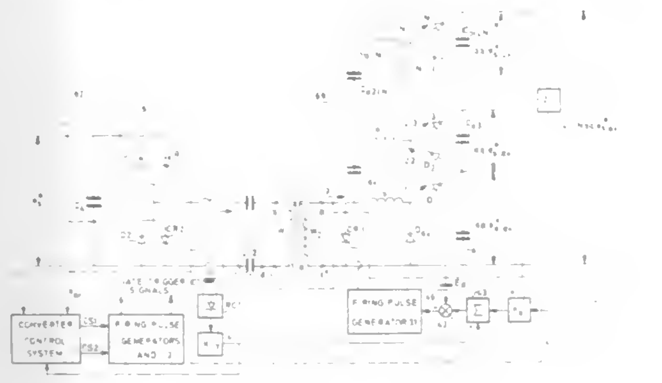
U.S. Cl. 364—200 **28 Claims**



1. Virtual address translation control means for a logical storage operand address in a data processing system having at least one central processor (CP) with a predetermined number

sured away from said reflector axis of symmetry such that the intensity of illumination of points on any normal plane, which points are spaced away from said reflector axis of symmetry, is increased to compensate substantially exactly for natural losses in direct illumination from said source which would otherwise be present at those same points absent said reflector and to abruptly cause a reduction in the intensity of the illumination of light traveling at angles, as measured with respect to said axis of symmetry, which are greater than said other smaller solid angle.

4,355,351
HIGH REPETITION RATE POWER PULSE GENERATOR
Francisc C. Schwarz, Round Hill Rd., Lincoln, Mass. 01773
Filed May 30, 1979, Ser. No. 43,882
Int. Cl.³ H02M *5/27, 7/19*
U.S. Cl. 363—9 27 Claims



1. A converter circuit for receiving electrical energy from an electrical power source having a varying or an unregulated electrical potential and for storing a preselected quantity of electrical energy for transfer to a load, comprising in combination:

controllable switch means connecting the electrical power source to receive electrical energy therefrom;

electrical storage means for receiving and storing electrical energy;

coupling means for transferring electrical energy between said controllable switch means and said electrical storage means;

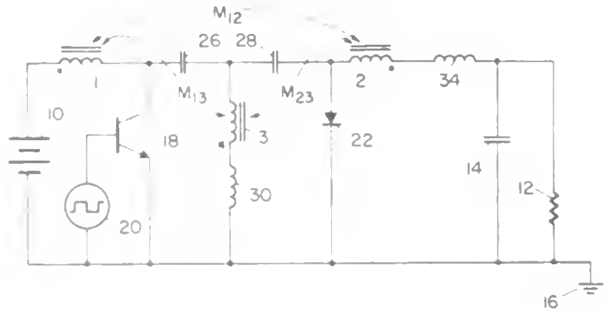
termination means for terminating the transfer of electrical energy between said controllable switch means and said electrical storage means;

first sensor means for sensing the electrical energy in said electrical storage means;

second sensor means for sensing the state of the converter circuit to determine the electrical energy that will be conveyed relative to said electrical storage means after termination of transfer of electrical energy between said controllable switch means and said electrical storage means; and

control means receiving the output from said first and second sensor means for activating said termination means prior to the preselected quantity of electrical energy being established in said electrical storage means enabling the additional electrical energy transferred relative to said electrical storage means after activation of said termination means to produce the preselected quantity of electrical energy in said electrical storage means.

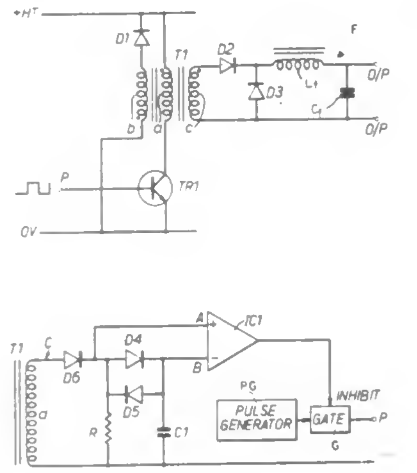
The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—16 3 Claims



1. In a DC-to-DC converter having first input terminals for receiving a DC source and second output terminals for connecting a load thereto, said input and output terminals having a common terminal and inductively coupled and capacitively coupled together, first switching apparatus connected in a closed mode to deliver input current from said input terminals through a first inductor, second switching apparatus connected in a closed mode to deliver output current through a second inductor to said output terminals, apparatus for cycling said switching apparatus so that one is open when the other is closed, said capacitive coupling comprising a pair of capacitors in series connection, third inductor means connected to the junction between said capacitors and inductively coupled to said first and second inductors, the improvement comprising:

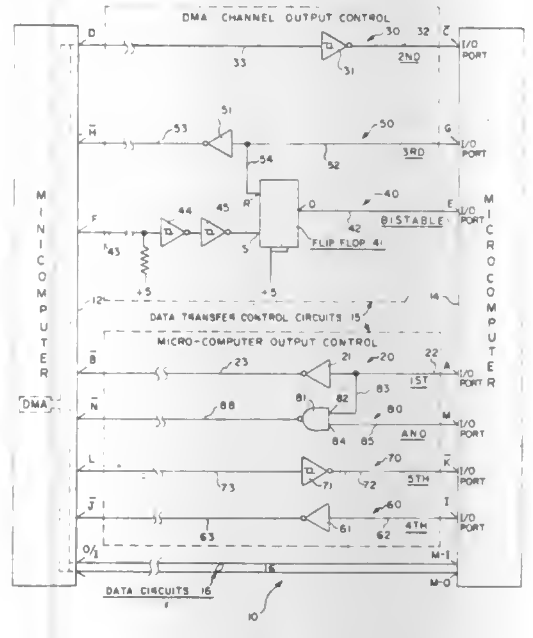
a fourth inductor substantially uncoupled from said first, second and third inductors, connected in series between said third inductor and said common terminal.

4,355,353
POWER SUPPLY APPARATUS
Michael Farrer, Bishops Stortford, England, assignor to Gould Advance Limited, Hainairt, England
Filed Jan. 5, 1981, Ser. No. 222,692
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 7 Claims



1. In a converter apparatus having a source of unidirectional current (HT, OV) a transformer (T1) including a primary winding (T1*a*) and an output winding (T1*c*), switching means (TR1) connecting said primary winding with said current source, and control means (PG) for periodically operating said switching means between conductive and non-conductive permit operation of the apparatus at maximum duty cycle without the risk of transformer saturation.

4,355,354
INTERFACE APPARATUS FOR COUPLING A MINICOMPUTER TO A MICROCOMPUTER FOR THE TRANSFER OF DATA BETWEEN THEM AND METHOD FOR USING SAME
Mark F. Kempf, Glen Ellyn; D'Arcy C. Randall, Winfield, and Timothy R. Walworth, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.
Filed Jun. 29, 1978, Ser. No. 920,408
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 11 Claims


DMA CHANNEL OUTPUT CONTROL
MINICOMPUTER
MICROCOMPUTER
BISTABLE
FLIP FLOP
DATA TRANSFER CONTROL CIRCUITS
MICRO-COMPUTER OUTPUT CONTROL
DMA
AND
I/O PORT
DATA CIRCUITS 16
10

1. Interface apparatus for facilitating asynchronous parallel transfer of data at a speed of up to at least 1.6 megabits per second between a minicomputer and a microcomputer, said apparatus comprising a plurality of bidirectional data circuits parallel coupled between the computers for carrying data between the computers when either computer wants to send data to the other, and data transfer control circuit means coupled between the computers for permitting either computer, when it wants to send data, to:

(a) indicate by means of a control signal to the receiving computer that the sending computer wants to transmit data over the data circuits,

(b) resolve contention between the computers for access to the interface apparatus,

(c) enable the receiving computer to indicate to the sending computer that the receiving computer is ready to receive data over the data circuits,

(d) effect transfer of data from the sending computer to the receiving computer over the data circuits, and

(e) enable the receiving computer to indicate to the sending computer that the receiving computer has received the data, said data transfer control means including:

(A) a first circuit means coupled between the computers for receiving a first control signal from the microcomputer indicating that it wants to send data, which first control signal, as transmitted by said first circuit means, is readable by the minicomputer,

(B) second circuit means coupled between the computers for receiving a second control signal from the minicomputer indicating that it wants to send data, which second control signal from the minicomputer after the minicomputer has sensed that a first control signal is not present on said first circuit means and has then asserted a second control signal on said second circuit means and has presented data to said data circuits, then to provide a "yes" signal to the microcomputer indicating that data is ready to be transferred from the minicomputer to the microcomputer over said data circuits so that when the microcomputer reads the "yes" signal it can then input the data on said data circuits,

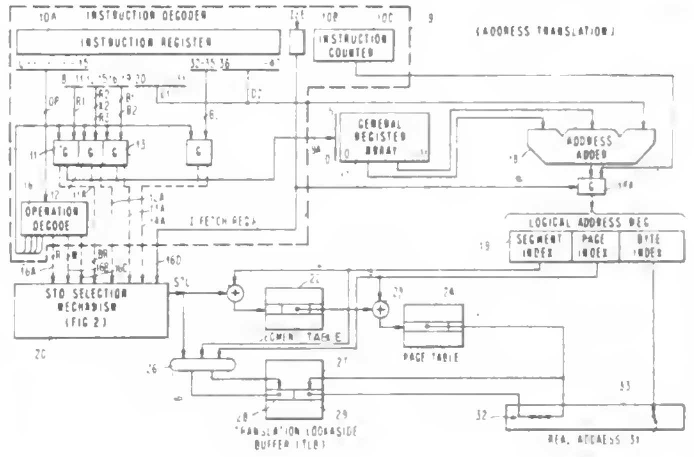
(D) third circuit means coupled between the computers and to said bistable circuit means for carrying a reset signal from the microcomputer, indicating that it has input the data, to a reset input of said bistable multivibrator to reset same and to indicate to the minicomputer that the data has been received and input by the microcomputer,

(E) fourth circuit means coupled between the computers for receiving a signal from the microcomputer and transmitting same to the minicomputer to indicate to the minicomputer that the microcomputer has data to send to the minicomputer,

(F) fifth circuit means coupled between the computers and receiving a signal from the minicomputer indicating that the minicomputer is ready to receive data from the microcomputer and for transferring the signal to the microcomputer, and

(G) AND circuit means coupled between computers and to said first circuit means and operable to receive the first control signal from the microcomputer at one input thereof which is coupled to said first circuit means and to receive a strobe signal at another input thereof from the microcomputer indicating that the microcomputer is ready to transmit data and upon receiving both signals to send a signal to the minicomputer that the data is ready to be transferred from the microcomputer to the minicomputer over the data circuits.

4,355,355
ADDRESS GENERATING MECHANISM FOR MULTIPLE VIRTUAL SPACES
Justin R. Butwell, Milton; Casper A. Scalzi, Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Mar. 19, 1980, Ser. No. 131,570
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 28 Claims



1. Virtual address translation control means for a logical storage operand address in a data processing system having at least one central processor (CP) with a predetermined number

of general purpose registers (GPR's), some instructions of the CP specifying a GPR address as a base GPR address or as a non-base GPR address, the base GPR address locating a GPR having contents that take part in a calculation of an instruction's logical storage operand address from an instruction's operand address components including at least a base GPR and optionally including either one or both of a non-base GPR and a displacement field, the effective logical storage operand address being generated by means of the addition of the content of the base GPR and the content of any no-base GPR and any displacement field, the virtual address translation control means comprising:

- means in the CP for detecting a base GPR address in an instruction, including instruction operation code decoding means for signalling whether a GPR designation in an instruction is a base GPR address or a non-base GPR address,
- a plurality of access registers (AR's), each AR being loadable with an address space identifier (ASI) for locating a translation table defining an address space,
- means for selecting an AR with the base GPR address provided by the detecting means, and the selecting means not selecting an AR with a non-base GPR address provided by the detecting means,
- virtual address translation means receiving the effective logical storage operand address and an ASI from the AR selected by the selecting means to locate a translation table and using the translation table to translate the effective logical storage operand address to a real address in a main storage of the data processing system,
- whereby plural ARs containing different ASIs enable the data processing system to concurrently access plural address spaces.

4,355,356

PROCESS AND DATA SYSTEM USING DATA QUALIFIERS

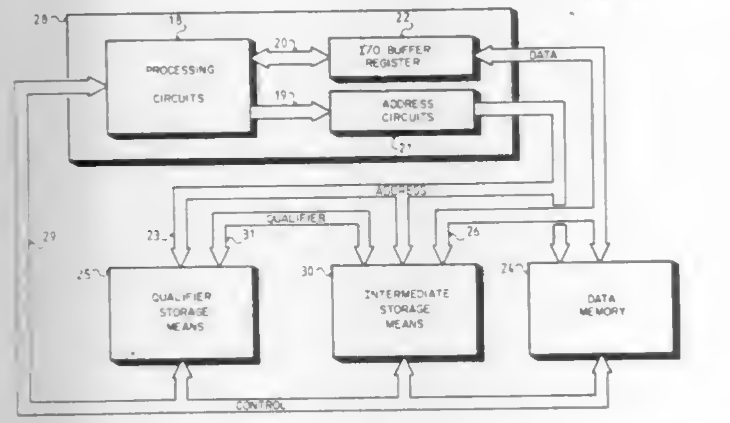
Robert J. A. Bavoux, Rueil Malmaison; Francis R. J. M. Lemaire, and Pierre Salkazanov, both of Plaisir, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 28, 1980, Ser. No. 135,098

Claims priority, application France, Apr. 6, 1979, 79 08715

Int. Cl.^{3} G06F ***13/00***

U.S. Cl. 364—200 **16 Claims**



1. A method of operation of a data processing system including a processor, an addressable data memory having a plurality of addresses, an addressable qualifier read-write memory for storing a plurality of qualifiers generated by said processor, and an intermediate storage means; said processor, said data memory, said qualifier read-write memory, and said intermediate storage means being operatively interconnected by a control bus and an address bus; said processor, said data memory, and said intermediate storage means operatively interconnected by a data bus; said qualifier read-write memory and said intermediate storage means operatively interconnected by a qualifier bus; and each qualifier has an address within said qualifier read-write memory which is the same as an associated predetermined one of said addresses within said data memory, the steps comprising:

- (a) storing a qualifier in said intermediate storage means, said qualifier being provided to said intermediate storage means from said processor by way of said data bus;
- (b) simultaneously addressing said data memory and said qualifier read-write memory by placing an address signal on said address bus, and
- (c) writing the qualifier from said intermediate storage means into said qualifier read-write memory by way of said qualifier bus and at an an address determined by the address signal, while simultaneously writing an associated qualified data word into said data memory at an address determined by the address signal such that said qualifier and said qualified data word are associated by having the same address respectively within said qualifier read-write memory and said data memory,

and wherein each of the qualifiers is characteristic of the data or processing undergone by the data in an associated predetermined address.

4,355,357

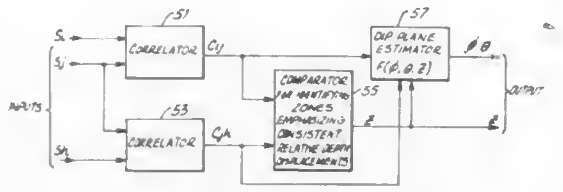
DIPMETER DATA PROCESSING TECHNIQUE

David S. K. Chan, Bethel, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,957

Int. Cl.^{3} G06F ***15/336***

U.S. Cl. 364—422 **39 Claims**


51
57
CORRELATOR
DIP PLANE ESTIMATOR F(φ, θ, Z)
φθ
OUTPUT
INPUTS
53
CORRELATOR
COMPARATOR FOR IDENTIFYING ZONES EMPHASIZING CONSISTENT RELATIVE DEPTH DISPLACEMENTS
55
Z

1. A method for determining the relative position of formation features along a borehole by processing three signals representative of a characteristic of said formation along said borehole and derived at spaced apart locations around said borehole; comprising the steps of:

- (a) for each of two respective pairs of signals and at each given depth level in a succession of adjacent depth levels, finding a cross-correlation function between respective correlation intervals of the signals of said each pair of signals, when the correlation intervals are depth displaced relative to each other at selected steps;
- (b) identifying, from a comparison of the cross-correlation functions of said succession of adjacent depth levels for said two respective pairs of signals, intervals of depth for which respectively the associated cross-correlation functions emphasize, for said each pair of signals, a consistent relative depth displacement of the respective signals of said each pair of signals; and
- (c) deriving, from said cross-correlation functions which are within said identified intervals of depth, an estimate of the relative position of said formation features.

4,355,358

ADAPTIVE AIRCRAFT ACTUATOR FAULT DETECTION

Douglas H. Clelford, Trumbull, and Donald W. Fowler, West Haven, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 26, 1980, Ser. No. 181,510

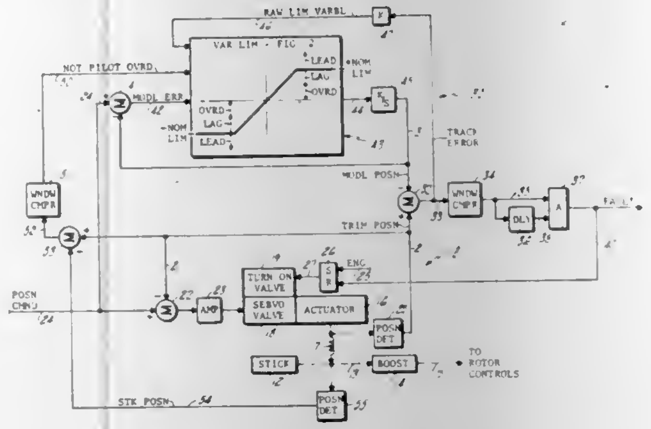
Int. Cl.^{3} G06F ***15/50;*** **G06G** ***7/78***

U.S. Cl. 364—424 **2 Claims**

1. An adaptive aircraft actuator fault detection apparatus comprising:

- a mechanism for positioning a control surface of the aircraft, said mechanism including a pilot control member movable by the pilot to position said surface;

- an actuator resiliently connected to said mechanism and being positionable in response to a position error signal applied thereto to determine the position of said mechanism which will have zero force applied thereto by said resilient connection;
- a position detector connected to said actuator for providing a trim position signal indicative of the position of said actuator; and
- signal processing means for providing a position command signal, for providing a position error signal to said actuator as the difference between said position command signal and said trim position signal, for presenting a model position signal, for providing a track error signal as the difference between said trim position signal and said model position signal, for providing a model error signal as the difference between said position command signal and said model position signal, for providing said model position signal as the integral of said model error signal to the extent that said model error signal does not exceed a limit, said limit being a nominal limit which is varied by a limited portion of said track error signal, said limit being increased in the case where said track error signal indicates that the model position is leading the actuator position and being decreased when said track error signal indicates that the model position is lagging the actuator position,and for providing a fault indication signal in response to said track error signal exceeding a threshold magnitude;



characterized by:

- means associated with said signal processing means and responsive to said mechanism for providing a pilot override signal when the pilot is forcing said mechanism away from said trim position by more than a predetermined threshold amount, and said signal processing means provides said model position signal as the integral of said model error signal limited to an amount which is further reduced by a limited portion of said track error signal, in response to said pilot override signal when said track error signal indicates that the actuator position is lagging the model position.

4,355,359

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hidetoshi Kanegae, Yokohama, and Masaharu Asano, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 21, 1980, Ser. No. 132,648

Claims priority, application Japan, Mar. 23, 1979, 54-33882; Mar. 23, 1979, 54-33885

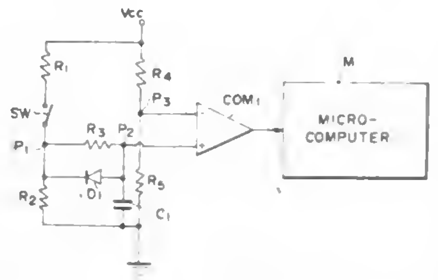
Int. Cl.^{3} F02D ***35/00, 13/00***

U.S. Cl. 364—431.04 **10 Claims**

1. A control system for use with an internal combustion engine, comprising:

- (a) a digital microcomputer adapted to perform routines for controlling various operating parameters of said engine;
- (b) at least one detector for detecting a specified engine operating condition, said detector providing a signal which has a first level during the occurrence of said specified engine operating condition and has a second level during the absence of said specified operating condition; and
- (c) interrupt signal generator means for providing an interrupt signal to said microcomputer and causing said microcomputer to enter a routine required for said specified engine operating condition when the time during which said signal from said detector is in said first level exceeds a predetermined value, said interrupt signal generator means being interposed between said microcomputer and said detector.

8. A control system for an internal combustion engine, comprising:



- means for detecting a specified engine operating condition and producing an output, said output being a first state signal in response to the occurrence of said specified operating condition;
- means for sensing said output signal;
- means for comparing the time duration of said first state signal with a predetermined time;
- means for generating an interrupt signal when said first state signal duration exceeds said predetermined time; and
- a microcomputer operating under a program control sequence in response to sensed engine operating conditions for controlling various engine operating parameters, said microcomputer being responsive to said interrupt signal to temporarily stop execution of said program control sequence to start executing an interrupt routine for controlling said parameters during said specified operating condition.

4,355,360

METHOD FOR PROGRAM CONTROL OF COMPONENTS OF AN AUTOMOTIVE VEHICLE

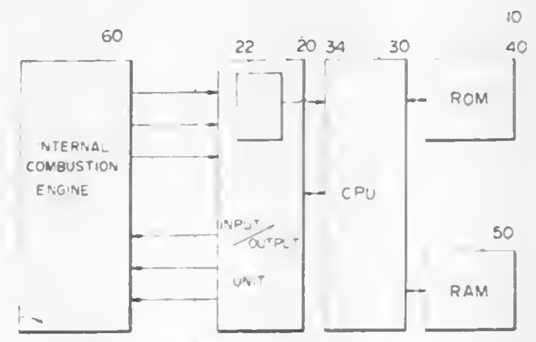
Masaharu Asano, Yokosuka, and Haruto Tanaka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 15, 1980, Ser. No. 140,663

Claims priority, application Japan, Apr. 16, 1979, 54-45321

Int. Cl.^{3} G06F ***15/20, 9/46;*** **G11C** ***7/00***

U.S. Cl. 364—431.11 **5 Claims**



1. A method for controlling various components of an automotive vehicle having a central processor for controlling said components in response to a stored main control program, a plurality of interruption programs, and an interruption pro-

cessing program, said main control program operative for controlling specified vehicle components on said vehicle when no interruption signals are produced, said plurality of interruption programs operative for effecting preset control operations of said vehicle components, and said interruption processing programs operative in response to said interruption signals for relating a received interruption signal to one of said interruption programs, said method comprising:

generating a plurality of sensor signals, each of said sensor signals being related to a vehicle operating parameter;

producing said interruption signals in response to certain of said sensor signals;

executing said main control program when no interruption signals are being produced;

interrupting the execution of said main control program when an interruption signal is received and transferring data related to said main control program to an auxiliary memory, and executing said interruption processing program in a non-interruptible state;

executing the interruption program related to said received interruption signal;

interrupting the execution of said interruption program related to said received interruption signal when an additional interruption signal is present and storing data related to the interrupted interruption program in said auxiliary memory, and re-executing said interruption processing program for storing a FLAG identifying the interruption program related to said additional interruption signal;

continuing to execute said interruption program related to said received interruption signal;

repeating the step of interrupting the execution of said interruption program related to said received interruption signal in the presence of each additional interruption signal;

executing interruption programs related to said additional interruption signals after completion of the execution of said interruption program related to said received interruption signal in accordance with a priority determined by said stored FLAGs;

after completion of all interruption programs corresponding to said additional interruption signal, continuing the execution of said main control program;

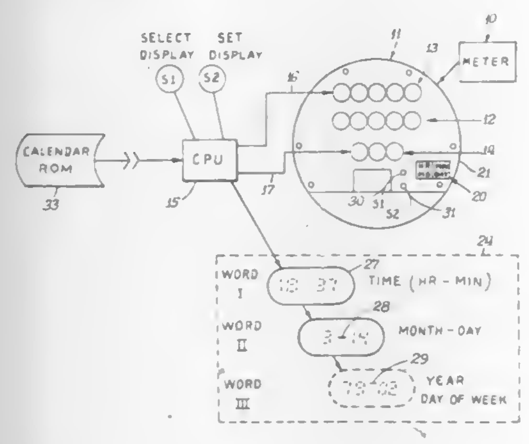
producing control signals for said vehicle components in accordance with said interruption programs and said main control program; and

actuating said vehicle components in response to said control signals.

4,355,361
DATA PROCESSOR APPARATUS FOR MULTITARIFF METER

Richard L. Riggs, East Point, and Richard G. Coppola, Marietta, both of Ga., assignors to Sangamo Weston, Inc., Norcross, Ga.

Filed Feb. 6, 1980, Ser. No. 119,071
Int. Cl.^{3} G01R *11/57*
U.S. Cl. 364—464 **15 Claims**

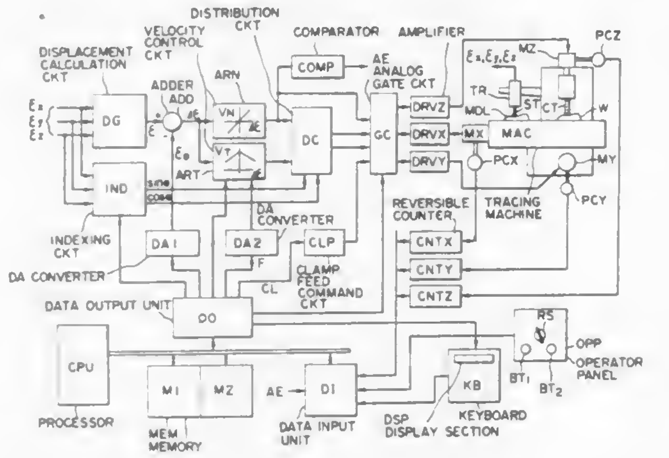


1. In a system for controllably switching a load to and from a source of electrical power according to a predetermined time schedule, the combination comprising: timing means for generating periodic timing signals; programmable data processor means including at least first and second signal storage files, and responsive to said timing signals for generating real time clock data stored in said first file; readable memory means for storing data representative of a plurality of calendar times for effecting schedule events; said data processor means addressing said memory means and being programmed to retrieve said calendar time data stored at a location of said memory means addressed by said data processor means and store the data read-out in said second file; said data processor means being further programmed to compare said real time clock data in said first file with said calendar time data in said second file, and, if the real time represented by the real time data exceeds the calendar time represented by the calendar time data, to cyclically increment the calendar time read-out by incrementing addresses of said memory means until the calendar time represented by the calendar time data read out of said memory means and stored in said second file is greater than the real time represented by the real time data stored in said first file.

4,355,362
TRACER CONTROL SYSTEM

Ryoji Imazeki, and Etsuo Yamazaki, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Kawasaki, Japan

Filed Mar. 17, 1980, Ser. No. 130,598
Int. Cl.^{3} G05B *19/18*
U.S. Cl. 364—474 **8 Claims**



1. A tracer control system which performs tracer control with variable clamp level by calculating the direction and velocity of tracing through utilization of displacement signals from a tracer head tracing a model surface, said displacement signals being utilized along with a predetermined composite displacement signal for generating normal and tangential velocity components with respect to said model surface for determining said direction and velocity of tracing, said system comprising:

an input unit for entering data defining a series of tracing operations, said data including clamp feed data for limiting the motion of said tracer head on a first predetermined axis of said tracer control system to a respective clamp level for each said tracing operation, and said data including data that is identical for each said tracing operation of said series of tracing operations, said identical data selectively including common starting and end points, and feed limits for the two axes of said tracer control system other than said first axis;

a memory for storing the data received from the input unit;

a processor for selectively reading out the data from the memory and from said data input unit and for controlling each said tracing operation in correspondence therewith;

means for detecting the current position of the tracer head according to each said tracer control system axis and for providing data corresponding to said current position to said input unit;

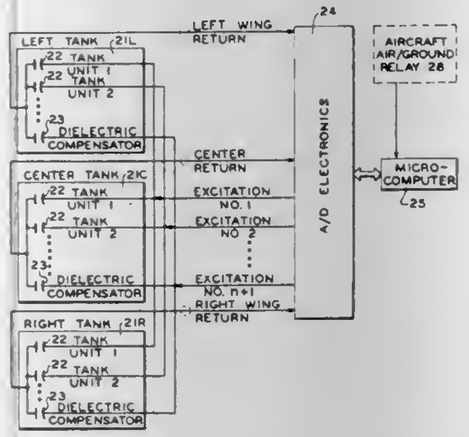
a control device including a clamp feed for controlling said clamp level of each said tracing operation according to said clamp feed data to a respective predetermined value for each said tracing operation, and

means for switching between said tracing operation to said clamp feed and back to said tracing during each said tracing operation, depending on the value of said normal velocity component.

4,355,363
DIGITAL CHARACTERIZATION OF LIQUID GAGING SYSTEM SENSORS

Dwight D. Colby, Roseville; Martin J. van Dyke, Brooklyn Park, and William R. Dougherty, St. Anthony, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,772
Int. Cl.^{3} G01F *23/00*
U.S. Cl. 364—509 **22 Claims**



1. A characterized liquid gaging system sensor, comprising:

sensor means for sensing a depth of liquid in a tank at a particular location in the tank; and

storage means for storing characterization parameters, each parameter defining a relationship between a liquid depth and a value related to a liquid quantity, each parameter being based on tank shape and volume, on the location of the sensor means, and on a physical condition which affects the accuracy of the value related to the liquid quantity, the storage means comprising means for storing look up tables, there being a first look up table for storing a first set of parameters and a second look up table for storing a second set of parameters, the first and second set of parameters each representing a different best fit between the physical condition and the value related to the liquid quantity, the storage means being connected to the sensor means.

4,355,364
VELOCITY SENSING SYSTEM

Adam J. Gudat, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00115, § 371 Date Feb. 4, 1980, § 102(e) Date Feb. 4, 1980, PCT Pub. No. WO81/02345, PCT Pub. Date Aug. 20, 1981

PCT Filed Feb. 4, 1980, Ser. No. 150,252
Int. Cl.^{3} G01P *3/48;* G06F *15/20*
U.S. Cl. 364—565 **9 Claims**

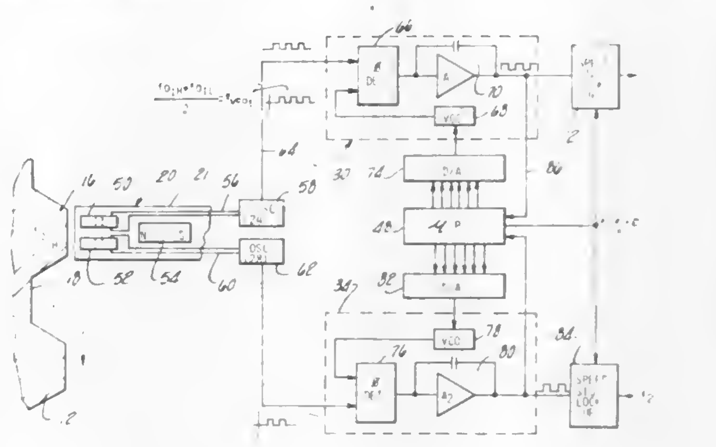
1. A velocity sensing system for parts (12) such as gear teeth having relatively well defined areas (16) of alternately opposite physical presence comprising:

an electronic oscillator (58) having an output (64) and a tank circuit (56), said tank circuit controlling the frequency of signals on said output;

a magnetic sensor (20) disposed adjacent the part (12) and defining a flux path which links said part and in which the magnetic flux intensity varies according to the physical presence of the part immediately adjacent the sensor (20);

said tank circuit (56) linking said flux bath to vary the frequency of the oscillator output signal alternately between a high and a low frequency as the part (12) moves relative to the sensor (20);

means (68) for producing a reference signal having a frequency between the high and low frequency of the oscillator output signal;



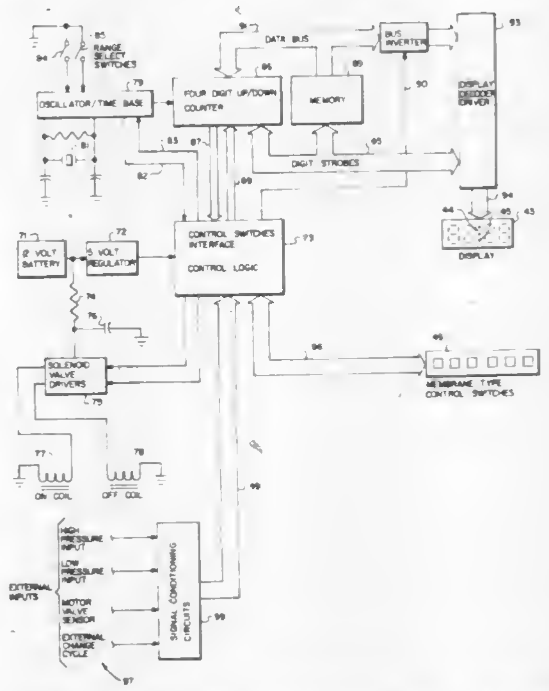
means (66, 70) for comparing the oscillator output signal to the reference signal and producing digital outputs of first and second levels as the frequency of the oscillator output is greater than and less than, respectively, the frequency of the reference signal; and

means (38) for determining the velocity of said part (12) relative to the sensor (20) according to the time interval between the first and second level digital outputs.

4,355,365
ELECTRONIC INTERMITTER

Oliver W. McCracken, Pauls Valley, Okla.; Larry C. Wortham, Garland, and Robert S. Higgins, Lewisville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 28, 1980, Ser. No. 144,069
Int. Cl.^{3} E21B *29/02;* G06F *7/38*
U.S. Cl. 364—569 **15 Claims**



1. A system for cyclicly intermitting the operation of a device between a first state and a second state, comprising:

a counter;

oscillator means for continuously decrementing said counter from a value toward zero;

a programmable memory having a pair of selectively addressable memory locations;

means for storing at a first location in said memory a first time value associated with the duration of said first state and at a second location in said memory a second time value associated with the duration of said second state;

gating means for automatically alternately loading said first and second time values from said memory into said counter; and

automatic sequencing means responsive to the value in said counter reaching zero for automatically changing the operation of the device from one state to the other and actuating said gating means to automatically load the time value associated with the state to which the device is changed from said memory into said counter.

4,355,366

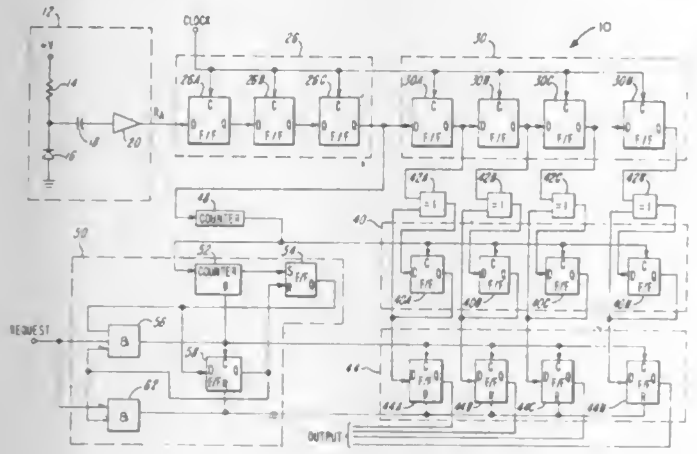
CIRCUITRY FOR MINIMIZING AUTO-CORRELATION AND BIAS IN A RANDOM NUMBER GENERATOR

Sigmund N. Porter, Solana Beach, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 28, 1980, Ser. No. 210,989

Int. Cl.^{3} H03K *3/84*

U.S. Cl. 364—717 **9 Claims**



1. A random number generator having an output for providing random numbers, comprising:

means for providing successive and randomly varying bits; and

means for receiving the randomly varying bits and minimizing auto-correlation in the randomly varying bits, including means for discarding certain ones of the randomly varying bits so that random numbers provided at the output of said random number generator do not include the discarded bits, said means for discarding comprising:

a first shift register clocked by a first clock signal in order to serially receive and store the randomly varying bits; and

a second register connected to said first shift register in order to receive in parallel the bits stored by said first register, said second register clocked by a signal other than the first clock signal so that said second register receives and stores only a portion of the bits received by said first register, with said second register providing the portion of the bits to the output of said random number generator.

4,355,367

WAVEFORM SYNTHESIZER ARRANGEMENT

Shigeaki Masuzawa, Nara; Shinya Shibata, Yamatokoriyama; Tetsuo Iwase, and Hiroshi Miyazaki, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1980, Ser. No. 127,379

Claims priority, application Japan, Mar. 7, 1979, 54-28061

Int. Cl.^{3} G06F *15/31*

U.S. Cl. 364—718 **9 Claims**

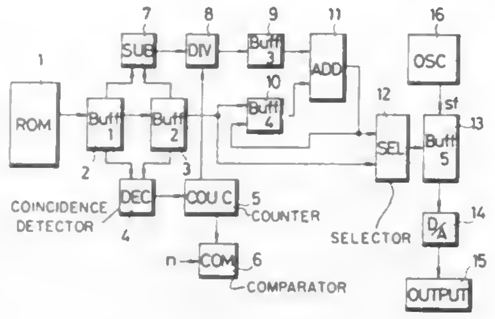
1. A digital filter comprising:

first buffer means for temporarily storing data received from an input source;

second buffer means for temporarily storing data received from said first buffer means;

subtraction means for detecting the difference between the data stored in said first buffer means and data stored in said second buffer means;

data modification means responsive to said subtraction means for altering data received from said second buffer means when said difference produced by said subtraction means is greater than a predetermined value;



third buffer means for temporarily storing data received from said data modification means; and

oscillator means for producing a periodic signal corresponding to a desired signal transmission rate;

said third buffer means generating a periodic train of data information in synchronism with said periodic signal.

4,355,368

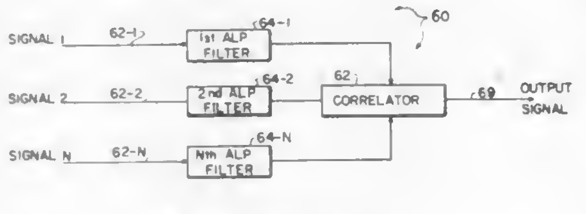
ADAPTIVE CORRELATOR

James R. Zeidler, San Diego; John M. McCool, El Cajon, and Bernard Widrow, Stanford, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1980, Ser. No. 194,168

Int. Cl.^{3} G06F *15/336*

U.S. Cl. 364—728 **3 Claims**



BASIC ADAPTIVE CORRELATOR

1. An adaptive correlator for correlating a plurality of N input signals, each signal traversing its own channel, comprising:

a plurality of N adaptive linear predictive (ALP) means for filtering, each having an input and an output, for receiving the input signals in their respective channels and adaptively filtering them; and

means having N inputs which are connected to the outputs of the N adaptive filtering means, for correlating its N input signals.

4,355,369

AUTOMATIC BANKING MACHINE

Billy R. Garvin, Euless, Tex., assignor to Docutel Corporation, Irving, Tex.

Continuation of Ser. No. 600,399, Jul. 30, 1975, abandoned. This application Jun. 15, 1979, Ser. No. 48,837

Int. Cl.^{3} G06F *15/30*

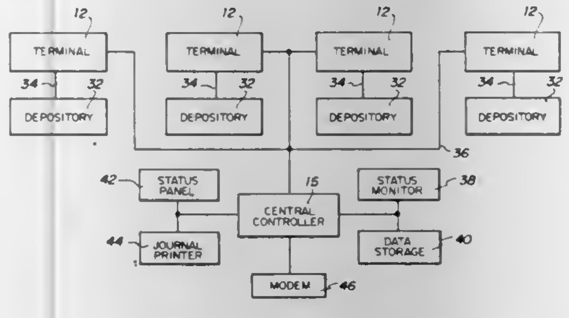
U.S. Cl. 364—900 **9 Claims**

1. An automatic banking machine having a first mode of operation for completing banking functions including cash withdrawals and deposits, and a second mode of operation for initializing operational parameters of the machine for the first mode of operation, comprising in combination:

first means for switching from the first mode of operation to the second mode of operation,

second means including a display and a memory of stored selected functions and associated instructions activated in the second mode of operation in response to said means for switching to call from memory and display selected functions of operation of the banking machine in the second mode to enable an operator to initialize operational parameters for controlling machine operation in the first mode,

a keyboard operational in the first mode for customer selection of an available banking function and operational in the second mode for initializing operational parameters, said keyboard responsive to operator input during the second mode for selecting one of the displayed functions and activating said second means to present on the display instructions from memory to an operator for initializing the operational parameters of the selected function,



said keyboard operational in response to an operator input for the selected function to enter data into the memory for initializing the operational parameters of the selected function to establish operation of the banking machine in the first mode of operation, and

controller means for interconnecting said means for switching, said means including the display and memory, and said keyboard.

4,355,370

STORAGE FORMAT IN A WORD MEMORY OF ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER

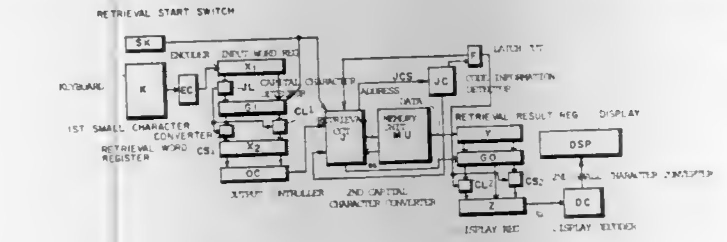
Shigenobu Yanagiuchi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 24, 1980, Ser. No. 114,744

Claims priority, application Japan, Jan. 26, 1979, 54-8476

Int. Cl.^{3} G06F *15/38*

U.S. Cl. 364—900 **19 Claims**



1. An electronic dictionary and language interpreter device wherein a first word or words represented in a first language are entered to obtain a second word or words represented in a second language equivalent to the first word or words, comprising:

input means for entering the first word or words in the form that the leading character is represented in a capital character and the remaining character or characters are represented in a small character;

storage means connected to said input means for storing said first word or words therein;

memory means for memorizing the second word or words, having a relationship with the first word or words preliminarily stored in said storage means in the form that the leading character is represented in a small character; and

control means for permitting the memory means to generate the second word or words in accordance with the first word or words applied by the input means.

4,355,371

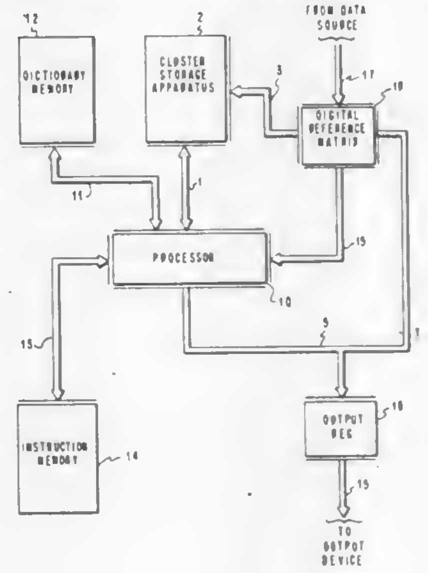
INSTANTANEOUS ALPHA CONTENT PRESCAN METHOD FOR AUTOMATIC SPELLING ERROR CORRECTION

Danny B. Convis, Washington Grove; David Glickman, Frederick, and Walter S. Rosenbaum, Bethesda, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,707

Int. Cl.^{3} G06F *7/02*

U.S. Cl. 364—900 **6 Claims**



1. In a process for automatically detecting and correcting input misspelled words, a method for improving the selection from a dictionary memory of the set of correctly spelled target words most nearly equal to the input misspelled word while minimizing real-time computational requirements without recourse to a character by character positional match comprising the steps of:

(a) predefining a set of characters or character sets having misspelling reliability;

(b) defining a bit mask having one bit position for each predefined character or character set;

(c) reviewing each dictionary word and setting a binary bit in the corresponding bit position of the bit mask to reflect the presence of said predefined character or character set;

(d) appending the bit mask to the dictionary word in storage;

(e) reviewing each input misspelled word, and setting bits in a binary counter to reflect the presence of said predefined character or character sets within the misspelled word;

(f) determining the EXCLUSIVE OR between the binary counter of the input misspelled word and the bit mask of each respective dictionary target word;

(g) comparing the output of the EXCLUSIVE OR operation to a predetermined threshold value;

(h) selecting those dictionary target words whose EXCLUSIVE OR'ed output exceeds the threshold value; and

(i) outputting the selected dictionary target words for further processing.

4,355,372

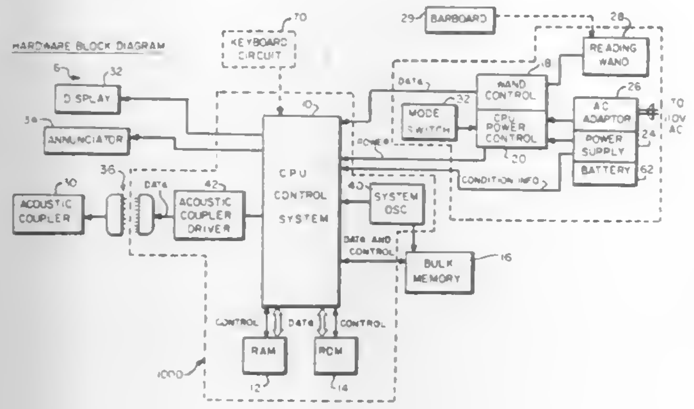
MARKET SURVEY DATA COLLECTION METHOD

Tod Johnson, Scarsdale; Andrew Tarshis, New York, and George Goldberg, Great Neck, all of N.Y., assignors to NPD Research Inc., Floral Park, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,140

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—900 9 Claims



1. A method for independently electronically collecting related market survey data from a plurality of diverse locations for temporary storage at each of said independent diverse locations where said data is independently collected for subsequent transmission thereof from said independent diverse locations over a telephone type link for accumulative processing thereof at a remote central electronic data processor, said method at said independent data collection diverse locations comprising the steps of electronically independently displaying an interactive changeable prompt message display on a visual display device at said independent diverse location indicating a particular one of a plurality of market survey information categories in a predefined sequence of said categories, said categories comprising at least product identification data, pricing data and purchase demographic data; providing a market survey data input signal to a buffer storage means in response to said interactive prompt message display, said provided market survey data input signal comprising an actual data input corresponding to said particular category; selectively interactively processing said provided market survey data input signal at said diverse location in a microcomputer means in accordance with said predefined sequence; providing a verification signal corresponding to said actual data input in response to the input thereof at said independent diverse location for verifying entry of said actual data input; providing a confirmation command input signal to said microcomputer means in response to said verification signal; and independently temporarily storing said displayed particular category market survey data input signal content of said buffer storage means in a static memory means at said independent diverse location in response to said confirmation command input signal and changing said visual display at said diverse location for electronically displaying the next prompt message in said predefined sequence in response to said confirmation command input signal for providing a next temporarily storable corresponding market survey data input signal in response to said next prompt message, said sequence defining a market survey data transaction expository of each product, said interactive sequence recycling for each market transaction for enabling independent integral storage of each product transaction at said diverse location; whereby subsequently transmitted market survey data may be rapidly independently collected at a central location from a plurality of independent diverse locations for said accumulative processing thereof with minimal error potential.

4,355,373

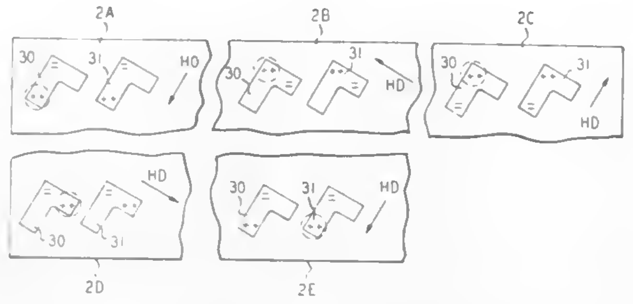
MAGNETIC BUBBLE MEMORY

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,901

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—39 6 Claims



1. A magnetic bubble memory comprising a host layer in which magnetic bubbles can be moved, said bubbles having a collapse diameter d in the presence of a bias field at a collapse value, means for providing a magnetic field reorienting in the plane of bubble movement, propagation means for defining in said host layer at least one path along which bubbles can be moved, said propagation means comprising a repetitive pattern of magnetically soft elements responsive to said in-plane field to exhibit changing pole patterns, said memory being CHARACTERIZED IN THAT adjacent ones of said elements have geometries and orientations to form a field gradient encompassing said adjacent elements said gradient being operative to move a bubble in said gradient from one element to the adjacent element.

4,355,374

SEMICONDUCTOR MEMORY DEVICE

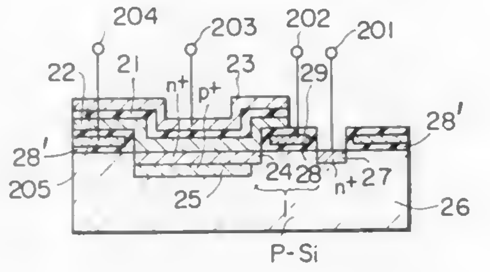
Yoshio Sakai, Hachioji; Mitsumasa Koyanagi, Kokubunji; Hideo Sunami, Hinodemachi, and Norikazu Hashimoto, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 172,378

Claims priority, application Japan, Aug. 1, 1979, 54/97301

Int. Cl.³ G11C *11/40, 11/24*

U.S. Cl. 365—149 8 Claims



1. A semiconductor memory comprising a memory cell disposed on a semiconductor substrate of first conduction type and including an insulated-gate field effect transistor and a storage capacitor,

wherein the improvement resides in that said storage capacitor comprises: an insulator capacitor including a first electrode disposed on said substrate, an insulating film disposed on the first-named electrode for providing a dielectric, and a second electrode disposed on said insulating film; and a pn junction capacitor including a first impurity region of second conduction type for constituting one of the source and drain of said insulated-gate field effect transistor, and a second impurity region of first conduction type disposed in contact with the first-named impurity region and having a higher impurity concentration than said substrate.

4,355,375

SEMICONDUCTOR MEMORY DEVICE

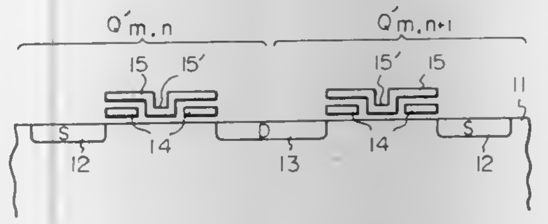
Hideki Arakawa, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 27, 1981, Ser. No. 287,138

Claims priority, application Japan, Jul. 28, 1980, 55/103504

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—185 5 Claims



1. A semiconductor memory device having a plurality of memory cell transistors each of which comprises:

- a semiconductor substrate of a first conductivity type;
- first and second impurity doped regions of a second conductivity type formed in said semiconductor substrate to define a channel region which extends between said first and second impurity doped regions;
- an insulation film formed on said channel region;
- a floating gate electrode formed on said insulation film, said floating gate electrode having first and second portions facing the portions of said channel region adjacent to said first and second impurity doped regions, respectively, said first and second portions of said floating gate electrode being separated from each other over an intermediate portion of said channel region, said first and second portions being connected at a position outside the channel region;
- a control gate electrode formed over said first and second portions of said floating gate electrode and on said insulation film over said intermediate portion of said channel region, a part of said control gate electrode facing said intermediate portion of said channel region.

4,355,376

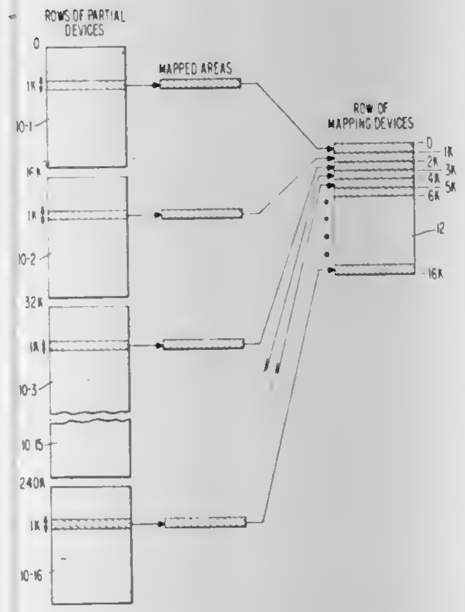
APPARATUS AND METHOD FOR UTILIZING PARTIALLY DEFECTIVE MEMORY DEVICES

Robert T. M. Gould, Downingtown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 30, 1980, Ser. No. 192,449

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—200 24 Claims



1. A mapping system to permit use of a group of partially defective memory devices as a memory unit, each of said partially defective memory devices characterized as having all of its respective faults within a contiguous address space, said mapping system comprising:

- mapping memory means for storing data which would be stored in the defective areas of said group of partially defective memory devices if said group of partially defective memory devices were faultfree;
- detection means, coupled to the address input lines to said memory unit, said detection means for detecting when an access is directed to the defective area of one of said group of partially defective memory devices;
- enabling means, connected to said group of partially defective memory devices and responsive to said detection means, said enabling means for selectively enabling accesses to said group of partially defective memory devices or said mapping memory means; and
- redirect means, coupled to the address input lines to said memory unit and responsive to said detection means, said redirect means for redirecting an access to one of said defective areas to a corresponding mapping storage area in said mapping memory means, said redirect means including multiplexor means, responsive to an indicated access to said mapping memory means, said multiplexor means for replacing information on a subset of the address input lines to said mapping memory means.

4,355,377

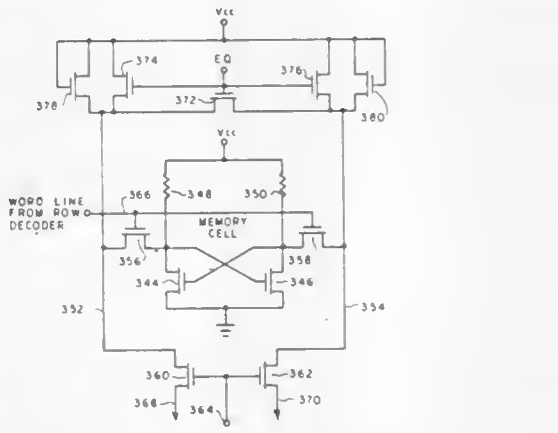
ASYNCHRONOUSLY EQUILLIBRATED AND PRE-CHARGED STATIC RAM

Rahul Sud, Colorado Springs; Kim C. Hardee, Manitou Springs, and John D. Heightley, Monument, all of Colo., assignors to INMOS Corporation

Filed Jun. 30, 1980, Ser. No. 164,283

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—203 12 Claims



1. In a static RAM having an array of memory cells which are each accessed by selection of a pair of bit lines and a word line in response to memory cell address information received by the RAM, the improvement comprising:

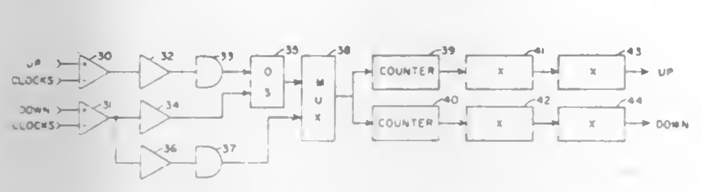
- means for asynchronously equilibrating the bit lines including:
  - a row address buffer for receiving row address information developed externally of the RAM and for developing therefrom true and complimentary row address data; an address transition detector for receiving and delaying the true and complimentary row address data for a predetermined duration and for comparing the delayed row address data with the next successive row address data developed by the row address buffer so as to generate a control signal when such comparison is indicative of a change in row address due to a change in the row address information received by the row address buffer;
  - a clock generator coupled to the address transition detector for generating a clock pulse in response to the control signal, and transistor means coupled to each pair of bit lines and to said clock generator for equilibrating

and precharging each pair of bit lines in response to the clock signal.

4,355,378
LOGGING SYSTEM DEPTH RECORDER

Charles L. Dennis, Dallas, and John W. Harrell, Duncanville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 2, 1980, Ser. No. 212,063
Int. Cl.^{3} G01V *1/40*
U.S. Cl. 367—33 **5 Claims**

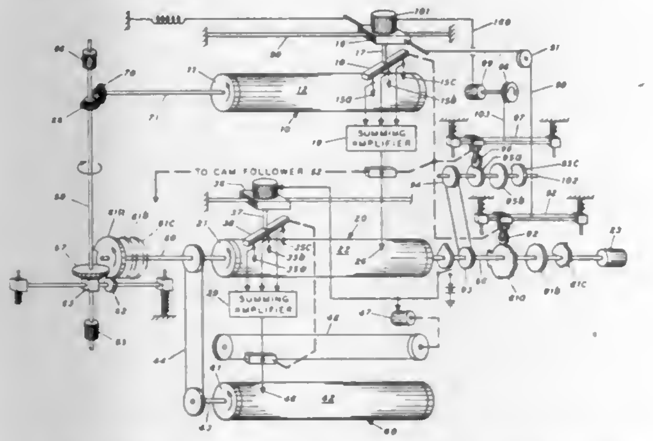


1. In a well logging system having a logging tool suspended in a borehole by means of a logging cable and an encoder for providing depth pulses in response to movement of the logging tool through the borehole, a system for converting depth pulses encoded in select formats into a common format suitable for use in the display of the depth of the logging tool in the borehole on a digital display device, comprising:
- (a) a first detector to which said depth pulses are applied for converting any bi-phase encoded depth information into a first dual clock line formatted signal,
- (b) a second detector to which said depth pulses are applied for converting any clock-line-plus-direction line encoded depth information into a second dual clock line formatted signal,
- (c) a selector to which the outputs of said first and second detectors are applied for providing a selected output of one of said first and second dual clock line formatted signals,
- (d) a first counter for counting up depth pulses in the selected output from said selector,
- (e) a second counter for counting down depth pulses in the selected output from said selector, and
- (f) means for applying said count of up depth pulses and said count of down depth pulses to said digital display device.

4,355,379
CONTINUOUS AUTOMATIC MIGRATION OF SEISMIC DATA WITH WAVEFORM PRESERVATION

John W. C. Sherwood, Whittier, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 410,058, Oct. 26, 1973, abandoned, Ser. No. 181,961, Sep. 29, 1971, abandoned, Ser. No. 28,197, Apr. 14, 1970, abandoned, and Ser. No. 768,149, Oct. 16, 1968, abandoned. This application Apr. 14, 1975, Ser. No. 567,458
Int. Cl.^{3} G01V *1/32, 1/34*
U.S. Cl. 367—68 **8 Claims**

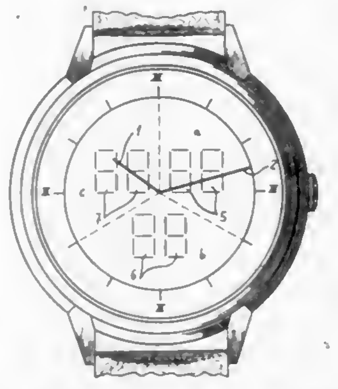


1. A system for converting a seismic time section consisting of a plurality of amplitude-versus-time seismic traces, into a seismic depth section consisting of a plurality of amplitude-versus-depth traces, so that events on the time section are migrated, both vertically and horizontally, into positions on said depth section corresponding to the actual spatial positions of the seismic reflectors in the subsurface, comprising:
- (a) automated data processing means for sonogramming said amplitude-versus-time traces, a group of traces at a time, to produce a plurality of sonograms each identified, indexed and stored with a respective horizontal pivot coordinate of a respective group of sonogrammed amplitude-versus-time traces, and with a represented moveout,
- (b) machine means for dividing each individual sonogram into a series of segments in accordance with a preselected seismic velocity function, and re-indexing and storing, also in accordance with said preselected velocity function, each of said series of segments into a particular storage zonelet representing a portion of said seismic depth section identified and indexed by a particular depth and horizontal coordinate, each of said series of divided and stored segments also being identified and indexed within a particular zonelet in accordance with a represented dip angle,
- (c) machine means for automatically sonogramming said segments divided and stored within each of the zonelets to produce a final plurality of amplitude-versus-depth representations and
- (d) machine means for directing and plotting the placement of said final representations on said seismic depth section, so that said seismic reflectors in said subsurface can be identified, in the vertical and horizontal location, by amplitude variations on said amplitude-versus-depth traces of said depth section.

4,355,380
ELECTRONIC TIMEPIECE WITH AUXILIARY DIGITAL DISPLAY

Freddy Huguenin, Lausanne, and Jean-Pierre Wattenhofer, Neuchatel, both of Switzerland, assignors to Ebauches, S.A., Switzerland

Filed Jun. 26, 1980, Ser. No. 163,277
Claims priority, application Switzerland, Jun. 28, 1979, 6028/79
Int. Cl.^{3} G04B *19/04, 25/00*
U.S. Cl. 368—71 **2 Claims**

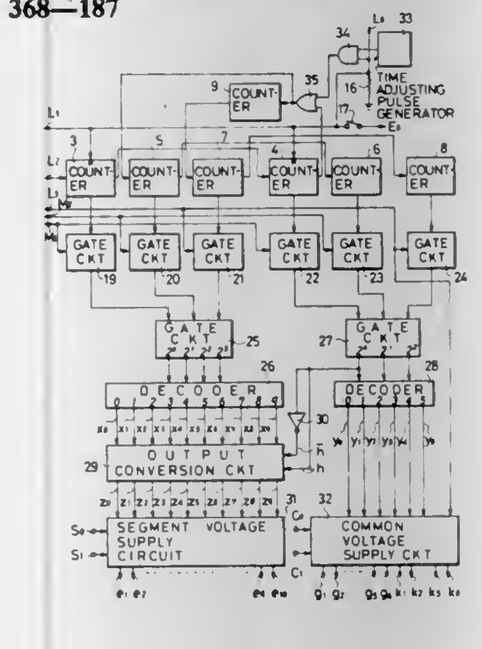


1. An electronic timepiece having a face and comprising an analog time display and a digital auxiliary display visible on said face, said analog time display and said digital auxiliary display being in superimposed relationship such that the analog time display can overlap a portion of the auxiliary display to obscure said portion, said auxiliary display comprising a plurality of digital display means disposed in three sectors of said face which each cover four hours of each half-day, control means for operating said analog time display for enabling time to be visibly indicated in an analog manner on the face of said timepiece and a control circuit for actuating and making fully visible at any given time of day at least one of said digital display means, said control circuit comprising a divider chain for supplying first and second signals when the minutes hand is in two respective ones of said sectors and third and fourth signals when the hour hand is in two respective ones of the sectors and an auxiliary display section decoder which is supplied with said first, second, third and fourth signals and which produces selection signals for activating the displays of the three sectors respectively.

4,355,381
ELECTRONIC TIMEPIECE WITH ELECTRO-OPTIC DISPLAY

Masanori Fujita, and Yoshihito Owa, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed May 21, 1980, Ser. No. 152,025
Claims priority, application Japan, May 23, 1979, 54-64169
Int. Cl.^{3} G04C *9/00*
U.S. Cl. 368—187 **4 Claims**


TIME ADJUSTING PULSE GENERATOR
COUNTER
GATE CKT
DECODER
OUTPUT CONVERSION CKT
SEGMENT VOLTAGE SUPPLY CIRCUIT
COMMON VOLTAGE SUPPLY CKT

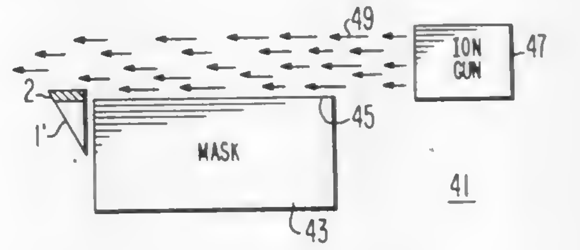
Vs-c / Vs / Vc			S_0		S_1	
			$3v_0$	0	v_0	$2v_0$
C_0	0	$3v_0$	$3v_0$	$-3v_0$	v_0	$-v_0$
C_1	$2v_0$	v_0	v_0	$-v_0$	$-v_0$	v_0

1. An electronic timepiece, comprising:
- an optical display device having a number of separate display elements in the shape of time-indicating hands and including electrodes comprised of a number of segment electrodes in the shape of time-indicating hands arranged so as to extend radially from a point, and common electrodes formed in at least two concentric rings and divided into sector-like electrodes each of which opposes a group of an equal number of the segment electrodes, means defining circuit paths connecting a corresponding segment electrode in each of the groups without crossing one another, and optical display material between the segment electrodes and the common electrodes;
- a clock pulse generator for generating clock pulses;
- time counting means receptive of the clock pulses for counting time and generating time data;
- selection means connected to receive the time data for time-divisionally selecting therefrom time units representative of time and for providing selected outputs of time units representative of time;
- first means including a first voltage supply circuit for developing and applying pulse signals to the segment electrodes of the display elements for turning ON selected ones of the segment electrodes in response to one output of time units selected at the same time by the selection means and for developing and applying pulse signals to the remaining non-selected ones of the segment electrodes for turning OFF the remaining segment electrodes;
- second means including a second voltage supply circuit for developing and applying pulse signals to the common electrodes of the display elements for turning ON selected ones of the common electrodes in response to another output of time units selected at the same time by the selection means and for applying pulse signals to the remaining non-selected ones of the common electrodes for turning OFF the remaining common electrodes; and
- time adjusting means for setting the time counting means in a time-adjustment mode and for applying time adjusting pulse signals to the time counting means when the same is in the time-adjustment mode for adjusting the contents of the time counting means, the time adjusting pulse signals being applied for a longer effective period during time adjustment than the period of the pulse signals applied to the electrodes when no time adjustment is being made.

4,355,382
APPARATUS FOR SHARPENING A CUTTING STYLUS

Anil R. Dholakia, East Windsor, N.J., and Charles J. Buiocchi, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,091
Int. Cl.^{3} C23C *15/00;* B24C *1/04;* G11B *3/00*
U.S. Cl. 369—71 **3 Claims**



1. A method for sharpening a cutting stylus for use in cutting geometric variations representing video signal information in a metal substrate, said method including the steps of:
- affixing said cutting stylus to a masking block, said cutting stylus being affixed to said masking block such that a first given portion of said cutting stylus is shielded from a beam of high energy particles during a subsequent irradiation step;
- providing a beam of high energy particles, said beam of high energy particles having a cross-sectional area perpendicular to the longitudinal axis of said beam that is large compared to a second given portion of said cutting stylus;
- positioning said cutting stylus affixed to said masking block in the path of said beam of high energy particles such that said first given portion of said cutting stylus is shielded from said beam of high energy particles; and
- irradiating said cutting stylus affixed to said masking block for a period of time sufficient to remove said second given portion of said stylus whereby said cutting stylus is sharpened.

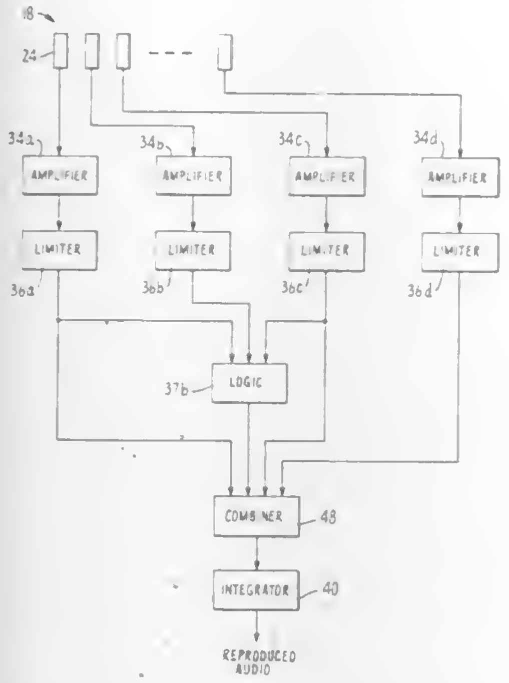
4,355,383
APPARATUS FOR SCANNING VARIABLE AREA OPTICAL SOUND TRACKS BY PARALLEL PROCESSING DISCRETE PHOTOSENSOR OUTPUTS

Ray M. Dolby, San Francisco, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation of Ser. No. 803,042, Jun. 3, 1977, abandoned. This application May 28, 1980, Ser. No. 154,074
Int. Cl.^{3} G11B *7/00, 7/12*
U.S. Cl. 369—120 **4 Claims**

1. A scanning system for reproducing a variable area optical sound track comprising

means for illuminating a substantial width of the sound track, a linear array of photoreceptor means disposed relative to the sound track from said illuminating means for generating analog electrical signals in response to the level of illumination received at each of said photoreceptor means from a respective small fractional portion of the sound track,



means for simultaneously processing in parallel said electrical signals, and including means for limiting each of said electrical signals, and

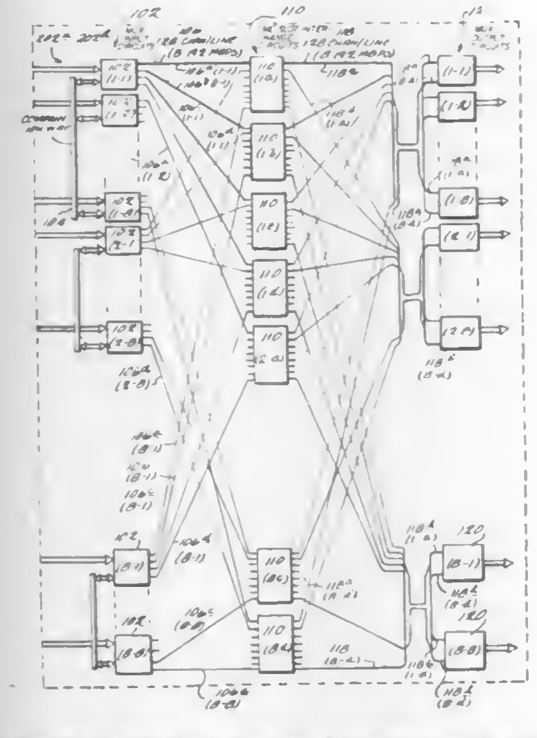
means receiving in parallel said simultaneously processed electrical signals for simultaneously combining said processed electrical signals to generate an audio signal.

4,355,384

NON-BLOCKING EXPANDABLE SWITCHING MATRIX FOR A TELECOMMUNICATION SYSTEM

Roland E. Genter, Falls Church, Va., and Steven R. Cook, Columbia, Md., assignors to Digital Switch Corporation, Reston, Va.

Filed Mar. 19, 1980, Ser. No. 131,862
Int. Cl.^{3} H04Q *11/04;* H04J *3/12*
U.S. Cl. 370—64 23 Claims



1. A digital switching system for selectively effecting communication between respective designated ones of a plurality of information channels; said digital switching system operating on a plurality of input data lines and corresponding output data lines, each input data line and corresponding output data line having a respective group of channels associated therewith, said group of associated channels being time division multiplexed onto said associated input data line to provide on said associated input data line sequential bytes of binary data occurring in sequential time slots, each of said time slots being associated with a respective particular channel of said group of channels; said digital switching system selectively providing on said corresponding output data line sequential bytes of binary data occurring in sequential time slots associated with the respective particular channels of said associated group of channels, said digital switching system comprising:

multiplexing input circuit means, coupled to said plurality of input data lines; and having a plurality of companionway lines associated therewith, for time compressing the data bytes from said plurality of input data lines and time division multiplexing said time compressed data bytes onto said associated companionway lines to provide on said companionway lines sequential time compressed data bytes occurring during successive compressed time slots,

said multiplexing input circuit means additionally having at least one inway junctor line associated therewith and further including means for selectively coupling designated ones of said companionway lines to said inway junctor line during respective compressed time slots;

time slot interchange means, coupled to said inway junctor line and having at least one outway junctor line associated therewith, for providing said time compressed data bytes on said associated outway junctor line in a controllable designated sequence different from the sequence of said time compressed data bytes on said inway junctor line; and

demultiplexing output circuit means, coupled to said outway junctor, for time expanding said differently sequenced compressed data bytes and time demultiplexing said time expanded data bytes onto respective ones of said associated group of output data lines;

said output circuit means further including means for storing an indicia of at least one predeterined message; and

means for designating said means for storing indicia as an alternative to designating one of said outway junctor lines, and for generating said predetermined message onto said output line.

4,355,385

MULTIPLEX INFORMATION HANDLING SYSTEM

Michael J. Hampshire, Liversedge, and Jonathan H. Williamson, Clifton, both of England, assignors to Ward & Goldstone Limited, Salford, England

Filed Jan. 30, 1980, Ser. No. 116,997
Claims priority, application United Kingdom, Feb. 1, 1979, 7903489; Jul. 6, 1979, 7923618
Int. Cl.^{3} H04J *3/02;* H04B *3/02*
U.S. Cl. 370—85 10 Claims

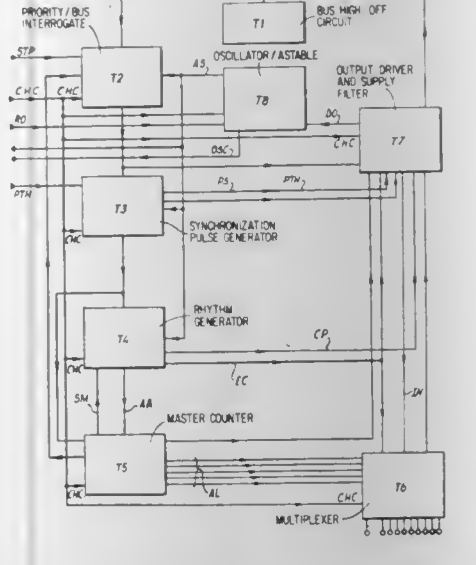
1. A multiplex information handling system comprising:

a plurality of transmitters and a plurality of receivers, all interconneted by a signal bus and by a power bus;

pieces of control equipment associated with the transmitters and receivers, and responsive to signals received by an associated receiver along the signal bus; and

signal priority establishing means for establishing a priority among the signals transmitted over and received from the signal bus;

wherein the transmitters transmit said signals along the signal bus, said signals being representative of the operational state of at least one of associated control equipment and pieces of equipment controlled by the control equipment, each said transmitter normally being operative to transmit periodically and after detecting a first predetermined time period of quiet conditions on the signal bus, and at least one of the transmitters being additionaly operative in a priority mode under control of the signal priority establishing means to transmit after detecting quiet



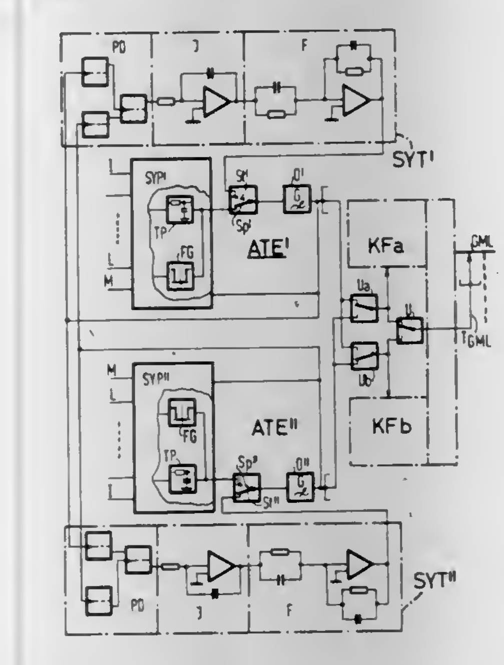
conditions on the signal bus for a second predetermined time period less than the first predetermined time period.

4,355,386

TIME-DIVISION MULTIPLEX DIGITAL SWITCHING NETWORK FOR A PCM TELEPHONE EXCHANGE SYSTEM UTILIZING DUPLICATE CONNECTING FIELD INSTALLATIONS

Reiner Binz, and Otto Karl, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,412
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1977, 2737713
Int. Cl.^{3} H04J *3/06, 3/14*
U.S. Cl. 370—100 7 Claims



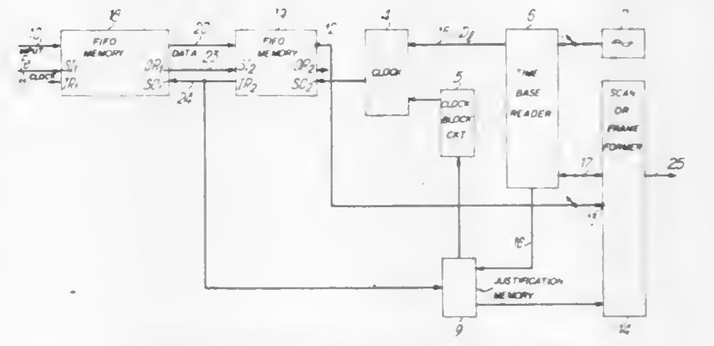
1. A time-division multiplex digital switching system, particularly a PCM-telephone exchange system comprising switching network installations (KFa, KFb) provided in duplicate operating in parallel with one another for interference-free operation, and each assuming approximately half the traffic flow, respectively, characterized in that there is provided, in duplicate, exchange clock pulse frequency generating apparatus ATE (ATE′, ATE″) supplying the switching networks (KFa, KFb) and the lines emanating from the latter with an exchange clock pulse determined in bit-frequency, whereby the particular one of the two exchange clock pulse frequency generating apparatuses ATE′, supplies the particular one of such doubly-provided switching network installation (KFa), as well as the line (GML) from the exchange system, with an exchange clock pulse generated by it independently of the particular other exchange clock pulse apparatus (ATE″), and whereby the particular other of the two exchange clock pulse generating apparatuses (ATE″) supplies the other of such doubly-provided switching network installations (KFb) with an exchange clock pulse which is phase-locked with the exchange clock pulse supplied by the exchange clock pulse from generating apparatus (ATE′).

4,355,387

RESYNCHRONIZING CIRCUIT FOR TIME DIVISION MULTIPLEX SYSTEM

Jean-Francois Portejoie, 46, rue de Lorraine; Gilbert Noel, Kergarant Brevelenez, and Jean-Claude Billy, 33, Residence Duroux, all of 22300 Lannion, France

Filed Feb. 14, 1980, Ser. No. 121,420
Claims priority, application France, Feb. 21, 1979, 79 05109
Int. Cl.^{3} H04J *3/07*
U.S. Cl. 370—102 9 Claims



INVENTIVE SYNCHRONIZATION CIRCUIT FOR ONE INPUT CHANNEL

1. A multiplexing input circuit for ensuring the synchronization of plesiochronous numerical signals responsive to a "justification" principle, said circuit comprising means for generating a "justification" request signal responsive to a detection of a need for retiming said plesiochronous signals, buffer memory means having independently writing and reading capabilities for receiving signals at one clocking rate, and retransmitting said signals at a different clocking rate, said buffer memory being formed of two FiFo memory means connected in series, and means selectively responsive to the electrical state on the series connection between the first and second FiFo memories for causing the generation of a request for "justification" signals.

4,355,388

MICROPROGRAMMABLE TDMA TERMINAL CONTROLLER

Joseph H. Deal, Jr., Clarksburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,619
Int. Cl.^{3} H04J *3/04, 3/06*
U.S. Cl. 370—104 32 Claims

1. In a time division multiple access (TDMA) terminal operable between at least a terrestrial interface module (TIM) and a modem, a microprogrammable TDMA terminal controller comprising:

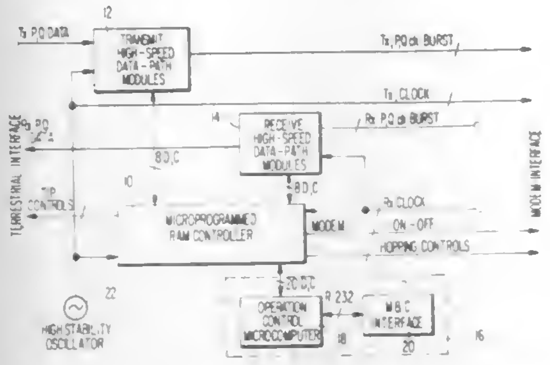
a microprogrammed random access memory (RAM) controller means for generating control signals to effect burst processing and data path control functions;

computer means for monitoring the operation of said terminal and providing data and control signals to said terminal to maintain desired terminal operation;

transmit means responsive to control signals from both said RAM controller and said computer for receiving data from said TIM, forming said data into a TDMA transmit burst and forwarding said burst to said modem;

receive means responsive to control signals from both said RAM controller and said computer for receiving demodulated bursts from said modem, deriving received data from said demodulated bursts and forwarding said data to said TIM; and

clock means for providing a source of timing pulses to said terminal controller.



4,355,389

MICROPROGRAMMED INFORMATION PROCESSING SYSTEM HAVING SELF-CHECKING FUNCTION

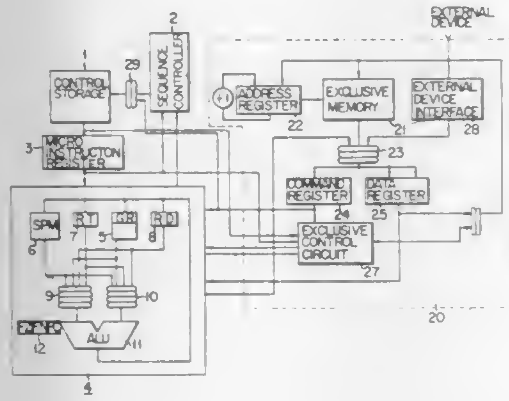
Fumitaka Sato, Oume; Masahiko Iwane, Tokyo, and Masaki Murayama, Fussa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 886,828, Mar. 15, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,368

Claims priority, application Japan, Mar. 15, 1977, 52-28432; Mar. 15, 1977, 52-28433

Int. Cl.^{3} G06F *11/22*

U.S. Cl. 371—18 **16 Claims**



1. A microprogrammed information processing system having a self-checking function comprising:

a central processing unit including means for executing microinstructions and having a control store for storing a microprogram including a sequence of microinstructions, said central processing unit further including means for periodically placing said unit in an idle state;

microinstruction register means included in said central processing unit and connected to said control store for storing microinstructions read out from said control store;

an exclusive fault test memory for exclusively storing commands which include addresses of microinstructions stored in said control store, the microinstructions addressed by said commands being selected under control of said commands to perform fault testing routines in said system; and

a fault test control circuit connected to said control store and said exclusive fault test memory and operable under control of said microinstruction execution means in said central processing unit, said fault test control circuit having means for reading out said commands from said exclusive fault test memory when said central processing unit is in said idle state and means for interpreting and executing the commands read out from said exclusive fault test memory, said fault test control circuit addressing said control store in response to said commands from said exclusive fault test memory causing said central processing unit to execute at least one microinstruction read out from said control store, thereby performing an operation checking procedure to check the operation of said central processing unit.

4,355,390

METHOD FOR CHECKING DATA WRITTEN INTO BUFFERED WRITE-READ MEMORIES IN NUMERICALLY CONTROLLED MACHINE TOOLS

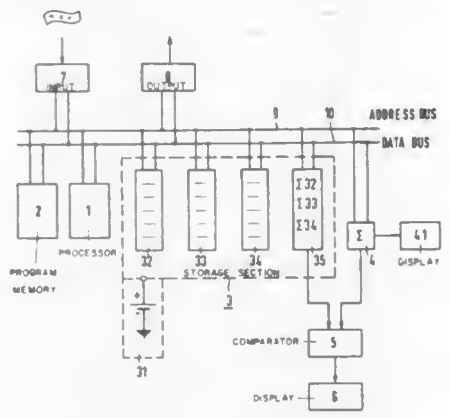
Friedrich-Wilhelm Hellwig, Hemhofen, and Werner Schrei, Kleinsendelbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,110

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939461

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—21 **2 Claims**



1. A method for checking data written into a buffered write-read memory in a control apparatus for a numerically controlled machine tool, comprising supplying buffered power to the write-read memory independently of the power supplied to the control apparatus so as to enable the write-read memory to store data for an extended period of time, forming longitudinal sums of associated data each time there is a change in the associated data, writing the longitudinal sums into the buffered write-read memory, reforming the longitudinal sums each time power is supplied to the control apparatus, comparing the formed and reformed longitudinal sums, and indicating the affected data if there is a deviation.

4,355,391

APPARATUS AND METHOD OF ERROR DETECTION AND/OR CORRECTION IN A DATA SET

John H. Alsop, IV, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1980, Ser. No. 136,128

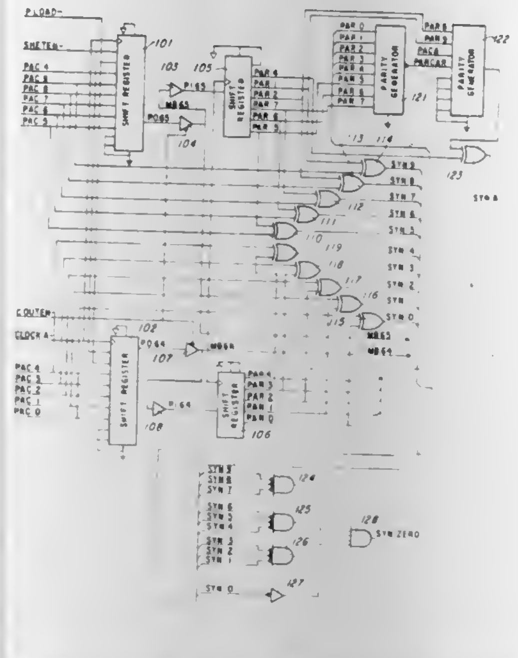
Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—37 **29 Claims**

1. Apparatus for generating a binary code word in response to an input binary word, comprising:

(a) matrix generating means comprising a memory for storing and for supplying a matrix of columns and rows of bits set to binary "1"s and "0"s in a pattern conforming to the mathematical expression of a predetermined error detection and/or correction code algorithm; and

(b) matrix multiplying means connected to multiply the matrix by the input binary word to yield the binary code word indicative of an error detection and/or correction code.



4,355,392

BURST-ERROR CORRECTING SYSTEM

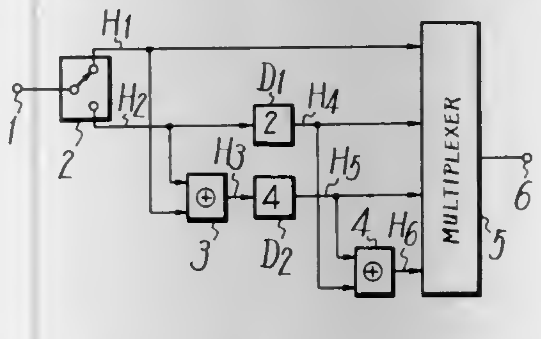
Toshitada Doi, Yokohama, and Akira Iga, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 31,030, Apr. 28, 1979, abandoned. This application Dec. 19, 1980, Ser. No. 218,256

Claims priority, application Japan, Apr. 21, 1978, 53-47247

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—45 **18 Claims**



1. A digital signal transmission system comprising:

means for providing a first error correcting signal from generation elements comprised of a plurality of words of digital information;

delay means for relatively delaying said plurality of words of digital information so as to have delay times that are different from each other;

means for providing a second error correcting signal from a plurality of generation elements comprised of said relatively delayed words and first error correcting signal; and

means for transmitting said relatively delayed words of digital information and first and second error correcting signals.

4,355,393

MICROCOMPUTER HAVING A RAM FOR STORING PARITY BITS

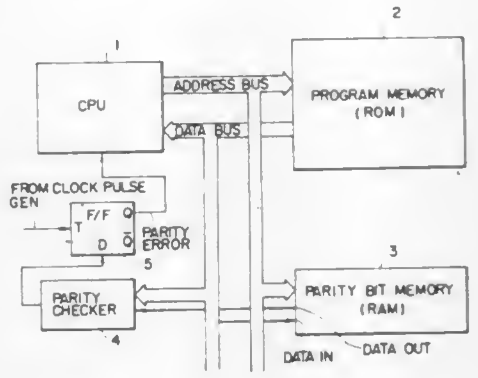
Kazuyuki Kubo, and Shigenobu Katagiri, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Jan. 30, 1980, Ser. No. 116,865

Claims priority, application Japan, Jan. 31, 1979, 54-10859

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—51 **9 Claims**



1. A microcomputer including a central processing unit and read only memory for storing a control program having instructions for said central processing unit, wherein the improvement comprises:

(a) means responsive to the microcomputer being supplied with power for deriving parity bits for words of said control program;

(b) a random access memory means having a segment responsive to the parity bit deriving means for storing only said derived parity bits; and

(c) means for parity checking each instruction word of said control program stored in said read only memory in combination with the parity bit for the corresponding word as stored in said random access memory.

4,355,394

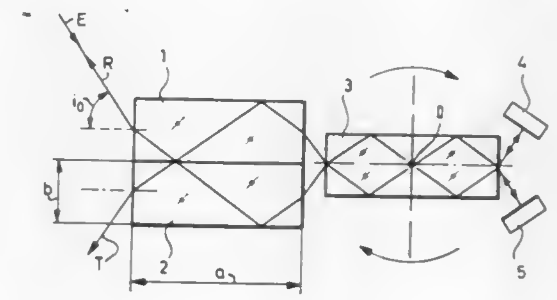
LASER DEVICE FOR GENERATING ULTRASHORT LASER RADIATION PULSES

Fritz P. Schaefer, Goettingen, Fed. Rep. of Germany, and Jan Jasny, Warsaw, Poland, assignors to Max Planck Gesellschaft Zur Foerderung der Wissenschaften E.V., Goettingen, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,152

Int. Cl.^{3} H01S *3/11*

U.S. Cl. 372—16 **11 Claims**



1. A laser device for generating laser radiation pulses of predetermined wavelength, said laser device including at least two reflector arrangements which define a laser radiation path, and of which a first reflector arrangement is capable of substantially fully reflecting the laser radiation and a second reflector arrangement is partially transparent for the purpose of decoupling a portion of the laser radiation from said laser radiation path, the laser device also including a stimulatable laser medium arranged in the laser radiation path for emitting, when stimulated, a laser radiation pulse of the predetermined

wavelength which circulates in the laser radiation path, and stimulating means for stimulating said laser medium, wherein the first reflector arrangement is an interferometer which comprises:

a beam splitter located in the laser radiation path for producing two component beams;

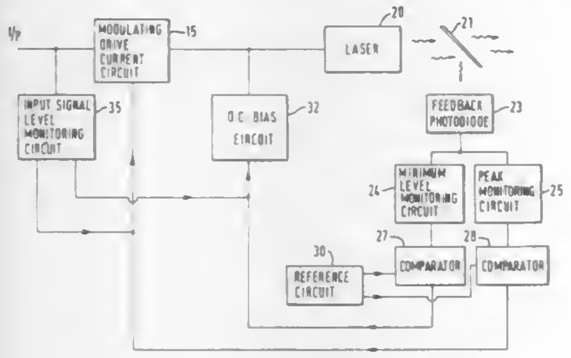
a reflector means for reflecting the component beams back into the beam splitter; and

path lengths ratio varying means for varying the ratio of the lengths of the optical paths travelled by the respective component beams in passage between the beam splitter and the reflecting means such that during each circulation of the laser radiation pulse in the laser radiation path, an interference maximum at the predetermined wavelength of the laser radiation will occur an integral number of times, said path lengths ratio varying means including

a rotatable component of optically transparent material having parallel surfaces for the entry and the exit of the component beams and having an axis of rotation which is substantially normal to the mean direction of propagation of the laser radiation through the rotatable component, and

rotating means for rotating the rotatable component about its axis at a predetermined speed of rotation.

4,355,395
INJECTION LASERS
Stuart R. Salter, and David R. Smith, both of Suffolk, England, assignors to British Telecommunications, London, England
Filed Apr. 10, 1978, Ser. No. 895,060
Int. Cl.^{3} H01S *3/13*
U.S. Cl. 372—38 **4 Claims**



1. In combination with an injection laser having current supply means for supplying a d.c. bias current to the laser and current drive circuitry for supplying current pulses to said laser, apparatus for stabilizing the output characteristics, comprising:

light sensitive means for producing a first electrical signal indicative of the optical output level of said laser;

means for sensing the lowest level of said electrical signal to produce a second electrical signal indicative of the optical output level of said laser at said d.c. bias current;

second means for producing a first reference electrical signal which is indicative of a predetermined d.c. bias current light output level;

third means for comparing said second electrical signal with said first reference signal to produce a first difference signal;

means for feeding said first difference signal to said d.c. bias current supply means, said d.c. bias current supply means being responsive to said first difference signal to adjust the d.c. bias level such that the d.c. light output level remains substantially at the predetermined level;

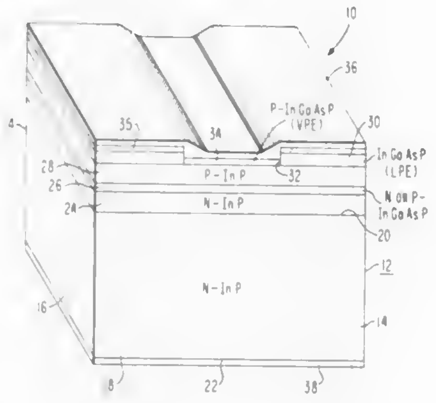
fourth means for sensing a preselected level of the first electrical signal to produce a third electrical signal indicative of a preselected light output level of said laser;

fifth means for producing a second reference electrical signal indicative of a predetermined light output level;

sixth means for comparing said third electrical signal with said second reference signal to produce a second difference signal; and

means for feeding said second difference signal to modulate said current drive means for said laser, said drive means being responsive to said second difference signal to adjust said drive current applied to said laser such that the optical output level remains substantially at said predetermined level.

4,355,396
SEMICONDUCTOR LASER DIODE AND METHOD OF MAKING THE SAME
Frank Z. Hawrylo, Trenton, and Gregory H. Olsen, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 23, 1979, Ser. No. 96,975
Int. Cl.^{3} H01S *3/19;* H01L *21/20*
U.S. Cl. 372—46 **9 Claims**



1. In a semiconductor laser diode which includes

a body of semiconductor material including an active layer between confinement layers of opposite conductivity type,

a capping layer over one of said confinement layers, said capping layer having a stripe-like opening therethrough, and

a contact layer in said opening in said capping layer and contacting the one confinement layer, the improvement comprising

said capping layer and said contact layer being of the same material, the capping layer being a liquid phase epitaxy layer, the contact layer being a vapor phase epitaxy layer.

4,355,397
FULL DUPLEX COMMUNICATION SYSTEM FOR VOICE GRADE CHANNELS
Richard L. Stuart, Columbia, Md., assignor to Rixon, Inc., Silver Spring, Md.
Filed Oct. 15, 1980, Ser. No. 197,038
Int. Cl.^{3} H04L *3/00*
U.S. Cl. 375—17 **35 Claims**

1. Apparatus for modulating and demodulating a signal comprising:

transmitter means comprising:

means for splitting a series of input binary data bits into an even bit stream and an odd bit stream;

means for converting said binary data bit streams into respective streams of multi-level encoded data characters;

means for modulating one of said multi-level encoded data character streams by an in-phase carrier signal;

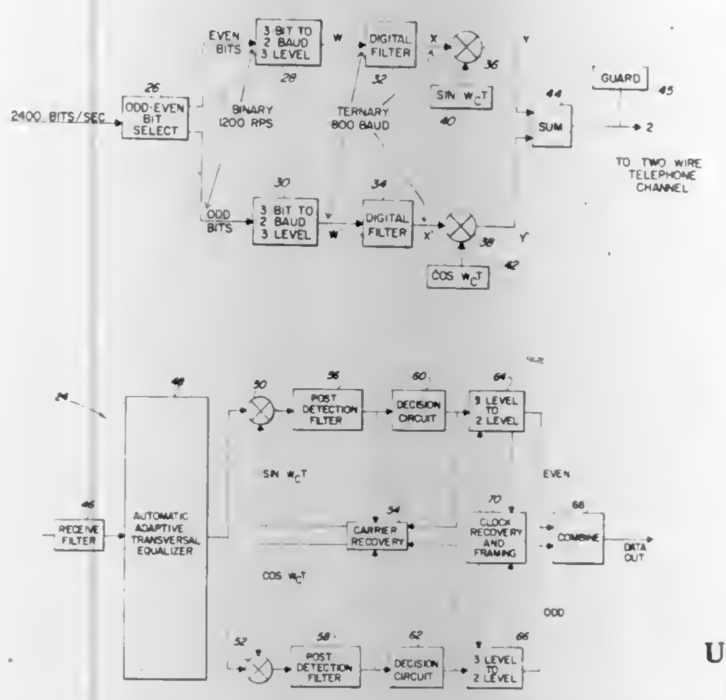
means for modulating the other said multi-level encoded data character stream by a quadrature carrier signal; and

means for summing said modulated carrier signals to produce a multi-level quadrature amplitude modulated output signal; and

receiver means comprising:

means for splitting a received multi-level quadrature amplitude modulated signal into n-phase and quadrature components;

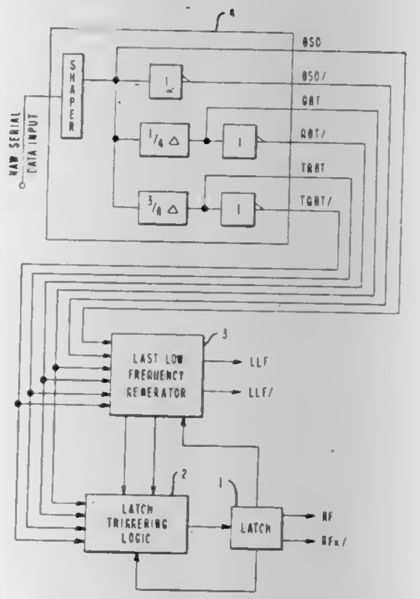
means for demodulating said in-phase and quadrature signal components to produce first and second streams of multi-level encoded data characters;



means for decoding said first and second streams of multi-level characters into respective streams of binary data bits; and

means for combining said binary data bit streams to produce an output data bit stream representative of the information borne by said multi-level quadrature amplitude modulated signal.

4,355,398
REAL TIME CLOCK RECOVERY CIRCUIT
Donald M. Cook, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio
Filed Dec. 17, 1980, Ser. No. 217,339
Int. Cl.^{3} H04L *7/02*
U.S. Cl. 375—110 **14 Claims**



1. A clock recovery circuit, having an input terminal adapted to receive a serial data stream having a defined bit time, said serial data stream being the resultant combination of a data signal and a clock signal, said clock recovery circuit comprising:

(a) means for deriving a shaped serial data stream from said serial data stream thereby providing a first input signal;

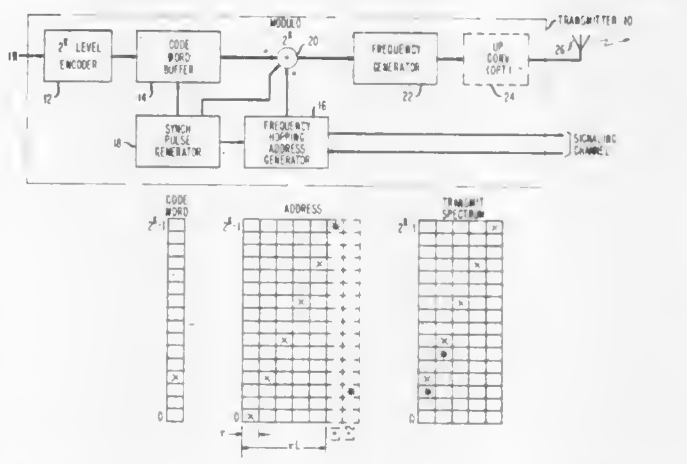
(b) first means for shifting said first input signal by one-quarter bit time thereby providing a second input signal;

(c) second means for shifting said first input signal by three-quarters of a bit time thereby providing a third input signal;

(d) a latch, having an output terminal for providing an output signal; and

(e) means for operating said latch, said means for operating having a first, second, and third input terminal adapted to receive said first, second, and third input signal, respectively, and further having a fourth, fifth, and sixth input terminal adapted to receive the respective complement signals of the first, second, and third input signals, wherein the respective complement signals are symmetrical in time, said means for operating operatively connected to said first, second, third, fourth, fifth, and sixth input terminals and to said latch, said means for operating generating a trigger signal upon detection of a transition in the second input signal and in the third input signal, thereby causing a transition in the output signal of said latch, said output signal being the clock signal recovered from said serial data stream.

4,355,399
ADAPTIVE SPREAD SPECTRUM FH-MFSK TRANSMITTER AND RECEIVER
Uzi Timor, Haifa, Israel, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 23, 1981, Ser. No. 237,540
Int. Cl.^{3} H04J *6/00;* H04B *7/12*
U.S. Cl. 375—1 **15 Claims**



1. A transmitter for use in a spread spectrum radio system for generating a frequency-hopping, multilevel frequency shift keyed (FH-MFSK) signal in a predetermined frequency band, the transmitter comprising:

a Q level encoder (**12**) capable of converting either a periodic sample of an analog message signal or a group of K sequential message bits of a binary signal to be transmitted into an equivalent level of a Q level code and generating an output signal indicative of such equivalent level;

a frequency-hopping address generating means (**16**) capable of appropriately generating, as an output signal, signals representative of the individual multiple elements of a predetermined length frequency-hopping address sequence which is associated with a particular user of the system whose message signals were converted by the Q level encoder;

adding means (**20**) capable of adding the output signal of the Q level encoder and each of the individual multiple elements in the output signal of the frequency-hopping address generating means and generating an output signal indicative of such addition; and

frequency generating means (**22**) capable of transmitting the output signals of the adding means within the appropriate time slots and at corresponding ones of at least Q encoded frequencies within the radio system's predetermined frequency band

characterized in that

the address generating means (**16**) comprises:

storage means (**58**) capable of storing the individual multiple elements of the predetermined length frequency-hopping address sequence for a user, the sequence comprising at least L signals where L is the normal length of a system encoded transmitted sequence; and

processing means (**56**) capable of transmitting the multiple elements of the frequency-hopping address sequence in a predetermined sequence to the adding means; and

the frequency generating means is responsive to the output signals from the adding means for causing, during a predetermined at least one time slot of the transmitting sequence, the simultaneous transmission of the resultant signal of the addition in said adding means of the Q level encoded signal and at least two elements of the frequency-hopping address sequence in corresponding encoded frequencies within the predetermined frequency band of the system.

4,355,400

TRANSMITTING AMPLIFIER FOR A REMOTE FED INTERMEDIATE REGENERATOR

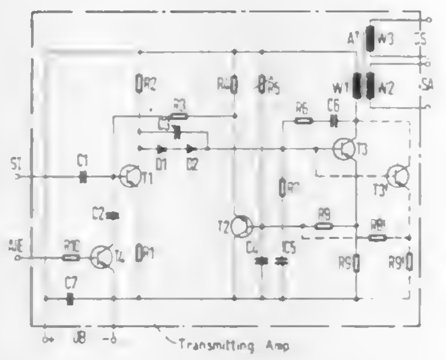
Josef Doemer, Hohenschaeftlarn, and Gerhard Thanhaeuser, Mering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,300

Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017476

Int. Cl.^{3} H04L *25/64;* H03K *5/01*

U.S. Cl. 375—4 **2 Claims**



1. In a remote fed intermediate regenerator for use in the transmission of digital signals said intermediate regenerator having for each transmission direction at least one pulse regenerator comprising a distortion correction means and a regenerator circuit connected in series, each regenerator being preceded by a first remote feed dividing filter and followed by a second remote feed dividing filter and each pulse generator including a high power Zener diode bridging the remote feed path of said regenerator and said distortion correcting means and said regenerator circuit each containing low power Zener diodes connected in parallel with the operating voltage terminals thereof, and a fault recognition circuit interconnected between the pulse regenerators, a transmitting amplifier for each pulse regenerator connected in series with said distortion correcting means and said regenerator circuit in said remote feed path, said transmitting amplifier comprising:

a first transistor having a base connected to a signal input of said transmitting amplifier through a first capacitor and having an emitter connected through a first resistor to a negative operating voltage and having a collector connected through a second resistor to a positive operating voltage;

a second transistor having an emitter connected to the base of said first transistor through a third resistor and to said positive operating voltage through a fourth resistor, and having a collector connected to said negative operating voltage and having a base connected through an adjustable fifth resistor to said positive operating voltage and through a fourth capacitor to said negative operating voltage;

a third transistor having a base connected to the collector of said first transistor through a diode series arrangement, said diode series arrangement being bridged by a third capacitor, said third transistor having a collector connected to the base of said third transistor through a sixth resistor and a sixth capacitor, said base of said third transistor being further connected to said negative operating potential through a seventh resistor and a fifth capacitor, said third transistor further having an emitter connected to the base of said second transistor through an eighth resistor and to said negative operating voltage through a ninth resistor;

a fourth transistor having a base connected to a blanking pulse voltage through a tenth resistor and having an emitter connected to said negative operating voltage and a collector connected to the base of said first transistor through a second capacitor; and

an output transformer having a primary winding connected between the collector of said third transistor and said positive operating voltage and having a first secondary winding having a tap serving as the output for said transformer and a second secondary winding connected to an input of said fault recognition circuit,

said first, third and fourth transistors being npn transistors and said second transistor being a pnp transistor.

4,355,401

RADIO TRANSMITTER/RECEIVER FOR DIGITAL AND ANALOG COMMUNICATIONS SYSTEM

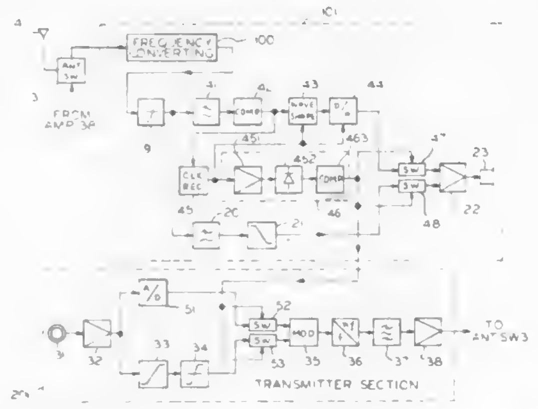
Masao Ikoma; Noboru Saegusa; Yoshihiko Akaiwa, and Ichirou Takase, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,154

Claims priority, application Japan, Sep. 28, 1979, 54-124951

Int. Cl.^{3} H04M *1/70*

U.S. Cl. 375—5 **5 Claims**



3. A radio device having secure transmission capabilities, said device comprising means for transmitting carrier waves which are angle modulated by either analog or digital signals; first selecting means for selecting either the analog or digital angle modulated carrier waves in response to a control signal; means for receiving both analog and digital angle modulated carrier waves and demodulating them to provide demodulated analog or digital signals, respectively;

means for regenerating a clock signal from the output of said receiving means;

analog-digital decision means responsive to said clock signals for generating said control signal, and second selecting means responsive to said control signal for selecting either said demodulated analog or digital signals.

4,355,402

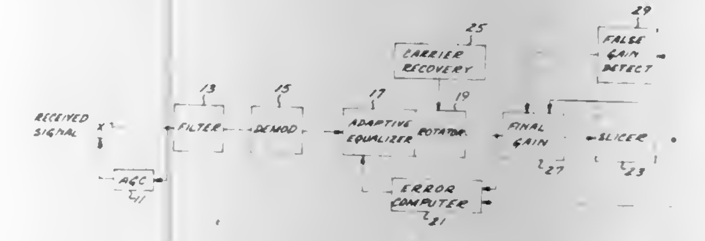
DATA MODEM FALSE EQUILIBRIUM CIRCUIT

Philip F. Kromer, III; Ran F. Chiu; Ming L. Kao, all of Miami, and Henry H. Parrish, Miami Springs, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Oct. 19, 1978, Ser. No. 952,856

Int. Cl.^{3} H04L *27/08*

U.S. Cl. 375—11 **10 Claims**



8. In a modem having a receiver system gain and a decision means operative on the output of an equalizer means to resolve said output into one of a plurality of data symbols and subject to a false equilibrium condition wherein the system gain is reduced to a level of operation, the resolution of data symbols by said decision means is incorrect, the improvement comprising:

means responsive to the resolution of data symbols for detecting and correcting said false equilibrium condition.

4,355,403

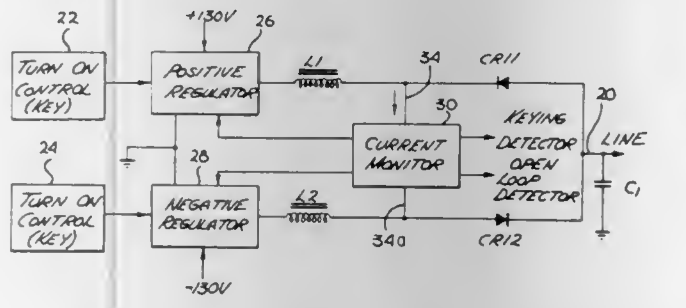
TELETYPEWRITER LINE KEYER WITH SWITCHING CURRENT REGULATOR

John W. Spaniol, Studio City; Ronald E. Tollum, Simi Valley, both of Calif., and Julius A. Barthelme, Woodsboro, Md., assignors to Frederick Electronics Corporation, Frederick, Md.

Continuation of Ser. No. 909,653, May 25, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,652

Int. Cl.^{3} G05F *1/40;* H03K *1/14*

U.S. Cl. 375—36 **18 Claims**



1. A switching network for selectively delivering an average current from either a negative power source or a positive power source to a load, comprising:

(a) switching means responsive to input keying control signals for connecting one of the power sources to the load, the load current forming the loop current in a loop which includes the connected power source supplying the loop current, a portion of said switching means and the load;

(b) a floating, loop current-sensing circuit responsive to the level of either a positive or a negative current in the load, for generating feedback control signals for operating said switching means to disconnect a connected power source from the load, the feedback control signals cooperating with the input keying control signals to control the connection and disconnection of a power source, said floating circuit developing its operating power voltages from the loop current itself; and

(c) an energy storage circuit connected between said switching means and the load, for storing energy when either of the power sources is connected to the load, and for supplying stored energy to the load when the connected power source is disconnected.

4,355,404

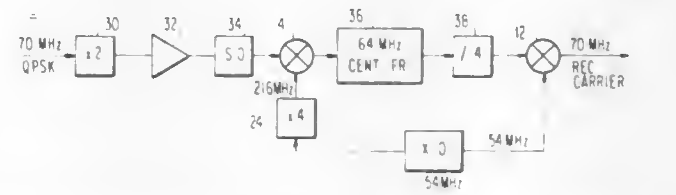
CARRIER RECOVERY NETWORK FOR QPSK MODEMS EMPLOYING SYNCHRONIZED OSCILLATORS

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed May 27, 1980, Ser. No. 153,289

Int. Cl.^{3} H03B *5/12;* H03D *7/16*

U.S. Cl. 375—86 **31 Claims**



1. A carrier recovery network for recovering a pure carrier waveform from a received carrier waveform having information modulated thereon, said carrier recovery network comprising:

first processing means for processing said received carrier waveform according to a first function in order to remove said information modulation therefrom to provide a processed output; and

an oscillator having (a) an oscillator input receiving said processed output of said first processing means and (b) an oscillator output having said pure carrier waveform thereon, said oscillator having means for synchronizing a signal at said oscillator output with a signal at said oscillator input whereby frequency variations in said processed output produce frequency variations in said pure carrier waveform, said oscillator also having means for further processing said processed output according to a second function, said second function being the inverse of said first function, whereby said pure carrier waveform is a substantial replica of said received carrier waveform without said data modulated thereon.

4,355,405

DIGITAL SIGNALLING SYSTEM

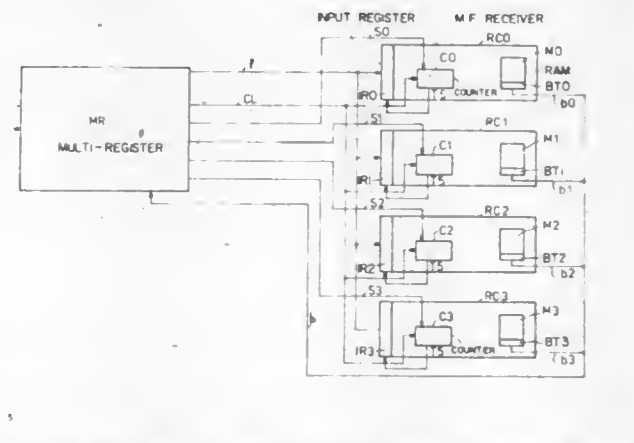
Willi A. H. Ruys, Wilrijk; Dermod J. K. O'Reilly, Antwerp; Leopold P. Verbist, St. Katelijne Waver; Daniel S. G. Hoefkens, Berchem, and Guido M. J. B. Thyssens, Boechout, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,055

Claims priority, application Netherlands, Apr. 27, 1979, 7903346

Int. Cl.^{3} H04J *5/06*

U.S. Cl. 375—48 **35 Claims**



1. Digital signalling system for multifrequency signalling and transmission of signals in digital form in channels grouped in successive frames including sender means which are coupled

to receiver means via transmission means and which are adapted to generate at least one frequency signal, said receiver means being adapted to recognize the presence of said frequency signal received and being provided with guard means to protect said receiver means against the reception of spurious signals, the invention wherein said receiver means includes filter means including at least one multiple band digital filter, a number of the bands of the multiple bands filtered being used as guard bands to form said guard means in which said sender means generate combinations of frequency signals out of a plurality of frequency signals and that said receiver means are adapted to recognize the presence of said combinations in which said filter means include a number of first filters at least equal to said plurality of frequency signals, each one of said filters being tuned to a different frequency of said plurality of frequency signals, said filters being single band or multiband filters, and wherein when said first filters are tuned to said plurality of frequency signals they are single band filters, said number of first filters also include at least one multiband guard filter, each pass band of which is situated between two different succeeding frequencies of said plurality of frequency signals.

4,355,406
CARRIER DETECTOR IN A MODEM PROVIDED WITH AN ECHO CANCELER

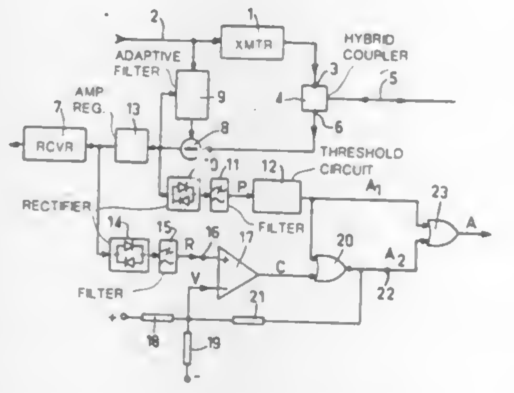
Loïc B. Y. Guidoux, Massy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,161

Claims priority, application France, Nov. 7, 1979, 79 27479

Int. Cl.^{3} H04B *3/20*

U.S. Cl. 375—82 **2 Claims**



1. A carrier detector in a modem provided with an echo canceler, the carrier detector comprising a first detection circuit which, in processing a signal representative of the level of the output signal of the echo canceler, produces a signal indicative of the interruption of the carrier signal, characterized in that the carrier detector further comprises a second detection circuit which processes a second signal representative of the level of the output signal of an amplitude regulator connected to the output of the echo canceler, this second detection circuit including a bistable circuit having hysteresis and having two thresholds located on both side of the operating value of said second level signal with predetermined deviations with respect to this operating value, this bistable circuit changing to a first state corresponding to the indication of a carrier interruption when the second level signal decreases to below the low threshold, and changing to a second state when the second level signal increases to above the high threshold or when the first detection circuit furnishes the indication of a carrier interruption, the indication of a carrier interruption at the output of the carrier detector being produced by the first or the second detection circuit.

4,355,407
DEVICE FOR DISCONNECTING THE RECEIVER IN CASE OF A SMALL SIGNAL-TO-NOISE RATIO FOR A DIGITAL-MODULATED RADIO SYSTEM

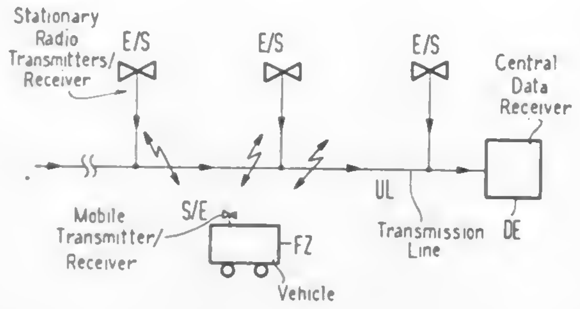
Friedrich Mueller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,572

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008076

Int. Cl.^{3} H04L *27/14;* **H04B** *3/60, 1/10, 17/00*

U.S. Cl. 375—91 **4 Claims**


Stationary Radio Transmitters/ Receiver
E/S
E/S
E/S
Central Data Receiver
UL
Mobile Transmitter/ Receiver
S/E
FZ
Vehicle
Transmission Line
DE

1. Apparatus for disconnecting a receiver in response to a small signal-to-noise ratio in a digital modulated radio system, comprising:

a receiving mixer operable to receive a transmitted radio signal and convert the same to an intermediate frequency;

a frequency shift keyed demodulator comprising an input coupled to said mixer, two channels each including in series a band-pass filter connected to said input, an amplifier and a detector, and a voltage comparator connected to said detectors and operable to be switched at a frequency which increases with decreasing signal-to-noise ratio;

an AND gate;

connecting means connecting said voltage comparator to said AND gate; and

frequency-to-voltage conversion means for obtaining a voltage which is inversely proportional to the signal-to-noise ratio connected between said voltage comparator and said AND gate and including in series a high-pass filter, a detector and a further comparator having a first input connected to said last-mentioned detector and a second input, and a variable voltage divider connected to said second input for setting a minimum acceptable signal-to-noise ratio,

said AND gate operated to disconnect the receiver in response to signal-to-noise ratios less than the set minimum.

4,355,408
SYSTEM FOR EXTRACTING TIMING INFORMATION FROM A DIGITAL WAVEFORM

Gordon G. Scarrott, Welwyn Garden City, England, assignor to International Computers Limited, Stevenage, England

Filed Feb. 11, 1981, Ser. No. 233,451

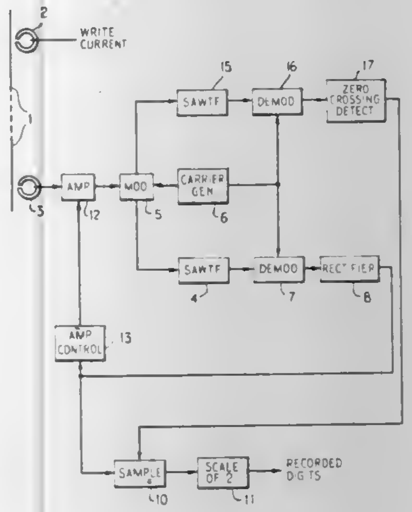
Claims priority, application United Kingdom, Feb. 13, 1980, 8004793

Int. Cl.^{3} H04L *7/00*

U.S. Cl. 375—110 **10 Claims**

6. Apparatus for extracting timing information from an original waveform representing digital information and composed of elementary signals, the apparatus comprising means for transforming the original waveform into a transformed waveform, which means comprises in sequence a modulator for modulating a carrier wave with the original waveform, a surface acoustic wave transversal filter for passing the modulated waveform and a demodulator for demodulating the filter output to produce said transformed waveform and means for detecting zero crossings of the demodulated signal and outputting timing signals in response thereto, the characteristics of

the surface acoustic wave transversal filter being such as in operation to transform an isolated elementary signal in the original waveform into an elementary transformed waveform



which has at least one zero crossing and is substantially zero at each instant at which a zero crossing of any other elementary transformed waveform can occur.

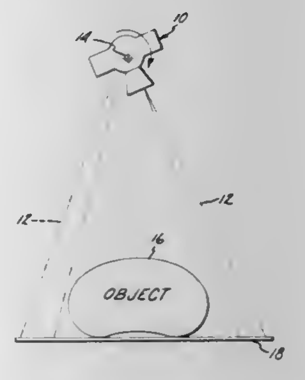
4,355,409
SCANNING X-RAY SYSTEM

Kurt Amplatz, 10 Evergreen Rd., St. Paul, Minn. 55110

Continuation of Ser. No. 71,184, Aug. 31, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,181

Int. Cl.^{3} G03B *41/16*

U.S. Cl. 378—146 **18 Claims**



1. An x-ray apparatus for producing x-ray images of an object, the x-ray apparatus comprising:

x-ray sensitive means positioned on one side of the object for receiving x-rays which have passed through the object, the x-ray sensitive means defining a field over which x-rays are received, the field having a first dimension in a first direction and a second dimension in a second direction;

x-ray source means positioned on an opposite side of the object from the x-ray sensitive means for providing a narrow x-ray beam having a first dimension at the field defined by the x-ray sensitive means which is at least equal to the first dimension of the field having a second dimension at the field defined by the x-ray sensitive means which is less than the second dimension of the field and less than the first dimension of the narrow beam, the x-ray source means including an x-ray tube in which an electron stream from a cathode is directed along an anode-cathode axis to strike a focal spot on a target surface of an anode to produce x-rays, the target surface being inclined with respect to a first plane which (1) is perpendicular to the anode-cathode axis and (2) passes through the center of the focal spot; and

pivoting means for pivoting the x-ray source means about a pivot axis to cause the narrow x-ray beam to be scanned in the second direction across the field defined by the x-ray sensitive means to cover the second dimension of the field, wherein the pivot axis (1) passes exactly through the center of the focal spot, (2) is perpendicular to the anode-cathode axis, (3) lies in the first plane, (4) is parallel to the field defined by the x-ray sensitive means, and (5) is parallel to the first direction so that as the x-ray source means is pivoted by the pivoting means, the center of the focal spot remains stationary.

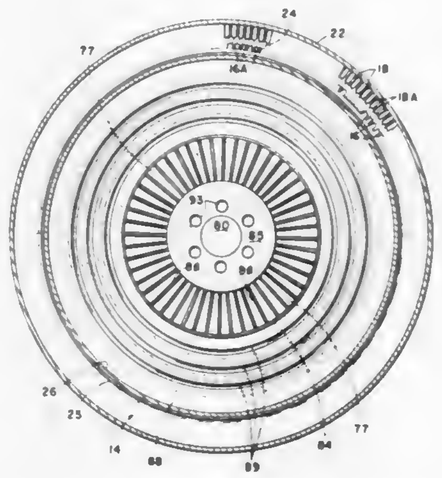
4,355,410
INDUSTRIAL X-RAY MACHINE

James R. Sullins, Tulsa, Okla., assignor to X-Ray Manufacturing & Supply, Inc., Tulsa, Okla.

Filed Oct. 27, 1980, Ser. No. 201,178

Int. Cl.^{3} H05G *1/02*

U.S. Cl. 378—199 **7 Claims**



1. A completely enclosed, self-contained, cooled, industrial X-ray machine having an improved X-ray tube, power supply and heat exchanger assembly, comprising:

(a) a cylindrical metallic housing of selected material, longer than said X-ray tube, a plurality of narrow longitudinal grooves with intervening narrow vanes, on the outside surface of said housing;

(b) a large plurality of narrow longitudinal grooves with intervening narrow vanes, on the outside surface; these internal and external vanes extending substantially the full length of said housing except for a portion of selected length intermediate the two ends, where said vanes are cut down to a thin-walled cylinder of selected thickness;

(c) a first thin-walled outer sleeve surrounding the outer edges of said outer vanes forming a plurality of external tubular longitudinal passageways along the outside surface of said housing, said outer sleeve extending from a first end of said housing almost to the second end, leaving a short length of said grooves uncovered;

(d) means to support two power transformers inside said housing, one at each end, for supplying high voltage to the cathode and anode respectively, of said X-ray tube;

(e) plate means to close off and seal both ends of said housing, and means to inject a selected gas at a selected pressure inside said closed housing;

(f) a conventional, commercial, X-ray tube, and support means for said X-ray tube inside of and concentric with an inner thin-walled cylindrical sleeve; and means to position said inner sleeve concentrically in said housing;

(g) internal fan means for circulating said selected gas inside of said inner sleeve past a first transformer, over said X-ray tube and past a second transformer, then through the annular space between said inner sleeve and said housing, back to said internal fan means;

(h) external fan means for blowing external air through said longitudinal passageways outside of said housing.

4,355,411

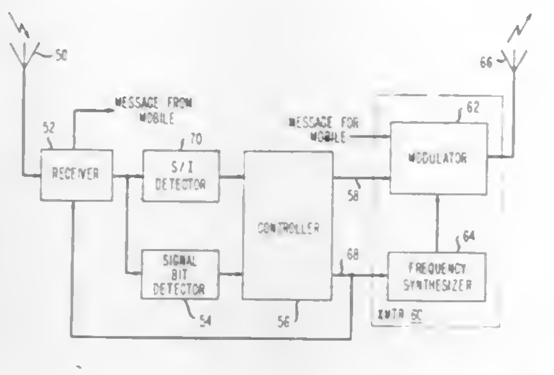
TECHNIQUE FOR EFFICIENT SPECTRUM UTILIZATION IN MOBILE RADIO SYSTEMS USING SPACE DIVERSITY

Douglas O. Reudink, Sea Girst, and Yu S. Yeh, Freehold, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 132,909, Mar. 24, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 276,255

Int. Cl.^{3} H04B *3/60, 7/06, 15/00*

U.S. Cl. 455—33 **11 Claims**



1. A method of communicating between a base station (**30–40**) and each of a plurality of mobiles (**24**) in a mobile radio communication system which is divided into a plurality of cellular areas (**10–21**) with each cell including at least one base station.

CHARACTERIZED IN THAT

the method comprises the steps of:

(a) transmitting information destined for each of the mobiles within an associated cell in a separate primary channel (C_p) of a plurality of primary channels within a first portion (f_m) of an overall system frequency spectrum when a mobile is not experiencing interference above a predetermined interference level from transmissions in corresponding primary channels in other cells of the system; and

(b) switching an individual mobile in said associated cell to a separate predetermined secondary channel (C_d) of a plurality of available secondary channels within a selected section (f_1, f_2, f_3) of a remaining second portion (f_i) of the overall system frequency spectrum when the individual mobile experiences interference from other cells above said predetermined interference level in its originally assigned primary channel, the selected section of the remaining second portion (f_i) of the overall system frequency spectrum being a different section of said remaining second portion than a selected section used for performing step (b) in a bordering sectional area of an adjacent cell of the plurality of cellular areas closest to said mobile.

4,355,412

PRESET STATION SELECTING DEVICE IN A RADIO RECEIVER

Yasushi Kawakami, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Apr. 8, 1980, Ser. No. 138,334

Claims priority, application Japan, Apr. 10, 1979, 54-46433[U]; Apr. 16, 1979, 54-49393[U]

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 455—175 **12 Claims**

1. In a radio receiver which is electrically tuned to a broadcasting frequency, a preset station selecting device comprising:

a memory;

means for previously writing a broadcasting frequency into the memory when it receives a write selection and write command signal;

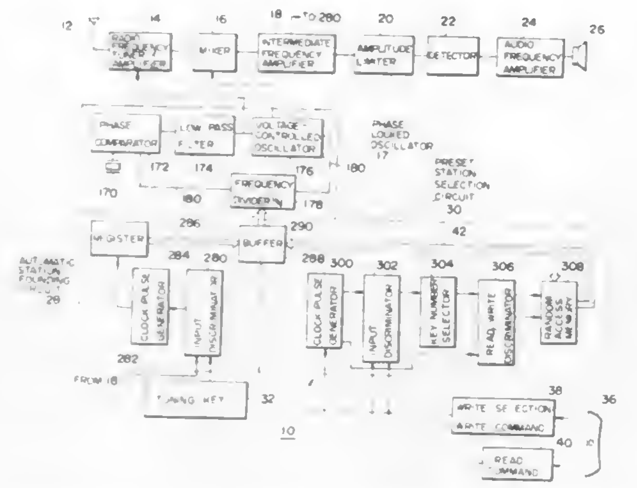
means for reading the broadcasting frequency out of the memory and electrically setting this frequency in the receiver;

a switch including a switchable member which has two switched positions, the switch being adapted to give a write selection and write command signal to the writing means when the switchable member is at one switched position, and being adapted to give a read command signal to the reading means when the switchable member is at the other switched position;

the switchable member being supported at a pivotal point in the switch; the switch comprising two parallel electrically insulating legs extending backward from a back of the switchable member, one on each side of the pivotal point, an insulating plate comprising thereon two separate groups of electrical contacts which are disposed so as to align with the two legs respectively, two electrically conductive contact members each disposed between and aligning with one insulating leg and a corresponding group of contacts made of electrically conductive rubber and normally separated from said corresponding group of electrical contacts;

one of said insulating legs of the switchable member being provided with a recess in one side thereof; and

a locking roller engaging with the recess at said one switched position of the switchable member.



4,355,413

PHASE LOCKED LOOP CIRCUIT

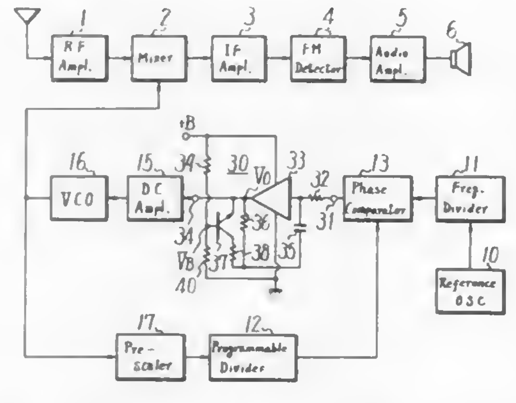
Tsutomu Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,740

Claims priority, application Japan, Dec. 10, 1979, 54-160086

Int. Cl.^{3} H04B *1/26;* **H03L** *7/18, 7/24*

U.S. Cl. 455—183 **14 Claims**



1. In a phase locked loop circuit comprising reference signal oscillator means providing a reference signal; voltage controlled oscillator means providing an output oscillation signal whose frequency varies in accordance with a DC control signal applied thereto; programmable divider means having an input connected to receive the output oscillation signal from said voltage controlled oscillator means and an output providing a divided-down signal over a range; phase comparator means having inputs respectively coupled to receive said reference signal and said divided-down signal and an output providing an error signal in response to the phase difference therebetween; and low pass filter means coupled between said phase comparator means and said voltage controlled oscillator means and supplied with said error signal for producing said DC control signal to lock the phase of the output oscillation signal to that of the reference signal, and having a time constant circuit whose time constant establishes the transfer function of the low pass filter means; the improvement wherein said low pass filter means includes control means coupled to said time constant circuit to adjust the time constant thereof in accordance with the level of said DC control signal such that the low pass filter means has a damping factor that is substantially a constant over said range of the divided-down signal.

4,355,414

AUTOMATIC GAIN CONTROL SYSTEM

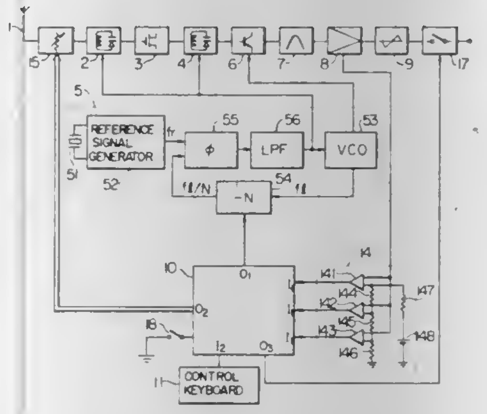
Shigeki Inoue, Toyokawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,095

Claims priority, application Japan, Sep. 19, 1979, 54-119405

Int. Cl.^{3} H04B *1/10*

U.S. Cl. 455—184 **8 Claims**



1. In a radio receiver including tuning means, receiving means for receiving transmitted signals and for applying the received signals to said tuning means, control means connected to said tuning means for controlling the tuning frequency of said tuning means, level detector means connected to receive the signals passed by said tuning means for detecting whether those signals exceed a predetermined level and for supplying a resulting detection output signal to said control means, and gain control means responsive to said control means for controlling the level of said received signals;

said control means including processing means connected to said tuning means, said level detector means and said gain control means for determining, when a desired broadcast frequency is received by said receiving system, whether there exists any other broadcast frequency which interferes with said desired broadcast frequency, program means connected to said processing means for controlling the operation thereof; memory means connected to said processing means for storing the result of the operations thereof, and a keyboard connected to said processing means for designating a desired receiving frequency (fs); said processing means including first generating means for generating a desired tuning control signal (No) corresponding to a desired receiving frequency (fs) and for storing the desired tuning control signal in said memory means when said desired receiving frequency (fs) is designated by way of said keyboard, second generating means for generating and successively applying to said tuning means a tuning control signal (N) corresponding to each frequency over the entire receiving band of said tuning means except for said desired receiving frequency (fs), means for determining on the basis of the output of said level detector means whether there exists an interference broadcasting wave in such a relation with said desired receiving frequency as to interfere with the same among the frequencies selected by said tuning control signal (N) and for applying a gain control signal to said gain control means to attenuate said received signals when there exists said interference broadcasting wave, and desired tuning control signal supply means responsive to completion of the operation of said interference broadcasting wave determining means for reading out the desired tuning control signal (No) stored in said memory means and for applying said signal (No) to said tuning means, thereby enabling the receipt of the desired receiving frequency (fs).

4,355,415

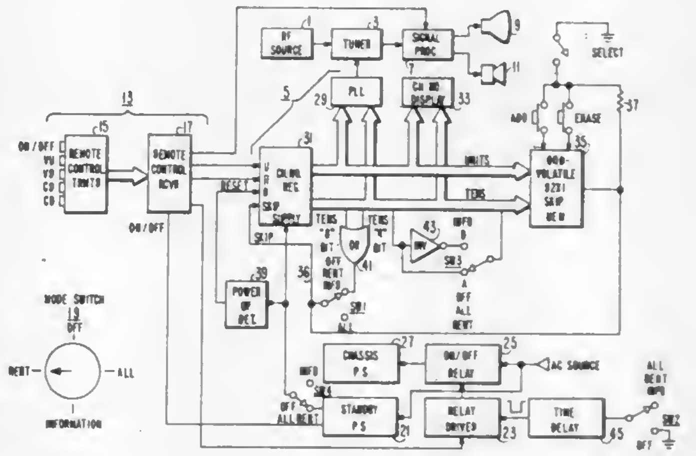
TUNING MODE ARRANGEMENT USEFUL FOR RESTRICTING CHANNEL SELECTION TO CERTAIN CHANNELS

John B. George, and William J. Testin, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1980, Ser. No. 144,828

Int. Cl.^{3} H04B *1/26*

U.S. Cl. 455—185 **10 Claims**



1. In a receiver, apparatus for tuning said receiver to various channels comprising:

channel number register means for storing coded groups of binary signals representing channel numbers of selected channels;

user operable channel selection means for selectively causing said channel number register means to change said binary signals in a given order when operated;

tuner means responsive to said binary signals for tuning said receiver to corresponding channels;

memory means including a plurality of memory locations addressed in response to said binary signals, each for storing at least one tuning control signal associated with the tuning of said receiver to a respective channel;

utilization means responsive to the tuning control signal stored in an addressed one of said memory locations for controlling said apparatus in a predetermined manner; and

mode selection means interposed between said channel number register means and said memory means in a first mode for selectively causing memory locations in a first group of said memory locations to be addressed in response to said binary signals when said binary signals represent channel numbers in a predetermined group of channel numbers and in a second mode for causing memory locations in a second group of memory locations to be addressed when said binary signals represent channel numbers in said same predetermined group in a second mode.

4,355,416

CIRCUIT ARRANGEMENT FOR THE SELECTION OF A FREQUENCY OF SIGNALS RECEIVABLE IN A RECEIVING SET

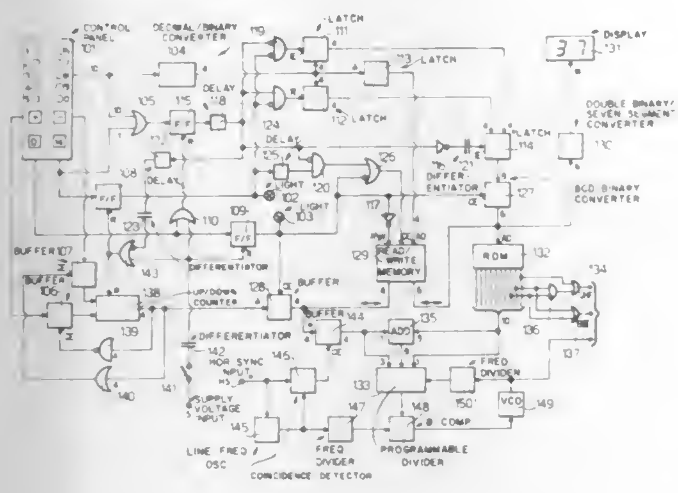
Mario Malerba, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Turin, Italy

Filed Oct. 5, 1976, Ser. No. 729,757

Claims priority, application Italy, Oct. 16, 1975, 69579 A/75

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 455—186 **32 Claims**



1. In an electronic circuit arrangement having a programmable frequency divider arranged to obtain from a voltage controlled tuning oscillator, as a function of a respective dividing number N in digital form for the tuning of each of the tunable signals in a receiver, a respective frequency signal at the output of said programmable divider, and means for comparing said respective frequency signal with a frequency reference oscillation and producing a resultant signal supplied to said voltage controlled tuning oscillator and suitable for the desired tuning, the improvement comprising in combination:

(a) a first circuit having memory means to store binary coded number R arranged to provide said binary coded number R to said programmable divider, each number R forming at least a part of said number N;

(b) a control panel having at least ten numbered push buttons;

(c) first means actuable by at least one of said push buttons to form a binary coded number P indicative of a selected frequency to which said receiver is to be tuned by said voltage controlled tuning oscillator, said number P being transmitted to said first circuit to obtain therefrom a corresponding binary coded number R;

(d) second means for generating adjustment signals representative of incremental modifications of the numerical value of said number N;

(e) a second memory circuit;

(f) third means for storing in said second memory circuit said number P and said adjustment signals; and

(g) fourth means arranged to inhibit the transmission of said number P to said first circuit and to inhibit the transmission of said adjustment signals from said second means, and to transfer from said second memory circuit the number P to said first circuit and the adjustment signals stored in said second memory circuit to said programmable divider for modifying said number N, said fourth means including additional push buttons on said control panel for causing said second means to vary said adjustment signals and for controlling the actuation of said third means and said fourth means.

4,355,417

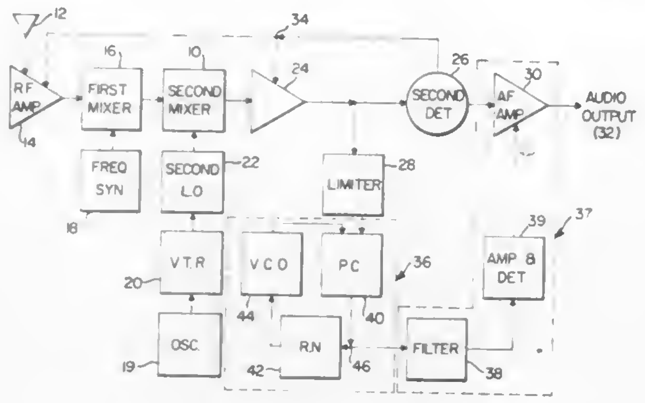
SQUELCH CONTROL CIRCUIT FOR AMPLITUDE MODULATED RF RECEIVERS

Joseph H. Kozak, Jr., 62 Bryan's Rd. Trailer Park, Bryan's Rd., Md. 20616

Continuation of Ser. No. 835,455, Sep. 22, 1977, abandoned. This application Apr. 17, 1980, Ser. No. 140,465

Int. Cl.^{3} H04B *1/10*

U.S. Cl. 455—218 **8 Claims**



1. A squelch circuit for an amplitude modulated RF receiver, comprising:

(a) radio frequency receiving means for producing an amplitude modulated signal and including a mixing stage for producing an intermediate frequency signal and which has an output connected to an intermediate frequency amplifier stage,

(b) detector means connected to the output of the intermediate frequency amplifier stage for demodulating the amplitude modulated signal and blocking any FM component which may be in the signal,

(c) an audio frequency amplifier connected to the output of the detector means for amplifying its output signal and passing it to an output line,

(d) frequency modulation means connected to the output of the mixing stage for continuously impressing a frequency modulated signal at a preselected frequency value on the intermediate frequency signal,

(e) a phase locked loop circuit connected to the output of the intermediate frequency amplifier for locking onto the received frequency modulated signal and tracking it through its frequency changes, and

(f) means connected between the output of the phase locked loop and the audio frequency amplifier for gating the audio frequency amplifier off when the phase locked loop does not find the impressed frequency modulated signal.

4,355,418

Patent Not Issued For This Number

4,355,419

RADIO SIGNAL RECEIVING SYSTEM HAVING MEANS FOR SELECTIVELY COMBINING SIGNALS FROM A PLURALITY OF RECEIVING SECTIONS

Takashi Hiyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,876

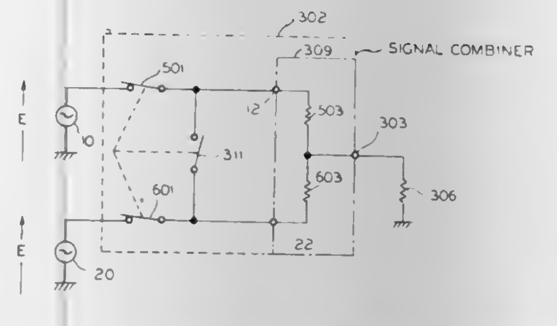
Claims priority, application Japan, May 14, 1979, 54-58906

Int. Cl.^{3} H04B *1/10*

U.S. Cl. 455—303 **4 Claims**

1. A radio signal receiving system having first and second signal receiving section means for providing output signals having substantially equal amplitudes and a signal combiner means coupled directly to outputs of said receiving section means for combining the outputs thereof to provide a combined signal having a substantially constant voltage, said first

and second receiving section means being unbalanced with respect to ground, said signal combiner comprising: a first and a second input terminal means for respectively receiving the outputs of individually associated ones of said first and second receiving section means; circuit means having at least a set of first and second receiving terminals and an output terminal, said first and second receiving terminals being connected with two resistors in series, said output terminals being connected to the junction of said resistors; first switching means connected between said first input terminal and said first receiving terminal, second switching means coupled between said second input terminal and said second receiving terminal; third switching means connected between said first and second receiving terminals and interlocked to close when either one of said first and second switching means opens; and means connected to said first and second input terminal means for controlling said first, second and third switching means so that said first and second switching means are closed and said third interlocked switching means is opened in a normal state representing those outputs which are derived from said first and second receiving section means when they are above any one of a predetermined signal-to-noise ratio, a predetermined signal level, and a predetermined pilot signal level and if either of said two outputs is driven out of said normal state, the one of said first and second switching means which receives a signal in the normal state remaining closed with said third switching means closing, while the one of said first and second switching means which receives a signal driven out of the normal state is opened.



4,355,420

FREQUENCY CONVERTER CAPABLE OF ELIMINATING LOCAL POWER LEAK

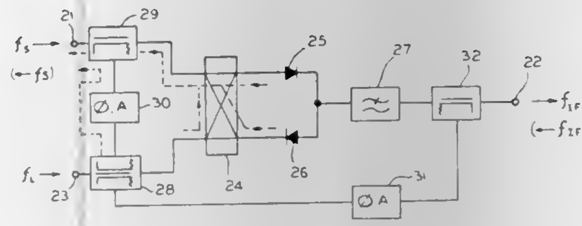
Hiroyuki Ishihara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,208

Claims priority, application Japan, Dec. 3, 1979, 54-155522

Int. Cl.^{3} H04B *1/26, 1/10*

U.S. Cl. 455—317 **13 Claims**



1. A frequency converter comprising first, second and third terminals respectively supplied with a first signal having a first frequency band, a local oscillation signal, and a second signal having a second frequency band; frequency mixing means for frequency-mixing said first signal and said local oscillation signal to generate said second signal; branching means coupled between said second terminal and said frequency mixing means, for branching part of said local oscillation signal to provide a branched local oscillation signal; coupling means, connected between said first terminal and said frequency mixing means, for supplying said branched local oscillation signal to said first terminal; and amplitude-phase adjusting means, connected between said branching means and said coupling means, for adjusting the phase and amplitude of said branched local oscillation signal so that said branched local oscillation signal and a leakage local oscillation signal which leaks from said frequency mixing means are equal in amplitude and reverse in phase with respect to each other at said first terminal.

4,355,421

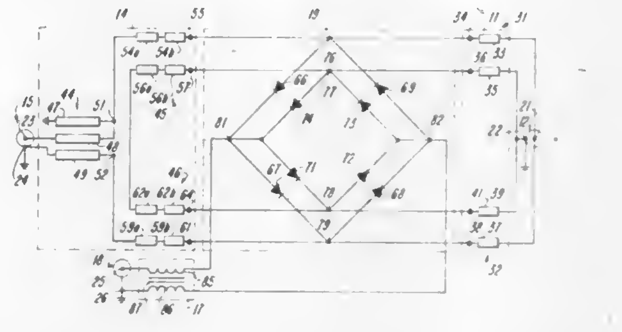
BROADBAND MIXER WITH COPLANAR BALUN

Warren L. Seely, Aurora, Colo., assignor to Vari-L Company, Inc., Denver, Colo.

Filed Dec. 5, 1980, Ser. No. 213,204

Int. Cl.^{3} H04B *1/26*

U.S. Cl. 455—327 **15 Claims**



1. In a broadband mixer having first, second and third balun means coupled between first, second and third signal ports and frequency converting means,

said frequency converting means arranged to convert first and second signals applied to said first and second signal ports, respectively, to a third signal at said third signal port,

said first balun means incuding first and second ground plane baluns juxtaposed to one another, each of said first and second ground plane baluns having a pair of opposed, spaced, strip conductors disposed in different planes,

said second balun means including third and fourth ground plane baluns juxtaposed to one another, each of said third and fourth ground plane baluns having a pair of opposed, spaced, strip conductors disposed in different planes,

the improvement wherein:

said second balun means includes a coplanar balun coupled between said second signal port and said third and fourth ground plane baluns, said coplanar balun having a center and two side coplanar strip conductors spaced from one another for converting an unbalanced input signal applied to said second signal port to two balanced output signals, one end of said center conductor having a first terminal, the other end of said center conductor being connected to an adjacent end of one of said side conductors having a second terminal, an end of said other side conductor adjacent said second terminal having a third terminal, the ends of said side conductors opposite said second and third terminals being connected to ground, said two balanced output signals appearing at said second and third terminals when said unbalanced input signal is applied to said first terminal.

4,355,422

TUNABLE RADIO RECEIVER WITH DETUNING PREVENTION DUE TO POWER SUPPLY VARIATIONS

Hans-Joachim Paschen, Remchingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,631

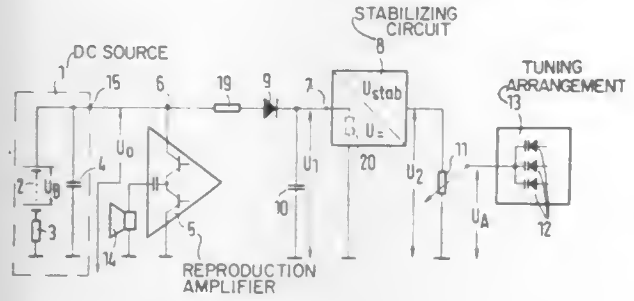
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009652

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 455—343 **2 Claims**

1. A tunable radio receiver comprising a D.C. power supply

source, a reproduction amplifier having a power supply terminal connected to the D.C. power supply source, and a stabilizing circuit for generating a stabilized tuning supply voltage for varactor diodes used as tuning elements in a voltage-controlled tuning arrangement in the receiver, further comprising a blocking diode having its anode terminal coupled to said power supply terminal and its cathode terminal coupled to said stabilizing circuit and a capacitor parallel-coupled between said cathode terminal and a reference potential terminal, wherein said stabilizing circuit has an input resistance and the time constant of said capacitor and input resistance, is greater than the time duration (T_1) of voltage changes at the supply terminal caused by reproduction variations in said reproduction amplifier.



4,355,423

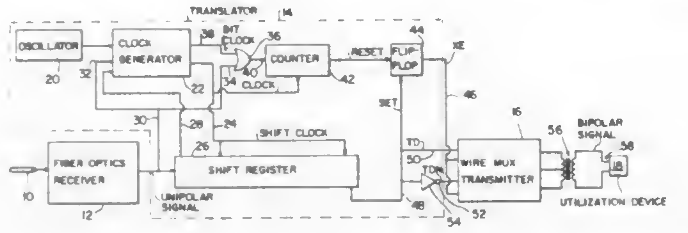
TRANSLATOR SYSTEM FOR CONVERTING UNIPOLAR FIBER OPTIC SIGNALS TO BIPOLAR SIGNALS UTILIZING MANCHESTER CODING

C. Earle Theall, Weston, Conn., assignor to The Singer Company, Little Falls, N.J.

Filed Dec. 20, 1979, Ser. No. 106,065

Int. Cl.^{3} H04B *9/00*

U.S. Cl. 455—608 **8 Claims**



1. In a Manchester system for translating a received unipolar signal to a bipolar signal, the received signal having a predetermined shortest allowable message gap, the system comprising:

means for storing the received signal long enough to detect the occurrence of a shortest allowable message gap;

transmitting means for converting received unipolar signals to bipolar format;

detecting means connected at an input thereof to the storing means and at an output thereof to the transmitting means for enabling the conversion, by the transmitting means, until a gap in excess of the shortest allowable message gap occurs thereby terminating such conversion until a subsequent signal is received.

DESIGNS

OCTOBER 19, 1982

266,540

SHORTS

Ken Nacinovich, Willoughby, Australia, assignor to Speedo Knitting Mills Pty Limited, New South Wales, Australia

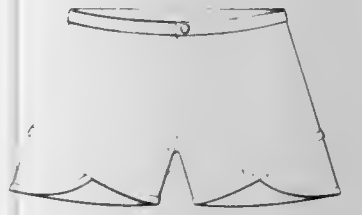
Filed Oct. 10, 1978, Ser. No. 950,250

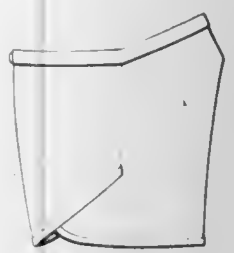
Claims priority, application Australia, May 25, 1978, 74,846

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—42





266,541

SHIRT

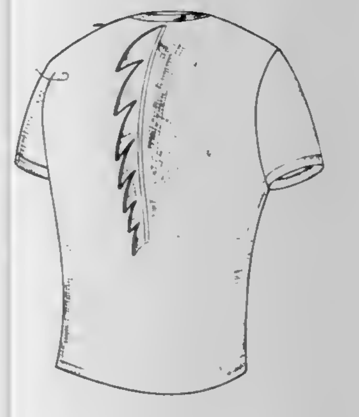
James M. Perry, 209 Brown St., Little Rock, Ark. 72205

Filed Oct. 23, 1978, Ser. No. 953,642

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—215



266,542

TREADED SHOE BOTTOM

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

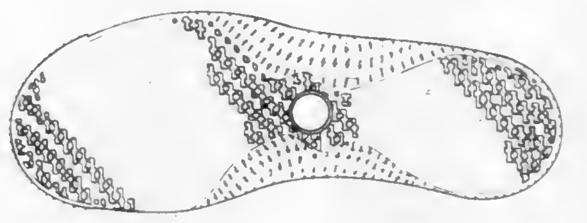
Division of Ser. No. 877,359, Feb. 13, 1978. This application Apr. 28, 1980, Ser. No. 144,270

The portion of the term of this patent subsequent to Oct. 7, 1994, has been disclaimed.

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—320



266,543

VENETIAN BLIND COLOR SAMPLER PACKET

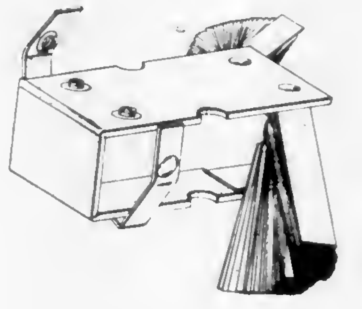
Harold Reiss, New York, N.Y., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.

Filed Dec. 11, 1980, Ser. No. 215,501

Term of patent 14 years

Int. Cl. D3—*02*

U.S. Cl. D3—30.1



266,544

DOCUMENT FILE

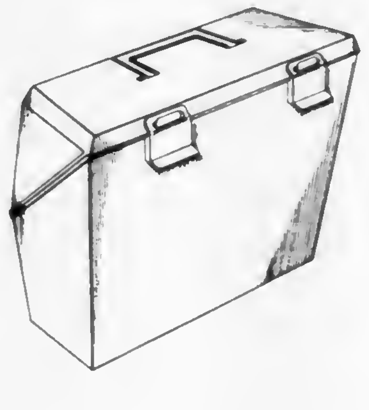
E. Bryant Crutchfield, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 31, 1980, Ser. No. 202,857

Term of patent 14 years

Int. Cl. D3—*02*

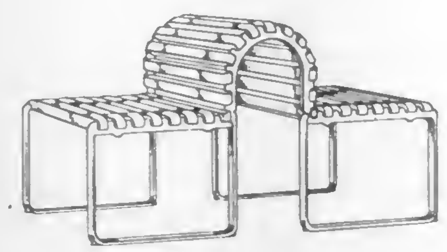
U.S. Cl. D3—72



266,545

BENCH

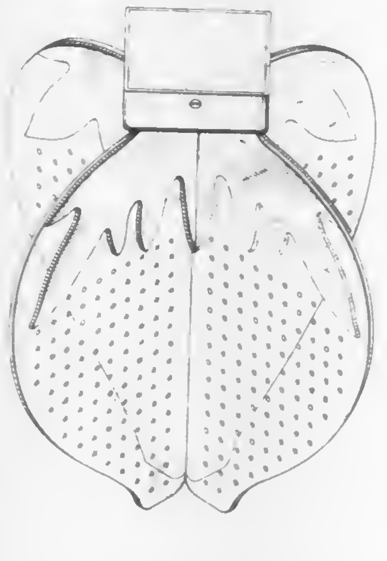
John W. Caldwell, San Marino, Calif., assignor to Pacific Furniture Manufacturing Co., Compton, Calif.
Filed Jan. 19, 1979, Ser. No. 4,976
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60



266,546

KITCHEN UTENSIL RACK

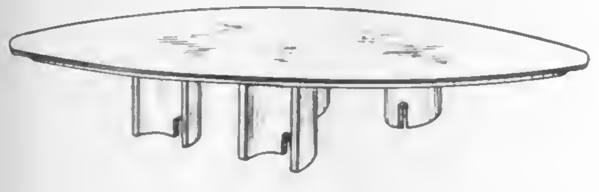
Richard J. Goodwin, 2510 U St., Sacramento, Calif. 95818
Filed Feb. 4, 1980, Ser. No. 118,576
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113



266,547

TABLE

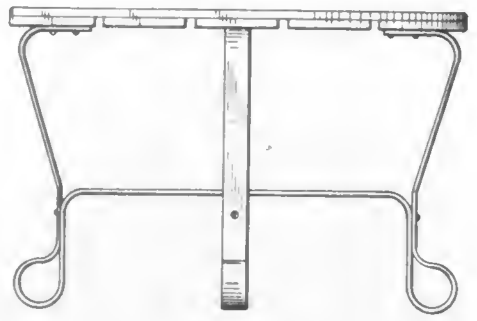
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Italy
Filed Mar. 19, 1980, Ser. No. 131,647
Claims priority, application Italy, Sep. 19, 1979, 60938B/79
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



266,548

TABLE

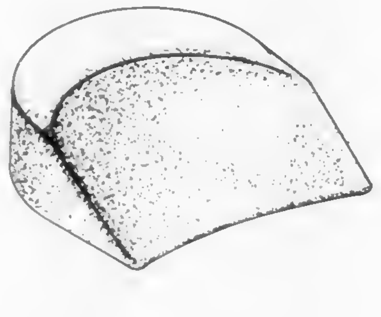
John Huber, Jr., 178 E. Cresent Ave., Mahwah, N.J. 07430
Filed May 6, 1980, Ser. No. 147,113
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



266,549

PRENATAL SUPPORT PILLOW

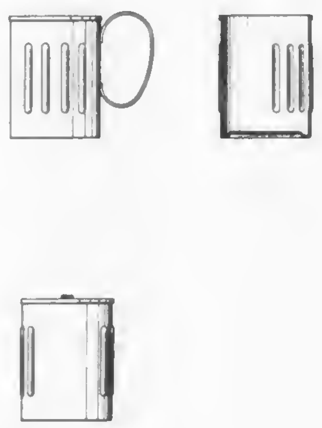
Richard G. Lund, III, 7564 Major Ave. North, Brooklyn Park, Minn. 55443
Filed Jul. 29, 1980, Ser. No. 173,323
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



266,550

MUG

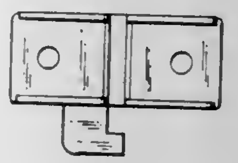
Kenichi Myodo, Tsubame, Japan, assignor to Shinko Kinzoku Kabushiki Kaisha, Japan
Filed Dec. 13, 1979, Ser. No. 103,360
Claims priority, application Japan, Jul. 18, 1979, 54-030155
The portion of the term of this patent subsequent to May 25, 1989, has been disclaimed.
Term of patent 7 years
Int. Cl. D07—*01*
U.S. Cl. D7—9



266,551

SHELF REST

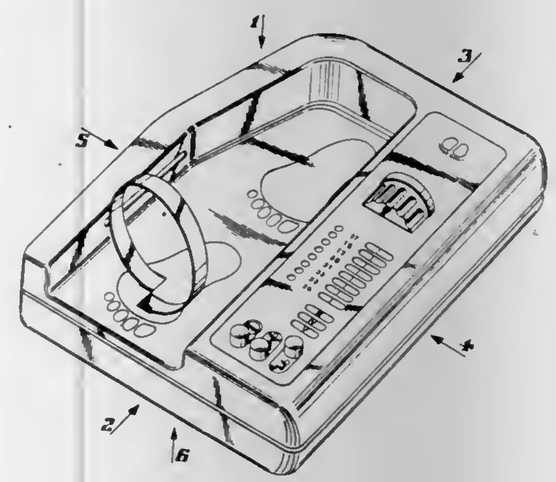
William Carlstrom, Chester, N.J., assignor to Lyle/Carlstrom Associates, Inc., Somerville, N.J.
Filed Sep. 18, 1980, Ser. No. 188,460
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—381



266,552

FOOTGAUGE

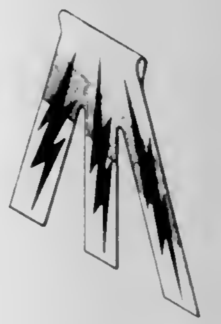
Pierre Bidegain; Georgy Bidegain, both of Pau, France; Dieter Baumann, Greifenstein-Holzhausen, Fed. Rep. of Germany; Rolf Baumann, Leun-Stockhausen, Fed. Rep. of Germany, and Peter Stielhoff, Dortmund, Fed. Rep. of Germany, assignors to Bidegain S.A., Pau, France
Filed Aug. 25, 1980, Ser. No. 181,210
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1980, URA 202/80
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



266,553

ELECTRIC FENCE SPOTTER

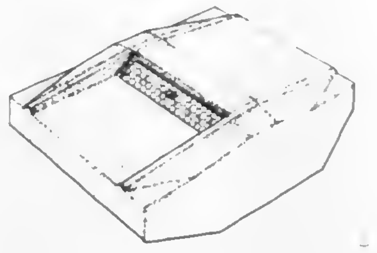
Chris P. Kelly, Rte. 2, Sparta, Wis. 54656
Filed Nov. 17, 1980, Ser. No. 207,233
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



266,554

REFLECTIVE PAVEMENT MARKER FOR ROADS

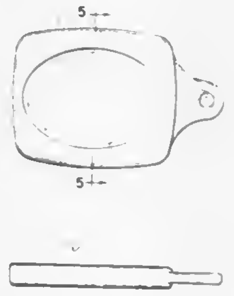
Angelo V. Beretta, Lincoln, R.I., assignor to Durastone Company, Inc., Lincoln, R.I.
Filed Jan. 7, 1980, Ser. No. 109,864
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—113



266,555

MINIATURE TWO-SIDED PICTURE FRAME

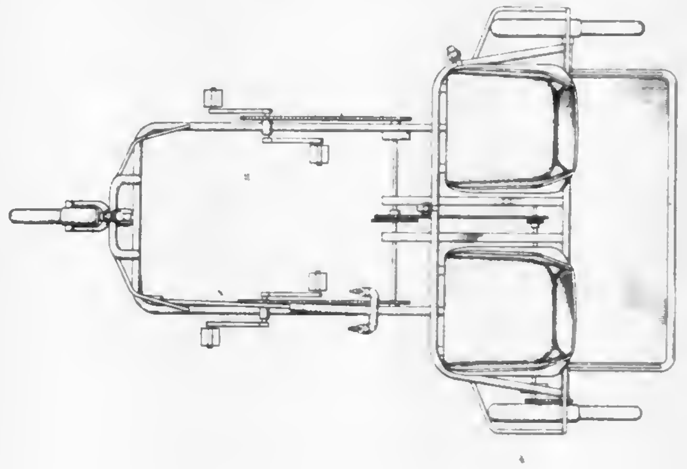
Aidan M. McNally, P.O. Box 530155, Miami, Fla. 33153
Filed Mar. 27, 1980, Ser. No. 134,569
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—80



266,556

TRICYCLE

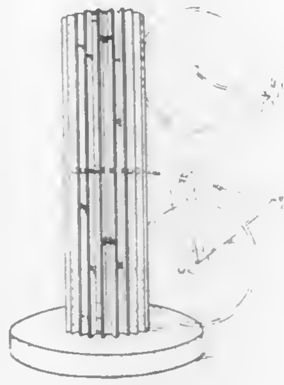
David S. Arthur, 14000 Tahiti Way, Marina Del Rey, Calif. 90291
Filed Jun. 30, 1980, Ser. No. 164,771
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



266,557

BICYCLE RACK

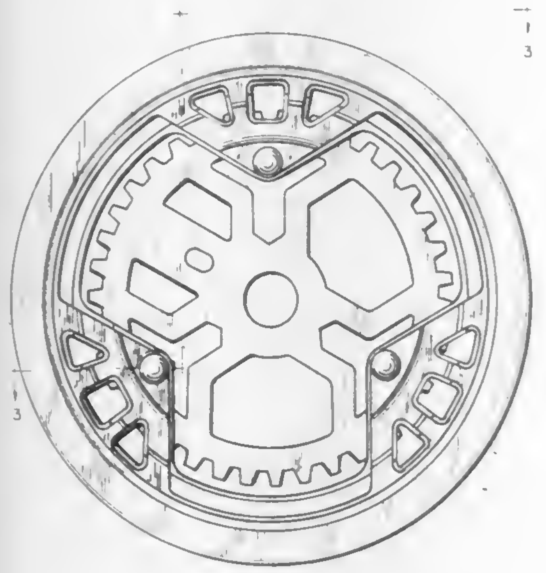
Terrance R. Smith, 28 Roundhay Dr., Nepean, Ontario, Canada K2G 1B5
Filed Oct. 23, 1980, Ser. No. 200,259
Claims priority, application Canada, Oct. 16, 1980, 16-10-80-4
Term of patent 14 years
Int. Cl. D08—*10*
U.S. Cl. D12—115



266,558

COMBINED BICYCLE SPROCKET AND CHAIN GUARD

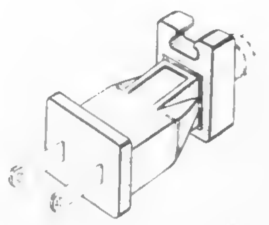
John D. Breen, Antioch, and Ronald L. Ihrie, Nashville, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed Jan. 10, 1980, Ser. No. 111,001
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—123



266,559

BODY FOR ELECTRIC PLUG

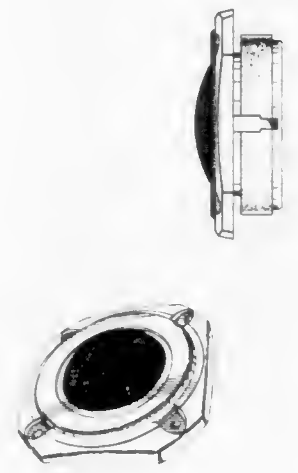
Ronald D. Gibbs, Naperville, Ill., assignor to Belden Corporation, Geneva, Ill.
Filed Feb. 25, 1980, Ser. No. 124,657
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



266,560

LOUDSPEAKER

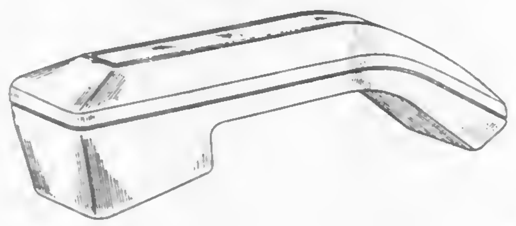
Hideyuki Matsubara, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 24, 1980, Ser. No. 190,338
Claims priority, application Japan, Mar. 31, 1980, 55-12699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—30



266,561

TELEPHONE HANDSET

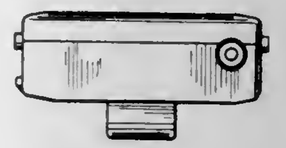
James W. M. Bee, Palo Alto, Calif., and Peter D. H. Trussler, Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Oct. 31, 1979, Ser. No. 90,001
Claims priority, application Canada, Oct. 4, 1979, 04-10-79-1
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63



266,562

RADIO SET

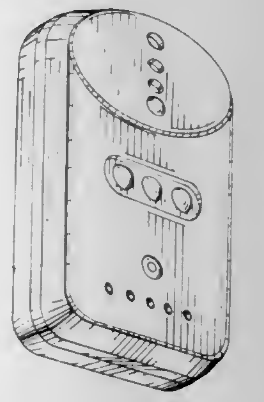
Yoshitaka Hattori, Kasiwa, Japan, assignor to Tomishiba Denki Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1980, Ser. No. 128,620
Claims priority, application Japan, Nov. 9, 1979, 54-46774
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



266,563

CASE FOR DATA PROCESSOR OR SIMILAR ARTICLE

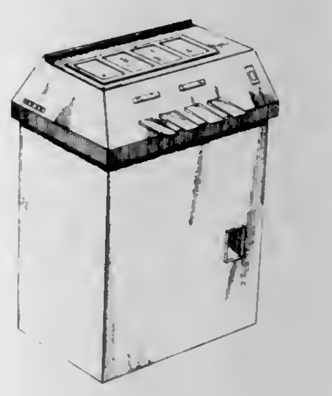
Edward A. White, Phoenix, Ariz., assignor to Arizona Digital Corp., Phoenix, Ariz.
Filed Apr. 2, 1979, Ser. No. 26,238
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



266,564

POINT OF SALE TERMINAL HOUSING

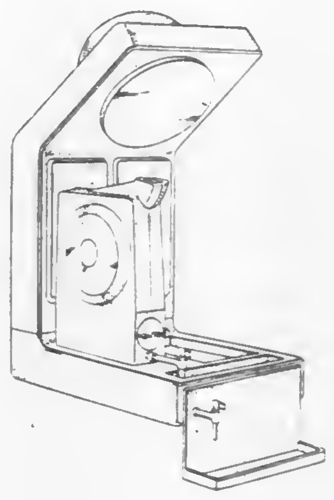
George D. Margolin, Newport Beach, and Michael Tooke, Calabasas, both of Calif., assignors to Auto Register, Inc., Glendale, Calif.
Filed Nov. 6, 1978, Ser. No. 957,911
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—102



266,565

JUICE VENDING BACK COUNTER UNIT

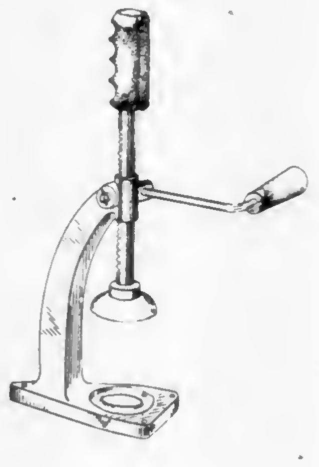
Morley L. Smith, Beaconsfield, Canada, assignor to Orangematic Canada Inc., Canada
Filed Apr. 22, 1980, Ser. No. 142,888
Claims priority, application Canada, Oct. 24, 1979, 2410791
Term of patent 3½ years
Int. Cl. D15—*08*
U.S. Cl. D15—112



266,566

ALUMINUM CAN CRUNCHER

Richard E. Schmid, 1911 Northshore Dr., Humble, Tex. 77339
Filed Jun. 26, 1980, Ser. No. 163,241
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123



266,567

INSULATING RISER SLEEVE

Nick Wukovich, North Olmstead, Ohio, assignor to Foseco Trading AG, Chur, Switzerland

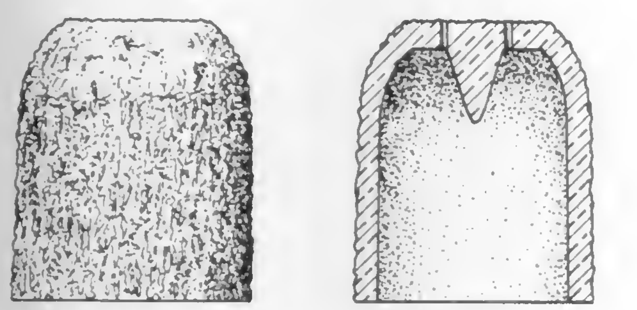
Continuation-in-part of Ser. No. 817,853, Jul. 21, 1977, abandoned. This application Apr. 12, 1979, Ser. No. 29,472

Claims priority, application United Kingdom, Jan. 21, 1977, 978644/77

Term of patent 14 years

Int. Cl. D15—*09*

U.S. Cl. D15—135



266,568

COMBINED COPY MACHINE AND STORAGE SUPPORT OR SIMILAR ARTICLE

Toshihiko Sakow, Teaneck, N.J.; Isao Katayama, Kobe, and Sadao Ishihara, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

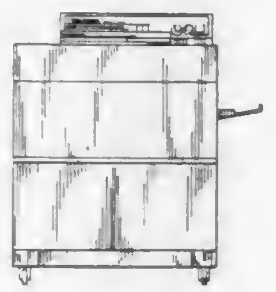
Division of Ser. No. 736,977, Oct. 29, 1976, Pat. No. Des. 254,181. This application Jun. 28, 1978, Ser. No. 919,659

Claims priority, application Japan, Apr. 30, 1976, 51-16338; Apr. 30, 1976, 51-16339; Apr. 30, 1976, 51-16340

Term of patent 14 years

Int. Cl. D16—*03*

U.S. Cl. D16—30



266,569

SPECTACLE WEIGHT RELIEVER

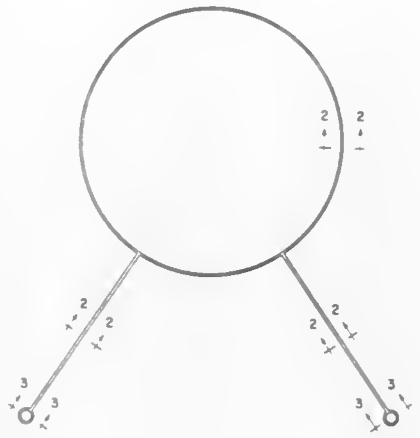
Stephen A. Crothers, 17/1 Brown Rd., Maroubra, New South Wales, 2035, Australia

Filed May 27, 1980, Ser. No. 153,882

Term of patent 14 years

Int. Cl. D16—*06*

U.S. Cl. D16—123



266,570

INK ROLL SET FOR PRINTING APPARATUS

Masahiko Mori, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagano, both of, Japan

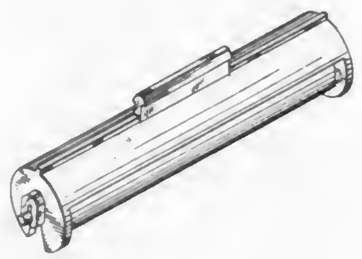
Filed Aug. 21, 1980, Ser. No. 180,223

Claims priority, application Japan, Mar. 18, 1980, 55-10616

Term of patent 14 years

Int. Cl. D18—*99*

U.S. Cl. D18—22



266,571

TELEPHONE LIST HOLDER

Harry Charbonneau, P.O. Box 1403, Station B, Sudbury, Ontario P3E 5K4, Canada

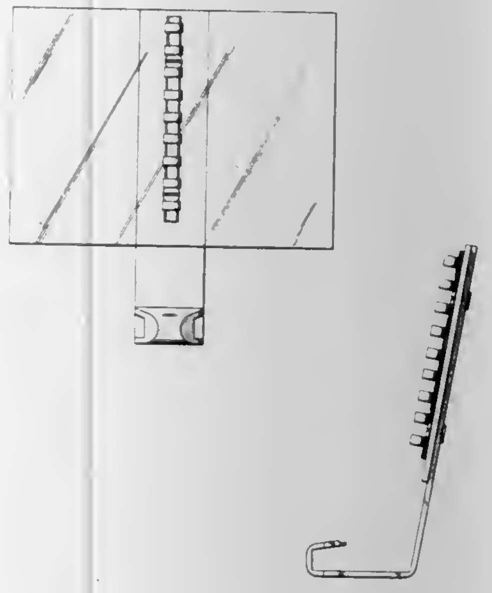
Filed Mar. 26, 1980, Ser. No. 134,340

Claims priority, application Canada, Nov. 6, 1979, 6-11-79-3

Term of patent 14 years

Int. Cl. D19—*02*

U.S. Cl. D19—76



266,572

TOY VEHICLE

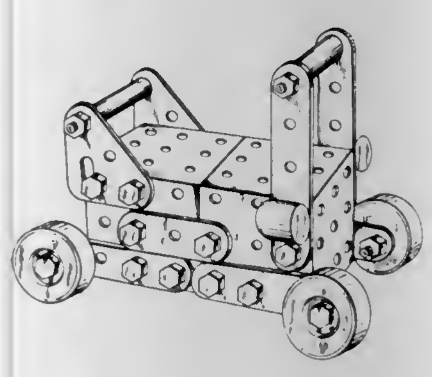
Roger Chalandard, Moirons en Montagne, France, assignor to Dessoy et Fils, Moirans en Montagne, France

Filed Sep. 19, 1979, Ser. No. 77,165

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—120



266,573

TOY VEHICLE OR THE LIKE

Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.

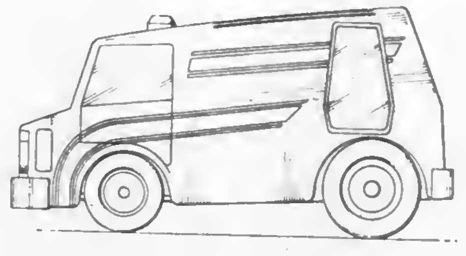
Filed Feb. 4, 1980, Ser. No. 117,969

Claims priority, application Japan, Dec. 26, 1979, 54-55233

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—140



266,574

SCRAPER FOR SKI POLE OR SIMILAR ARTICLE

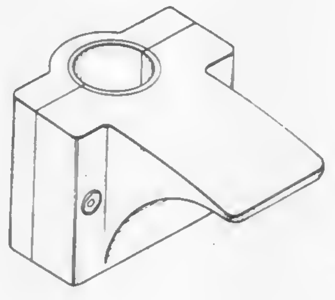
Irwin M. Krive, 31 Slocum Ave., Port Washington, N.Y. 11050

Filed Jun. 27, 1979, Ser. No. 52,338

Term of patent 14 years

Int. Cl. D21—*02*

U.S. Cl. D21—230



266,575

SHOWERHEAD

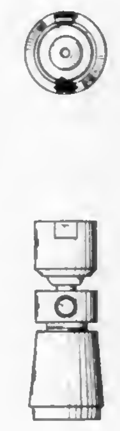
Scott W. Miller, 420 Pilgrim La., Stratford, Conn. 06497

Filed Nov. 23, 1981, Ser. No. 323,868

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—35

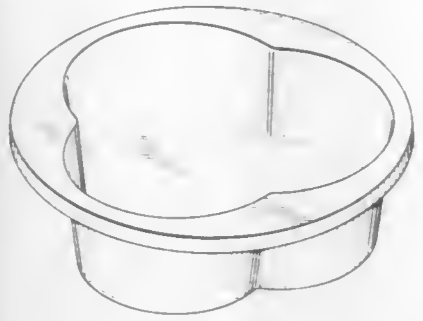


266,576
BATHTUB

Jeffrey Harrison, Brookhouse, England, assignor to Kallista Baths, Inc., San Francisco, Calif.

Filed Nov. 20, 1980, Ser. No. 208,802
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—55

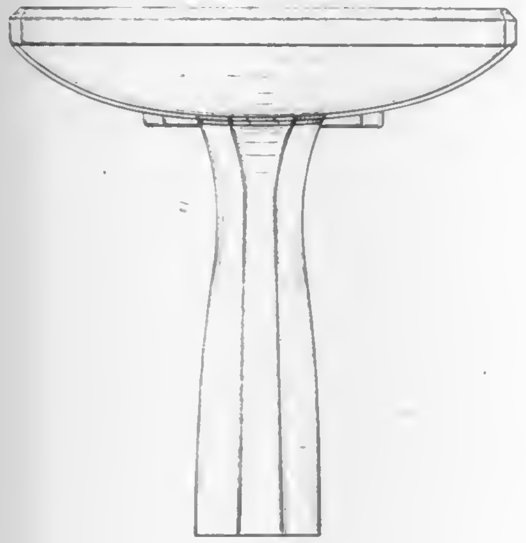


266,577
COMBINED SUPPORT SURFACE AND PEDESTAL FOR A LAVATORY

Jack N. Kaiser, Danville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,880
Term of patent 14 years
Int. Cl. D23—*02*

U.S. Cl. D23—70

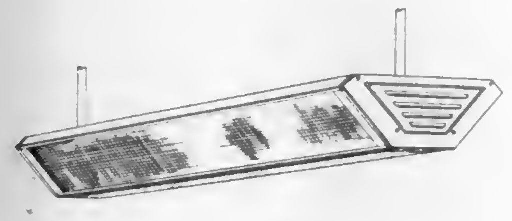


266,578
COMBINED HEATING AND LIGHTING FIXTURE

William R. Moshier, Independence, Mo., assignor to Mabel W. Zellers, Reading, Pa.

Filed Feb. 8, 1980, Ser. No. 119,698
Term of patent 14 years
Int. Cl. D23—*03*; D26—*05*

U.S. Cl. D23—75

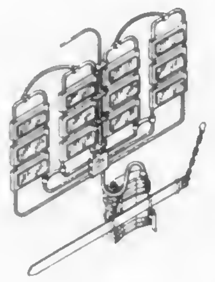


266,579
INDIVIDUAL HEAT-REFLECTING DEVICE

Jury M. Barats, ulitsa Postysheva, 107, kv. 1; Jury N. Kiklevich, ulitsa Universitetskaya, 97, kv. 26, and Valentin A. Selin, ulitsa Universitetskaya, 100a, kv. 178, all of Donetsk, U.S.S.R.

Filed Feb. 26, 1980, Ser. No. 124,951
Claims priority, application U.S.S.R., May 19, 1977, 15489
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—77

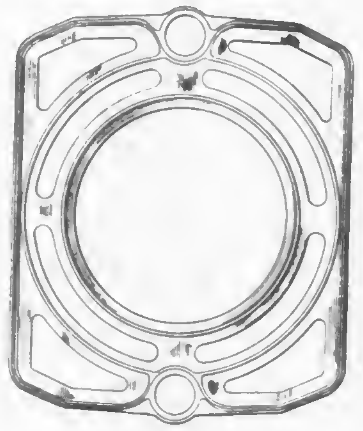


266,580
BOILER SECTION

Henning Rasmussen, Odense NV, Denmark, assignor to A/S Tasso Odense, Odense, Denmark

Filed Apr. 22, 1980, Ser. No. 142,726
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—90

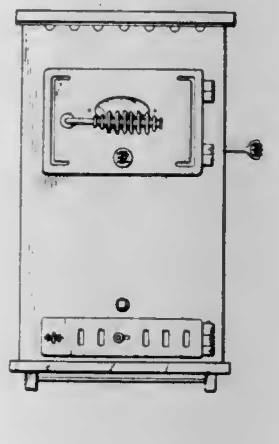


266,581
WOOD STOVE

Leonard H. Ferrara, Jr., Raynham, Mass., assignor to Superior Stove Company, Inc., Stoughton, Mass.

Filed Sep. 8, 1980, Ser. No. 185,367
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—97

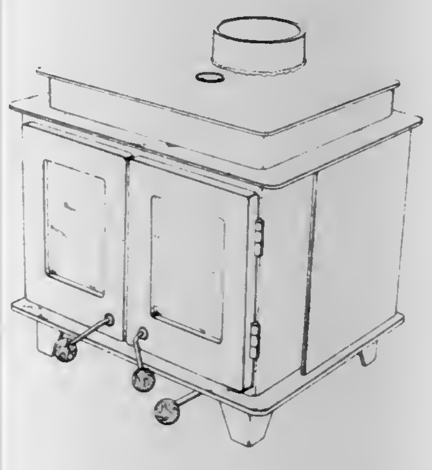


266,582
WOOD BURNING STOVE

Larry A. Schwartz, Warwick; Robert Geiter, Coventry, and Peter S. Albertsen, Quidnesset, all of R.I., assignors to Jamestown Group, Providence, R.I.

Filed Sep. 15, 1980, Ser. No. 187,220
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—97

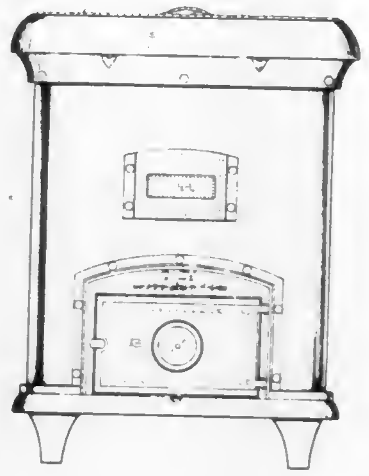


266,583
STOVE

Robert Bickmeyer, Orion Pl., Huntington, N.Y. 11743

Filed Mar. 6, 1981, Ser. No. 241,441
Term of patent 14 years
Int. Cl. D23—*03*

U.S. Cl. D23—97

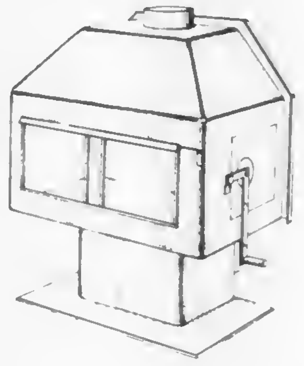


266,584
STOVE FOR BURNING COMBUSTIBLE SOLID FUELS

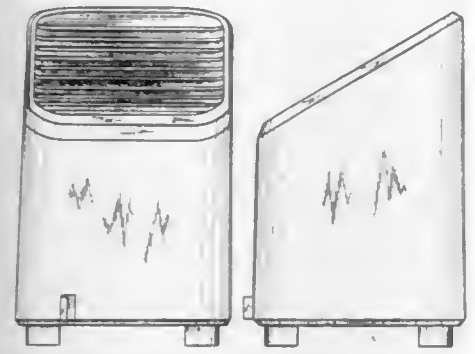
Robert D. Thulman, 10309 Wilde Lake Ter., Columbia, Md. 21044, and Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055

Filed May 4, 1981, Ser. No. 260,089
Term of patent 14 years
Int. Cl. D23—*03*

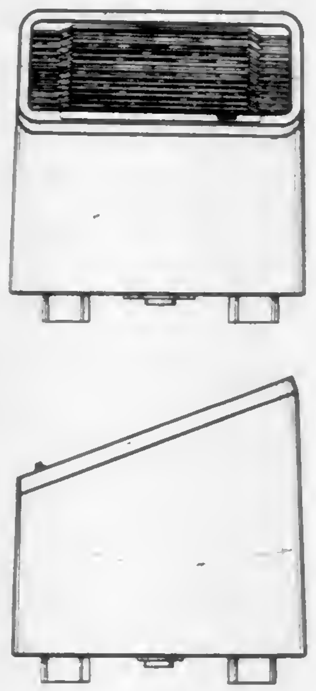
U.S. Cl. D23—97



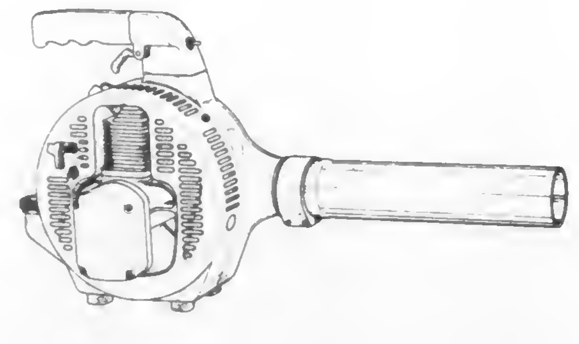
266,585
ROOM AIR CLEANER
William J. Rakocy, Madison, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.
Filed Sep. 2, 1980, Ser. No. 183,682
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



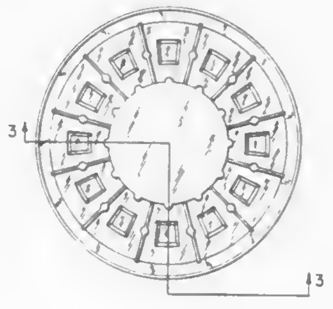
266,586
ROOM AIR CLEANER
William J. Rakocy, Madison, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.
Filed May 29, 1981, Ser. No. 268,446
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



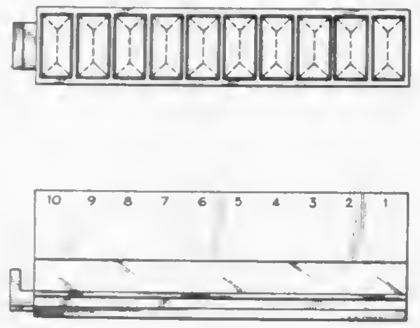
266,587
POWER BLOWER
Masatoshi Satoh, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Jul. 25, 1980, Ser. No. 172,185
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



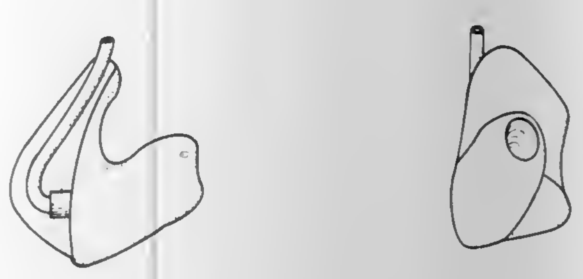
266,588
CUVETTE TRAY DESIGN
John W. Mellars, Denville, N.J., assignor to Warner-Lambert Company, Morris Plaines, N.J.
Filed Oct. 15, 1979, Ser. No. 85,074
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—17



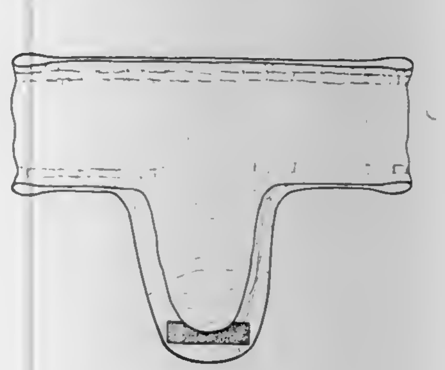
266,589
CUVETTE HOUSING
Saul R. Gilford, Oberlin, and Robert J. Emary, Wakeman, both of Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio
Filed Nov. 6, 1978, Ser. No. 958,117
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—31



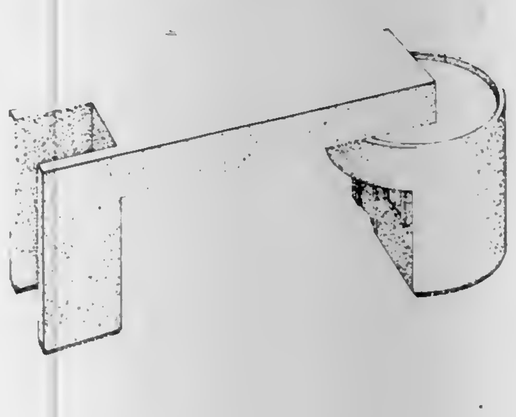
266,590
ACOUSTIC EAR MOLD
Harry Bennett, 3544 N. Mariposa, Fresno, Calif. 93726
Filed Jan. 28, 1980, Ser. No. 115,933
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—35



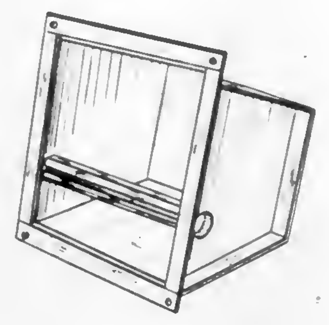
266,591
ELASTICIZED DISPOSABLE DIAPER
Lenore S. Ryan, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 14, 1980, Ser. No. 121,384
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D24—50



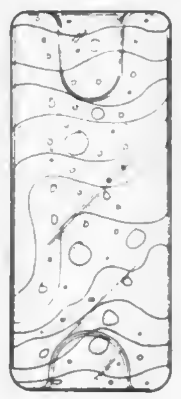
266,592
BUILDING STRUCTURE
Edward F. Bavis, Cincinnati, Ohio, assignor to E. F. Bavis & Associates, Inc., Cincinnati, Ohio
Division of Ser. No. D. 937,519, Aug. 28, 1978, Pat. No. Des. 258,087. This application May 19, 1980, Ser. No. 151,453
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—31



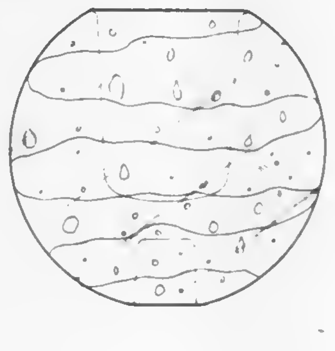
266,593
WALL INSERTED STEP OR HAND BOX
Wilhelm Nelles, Nesenhaus 2, 4030 Ratingen 6, Fed. Rep. of Germany
Filed Jul. 13, 1978, Ser. No. 924,449
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, MR 220
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—69



266,594
CANDLESTICK
Timo Sarpaneva, Helsinki, Finland, assignor to A.Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 9, 1979, Ser. No. 92,759
Claims priority, application Finland, May 18, 1979, 329/79
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—9



266,595
COMBINATION CANDLESTICK AND BOWL
Timo Sarpaneva, Helsinki, Finland, assignor to A.Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed Nov. 13, 1979, Ser. No. 93,265
Claims priority, application Finland, May 18, 1979, 337/79
Term of patent 14 years
Int. Cl. D26—*01*; D7—*01*
U.S. Cl. D26—10



266,596

FLOODLIGHT

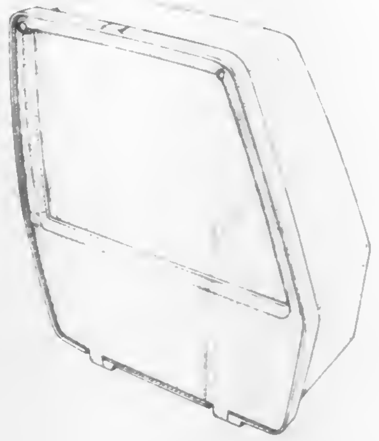
Jon M. Newgard, Louisville, Ky., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,589

Term of patent 14 years

Int. Cl. D26—*03*

U.S. Cl. D26—24



266,597

VEHICULAR HOOD-MOUNTED LAMP HOUSING

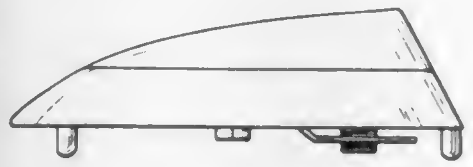
Willie A. Roberts, 8080 Roselawn St., Detroit, Mich. 48204

Continuation-in-part of Ser. No. 117,553, Feb. 1, 1980. This application May 27, 1980, Ser. No. 153,716

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—28



266,598

AUTOMOBILE AUXILIARY LIGHT

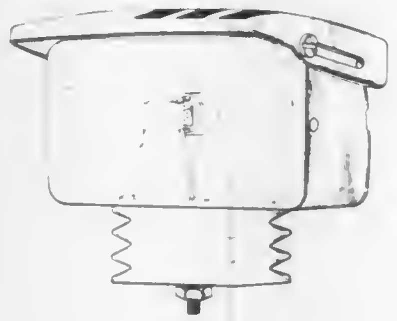
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,301

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—28



266,599

FOG LIGHT FOR AUTOMOBILE

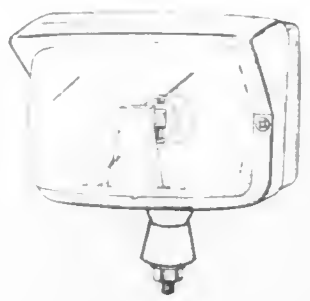
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,303

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—28



266,600

AUTOMOBILE AUXILIARY LIGHT

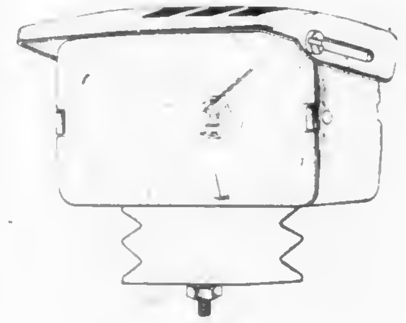
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,353

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—28



266,601

LENS REFLECTOR ASSEMBLY FOR AUTOMOBILE AUXILIARY LIGHT

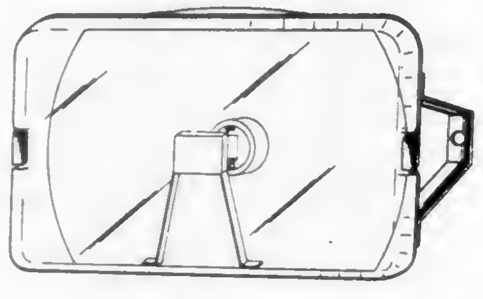
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,568

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—28



266,602

FOOT COVER FOR AUTOMOBILE AUXILIARY LIGHT

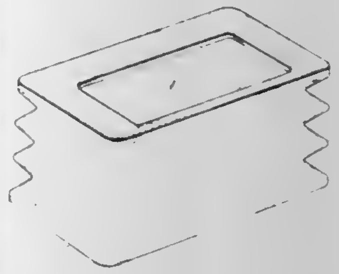
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,555

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—113



266,603

COVER FOR AUTOMOBILE AUXILIARY LIGHT

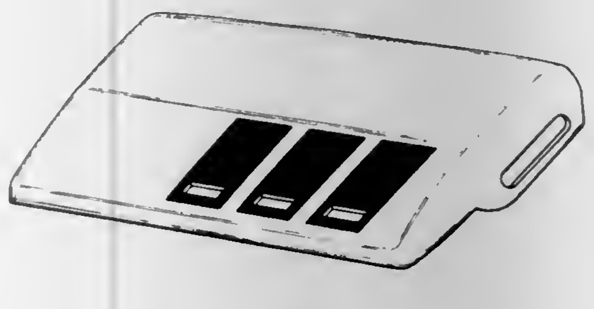
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,564

Term of patent 14 years

Int. Cl. D26—*06, 05*

U.S. Cl. D26—139



266,604

COVER FOR AUTOMOBILE AUXILIARY LIGHT

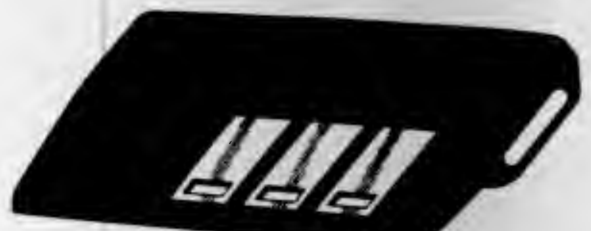
Yoshikazu Suzuki, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,565

Term of patent 14 years

Int. Cl. D26—*06*

U.S. Cl. D26—139



266,605

PIPE

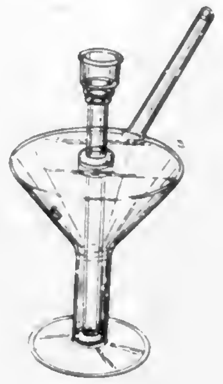
Robert B. Sher, 609 Lochmor, Danville, Calif. 94526

Filed Mar. 31, 1981, Ser. No. 249,625

Term of patent 14 years

Int. Cl. D27—*02*

U.S. Cl. D27—03



266,606

RAZOR HOLDER

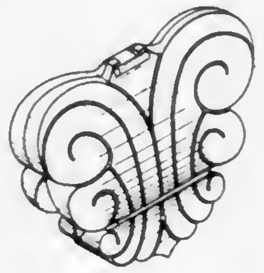
Karl M. Keck, 2155 Silver Palm West, Boca Raton, Fla. 33432

Filed Sep. 24, 1979, Ser. No. 78,218

Term of patent 14 years

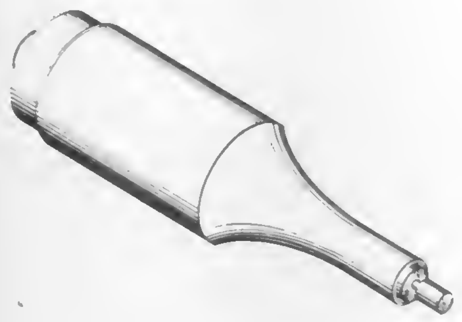
Int. Cl. D28—*03*

U.S. Cl. D28—44



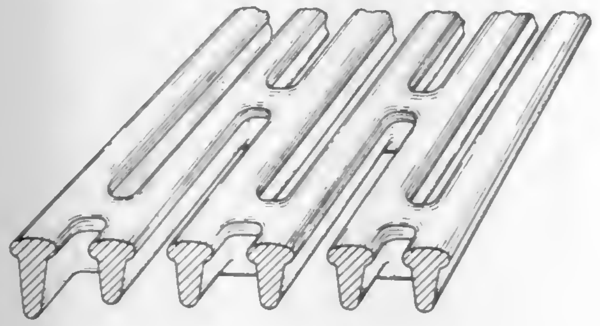
266,607
HANDPIECE FOR MANICURE MACHINE

Sunjeen Choe, 2938 Oakhurst Ave., Los Angeles, Calif. 90034
Filed Aug. 25, 1980, Ser. No. 180,667
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—58



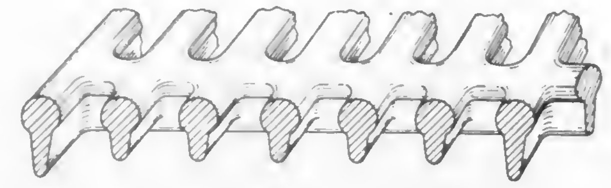
266,608
FLOOR PANEL FOR A PIG SHED

Franz Bartscher, Geseke, Fed. Rep. of Germany, assignor to Josef Schonlau Maschinenfabrik-und Eisengiesserei, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,269
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



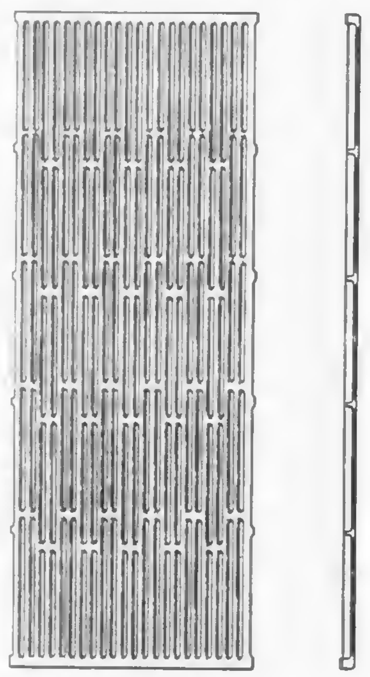
266,609
FLOOR PANEL FOR A PIG SHED

Franz Bartscher, Geseke, Fed. Rep. of Germany, assignor to Josef Schonlau Maschinenfabrik und Eisengiesserei, Fed. Rep. of Germany
Filed Nov. 1, 1979, Ser. No. 90,270
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



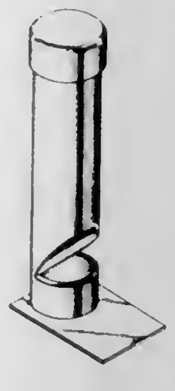
266,610
FLOOR PANEL FOR A PIG SHED

Franz Bartscher, Geseke/Westf., Fed. Rep. of Germany, assignor to Josef Schonlau Maschinenfabrik u. Eisengiesserei, Fed. Rep. of Germany
Filed Mar. 28, 1980, Ser. No. 134,762
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



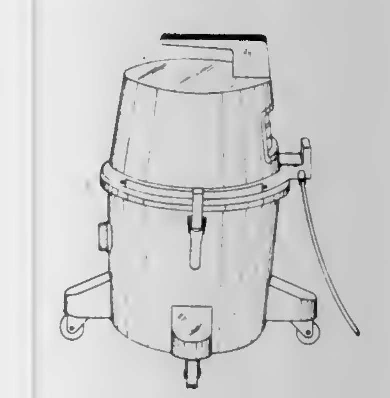
266,611
BIRD FEEDER

Thomas Metts, P.O. Box 219, and John R. Harmon, Rte. 9, Box 800, both of Stafford, Va. 22554
Filed May 21, 1981, Ser. No. 265,973
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



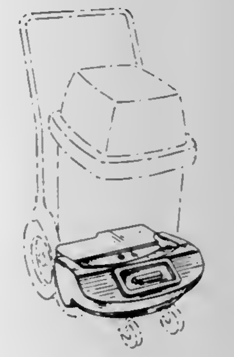
266,612
VACUUM CLEANER

Niklaus Hug, Romanshorn, Switzerland, assignor to Rommag P. Wörwag & Co., Romanshorn, Switzerland
Filed Oct. 2, 1979, Ser. No. 81,214
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, URA 373
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—23



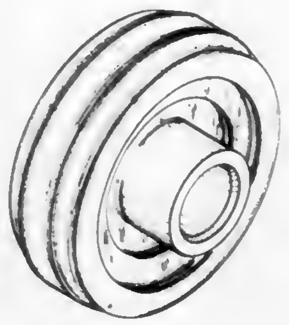
266,613
ACCESSORY SOLUTION TANK FOR VACUUM CLEANER

Dale E. Lowder, North Muskegon, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Dec. 18, 1980, Ser. No. 218,041
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—31



266,614
ROLLER

Donald Neville, Manhattan Beach, Calif., assignor to Plastiglide Manufacturing Corporation, Hawthorne, Calif.
Filed May 1, 1978, Ser. No. 901,741
Term of patent 14 years
Int. Cl. D12—*05;* D8—*08*
U.S. Cl. D34—29



266,615
CURTAIN MATERIAL

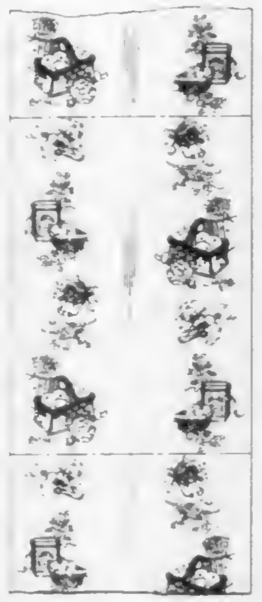
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,485
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, URA 150
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E

266,616

CONTINUOUS SHEET MATERIAL OR THE LIKE

Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 23, 1980, Ser. No. 162,466
Term of patent 14 years
Int. Cl. D5—*06*

U.S. Cl. D59—2 B

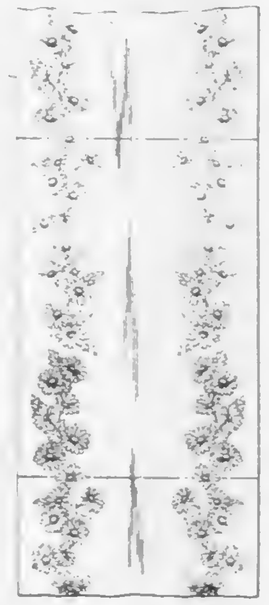


266,617

CONTINUOUS SHEET MATERIAL OR THE LIKE

Donald T. Appleman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 23, 1980, Ser. No. 162,468
Term of patent 14 years
Int. Cl. D5—*06*

U.S. Cl. D59—2 B



266,618

CURTAIN MATERIAL

Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Oct. 2, 1980, Ser. No. 193,257
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 369
Term of patent 14 years
Int. Cl. D5—*05*

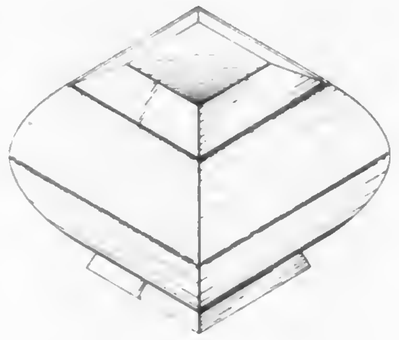
U.S. Cl. D92—1 C

266,619

CREMATION URN

David E. Krech, Inver Grove Heights, Minn., assignor to DeKrech Enterprises, Inc., Inver Grove Heights, Minn.
Filed Oct. 11, 1979, Ser. No. 83,963
Term of patent 14 years
Int. Cl. D31—*00*

U.S. Cl. D99—5

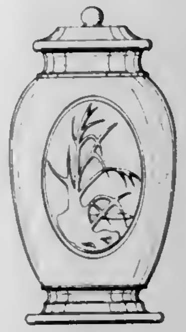


266,620

CREMATION URN

David E. Krech, Inver Grove Heights, Minn., assignor to DeKrech Enterprises, Inc., Inver Grove Heights, Minn.
Filed Oct. 11, 1979, Ser. No. 83,964
Term of patent 14 years
Int. Cl. D31—*00*

U.S. Cl. D99—5

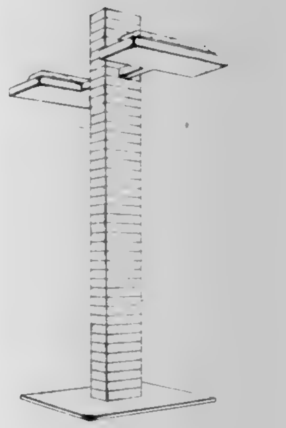


266,621

ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM

Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,036
Claims priority, application Mexico, Dec. 26, 1980, 3071
Term of patent 14 years
Int. Cl. D25—*99*

U.S. Cl. D99—24

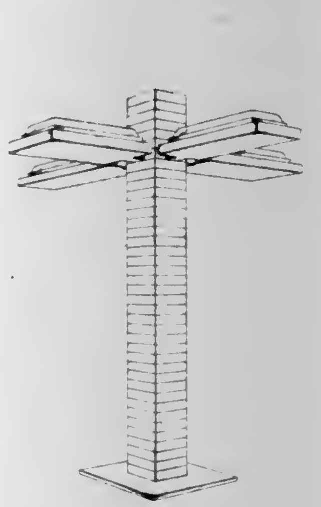


266,622

ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM

Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,037
Claims priority, application Mexico, Dec. 26, 1980, 3073
Term of patent 14 years
Int. Cl. D25—*99*

U.S. Cl. D99—24

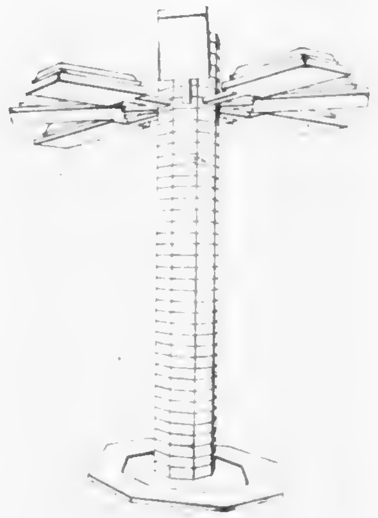


266,623

ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM

Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,038
Claims priority, application Mexico, Dec. 26, 1980, 3070
Term of patent 14 years
Int. Cl. D25—*99*

U.S. Cl. D99—24

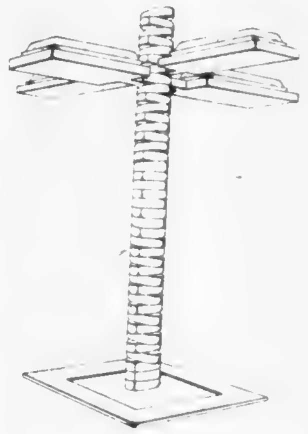


266,624

ELEVATED MULTIPLE DOME FUNERAL MAUSOLEUM

Pablo P. Barberena, San Luis Potosi, No. 195, A.P. 7, Mexico, D.F., Mexico
Filed Aug. 28, 1980, Ser. No. 182,039
Claims priority, application Mexico, Feb. 26, 1980, 3072
Term of patent 14 years
Int. Cl. D25—*99*

U.S. Cl. D99—24



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A.N.F. Industrie: *See—*
  - Pelabon, Jean, 4,354,612, Cl. 220-401.000.
- AB Indesko: *See—*
  - Odsvall, Jan, 4,354,658, Cl. 249-202.000.
- AB Rescon: *See—*
  - Hagglund, Hans, 4,354,382, Cl. 73-290.00R.
- AB Volvo: *See—*
  - Harde, Bo T. S., 4,354,521, Cl. 137-571.000.
- Abel, Irving R.; and Hatch, Marcus R., to Honeywell Inc. Optical system having a dual field of view. 4,354,742, Cl. 350-442.000.
- Abla, M. H.: *See—*
  - Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.
- Abrahamson, David M., to Dason International Products Inc. Afghan construction and method. 4,354,443, Cl. 112-440.000.
- ACF Industries, Incorporated: *See—*
  - Hochmuth, William R.; and Shelton, William S., 4,354,523, Cl. 137-614.180.
- Achermann, Heinz; and Daetwyler, Jurg. Specimen testing apparatus. 4,354,764, Cl. 374-56.000.
- Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., to Singer Company, The. Phase locked gyroscope wheel supply for synchronous hysteresis motor. 4,354,393, Cl. 74-5.370.
- Acker, William F., to Honeywell Inc. Phase correction system. 4,355,284, Cl. 328-155.000.
- Adams, Ronald D.; and Chia, E. Henry, to Southwire Company. Method of forge-conditioning non-ferrous metals prior to rolling. 4,354,880, Cl. 148-2.000.
- AES Technology Systems, Inc.: *See—*
  - Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,354,789, Cl. 414-104.000.
- Agatahama, Shunichi, to Omron Tateisi Electronics Company. Sealed electric assembly with connecting terminals. 4,355,291, Cl. 335-128.000.
- Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
  - Neveu, Jean-Louis, 4,355,067, Cl. 428-253.000.
- Agency of Industrial Science and Technology, The: *See—*
  - Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,354,936, Cl. 210-602.000.
- Agfa-Gevaert Aktiengesellschaft: *See—*
  - Bergthaller, Peter; and Wenzl, Peter, 4,355,185, Cl. 568-50.000.
  - Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.
- Aggarwal, Sundar L.: *See—*
  - Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
- Aho, Sakari, to SAK Industries (1980) Ltd. Folding marine trap. 4,354,325, Cl. 43-105.000.
- Ahuja, Ramesh C.: *See—*
  - van Turnhout, Jan; and Ahuja, Ramesh C., 4,355,089, Cl. 430-130.000.
- Ainoura, Masato. Screw type hone assembly for the honing of gears. 4,354,328, Cl. 51-206.400.
- Airco, Inc.: *See—*
  - Estes, James W., 4,354,829, Cl. 432-117.000.
  - Kayser, John P.; and Pinkert, John R., 4,354,493, Cl. 128-276.000.
- Aisin Seiki Co., Ltd.: *See—*
  - Ohmi, Atsushi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,354,423, Cl. 91-369.00A.
  - Omitsu, Takashi, 4,354,401, Cl. 74-689.000.
  - Toyoda, Minoru, 4,354,368, Cl. 70-456.00R.
- Aisin Seiki Kabushiki Kaisha: *See—*
  - Oyama, Tadashi; and Kawata, Shoji, 4,354,525, Cl. 137-625.500.
- Akaiwa, Yoshihiko: *See—*
  - Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.
- Akers, Francis I.: *See—*
  - Maklad, Mokhtar S.; Akers, Francis I.; and Thomas, William L., 4,354,736, Cl. 350-96.320.
- Akesson, Ingve R., to Societe d'Assistance Technique Pour Produits Nestle, S.A. Spring assembly system. 4,354,428, Cl. 99-639.000.
- Aki, Osami: *See—*
  - Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.
- Aktiebolaget Bofors: *See—*
  - Broberg, Hans; Douren, Lars; and Troeng, John, 4,354,899, Cl. 159-13.00A.
- Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., to Bell Telephone Laboratories, Incorporated; and N. V. Philips Gloeilampenfabrieken. Spelled word recognizer. 4,355,302, Cl. 340-146.30Q.
- Aldinger, Fritz: *See—*
  - Bischoff, Albrecht; and Aldinger, Fritz, 4,355,082, Cl. 428-607.000.
- Alessio, Lorenzo E.; and Cuneo, Giuseppe, to Black & Decker Inc. Tachometric generator. 4,355,251, Cl. 310-155.000.
- Alfa-Laval AB: *See—*
  - Kristoffersson, Ingmar; and Heurlin, Gustav S., 4,354,551, Cl. 165-166.000.
  - Stroucken, Klaus H. D., 4,354,632, Cl. 233-20.00A.
- Allanson, Ernest E.: *See—*
  - Edmundowicz, John M.; and Allanson, Ernest E., 4,354,971, Cl. 260-239.100.
- Allen-Bradley Company: *See—*
  - Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., 4,355,269, Cl. 318-436.000.
- Allen, Richard C.: *See—*
  - Strupczewski, Joseph T.; Gardner, Beth Ann; and Allen, Richard C., 4,355,037, Cl. 424-267.000.
- Allied Corporation: *See—*
  - Lee, Lester T. C.; and Liu, Kang-Jen, 4,355,116, Cl. 521-27.000.
- Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., to International Harvester Co. Check valve assembly with actuator. 4,354,931, Cl. 210-136.000.
- Alsop, John H., IV, to Texas Instruments Incorporated. Apparatus and method of error detection and/or correction in a data set. 4,355,391, Cl. 371-37.000.
- Altosaar, Arkadi: *See—*
  - Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.
- Am International, Inc.: *See—*
  - Westdale, Virgil W.; and Novotny, John, Jr., 4,355,088, Cl. 430-98.000.
- Ambrose, Lawrence A., to Bryant Grinder Corporation. Loader for grinding machine. 4,354,329, Cl. 51-215.00H.
- Amerace Corporation: *See—*
  - Luzzi, Glenn J., 4,354,721, Cl. 339-94.00R.
- American Color & Chemical Corporation: *See—*
  - Renfrew, Edgar E.; and Zanella, Dominic A., 4,355,012, Cl. 423-226.000.
- American Filtrona Corporation: *See—*
  - Berger, Richard M., 4,354,889, Cl. 156-180.000.
- American General Supply Company: *See—*
  - White, Herbert A., Jr., 4,354,659, Cl. 249-206.000.
- American Hoechst Corporation: *See—*
  - Walls, John E., 4,355,096, Cl. 430-302.000.
- American Home Products Corp.: *See—*
  - Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,355,031, Cl. 424-250.000.
- American Hospital Supply Corporation: *See—*
  - McPhee, Charles J., 4,354,492, Cl. 128-214.00E.
- American Standard Inc.: *See—*
  - Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., 4,354,302, Cl. 29-252.000.
- American Sterilizer Company: *See—*
  - Sundheimer, Craig S.; and Joslin, Bradley D., 4,354,514, Cl. 134-152.000.
- AMF Incorporated: *See—*
  - Brutsman, James W., 4,354,605, Cl. 211-49.00D.
- AMP Incorporated: *See—*
  - Bakermans, Johannes C. W., 4,354,720, Cl. 339-91.00R.
  - Brandewie, Joseph E.; and Shatto, Walter C., Jr., 4,354,626, Cl. 226-109.000.
  - Bright, Edward J.; and Kandybowski, Steven J., 4,354,718, Cl. 339-17.0CF.
  - Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,354,729, Cl. 339-258.00R.
  - Weidler, Charles H., 4,354,719, Cl. 339-59.00M.
- Ampex Corporation: *See—*
  - Pearson, Willard C., 4,355,266, Cl. 318-85.000.
- Amplatz, Kurt. Scanning x-ray system. 4,355,409, Cl. 378-146.000.
- Amtel Communications, Inc.: *See—*
  - Curtin, William J., 4,355,207, Cl. 179-18.0FC.
- Anderle, Joseph A., to Levolor Lorentzen, Inc. Holder for supporting a valance at a Venetian blind head. 4,354,300, Cl. 24-343.000.
- Andersen, Esther. Hood for prevention of scalp hair loss. 4,354,496, Cl. 128-403.000.
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  - Madsen, Ingvard M.; and Andersen, Niels L., 4,354,822, Cl. 431-208.000.

- Anderson, Wayne M.: *See—*
  - Hang, Kenneth W.; and Anderson, Wayne M., 4,355,114, Cl. 501-5.000.
  - Hang, Kenneth W.; and Anderson, Wayne M., 4,355,115, Cl. 501-21.000.
- Andersson, Curt E., to Andersson, Kurt Goran. Goods conveyor track. 4,354,575, Cl. 187-12.000.
- Andersson, Kurt Goran: *See—*
  - Andersson, Curt E., 4,354,575, Cl. 187-12.000.
- Andre Buechl Kalk-und Portandzementwerk: *See—*
  - Sgaslik, Friedrich, 4,354,862, Cl. 55-296.000.
- Angevine, Philip J.: *See—*
  - Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., 4,354,927, Cl. 208-251.00H.
- Anglin, Russell E. Battery charger with current pulse regulation. 4,355,275, Cl. 320-21.000.
- Anic, S.p.A.: *See—*
  - Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,354,981, Cl. 260-465.80R.
- Anritsu Electric Company Limited: *See—*
  - Shirono, Junkichi; and Honda, Katsuhisa, 4,354,436, Cl. 108-123.000.
- Antonellis, Robert A. Wheelchair construction. 4,354,791, Cl. 414-343.000.
- Antrim, Richard L.; and Hurst, Louis S., to Nabisco Brands, Inc. Process for preparing agglomerated fibrous cellulose. 4,355,117, Cl. 521-28.000.
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  - Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.
- Aoki, Bunya: *See—*
  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
- Aoki, Takashi: *See—*
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- Arai, Yasunori; Ogawa, Ryota; and Ohishi, Michiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Copying apparatus. 4,354,756, Cl. 355-3.00R.
- Arakawa, Hideki, to Fujitsu Limited. Semiconductor memory device. 4,355,375, Cl. 365-185.000.
- Arakawa, Hiroshi: *See—*
  - Suzuki, Hajime; and Arakawa, Hiroshi, 4,354,533, Cl. 139-435.000.
- Araki, Shigeru: *See—*
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- Aratani, Matsuhiko: *See—*
  - Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
- Ariel, Gideon B., to Pepsico, Inc. Exerciser. 4,354,676, Cl. 272-129.000.
- Armstrong, Raymond E. Slide handling apparatus. 4,354,745, Cl. 353-112.000.
- Arnaud, Maurice, deceased; by Avril nee Arnaud, Marie C. N. A., heir; by Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, to Societe Lignes Telegraphiques et Telephoniques. Cable elements comprising optical fibres and cables incorporating them. 4,354,732, Cl. 350-96.230.
- Arnaud, Michel F., heir: *See—*
  - Arnaud, Maurice, deceased; Avril nee Arnaud, Marie C. N. A., heir; Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,354,732, Cl. 350-96.230.
- Arnold, Franklin D.: *See—*
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- Arvey Corporation: *See—*
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- Asahi Glass Company, Ltd.: *See—*
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- Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Arai, Yasunori; Ogawa, Ryota; and Ohishi, Michiro, 4,354,756, Cl. 355-3.00R.
- Asaida, Takashi: *See—*
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- Asano, Masaharu: *See—*
  - Kanegae, Hidetoshi; and Asano, Masaharu, 4,355,359, Cl. 364-431.040.
- Ashland Oil, Inc.: *See—*
  - Daniel, Chelliah, 4,355,176, Cl. 562-599.000.
  - Myers, George D.; and Busch, Lloyd E., 4,354,923, Cl. 208-113.000.
  - Norton, Richard V.; Fisher, Dennis H.; Graham, Garry M.; and Frank, Peter J., 4,355,194, Cl. 585-14.000.
- Associated Engineering Limited: *See—*
  - Noddings, John; and Borton, Roland K., 4,354,467, Cl. 123-352.000.
- Atlantic Richfield Company: *See—*
  - Baillie, Lloyd A., 4,354,389, Cl. 73-749.000.
- Attwood, Brian W. Flowbox system for wet-laying a multiply fibrous web. 4,354,902, Cl. 162-300.000.
- Audeh, Costandi A.; and Yan, Tsoung Y., to Mobil Oil Corporation. Supercritical selective extraction of hydrocarbons from asphaltic petroleum oils. 4,354,928, Cl. 208-309.000.
- Aug. Winkhaus: *See—*
  - Mayer, Siegfried; and Henrichmann, Ludger, 4,354,365, Cl. 70-30.000.
- Austin, Eric P.; and Worrall, Howard J., to Simon-Hartley Limited. Apparatus for thickening sludge. 4,354,935, Cl. 210-396.000.
- Autodynamics, Inc.: *See—*
  - Newton, Robert P., 4,354,386, Cl. 73-487.000.
- Automated Packaging Systems, Inc.: *See—*
  - Weyandt, Ronald R., 4,354,618, Cl. 221-186.000.
- Automation Industries, Inc.: *See—*
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- Automotive Products Limited: *See—*
  - Stanley, Michael G., 4,354,586, Cl. 192-106.200.
- Avril nee Arnaud, Marie C. N. A., heir: *See—*
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- Azumi, Toshinori: *See—*
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- Azzaroni, Cesare. Automatic machine for loading and unloading films in radiography cassettes. 4,354,336, Cl. 53-505.000.
- B. F. Goodrich Company, The: *See—*
  - Khungar, Sohan L.; and Shah, Suresh R., 4,355,142, Cl. 526-88.000.
  - Layer, Robert W.; and Tenney, Linwood P., 4,355,148, Cl. 526-281.000.
- Babcock-BSH AG vormals Buttner-Schilde-Haas AG: *See—*
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- Baeckelmans, Rene: *See—*
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- Baessler, Konrad: *See—*
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- Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M. Acoustic surface wave filter. 4,355,290, Cl. 333-195.000.
- Bahder, George, to Cable Technology Labs., Inc. Electrochemical tree resistant power cable. 4,354,992, Cl. 264-85.000.
- Bahrmann, Helmut: *See—*
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- Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., to Diamond Shamrock Corporation. Strengthened fiberous electrochemical cell diaphragm and a method for making. 4,354,900, Cl. 162-106.000.
- Baillie, Lloyd A., to Atlantic Richfield Company. Vapor pressure sensor and flow measuring devices. 4,354,389, Cl. 73-749.000.
- Baker, Willard C., to Dana Corporation. Hydromechanical transmission. 4,354,400, Cl. 74-687.000.
- Bakermans, Johannes C. W., to AMP Incorporated. Connector assembly having improved latching means. 4,354,720, Cl. 339-91.00R.
- Bako, Lazlo, to Kidde, Inc. (Presto Lock Company Division). Combination locks. 4,354,366, Cl. 70-312.000.
- Baldwin, Blair F.: *See—*
  - Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, 4,354,842, Cl. 434-195.000.
- Baldwin, Stoddard & Co.: *See—*
  - Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, 4,354,842, Cl. 434-195.000.
- Balkus, Carl E. Wood splitting device. 4,354,537, Cl. 144-193.00C.
- Bally Manufacturing Corporation: *See—*
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- Baltes, Herbert; and Leupold, Ernst I., to Hoechst Aktiengesellschaft. Process for the manufacture of methyl glyoxal. 4,355,187, Cl. 568-471.000.
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  - Cohen, Sheppard; and Barakitis, Nikolaos, 4,355,261, Cl. 315-47.000.
  - Cohen, Sheppard; Barakitis, Nikolaos; and Zack, Alexander T., 4,355,265, Cl. 315-290.000.
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- Barber-Colman Company: *See—*
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- Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, to Global Gym & Fitness Equipment Limited. Weight lifting device. 4,354,675, Cl. 272-118.000.

- Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., to General Foods Corporation. Apparatus for the preparation of a food product. 4,354,815, Cl. 425-236.000.
- Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, to Kernforschungsanlage Julich GmbH. Fluidized bed reactor with open reaction gas input and method of increasing the duct. 4,354,635, Cl. 239-11.000.
- Barone, Salvatore: *See—*
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- Bartels, Gunter: *See—*
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- Barthelme, Julius A.: *See—*
  - Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., 4,355,403, Cl. 375-36.000.
- Bartos, Donald M., to Dow Corning Corporation. Nose mask gas delivery device. 4,354,488, Cl. 128-205.250.
- BASF Aktiengesellschaft: *See—*
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  - Hartmann, Heinrich; Hoffmann, Gerhard; Lenz, Werner; Lynch, John; and Naarmann, Herbert, 4,355,093, Cl. 430-275.000.
  - Henning, Georg; Honigmann, Bertold; and Lamm, Gunther, 4,354,969, Cl. 260-156.000.
  - Schwendemann, Volker; and Mangold, Dietrich, 4,354,979, Cl. 260-453.00P.
- BASF Wyandotte Corporation: *See—*
  - Camp, Ronald L., 4,354,956, Cl. 252-316.000.
- Bates, Ronald F.: *See—*
  - Wang, Chih C.; and Bates, Ronald F., 4,355,062, Cl. 428-64.000.
- Bath, William R.: *See—*
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- Bauer, Peter. Fluid dynamic energy exchanger. 4,354,805, Cl. 417-54.000.
- Baugh, William D.: *See—*
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- Baumann, Gert F.: *See—*
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- Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, to Dow Corning GmbH. Air- and/or oven-drying lubricant paint composition for producing dry-film lubricants. 4,355,124, Cl. 524-104.000.
- Baumann, Manfred: *See—*
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- Baunack, Fritz, to Babcock-BSH AG vormals Buttner-Schilde-Haas AG. Method of and a device for feeding solid fuel in a fluidized bed hearth. 4,354,439, Cl. 110-245.000.
- Bausch & Lomb Incorporated: *See—*
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  - Riedhammer, Thomas M.; and Smith, Francis X., 4,354,952, Cl. 252-106.000.
- Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Process and data system using data qualifiers. 4,355,356, Cl. 364-200.000.
- Baxter Travenol Laboratories, Inc.: *See—*
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  - Stupar, James A.; and Smith, Stephen D., 4,354,660, Cl. 251-4.000.
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  - Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, 4,354,854, Cl. 23-232.00R.
  - Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,354,968, Cl. 260-146.00T.
  - Rademachers, Jakob; and Pflugmacher, Ingo, 4,355,006, Cl. 423-61.000.
  - von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, 4,355,163, Cl. 544-189.000.
- Beach, Shirley, to Phillips Cables Limited. Extrusion of insulating plastic. 4,354,989, Cl. 264-40.600.
- Becheiraz, Joseph, to Ciba-Geigy AG. Apparatus for the processing of photographic material in sheet form. 4,354,755, Cl. 354-322.000.
- Bechthold, Horst; and Mohn, Ulrich, to Maschinenfabrik Buckau R.Wolf AG. Process for removing sulphuric acid components from flue gases. 4,355,013, Cl. 423-242.000.
- Beck, Darrel R. Safety stress shutdown switch. 4,355,307, Cl. 340-679.000.
- Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, to Hoechst Aktiengesellschaft. Process for the preparation of 4-phenoxy-phenols. 4,355,186, Cl. 568-52.000.
- Beckman Instruments, Inc.: *See—*
  - Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., 4,355,233, Cl. 250-343.000.
- Beckmann, Georg, to Waagner-Biro A.G. Method and apparatus for cooling hot bulk material. 4,354,438, Cl. 110-234.000.
- Beecham Group Limited: *See—*
  - Cantello, Barrie C. C.; and White, Susan M., 4,355,004, Cl. 422-246.000.
  - Stirling, Irene, 4,354,974, Cl. 260-245.300.
- Beecroft, Julian B.: *See—*
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- Beekman, Stanley: *See—*
  - Block, Barry H.; and Beekman, Stanley, 4,354,319, Cl. 36-114.000.
- Beeson, Gary H., to Convergence Corporation. Video tape editing control system. 4,355,332, Cl. 360-14.100.
- Beffano, John J.: *See—*
  - Linder, Morris B.; and Beffano, John J., 4,354,698, Cl. 285-98.000.
- Beisecker, Mark B., to Gillette Company, The. Automatic temperature control system with manual off override for a catalytically heated curling device. 4,354,482, Cl. 126-409.000.
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  - De Muynck, Gabriel, 4,354,798, Cl. 414-750.000.
- Bel, Roger P., to Metallisations et Traitements Optiques M.T.O. Optical relay used for transferring an image from one point to another along an optical axis. 4,354,730, Cl. 350-54.000.
- Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., to Schlumberger Technology Corporation. Well logging communication system. 4,355,310, Cl. 340-858.000.
- Belart, Juan, to ITT Industries, Inc. Hydraulic brake system having wheel slip control. 4,354,714, Cl. 303-114.000.
- Bell & Howell Company: *See—*
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- Bell Telephone Laboratories, Incorporated: *See—*
  - Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.
  - Bobeck, Andrew H., 4,355,373, Cl. 365-39.000.
  - Coldren, Larry A.; and Furuya, Kazuhito, 4,354,898, Cl. 156-647.000.
  - DeCosta, John; Mallos, James B.; and Roe, David B., 4,355,202, Cl. 178-18.000.
  - Hamilton, Billy H., 4,355,240, Cl. 307-44.000.
  - Ohm, Edward A., 4,355,314, Cl. 343-779.000.
  - Reudink, Douglas O.; and Yeh, Yu S., 4,355,411, Cl. 455-33.000.
  - Timor, Uzi, 4,355,399, Cl. 375-1.000.
- Ben-David, Menashe; and Poffenberger, Russell E., to Automation Industries, Inc. Altitude alert system. 4,355,294, Cl. 340-27.00R.
- Bendix Corporation, The: *See—*
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  - Driscoll, Barry J., 4,355,293, Cl. 338-184.000.
  - Jessup, Gregory M., 4,355,298, Cl. 340-58.000.
- Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, to Thomson-CSF. Device for reading a quantity of electric charges and charge-filter equipped with said device. 4,355,244, Cl. 307-304.000.
- Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, to Southwire Company; and National Steel Corporation. Method and apparatus for producing uniformly baked anodes. 4,354,828, Cl. 432-24.000.
- Berard, Jean-Claude, to SEB S.A. Apparatus for the destruction of microfiches and the like. 4,355,227, Cl. 219-390.000.
- Berger, Jean-Luc: *See—*
  - Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, 4,355,244, Cl. 307-304.000.
- Berger, Richard M., to American Filtrona Corporation. Ink reservoir element for use in a marking instrument, and method and apparatus for producing same. 4,354,889, Cl. 156-180.000.
- Bergersen, Hans A., to International Standard Electric Corporation. Method for making electrical heating mats from an expanded foil-insulation composite. 4,354,886, Cl. 156-50.000.
- Bergland, Paul W., to Bobst Champlain, Inc. Sheet handling device. 4,354,671, Cl. 270-58.000.
- Bergman, Raymond A. Air float power translation system. 4,354,796, Cl. 414-676.000.
- Bergthaller, Peter; and Wenzl, Peter, to Agfa-Gevaert Aktiengesellschaft. Process for the preparation of 2-mercaptoalkyl-sulphides and 2-mercaptoalkylethers. 4,355,185, Cl. 568-50.000.
- Berna AG Olten: *See—*
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- Beske, Grant A.; Cohen, Abraham B.; and Uhler, Roger O., to Du Pont de Nemours, E. I., and Company. Use of prolonged tack toners for the preparation of multilayer electric circuits. 4,355,055, Cl. 427-96.000.
- Beyer, Horst; and Zerfass, Hans-Reiner, to Goetze AG. Impregnated gasket and method of producing. 4,355,068, Cl. 428-290.000.
- Beyer, James B.; and Summers, James B., to Wisconsin Alumni Research Foundation. Phase shift and amplitude modulator. 4,355,289, Cl. 332-17.000.
- Bianchetta, Donald L., to Caterpillar Tractor Co. Fluid motor control system providing speed change by combination of displacement and flow control. 4,354,420, Cl. 91-6.000.
- Bianchi, Giuseppe; and Gussoni, Giovanni, to Industrie Pirelli Societa per Azioni. Method and apparatus for the restrained and flame-retardant laying of electric cables. 4,354,774, Cl. 405-157.000.
- Bickham, Kenneth L., to Shell Oil Company. Waterfall technique for removing settled coal solids from a storage facility. 4,354,778, Cl. 406-137.000.
- Bieber, Gerold: *See—*
  - Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.

- Bielawski, Billy J., Sr.: *See—*
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- Bilco Tools, Inc.: *See—*
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- Billy, Jean-Claude: *See—*
  - Portejoie, Jean-Francois; Noel, Gilbert; and Billy, Jean-Claude, 4,355,387, Cl. 370-102.000.
- Bingham, Marion G.; and Reagan, Leonard D., to Milchem Incorporated. Cuttings washer assembly. 4,354,513, Cl. 134-104.000.
- Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., to General Tire & Rubber Company, The. Solution polymerization. 4,355,156, Cl. 528-413.000.
- Bingham, Robert E.: *See—*
  - Herold, Robert J.; and Bingham, Robert E., 4,355,188, Cl. 568-620.000.
- Binz, Reiner; and Karl, Otto, to Siemens Aktiengesellschaft. Time-division multiplex digital switching network for a PCM telephone exchange system utilizing duplicate connecting field installations. 4,355,386, Cl. 370-100.000.
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  - Zinn, Michael F., 4,354,546, Cl. 165-1.000.
- Birkenbach, Alfred; and Franke, Helmut, to ITT Industries, Inc. Mechanical actuating device for a disc brake. 4,354,581, Cl. 188-71.900.
- Bischoff, Albrecht; and Aldinger, Fritz, to W. C. Heraeus GmbH. Ultra-thin wire for semiconductor connections. 4,355,082, Cl. 428-607.000.
- Bitter, Istvan: *See—*
  - Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, 4,355,178, Cl. 564-44.000.
- Bjorklund, Curt A. Non-drip valve apparatus. 4,354,519, Cl. 137-312.000.
- Black Clawson Company, The: *See—*
  - Zink, Stanley C., 4,354,449, Cl. 118-126.000.
- Black & Decker Inc.: *See—*
  - Alessio, Lorenzo E.; and Cuneo, Giuseppe, 4,355,251, Cl. 310-155.000.
- Blackwell, Jennings P., to Phillips Petroleum Company. Poly(arylene sulfide) composition containing a polyolefin. 4,355,059, Cl. 427-388.200.
- Blanchard, Clarence E., to Outboard Marine Corporation. High tilt pivot mounting arrangement for an outboard motor. 4,354,847, Cl. 440-61.000.
- Bliss, John W.: *See—*
  - Chowdhury, Mofazzal H.; and Bliss, John W., 4,354,624, Cl. 222-608.000.
- Block, Barry H.; and Beekman, Stanley. Athletic shoe. 4,354,319, Cl. 36-114.000.
- Block Engineering, Inc.: *See—*
  - Hirschfeld, Tomas; and Margoshes, Marvin, 4,355,336, Cl. 358-217.000.
- Block, Sheldon A., to United States of America, Navy. Wedge assembly. 4,354,770, Cl. 403-409.000.
- Bloom, Gordon E.; and Eris, Altan. DC to DC Converter. 4,355,352, Cl. 363-16.000.
- Blossfeldt, Dieter, to Siemens Aktiengesellschaft. Circuit arrangement for operating opto-electronic display elements assigned to terminal devices, in particular in telephone system. 4,355,308, Cl. 340-781.000.
- Bobeck, Andrew H., to Bell Telephone Laboratories, Incorporated. Magnetic bubble memory. 4,355,373, Cl. 365-39.000.
- Bobst Champlain, Inc.: *See—*
  - Bergland, Paul W., 4,354,671, Cl. 270-58.000.
- Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Mixture of aliphatic C_{10} branched olefin epoxides and use thereof in augmenting or enhancing the aroma of perfumes and/or articles. 4,354,951, Cl. 252-8.900.
- Boden, Richard M., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of detergents using 1-n-butoxy-1-ethanol acetate. 4,354,953, Cl. 252-174.110.
- Bodenseewerk Geratetechnik GmbH: *See—*
  - Giesenberg, Peter, 4,354,394, Cl. 74-5.440.
- Bodicky, Raymond O., to Sherwood Medical Industries Inc. Method of connecting plastic tube to a plastic part. 4,354,495, Cl. 128-348.000.
- Boegel, Gerhard; and Sahli, Max, to SFS Stadler AG. Screw driver apparatus. 4,354,403, Cl. 81-57.370.
- Boeing Company, The: *See—*
  - Geithman, Glenn A.; and Olsen, Donald F., 4,355,222, Cl. 219-10.570.
- Bogdanovic, Borislav, to Studiengesellschaft Kohle m.b.H. Production of organolithium compounds and lithium hydride. 4,354,982, Cl. 260-665.00R.
- Bogner, Paul. Portable hamper. 4,354,543, Cl. 150-50.000.
- Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Amino-functionalized phthalhydrazide intermediates. 4,355,165, Cl. 544-237.000.
- Boguslawski, George; and Rynski, Michael J., to Miles Laboratories, Inc. Novel strain of *Bacillus licheniformis* useful in the production of glucose isomerase and method of screening Bacillus mutants for ability to produce glucose isomerase in the absence of xylose. 4,355,103, Cl. 435-34.000.
- Boise Cascade Corporation: *See—*
  - Westphal, Teddy M., 4,354,784, Cl. 413-12.000.
- Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., to Hesston Corporation. Bale wrapping apparatus. 4,354,429, Cl. 100-5.000.
- Bom, Cornelis J. G.: *See—*
  - van der Lely, Ary; and Bom, Cornelis J. G., 4,354,557, Cl. 172-49.500.
- Boman, Hans G.: *See—*
  - Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.
- Bompard, Bruno; and Bruyere, Alain, to Commissariat a l'Energie Atomique; and Societe J. Brochier & Fils. Process and machine for manufacturing pieces of revolution made of three-dimensional material of which the generatrix has at least one concave part. 4,354,888, Cl. 156-175.000.
- Bononi, Walter H. Frame for eyeglasses. 4,354,744, Cl. 351-153.000.
- Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Can and bottle vending. 4,354,614, Cl. 221-67.000.
- Bormioli, Giorgio. Flexible connecting system for pipes with automatic safety release in case of tensile stress. 4,354,522, Cl. 137-614.020.
- Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, to Agfa-Gevaert Aktiengesellschaft. Switching circuit for regulation of camera functions. 4,354,747, Cl. 354-23.00D.
- Bortkevicius, Jonas: *See—*
  - Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,354,815, Cl. 425-236.000.
- Borton, Roland K.: *See—*
  - Noddings, John; and Borton, Roland K., 4,354,467, Cl. 123-352.000.
- Bosch & Pierburg System oHG: *See—*
  - Hartel, Gunter, 4,354,383, Cl. 73-290.00B.
- Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., to Hughes Aircraft Company. Radar signal processor. 4,355,312, Cl. 343-5.0VQ.
- Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Thermoplastic poly(bisphenol A tere- or isophthalate) copolycarbonate. 4,355,150, Cl. 528-176.000.
- Bottcher, Irmgard: *See—*
  - Niedballa, Ulrich; and Bottcher, Irmgard, 4,355,039, Cl. 424-273.00R.
- Bougiouris, Evangelos, to Ilco Unican Corp. Making formed milled cutters and key cutters. 4,354,780, Cl. 409-122.000.
- Bourbeau, Frank J. Load responsive control system for constant speed induction motor. 4,355,274, Cl. 318-812.000.
- Bowater Tutt Industries, Pty. Ltd.: *See—*
  - Maffey, Peter M., 4,354,890, Cl. 156-264.000.
- Boxall, Larry G.; and Nagle, Dennis C., to Martin Marietta Corporation. Anode stud coatings for electrolytic cells. 4,354,918, Cl. 204-286.000.
- Bramlage GmbH: *See—*
  - Wippermann, Gerhard; and Keller, Peter, 4,354,619, Cl. 221-263.000.
- Brandewie, Joseph E.; and Shatto, Walter C., Jr., to AMP Incorporated. Apparatus for feeding a plurality of wires. 4,354,626, Cl. 226-109.000.
- Brandon, Thomas M.: *See—*
  - Huggins, Edgar M.; and Brandon, Thomas M., 4,354,340, Cl. 56-27.500.
- Brandsma, Russell G.: *See—*
  - Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., 4,354,302, Cl. 29-252.000.
- Bricot, Claude; and Robin, Gerard, to Thomson-Brandt. Process for making video discs. 4,354,988, Cl. 264-22.000.
- Briggs & Stratton Corp.: *See—*
  - Vollbrecht, Kenneth A., 4,355,253, Cl. 310-239.000.
- Bright, Edward J.; and Kandybowski, Steven J., to AMP Incorporated. Dual-in-line package carrier and socket assembly. 4,354,718, Cl. 339-17.0CF.
- Bristol-Myers Company: *See—*
  - Weinstein, Jack, 4,354,638, Cl. 239-337.000.
- British Aerospace: *See—*
  - Wooding, Michael S., 4,354,346, Cl. 60-39.09P.
- British Telecommunications: *See—*
  - Salter, Stuart R.; and Smith, David R., 4,355,395, Cl. 372-38.000.
- Bro, William J. Thermal diffusion flow probe. 4,354,504, Cl. 128-691.000.
- Broberg, Hans; Douren, Lars; and Troeng, John, to Aktiebolaget Bofors. Device for concentration and possible purification of mineral acids, particularly sulphuric acid. 4,354,899, Cl. 159-13.00A.
- Brockway Glass Company, Inc.: *See—*
  - Poad, William J.; DeSantis, Urbano J.; and McFadden, Lewis W., 4,354,865, Cl. 65-29.000.
- Broding, Robert A.: *See—*
  - Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., 4,354,558, Cl. 175-45.000.
- Brown, Carl W.: *See—*
  - Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.
- Brown, Donald C., to Heyman Manufacturing Company. Contact strip for electrical connector. 4,354,727, Cl. 339-256.00R.
- Brown, Donald L.; and Calvert, Gareld D. Keg saddle. 4,354,599, Cl. 206-503.000.
- Brown, James H.: *See—*
  - Hughey, Robert M.; Fairchild, James J.; and Brown, James H., 4,355,309, Cl. 340-825.530.
- Brown & Williamson Tobacco Corporation: *See—*
  - Lewis, Robert T.; and Sexstone, John H., 4,354,894, Cl. 156-517.000.

  - Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., 4,354,591, Cl. 198-451.000.
- BRS, Inc.: *See—*
  - Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.
- Brun, Alain; Marcotte, Louis; and Szarazi, Bela, to L'Oreal. Method of and device for forming openings in a gelatinous substance. 4,354,406, Cl. 83-24.000.
- Brunelli, Maurizio: *See—*
  - Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,354,981, Cl. 260-465.80R.
- Bruton, Billy R.; Corneillie Jerome E.; and Perkins, Marion W., to U.S. Industries, Inc. Fire-safe valve actuator. 4,354,425, Cl. 92-94.000.
- Brutsman, James W., to AMF Incorporated. Adjustable dispenser. 4,354,605, Cl. 211-49.00D.
- Bruyere, Alain: *See—*
  - Bompard, Bruno; and Bruyere, Alain, 4,354,888, Cl. 156-175.000.
- Bryant Grinder Corporation: *See—*
  - Ambrose, Lawrence A., 4,354,329, Cl. 51-215.00H.
- Buchanan, James C.; and Rutkowski, Edward V., Jr., to International Business Machines Corporation. Hyphen characterization apparatus for a typewriter. 4,354,765, Cl. 400-7.000.
- Buckeye Cellulose Corporation, The: *See—*
  - Oliver, Don W., 4,354,486, Cl. 128-132.00D.
- Buehl, Arnold L.; and Zwipf, Werner H., to Slyman Manufacturing Corporation. Non-air cooled radiant burner. 4,354,823, Cl. 431-328.000.
- Buhrlen, Harold, to Meagher, James E. Ignition circuit for explosive devices and the like. 4,355,263, Cl. 315-209.00T.
- Buiocchi, Charles J.: *See—*
  - Dholakia, Anil R.; and Buiocchi, Charles J., 4,355,382, Cl. 369-71.000.
- Bujese, David P., to Pitney Bowes Inc. Copy paper feed mechanism. 4,354,759, Cl. 355-3.0SH.
- Burgdorf, Jochen, to ITT Industries, Inc. Hydraulic brake-actuating device. 4,354,716, Cl. 303-119.000.
- Burl, Michael: *See—*
  - Young, Ian R.; and Burl, Michael, 4,355,282, Cl. 324-309.000.
- Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., to United States of America, Air Force. Method for testing and analyzing surface acoustic wave interdigital transducers. 4,355,278, Cl. 324-158.00R.
- Burnstein, Philip J.: *See—*
  - Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., 4,354,652, Cl. 248-201.000.
- Burris, Steven J.: *See—*
  - Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.
- Burroughs Corporation: *See—*
  - Gould, Robert T. M., 4,355,376, Cl. 365-200.000.
  - Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.
- Burroughs Wellcome Co.: *See—*
  - Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,355,179, Cl. 564-177.000.
  - Lazarus, Norman R., 4,355,025, Cl. 424-177.000.
- Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., to Allen-Bradley Company. Motor heating control with interlocked dual isolating switches. 4,355,269, Cl. 318-436.000.
- Burtt, Richard F.: *See—*
  - Murfitt, Robert R.; and Burtt, Richard F., 4,354,508, Cl. 128-798.000.
- Bury, Cecil T., to David Brown Tractors, Ltd. Tractor engine air supply means. 4,354,458, Cl. 123-52.00M.
- Busch, Lloyd E.: *See—*
  - Myers, George D.; and Busch, Lloyd E., 4,354,923, Cl. 208-113.000.
- Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbacher Huette. Process for filtering sludge-like materials in a filter press. 4,354,947, Cl. 210-790.000.
- Butland, Peter. Process for producing a natural fruit candy. 4,355,050, Cl. 426-615.000.
- Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., to Mobil Oil Corporation. Conversion of synthesis gas with iron-containing catalyst. 4,354,963, Cl. 252-455.00Z.
- Butterwick, Gilbert N., to RCA Corporation. Photomultiplier tube having a stress isolation cage assembly. 4,355,258, Cl. 313-95.000.
- Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., to International Business Machines Corp. Address generating mechanism for multiple virtual spaces. 4,355,355, Cl. 364-200.000.
- Butz, David E., to Data Packaging Corporation. Disc pack with snap on handle. 4,355,340, Cl. 360-133.000.
- Butz, Robert F.: *See—*
  - Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,355,179, Cl. 564-177.000.
- Butzke, Jurgen: *See—*
  - Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.
- Bytzek, Max: *See—*
  - Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.
- C. F. Distributions, Inc.: *See—*
  - Meeder, Ernest P., 4,354,841, Cl. 434-157.000.
- C. van der Lely N.V.: *See—*
  - van der Lely, Ary; and Bom, Cornelis J. G., 4,354,557, Cl. 172-49.500.
- Cable Technology Labs., Inc.: *See—*
  - Bahder, George, 4,354,992, Cl. 264-85.000.
- Cabot Corporation: *See—*
  - Morgan, Allan C.; and Puckett, Dan K., 4,354,592, Cl. 198-703.000.
- Cairo, Joseph A.: *See—*
  - Richardson, Gerry D.; and Cairo, Joseph A., 4,354,984, Cl. 261-66.000.
- Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., to Otis Engineering Corporation. Well safety valve. 4,354,554, Cl. 166-321.000.
- Callanan, Robert F.: *See—*
  - Soutsos, Michael D.; and Callanan, Robert F., 4,354,529, Cl. 138-96.00T.
- Calundann, Gordon W.: *See—*
  - Charbonneau, Larry F.; and Calundann, Gordon W., 4,355,134, Cl. 524-605.000.
  - East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., 4,355,132, Cl. 524-602.000.
  - East, Anthony J.; and Calundann, Gordon W., 4,355,133, Cl. 524-604.000.
- Calvert, Gareld D.: *See—*
  - Brown, Donald L.; and Calvert, Gareld D., 4,354,599, Cl. 206-503.000.
- Calvert, Thomas J.: *See—*
  - Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.
- Cameron Iron Works, Inc.: *See—*
  - Campbell, Frank, Jr., 4,354,824, Cl. 432-3.000.
- Camp, Ronald L., to BASF Wyandotte Corporation. Thickening aqueous systems with alpha-olefin oxide-modified liquid polyether thickeners. 4,354,956, Cl. 252-316.000.
- Camp, Vernon D., to Cavalier Corporation. Alternate column circuit reciprocator for multiple column vending machines. 4,354,616, Cl. 221-116.000.
- Campagna, Anthony J.: *See—*
  - Wheeler, Edward S.; and Campagna, Anthony J., 4,355,200, Cl. 174-140.00S.
- Campbell, Bruce D.; and Chapman, Lynn O., to Raychem Corporation. Apparatus for use in making a selectively vapor deposition coated tubular article. 4,354,456, Cl. 118-721.000.
- Campbell, Frank, Jr., to Cameron Iron Works, Inc. Method and device for reducing heat flow from a workpiece to a skip pipe. 4,354,824, Cl. 432-3.000.
- Canadian Stackpole Limited: *See—*
  - Total, Robert V., 4,354,887, Cl. 156-64.000.
- Cannavo', Christian G.; Espagnacq, Andre'; and Riffault, Marie L., to Etat Francais represente par le Delegue General pour l'Armement. Hot-wire ignition initiator for propellant charges. 4,354,432, Cl. 102-202.700.
- Cantello, Barrie C. C.; and White, Susan M., to Beecham Group Limited. Benzimidazoline derivatives and pharmaceutical compositions containing them. 4,355,004, Cl. 422-246.000.
- Cantoni, Angelo, to Solar 77 S.p.A. Emulsifying assembly. 4,354,762, Cl. 366-160.000.
- Cantwell, Thomas C.: *See—*
  - Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.
- Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
  - Eichinger, Johann, 4,354,846, Cl. 440-52.000.
- Carl Still GmbH & Co. KG, Firma: *See—*
  - Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,354,903, Cl. 201-6.000.
- Carlson, David H. J., to UOP Inc. Catalytic composite and process for use. 4,354,926, Cl. 208-207.000.
- Carlson, William P.: *See—*
  - Moravec, John V.; Carlson, William P.; and McGowan, Michael J., 4,354,418, Cl. 84-454.000.
- Carlsson, Bror-Erland. Device for heating liquid for one or several washer systems. 4,354,548, Cl. 165-41.000.
- Carone, Robert A. Hand gun with improved barrel mounting pin. 4,354,322, Cl. 42-75.00D.
- Carpenter, Lindell O. Miniature collapsible kite and method of making same. 4,354,647, Cl. 244-153.00R.
- Carrico, Robert J.: *See—*
  - Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,355,165, Cl. 544-237.000.
- Carte, Clyde R., to Valcour Imprinted Papers, Inc. Place mat producing and dispensing apparatus. 4,354,408, Cl. 83-162.000.
- Caterpillar Tractor Co.: *See—*
  - Bianchetta, Donald L., 4,354,420, Cl. 91-6.000.
  - Dezelan, Joseph E., 4,354,351, Cl. 60-456.000.
  - Gudat, Adam J., 4,355,364, Cl. 364-565.000.
  - McMillan, William D., 4,354,527, Cl. 137-625.630.
  - Shoup, Stephen G., 4,354,692, Cl. 280-495.000.
- Cavalier Corporation: *See—*
  - Camp, Vernon D., 4,354,616, Cl. 221-116.000.
  - Lindsey, James C., 4,354,615, Cl. 221-116.000.
- Cederstrand, Carl N.: *See—*
  - Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., 4,355,233, Cl. 250-343.000.
- Celanese Corporation: *See—*
  - Charbonneau, Larry F.; and Calundann, Gordon W., 4,355,134, Cl. 524-605.000.
  - East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., 4,355,132, Cl. 524-602.000.

  - East, Anthony J.; and Calundann, Gordon W., 4,355,133, Cl. 524-604.000.
  - Maxwell, Peter C., 4,355,107, Cl. 435-142.000.
  - Williams, Albert G., 4,354,994, Cl. 264-169.000.
  - Williams, Albert G., 4,355,152, Cl. 528-191.000.
- Cello, Linda M.: *See—*
  - Smeltzer, Richard H.; and Cello, Linda M., 4,354,327, Cl. 47-58.000.
- Chai, An-Ti, to United States of America, National Aeronautics and Space Administration. Solar cell having improved back surface reflector. 4,355,196, Cl. 136-259.000.
- Chamberlain, Robert A., to Northwestern Ohio Tractor Pullers Assoc. Tractor pull sled. 4,354,390, Cl. 73-862.030.
- Champion International Corporation: *See—*
  - Lavery, John J., 4,354,596, Cl. 206-45.310.
  - Roccaforte, Harry I., 4,354,630, Cl. 229-39.00R.
  - Schillinger, Joseph F., 4,354,598, Cl. 206-462.000.
- Champion Spark Plug Europe S.A.: *See—*
  - Le Sausse, Robert T.; and Van den Berg, Johan H., 4,354,293, Cl. 15-250.320.
- Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J. Electric arc apparatus. 4,355,262, Cl. 315-111.110.
- Chan, David S. K., to Schlumberger Technology Corporation. Dipmeter data processing technique. 4,355,357, Cl. 364-422.000.
- Chandler Evans Inc.: *See—*
  - Sundberg, Jack G., 4,354,809, Cl. 418-268.000.
- Chang, David C., to Du Pont de Nemours, E. I., and Company. Clear coat/color coat finish containing ultraviolet light stabilizer. 4,355,071, Cl. 428-334.000.
- Chapman, Lynn O.: *See—*
  - Campbell, Bruce D.; and Chapman, Lynn O., 4,354,456, Cl. 118-721.000.
- Charbonneau, Larry F.; and Calundann, Gordon W., to Celanese Corporation. Wholly aromatic polyester capable of forming an anisotropic melt phase at an advantageously reduced temperature. 4,355,134, Cl. 524-605.000.
- Charbonneau, Larry F.: *See—*
  - East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., 4,355,132, Cl. 524-602.000.
- Charles, James A., to Dana Corporation. Speed change mechanism with load bearing saddle. 4,354,396, Cl. 74-104.000.
- Charlton, Homer M.: *See—*
  - Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.
- Chaudhary, Vinod K.: *See—*
  - Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.
  - Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.
- Chemische Werke Huels Aktiengesellschaft: *See—*
  - Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,355,058, Cl. 427-386.000.
- Chester, Arthur W.: *See—*
  - Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., 4,354,963, Cl. 252-455.00Z.
- Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, to Deltaglass S.A. Photocured lamina of unsaturated urethane/monomer adhesive blend with a transparent layer. 4,355,077, Cl. 428-412.000.
- Chevron Research Company: *See—*
  - Lewis, Robert T., 4,354,856, Cl. 55-3.000.
  - Miller, Stephen J., 4,354,924, Cl. 208-120.000.
  - Rosenthal, Joel W.; and Dahlberg, Arthur J., 4,354,920, Cl. 208-10.000.
  - Sherwood, John W. C., 4,355,379, Cl. 367-68.000.
  - Sweeney, W. Alan, 4,354,855, Cl. 44-56.000.
- Chia, E. Henry: *See—*
  - Adams, Ronald D.; and Chia, E. Henry, 4,354,880, Cl. 148-2.000.
- Chicoye, Etzer: *See—*
  - Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.
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- Consort Project Developments Limited: *See—*
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  - Powers, Larry J.; and Vickers, Thomas M., 4,354,875, Cl. 106-74.000.
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  - Goodell, Thomas W.; and Clark, Forrest E., 4,354,392, Cl. 73-863.860.
- Dixon, Bernard, to Dixon International Limited. Method of making intumescent seals. 4,354,304, Cl. 29-527.100.
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- Dobry, Alan M., to Standard Oil Company (Indiana). Clarification of ammonium polyphosphate solutions. 4,354,943, Cl. 210-727.000.
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  - Noack, Fritz, 4,354,773, Cl. 404-41.000.
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- Dodd, Thomas C.; and Emerson, John A., to Western Electric Company Inc. Method of selectively depositing a metal on a surface by means of sputtering. 4,354,911, Cl. 204-192.0EC.
- Doeinghaus, Herman: *See—*
  - Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, 4,354,654, Cl. 248-663.000.
- Doemer, Josef; and Thanhaeuser, Gerhard, to Siemens Aktiengesellschaft. Transmitting amplifier for a remote fed intermediate regenerator. 4,355,400, Cl. 375-4.000.
- Doi, Toshitada; and Iga, Akira, to Sony Corporation. Burst-error correcting system. 4,355,392, Cl. 371-45.000.
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  - Dolby, Ray M., 4,355,383, Cl. 369-120.000.
- Dolby, Ray M., to Dolby Laboratories Licensing Corporation. Apparatus for scanning variable area optical sound tracks by parallel processing discrete photosensor outputs. 4,355,383, Cl. 369-120.000.
- Dolenc, Bozidar: *See—*
  - Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, 4,354,940, Cl. 210-698.000.
- Dolling, Ulf H., to Merck & Co., Inc. Preparation of 5(halophenyl)salicylic acid compounds. 4,355,174, Cl. 562-469.000.
- Dombroski, John R.; and Light, Fred W., Jr., to Eastman Kodak Company. Solvent-resistant unsaturated polyester compositions. 4,355,136, Cl. 525-35.000.
- Dooley, James L.: *See—*
  - Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,354,565, Cl. 180-54.00B.
- Dorer, Wilfried; Fuss, Manfred; and Lehmann, Werner, to Mathias Bauerle GmbH. Device for distributing flexible sheets in collecting bins. 4,354,674, Cl. 271-296.000.
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  - Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., 4,355,034, Cl. 424-263.000.
- Dorn, Friedrich-Wilhelm: *See—*
  - Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.
- Dotsko, Martin; Klemm, Robert E.; and Peters, David L., to Singer Company, The. Variable gain screen permitting off-axis viewing with image brightness remaining constant. 4,354,737, Cl. 350-117.000.
- Dougherty, Lawrence W., to Zenith Radio Corporation. Shadow mask suspension means for color cathode ray picture tubes. 4,355,260, Cl. 313-404.000.
- Dougherty, William R.: *See—*
  - Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., 4,355,363, Cl. 364-509.000.

- Douren, Lars: *See—*
  - Broberg, Hans; Douren, Lars; and Troeng, John, 4,354,899, Cl. 159-13.00A.
- Dow Chemical Company, The: *See—*
  - Willis, Stephen B., Jr.; and Henry, Joseph D., 4,355,181, Cl. 564-477.000.
  - Zingg, Warren M., 4,354,552, Cl. 166-90.000.
- Dow Corning Corporation: *See—*
  - Bartos, Donald M., 4,354,488, Cl. 128-205.250.
  - January, James R., 4,355,135, Cl. 524-767.000.
  - Saam, John C.; and Chou, Yungnien J., 4,355,154, Cl. 528-274.000.
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  - Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.
- Dow Corning Limited: *See—*
  - Dams, Michael J., 4,355,129, Cl. 524-435.000.
- Drag Specialties, Inc.: *See—*
  - Rudd, Thomas H., 4,354,285, Cl. 2-424.000.
- Dravo Corporation: *See—*
  - Cornish, James E., 4,354,792, Cl. 414-359.000.
- Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., to United Technologies Corporation. Fuel heating system for gas turbine engine. 4,354,345, Cl. 60-39.080.
- Drexler, Joannes H. Road post or reflector post. 4,354,772, Cl. 404-10.000.
- Dreyfus, Gerard: *See—*
  - Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,355,235, Cl. 250-376.000.
- Driscoll, Barry J., to Bendix Corporation, The. Electrical resistance apparatus having integral shorting protection. 4,355,293, Cl. 338-184.000.
- Drone, Gary A., to Fiat Allis North America, Inc. Electric vehicle performance sensor and shift point indicator. 4,355,296, Cl. 340-52.00R.
- Dudgeon, Charles D., to General Electric Company. Cured polyester compositions and process for their production. 4,355,123, Cl. 523-511.000.
- Dudley, Carl K.; and Roberts, William J., to Eltra Corporation. Idle speed controller. 4,354,466, Cl. 123-339.000.
- Dungs, Horst: *See—*
  - Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,354,903, Cl. 201-6.000.
- Dunn, Floyd, to Dysan Corporation. Rigid magnetic disc stacker. 4,354,603, Cl. 211-1.500.
- Dunn, Wendell E., Jr. Two stage chlorination process for aluminum value containing source. 4,355,007, Cl. 423-79.000.
- Dunn, Wendell E., Jr., to Reynolds Metals Company. Chlorination process. 4,355,008, Cl. 423-79.000.
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  - Beske, Grant A.; Cohen, Abraham B.; and Uhler, Roger O., 4,355,055, Cl. 427-96.000.
  - Chang, David C., 4,355,071, Cl. 428-334.000.
  - Mouissie, Bob, 4,354,731, Cl. 350-96.210.
  - Myers, Melvyn J., 4,355,041, Cl. 424-273.00R.
  - Pechhold, Engelbert, 4,355,119, Cl. 521-159.000.
  - Wheeler, James W., 4,355,098, Cl. 430-510.000.
- Durance, Robert A.: *See—*
  - Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.
- Durand, Yves: *See—*
  - Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.
- Durlach, Jean P., to Les Laboratoires Meram. Novel derivatives of 3-aminopropanesulfonic acid having a reinforced activity on membrane. 4,355,043, Cl. 424-289.000.
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  - Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
- Dutra, Joseph G., Jr. Load stabilizer assembly with pivotal mount for a forklift truck. 4,354,795, Cl. 414-622.000.
- DuVall, Wilbur E., to Xerox Corporation. Servo capture system. 4,355,273, Cl. 318-561.000.
- Duzich, John J., to Grumman Aerospace Corporation. Accumulator condition indicator with spring biasing to indicate linear displacement of a piston. 4,355,280, Cl. 324-207.000.
- Dyke, Leslie A., to Consort Project Developments Limited. Collapsable structures. 4,354,331, Cl. 52-66.000.
- Dysan Corporation: *See—*
  - Dunn, Floyd, 4,354,603, Cl. 211-1.500.
- Eakin, Lourie L. Cigarette snuffer. 4,354,510, Cl. 131-235.00R.
- Easley, Othel D., Jr., to Reactor Services International, Inc. Pressure/demand exhalation valve. 4,354,520, Cl. 137-543.230.
- East, Anthony J.; Calundann, Gordon W.; and Charbonneau, Larry F., to Celanese Corporation. Anisotropic melt phase forming poly(ester-amide) derived from p-hydroxybenzoic acid, 2,6-naphthalenedicarboxylic acid, aromatic monomer capable of forming an amide linkage, and, optionally, hydroquinone and additional carbocyclic dicarboxylic acid. 4,355,132, Cl. 524-602.000.
- East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Polyester of 6-hydroxy-2-naphthoic acid, 4-hydroxy benzoic acid, 1,4-cyclohexanedicarboxylic acid, and aromatic diol capable of readily undergoing melt processing to form articles possessing high impact properties. 4,355,133, Cl. 524-604.000.
- Eastman Kodak Company: *See—*
  - Dombroski, John R.; and Light, Fred W., Jr., 4,355,136, Cl. 525-35.000.
  - Fleischer, Jean C.; Clark, Gary T.; and Weaver, Max A., 4,354,970, Cl. 260-158.000.
  - Gysling, Henry J.; and Gardner, Sylvia A., 4,355,097, Cl. 430-495.000.
  - Martin, Thomas W., 4,355,087, Cl. 430-7.000.
  - Zannucci, Joseph S., 4,355,080, Cl. 428-483.000.
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  - Huguenin, Freddy; and Wattenhofer, Jean-Pierre, 4,355,380, Cl. 368-71.000.
- Ebihara, Yasunori: *See—*
  - Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, 4,355,257, Cl. 310-361.000.
- Eblen, James H. Fishing rod holding device. 4,354,324, Cl. 43-15.000.
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  - Edwards, Norman, 4,354,713, Cl. 303-8.000.
- Edmundowicz, John M.; and Allanson, Ernest E., to Eli Lilly and Company. Non-extractive penicillin V recovery process. 4,354,971, Cl. 260-239.100.
- Edwards, Norman, to Echlin Inc. Dual area metering valve with variable reaction assembly. 4,354,713, Cl. 303-8.000.
- Edwards, Thomas C.: *See—*
  - Shank, Wayne C.; and Edwards, Thomas C., 4,354,807, Cl. 418-13.000.
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  - Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
- Eggers, Carl A.; and Galvin, Gerald D., to Shell Oil Company. Hydraulic fluid, hydraulic equipment containing this fluid and a concentrate of this fluid. 4,354,949, Cl. 252-39.000.
- Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, to Massachusetts General Hospital, The. Antibody fragment compositions and process. 4,355,023, Cl. 424-85.000.
- Eichbaum, Gerhard; and Heidemann, Wolfgang, to Mannesmann DeMag A.G. Lining apparatus for metallurgical vessels, particularly for steel mill converters and/or blast furnaces. 4,354,670, Cl. 266-281.000.
- Eichholz, Heinz. Electric vehicle. 4,354,569, Cl. 180-211.000.
- Eichinger, Johann, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Nonsteerable drive mechanism for a watercraft. 4,354,846, Cl. 440-52.000.
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  - Ida, Jinsei; Matsuo, Kenzaburo; Ejiri, Hiroshi; and Ishibashi, Takeshi, 4,354,306, Cl. 29-568.000.
- Electric Power Research Institute, Inc.: *See—*
  - Hingorani, Narain G., 4,355,241, Cl. 307-102.000.
  - Lin, Kou C., 4,355,221, Cl. 219-10.430.
- Electromark, Div. of Mohawk International Inc.: *See—*
  - Szeliga, Philip C., 4,354,914, Cl. 204-224.00R.
- Eli Lilly and Company: *See—*
  - DeLong, Donald C., 4,355,030, Cl. 424-250.000.
  - Edmundowicz, John M.; and Allanson, Ernest E., 4,354,971, Cl. 260-239.100.
  - Koppel, Gary A.; and Cooper, Robin D. G., 4,355,172, Cl. 560-29.000.
  - Ridolfo, Anthony S., 4,355,029, Cl. 424-232.000.
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  - Langdon, Joel A., 4,354,282, Cl. 2-115.000.
- Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, to AES Technology Systems, Inc. Method and apparatus for transferring envelopes. 4,354,789, Cl. 414-104.000.
- Ellis, Theron L., to International Business Machines Corporation. Method for making laminated multilayer circuit boards. 4,354,895, Cl. 156-631.000.
- Eloff, Carl J.: *See—*
  - Warlick, Frank M.; and Eloff, Carl J., 4,354,946, Cl. 210-774.000.
- Eltra Corporation: *See—*
  - Dudley, Carl K.; and Roberts, William J., 4,354,466, Cl. 123-339.000.
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  - Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, 4,354,693, Cl. 280-714.000.
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  - Griffin, Gerald J. L.; and Emck, Adrian J., 4,354,879, Cl. 106-163.00R.
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  - Dodd, Thomas C.; and Emerson, John A., 4,354,911, Cl. 204-192.0EC.
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  - Huffman, Carl F.; and Emerson, Martha M., 4,355,191, Cl. 568-827.000.
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  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
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  - Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.
- Ennis, George T., to N/S Car Wash Enterprises, Inc. Spring coupled brush assembly for vehicle washing apparatus. 4,354,291, Cl. 15-53.0AB.

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  - Kohonen, Raimo, 4,354,934, Cl. 210-386.000.
- Environmental Control Products, Inc.: *See—*
  - McRee, Robert E., Jr., 4,354,440, Cl. 110-346.000.
- Epstein, Ronald A.; and Mink, Robert I., to Stauffer Chemical Company. Catalyst for polymerizing olefins. 4,354,959, Cl. 252-429.00B.
- Ericsson, Gote. Suspension device. 4,354,653, Cl. 248-317.000.
- Eris, Altan: *See—*
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- Ernst, Donald M., to Jones & Laughlin Steel Incorporated. Method and apparatus for determining completion of a cast in blast furnace casthouse pollution suppression system. 4,354,668, Cl. 266-45.000.
- Ernst Leitz Wetzlar GmbH: *See—*
  - Jacoby, Hans-Dieter, 4,354,761, Cl. 356-378.000.
- Esashi, Masayoshi: *See—*
  - Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, 4,354,308, Cl. 29-571.000.
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  - Vohringer, Gerhard F.; and Hestermann, Gerhard, 4,354,451, Cl. 118-326.000.
- Espagnacq, Andre': *See—*
  - Cannavo', Christian G.; Espagnacq, Andre'; and Riffault, Marie L., 4,354,432, Cl. 102-202.700.
- Essex Group, Inc.: *See—*
  - Turner, Jesse H.; and Wallace, Elmer E., 4,354,633, Cl. 236-1.00H.
- Estes, James W., to Airco, Inc. Methods and apparatus for calcining carbonaceous material. 4,354,829, Cl. 432-117.000.
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  - Cannavo', Christian G.; Espagnacq, Andre'; and Riffault, Marie L., 4,354,432, Cl. 102-202.700.
- Evans, Edwin R., to General Electric Company. Heat strength curable silicone rubber compositions. 4,355,121, Cl. 523-213.000.
- Evans, Mervyn L. Turf cutting and rolling apparatus. 4,354,556, Cl. 172-19.000.
- Evans, Stephen E.: *See—*
  - Schumacher, Ernest W.; and Evans, Stephen E., 4,354,362, Cl. 62-474.000.
- Evanuik, Richard N.: *See—*
  - Fertig, Glenn H.; Nardozzi, Daniel R.; and Evanuik, Richard N., 4,355,234, Cl. 250-343.000.
- Exxon Research and Engineering Co.: *See—*
  - Johnson, Jack W.; and Jacobson, Allan J., 4,355,161, Cl. 544-181.000.
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  - Schorfheide, James J., 4,354,925, Cl. 208-140.000.
  - Sims, J. Robert, 4,354,421, Cl. 91-39.000.
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  - Noack, Fritz, 4,354,773, Cl. 404-41.000.
- Fabris, Hubert J.: *See—*
  - Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
- Facet Enterprises, Inc.: *See—*
  - Mercer, James B., 4,355,128, Cl. 524-423.000.
- Fairchild, James J.: *See—*
  - Hughey, Robert M.; Fairchild, James J.; and Brown, James H.; 4,355,309, Cl. 340-825.530.
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  - Chowdhury, Mofazzal H.; and Bliss, John W., 4,354,624, Cl. 222-608.000.
- Farr, Glyn P. R.; and Mortimer, Ivan, to Lucas Industries Limited. Hydraulic anti-skid braking systems for vehicles. 4,354,715, Cl. 303-116.000.
- Farrer, Michael, to Gould Advance Limited. Power supply apparatus. 4,355,353, Cl. 363-21.000.
- Favish, Michael: *See—*
  - Holder, H. Dennis; Goodman, Herb L.; and Favish, Michael, 4,354,364, Cl. 68-18.00R.
- Fee, Graham M.: *See—*
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- Feldman, Brian. Spacial orientation instruction device. 4,354,843, Cl. 434-236.000.
- Feldstein, Nathan. Electrolessly metallized silver coated article. 4,355,083, Cl. 428-621.000.
- Felici, Maurizio; and Menniti, Pietro, to SGS-ATES Componenti Elettronici S.p.A. Protective device electronic semiconductor component. 4,355,344, Cl. 361-103.000.
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- Fiat Allis North America, Inc.: *See—*
  - Drone, Gary A., 4,355,296, Cl. 340-52.00R.
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  - Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
- Fiber-Metal Products Company, The: *See—*
  - Walters, Eugene G., Jr.; and Ruck, Heinz E., 4,354,279, Cl. 2-8.000.
- Filipowicz, Maciej K.; and Hayes, Cecil, to W. M. Still & Sons Limited. Coffee and tea making or brewing apparatus. 4,354,427, Cl. 99-307.000.
- Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., to Burroughs Wellcome Co. Radioactive nuclide labeled propiophenone compounds. 4,355,179, Cl. 564-177.000.
- Finn, Everett N.: *See—*
  - Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., 4,354,591, Cl. 198-451.000.
- Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing cylinder engagement pressure regulating system. 4,354,431, Cl. 101-247.000.
- Fisher, Dennis H.: *See—*
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- Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., to McNally Pittsburg Mfg. Corp. Method and apparatus for drying coal. 4,354,825, Cl. 432-14.000.
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  - Powell, Robert Y.; and Fisher, Jeff A., 4,354,535, Cl. 140-93.00A.
- Fiske, Herbert E. Automatic machine for making crushed ice. 4,354,360, Cl. 62-320.000.
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- Fix, Paul W. Sucker rod shock absorber. 4,354,397, Cl. 74-108.000.
- Fleischer, Jean C.; Clark, Gary T.; and Weaver, Max A., to Eastman Kodak Company. Indoline coupled isothiazole azo dyes. 4,354,970, Cl. 260-158.000.
- Fluck, Rene, to SIG Schweizerische Industrie-Gesellschaft. Method and apparatus for grouping flat items in stacks. 4,354,589, Cl. 198-419.000.
- Ford Aerospace & Communications Corp.: *See—*
  - Hwang, Yeongming; Han, Ching C.; and Ford, David F., 4,355,316, Cl. 343-840.000.
- Ford, David F.: *See—*
  - Hwang, Yeongming; Han, Ching C.; and Ford, David F., 4,355,316, Cl. 343-840.000.
- Forehand, Frederic N.; and Mecklenborg, Richard A., to Singer Company, The. Front projection screen with precision gain control. 4,354,738, Cl. 350-126.000.
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- Franchet, Leon G., to Claude, S.A. High current draining capacity micro-lightning arrester. 4,355,345, Cl. 361-117.000.
- Frank, Peter J.: *See—*
  - Norton, Richard V.; Fisher, Dennis H.; Graham, Garry M.; and Frank, Peter J., 4,355,194, Cl. 585-14.000.
- Franke, Helmut: *See—*
  - Birkenbach, Alfred; and Franke, Helmut, 4,354,581, Cl. 188-71.900.
- Franz, James H., Jr.; and Jones, Stanley W., to Westinghouse Electric Corp. Propulsion motor control apparatus. 4,355,267, Cl. 318-89.000.
- Franzolini, Luciano, to Sp. El. s.r.l. Power circuit including means for automatically protecting a chopping transistor thereof. 4,355,342, Cl. 361-91.000.
- Fraschini, Mario. Thermometric compositions for measuring and indicating low temperatures and related thermometric devices. 4,354,385, Cl. 374-162.000.
- Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., to BRS, Inc. Athletic shoe with heel stabilizer. 4,354,318, Cl. 36-30.00R.
- Frederick Electronics Corporation: *See—*
  - Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., 4,355,403, Cl. 375-36.000.
- Fredman, Harry. Bed frame with adjustable headboard engager or engager-extender. 4,354,287, Cl. 5-185.000.
- Freeman, Richard F.: *See—*
  - Mesick, Jack H.; Shoemaker, Lewis E.; and Freeman, Richard F., 4,355,224, Cl. 219-137.0WM.
- Friends, Gary D.: *See—*
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- Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, to Bayer Aktiengesellschaft. Apparatus for colorimetrically measuring traces of gas. 4,354,854, Cl. 23-232.00R.
- Frohning, Carl D.: *See—*
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- Frommelt, Wolfgang: *See—*
  - Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,354,635, Cl. 239-11.000.
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  - Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.

- Fuderer, Andrija: *See—*
  - Wessels, Anton; and Fuderer, Andrija, 4,354,929, Cl. 208-310.00Z.
- Fugakawa, Yasuo: *See—*
  - Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.
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  - Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
- Fuji Jukogyo Kabushiki Kaisha: *See—*
  - Satoh, Nobuo, 4,354,694, Cl. 280-802.000.
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  - Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.
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  - Tatsuoka, Masao; and Fujimura, Katsunori, 4,354,358, Cl. 62-271.000.
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  - Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
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  - Arakawa, Hideki, 4,355,375, Cl. 365-185.000.
  - Isogai, Hideaki, 4,355,245, Cl. 307-455.000.
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  - Eggers, Carl A.; and Galvin, Gerald D., 4,354,949, Cl. 252-39.000.
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- Gamson, Bernard W.; and Hayden, Howard W., Jr., to Martin Marietta Corporation. Aluminum electrolytic cell cathode waste recovery. 4,355,017, Cl. 423-484.000.
- Garbark, Roman F., to D. Gottlieb & Co. Drop target assembly for pinball game. 4,354,681, Cl. 273-121.00R.
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- Gardner, Sylvia A.: *See—*
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- Garrod, Norman J. Covers for cassette boxes. 4,354,597, Cl. 206-387.000.
- Gartland, Albert J., Jr., to Harvey Hubbell Incorporated. Screw retaining and aligning cover plate. 4,355,198, Cl. 174-66.000.
- Garvin, Billy R., to Docutel Corporation. Automatic banking machine. 4,355,369, Cl. 364-900.000.
- Gash, Duggan J., to Koninklijke Emballage Industrie Van Leer, B.V. Dry lamination. 4,355,076, Cl. 428-411.000.
- Gates Learjet Corporation: *See—*
  - Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.
- Gauger, Gary A.; and Mason, Marco J., to McGraw-Edison Company. Electrical apparatus having an improved dielectric system. 4,355,346, Cl. 361-318.000.
- Geithman, Glenn A.; and Olsen, Donald F., to Boeing Company, The. Induction heater and apparatus for use with stud mounted hot melt fasteners. 4,355,222, Cl. 219-10.570.
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  - Scanlon, Robert T.; and Gelber, Robert M., 4,354,739, Cl. 350-311.000.
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  - Ohkawa, Tihiro, 4,354,998, Cl. 376-140.000.
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  - Cole, Herbert S., Jr., 4,354,740, Cl. 350-340.000.
  - Cushing, Donald S., 4,355,217, Cl. 200-38.00R.
  - Dudgeon, Charles D., 4,355,123, Cl. 523-511.000.
  - Evans, Edwin R., 4,355,121, Cl. 523-213.000.
  - Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., 4,355,331, Cl. 358-111.000.
  - Haaf, William R.; and Reinhard, Donald L., 4,355,126, Cl. 524-411.000.
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  - Langdon, Robert S., 4,355,250, Cl. 310-88.000.
  - Lee, Yue-Guey L.; and Zamek, Otto S., 4,354,965, Cl. 524-104.000.
  - Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., 4,355,242, Cl. 307-252.00N.
  - Losert, Gerhard K., 4,354,384, Cl. 374-134.000.
  - Tomlinson, Leroy O.; and Cuscino, Richard T., 4,354,347, Cl. 60-39.18B.
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  - Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,354,815, Cl. 425-236.000.
  - Spencer, Marcia D.; Parliment, Thomas H.; and Giordano, Denise A., 4,355,049, Cl. 426-535.000.
- General Motors Corporation: *See—*
  - Cook, Keith R.; Pozenel, John E.; and Graham, Donald E., 4,355,270, Cl. 318-443.000.
- General Signal Corporation: *See—*
  - Grobel, Edward W., 4,355,003, Cl. 422-206.000.
- General Tire & Rubber Company, The: *See—*
  - Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
  - Herold, Robert J.; and Bingham, Robert E., 4,355,188, Cl. 568-620.000.
  - Wise, Richard M., 4,355,131, Cl. 524-504.000.
- Gensike, Karl H.; and Marsh, Robert C., to Photomatrix Corp. Microfiche collating stacker. 4,354,787, Cl. 414-54.000.
- Genter, Roland E.; and Cook, Steven R., to Digital Switch Corporation. Non-blocking expandable switching matrix for a telecommunication system. 4,355,384, Cl. 370-64.000.
- George, John B.; and Testin, William J., to RCA Corporation. Tuning mode arrangement useful for restricting channel selection to certain channels. 4,355,415, Cl. 455-185.000.
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  - Lawford, Hugh G., 4,355,106, Cl. 435-101.000.
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- Gerch, Edward L., to Kingport, Ltd. Handbag. 4,354,542, Cl. 150-34.000.
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  - Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., 4,354,649, Cl. 246-187.00B.
- Geyer, Gerhard; and Kuschmierz, Heinz, to Robert Bosch GmbH. Injection instant adjuster for internal combustion engines. 4,354,473, Cl. 123-501.000.

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  - Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
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  - Plummer, Harvey R.; and Keller, William E., 4,354,305, Cl. 29-568.000.
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- Gill, Dorothy E.: *See—*
  - Gill, John B.; and Gill, Dorothy E., 4,354,623, Cl. 222-102.000.
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  - Beisecker, Mark B., 4,354,482, Cl. 126-409.000.
  - Trotta, Robert A., 4,354,312, Cl. 30-47.000.
- Gilman, Robert W., to Ingersoll-Rand Company. Composite extrusion die. 4,354,817, Cl. 425-331.000.
- Giordano, Denise A.: *See—*
  - Spencer, Marcia D.; Parliment, Thomas H.; and Giordano, Denise A., 4,355,049, Cl. 426-535.000.
- Girod, Hansjochen: *See—*
  - Piepenbreier, Ernst; and Girod, Hansjochen, 4,354,850, Cl. 464-32.000.
- Giroldini, William: *See—*
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- Giusti, Giampiero. Automatic system for the formation and distribution of layers of groups of sheets. 4,354,788, Cl. 414-55.000.
- Glaser, Joseph, II. Tone changer for stringed instrument. 4,354,417, Cl. 84-312.00R.
- Glavas, Xenophon; G.; and Thompson, Robert E., to International Telephone and Telegraph Corporation. Collapsible mandrel for precise winding of a coil. 4,354,645, Cl. 242-117.000.
- Glickman, David: *See—*
  - Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,355,371, Cl. 364-900.000.
- Global Gym & Fitness Equipment Limited: *See—*
  - Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.
- Goebel, Franz, to GTE Products Corp. Electrochemical cell. 4,355,085, Cl. 429-101.000.
- Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, to BASF Aktiengesellschaft. Preparation of primary aromatic amines from cyclic alcohols and/or ketones. 4,355,180, Cl. 564-398.000.
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- Goldberg, Erwin, to Northwestern University. Antigenic linear peptide compound. 4,354,967, Cl. 260-112.50R.
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  - Johnson, Tod; Tarshis, Andrew; and Goldberg, George, 4,355,372, Cl. 364-900.000.
- Golden, Richard I. Blood pressure cuff. 4,354,503, Cl. 128-686.000.
- Goldhammer, Walter M. Modified pressure casting process. 4,354,545, Cl. 164-457.000.
- Goldsmith, Riley G.; and Mercier, John A., to Conoco Inc. Temporary mooring of tension leg platforms. 4,354,446, Cl. 114-230.000.
- Goldstein, Theodore P.; and Rollmann, Louis D., to Mobil Oil Corporation. Metals beneficiation process. 4,354,870, Cl. 75-108.000.
- Gomberg, Henry J.; Lee, Rupert A.; and Lewis, John G., to Texas Gas Transmission Corporation. Combined radiolytic and thermochemical process for generation of hydrogen. 4,354,906, Cl. 204-157.10H.
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- Gooding, Elwyn R., to University of Michigan, The Regents of the. Headband assembly for protective headgear. 4,354,283, Cl. 2-413.000.
- Gooding, Elwyn R., to University of Michigan, The Regents of the. Protective liner for outdoor headgear. 4,354,284, Cl. 2-413.000.
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  - Holder, H. Dennis; Goodman, Herb L.; and Favish, Michael, 4,354,364, Cl. 68-18.00R.
- Gorgas, Donald: *See—*
  - Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, 4,354,842, Cl. 434-195.000.
- Gorman, James T.: *See—*
  - Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.
- Gotoh, Kuniyuki: *See—*
  - Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.
- Gould Advance Limited: *See—*
  - Farrer, Michael, 4,355,353, Cl. 363-21.000.
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  - Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.
- Gould, Robert T. M., to Burroughs Corporation. Apparatus and method for utilizing partially defective memory devices. 4,355,376, Cl. 365-200.000.
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- Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Preloaded electrical contact terminal. 4,354,729, Cl. 339-258.00R.
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- Graham, Garry M.: *See—*
  - Norton, Richard V.; Fisher, Dennis H.; Graham, Garry M.; and Frank, Peter J., 4,355,194, Cl. 585-14.000.
- Grant, Frederic F., to Bell & Howell Company. Reel mounting methods and apparatus. 4,354,644, Cl. 242-68.300.
- Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, to Chemische Werke Huels Aktiengesellschaft. Powdery coating media and their use. 4,355,058, Cl. 427-386.000.
- Grassauer, Willie K.; and Robinson, William M., to Raychem Corporation. Solder delivery system. 4,354,629, Cl. 228-56.000.
- Gray, Glenn E. Ready clamp. 4,354,578, Cl. 187-71.000.
- Green, David T., to United States Surgical Corporation. Surgical stapler apparatus having pivotally related staple holder and anvil. 4,354,628, Cl. 227-19.000.
- Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., to Medical Laboratory Automation, Inc. Kit for calibrating pipettes. 4,354,376, Cl. 73-1.00H.
- Greer, James B., to Lone Star Steel Company. High performance tubulars for critical oil country applications and process for their preparation. 4,354,882, Cl. 148-12.00R.
- Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, to Sack GmbH. Cold shears and method for cutting billets and bars. 4,354,411, Cl. 83-862.000.
- Griesenbrock, Karl-Heinz, to Jungheinrich Unternehmensverwaltung KG. Electrically controlled travel drive control system for steerable vehicles, particularly fork lift trucks. 4,354,568, Cl. 180-197.000.
- Griffin, Gerald J. L.; and Emck, Adrian J. Utilization of fibrous waste. 4,354,879, Cl. 106-163.00R.
- Griffin, James G.: *See—*
  - Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., 4,354,345, Cl. 60-39.080.
- Grimes, Donald L.; and Haskell, Stanley W., to Polaroid Corporation. Photographic exposure system with computer controlled strobe unit. 4,354,748, Cl. 354-23.00D.
- Grimminger, Albert; and Koch, Heinz, to Werner and Pfleiderer. Extruder with a sheet extrusion head and an associated calender. 4,354,814, Cl. 425-186.000.
- Grobel, Edward W., to General Signal Corporation. Two pass endothermic generator. 4,355,003, Cl. 422-206.000.
- Gross, Thomas A. O., to Jet Spray Corp. Semiconductor switch failure control circuit. 4,355,343, Cl. 361-100.000.
- Grow, Joseph A., Jr.: *See—*
  - Malone, Kenneth B.; and Grow, Joseph A., Jr., 4,354,484, Cl. 126-425.000.
- Growdon, John H.; and Wurtman, Richard J., to Massachusetts Institute of Technology. Process and composition for treating disorders by administering piracetam and choline. 4,355,027, Cl. 424-199.000.
- Grumman Aerospace Corporation: *See—*
  - Duzich, John J., 4,355,280, Cl. 324-207.000.
- GTE Automatic Electric Labs Inc.: *See—*
  - Kosten, Richard B., 4,355,212, Cl. 179-100.00C.
  - Sabon, Robert J., 4,355,209, Cl. 179-18.0FA.
- GTE Products Corporation: *See—*
  - Cohen, Sheppard; and Barakitis, Nikolaos, 4,355,261, Cl. 315-47.000.
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  - Goebel, Franz, 4,355,085, Cl. 429-101.000.
  - Kane, Hugh; and Williams, Bradford J., 4,355,216, Cl. 200-16.00A.
- Gudat, Adam J., to Caterpillar Tractor Co. Velocity sensing system. 4,355,364, Cl. 364-565.000.
- Guidoux, Loic B. Y., to U.S. Philips Corporation. Carrier detector in a modem provided with an echo canceler. 4,355,406, Cl. 375-82.000.
- Gulett, Michael R.: *See—*
  - Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.
- Gulf Oil Corporation: *See—*
  - Lakshmanan, Pallavoor R., 4,355,125, Cl. 524-401.000.
- Gulf & Western Manufacturing Company: *See—*
  - Kent, Willard L., 4,355,295, Cl. 340-41.00R.
- Gulyaev, Jury V.: *See—*
  - Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,355,290, Cl. 333-195.000.
- Gussoni, Giovanni: *See—*
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- Guthrie, Rachael M. Temperature control device. 4,355,347, Cl. 362-30.000.
- Gyobu, Ichiro: *See—*
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- Gysling, Henry J.; and Gardner, Sylvia A., to Eastman Kodak Company. Tellurium (IV) compounds and compositions. 4,355,097, Cl. 430-495.000.

- H. J. Langen & Sons Ltd.: *See—*
  - Langen, Marinus J. M., 4,354,590, Cl. 198-425.000.
- Haaf, William R.; and Reinhard, Donald L., to General Electric Company. Flame retardant, non-dripping compositions of polyphenylene ether and acrylonitrile-butadiene-styrene. 4,355,126, Cl. 524-411.000.
- Haag, Jean-Philippe: *See—*
  - Levy, Michel; and Haag, Jean-Philippe, 4,355,214, Cl. 179-170.200.
- Haba, Hiroaki: *See—*
  - Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, 4,354,620, Cl. 222-14.000.
- Haber, Edgar: *See—*
  - Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, 4,355,023, Cl. 424-85.000.
- Haberkorn, Joseph: *See—*
  - Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, 4,354,812, Cl. 425-144.000.
- Hack, Randolph L.: *See—*
  - Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.
- Hafner-Milac, Natasa: *See—*
  - Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, 4,354,940, Cl. 210-698.000.
- Haga, Ryoichi: *See—*
  - Ishida, Masahiko; Haga, Ryoichi; and Odawara, Yoji, 4,354,936, Cl. 210-602.000.
- Hagglund, Hans, to AB Rescon. Device for determining the level of melt in a ladle or the like. 4,354,382, Cl. 73-290.00R.
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  - Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, 4,355,090, Cl. 430-204.000.
- Hait, James M. Torque driven rotary irrigation system. 4,354,636, Cl. 239-177.000.
- Hall, Charles B.; McBride, Edward D.; and Young, Robert F., to Outboard Marine Corporation. Outboard motor with tilt linkage including pivot link. 4,354,848, Cl. 440-61.000.
- Hall, Glenn E.: *See—*
  - Sagolili, Emmanuel T.; and Hall, Glenn E., 4,354,746, Cl. 354-1.000.
- Hall, Robert J., to Wiggins Teape Group Limited. Apparatus for the spark perforation of sheet materials. 4,355,226, Cl. 219-384.000.
- Hall, Roger W.; and Lotterer, John F., III. Cold storage assembly. 4,354,359, Cl. 62-299.000.
- Hallberg, Rolf O., to Vyrmetoder AB. Process for precipitating heavy metals from wastewater. 4,354,937, Cl. 210-607.000.
- Halter, Mark A.: *See—*
  - Malloy, Thomas P.; Halter, Mark A.; and House, David W., 4,354,904, Cl. 204-59.00R.
- Hamilton, Billy H., to Bell Telephone Laboratories, Incorporated. Auxiliary backup regulator control for paralleled converter circuits controlled by a master regulator. 4,355,240, Cl. 307-44.000.
- Hamilton, C. Howard, to Rockwell International Corporation. Method for superplastic forming. 4,354,369, Cl. 72-38.000.
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  - Laue, Charles E., 4,354,353, Cl. 60-554.000.
- Hammer, Hans; and Jacobi, Heinz. Process for the production of boron-containing nickel-aluminum oxide catalysts. 4,354,960, Cl. 252-432.000.
- Hammer, Klaus-Dieter: *See—*
  - Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.
- Hammond, Kenneth G.; and Maas, Garren E., to Texaco Inc. Mannich base derivative of hydroxyaryl succinimide and hydrocarbon oil composition containing same. 4,354,950, Cl. 252-51.50A.
- Hammond, R. Philip: *See—*
  - Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,354,565, Cl. 180-54.00B.
- Hampshire, Michael J.; and Williamson, Jonathan H., to Ward & Goldstone Limited. Multiplex information handling system. 4,355,385, Cl. 370-85.000.
- Hampson, Edward A. Hand toss-catch game apparatus. 4,354,685, Cl. 273-342.000.
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  - Hwang, Yeongming; Han, Ching C.; and Ford, David F., 4,355,316, Cl. 343-840.000.
- Haney, Bell Charles: *See—*
  - Logan, Clifford K., Jr., 4,354,561, Cl. 175-321.000.
- Hang, Kenneth W.; and Anderson, Wayne M., to RCA Corporation. Partially devitrified porcelain containing $BaO.2MgO.2SiO_2$ and $2MgO.B_2O_3$ crystalline phases obtained from alkali metal free divalent metal oxide borosilicate glass. 4,355,114, Cl. 501-5.000.
- Hang, Kenneth W.; and Anderson, Wayne M., to RCA Corporation. Borosilicate glass frit with MgO and BaO. 4,355,115, Cl. 501-21.000.
- Hans, Waldemar, to Robert Bosch GmbH. Electromagnetically actuatable valve. 4,354,640, Cl. 239-585.000.
- Hansen, Hans J.; and Reynoso, Gustavo, to Hoffmann-La Roche Inc.; and Ideal Wilson Medical Center, The. Assay for vitamin B_{12}. 4,355,018, Cl. 424-1.000.
- Hanson, Marlyn S. Support systems for vehicle mud flaps. 4,354,690, Cl. 280-154.50R.
- Hara, Kunio, to Nifco Inc. Apparatus for attachment of sheet carriers to containers. 4,354,334, Cl. 53-48.000.
- Harada, Norimichi: *See—*
  - Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, 4,354,849, Cl. 440-88.000.
- Harada, Yusuke: *See—*
  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
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- Hardee, Kim C.: *See—*
  - Sud, Rahul; Hardee, Kim C.; and Heightley, John D., 4,355,377, Cl. 365-203.000.
- Hargis, Ivan G.: *See—*
  - Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
- Harms, Wolfgang: *See—*
  - von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, 4,355,163, Cl. 544-189.000.
- Harnisch, Heinz: *See—*
  - Roszinski, Hilmar; and Harnisch, Heinz, 4,354,983, Cl. 260-990.000.
- Harrell, John W.: *See—*
  - Dennis, Charles L.; and Harrell, John W., 4,355,378, Cl. 367-33.000.
- Harrington, Edgar F.: *See—*
  - Jones, William R.; and Harrington, Edgar F., 4,354,387, Cl. 73-597.000.
- Harris, William S., Jr., to Texas Instruments Incorporated. High speed AC/DC coupler. 4,355,237, Cl. 250-551.000.
- Harrison, Charles W.: *See—*
  - Pitman, Herbert J.; and Harrison, Charles W., 4,354,921, Cl. 208-33.000.
- Harrison, Derek. Trays for credit card transactions and the like. 4,354,601, Cl. 206-564.000.
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  - Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., 4,354,376, Cl. 73-1.00H.
- Haruhara, Tadao, to Orion Machinery Co., Ltd. Infrared ray generator. 4,354,479, Cl. 126-92.0AC.
- Harvey Hubbell Incorporated: *See—*
  - Gartland, Albert J., Jr., 4,355,198, Cl. 174-66.000.
  - Shorey, Louis W.; Hill, Keith W.; and Davis, Alan R., 4,354,705, Cl. 294-86.0CG.
- Harvill, William A.: *See—*
  - McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.
- Hasegawa, Hiroshi; and Maida, Osamu, to Nippon Kogaku K.K. Flash unit having a flash output control device. 4,354,750, Cl. 354-128.000.
- Hashimoto, Masashi: *See—*
  - Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
- Hashimoto, Norikazu: *See—*
  - Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, 4,355,374, Cl. 365-149.000.
- Hashimoto, Susumu: *See—*
  - Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, 4,354,726, Cl. 339-230.00R.
- Haskell, Stanley W.: *See—*
  - Grimes, Donald L.; and Haskell, Stanley W., 4,354,748, Cl. 354-23.00D.
- Hatch, Marcus R.: *See—*
  - Abel, Irving R.; and Hatch, Marcus R., 4,354,742, Cl. 350-442.000.
- Hathaway, Milton R. Brush cutter. 4,354,341, Cl. 56-503.000.
- Hatton, Richard L. Method of making inductance. 4,354,310, Cl. 29-605.000.
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  - Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, 4,354,913, Cl. 204-195.00P.
- Havas, Laszlo: *See—*
  - Lassalle, Dominique; and Havas, Laszlo, 4,355,143, Cl. 526-119.000.
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  - Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,355,150, Cl. 528-176.000.
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  - Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
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- Hayden, Howard W., Jr.: *See—*
  - Gamson, Bernard W.; and Hayden, Howard W., Jr., 4,355,017, Cl. 423-484.000.
- Hayes, Cecil: *See—*
  - Filipowicz, Maciej K.; and Hayes, Cecil, 4,354,427, Cl. 99-307.000.
- Hayes, John B., to Kendall Company, The. Joint protector. 4,354,280, Cl. 2-16.000.
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- Heddon, Will. Modular approach fill system. 4,354,678, Cl. 273-51.000.
- Heidemann, Wolfgang: *See—*
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- Heightley, John D.: *See—*
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- Heilmann, Wolfgang: *See—*
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- Heimann GmbH: *See—*
  - Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,354,717, Cl. 316-19.000.
- Heinze, Richard E., to Communications Technology Corporation. Polyalphaolefin extended polyurethane systems. 4,355,130, Cl. 524-491.000.
- Heismann, Richard A.; and Morris, Richard L., to Outboard Marine Corporation. Two-cycle internal combustion engine including horizontal crankshaft. 4,354,461, Cl. 123-195.0AC.
- Heller, Bernardo. D-Phenylalanine treatment. 4,355,044, Cl. 424-319.000.
- Hellwig, Friedrich-Wilhelm; and Schrei, Werner, to Siemens Aktiengesellschaft. Method for checking data written into buffered write-read memories in numerically controlled machine tools. 4,355,390, Cl. 371-21.000.
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- Henderson, Louis L.; and Henderson, Louis L. Fireplace heating unit. 4,354,480, Cl. 126-123.000.
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  - Henderson, Louis L.; and Henderson, Louis L., 4,354,480, Cl. 126-123.000.
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- Hengst, Erwin M. Mounting base construction. 4,354,655, Cl. 248-679.000.
- Henning, Georg; Honigmann, Bertold; and Lamm, Gunther, to BASF Aktiengesellschaft. Dye mixtures. 4,354,969, Cl. 260-156.000.
- Henrichmann, Ludger: *See—*
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- Henry, Joseph D.: *See—*
  - Willis, Stephen B., Jr.; and Henry, Joseph D., 4,355,181, Cl. 564-477.000.
- Hensley, Clifford J. Corrosion control downhole in a borehole. 4,354,553, Cl. 166-244.00C.
- Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., to General Electric Co. Insulated terminal assembly. 4,354,725, Cl. 339-214.00R.
- Hercules Incorporated: *See—*
  - Williams, Rafelix A., 4,354,884, Cl. 149-10.000.
- Herfurth GmbH: *See—*
  - Knobbe, Karl-Heinz; and Noldge, Hellmut, 4,355,286, Cl. 330-56.000.
- Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, to Siemens Aktiengesellschaft. Method for determining the filter current limit of an electrostatic filter. 4,354,860, Cl. 55-105.000.
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  - Propst, Robert L.; and Propst, Paul L., 4,354,611, Cl. 220-335.000.
- Herold, Albert J.: *See—*
  - Yanik, Richard W.; and Herold, Albert J., 4,355,157, Cl. 528-499.000.
- Herold, Robert J.; and Bingham, Robert E., to General Tire & Rubber Company, The. Method for treating polypropylene ether and poly-1,2-butylene ether polyols. 4,355,188, Cl. 568-620.000.
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  - Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, 4,354,854, Cl. 23-232.00R.
- Hesston Corporation: *See—*
  - Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., 4,354,429, Cl. 100-5.000.
- Hestermann, Gerhard: *See—*
  - Vohringer, Gerhard F.; and Hestermann, Gerhard, 4,354,451, Cl. 118-326.000.
- Heurlin, Gustav S.: *See—*
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- Hewlett-Packard Company: *See—*
  - Younge, Robert G., 4,355,279, Cl. 324-161.000.
- Heyman Manufacturing Company: *See—*
  - Brown, Donald C., 4,354,727, Cl. 339-256.00R.
- Heymer, Gero: *See—*
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- Hidding, Walter E. Snap-on tamperproof bottle cap. 4,354,609, Cl. 215-252.000.
- Higgins, Robert S., to Otis Engineering Corporation. Automatic reset pneumatic timer. 4,354,524, Cl. 137-624.140.
- Higgins, Robert S.: *See—*
  - McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., 4,355,365, Cl. 364-569.000.
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  - Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.
- Hilgers, Franz, to Leo Gottwald KG. Crane for heavy lifting with an erection column for the main jib. 4,354,607, Cl. 212-175.000.
- Hill, Keith W.: *See—*
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- Hilliard, John C.: *See—*
  - Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J., 4,355,262, Cl. 315-111.110.
- Hing, Peter; and Kay, Ronald, to Thorn Emi Limited. Cermet materials. 4,354,964, Cl. 252-518.000.
- Hingorani, Narain G., to Electric Power Research Institute, Inc. Means for damping subsynchronous oscillations in an AC power system including overload protection. 4,355,241, Cl. 307-102.000.
- Hinni, Bernhard: *See—*
  - Ludi, Roger; and Hinni, Bernhard, 4,355,292, Cl. 335-145.000.
- Hiraga, Yoichi: *See—*
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- Hirayama, Hiroshi: *See—*
  - Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
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- Hirschfeld, Tomas; and Margoshes, Marvin, to Block Engineering, Inc. Digitally controlled electro-optical imaging system. 4,355,336, Cl. 358-217.000.
- Hirst, Roy T.: *See—*
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- Hitachi Chemical Co., Ltd.: *See—*
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- Hitachi Construction Machinery Co., Ltd.: *See—*
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- Hitachi Koki Company, Limited: *See—*
  - Kubo, Kazuyuki; and Katagiri, Shigenobu, 4,355,393, Cl. 371-51.000.
- Hitachi, Ltd.: *See—*
  - Hosokawa, Takanori; Maki, Hideo; and Shinbo, Katsutoshi, 4,355,002, Cl. 376-419.000.
  - Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.
  - Inoue, Shigeki, 4,355,414, Cl. 455-184.000.
  - Kuwabara, Takao, 4,354,800, Cl. 415-1.000.
  - Nishida, Hideo; Koseki, Fumio; and Gyobu, Ichiro, 4,354,802, Cl. 415-207.000.
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  - Todokoro, Hideo; Fukuhara, Satoru; and Sakitani, Yoshio, 4,355,232, Cl. 250-310.000.
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  - Inoue, Takesi; and Okada, Kuniaki, 4,354,372, Cl. 72-177.000.
- Hix, Daniel H.; and Closser, Daniel D., to United States Gypsum Company. Method for making a decorated, water-resistant, rigid panel and the product made thereby: transfer dye process onto rigid panel. 4,354,851, Cl. 8-471.000.
- Hiyama, Norio: *See—*
  - Kasuga, Masao; Hiyama, Norio; and Tsuchikane, Yoshiyuki, 4,355,304, Cl. 340-347.0DD.
- Hiyama, Takashi, to Nippon Electric Co., Ltd. Radio signal receiving system having means for selectively combining signals from a plurality of receiving sections. 4,355,419, Cl. 455-303.000.
- Hochmuth, William R.; and Shelton, William S., to ACF Industries, Incorporated. Lubricant fitting for a valve. 4,354,523, Cl. 137-614.180.
- Hodgson, Robert F., to Commercial Shearing, Inc. Control valves. 4,354,526, Cl. 137-625.480.
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  - Baltes, Herbert; and Leupold, Ernst I., 4,355,187, Cl. 568-471.000.
  - Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.
  - Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.
  - Roszinski, Hilmar; and Harnisch, Heinz, 4,354,983, Cl. 260-990.000.
  - Stemmler, Hermann; and Knittel, Volker, 4,355,074, Cl. 428-350.000.
  - Volkwein, Gert; Schonowsky, Hubert; and Baessler, Konrad, 4,355,189, Cl. 568-637.000.
  - Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.

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- Hoefkens, Daniel S. G.: *See—*
  - Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.
- Hoff, William B., III: *See—*
  - Wilson, David G.; Hoff, William B., III; and Richard, Roy V., II, 4,354,297, Cl. 17-54.000.
- Hoffman-La Roche Inc.: *See—*
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- Hoffmann, Gerhard: *See—*
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  - Goetz, Norbert; Hupfer, Leopold; Hoffmann, Werner; and Baumann, Manfred, 4,355,180, Cl. 564-398.000.
- Hofstetter, Robert W. Conveyor system with cooling means. 4,354,357, Cl. 62-216.000.
- Hogin, Philip E. Condom having a retention strap. 4,354,494, Cl. 128-294.000.
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  - Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.
- Hoke, John L.; and Sudia, Theodore W., to United States of America, Interior. Catalytic coating to directly generate heat upon the surface of a heat dome. 4,354,352, Cl. 60-517.000.
- Holan, George; and O'Keefe, David F., to Commonwealth Scientific and Industrial Research Organization. Insecticidal esters. 4,355,042, Cl. 424-285.000.
- Holder, H. Dennis; Goodman, Herb L.; and Favish, Michael. Drycleaning system. 4,354,364, Cl. 68-18.00R.
- Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., to Rolls-Royce Limited. Gas turbine engines. 4,354,687, Cl. 277-26.000.
- Holland, Robert L., Jr.: *See—*
  - Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., 4,354,554, Cl. 166-321.000.
- Holloway, Thomas C.: *See—*
  - Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., 4,354,896, Cl. 156-643.000.
- Holsinger, Ronald F., to New England Nuclear Corporation. Variable strength beam line multipole permanent magnets and methods for their use. 4,355,236, Cl. 250-396.0ML.
- Holzapfel, Walter: *See—*
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- Honda Giken Kogyo Kabushiki Kaisha: *See—*
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  - Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.
  - Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, 4,354,422, Cl. 91-358.00R.
  - Otani, Junji; and Ikenoya, Yasuo, 4,354,349, Cl. 60-299.000.
  - Otani, Junji; and Ikenoya, Yasuo, 4,354,463, Cl. 123-308.000.
  - Sato, Toshihiko, 4,354,469, Cl. 123-460.000.
  - Tanaka, Norio; and Ito, Kentaro, 4,354,570, Cl. 180-219.000.
  - Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.
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- Honda, Tetsuzo: *See—*
  - Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
- Honeywell Inc.: *See—*
  - Abel, Irving R.; and Hatch, Marcus R., 4,354,742, Cl. 350-442.000.
  - Acker, William F., 4,355,284, Cl. 328-155.000.
  - Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., 4,355,363, Cl. 364-509.000.
  - Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiya V., 4,355,086, Cl. 429-105.000.
- Honeywell Information Systems Inc.: *See—*
  - Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., 4,354,311, Cl. 29-840.000.
- Honigmann, Bertold: *See—*
  - Henning, Georg; Honigmann, Bertold; and Lamm, Gunther, 4,354,969, Cl. 260-156.000.
- Honkala, Risto J.: *See—*
  - Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., 4,355,005, Cl. 423-41.000.
- Honma, Hideaki: *See—*
  - Tabata, Kazuki; and Honma, Hideaki, 4,354,573, Cl. 181-239.000.
- Hooker Chemicals & Plastics Corp.: *See—*
  - Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., 4,354,915, Cl. 204-242.000.
- Hoover, Merle V., to RCA Corporation. Bridge amplifiers employing complementary field-effect transistors. 4,355,287, Cl. 330-264.000.
- Horey, Leonard I., to Singer Company, The. Method for storing sewing machine stitch pattern data in a byte organized memory. 4,354,442, Cl. 112-158.00E.
- Horiuchi, George H., to Sperry Corporation. Bale tension apparatus. 4,354,430, Cl. 100-192.000.
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  - Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., 4,354,302, Cl. 29-252.000.
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  - Kasuba, John A.; Fee, Graham M.; and Hoskins, Phillip M., 4,354,634, Cl. 238-338.000.
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- Hosoda, Seiichi, to Olympus Optical Co., Ltd. Endoscopic photographing apparatus. 4,354,749, Cl. 354-33.000.
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  - Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.
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- House, David W.: *See—*
  - Malloy, Thomas P.; Halter, Mark A.; and House, David W., 4,354,904, Cl. 204-59.00R.
- Hoyer, Gerd; and Pietschmann, Helmut, to Sybron Corporation. Foot controller for dental instruments or the like. 4,354,838, Cl. 433-101.000.
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  - Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.
- Huber, Wilhelm: *See—*
  - Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.
- Hubert, Bernard, to Societe Nationale Industrielle Aerospatiale. Satellite antenna orientation control method and sensor configuration applying said method. 4,355,313, Cl. 343-725.000.
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  - Weigert, Kurt; and Hudek, Karl, deceased, 4,354,498, Cl. 128-419.00R.
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  - Markusch, Peter; Hudson, George A., deceased; and White, Richard L., administrator, 4,355,138, Cl. 525-127.000.
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- Huggins, Edgar M.; and Brandon, Thomas M. Mechanical pruning device. 4,354,340, Cl. 56-27.500.
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  - Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.
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- Huguenin, Freddy; and Wattenhofer, Jean-Pierre, to Ebauches, S.A. Electronic timepiece with auxiliary digital display. 4,355,380, Cl. 368-71.000.
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  - Mesick, Jack H.; Shoemaker, Lewis E.; and Freeman, Richard F., 4,355,224, Cl. 219-137.0WM.
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- Hurst, Kenneth. Mounting block for tufting machine gauge parts. 4,354,441, Cl. 112-79.00R.
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  - Antrim, Richard L.; and Hurst, Louis S., 4,355,117, Cl. 521-28.000.
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  - Nash, Martin E.; and Huxley, Edward E., 4,355,183, Cl. 568-19.000.
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  - Taylor, Dan G.; and Robertson, Walter W., 4,354,664, Cl. 251-282.000.
- Hydrocarbon Research, Inc.: *See—*
  - Kydd, Paul H., 4,354,852, Cl. 23-230.00A.
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- Ickinger, William J. Behavioral and psychological test instrument. 4,354,844, Cl. 434-237.000.
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  - Hansen, Hans J.; and Reynoso, Gustavo, 4,355,018, Cl. 424-1.000.
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  - Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, 4,355,170, Cl. 548-341.000.
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  - Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,354,471, Cl. 123-481.000.
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- Ikemoto, Isao: *See—*
  - Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, 4,354,763, Cl. 366-181.000.
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  - Bougiouris, Evangelos, 4,354,780, Cl. 409-122.000.
- Ilg, Rudolf, to Zahnradfabrik Friedrichshafen, AG. Vane pump having sleeve bearing and rotor retaining construction. 4,354,808, Cl. 418-259.000.
- Iliopulos, Miltiadis I.; and Baumann, Gert F., to Mobay Chemical Corporation. Process for the production of inorganic-organic compositions. 4,355,118, Cl. 521-108.000.
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- Illinois Tool Works Inc.: *See—*
  - McArdle, Edward J., 4,354,333, Cl. 53-48.000.
- Ima, Seiichiro: *See—*
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- Imanishi, Kiyokazu; and Ichiyanagi, Takashi, to Matsushita Electric Industrial Co., Ltd. Contact-free sealing member. 4,354,686, Cl. 277-3.000.
- Imazeki, Ryoji; and Yamazaki, Etsuo, to Fujitsu Fanuc Limited. Tracer control system. 4,355,362, Cl. 364-474.000.
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  - Manson, Harry G., 4,355,248, Cl. 310-42.000.
- Imhof, Jorg. Covering material. 4,355,064, Cl. 428-178.000.
- Imoto, Tadashi: *See—*
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- Imperial Chemical Industries Limited: *See—*
  - Preston, John; and Reeve, Austin J., 4,355,045, Cl. 424-322.000.
- Indesit Industria Elettrodomestici Italiana S.p.A.: *See—*
  - Malerba, Mario, 4,355,416, Cl. 455-186.000.
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  - Bianchi, Giuseppe; and Gussoni, Giovanni, 4,354,774, Cl. 405-157.000.
- Industriewerk Schaeffler OHG: *See—*
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  - Gilman, Robert W., 4,354,817, Cl. 425-331.000.
- INMOS Corporation: *See—*
  - Sud, Rahul; Hardee, Kim C.; and Heightley, John D., 4,355,377, Cl. 365-203.000.
- Innocenti Santeustacchio S.p.A.: *See—*
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  - Inoue, Kiyoshi; and Shibuya, Iwao, 4,355,223, Cl. 219-69.00M.
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- Inoue, Shigeki, to Hitachi, Ltd. Automatic gain control system. 4,355,414, Cl. 455-184.000.
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  - Quash, Gerard, 4,355,102, Cl. 435-5.000.
- Institut Textile Boulogne-Sur de France: *See—*
  - Neveu, Jean-Louis, 4,355,067, Cl. 428-253.000.
- International Business Machines Corporation: *See—*
  - Buchanan, James C.; and Rutkowski, Edward V., Jr., 4,354,765, Cl. 400-7.000.
  - Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., 4,355,355, Cl. 364-200.000.
  - Convis, Danny B.; Glickman, David; and Rosenbaum, Walter S., 4,355,371, Cl. 364-900.000.
  - Ellis, Theron L., 4,354,895, Cl. 156-631.000.
  - Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.
  - King, Francis K.; and Wanek, Donald J., 4,355,339, Cl. 360-105.000.
  - Mitchell, Joan L., 4,355,306, Cl. 340-347.0DD.
- International Computers Limited: *See—*
  - Scarrott, Gordon G., 4,355,408, Cl. 375-110.000.
- International Flavors & Fragrances Inc.: *See—*
  - Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.
  - Boden, Richard M., 4,354,953, Cl. 252-174.110.
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  - Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., 4,354,931, Cl. 210-136.000.
  - Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,355,120, Cl. 521-189.000.
  - Swanson, William C., 4,354,688, Cl. 280-43.230.
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  - Smeltzer, Richard H.; and Cello, Linda M., 4,354,327, Cl. 47-58.000.
- International Standard Electric Corporation: *See—*
  - Bergersen, Hans A., 4,354,886, Cl. 156-50.000.
  - Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., 4,354,649, Cl. 246-187.00B.
  - Paschen, Hans-Joachim, 4,355,422, Cl. 455-343.000.
  - Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.
  - Schmidt, Peter; and Muhlberger, Emil, 4,354,703, Cl. 294-64.00R.
  - Weiss, Eberhard, 4,355,259, Cl. 313-337.000.
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  - Glavas, Xenophon; G.; and Thompson, Robert E., 4,354,645, Cl. 242-117.000.
  - Maklad, Mokhtar S.; Akers, Francis I.; and Thomas, William L., 4,354,736, Cl. 350-96.320.
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  - Rabussay, Dietmar P., 4,355,022, Cl. 424-50.000.
- Interpace Corporation: *See—*
  - Wheeler, Edward S.; and Campagna, Anthony J., 4,355,200, Cl. 174-140.00S.
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  - Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, 4,354,881, Cl. 148-6.14R.
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  - Weissman, Bernard, 4,354,840, Cl. 433-215.000.
- Iqbal, Abul; Lienhard, Paul; and Pugin, Andre, to Ciba-Geigy Corporation. Nickel complex pigments of azines. 4,355,159, Cl. 542-417.000.
- Isaacs, Harold. Merchandise stocking system and method, and equipment used therewith. 4,354,604, Cl. 211-17.000.
- Ishibashi, Takeshi: *See—*
  - Ida, Jinsei; Matsuo, Kenzaburo; Ejiri, Hiroshi; and Ishibashi, Takeshi, 4,354,306, Cl. 29-568.000.
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  - Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.
- Ishigaki, Isao: *See—*
  - Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.
- Ishihara, Hiroyuki, to Nippon Electric Co., Ltd. Frequency converter capable of eliminating local power leak. 4,355,420, Cl. 455-317.000.
- Ishihara, Toshinobu: *See—*
  - Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, 4,355,193, Cl. 570-217.000.
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- Ishikura, Tomoyuki: *See—*
  - Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.
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- Isogai, Hideaki, to Fujitsu Limited. Electronic circuit. 4,355,245, Cl. 307-455.000.
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- Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, to Sumitomo Electric Industries, Ltd. Optical character reading system. 4,355,301, Cl. 340-146.30D.
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  - Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, 4,354,465, Cl. 123-339.000.
- Ito, Kentaro: *See—*
  - Tanaka, Norio; and Ito, Kentaro, 4,354,570, Cl. 180-219.000.
- Ito, Toshihiko: *See—*
  - Yamamoto, Shinichi; and Ito, Toshihiko, 4,354,820, Cl. 425-461.000.
- Itoh, Masatoshi: *See—*
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- ITT Industries, Inc.: *See—*
  - Belart, Juan, 4,354,714, Cl. 303-114.000.
  - Birkenbach, Alfred; and Franke, Helmut, 4,354,581, Cl. 188-71.900.
  - Burgdorf, Jochen, 4,354,716, Cl. 303-119.000.
  - Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.
- ITW de France: *See—*
  - Morel, Henri, 4,354,722, Cl. 339-95.00D.
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- Iwane, Masahiko: *See—*
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- Iwasawa, Teruo; and Tojiki, Hitomi, to Mobil Oil Corporation. Motor control apparatus. 4,355,268, Cl. 318-314.000.
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  - Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.
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- Iya, Sridhar K., to Union Carbide Corporation. Consolidation of high purity silicon powder. 4,354,987, Cl. 264-13.000.
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- Izumita, Morishi: *See—*
  - Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.
- Izumiyama, Taizo: *See—*
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- Jacobi, Heinz: *See—*
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- Jacobson, Allan J.: *See—*
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- Jacobson, James E., Jr.: *See—*
  - Davis, Walter L.; and Jacobson, James E., Jr., 4,355,277, Cl. 323-351.000.
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- Jaffe, Wolfgang: *See—*
  - Herr, John A.; and Jaffe, Wolfgang, 4,355,255, Cl. 310-254.000.
- Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., to Standard Oil Company (Indiana). Apparatus and method for drilling into the sidewall of a drill hole. 4,354,558, Cl. 175-45.000.
- Jain, Atul: *See—*
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- Jalas, Leon C. Pneumatic line clean out device. 4,354,775, Cl. 406-3.000.
- James River Corporation: *See—*
  - Kinsley, Homan B., Jr., 4,355,081, Cl. 428-526.000.
- Janser, Gerd: *See—*
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- January, James R., to Dow Corning Corporation. Tintable abrasion resistant coatings. 4,355,135, Cl. 524-767.000.
- Japan Atomic Energy Research Institute: *See—*
  - Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.
- Jarmy, Howard I., to Singer Company, The. Circuit board connector indexing key. 4,354,724, Cl. 339-186.00R.
- Jaskolski, Stanley V.: *See—*
  - Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,355,322, Cl. 357-38.000.
- Jasny, Jan: *See—*
  - Schaefer, Fritz P.; and Jasny, Jan, 4,355,394, Cl. 372-16.000.
- Jefferson, Robert T. Screw holder system. 4,354,540, Cl. 145-46.000.
- Jervis B. Webb Company: *See—*
  - Dehne, Clarence A., 4,354,434, Cl. 104-103.000.
- Jessup, Gregory M., to Bendix Corporation, The. Low or flat tire warning system. 4,355,298, Cl. 340-58.000.
- Jet Spray Corp.: *See—*
  - Gross, Thomas A. O., 4,355,343, Cl. 361-100.000.
- Jirkovsky, Ivo L.: *See—*
  - Demerson, Christopher A.; and Jirkovsky, Ivo L., 4,355,031, Cl. 424-250.000.
- Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, to Hoechst Aktiengesellschaft. Process for removing phosphorus in vapor form and phosphanes from gas mixtures. 4,355,010, Cl. 423-210.000.
- Johnson, Daniel E., to Metal Improvement Company, Inc. Method of prestressing the working surfaces of pressure chambers or cylinders. 4,354,371, Cl. 72-53.000.
- Johnson, Gary R., to Tri-State Oil Tool Industries, Inc. Enlarged borehole drilling method and apparatus. 4,354,559, Cl. 175-71.000.
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  - Oczkowski, Boguslaw; and Schiff, Norman, 4,354,487, Cl. 128-156.000.
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- Johnson, Tod; Tarshis, Andrew; and Goldberg, George, to NPD Research Inc. Market survey data collection method. 4,355,372, Cl. 364-900.000.
- Johnston, Barry W. Closed loop solar collector system with dual reservoirs and fluid bypass. 4,354,483, Cl. 126-419.000.
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  - Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J., 4,355,262, Cl. 315-111.110.
- Jones, Edward A. Pick-up camper locating and holddown assembly. 4,354,707, Cl. 296-167.000.
- Jones, Howard: *See—*
  - Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., 4,355,034, Cl. 424-263.000.
- Jones & Laughlin Steel Incorporated: *See—*
  - Ernst, Donald M., 4,354,668, Cl. 266-45.000.
- Jones, Norman W.: *See—*
  - Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., 4,354,307, Cl. 29-571.000.
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  - Franz, James H., Jr.; and Jones, Stanley W., 4,355,267, Cl. 318-89.000.
- Jones, William R.; and Harrington, Edgar F., to National Identification Bureau Inc. Apparatus identification system. 4,354,387, Cl. 73-597.000.
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  - Jonsson, Lennart C. B., 4,355,197, Cl. 174-37.000.
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  - Jonsson, Lennart C. B., 4,355,197, Cl. 174-37.000.
- Jonsson, Jane: *See—*
  - Jonsson, Lennart C. B., 4,355,197, Cl. 174-37.000.
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- Joseph, Peter M.: *See—*
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  - Sundheimer, Craig S.; and Joslin, Bradley D., 4,354,514, Cl. 134-152.000.
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  - Toth, James M.; and Judd, Tyler W., 4,355,281, Cl. 324-232.000.
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  - Griesenbrock, Karl-Heinz, 4,354,568, Cl. 180-197.000.
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  - Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, 4,355,257, Cl. 310-361.000.

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  - Deguchi, Hideaki, 4,354,374, Cl. 72-389.000.
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  - Suzuki, Hajime; and Arakawa, Hiroshi, 4,354,533, Cl. 139-435.000.
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- Kafka, Robert S.: *See—*
  - Kafka, Charles F.; and Kafka, Robert S., 4,354,445, Cl. 114-218.000.
- Kaganowicz, Grzegorz; and Robinson, John W., to RCA Corporation. Method of preparing an abrasive coated substrate. 4,355,052, Cl. 427-39.000.
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- Kain, Arthur F. Suspension idler mold apparatus. 4,354,656, Cl. 249-78.000.
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- Kaiser, Klaus: *See—*
  - Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.
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- Kakugo, Masahiro: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.
- Kalt, Charles G. Particle collector and method of manufacturing same. 4,354,861, Cl. 55-130.000.
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  - Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.
- Kaman Aerospace Corporation: *See—*
  - Mayerjak, Robert J., 4,354,704, Cl. 294-74.000.
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  - Richter, Johan C. F. C.; and Ramstad, Jens, 4,354,777, Cl. 406-63.000.
- Kanada, Eiji: *See—*
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- Kanayama, Akikatsu: *See—*
  - Nakamura, Mamoru; and Kanayama, Akikatsu, 4,355,146, Cl. 526-199.000.
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  - Bright, Edward J.; and Kandybowski, Steven J., 4,354,718, Cl. 339-17.0CF.
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- Kanegae, Hidetoshi; and Asano, Masaharu, to Nissan Motor Company, Limited. Control system for internal combustion engines. 4,355,359, Cl. 364-431.040.
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  - Suzuki, Hideo; and Kaneko, Makoto, 4,354,413, Cl. 84-1.010.
- Kanetsu Kogyo Kabushiki Kaisha: *See—*
  - Nakajima, Takato, 4,354,930, Cl. 209-221.000.
- Kango Electric Hammers Limited: *See—*
  - Vaughan, Christopher A., 4,354,779, Cl. 408-241.00S.
- Kanki, Kazuhiko: *See—*
  - Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, 4,354,909, Cl. 204-192.00N.
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  - Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.
- Kanzaki Paper Manufacturing Co., Ltd.: *See—*
  - Oeda, Yoshitaka, 4,355,070, Cl. 428-323.000.
- Kao, Ming L.: *See—*
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- Karl, Otto: *See—*
  - Binz, Reiner; and Karl, Otto, 4,355,386, Cl. 370-100.000.
- Karl Schmidt GmbH: *See—*
  - Steidle, Werner, 4,354,426, Cl. 92-235.000.
- Karl, Walter, to Utilux Pty. Limited. Feed mechanisms. 4,354,790, Cl. 414-222.000.
- Karlberg, John E. Supports for coaxial conduits. 4,354,657, Cl. 249-83.000.
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- Kasuga, Masao; Hiyama, Norio; and Tsuchikane, Yoshiyuki. Digital compandor. 4,355,304, Cl. 340-347.0DD.
- Kasui, Toshikatsu: *See—*
  - Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, 4,354,754, Cl. 354-289.000.
- Katagiri, Shigenobu: *See—*
  - Kubo, Kazuyuki; and Katagiri, Shigenobu, 4,355,393, Cl. 371-51.000.
- Katayama, Hitoshi, to Shimano Industrial Company Limited. Handle bar fixing device for a bicycle. 4,354,399, Cl. 74-551.100.
- Katayama, Susumu: *See—*
  - Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
- Kato Hatsujo Kabushiki Kaisha: *See—*
  - Tanaka, Yoshiyuki; and Kobori, Masaharu, 4,354,298, Cl. 24-201.0LP.
- Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, to Nissan Motor Company, Limited. Battery terminal connector with an uneven interior surface. 4,354,726, Cl. 339-230.00R.
- Katsuura, Kiyoshi: *See—*
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- Kaufman, Martin H., to United States of America, Navy. Nitrile elastomer surfaces receptive for bonding by epoxy adhesives and method therefor. 4,355,078, Cl. 428-414.000.
- Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
  - Deutsch, Ralph, 4,354,412, Cl. 84-1.010.
  - Deutsch, Ralph; and Deutsch, Leslie J., 4,354,414, Cl. 84-1.240.
- Kawakami, Yasushi, to Nissan Motor Company, Limited. Preset station selecting device in a radio receiver. 4,355,412, Cl. 455-175.000.
- Kawakita, Kenji: *See—*
  - Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.
- Kawamura, Masanori: *See—*
  - Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, 4,355,170, Cl. 548-341.000.
- Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, to Onoda Cement Company, Ltd. Demolition agent, its preparation and its use. 4,354,877, Cl. 106-90.000.
- Kawasaki, Tetsuji: *See—*
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- Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, to Kabushiki Kaisha Daini Seikosha. Thickness shear type piezoelectric vibrator with integral mounting. 4,355,257, Cl. 310-361.000.
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  - Oyama, Tadashi; and Kawata, Shoji, 4,354,525, Cl. 137-625.500.
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  - Mano, Hiroshi; and Kawauchi, Satsuki, 4,354,741, Cl. 350-357.000.
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  - Hing, Peter; and Kay, Ronald, 4,354,964, Cl. 252-518.000.
- Kayser, John P.; and Pinkert, John R., to Airco, Inc. Thoracic drainage unit. 4,354,493, Cl. 128-276.000.
- Kearns, Thomas B.: *See—*
  - Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., 4,354,825, Cl. 432-14.000.
- Keenan, Charles A.: *See—*
  - Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., 4,355,233, Cl. 250-343.000.
- Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., to Nalco Chemical Company. Metal oxide oil slurries. 4,354,872, Cl. 106-14.270.
- Keller, George E., II; and Kuo, Chia-Huei A., to Union Carbide Corporation. Enhanced gas separation by selective adsorption. 4,354,859, Cl. 55-25.000.
- Keller, Peter: *See—*
  - Wippermann, Gerhard; and Keller, Peter, 4,354,619, Cl. 221-263.000.
- Keller, William E.: *See—*
  - Plummer, Harvey R.; and Keller, William E., 4,354,305, Cl. 29-568.000.
- Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., to Motorola, Inc. Auto-zeroing operational amplifier circuit. 4,355,285, Cl. 330-9.000.
- Kelsey-Hayes Co.: *See—*
  - Main, John A., 4,354,711, Cl. 301-9.0CN.
- Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., to Standard Oil Company (Indiana). Interface apparatus for coupling a minicomputer to a microcomputer for the transfer of data between them and method for using same. 4,355,354, Cl. 364-200.000.
- Kendall Company, The: *See—*
  - Hayes, John B., 4,354,280, Cl. 2-16.000.
  - Newman, Nicholas S., 4,355,066, Cl. 428-198.000.
- Kenji, Okamura: *See—*
  - Sone, Kohki; and Kenji, Okamura, 4,354,468, Cl. 123-440.000.
- Kennecott Corporation: *See—*
  - Maczuga, Jacob W.; and Wilhelm, Daniel C., 4,354,986, Cl. 264-8.000.
- Kenner, Mary B. Bathroom tissue holder. 4,354,643, Cl. 242-55.200.
- Kent, Willard L., to Gulf & Western Manufacturing Company. Method and device for connecting terminals of a traffic control unit. 4,355,295, Cl. 340-41.00R.

- Kenwell, Rudolf F. Direct current motor having outer rotor and inner stator. 4,355,249, Cl. 310-49.00R.
- Kepplinger, Werner: *See—*
  - Kruger, Gerhard; and Kepplinger, Werner, 4,354,826, Cl. 432-18.000.
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  - Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,354,635, Cl. 239-11.000.
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  - Koster, Rainer; Scheffler, Knut; and Riege, Ulrich, 4,354,954, Cl. 252-629.000.
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  - McHale, Joseph P., 4,354,666, Cl. 251-335.00A.
- Kersting, Emil F.: *See—*
  - Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, 4,354,411, Cl. 83-862.000.
- Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, to United States of America, Environmental Protection Agency. Multiple stage catalytic combustion process and system. 4,354,821, Cl. 431-7.000.
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  - Kessler, Milton; and Ullman, Myron E., Jr., 4,354,610, Cl. 215-253.000.
  - Ullman, Myron E., Jr., 4,354,370, Cl. 72-42.000.
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  - Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., 4,355,331, Cl. 358-111.000.
- Khungar, Sohan L.; and Shah, Suresh R., to B. F. Goodrich Company, The. Method for homogenizing monomer mixes for vinyl latex production. 4,355,142, Cl. 526-88.000.
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  - Bako, Lazlo, 4,354,366, Cl. 70-312.000.
- Kieber, Lothar, to Deutsche Calypsolgesellschaft mbH & Co. Oil suction apparatus. 4,354,574, Cl. 184-1.500.
- Kilichowski, Kurt B.: *See—*
  - Pampalone, Thomas R.; and Kilichowski, Kurt B., 4,355,094, Cl. 430-286.000.
- Kilmer, Lauren G.: *See—*
  - Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., 4,354,558, Cl. 175-45.000.
- Kimura, Takao: *See—*
  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
- King, Francis K.; and Wanek, Donald J., to International Business Machines Corporation. Transducer carriage assembly. 4,355,339, Cl. 360-105.000.
- Kingport, Ltd.: *See—*
  - Gerch, Edward L., 4,354,542, Cl. 150-34.000.
- Kinsley, Hcman B., Jr., to James River Corporation. Curing of resin impregnated cellulosics with continuously superheated steam. 4,355,081, Cl. 428-526.000.
- Kiriyama, Tsutomu: *See—*
  - Norota, Susumu; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,355,075, Cl. 428-369.000.
- Kishimoto, Shoji: *See—*
  - Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,355,040, Cl. 424-273.00R.
- Kissei Pharmaceutical Co., Ltd.: *See—*
  - Hayashi, Masaki; Tanouchi, Tadao; Kawamura, Masanori; and Iguchi, Yoichi, 4,355,170, Cl. 548-341.000.
- Kissel, Roland R., to Midland-Ross Corporation. Process and device for improving heat exchange in furnaces heated by radiant heaters. 4,354,827, Cl. 432-21.000.
- Kitamoto, Tatsuji: *See—*
  - Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.
- Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, to Fujisawa Pharmaceutical Co., Ltd. Peptides, process for preparation thereof and use thereof. 4,354,966, Cl. 260-112.50R.
- Kitchen, Donald R., to United States of America, Air Force. Low temperature braze alloy and composite. 4,355,084, Cl. 428-672.000.
- Kitchener, William R.: *See—*
  - Sama, Stephen L.; and Kitchener, William R., 4,355,228, Cl. 235-92.0PC.
- Kitzelmann, Dieter: *See—*
  - Fritze, Ulrich; Janser, Gerd; Herschinger, Heinz; and Kitzelmann, Dieter, 4,354,854, Cl. 23-232.00R.
- Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., to Skandinanisk Tobakskompagni A/S. Device for spreading tobacco leaves. 4,354,511, Cl. 131-324.000.
- Klauber, Stefan J.: *See—*
  - Roppatte, Michael, Jr., 4,354,512, Cl. 132-88.500.
- Klemm, Robert E.: *See—*
  - Dotsko, Martin; Klemm, Robert E.; and Peters, David L., 4,354,737, Cl. 350-117.000.
- Klepetar, Manfred: *See—*
  - Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, 4,354,891, Cl. 156-307.300.
- Klesper, Hugo: *See—*
  - Busse, Oswald; and Klesper, Hugo, 4,354,947, Cl. 210-790.000.
- Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., to Westwood Pharmaceuticals, Inc. Composition for treating acne vulgaris. 4,355,028, Cl. 424-230.000.
- Kline, Paul J.: *See—*
  - Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., 4,354,725, Cl. 339-214.00R.
- Kmiec, Gregory E., to Bally Manufacturing Corporation. Pinball game including elevated ball pathway. 4,354,680, Cl. 273-121.00A.
- Kmita, Anatoly M.: *See—*
  - Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,355,290, Cl. 333-195.000.
- Knaitner, Eugene L.: *See—*
  - Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.
- Knapp, Heinrich; and Maisch, Wolfgang, to Robert Bosch GmbH. Fuel injection system. 4,354,472, Cl. 123-493.000.
- Knickerbocker, Michael G., to Seaquist Valve Co., Div. of Pittway Corp. Child resistant assembly for aerosol dispensers. 4,354,621, Cl. 222-47.000.
- Knight, Alan C.: *See—*
  - Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., 4,354,649, Cl. 246-187.00B.
- Knightley, Jack A., to Scott Bader Company Limited. Adhesive coatings of prepasted wall coverings. 4,355,073, Cl. 428-350.000.
- Knittel, Volker: *See—*
  - Stemmler, Hermann; and Knittel, Volker, 4,355,074, Cl. 428-350.000.
- Knobbe, Karl-Heinz; and Noldge, Hellmut, to Herfurth GmbH. Resonant circuit arrangement. 4,355,286, Cl. 330-56.000.
- Knorr-Bremse GmbH: *See—*
  - Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.
- Knowles, Albert H., to Rines, Robert Harvey, a part interest. Method of and apparatus for enabling access to the interior of fish-farming ponds and the like. 4,354,457, Cl. 119-3.000.
- Koba, Keiichiro: *See—*
  - Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.
- Kobayashi, Kazutaka: *See—*
  - Yoshida, Shinichi; and Kobayashi, Kazutaka, 4,355,329, Cl. 358-108.000.
- Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, to Diesel Kiki Company, Ltd. Fuel injection advance angle control apparatus. 4,354,474, Cl. 123-502.000.
- Kobori, Masaharu: *See—*
  - Tanaka, Yoshiyuki; and Kobori, Masaharu, 4,354,298, Cl. 24-201.0LP.
- Koch, Bernhard R.; and Vogelbacher, Erich, to Sulzer Brothers Ltd. Crossing thread supply system for a weaving machine. 4,354,530, Cl. 139-54.000.
- Koch, Heinz: *See—*
  - Grimminger, Albert; and Koch, Heinz, 4,354,814, Cl. 425-186.000.
- Kock, Hendrikus G., to U.S. Philips Corporation. Coupler comprising a light source and lens. 4,355,323, Cl. 357-74.000.
- Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, to Toray Silicone Co., Ltd. Cyclofluorosilicone-containing compositions for the treatment of fibers. 4,355,149, Cl. 528-18.000.
- Kohjin Co., Ltd.: *See—*
  - Mizutani, Tomoji; Fukushima, Hitoshi; and Sakamoto, Yoshihiro, 4,354,997, Cl. 264-560.000.
- Kohonen, Raimo, to Enso-Gutzeit Osakeyhtio. Filter press. 4,354,934, Cl. 210-386.000.
- Koike, Susumu; and Iwasa, Hitoo, to Matsushita Electric Industrial Co., Ltd. Substrate holder for liquid phase epitaxial growth. 4,354,453, Cl. 118-426.000.
- Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, to Konishiroku Photo Industry Co., Ltd. Dry-type developing device. 4,354,763, Cl. 366-181.000.
- Kojima, Kana: *See—*
  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
- Kollross, Gunter. Device for axial shirring of synthetic tubular material for further processing, especially on automated sausage stuffers. 4,354,295, Cl. 17-1.00R.
- Komori Printing Machinery Co., Ltd.: *See—*
  - Kuroda, Tamio, 4,354,673, Cl. 271-227.000.
- Komori, Ryuichi: *See—*
  - Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
- Koninklijke Emballage Industrie Van Leer, B.V.: *See—*
  - Gash, Duggan J., 4,355,076, Cl. 428-411.000.
- Konishiroku Photo Industry Co., Ltd.: *See—*
  - Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, 4,354,763, Cl. 366-181.000.
  - Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

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- Lee, Robert E. Solar space vehicle. 4,354,348, Cl. 60-203.100.
- Lee, Ronald B., to Zenith Radio Corporation. Bandwidth enhancement network for color television signals. 4,355,326, Cl. 358-37.000.
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- Lester, James P. Implantable artificial kidney. 4,354,933, Cl. 210-257.200.
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- Lewis, Cheri J. Support for mounting metal mirror on teeth. 4,354,835, Cl. 433-30.000.
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  - Lechner, Hubert; and Steinle, Benedikt, 4,355,252, Cl. 310-162.000.
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  - Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., 4,354,872, Cl. 106-14.270.
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  - Bingham, Robert E.; Durst, Richard R.; Fabris, Hubert J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,355,156, Cl. 528-413.000.
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- Logan, Emanuel L., to Reliable Security Systems, Inc. Apparatus for delaying opening of doors. 4,354,699, Cl. 292-201.000.
- Logan, William F. Support structure for folding tables and like structures. 4,354,437, Cl. 108-153.000.
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  - Greer, James B., 4,354,882, Cl. 148-12.00R.
- Looney, Gary W., to RCA Corporation. Apparatus for oscillating a gas manifold in a rotary disc reactor. 4,354,455, Cl. 118-700.000.
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  - Brun, Alain; Marcotte, Louis; and Szarazi, Bela, 4,354,406, Cl. 83-24.000.
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- Losert, Gerhard K., to General Electric Company. Visual device for ice cube trays. 4,354,384, Cl. 374-134.000.
- Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, to Manville Service Corporation. Method of curing polyester resin in the presence of rubber. 4,354,891, Cl. 156-307.300.
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  - Hall, Roger W.; and Lotterer, John F., III, 4,354,359, Cl. 62-299.000.
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- Lowder, Dale E., to McGraw-Edison Company. Power cord storage device. 4,354,650, Cl. 248-49.000.
- Lowe, Derek: *See*—
  - Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.
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  - Farr, Glyn P. R.; and Mortimer, Ivan, 4,354,715, Cl. 303-116.000.
  - Williams, David C.; and Walsh, Peter A., 4,355,239, Cl. 307-41.000.
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  - Burton, Lawrence A.; Rollay, David T.; and Lukitsch, Walter J., 4,355,269, Cl. 318-436.000.
- Lumelleau, Adrian, to Presray Corporation, The. Lightweight, removable gate seal. 4,355,000, Cl. 376-205.000.
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- Lynch, John: *See*—
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  - Fischer, Hermann, 4,354,431, Cl. 101-247.000.
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- Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, to Japan Atomic Energy Research Institute; and Taki Chemical Co., Ltd. Radiation polymerization of cationic monomer in aqueous alcohol. 4,354,907, Cl. 204-159.220.
- Maciejewski, Edward T.: *See*—
  - Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., 4,354,825, Cl. 432-14.000.
- MacLeish, William T.; and Shchori, Ehud, to Polaroid Corporation. Polymeric neutralizing layer with temporary crosslinks from an organo-metallic crosslinking agent. 4,355,091, Cl. 430-216.000.
- Macnab, John E., to Towmotor Corporation. Carriage assembly. 4,354,794, Cl. 414-607.000.
- Maczuga, Jacob W.; and Wilhelm, Daniel C., to Kennecott Corporation. Process for manufacturing boron nitride fiber mats using a needler. 4,354,986, Cl. 264-8.000.
- Mader, John J., to Polaroid Corporation. Reflector for use in an artificial lighting device. 4,355,350, Cl. 362-347.000.
- Madsen, Ingvard M.; and Andersen, Niels L., to Danfoss A/S. Atomizer burner for oil firing plant. 4,354,822, Cl. 431-208.000.
- Mae, Hisao; Takizawa, Masaaki; and Matsubara, Noboru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable valve event engine. 4,354,460, Cl. 123-90.160.
- Maeda, Chiaki: *See*—
  - Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, 4,354,881, Cl. 148-6.14R.

Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, to Tokico Ltd. Vehicle height adjusting device. 4,354,693, Cl. 280-714.000.
Maffey, Peter M., to Bowater Tutt Industries, Pty. Ltd. Method of producing reinforced paper. 4,354,890, Cl. 156-264.000.
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Mahl, Mearl C.; Dick, Elliot C.; and Walter, George R., Jr., to S. C. Johnson & Son, Inc. Virucidal wipe and method. 4,355,021, Cl. 424-28.000.
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Maidhof, Georg, to Maidhof GmbH. Clamp for fastening grapevines and other fruit-bearing shrubs on bracing wires. 4,354,299, Cl. 24-261.00R.
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Malloy, Thomas P.; Halter, Mark A.; and House, David W., to UOP Inc. Electrochemical oxidation of alkyl aromatic compounds. 4,354,904, Cl. 204-59.00R.
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Mano, Hiroshi; and Kawauchi, Satsuki, to Sumitomo Electric Industries, Ltd. Electrochromic display device. 4,354,741, Cl. 350-357.000.
Manson, Harry G., to IMC Magnetics Corp. Stepper motor. 4,355,248, Cl. 310-42.000.
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Hutchison, Ralph M.; Martin, Phillip C.; and Willingham, Francis Y., 4,354,878, Cl. 106-120.000.
Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, 4,354,891, Cl. 156-307.300.
Manziek, Larry, to Rohm and Haas Company. Borane reducing resins. 4,355,140, Cl. 525-329.400.
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Martin, Philip N., 4,354,572, Cl. 181-116.000.
Marbry, Steven L. Fluid transfer device. 4,354,491, Cl. 128-214.400.
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Israel, Renato G.; Lavoisard, Jean-Louis; and Marchand, Jean-Claude, deceased, 4,355,206, Cl. 179-18.0HB.
Marchand, Jean-Claude, deceased: *See—*
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Brun, Alain; Marcotte, Louis; and Szarazi, Bela, 4,354,406, Cl. 83-24.000.
Margolies, Michael N.: *See—*
Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, 4,355,023, Cl. 424-85.000.
Margoshes, Marvin: *See—*
Hirschfeld, Tomas; and Margoshes, Marvin, 4,355,336, Cl. 358-217.000.
Marine Construction & Design Co.: *See—*
Svendsen, Robert A., 4,354,667, Cl. 254-332.000.
Markusch, Peter; Hudson, George A., deceased; and by White, Richard L., administrator, to Mobay Chemical Corporation. Polyisocyanate adducts with apolar solvent compatibility and good storage stability. 4,355,138, Cl. 525-127.000.
Marmet, Melvin L., to Rockwell International Corporation. Sense amplifier and method for small bit line swing with short propagation delay for high speed MOS memories. 4,355,247, Cl. 307-530.000.
Marmo, Anthony R., to Westinghouse Electric Corp. Workpiece pellet length control apparatus. 4,354,811, Cl. 425-140.000.
Marsh, Dana G., to Xerox Corporation. Instant-on radiant fuser. 4,355,225, Cl. 219-216.000.
Marsh Products, Inc.: *See—*
Marsh, Richard E., 4,355,213, Cl. 179-146.00R.
Marsh, Richard E., to Marsh Products, Inc. Microphone assembly. 4,355,213, Cl. 179-146.00R.
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Gensike, Karl H.; and Marsh, Robert C., 4,354,787, Cl. 414-54.000.
Marshall, Wilbur A. Glazier's punch. 4,354,701, Cl. 294-1.00R.
Martin, G. Blair: *See—*
Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, 4,354,821, Cl. 431-7.000.
Martin, John C.: *See—*
Verheyden, Julien P.; and Martin, John C., 4,355,032, Cl. 424-253.000.
Martin Marietta Corporation: *See—*
Boxall, Larry G.; and Nagle, Dennis C., 4,354,918, Cl. 204-286.000.
Gamson, Bernard W.; and Hayden, Howard W., Jr., 4,355,017, Cl. 423-484.000.
Martin, Philip N., to Mapco, Inc. Portable seismic energy source. 4,354,572, Cl. 181-116.000.
Martin, Phillip C.: *See—*
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Martin, Roy W.: *See—*
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Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, to Fiat Societa per Azioni. Process for sintering silicon nitride compacts. 4,354,990, Cl. 264-65.000.
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Bechthold, Horst; and Mohn, Ulrich, 4,355,013, Cl. 423-242.000.
Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
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Mason, Marco J.: *See—*
Gauger, Gary A.; and Mason, Marco J., 4,355,346, Cl. 361-318.000.
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Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, 4,355,023, Cl. 424-85.000.
Massachusetts Institute of Technology: *See—*
Growdon, John H.; and Wurtman, Richard J., 4,355,027, Cl. 424-199.000.
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Masuda, Michio: *See—*
Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.
Masuko, Seiichi: *See—*
Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.
Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, to Sharp Kabushiki Kaisha. Waveform synthesizer arrangement. 4,355,367, Cl. 364-718.000.
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Mathews, Kenneth D. Toy flip cap. 4,354,326, Cl. 46-74.00D.
Mathias Bauerle GmbH: *See—*
Dorer, Wilfried; Fuss, Manfred; and Lehmann, Werner, 4,354,674, Cl. 271-296.000.
Mathis, Paul; and Zimmer, Max, to Mathis System-Technik GmbH. Process of pourable materials. 4,354,317, Cl. 34-33.000.
Mathis System-Technik GmbH: *See—*
Mathis, Paul; and Zimmer, Max, 4,354,317, Cl. 34-33.000.
Matsubara, Noboru: *See—*
Mae, Hisao; Takizawa, Masaaki; and Matsubara, Noboru, 4,354,460, Cl. 123-90.160.
Matsueda, Gary R.: *See—*
Ehrlich, Paul H.; Matsueda, Gary R.; Margolies, Michael N.; and Haber, Edgar, 4,355,023, Cl. 424-85.000.
Matsui Manufacturing Co., Ltd.: *See—*
Matsui, Osamu, 4,354,776, Cl. 406-23.000.
Matsui, Osamu, to Matsui Manufacturing Co., Ltd. Pressurized gas transporter and method. 4,354,776, Cl. 406-23.000.
Matsumoto, Masahiko: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

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Matsumoto, Toshiaki: *See—*
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Matsunaga, Fujihisa: *See—*
Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, 4,355,190, Cl. 568-754.000.
Matsunaga, Isao: *See—*
Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
Matsuo, Kenzaburo: *See—*
Ida, Jinsei; Matsuo, Kenzaburo; Ejiri, Hiroshi; and Ishibashi, Takeshi, 4,354,306, Cl. 29-568.000.
Matsuoka, Hiroyoshi: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
Imanishi, Kiyokazu; and Ichiyanagi, Takashi, 4,354,686, Cl. 277-3.000.
Koike, Susumu; and Iwasa, Hitoo, 4,354,453, Cl. 118-426.000.
Mori, Kazuhiro; Taki, Yasuo; and Araki, Shigeru, 4,354,337, Cl. 53-559.000.
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Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, 4,354,620, Cl. 222-14.000.
Matsushita Graphic Communication Systems, Inc.: *See—*
Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, 4,355,319, Cl. 346-76.0PH.
Matsushita, Yoshihiro: *See—*
Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.
Matsuyama, Kiyoshi: *See—*
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.
Matth. Hohner AG: *See—*
Sonnabend, Werner, 4,354,415, Cl. 84-1.240.
Matuo, Masayuki: *See—*
Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, 4,354,308, Cl. 29-571.000.
Max Planck Gesellschaft Zur Foerderung der Wissenschaften E.V.: *See—*
Schaefer, Fritz P.; and Jasny, Jan, 4,355,394, Cl. 372-16.000.
Maxey, Joel W. Non-throttling control apparatus for spark ignition internal combustion engines. 4,354,459, Cl. 123-80.0BA.
Maxwell, Peter C., to Celanese Corporation. Production of muconic acid. 4,355,107, Cl. 435-142.000.
Mayer, Siegfried; and Henrichmann, Ludger, to Aug. Winkhaus. Permutation lock. 4,354,365, Cl. 70-30.000.
Mayerjak, Robert J., to Kaman Aerospace Corporation. Sling and method for making same. 4,354,704, Cl. 294-74.000.
Maytag Company, The: *See—*
Wunderlich, Daniel F., 4,355,218, Cl. 200-38.00F.
McAndrew, Miles J., to UOP Inc. Poppet damper with gas flow turning means. 4,354,528, Cl. 137-875.000.
McArdle, Edward J., to Illinois Tool Works Inc. Packaging apparatus. 4,354,333, Cl. 53-48.000.
McBride, Edward D.: *See—*
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,354,848, Cl. 440-61.000.
McCool, John M.: *See—*
Zeidler, James R.; McCool, John M.; and Widrow, Bernard, 4,355,368, Cl. 364-728.000.
McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., to Otis Engineering Corporation. Electronic intermitter. 4,355,365, Cl. 364-569.000.
McFadden, Lewis W.: *See—*
Poad, William J.; DeSantis, Urbano J.; and McFadden, Lewis W., 4,354,865, Cl. 65-29.000.
McGowan, Donald A.; and Meneghini, Frank A., to Polaroid Corporation. Thiazolidinyl-substituted phenyl sulfonamides. 4,355,169, Cl. 548-146.000.
McGowan, Michael J.: *See—*
Moravec, John V.; Carlson, William P.; and McGowan, Michael J., 4,354,418, Cl. 84-454.000.
McGraw-Edison Company: *See—*
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Lowder, Dale E., 4,354,650, Cl. 248-49.000.
McHale, Joseph P., to Kerotest Manufacturing Corp. High pressure packless metal diaphragm valve. 4,354,666, Cl. 251-335.00A.
McKenzie, Walter L.: *See—*
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., 4,355,028, Cl. 424-230.000.
McKinley, Paul F. Business strategy board game. 4,354,684, Cl. 273-256.000.
McMillan, William D., to Caterpillar Tractor Co. Control system for pilot operated valve. 4,354,527, Cl. 137-625.630.
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., to Coca-Cola Company, The; and Cornelius Company, The. Pneumatically powerable double acting positive displacement fluid pump. 4,354,806, Cl. 417-393.000.
McNally Pittsburg Mfg. Corp.: *See—*
Fisher, Donald L.; Kearns, Thomas B.; and Maciejewski, Edward T., 4,354,825, Cl. 432-14.000.
McNeil, Roderick J., to Perkin-Elmer Corporation, The. Fluid flow control device. 4,354,932, Cl. 210-198.200.
McPhee, Charles J., to American Hospital Supply Corporation. Medical administration set with backflow check valve. 4,354,492, Cl. 128-214.00E.
McRee, Robert E., Jr., to Environmental Control Products, Inc. Underfire air and steam system and incinerating process for a controlled starved-air incinerator. 4,354,440, Cl. 110-346.000.
Meacham Marine Products, Inc.: *See—*
Kafka, Charles F.; and Kafka, Robert S., 4,354,445, Cl. 114-218.000.
Meagher, James E.: *See—*
Buhrlen, Harold, 4,355,263, Cl. 315-209.00T.
Mecklenborg, Richard A.: *See—*
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Medalist Industries, Inc.: *See—*
Witek, Joseph I., 4,354,768, Cl. 403-3.000.
Medical Laboratory Automation, Inc.: *See—*
Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., 4,354,376, Cl. 73-1.00H.
Medicor Muvek: *See—*
Vittay, Pal, 4,355,276, Cl. 322-4.000.
Medlin, William L.; Masse, Lucien; and Sexton, James H., to Mobil Oil Corporation. Sonic attenuating method for distinguishing between oil, water and gas. 4,354,381, Cl. 73-151.000.
Medtronic, Inc.: *See—*
Kahn, Alan R., 4,354,497, Cl. 128-419.00D.
Meeder, Ernest P., to C. F. Distributions, Inc. Prerecorded instructional material and method of instruction. 4,354,841, Cl. 434-157.000.
Mehler, Gunter: *See—*
Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., to Polaroid Corporation. Novel phenylmercaptoazole compounds. 4,355,092, Cl. 430-219.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., to Polaroid Corporation. Phenylmercaptoazole compounds. 4,355,101, Cl. 430-564.000.
Melpolder, John B.: *See—*
Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,355,147, Cl. 526-264.000.
Melvin, Waymon A., Jr.: *See—*
Phillips, John S.; and Melvin, Waymon A., Jr., 4,355,303, Cl. 340-310.00A.
Meneghini, Frank A.: *See—*
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Mennen, Frederick C. Over the counter swab kit for self detection of gonorrhea in the male using saline ampule. 4,355,113, Cl. 435-295.000.
Menniti, Pietro: *See—*
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Mera, Hiroshi: *See—*
Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.
Mercer, James B., to Facet Enterprises, Inc. Durable molded articles. 4,355,128, Cl. 524-423.000.
Mercier, John A.: *See—*
Goldsmith, Riley G.; and Mercier, John A., 4,354,446, Cl. 114-230.000.
Merck & Co., Inc.: *See—*
Dolling, Ulf H., 4,355,174, Cl. 562-469.000.
Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., 4,355,034, Cl. 424-263.000.
Merck Patent Gesellschaft mit Beschrankter Haftung: *See—*
Romer, Michael, 4,354,976, Cl. 260-349.000.
Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.
Merli, Gian F., to Claude, S.A. Starter circuit for discharge lamp. 4,355,264, Cl. 315-289.000.
Mesick, Jack H.; Shoemaker, Lewis E.; and Freeman, Richard F., to Huntington Alloys, Inc. Coated electrode. 4,355,224, Cl. 219-137.0WM.
Metal Improvement Company, Inc.: *See—*
Johnson, Daniel E., 4,354,371, Cl. 72-53.000.
Metallgesellschaft Aktiengesellschaft: *See—*
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Metallisations et Traitements Optiques M.T.O.: *See—*
Bel, Roger P., 4,354,730, Cl. 350-54.000.
Metallwerk Max Brose GmbH & Co.: *See—*
Volk, Hans-Joachim; and Forkel, Michael, 4,354,696, Cl. 280-804.000.
Metals & Alloys Company Limited: *See—*
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Mettler Instrumente AG: *See—*
Luchinger, Paul; and Stutz, Andreas, 4,354,563, Cl. 177-212.000.
Meyer, Alfons. Method for orderly transport and storage of flat objects and a plastic bag suitable therefor. 4,354,335, Cl. 53-475.000.

Meyer, Jerry A.: *See—*

Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.

Meyer, Nicolas; and Cousin, Michel, to Societe Chimique des Charbonnages SA. Furan resins of improved fire resistance. 4,355,145, Cl. 526-195.000.

Mid-America Body & Equipment Co.: *See—*

Perry, Marvin D., 4,354,793, Cl. 414-546.000.

Midian Electronics, Inc.: *See—*

Soulliard, Charles, 4,355,210, Cl. 179-84.0VF.

Midland-Ross Corporation: *See—*

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Migita, Jyunichiro: *See—*

Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, 4,354,877, Cl. 106-90.000.

Migliarini, Cesare: *See—*

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Mihara, Shin'ichi, to Olympus Optical Co., Ltd. Attachment lens system. 4,354,743, Cl. 350-464.000.

Milchem Incorporated: *See—*

Bingham, Marion G.; and Reagan, Leonard D., 4,354,513, Cl. 134-104.000.

Miles Laboratories, Inc.: *See—*

Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,355,165, Cl. 544-237.000.

Boguslawski, George; and Rynski, Michael J., 4,355,103, Cl. 435-34.000.

Lantero, Oreste J., Jr., 4,355,105, Cl. 435-94.000.

Miller Brewing Company: *See—*

Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.

Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.

Miller, Stephen J., to Chevron Research Company. Dual component chromia silicate cracking catalyst. 4,354,924, Cl. 208-120.000.

Milliken Research Corporation: *See—*

DeMott, Roy P., 4,355,065, Cl. 428-195.000.

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Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., 4,354,591, Cl. 198-451.000.

Milner, Christopher J., to Unisearch Limited. Temperature-cycled cold trap. 4,354,356, Cl. 62-55.500.

Mine Safety Appliances Company: *See—*

Fertig, Glenn H.; Nardozzi, Daniel R.; and Evanuik, Richard N., 4,355,234, Cl. 250-343.000.

Miner, Robert M. Methods and apparatus for testing roundness and straightness of pipes and tubings. 4,354,379, Cl. 73-37.000.

Minigrip, Inc.: *See—*

Tilman, Paul A., 4,354,541, Cl. 150-3.000.

Mink, Robert I.: *See—*

Epstein, Ronald A.; and Mink, Robert I., 4,354,959, Cl. 252-429.00B.

Minolta Camera Kabushiki Kaisha: *See—*

Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.

Mitchell, Joan L., to International Business Machines Corporation. Dynamic stack data compression and decompression system. 4,355,306, Cl. 340-347.0DD.

Mitel Corporation: *See—*

Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.

Mitsubishi Denki Kabushiki Kaisha: *See—*

Kajiyama, Ryuichi, 4,354,576, Cl. 187-29.00R.

Yonemoto, Masashi, 4,354,577, Cl. 187-29.00R.

Mitsubishi Gas Chemical Company, Inc.: *See—*

Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.

Mitsubishi Paper Mills, Ltd.: *See—*

Fuchigami, Mitsuru, 4,354,697, Cl. 282-27.500.

Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, 4,355,090, Cl. 430-204.000.

Mitsubushi Kinzoku Kabushiki Kaisha: *See—*

Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.

Mitsui Coke Co., Ltd.: *See—*

Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.

Mitsui-Kozan Coking Industry Co., Ltd.: *See—*

Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.

Mitsui Petrochemical Industries, Ltd.: *See—*

Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, 4,355,190, Cl. 568-754.000.

Mitsui Toatsu Chemical, Inc.: *See—*

Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.

Mitsui Toatsu Chemicals, Inc.: *See—*

Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply apparatus in internal combustion engine. 4,354,470, Cl. 123-472.000.

Miyashita, Atsushi: *See—*

Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.

Miyauchi, Akio, to Fuji Photo Film Co., Ltd. Laser recording monitoring system. 4,355,318, Cl. 346-76.00L.

Miyazaki, Hiroshi: *See—*

Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.

Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, to Fuji Electric Co., Ltd.; and Sankyo Company, Limited. Device for inspecting the external appearance of solid medicine. 4,354,602, Cl. 209-545.000.

Mizerak, Robert J.: *See—*

Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,047, Cl. 426-13.000.

Line, William F.; Chaudhary, Vinod K.; Chicoye, Etzer; and Mizerak, Robert J., 4,355,110, Cl. 435-210.000.

Mizutani, Tomoji; Fukushima, Hitoshi; and Sakamoto, Yoshihiro, to Kohjin Co., Ltd. Heat shrinkable film and process for preparing the same. 4,354,997, Cl. 264-560.000.

Mobay Chemical Corporation: *See—*

Iliopulos, Miltiadis I.; and Baumann, Gert F., 4,355,118, Cl. 521-108.000.

Markusch, Peter; Hudson, George A., deceased; and White, Richard L., administrator, 4,355,138, Cl. 525-127.000.

Mobil Oil Corporation: *See—*

Audeh, Costandi A.; and Yan, Tsoung Y., 4,354,928, Cl. 208-309.000.

Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., 4,354,963, Cl. 252-455.00Z.

Dennis, Charles L.; and Harrell, John W., 4,355,378, Cl. 367-33.000.

Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,354,922, Cl. 208-68.000.

Goldstein, Theodore P.; and Rollmann, Louis D., 4,354,870, Cl. 75-108.000.

Iwasawa, Teruo; and Tojiki, Hitomi, 4,355,268, Cl. 318-314.000.

Medlin, William L.; Masse, Lucien; and Sexton, James H., 4,354,381, Cl. 73-151.000.

Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., 4,354,927, Cl. 208-251.00H.

Modahl, Robert J.; and Luckeroth, Virgil C., to Trane Company, The. Heat transfer surface for efficient boiling of liquid R-11 and its equivalents. 4,354,550, Cl. 165-133.000.

Mogi, Takehiko: *See—*

Okada, Hiroshi; Masuko, Seiichi; Gotoh, Kuniyuki; and Mogi, Takehiko, 4,355,141, Cl. 526-62.000.

Mohn, Ulrich: *See—*

Bechthold, Horst; and Mohn, Ulrich, 4,355,013, Cl. 423-242.000.

Moller, Hans J.: *See—*

Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., 4,354,511, Cl. 131-324.000.

Monahan, Joseph F., Jr.: *See—*

Langdon, Joel A., 4,354,282, Cl. 2-115.000.

Mones, Arthur H.: *See—*

Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., 4,354,311, Cl. 29-840.000.

Monsanto Company: *See—*

Coran, Aubert Y.; and Patel, Raman, 4,355,139, Cl. 525-133.000.

Montedison S.p.A.: *See—*

Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, 4,355,168, Cl. 546-341.000.

Moore, Charles E. Dental appliance for use in combination with a saliva ejector. 4,354,837, Cl. 433-91.000.

Moore, Cyril G.: *See—*

Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., 4,354,687, Cl. 277-26.000.

Moorwats Safety Systems Limited: *See—*

Lakin, John; and Watson, Philip R., 4,354,571, Cl. 180-271.000.

Moravec, John V.; Carlson, William P.; and McGowan, Michael J., to Nuvatec, Inc. Automatic note analyzer. 4,354,418, Cl. 84-454.000.

Morel, Henri, to ITW de France. Terminal connector device for electrical conducting wires. 4,354,722, Cl. 339-95.00D.

Moretto, Hans-Heinrich: *See—*

de Montigny, Armand; Illger, Hans-Walter; Gonzalez-Doerner, Alberto C.; and Moretto, Hans-Heinrich, 4,355,171, Cl. 556-446.000.

Morgan, Allan C.; and Puckett, Dan K., to Cabot Corporation. Self-cleaning apparatus for removing material from a rotating drum. 4,354,592, Cl. 198-703.000.

Mori, Kazuhiro; Taki, Yasuo; and Araki, Shigeru, to Matsushita Electric Industrial Co., Ltd. Apparatus for packaging electrical circuit components. 4,354,337, Cl. 53-559.000.

Mori, Shinya: *See—*

Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.

Morikawa, Masaki: *See—*

Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, 4,354,301, Cl. 29-160.600.

Morimoto, Akira: *See—*

Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.

Moro, Kanji: *See—*

Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Morris, Kenneth J. Moulding apparatus for compacting powdered materials. 4,354,818, Cl. 425-405.00H.

Morris, Richard L.: *See—*

Heismann, Richard A.; and Morris, Richard L., 4,354,461, Cl. 123-195.0AC.

Morrow, William D.; and Bath, William R. Bearing assembly for a pedestal crane. 4,354,606, Cl. 212-175.000.

Mortimer, Ivan: *See—*

Farr, Glyn P. R.; and Mortimer, Ivan, 4,354,715, Cl. 303-116.000.

Morton, Daniel D.: *See—*

Cording, Richard W.; and Morton, Daniel D., 4,355,305, Cl. 340-347.0SY.

Moss, Jack. Gasoline dispensing nozzle. 4,354,536, Cl. 141-383.000.

Motegi, Shoji: *See—*

Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Motor Wheel Corporation: *See—*

Daudi, Anwar; Golata, John H.; and Triponi, Doarde G., 4,354,407, Cl. 83-55.000.

Motorola, Inc.: *See—*

Davis, Walter L.; and Jacobson, James E., Jr., 4,355,277, Cl. 323-351.000.

Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., 4,355,285, Cl. 330-9.000.

Motosacoche S.A.: *See—*

Collombin, Andre-Marcel, 4,354,813, Cl. 425-182.000.

Mouissie, Bob, to Du Pont de Nemours, E. I., and Company. Self-aligning optical fiber connector. 4,354,731, Cl. 350-96.210.

Mouly, Raymond J., to PPG Industries, Inc. Method of bidirectionally attenuating glass in a float process with edge cooling. 4,354,866, Cl. 65-99.500.

Mueller, Friedrich, to Siemens Aktiengesellschaft. Device for disconnecting the receiver in case of a small signal-to-noise ratio for a digital-modulated radio system. 4,355,407, Cl. 375-91.000.

Mueller, Richard A., to G.D. Searle & Co. Hydroxy-substituted phosphoranes and salts. 4,355,182, Cl. 568-11.000.

Muhlberger, Emil: *See—*

Schmidt, Peter; and Muhlberger, Emil, 4,354,703, Cl. 294-64.00R.

Murakami, Tsugio; Igawa, Kazushige; and Hiraga, Yoichi, to Toyo Soda Manufacturing Co., Ltd. Stable calcium hypochlorite composition and method for manufacture thereof. 4,355,014, Cl. 423-265.000.

Murata, Yoichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection pump operating condition detector. 4,354,380, Cl. 73-119.00A.

Murayama, Masaki: *See—*

Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,355,389, Cl. 371-18.000.

Murfitt, Robert R.; and Burtt, Richard F., to Vaughn Corporation. Electrode. 4,354,508, Cl. 128-798.000.

Murphy, Joseph J.: *See—*

Frederick, Edward C.; Murphy, Joseph J.; Gorman, James T.; and Burris, Steven J., 4,354,318, Cl. 36-30.00R.

Murr, Eduard; Gersting, Siegfried; Ubel, Helmut; and Knight, Alan C., to International Standard Electric Corporation. Arrangement for continuously controlling track-bound vehicles. 4,354,649, Cl. 246-187.00B.

Muzio, Andrew R., to Georgia Tech Research Institute. Dish antenna and method for making. 4,355,317, Cl. 343-840.000.

Myers, George D.; and Busch, Lloyd E., to Ashland Oil, Inc. Carbo-metallic oil conversion with liquid water, ballistic separation and controlled $CO:CO_2$ ratio during catalyst regeneration. 4,354,923, Cl. 208-113.000.

Myers, Melvyn J., to Du Pont de Nemours, E. I., and Company. 4,5-Bis-(4-fluorophenyl)-1-(4-nitrobenzyl)-2-[((1,1,2,2-tetrafluoroethyl)sulfonyl]-1H-imidazole, composition and use. 4,355,041, Cl. 424-273.00R.

Mylar, James L.: *See—*

O'Toole, James P.; and Mylar, James L., 4,354,475, Cl. 123-525.000.

N/S Car Wash Enterprises, Inc.: *See—*

Ennis, George T., 4,354,291, Cl. 15-53.0AB.

N. V. Philips Gloeilampenfabrieken: *See—*

Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.

Naarmann, Herbert: *See—*

Hartmann, Heinrich; Hoffmann, Gerhard; Lenz, Werner; Lynch, John; and Naarmann, Herbert, 4,355,093, Cl. 430-275.000.

Nabeyama, Hiroaki: *See—*

Imaide, Takuya; Nabeyama, Hiroaki; Noda, Masaru; Masuda, Michio; Izumita, Morishi; and Ohba, Shinya, 4,355,335, Cl. 358-213.000.

Nabisco Brands, Inc.: *See—*

Antrim, Richard L.; and Hurst, Louis S., 4,355,117, Cl. 521-28.000.

Nace, Grace M.: *See—*

Langdon, Joel A., 4,354,282, Cl. 2-115.000.

Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, to Toyo Engineering Corporation; and Mitsui Toatsu Chemicals, Inc. Jet layer granulator. 4,354,450, Cl. 118-303.000.

Naganawa, Hiroshi: *See—*

Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; and Tatsuta, Kuniaki, 4,355,026, Cl. 424-180.000.

Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, to Nippon Steel Corporation. Process for production of a low hydrogen type covered arc-electrode. 4,355,054, Cl. 427-61.000.

Naganokeiki Seisakujo Company, Ltd.: *See—*

Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.

Nagase, Hidenobu: *See—*

Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.

Nagase, Masaaki: *See—*

Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, 4,355,319, Cl. 346-76.0PH.

Nagle, Dennis C.: *See—*

Boxall, Larry G.; and Nagle, Dennis C., 4,354,918, Cl. 204-286.000.

Nagumo, Fumio; and Asaida, Takashi, to Sony Corporation. Digital color encoder. 4,355,327, Cl. 358-44.000.

Nagy, Geza: *See—*

Pungor, Erno; Havas, Jeno; Nagy, Geza; and Porjesz, Emma, 4,354,913, Cl. 204-195.00P.

Naifeh, Woodrow W. Slide lock folding blade knife. 4,354,313, Cl. 30-161.000.

Naito, Yukio: *See—*

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.

Nakada, Teruo: *See—*

Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, 4,354,465, Cl. 123-339.000.

Nakagawa, Hiroaki: *See—*

Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, 4,355,190, Cl. 568-754.000.

Nakagawa, Sachio: *See—*

Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.

Nakaguchi, Osamu: *See—*

Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.

Nakahashi, Ken-ichi, to Olympus Optical Co., Ltd. Objective optical system for endoscopes. 4,354,734, Cl. 350-96.260.

Nakajima, Makoto, to Fujitsu Limited. Process for forming contact through holes. 4,354,897, Cl. 156-643.000.

Nakajima, Takato, to Kanetsu Kogyo Kabushiki Kaisha. Device for separating mixture. 4,354,930, Cl. 209-221.000.

Nakamura, Kenji: *See—*

Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.

Nakamura, Mamoru; and Kanayama, Akikatsu, to Nippon Zeon Co. Ltd. Process for removing water-soluble protein from vinyl chloride resin. 4,355,146, Cl. 526-199.000.

Nakamura, Takashi; and Sakashita, Akio, to Sony Corporation. White balance control system. 4,355,325, Cl. 358-29.000.

Nakanishi Metal Works Co., Ltd.: *See—*

Wakabayashi, Takao, 4,354,435, Cl. 104-172.00S.

Nakata, Shinsaku: *See—*

Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, 4,354,909, Cl. 204-192.00N.

Nakayama, Hiroyuki: *See—*

Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.

Nalco Chemical Company: *See—*

Kekish, George T.; Lin, Mei-Jan L.; and Collins, John H., 4,354,872, Cl. 106-14.270.

Nambu, Hirohiko; Matsunaga, Fujihisa; and Nakagawa, Hiroaki, to Mitsui Petrochemical Industries, Ltd. Process for recovery of resorcinol from aqueous resorcinol solution containing hydroquinone. 4,355,190, Cl. 568-754.000.

Naphtachimie: *See—*

Lassalle, Dominique; and Havas, Laszlo, 4,355,143, Cl. 526-119.000.

Nardozzi, Daniel R.: *See—*

Fertig, Glenn H.; Nardozzi, Daniel R.; and Evanuik, Richard N., 4,355,234, Cl. 250-343.000.

Naruo, Masaki: *See—*

Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Nash, Martin E.; and Huxley, Edward E., to Phillips Petroleum Company. Decolorization treatment. 4,355,183, Cl. 568-19.000.

National Distillers & Chemical Corp.: *See—*

Frampton, Orville D.; and Baugh, William D., 4,354,978, Cl. 260-410.90R.

National Gypsum Company: *See—*

White, George H., 4,354,885, Cl. 156-39.000.

National Identification Bureau Inc.: *See—*

Jones, William R.; and Harrington, Edgar F., 4,354,387, Cl. 73-597.000.

National Steel Corporation: *See—*

Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.

Nawn, George H.: *See—*

Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,092, Cl. 430-219.000.

Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,101, Cl. 430-564.000.

NCR Corporation: *See—*

Cook, Donald M., 4,355,398, Cl. 375-110.000.

Porter, Sigmund N., 4,355,366, Cl. 364-717.000.

Neathway, Graham: *See—*

Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.

Nebashi, Toshiyuki: *See—*

Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.

Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer: *See—*

van Turnhout, Jan; and Ahuja, Ramesh C., 4,355,089, Cl. 430-130.000.

Nelms, Carl L.: *See—*

Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., 4,354,429, Cl. 100-5.000.

Nelsen, Suzanne B., to GAF Corporation. Thermoplastic copolyester elastomer. 4,355,155, Cl. 528-301.000.

Nelson, Stephen J.. to Upjohn Company, The. Processes for making phosphorus derivatives of aminothiomethylcarbamates. 4,354,975, Cl. 549-220.000.

Neuhoff, Donald; Mones, Arthur H.; and Lam, Kit M., to Honeywell Information Systems Inc. Solderable conductor composition and a method of soldering a lead to a lead pad. 4,354,311, Cl. 29-840.000.

Neulinger, Franz: *See—*

Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.

Neveu, Jean-Louis, to Agence Nationale de Valorisation de la Recherche (ANVAR); and Institut Textile Boulogne-Sur de France. Scouring material. 4,355,067, Cl. 428-253.000.

New England Nuclear Corporation: *See—*

Holsinger, Ronald F., 4,355,236, Cl. 250-396.0ML.

Newell, Ronald. Automatic control valve. 4,354,516, Cl. 137-98.000.

Newman, Martin H. Electronic weighing device. 4,354,562, Cl. 177-210.0EM.

Newman, Nicholas S., to Kendall Company, The. Spot-bonded absorbent composite towel material having 60% or more of the surface area unbonded. 4,355,066, Cl. 428-198.000.

Newport, Duane B. Drive-in expansion fastener. 4,354,782, Cl. 411-61.000.

Newton, Robert P., to Autodynamics, Inc. Tire assembly mounting adapter. 4,354,386, Cl. 73-487.000.

Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, to Kansai Paint Co., Ltd. Method for improving the adhesiveness of the surface of a synthetic polymeric substrate to coatings. 4,355,053, Cl. 427-54.100.

Nguyen, Van T.: *See—*

Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.

Nickel, Horst: *See—*

Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,354,968, Cl. 260-146.00T.

Nicko, Reinhard: *See—*

Borowski, Kurt; Nicko, Reinhard; Cocron, Istvan; and Engelsmann, Dieter, 4,354,747, Cl. 354-23.00D.

Niedballa, Ulrich; and Bottcher, Irmgard, to Schering, Aktiengesellschaft. Antiinflammatory-4,5-diaryl-2-substituted-thio-imidazoles and their corresponding sulfoxides and sulfones. 4,355,039, Cl. 424-273.00R.

Nielsen, Steen H.: *See—*

Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., 4,354,511, Cl. 131-324.000.

Niewisch, Joachim: *See—*

Diepers, Heinrich; and Niewisch, Joachim, 4,354,388, Cl. 73-612.000.

Nifco Inc.: *See—*

Hara, Kunio, 4,354,334, Cl. 53-48.000.

Yuda, Takuo, 4,354,566, Cl. 180-68.00P.

Nihon Yohhin Kabushiki Kaisha: *See—*

Satoh, Tomoyoshi, 4,354,281, Cl. 2-69.500.

Nioh, Susumu: *See—*

Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.

Nipon Interphone Co., Ltd.: *See—*

Yoshida, Shinichi; and Kobayashi, Kazutaka, 4,355,329, Cl. 358-108.000.

Nippon Air Brake Co., Ltd.: *See—*

Kuroda, Yoichi; and Tamamori, Hideo, 4,354,518, Cl. 137-112.000.

Nippon Columbia K.K.: *See—*

Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.

Nippon Electric Co., Ltd.: *See—*

Hiyama, Takashi, 4,355,419, Cl. 455-303.000.

Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.

Ishihara, Hiroyuki, 4,355,420, Cl. 455-317.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*

Suzuki, Hideo; and Kaneko, Makoto, 4,354,413, Cl. 84-1.010.

Nippon Kogaku K.K.: *See—*

Hasegawa, Hiroshi; and Maida, Osamu, 4,354,750, Cl. 354-128.000.

Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, 4,354,754, Cl. 354-289.000.

Nippon Soda Company Limited: *See—*

Kaku, Tsutomu; Katsuura, Kiyoshi; and Sawaki, Mikio, 4,355,184, Cl. 568-31.000.

Nippon Soken, Inc.: *See—*

Yamamoto, Shinichi; and Ito, Toshihiko, 4,354,820, Cl. 425-461.000.

Nippon Steel Corporation: *See—*

Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,355,054, Cl. 427-61.000.

Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, 4,354,881, Cl. 148-6.14R.

Nippon Zeon Co. Ltd.: *See—*

Nakamura, Mamoru; and Kanayama, Akikatsu, 4,355,146, Cl. 526-199.000.

Nishida, Hideo; Koseki, Fumio; and Gyobu, Ichiro, to Hitachi, Ltd. Vaned diffuser. 4,354,802, Cl. 415-207.000.

Nishida, Yasuhiro: *See—*

Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, 4,354,849, Cl. 440-88.000.

Nishii, Michiharu: *See—*

Ohmi, Atsushi; Tsubouchi, Kaoru; and Nishii, Michiharu, 4,354,423, Cl. 91-369.00A.

Nishikawa, Eiichiro: *See—*

Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.

Nishikawa, Kohei: *See—*

Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,355,040, Cl. 424-273.00R.

Nishikawa, Masaji, to Olympus Optical Company Limited. Developing device with magnetic pole having magnetic spacer members. 4,354,454, Cl. 118-658.000.

Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Load relief device for power steering system. 4,354,422, Cl. 91-358.00R.

Nishiyama, Seiichi; and Yamada, Muneki, to Toyo Seikan Kaisha, Ltd. Method for making a plastic container. 4,354,996, Cl. 264-322.000.

Nissan Jidosha Kabushiki Kaisha: *See—*

Tanaka, Yoshiyuki; and Kobori, Masaharu, 4,354,298, Cl. 24-201.0LP.

Nissan Motor Company, Limited: *See—*

Asano, Masaharu; and Tanaka, Haruto, 4,355,360, Cl. 364-431.110.

Kanegae, Hidetoshi; and Asano, Masaharu, 4,355,359, Cl. 364-431.040.

Kato, Shinichi; Otani, Syuichi; and Hashimoto, Susumu, 4,354,726, Cl. 339-230.00R.

Kawakami, Yasushi, 4,355,412, Cl. 455-175.000.

Oshiage, Katsunori; and Manaka, Nobuji, 4,354,378, Cl. 73-35.000.

Sato, Yoshimi, 4,354,695, Cl. 280-804.000.

Sone, Kohki; and Kenji, Okamura, 4,354,468, Cl. 123-440.000.

Sugasawa, Fukashi; and Iizuka, Haruhiko, 4,354,471, Cl. 123-481.000.

Niwa, Masatake: *See—*

Izumi, Tatsuro; Taniguchi, Nobuyuki; Matsumoto, Toshiaki; Niwa, Masatake; Ishida, Tokuji; and Itoh, Masatoshi, 4,354,751, Cl. 354-139.000.

Nixdorf Computer AG: *See—*

Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, 4,354,654, Cl. 248-663.000.

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Westdale, Virgil W.; and Novotny, John, Jr., 4,355,088, Cl. 430-98.000.

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Johnson, Tod; Tarshis, Andrew; and Goldberg, George, 4,355,372, Cl. 364-900.000.

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Moravec, John V.; Carlson, William P.; and McGowan, Michael J., 4,354,418, Cl. 84-454.000.

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Saeman, Walter C., 4,354,864, Cl. 65-27.000.

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  - Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., 4,354,554, Cl. 166-321.000.
  - Higgins, Robert S., 4,354,524, Cl. 137-624.140.
  - McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., 4,355,365, Cl. 364-569.000.
- O'Toole, James P.; and Mylar, James L., to Lazy S. Mining and Development Corp. Auxiliary supply system. 4,354,475, Cl. 123-525.000.
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  - Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.
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- Ott, Russell G., to RCA Corporation. Circuit and method for duty cycle control. 4,355,283, Cl. 328-61.000.
- Outboard Marine Corporation: *See—*
  - Blanchard, Clarence E., 4,354,847, Cl. 440-61.000.
  - Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,354.848, Cl. 440-61.000.
  - Heismann, Richard A.; and Morris, Richard L., 4,354,461, Cl. 123-195.0AC.
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  - Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., 4,355,005, Cl. 423-41.000.
- Owa, Yoshihito: *See—*
  - Fujita, Masanori; and Owa, Yoshihito, 4,355,381, Cl. 368-187.000.
- Owen, Harrold D., to Pengo Industries, Inc. Apparatus for cutting pipe. 4,354,433, Cl. 102-307.000.
- Oyama, Tadashi; and Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Electromagnetic valve. 4,354,525, Cl. 137-625.500.
- P. L. Porter Co.: *See—*
  - Porter, Clyde R., 4,354,398, Cl. 74-501.00R.
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  - Kugler, William E.; and Pacello, James M., 4,354,893, Cl. 156-497.000.
- Page, John S., Jr. Shock absorption apparatus associated with well pump. 4,354,395, Cl. 74-41.000.
- Pallini, Luciano: *See—*
  - Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, 4,355,168, Cl. 546-341.000.
- Palmer, Leon B.; and Conger, Robert P., to Congoleum Corporation. Chemically embossed carpet and the method of carrying out chemical embossing while preserving texture. 4,355,063, Cl. 428-89.000.
- Pampalone, Thomas R.; and Kilichowski, Kurt B., to RCA Corporation. Positive radiation sensitive resist terpolymers. 4,355,094, Cl. 430-286.000.
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  - Zajic, James E.; Gerson, Donald F.; Gerson, Richard K.; and Panchal, Chandrakant J., 4,355,109, Cl. 435-170.000.
- Panlabs, Inc.: *See—*
  - Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.
- Pariza, George R.: *See—*
  - Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., 4,354,652, Cl. 248-201.000.
- Park, Joon S.: *See—*
  - Deichert, William G.; Friends, Gary D.; Melpolder, John B.; and Park, Joon S., 4,355,147, Cl. 526-264.000.
- Parliment, Thomas H.: *See—*
  - Spencer, Marcia D.; Parliment, Thomas H.; and Giordano, Denise A., 4,355,049, Cl. 426-535.000.
- Parrish, Henry H.: *See—*
  - Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., 4,355,402, Cl. 375-11.000.
- Parry, John, to South Wales Switchgear Limited. Electrical switchgear. 4,355,219, Cl. 200-147.00R.
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  - Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,355,150, Cl. 528-176.000.
- Paschen, Hans-Joachim, to International Standard Electric Corporation. Tunable radio receiver with detuning prevention due to power supply variations. 4,355,422, Cl. 455-343.000.
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  - Busse, Oswald; and Klesper, Hugo, 4,354,947, Cl. 210-790.000.
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  - Coran, Aubert Y.; and Patel, Raman, 4,355,139, Cl. 525-133.000.
- Patterson, Charles F., to United States of America, Air Force. Survivable target acquisition and designation system. 4,354,419, Cl. 89-1.00A.
- Patterson, Harvey J., to Consolidated Papers, Inc. Expandable edge dam assembly for paper coating apparatus. 4,354,452, Cl. 118-413.000.
- Paul Wurth S.A.: *See—*
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- Paulik, John R.: *See—*
  - Kulpa, Walter J.; and Paulik, John R., 4,354,672, Cl. 271-221.000.
- Paumard, Alain: *See—*
  - Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.
- Pavelec, John J.: *See—*
  - Riera, John F.; Bielawski, Billy J., Sr.; and Pavelec, John J., 4,354,409, Cl. 83-285.000.
- PCUK Produits Chimiques Ugine Kuhlmann: *See—*
  - Schoch, Elisabeth; and Rebiffe, Michel, 4,354,948, Cl. 252-22.000.
- Pearce, Henry M.: *See—*
  - Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., 4,355,051, Cl. 426-632.000.
- Pearson, Willard C., to Ampex Corporation. Eddy current servo system for controlling the rotation of disk packs. 4,355,266, Cl. 318-85.000.
- Pechhold, Engelbert, to Du Pont de Nemours, E. I., and Company. Oligomeric formal diols of poly(tetramethylene ether) glycol and polyurethanes prepared therefrom. 4,355,119, Cl. 521-159.000.
- Pelabon, Jean, to A.N.F. Industrie. System for attachment of a tank within a container frame. 4,354,612, Cl. 220-401.000.
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  - Owen, Harrold D., 4,354,433, Cl. 102-307.000.
- Peoples, Charles B., to U-Haul International, Inc. Car top carrier. 4,354,625, Cl. 224-329.000.
- Pepsico, Inc.: *See—*
  - Ariel, Gideon B., 4,354,676, Cl. 272-129.000.
- Perduijn, David J.; and Verberkt, Jacobus, to U.S. Philips Corporation. Ceramic composition for a piezoelectric body and electromechanical transducer. 4,355,256, Cl. 310-358.000.
- Perego, Giuseppe. Adjustable baby stroller handle rod. 4,354,689, Cl. 280-47.37R.
- Perino, Didier: *See—*
  - Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,355,235, Cl. 250-376.000.
- Perkin-Elmer Corporation, The: *See—*
  - McNeil, Roderick J., 4,354,932, Cl. 210-198.200.
- Perkins, Marion W.: *See—*
  - Bruton, Billy R.; Corneillie, Jerome E.; and Perkins, Marion W., 4,354,425, Cl. 92-94.000.
- Perry, Marvin D., to Mid-America Body & Equipment Co. Reel locking mechanism for a reel loader apparatus. 4,354,793, Cl. 414-546.000.
- Personal Products Company: *See—*
  - Kopolow, Steven L., 4,354,901, Cl. 162-158.000.
- Peter, Oskar E. Dual counteracting hub-to-shaft clamp connection. 4,354,769, Cl. 403-248.000.
- Peters, David L.: *See—*
  - Dotsko, Martin; Klemm, Robert E.; and Peters, David L., 4,354,737, Cl. 350-117.000.
- Petrolite Corporation: *See—*
  - Quinlan, Patrick M., 4,354,945, Cl. 210-736.000.
- Pfeifer, Josef: *See—*
  - Reinehr, Dieter; and Pfeifer, Josef, 4,355,177, Cl. 564-36.000.
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  - Rademachers, Jakob; and Pflugmacher, Ingo, 4,355,006, Cl. 423-61.000.
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  - Beach, Shirley, 4,354,989, Cl. 264-40.600.
- Phillips, John S.; and Melvin, Waymon A., Jr., to Westinghouse Electric Corp. Receiver for a distribution network power line carrier communication system. 4,355,303, Cl. 340-310.00A.
- Phillips Petroleum Company: *See—*
  - Blackwell, Jennings P., 4,355,059, Cl. 427-388.200.
  - Nash, Martin E.; and Huxley, Edward E., 4,355,183, Cl. 568-19.000.
  - Stacy, Galen D.; and Likins, Merle R., Jr., 4,355,016, Cl. 423-450.000.
  - Swindell, Harold J.; and Thompson, Randall G., 4,354,957, Cl. 252-419.000.
- Photomatrix Corp.: *See—*
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- Picker International Limited: *See—*
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- Picquet, Jean M.; Picquet, Lambert; and Cuvillier, Roger. Rearview device incorporable in helmets. 4,354,733, Cl. 350-51.000.
- Picquet, Lambert: *See—*
  - Picquet, Jean M.; Picquet, Lambert; and Cuvillier, Roger, 4,354,733, Cl. 350-51.000.
- Piepenbreier, Ernst; and Girod, Hansjochen, to Thyssen Industrie AG. Gear clutch. 4,354,850, Cl. 464-32.000.
- Pierart, Robert, to Societe Anonyme dite: Ateliers et Chantiers de Bretagne A.C.B. Reactor unit and a nuclear installation which uses said reactor unit. 4,355,001, Cl. 376-317.000.
- Pierce, Donald C. Hand-held cutter and blade holder for cutting mounting board and the like. 4,354,314, Cl. 30-293.000.
- Pietschmann, Helmut: *See—*
  - Hoyer, Gerd; and Pietschmann, Helmut, 4,354,838, Cl. 433-101.000.
- Pinkert, John R.: *See—*
  - Kayser, John P.; and Pinkert, John R., 4,354,493, Cl. 128-276.000.
- Pitman, Herbert J.; and Harrison, Charles W., to Texaco Inc. Solvent dewaxing process. 4,354,921, Cl. 208-33.000.
- Pitney Bowes Inc.: *See—*
  - Bujese, David P., 4,354,759, Cl. 355-3.0SH.
  - Kulpa, Walter J.; and Paulik, John R., 4,354,672, Cl. 271-221.000.
- Pittway Corporation: *See—*
  - Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., 4,354,652, Cl. 248-201.000.
- Pivovarov, Nikolai N.: *See—*
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  - Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, 4,354,981, Cl. 260-465.80R.

- Plessey Overseas Limited: *See—*
  - Steiner, Frederick, 4,355,211, Cl. 179-90.00K.
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  - Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.
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- Poad, William J.; DeSantis, Urbano J.; and McFadden, Lewis W., to Brockway Glass Company, Inc. Automatic glass ware forming machine with automatic down and/or stuck bottle rejection. 4,354,865, Cl. 65-29.000.
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- Pohl, Kurt M., to L. & C. Steinmuller GmbH. Reverse osmosis desalinization utilizing plural flow work exchange vessels. 4,354,939, Cl. 210-637.000.
- Pohto, Gerald R., to Diamond Shamrock Corporation. High current density electrical contact device. 4,354,916, Cl. 204-253.000.
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- Polaroid Corporation: *See—*
  - Grimes, Donald L.; and Haskell, Stanley W., 4,354,748, Cl. 354-23.00D.
  - MacLeish, William T.; and Shchori, Ehud, 4,355,091, Cl. 430-216.000.
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  - McGowan, Donald A.; and Meneghini, Frank A., 4,355,169, Cl. 548-146.000.
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- Polysar Incorporated: *See—*
  - Stidham, Warren D., 4,354,810, Cl. 425-91.000.
- Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., to United States of America, Agriculture. Direct extraction process for the production of a white defatted food-grade peanut flour. 4,355,051, Cl. 426-632.000.
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  - Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
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- Porter, Clyde R., to P. L. Porter Co. Control mechanism for hydraulic locking device. 4,354,398, Cl. 74-501.00R.
- Porter, Sigmund N., to NCR Corporation. Circuitry for minimizing auto-correlation and bias in a random number generator. 4,355,366, Cl. 364-717.000.
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  - Poteet, Ronald J.; and Poteet, Anne P., 4,354,845, Cl. 434-410.000.
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  - Stubbings, James H., 4,354,410, Cl. 83-471.300.
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- Powers, Larry J.; and Vickers, Thomas M., to Diamond Shamrock Corporation. Controlling the curing time of alkali metal silicates using derivatives of glyoxal. 4,354,875, Cl. 106-74.000.
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  - Cook, Keith R.; Pozenel, John E.; and Graham, Donald E., 4,355,270, Cl. 318-443.000.
- PPG Industries, Inc.: *See—*
  - Mouly, Raymond J., 4,354,866, Cl. 65-99.500.
- Presray Corporation, The: *See—*
  - Lumelleau, Adrian, 4,355,000, Cl. 376-205.000.
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- Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, to Anic, S.p.A. Method for synthesizing dinitriles, products obtained thereby and their derivatives. 4,354,981, Cl. 260-465.80R.
- Priest, Robert V. Plasma confinement. 4,354,999, Cl. 376-142.000.
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- Propst, Robert L. System for pulpwood harvesting and delivery. 4,354,539, Cl. 144-338.000.
- Propst, Robert L.; and Propst, Paul L., to Herman Miller, Inc. Top opening receptacle for trash collection and management systems. 4,354,611, Cl. 220-335.000.
- Puchas, Christian, to Daimler-Benz Aktiengesellschaft. Rear axle suspension system for motor vehicles. 4,354,567, Cl. 180-73.00C.
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  - Morgan, Allan C.; and Puckett, Dan K., 4,354,592, Cl. 198-703.000.
- Pugin, Andre: *See—*
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- Puretic, Mario J. Sail handling apparatus. 4,354,444, Cl. 114-105.000.
- Pusztaszeri, Stephen F. Method for recovery of terephthalic acid from polyester scrap. 4,355,175, Cl. 562-483.000.
- Pyronnet, Patrice: *See—*
  - Legras, Jacques; and Pyronnet, Patrice, 4,355,215, Cl. 179-175.31R.
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  - Linder, Morris B.; and Beffano, John J., 4,354,698, Cl. 285-98.000.
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- Quinlan, Patrick M., to Petrolite Corporation. Clarification process with thiazine quaternary ammonium salts of polyepihalohydrin. 4,354,945, Cl. 210-736.000.
- R & D Associates: *See—*
  - Latter, Albert L.; Hammond, R. Philip; and Dooley, James L., 4,354,565, Cl. 180-54.00B.
- R & G Mold Company, Inc.: *See—*
  - Schepp, Frank, 4,354,816, Cl. 425-302.100.
- Rabussay, Dietmar P., to Interon, Inc. Method of dental treatment. 4,355,022, Cl. 424-50.000.
- Racal-Milgo, Inc.: *See—*
  - Kromer, Philip F., III; Chiu, Ran F.; Kao, Ming L.; and Parrish, Henry H., 4,355,402, Cl. 375-11.000.
- Radakovich, Thomas: *See—*
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- Radici, Pierino; and Colombo, Paolo, to Societa' Italiana Resine S.I.R. S.p.A. Process for the polymerization of formaldehyde. 4,355,153, Cl. 528-243.000.
- Raitto, Russell G., to Concord Laboratories. Syringe. 4,354,507, Cl. 128-763.000.
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  - Richter, Johan C. F. C.; and Ramstad, Jens, 4,354,777, Cl. 406-63.000.
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- Ramuz, Henri, to Hoffman-La Roche Inc. 2-Imino-imidazolidine derivatives. 4,355,033, Cl. 424-256.000.
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  - Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., 4,355,354, Cl. 364-200.000.
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  - Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.
- Rasmussen, Peter J.: *See—*
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- Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., to Outokumpu Oy. Process for the treatment of a raw material which contains oxide and ferrite of zinc, copper and cadmium. 4,355,005, Cl. 423-41.000.
- Ratschat, Gunter, to Mannesmann DeMag A.G. Apparatus for regulating the quantities and percentages of the gaseous constituents of oxygen, nitrogen, carbon dioxide and water in reaction processes in metallurgical applications. 4,354,669, Cl. 266-140.000.
- Rauschenberger, Jorg. Hinge for a chaise and the like. 4,354,710, Cl. 297-356.000.
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  - Campbell, Bruce D.; and Chapman, Lynn O., 4,354,456, Cl. 118-721.000.
  - Grassauer, Willie K.; and Robinson, William M., 4,354,629, Cl. 228-56.000.
- Raymer, Daniel P., to Rockwell International Corporation. Variable dihedral angle tail unit for supersonic aircraft. 4,354,646, Cl. 244-87.000.
- RCA Corporation: *See—*
  - Butterwick, Gilbert N., 4,355,258, Cl. 313-95.000.
  - Dholakia, Anil R.; and Buiocchi, Charles J., 4,355,382, Cl. 369-71.000.
  - George, John B.; and Testin, William J., 4,355,415, Cl. 455-185.000.
  - Hang, Kenneth W.; and Anderson, Wayne M., 4,355,114, Cl. 501-5.000.
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  - Hawrylo, Frank Z.; and Olsen, Gregory H., 4,355,396, Cl. 372-46.000.
  - Hoover, Merle V., 4,355,287, Cl. 330-264.000.
  - Kaganowicz, Grzegorz; and Robinson, John W., 4,355,052, Cl. 427-39.000.

- Kaplan, Leonard A., 4,355,341, Cl. 361-79.000.
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- Ott, Russell G., 4,355,283, Cl. 328-61.000.
- Pampalone, Thomas R.; and Kilichowski, Kurt B., 4,355,094, Cl. 430-286.000.
- Reitmeier, Glenn A., 4,355,324, Cl. 358-312.000.
- Sagolili, Emmanuel T.; and Hall, Glenn E., 4,354,746, Cl. 354-1.000.
- Wang, Chih C.; and Bates, Ronald F., 4,355,062, Cl. 428-64.000.
- Zimmerman, Harlan S.; and Rhoads, James L., 4,355,229, Cl. 250-213.0VT.

- Reactor Services International, Inc.: *See—*
  - Easley, Othel D., Jr., 4,354,520, Cl. 137-543.230.
- Reagan, Leonard D.: *See—*
  - Bingham, Marion G.; and Reagan, Leonard D., 4,354,513, Cl. 134-104.000.
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- Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, to Heimann GmbH. Process for the production of gas discharge lamps. 4,354,717, Cl. 316-19.000.
- Reeve, Austin J.: *See—*
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  - Goupy, Marcel; and Roubinet, Pierre, 4,354,700, Cl. 293-132.000.
- Rehn, Karl: *See—*
  - Becker, Werner; Dehmer, Klaus; Kaiser, Klaus; and Rehn, Karl, 4,355,186, Cl. 568-52.000.
- Reiff, Fritz: *See—*
  - Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.
- Reiff, Thomas F.: *See—*
  - Allori, Aldo; Wilger, John A.; and Reiff, Thomas F., 4,354,931, Cl. 210-136.000.
- Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, to Zahnradfabrik Friedrichshafen A.G.; and Knorr-Bremse GmbH, a part interest to each. Transmission-clutch operating system. 4,354,584, Cl. 192-3.570.
- Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, to ITT Industries, Inc. Dual-circuit pressure control valve for hydraulic brake systems. 4,354,712, Cl. 303-6.00C.
- Reinehr, Dieter; and Pfeifer, Josef, to Ciba-Geigy Corporation. Substituted 11-amino-undeca-4,8-dienal and 11-amino-undecanal derivatives and processes for their preparation. 4,355,177, Cl. 564-36.000.
- Reiner, Alberto, to D and D S.r.l. Quinuclidinic ester and derivatives of phenoxycarboxylic acids. 4,355,166, Cl. 544-268.000.
- Reinhard, Donald L.: *See—*
  - Haaf, William R.; and Reinhard, Donald L., 4,355,126, Cl. 524-411.000.
- Reinisch, Joseph: *See—*
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- Reiss, Howard, to Occidental Research Corporation. Method and apparatus for separating gas molecules using a bipolar membrane as a molecular sieve. 4,354,857, Cl. 55-6.000.
- Reitmeier, Glenn A., to RCA Corporation. Sampled or digitized color in a high speed search record and replay system. 4,355,324, Cl. 358-312.000.
- Reliable Security Systems, Inc.: *See—*
  - Logan, Emanuel L., 4,354,699, Cl. 292-201.000.
- Remedios, Eugenio E.: *See—*
  - Barclay, Stanley B.; Knaitner, Eugene L.; Remedios, Eugenio E.; Altosaar, Arkadi; and Rusiniak, Richard, 4,354,675, Cl. 272-118.000.
- Renfrew, Edgar E.; and Zanella, Dominic A., to American Color & Chemical Corporation. Mixed anthraquinonedisulfonic acids. 4,355,012, Cl. 423-226.000.
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  - Toth, James M.; and Judd, Tyler W., 4,355,281, Cl. 324-232.000.
- Reudink, Douglas O.; and Yeh, Yu S., to Bell Telephone Laboratories, Incorporated. Technique for efficient spectrum utilization in mobile radio systems using space diversity. 4,355,411, Cl. 455-33.000.
- Revitz, Martin: *See—*
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- Reynolds, Augustus T. Apparatus and method for maintaining positional alignment between two spaced-apart points on a moveable member. 4,354,595, Cl. 198-807.000.
- Reynolds Metals Company: *See—*
  - Dunn, Wendell E., Jr., 4,355,008, Cl. 423-79.000.
- Reynolds, Peter T.: *See—*
  - Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.
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  - Hansen, Hans J.; and Reynoso, Gustavo, 4,355,018, Cl. 424-1.000.
- Rheinthal, Peter, to Sundwiger Eisenhutte Maschinenfabrik Grah & Co. Axial adjustment device for tapered intermediate rolls in a clustered mill stand. 4,354,373, Cl. 72-247.000.
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  - Zimmerman, Harlan S.; and Rhoads, James L., 4,355,229, Cl. 250-213.0VT.
- Riaboy, Florence. Individual nose and mouth filters. 4,354,489, Cl. 128-206.140.
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  - Wilson, David G.; Hoff, William B., III; and Richard, Roy V., II, 4,354,297, Cl. 17-54.000.
- Richards, Bruce H.: *See—*
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  - Richards, Carl H., III; and Richards, Bruce H., 4,354,289, Cl. 5-451.000.
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- Richter, Johan C. F. C.; and Ramstad, Jens, to Kamyr, Inc. High pressure feeder deflection prevention. 4,354,777, Cl. 406-63.000.
- Ricoh Co., Ltd.: *See—*
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- Ridolfo, Anthony S., to Eli Lilly and Company. Combination therapy for rheumatoid arthritis. 4,355,029, Cl. 424-232.000.
- Riedhammer, Thomas M.; and Smith, Francis X., to Bausch & Lomb Incorporated. Contact lens disinfecting and preserving solution comprising chlorhexidine and salts thereof. 4,354,952, Cl. 252-106.000.
- Riege, Ulrich: *See—*
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- Riemens, Karel; and Van Thuijl, Joannes G. M., to U.S. Philips Corporation. Speech synthesizing arrangement having at least two distortion circuits. 4,355,204, Cl. 179-1.0SA.
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- Riffault, Marie L.: *See—*
  - Cannavo', Christian G.; Espagnacq, Andre'; and Riffault, Marie L., 4,354,432, Cl. 102-202.700.
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- Rines, Robert Harvey: *See—*
  - Knowles, Albert H., 4,354,457, Cl. 119-3.000.
- Ripa, John A.: *See—*
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- Ritter, Joachim, to Industriewerk Schaeffler OHG. Overrunning clutch shiftable to free wheeling. 4,354,585, Cl. 192-45.000.
- Ritzerfeld, Gerhard. Xerographic or electrostatic copying apparatus capable of copying only selected lines, paragraphs or other such sections of an original. 4,354,757, Cl. 355-7.000.
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  - Geyer, Gerhard; and Kuschmierz, Heinz, 4,354,473, Cl. 123-501.000.
  - Hans, Waldemar, 4,354,640, Cl. 239-585.000.
  - Knapp, Heinrich; and Maisch, Wolfgang, 4,354,472, Cl. 123-493.000.
  - Straubel, Max, 4,354,476, Cl. 123-569.000.
  - Zirps, Wilhelm, 4,354,517, Cl. 132-110.000.
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- Roberts, William J.: *See—*
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- Robertson, Walter W.: *See—*
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- Robin, Gerard: *See—*
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- Robinson, Ronald D. Method and apparatus for killing poultry. 4,354,296, Cl. 17-52.000.
- Robinson, William M.: *See—*
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- Roccaforte, Harry I., to Champion International Corporation. Pyramid carton closure. 4,354,630, Cl. 229-39.00R.
- Rock-Ola Manufacturing Corporation: *See—*
  - Bookout, Floyd V., 4,354,614, Cl. 221-67.000.
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  - Hamilton, C. Howard, 4,354,369, Cl. 72-38.000.
  - Marmet, Melvin L., 4,355,247, Cl. 307-530.000.
  - Rayner, Daniel P., 4,354,646, Cl. 244-87.000.
- Roe, David B.: *See—*
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- Rogers, Phillip P. Connector for ambulatory dialysis system. 4,354,490, Cl. 128-213.00A.
- Rohm and Haas Company: *See—*
  - Manziek, Larry, 4,355,140, Cl. 525-329.400.
- Rollay, David T.: *See—*
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- Rollmann, Louis D.: *See—*
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- Rolls-Royce Limited: *See—*
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  - Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.
- Romer, Michael, to Merck Patent Gesellschaft mit Beschrankter Haftung. Process for the preparation of azidobenzal compounds. 4,354,976, Cl. 260-349.000.
- Ronge, Georg. Process for continuous separation of polluting matter from a carrier fluid. 4,354,941, Cl. 210-706.000.
- Roppatte, Michael, Jr., to Klauber, Stefan J., a part interest. Liquid applicator device with hair-parting wand. 4,354,512, Cl. 132-88.500.
- Rordorf, Horst, to Berna AG Olten. Method and apparatus for the partial coating of a substrate by cathode sputtering. 4,354,910, Cl. 204-192.00R.
- Rosen, Frank L.: *See—*
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- Rosenbaum, Walter S.: *See—*
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- Rosenberg, Arnold M.; and Gaidis, James M., to W. R. Grace & Co. Corrosion inhibition. 4,355,079, Cl. 428-469.000.
- Rosenthal, Joel W.; and Dahlberg, Arthur J., to Chevron Research Company. Coal liquefaction process. 4,354,920, Cl. 208-10.000.
- Roszinski, Hilmar; and Harnisch, Heinz, to Hoechst Aktiengesellschaft. Process for the purification of O,O-dialkylthionophosphoric acid chlorides. 4,354,983, Cl. 260-990.000.
- Roubinet, Pierre: *See—*
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- Rudd, Thomas H., to Drag Specialties, Inc. Face shield and helmet. 4,354,285, Cl. 2-424.000.
- Ruderman, Stephen: *See—*
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- Ruell, Hartwig, to Siemens Corporation. Liquid level indicator. 4,355,238, Cl. 250-577.000.
- Ruhrchemie Aktiengesellschaft: *See—*
  - Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.
- Rumsey, Robert M.; and Thornton, Robert W., to Standard Oil Company (Indiana). Twister ring and traveler. 4,354,342, Cl. 57-119.000.
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- Ruti Machinery Works Ltd.: *See—*
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- Rutkowski, Edward V., Jr.: *See—*
  - Buchanan, James C.; and Rutkowski, Edward V., Jr., 4,354,765, Cl. 400-7.000.
- Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., to International Standard Electric Corporation. Digital signalling system. 4,355,405, Cl. 375-48.000.
- Rynski, Michael J.: *See—*
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- S. C. Johnson & Son, Inc.: *See—*
  - Mahl, Mearl C.; Dick, Elliot C.; and Walter, George R., Jr., 4,355,021, Cl. 424-28.000.
  - Sutton, David C., 4,354,871, Cl. 106-3.000.
- Saam, John C.; and Chou, Yungnien J., to Dow Corning Corporation. Method for preparing condensation polymers by emulsion polymerization. 4,355,154, Cl. 528-274.000.
- Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiya V., to Honeywell Inc. Lithium thionyl chloride battery. 4,355,086, Cl. 429-105.000.
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  - Severinsson, Lars M., 4,354,582, Cl. 188-196.00M.
- Sabon, Robert J., to GTE Automatic Electric Labs Inc. Programmable line circuit. 4,355,209, Cl. 179-18.0FA.
- Sachs-Systemtechnik GmbH: *See—*
  - Tellert, Rudy, 4,355,243, Cl. 307-261.000.
- Sack GmbH: *See—*
  - Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, 4,354,411, Cl. 83-862.000.
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  - Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.
- Saeman, Walter C., to Olin Corporation. Process for production of layered glass batch pellets. 4,354,864, Cl. 65-27.000.
- Safadago, Gary J. Therapeutic apparatus for use in treatment of muscular and skeletal disorders. 4,354,485, Cl. 128-70.000.
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  - Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, 4,354,620, Cl. 222-14.000.
- Sagolili, Emmanuel T.; and Hall, Glenn E., to RCA Corporation. Unitary light shield for use in color picture tube lighthouses. 4,354,746, Cl. 354-1.000.
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  - Boegel, Gerhard; and Sahli, Max, 4,354,403, Cl. 81-57.370.
- Saikkonen, Pekka J.: *See—*
  - Rastas, Jussi K.; Saikkonen, Pekka J.; and Honkala, Risto J., 4,355,005, Cl. 423-41.000.
- Saito, Gunji: *See—*
  - Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, 4,354,564, Cl. 180-19.00H.
- Saito, Shizuo: *See—*
  - Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.
- Saito, Tetsuo: *See—*
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- SAK Industries (1980) Ltd.: *See—*
  - Aho, Sakari, 4,354,325, Cl. 43-105.000.
- Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, to Naganokeiki Seisakujo Company, Ltd. Intracranial pressure gauge. 4,354,506, Cl. 128-748.000.
- Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, to Hitachi, Ltd. Semiconductor memory device. 4,355,374, Cl. 365-149.000.
- Sakamoto, Fukuma: *See—*
  - Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.
- Sakamoto, Masahiro: *See—*
  - Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.
- Sakamoto, Yoshihiro: *See—*
  - Mizutani, Tomoji; Fukushima, Hitoshi; and Sakamoto, Yoshihiro, 4,354,997, Cl. 264-560.000.
- Sakashita, Akio: *See—*
  - Nakamura, Takashi; and Sakashita, Akio, 4,355,325, Cl. 358-29.000.
- Sakitani, Yoshio: *See—*
  - Todokoro, Hideo; Fukuhara, Satoru; and Sakitani, Yoshio, 4,355,232, Cl. 250-310.000.
- Sakuranaka, Toru: *See—*
  - Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.
- Salerno, Giuseppe: *See—*
  - Chiusoli, Gian P.; Giroldini, William; Pallini, Luciano; and Salerno, Giuseppe, 4,355,168, Cl. 546-341.000.
- Salkazanov, Pierre: *See—*
  - Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, 4,355,356, Cl. 364-200.000.
- Salter, Stuart R.; and Smith, David R., to British Telecommunications. Injection lasers. 4,355,395, Cl. 372-38.000.
- Sama, Stephen L.; and Kitchener, William R., to Artek Systems Corporation. Image analyzer with light pen or the like and shading corrector. 4,355,228, Cl. 235-92.0PC.
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  - Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., 4,354,292, Cl. 15-77.000.
- Sanders Associates, Inc.: *See—*
  - Thompson, Thomas W., 4,354,662, Cl. 251-129.000.
- Sangamo Weston, Inc.: *See—*
  - Riggs, Richard L.; and Coppola, Richard G., 4,355,361, Cl. 364-464.000.
- Sankei Giken Kogyo Kabushiki Kaisha: *See—*
  - Tabata, Kazuki; and Honma, Hideaki, 4,354,573, Cl. 181-239.000.
- Sankyo Company, Limited: *See—*
  - Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
- Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust gas discharge and cooling means for outboard engines. 4,354,849, Cl. 440-88.000.
- Sanraku-Ocean Co., Ltd.: *See—*
  - Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,355,112, Cl. 435-253.000.
- Sansbury, Ralph. Electromagnetic solar cell. 4,355,195, Cl. 136-254.000.
- Sansha Electric Mfg. Co., Ltd.: *See—*
  - Shinkawa, Tsutomu; and Tokuda, Hiroaki, 4,354,831, Cl. 432-263.000.
- Santoni, Pierre J. Articulator devices for reproducing the movements of the mandible. 4,354,836, Cl. 433-73.000.
- Sasagaki, Nobuaki: *See—*
  - Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, 4,354,754, Cl. 354-289.000.
- Sasaki, Noriaki: *See—*
  - Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.
- Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, to Tokyo Shibaura Electric Co., Ltd. Microprogrammed information processing system having self-checking function. 4,355,389, Cl. 371-18.000.
- Sato, Ichitaro, to Sony Corporation. Video signal processing circuit with comb filter. 4,355,333, Cl. 358-160.000.
- Sato, Koji: *See—*
  - Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.
- Sato, Ryosuke: *See—*
  - Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

- Sato, Toshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Fuel injection apparatus in motorized two-wheeled vehicle. 4,354,469, Cl. 123-460.000.
- Sato, Tsutomu, to Sony Corporation. Phase locked loop circuit. 4,355,413, Cl. 455-183.000.
- Sato, Yoichi: *See—*
  - Nishikawa, Masao; Aoki, Takashi; and Sato, Yoichi, 4,354,422, Cl. 91-358.00R.
- Sato, Yoshimi, to Nissan Motor Company, Limited. Seat belt system. 4,354,695, Cl. 280-804.000.
- Sato, Yoshinori: *See—*
  - Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
- Satoh, Nobuo, to Fuji Jukogyo Kabushiki Kaisha. Passive safety belt device. 4,354,694, Cl. 280-802.000.
- Satoh, Tomoyoshi, to Nihon Yohhin Kabushiki Kaisha. Structural member for sleeping bag. 4,354,281, Cl. 2-69.500.
- Satronic AG: *See—*
  - Ludi, Roger; and Hinni, Bernhard, 4,355,292, Cl. 335-145.000.
- Saunders, Gerald A. B.; and Lowe, Philip J., to Queen's University at Kingston. Wheel chair propulsion system. 4,354,691, Cl. 280-242.0WC.
- Sawaki, Mikio: *See—*
  - Kaku, Tsutomu; Katsuura, Kiyoshi; and Sawaki, Mikio, 4,355,184, Cl. 568-31.000.
- Scalzi, Casper A.: *See—*
  - Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., 4,355,355, Cl. 364-200.000.
- Scanlon, Robert T.; and Gelber, Robert M., to Optical Coating Laboratory, Inc. Color absorption-type filter and method of making. 4,354,739, Cl. 350-311.000.
- Scarrott, Gordon G., to International Computers Limited. System for extracting timing information from a digital waveform. 4,355,408, Cl. 375-110.000.
- Schaap, Johannes E.; Nooy, Paulus F. C.; and De Boer, Rudolf, to Stichting Bedrijven Van Het Nederlands Instituut voor Zuivelonderzoek. Manufacture of semi-hard cheese by ultrafiltration. 4,355,048, Cl. 426-40.000.
- Schaefer, Fritz P.; and Jasny, Jan, to Max Planck Gesellschaft Zur Foerderung der Wissenschaften E.V. Laser device for generating ultrashort laser radiation pulses. 4,355,394, Cl. 372-16.000.
- Schaeffer-Homberg GmbH: *See—*
  - Wolfertz, Gunter, 4,354,588, Cl. 198-394.000.
- Scheffler, Knut: *See—*
  - Koster, Rainer; Scheffler, Knut; and Riege, Ulrich, 4,354,954, Cl. 252-629.000.
- Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., to Gates Learjet Corporation. Airstream modification device for airfoils. 4,354,648, Cl. 244-199.000.
- Schepp, Frank, to R & G Mold Company, Inc. Thermoforming apparatus. 4,354,816, Cl. 425-302.100.
- Schering, Aktiengesellschaft: *See—*
  - Niedballa, Ulrich; and Bottcher, Irmgard, 4,355,039, Cl. 424-273.00R.
- Schering Corporation: *See—*
  - Villani, Frank J., 4,355,036, Cl. 424-267.000.
- Schewe, Richard A., to Barber-Colman Company. Package support apparatus for forming a creeling tail. 4,354,642, Cl. 242-18.0PW.
- Schiff, Norman: *See—*
  - Oczkowski, Boguslaw; and Schiff, Norman, 4,354,487, Cl. 128-156.000.
- Schiffner, Gerhard, to Siemens Aktiengesellschaft. Ring interferometer comprising a single-mode light waveguide. 4,354,760, Cl. 356-350.000.
- Schillinger, Joseph F., to Champion International Corporation. Article display package and blank therefor. 4,354,598, Cl. 206-462.000.
- Schlumberger Technology Corporation: *See—*
  - Belaigues, Antoine; Paumard, Alain; Durand, Yves; and Calvert, Thomas J., 4,355,310, Cl. 340-858.000.
  - Chan, David S. K., 4,355,357, Cl. 364-422.000.
- Schmalz, Richard J.: *See—*
  - Butwell, Justin R.; Scalzi, Casper A.; and Schmalz, Richard J., 4,355,355, Cl. 364-200.000.
- Schmeykal, Rudolf: *See—*
  - Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, 4,354,654, Cl. 248-663.000.
- Schmidt, Alfred. Snow plow for railed vehicle. 4,354,320, Cl. 37-213.000.
- Schmidt, Peter; and Muhlberger, Emil, to International Standard Electric Corporation. Method of and apparatus for transporting articles. 4,354,703, Cl. 294-64.00R.
- Schmidt, Walter: *See—*
  - Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
- Schmitt, Frederick L.: *See—*
  - Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.
- Schoch, Elisabeth; and Rebiffe, Michel, to PCUK Produits Chimiques Ugine Kuhlmann. Lubricating varnishes having a graphite fluoride base and method of preparing same. 4,354,948, Cl. 252-22.000.
- Schonowsky, Hubert: *See—*
  - Volkwein, Gert; Schonowsky, Hubert; and Baessler, Konrad, 4,355,189, Cl. 568-637.000.
- Schoonmaker, Charles D.: *See—*
  - Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,354,815, Cl. 425-236.000.
- Schopper, Bernd: *See—*
  - Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.
- Schorfheide, James J., to Exxon Research and Engineering Co. Catalytic reforming process. 4,354,925, Cl. 208-140.000.
- Schrei, Werner: *See—*
  - Hellwig, Friedrich-Wilhelm; and Schrei, Werner, 4,355,390, Cl. 371-21.000.
- Schroeder, Herbert A. Method of beneficiating wood. 4,354,316, Cl. 34-13.800.
- Schulte, Rolf: *See—*
  - Griese, Karl; Kersting, Emil F.; and Schulte, Rolf, 4,354,411, Cl. 83-862.000.
- Schumacher, Ernest W.; and Evans, Stephen E., to Virginia Chemicals, Inc. Integral suction line accumulator/filter-drier. 4,354,362, Cl. 62-474.000.
- Schummer, Helmut: *See—*
  - Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
- Schundehutte, Karl-Heinz: *See—*
  - Kramer, Erich; Nickel, Horst; and Schundehutte, Karl-Heinz, 4,354,968, Cl. 260-146.00T.
- Schuss, Werner. Dental handpiece. 4,354,839, Cl. 433-126.000.
- Schuster, Wilhelm. Flexible elastic support. 4,354,709, Cl. 297-284.000.
- Schutten, Herman P.: *See—*
  - Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,355,322, Cl. 357-38.000.
- Schwaier, Anita: *See—*
  - Lorenz, Peter; and Schwaier, Anita, 4,355,019, Cl. 424-9.000.
- Schwartz, Albert B.: *See—*
  - Butter, Stephen A.; Chester, Arthur W.; and Schwartz, Albert B., 4,354,963, Cl. 252-455.00Z.
- Schwartz, Wesley W., to Square D Company. Flat-cornered triangular medical column. 4,354,330, Cl. 52-28.000.
- Schwarz, Francisc C. High repetition rate power pulse generator. 4,355,351, Cl. 363-9.000.
- Schwendemann, Volker; and Mangold, Dietrich, to BASF Aktiengesellschaft. Preparation of aliphatic isocyanates. 4,354,979, Cl. 260-453.00P.
- Scordato, Richard E.: *See—*
  - Greenfield, Walter; Levy, Didya D.; Scordato, Richard E.; and Hartnett, John J., 4,354,376, Cl. 73-1.00H.
- Scott Bader Company Limited: *See—*
  - Knightley, Jack A., 4,355,073, Cl. 428-350.000.
- Scott, John W. Volumetric apparatus with improved drive system. 4,354,402, Cl. 74-822.000.
- Scott, Paul D.: *See—*
  - Calhoun, Michael B.; Holland, Robert L., Jr.; and Scott, Paul D., 4,354,554, Cl. 166-321.000.
- Seaquist Valve Co., Div. of Pittway Corp.: *See—*
  - Knickerbocker, Michael G., 4,354,621, Cl. 222-47.000.
- SEB S.A.: *See—*
  - Berard, Jean-Claude, 4,355,227, Cl. 219-390.000.
- Seely, Warren L., to Vari-L Company, Inc. Broadband mixer with coplanar balun. 4,355,421, Cl. 455-327.000.
- Seikosha Co., Ltd.: *See—*
  - Fujita, Masanori; and Owa, Yoshihito, 4,355,381, Cl. 368-187.000.
- Sekigawa, Keiji, to Ricoh Co., Ltd. Method of restoring pictures with high density. 4,355,337, Cl. 358-284.000.
- Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, 4,354,909, Cl. 204-192.00N.
- Septier, Louis: *See—*
  - Demange, Michel; and Septier, Louis, 4,354,868, Cl. 75-60.000.
- Sethares, James C.: *See—*
  - Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., 4,355,278, Cl. 324-158.00R.
- Severinsson, Lars M., to SAB Industri AB. Device at a slack adjuster. 4,354,582, Cl. 188-196.00M.
- Sexstone, John H.; Lewis, Tom; Milliner, Ken; and Finn, Everett N., to Brown & Williamson Tobacco Corporation. Carton collating and transfer apparatus. 4,354,591, Cl. 198-451.000.
- Sexstone, John H.: *See—*
  - Lewis, Robert T.; and Sexstone, John H., 4,354,894, Cl. 156-517.000.
- Sexton, James H.: *See—*
  - Medlin, William L.; Masse, Lucien; and Sexton, James H., 4,354,381, Cl. 73-151.000.
- Seys, Freddy: *See—*
  - Heckel, Emil; Seys, Freddy; Baeckelmans, Rene; and Heilmann, Wolfgang, 4,355,015, Cl. 423-336.000.
- SFS Stadler AG: *See—*
  - Boegel, Gerhard; and Sahli, Max, 4,354,403, Cl. 81-57.370.
- Sgaslik, Friedrich, to Andre Buechl Kalk-und Portandzementwerk. Filter for cleaning gases. 4,354,862, Cl. 55-296.000.
- SGS-ATES Componenti Elettronici S.p.A.: *See—*
  - Felici, Maurizio; and Menniti, Pietro, 4,355,344, Cl. 361-103.000.
- Shah, Suresh R.: *See—*
  - Khungar, Sohan L.; and Shah, Suresh R., 4,355,142, Cl. 526-88.000.
- Shakespeare Company: *See—*
  - Zeigler, Myron C., 4,355,061, Cl. 428-36.000.

- Shank, Wayne C.; and Edwards, Thomas C., to Rovac Corporation, The. Compressor-expander of the vane type having canted vane cavity. 4,354,807, Cl. 418-13.000.
- Sharp Kabushiki Kaisha: *See—*
  - Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.
  - Tatsuoka, Masao; and Fujimura, Katsunori, 4,354,358, Cl. 62-271.000.
  - Yanagiuchi, Shigenobu, 4,355,370, Cl. 364-900.000.
- Shatto, Walter C., Jr.: *See—*
  - Brandewie, Joseph E.; and Shatto, Walter C., Jr., 4,354,626, Cl. 226-109.000.
- Shchori, Ehud: *See—*
  - MacLeish, William T.; and Shchori, Ehud, 4,355,091, Cl. 430-216.000.
- Shell Oil Company: *See—*
  - Bickham, Kenneth L., 4,354,778, Cl. 406-137.000.
  - Eggers, Carl A.; and Galvin, Gerald D., 4,354,949, Cl. 252-39.000.
  - Ten Haken, Pieter; and Webb, Shirley B., 4,355,035, Cl. 424-263.000.
- Shelton, William S.: *See—*
  - Hochmuth, William R.; and Shelton, William S., 4,354,523, Cl. 137-614.180.
- Shen, Tsung-Ying; Jones, Howard; and Dorn, Conrad P., to Merck & Co., Inc. Ethenyl derivatives of mercaptoalkylpyridines as anti-inflammatory agents. 4,355,034, Cl. 424-263.000.
- Shepard, Joseph F.: *See—*
  - Gardiner, James R.; Pliskin, William A.; Revitz, Martin; and Shepard, Joseph F., 4,354,309, Cl. 29-571.000.
- Sherwood, John W. C., to Chevron Research Company. Continuous automatic migration of seismic data with waveform preservation. 4,355,379, Cl. 367-68.000.
- Sherwood Medical Industries Inc.: *See—*
  - Bodicky, Raymond O., 4,354,495, Cl. 128-348.000.
- Shibata, Shinya: *See—*
  - Masuzawa, Shigeaki; Shibata, Shinya; Iwase, Tetsuo; and Miyazaki, Hiroshi, 4,355,367, Cl. 364-718.000.
- Shibuya, Iwao: *See—*
  - Inoue, Kiyoshi; and Shibuya, Iwao, 4,355,223, Cl. 219-69.00M.
- Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, to Sumitomo Chemical Company Limited. Process for producing a propylene-ethylene copolymer having improved stretchability. 4,355,144, Cl. 526-137.000.
- Shiga, Kazumasa, to Matsushita Electric Industrial Company, Limited. Method of and apparatus for testing and indicating relaxation state of a human subject. 4,354,505, Cl. 128-732.000.
- Shih, Stuart S.; Angevine, Philip J.; and Oleck, Stephen M., to Mobil Oil Corporation. Method of removing contaminants from hydrocarbonaceous fluids using high-sodium alumina. 4,354,927, Cl. 208-251.00H.
- Shiino, Kouji: *See—*
  - Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
- Shima Idea Center Co., Ltd.: *See—*
  - Inoue, Hideo, 4,354,363, Cl. 66-128.000.
- Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, to Teijin Limited. Aromatic copolyamide containing 3,4'-diamino diphenylene moiety. 4,355,151, Cl. 528-183.000.
- Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, to Kuraray Co., Ltd.; and Taoayuki Matsuo. Method for manufacture of a selective chemical sensitive FET transducer. 4,354,308, Cl. 29-571.000.
- Shimano Industrial Company Limited: *See—*
  - Katayama, Hitoshi, 4,354,399, Cl. 74-551.100.
- Shimizu, Masaki; and Nomura, Takeo, to Terumo Corporation. Microorganism culturing device. 4,355,111, Cl. 435-243.000.
- Shin-Etsu Chemical Co., Ltd.: *See—*
  - Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, 4,355,193, Cl. 570-217.000.
- Shinbo, Katsutoshi: *See—*
  - Hosokawa, Takanori; Maki, Hideo; and Shinbo, Katsutoshi, 4,355,002, Cl. 376-419.000.
- Shindo, Minoru: *See—*
  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
- Shinkawa, Tsutomu; and Tokuda, Hiroaki, to Sansha Electric Mfg. Co., Ltd. Crucible for precision casting device. 4,354,831, Cl. 432-263.000.
- Shinohara, Nobuhiro: *See—*
  - Suzuki, Keiichiro; Ono, Takuro; and Shinohara, Nobuhiro, 4,354,991, Cl. 264-65.000.
- Shinozaki, Teizo: *See—*
  - Oi, Nobuhiro; Aoki, Bunya; Shinozaki, Teizo; Moro, Kanji; Kuroki, Toshio; Matsunaga, Isao; Noto, Takao; Nebashi, Toshiyuki; Harada, Yusuke; Endo, Hisao; Kimura, Takao; Kojima, Kana; Matsumoto, Masahiko; Okazaki, Hiroshi; Ogawa, Haruki; and Shindo, Minoru, 4,355,038, Cl. 424-271.000.
- Shiotu, Gisaburo: *See—*
  - Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
- Shiozawa, Kouji: *See—*
  - Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.
- Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, to Fuji Photo Film Co., Ltd. Process for the production of magnetic recording members. 4,354,908, Cl. 204-192.00N.
- Shiratori, Mamoru: *See—*
  - Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
- Shirono, Junkichi; and Honda, Katsuhisa, to Anritsu Electric Company Limited. Stand for supporting items of electronic equipment. 4,354,436, Cl. 108-123.000.
- Shoemaker, Lewis E.: *See—*
  - Mesick, Jack H.; Shoemaker, Lewis E.; and Freeman, Richard F., 4,355,224, Cl. 219-137.0WM.
- Shorey, Louis W.; Hill, Keith W.; and Davis, Alan R., to Harvey Hubbell Incorporated. Cable grips. 4,354,705, Cl. 294-86.0CG.
- Shoup, Stephen G., to Caterpillar Tractor Co. Heavy duty drawbar. 4,354,692, Cl. 280-495.000.
- Shuren, Thomas E.: *See—*
  - Desai, Mahendrakumar D.; and Shuren, Thomas E., 4,354,613, Cl. 221-4.000.
- Siemens Aktiengesellschaft: *See—*
  - Binz, Reiner; and Karl, Otto, 4,355,386, Cl. 370-100.000.
  - Blossfeldt, Dieter, 4,355,308, Cl. 340-781.000.
  - Diepers, Heinrich; and Niewisch, Joachim, 4,354,388, Cl. 73-612.000.
  - Doemer, Josef; and Thanhaeuser, Gerhard, 4,355,400, Cl. 375-4.000.
  - Hellwig, Friedrich-Wilhelm; and Schrei, Werner, 4,355,390, Cl. 371-21.000.
  - Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.
  - Mueller, Friedrich, 4,355,407, Cl. 375-91.000.
  - Schiffner, Gerhard, 4,354,760, Cl. 356-350.000.
  - Strahwald, Franz; and Szehi, Erich, 4,354,509, Cl. 128-803.000.
  - Tihanyi, Jeno, 4,355,320, Cl. 357-30.000.
  - Weigert, Kurt; and Hudek, Karl; deceased, 4,354,498, Cl. 128-419.00R.
- Siemens Corporation: *See—*
  - Ruell, Hartwig, 4,355,238, Cl. 250-577.000.
- SIG Schweizerische Industrie-Gesellschaft: *See—*
  - Fluck, Rene, 4,354,589, Cl. 198-419.000.
- Sills, Roger J. M.: *See—*
  - Holland, Brian C.; Hirst, Roy T.; Sills, Roger J. M.; and Moore, Cyril G., 4,354,687, Cl. 277-26.000.
- Silver, Theodore R., to White Consolidated Industries, Inc. Rotary wall deslagger. 4,354,294, Cl. 15-317.000.
- Simmons, John J.: *See—*
  - Kaczur, Jerry J.; Tyler, James C., Jr.; and Simmons, John J., 4,354,942, Cl. 210-712.000.
- Simon, Hans. Cable grommet with tension relief. 4,354,651, Cl. 248-56.000.
- Simon-Hartley Limited: *See—*
  - Austin, Eric P.; and Worrall, Howard J., 4,354,935, Cl. 210-396.000.
- Simons, Ronald H.; and Wilkinson, Basil S. Lighting unit. 4,355,349, Cl. 362-153.000.
- Sims, J. Robert, to Exxon Research & Engineering Co. Energy recovery reciprocating engine. 4,354,421, Cl. 91-39.000.
- Singer Company, The: *See—*
  - Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., 4,354,393, Cl. 74-5.370.
  - Dotsko, Martin; Klemm, Robert E.; and Peters, David L., 4,354,737, Cl. 350-117.000.
  - Forehand, Frederic N.; and Mecklenborg, Richard A., 4,354,738, Cl. 350-126.000.
  - Herr, John A.; and Jaffe, Wolfgang, 4,355,255, Cl. 310-254.000.
  - Horey, Leonard I., 4,354,442, Cl. 112-158.00E.
  - Jarmy, Howard I., 4,354,724, Cl. 339-186.00R.
  - Theall, C. Earle, 4,355,423, Cl. 455-608.000.
- Sinha, Brajnandan; and Tiberg, Sven-Erik, to Sinha, Brajnandan. Device for indicating air pressure in vehicle tires. 4,355,297, Cl. 340-58.000.
- Sitton, Oliver C.: *See—*
  - Gaddy, James L.; and Sitton, Oliver C., 4,355,108, Cl. 435-165.000.
- Skandinanisk Tobakskompagni A/S: *See—*
  - Kjaer, Ian; Moller, Hans J.; and Nielsen, Steen H., 4,354,511, Cl. 131-324.000.
- Skuttle Mfg. Co.: *See—*
  - Johnson, Thomas, 4,354,985, Cl. 261-100.000.
- Slaughter, Edward R., to United Technologies Corporation. Formation of alloy powders through solid particle quenching. 4,355,057, Cl. 427-216.000.
- Slyman Manufacturing Corporation: *See—*
  - Buehl, Arnold L.; and Zwipf, Werner H., 4,354,823, Cl. 431-328.000.
- Smeltzer, Richard H.; and Cello, Linda M., to International Paper Company. Tissue culture method for asexual propagation of pine trees and medium for use therewith. 4,354,327, Cl. 47-58.000.
- Smith, David R.: *See—*
  - Salter, Stuart R.; and Smith, David R., 4,355,395, Cl. 372-38.000.
- Smith, Donald P. Induced circulation oven or cooler. 4,354,549, Cl. 165-62.000.

- Smith, Francis X.: *See—*
  - Riedhammer, Thomas M.; and Smith, Francis X., 4,354,952, Cl. 252-106.000.
- Smith, Marvin W.: *See—*
  - Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., 4,355,242, Cl. 307-252.00N.
- Smith, Stephen D.: *See—*
  - Stupar, James A.; and Smith, Stephen D., 4,354,660, Cl. 251-4.000.
- Smith, William J., to Weatherly Foundry & Manufacturing Co. Apparatus for removing no-bake coatings from foundry sand and classifying the reclaimed sand. 4,354,641, Cl. 241-40.000.
- Societa' Italiana Resine S.I.R. S.p.A.: *See—*
  - Radici, Pierino; and Colombo, Paolo, 4,355,153, Cl. 528-243.000.
- Societa Italiana Telecomunicazioni Siemens S.P.A.: *See—*
  - Cottatellucci, Ezio, 4,355,288, Cl. 331-12.000.
- Societa per Azioni Technogas Fabbrica Apparecchiature Termo-Elettrodomestiche di Giorgio e Gianni F. llt Contini: *See—*
  - Contini, Giorgio, 4,354,478, Cl. 126-39.00E.
- Societa Pneumatici Pirelli S.p.A.: *See—*
  - Tarantola, Luciano; and Migliarini, Cesare, 4,354,892, Cl. 156-398.000.
- Societe Anonyme de Telecommunications: *See—*
  - Israel, Renato G.; Lavoisard, Jean-Louis; and Marchand, Jean-Claude, deceased, 4,355,206, Cl. 179-18.0HB.
- Societe Anonyme dite: Ateliers et Chantiers de Bretagne A.C.B.: *See—*
  - Pierart, Robert, 4,355,001, Cl. 376-317.000.
- Societe Chimique des Charbonnages SA: *See—*
  - Meyer, Nicolas; and Cousin, Michel, 4,355,145, Cl. 526-195.000.
- Societe d'Assistance Technique Pour Produits Nestle, S.A.: *See—*
  - Akesson, Ingve R., 4,354,428, Cl. 99-639.000.
- Societe Francaise d'Electrometallurgie-SOFREM: *See—*
  - Demange, Michel; and Septier, Louis, 4,354,868, Cl. 75-60.000.
- Societe J. Brochier & Fils.: *See—*
  - Bompard, Bruno; and Bruyere, Alain, 4,354,888, Cl. 156-175.000.
- Societe Lignes Telegraphiques et Telephoniques: *See—*
  - Arnaud, Maurice, deceased; Avril nee Arnaud, Marie C. N. A., heir; Arnaud, Michel F., heir; Chiron, Bernard; Gallachi, Claude; Hulin, Jean-Pierre; and de Vecchis, Michel, 4,354,732, Cl. 350-96.230.
- Societe Nationale Industrielle Aerospatiale: *See—*
  - Hubert, Bernard, 4,355,313, Cl. 343-725.000.
- Soeda, Koichi: *See—*
  - Kawano, Toshio; Ishii, Shiro; Soeda, Koichi; and Migita, Jyunichiro, 4,354,877, Cl. 106-90.000.
- SOHIO: *See—*
  - Isley, Ralph E., 4,355,127, Cl. 524-423.000.
- Solar 77 S.p.A.: *See—*
  - Cantoni, Angelo, 4,354,762, Cl. 366-160.000.
- Solartron Electronic Group Limited, The: *See—*
  - Stansfeld, James W., 4,354,377, Cl. 73-32.00A.
- Solomon, Frank, to Diamond Shamrock Corporation. Gas electrode with asymmetric current distributor. 4,354,917, Cl. 204-284.000.
- Solomon, Frank, to Diamond Shamrock Corporation. Fibrillated matrix active layer for an electrode. 4,354,958, Cl. 252-425.300.
- Sone, Kohki; and Kenji, Okamura, to Nissan Motor Company, Limited. System for feedback control of air/fuel ratio in IC engine with subsystem to control current supply to oxygen sensor. 4,354,468, Cl. 123-440.000.
- Sonnabend, Werner, to Matth. Hohner AG. Phase-modulating system for electronic musical instruments. 4,354,415, Cl. 84-1.240.
- Sonnenberg, Heinz: *See—*
  - Surkamp, Paul; and Sonnenberg, Heinz, 4,354,531, Cl. 139-66.00R.
- Sony Corporation: *See—*
  - Doi, Toshitada; and Iga, Akira, 4,355,392, Cl. 371-45.000.
  - Nagumo, Fumio; and Asaida, Takashi, 4,355,327, Cl. 358-44.000.
  - Nakamura, Takashi; and Sakashita, Akio, 4,355,325, Cl. 358-29.000.
  - Sato, Ichitaro, 4,355,333, Cl. 358-160.000.
  - Sato, Tsutomu, 4,355,413, Cl. 455-183.000.
- Sorathia, Usman A. K.: *See—*
  - Gagliani, John; Lee, Raymond; and Sorathia, Usman A. K., 4,355,120, Cl. 521-189.000.
- Soulliard, Charles, to Midian Electronics, Inc. Sub-miniature tone encoder with automatic number identification. 4,355,210, Cl. 179-84.0VF.
- South Wales Switchgear Limited: *See—*
  - Parry, John, 4,355,219, Cl. 200-147.00R.
  - Parry, John, 4,355,220, Cl. 200-147.00R.
- Southwire Company: *See—*
  - Adams, Ronald D.; and Chia, E. Henry, 4,354,880, Cl. 148-2.000.
  - Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.
  - Stewart, Maxson L., 4,355,009, Cl. 423-101.000.
- Soutsos, Michael D.; and Callanan, Robert F. Pipe thread protector. 4,354,529, Cl. 138-96.00T.
- Sp. El. s.r.l.: *See—*
  - Franzolini, Luciano, 4,355,342, Cl. 361-91.000.
- Spadaro, James J.: *See—*
  - Pominski, Joseph; Spadaro, James J.; and Pearce, Henry M., 4,355,051, Cl. 426-632.000.
- Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., to Frederick Electronics Corporation. Teletypewriter line keyer with switching current regulator. 4,355,403, Cl. 375-36.000.
- Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V. Integrated gate turn-off device having a vertical power transistor forming a regenerative loop with a lateral transistor. 4,355,322, Cl. 357-38.000.
- Spencer, Marcia D.; Parliment, Thomas H.; and Giordano, Denise A., to General Foods Corporation. Flavoring with 2-(α-mercaptoalkyl)-3-thiazoline. 4,355,049, Cl. 426-535.000.
- Sperry Corporation: *See—*
  - Horiuchi, George H., 4,354,430, Cl. 100-192.000.
- Spitler, Blaine W. Apparatus for stacking containers on a pallet. 4,354,786, Cl. 414-46.000.
- Sprick, Ellis H. Multi-fuel carburetor with rotary mixing valve. 4,354,477, Cl. 123-575.000.
- Spuhl AG: *See—*
  - Wirz, Jakob, 4,354,819, Cl. 425-409.000.
- Square D Company: *See—*
  - Schwartz, Wesley W., 4,354,330, Cl. 52-28.000.
- Stachurski, John Z. O.; Pouli, Dirk; Ripa, John A.; and Pokrzyk, Gerald F., to Hooker Chemicals & Plastics Corp. Low overvoltage hydrogen cathodes. 4,354,915, Cl. 204-242.000.
- Stacy, Galen D.; and Likins, Merle R., Jr., to Phillips Petroleum Company. Feed forward carbon black reactor control. 4,355,016, Cl. 423-450.000.
- Staley, Raymond J. Method of disc brake repair. 4,354,303, Cl. 29-402.080.
- Standard Oil Company, The: *See—*
  - Yanik, Richard W.; and Herold, Albert J., 4,355,157, Cl. 528-499.000.
- Standard Oil Company (Indiana): *See—*
  - Dobry, Alan M., 4,354,943, Cl. 210-727.000.
  - Dobry, Alan M., 4,354,944, Cl. 210-727.000.
  - Jageler, Alfred E.; Broding, Robert A.; and Kilmer, Lauren G., 4,354,558, Cl. 175-45.000.
  - Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., 4,355,354, Cl. 364-200.000.
  - Rumsey, Robert M.; and Thornton, Robert W., 4,354,342, Cl. 57-119.000.
- Standley, Paul M., to Dayco Corporation. Flexible load-carrying cord, apparatus and polymeric construction utilizing same. 4,355,069, Cl. 428-292.000.
- Stanley, Michael G., to Automotive Products Limited. Friction clutch driven plate. 4,354,586, Cl. 192-106.200.
- Stansfeld, James W., to Solartron Electronic Group Limited, The. Fluid density transducer. 4,354,377, Cl. 73-32.00A.
- Starp, Franz. Photographic camera. 4,354,752, Cl. 354-232.000.
- Starp, Franz: *See—*
  - Tenne, Lave; Starp, Franz; and Holzapfel, Walter, 4,354,753, Cl. 354-232.000.
- Stauffer Chemical Company: *See—*
  - Epstein, Ronald A.; and Mink, Robert I., 4,354,959, Cl. 252-429.00B.
  - Teach, Eugene G., 4,354,867, Cl. 71-88.000.
- Steidle, Werner, to Karl Schmidt GmbH. Expansion-controlled light alloy piston. 4,354,426, Cl. 92-235.000.
- Steiner, Frederick, to Plessey Overseas Limited. Push button key modules. 4,355,211, Cl. 179-90.00K.
- Steiner, Hakan: *See—*
  - Hultmark, Dan; Steiner, Hakan; Rasmuson, Torgny; and Boman, Hans G., 4,355,104, Cl. 435-70.000.
- Steinle, Benedikt: *See—*
  - Lechner, Hubert; and Steinle, Benedikt, 4,355,252, Cl. 310-162.000.
- Steinmetz, Richard D. Game bag. 4,354,679, Cl. 273-58.00A.
- Stemmler, Hermann; and Knittel, Volker, to Hoechst Aktiengesellschaft. Bonding sheet-like material to a substrate from which it can be dry-stripped. 4,355,074, Cl. 428-350.000.
- Stephan, Hans-Werner: *See—*
  - Jodden, Klaus; Dorn, Friedrich-Wilhelm; Heymer, Gero; and Stephan, Hans-Werner, 4,355,010, Cl. 423-210.000.
- Stevenson, Mayne B., to Arvey Corporation. Resealable envelope. 4,354,631, Cl. 229-71.000.
- Stewart, Maxson L., to Southwire Company. Separative treatment of zinc-bearing flue dust. 4,355,009, Cl. 423-101.000.
- Stichting Bedrijven Van Het Nederlands Instituut voor Zuivelonderzoek: *See—*
  - Schaap, Johannes E.; Nooy, Paulus F. C.; and De Boer, Rudolf, 4,355,048, Cl. 426-40.000.
- Stidham, Warren D., to Polysar Incorporated. Apparatus for distributing a foamed composition on a substrate. 4,354,810, Cl. 425-91.000.
- Stirling, Irene, to Beecham Group Limited. Clavudienes. 4,354,974, Cl. 260-245.300.
- Stoddard, Deborah; Baldwin, Blair F.; and Gorgas, Donald, to Baldwin, Stoddard & Co. System for utilizing interactive blocks to teach arithmetic. 4,354,842, Cl. 434-195.000.
- Storm, Dick E. A.: *See—*
  - Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., 4,354,292, Cl. 15-77.000.
- Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, to Gould Inc. Optical transducer. 4,354,735, Cl. 350-96.290.
- Strahwald, Franz; and Szehi, Erich, to Siemens Aktiengesellschaft. Apparatus for application of an electrode system on a patient's body. 4,354,509, Cl. 128-803.000.
- Strait, Carl. Violin bridge for a stringed instrument. 4,354,416, Cl. 84-309.000.
- Straubel, Max, to Robert Bosch GmbH. Apparatus for controlling the recirculated exhaust gas quantities and the injection quantity in auto-igniting internal combustion engines. 4,354,476, Cl. 123-569.000.

- Strijbos, Sytse: *See—*
  - Kools, Franciscus X. N. M.; and Strijbos, Sytse, 4,354,993, Cl. 264-86.000.
- Stroucken, Klaus H. D., to Alfa-Laval AB. Operating system for centrifuges. 4,354,632, Cl. 233-20.00A.
- Strupczewski, Joseph T.; Gardner, Beth Ann; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals. 3-(4-Piperidyl)-1,2-benzisoxales. 4,355,037, Cl. 424-267.000.
- Stuart, Richard L., to Rixon, Inc. Full duplex communication system for voice grade channels. 4,355,397, Cl. 375-17.000.
- Stubbings, James H., to Potomac Applied Mechanics, Inc. Straight line insulation cutter assembly. 4,354,410, Cl. 83-471.300.
- Stucki, Peter: *See—*
  - Sulser, Heinrich; and Stucki, Peter, 4,354,534, Cl. 139-435.000.
- Studiengesellschaft Kohle m.b.H.: *See—*
  - Bogdanovic, Borislav, 4,354,982, Cl. 260-665.00R.
- Stull, Herbert C.: *See—*
  - Herbaugh, Donald W.; Kline, Paul J.; and Stull, Herbert C., 4,354,725, Cl. 339-214.00R.
- Stupar, James A.; and Smith, Stephen D., to Baxter Travenol Laboratories Inc. In-line flow control clamp. 4,354,660, Cl. 251-4.000.
- Stutz, Andreas: *See—*
  - Luchinger, Paul; and Stutz, Andreas, 4,354,563, Cl. 177-212.000.
- Sud, Rahul; Hardee, Kim C.; and Heightley, John D., to INMOS Corporation. Asynchronously equillibrated and pre-charged static ram. 4,355,377, Cl. 365-203.000.
- Sudia, Theodore W.: *See—*
  - Hoke, John L.; and Sudia, Theodore W., 4,354,352, Cl. 60-517.000.
- Suess, Hans R. Dermatologic and cosmetic ointment base. 4,355,046, Cl. 424-355.000.
- Sugasawa, Fukashi; and Iizuka, Haruhiko, to Nissan Motor Company, Limited. Internal combustion engine. 4,354,471, Cl. 123-481.000.
- Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,355,100, Cl. 430-544.000.
- Sugiura, Hiroyuki, to Diesel Kiki Co., Ltd. Discharge air temperature control device having reference temperature control function for air conditioning system for automotive vehicles. 4,354,547, Cl. 165-25.000.
- Sugiyama, Yoshio: *See—*
  - Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.
- Suhac, Peter; Hafner-Milac, Natasa; and Dolenc, Bozidar, to LEK, tovarna farmacevtskih in kemicnih izdelkov, n.sol.o. Sodium alumoglucoheptonate, a process for its preparation and its use as sequestering agent. 4,354,940, Cl. 210-698.000.
- Sullins, James R., to X-Ray Manufacturing & Supply, Inc. Industrial X-ray machine. 4,355,410, Cl. 378-199.000.
- Sulser, Heinrich; and Stucki, Peter, to Ruti Machinery Works Ltd. Reed for jet looms. 4,354,534, Cl. 139-435.000.
- Sulzer Brothers Ltd.: *See—*
  - Koch, Bernhard R.; and Vogelbacher, Erich, 4,354,530, Cl. 139-54.000.
- Sumitomo Chemical Company Limited: *See—*
  - Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.
- Sumitomo Electric Industries, Ltd.: *See—*
  - Isshiki, Isao; Ohoka, Akihiro; Sakamoto, Fukuma; Tanaka, Masatoshi; and Sato, Koji, 4,355,301, Cl. 340-146.30D.
  - Mano, Hiroshi; and Kawauchi, Satsuki, 4,354,741, Cl. 350-357.000.
- Summers, James B.: *See—*
  - Beyer, James B.; and Summers, James B., 4,355,289, Cl. 332-17.000.
- Sunami, Hideo: *See—*
  - Sakai, Yoshio; Koyanagi, Mitsumasa; Sunami, Hideo; and Hashimoto, Norikazu, 4,355,374, Cl. 365-149.000.
- Suncor Inc.: *See—*
  - Lauer, James L.; and Lau, Keyser K., 4,355,231, Cl. 250-253.000.
- Sundberg, Jack G., to Chandler Evans Inc. Fixed displacement vane pump with undervane pumping. 4,354,809, Cl. 418-268.000.
- Sundheimer, Craig S.; and Joslin, Bradley D., to American Sterilizer Company. Apparatus for cleaning and drying anesthesia and respiratory equipment. 4,354,514, Cl. 134-152.000.
- Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: *See—*
  - Rheinthal, Peter, 4,354,373, Cl. 72-247.000.
- Supcoe, Robert F.; and Radakovich, Thomas, to United States of America, Navy. Underwater antifoulant composition. 4,354,873, Cl. 106-18.320.
- Surkamp, Paul; and Sonnenberg, Heinz, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Rotation dobby. 4,354,531, Cl. 139-66.00R.
- Sutherland, Rabion C. Drain pipe flushing apparatus. 4,354,515, Cl. 134-167.00C.
- Sutton, David C., to S. C. Johnson & Son, Inc. Cleaner-polish compositions. 4,354,871, Cl. 106-3.000.
- Sutton, Leroy: *See—*
  - Fitzgibbon, James J.; and Sutton, Leroy, 4,355,334, Cl. 358-168.000.
- Suzuki, Hajime; and Arakawa, Hiroshi, to Kabushiki Toyoda Jidoshokki Seisakusho. Auxiliary nozzle for jet looms. 4,354,533, Cl. 139-435.000.
- Suzuki, Hideo; and Kaneko, Makoto, to Nippon Gakki Seizo Kabushiki Kaisha. Accompaniment tone generator for electronic musical instrument. 4,354,413, Cl. 84-1.010.
- Suzuki, Keiichiro; Ono, Takuro; and Shinohara, Nobuhiro, to Asahi Glass Company, Ltd. Dense sintered silicon carbide ceramic. 4,354,991, Cl. 264-65.000.
- Suzuki, Masaaki: *See—*
  - Shirahata, Ryuji; Kitamoto, Tatsuji; Tamai, Yasuo; and Suzuki, Masaaki, 4,354,908, Cl. 204-192.00N.
- Svendsen, Robert A., to Marine Construction & Design Co. Crab pot line hauler. 4,354,667, Cl. 254-332.000.
- Swanson, William C., to International Harvester Co. Hydraulic circuit for a tractor drawn implement having remote variable height selector. 4,354,688, Cl. 280-43.230.
- Sweeney, W. Alan, to Chevron Research Company. Motor fuel. 4,354,855, Cl. 44-56.000.
- Sweet, Gerald G.: *See—*
  - Burns, Daniel J.; Sethares, James C.; and Sweet, Gerald G., 4,355,278, Cl. 324-158.00R.
- Swindell, Harold J.; and Thompson, Randall G., to Phillips Petroleum Company. Regenerator temperature control. 4,354,957, Cl. 252-419.000.
- Sybron Corporation: *See—*
  - Hoyer, Gerd; and Pietschmann, Helmut, 4,354,838, Cl. 433-101.000.
- Synergistic Controls, Inc.: *See—*
  - Hughey, Robert M.; Fairchild, James J.; and Brown, James H., 4,355,309, Cl. 340-825.530.
- Syntex (U.S.A.) Inc.: *See—*
  - Verheyden, Julien P.; and Martin, John C., 4,355,032, Cl. 424-253.000.
- Szabo, Georges, to Compagnie Francaise de Raffinage. Method for preparing a hydrocarbon conversion catalyst. 4,354,962, Cl. 252-442.000.
- Szanto, Elmer G.; Wu, George; and Barone, Salvatore, to Velo-Bind, Inc. Punch edge guide indicator and method. 4,354,405, Cl. 83-13.000.
- Szanto, Elmer G., to Velo-Bind, Inc. Punching and binding machine. 4,354,783, Cl. 412-13.000.
- Szarazi, Bela: *See—*
  - Brun, Alain; Marcotte, Louis; and Szarazi, Bela, 4,354,406, Cl. 83-24.000.
- Szehi, Erich: *See—*
  - Strahwald, Franz; and Szehi, Erich, 4,354,509, Cl. 128-803.000.
- Szeliga, Philip C., to Electromark, Div. of Mohawk International Inc. Marking head for electrochemical process. 4,354,914, Cl. 204-224.00R.
- Sznopek, John L.: *See—*
  - Lostak, Charles; Sznopek, John L.; and Klepetar, Manfred, 4,354,891, Cl. 156-307.300.
- Szymanski, Thomas G.: *See—*
  - Aldefeld, Bernd; Levinson, Stephen E.; and Szymanski, Thomas G., 4,355,302, Cl. 340-146.30Q.
- T & T Mfg. Co.: *See—*
  - Tessier, Aram J., 4,354,767, Cl. 401-63.000.
- Tabata, Kazuki; and Honma, Hideaki, to Sankei Giken Kogyo Kabushiki Kaisha. Silencer for motorcycle. 4,354,573, Cl. 181-239.000.
- Taguchi, Kenichi: *See—*
  - Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, 4,355,193, Cl. 570-217.000.
- Taguchi, Yoshio: *See—*
  - Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
- Takagi, Toshinori; Nakata, Shinsaku; Kanki, Kazuhiko; and Hotta, Masahiro, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Process for production of magnetic recording medium. 4,354,909, Cl. 204-192.00N.
- Takahashi, Kenichi: *See—*
  - Sakaguchi, Iwao; Osaka, Kunihiko; Hokari, Shigenori; and Takahashi, Kenichi, 4,354,506, Cl. 128-748.000.
- Takahashi, Yosuke; Kasui, Toshikatsu; and Sasagaki, Nobuaki, to Nippon Kogaku K.K. Indicator device within the viewfinder of a camera. 4,354,754, Cl. 354-289.000.
- Takami, Toshihiko: *See—*
  - Nagano, Kyoichi; Takami, Toshihiko; and Koyama, Kunio, 4,355,054, Cl. 427-61.000.
- Takase, Ichirou: *See—*
  - Ikoma, Masao; Saegusa, Noboru; Akaiwa, Yoshihiko; and Takase, Ichirou, 4,355,401, Cl. 375-5.000.
- Takata, Tadanobu: *See—*
  - Oi, Shoichi; Ohnishi, Noriaki; Mori, Shinya; Takata, Tadanobu; and Koba, Keiichiro, 4,354,919, Cl. 208-10.000.
- Takeda, Atsushi: *See—*
  - Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, 4,355,149, Cl. 528-18.000.
- Takeda Chemical Industries, Ltd.: *See—*
  - Furukawa, Yoshiyasu; Kishimoto, Shoji; and Nishikawa, Kohei, 4,355,040, Cl. 424-273.00R.
  - Ochiai, Michihiko; Okada, Taiiti; Aki, Osami; Morimoto, Akira; Kawakita, Kenji; and Matsushita, Yoshihiro, 4,355,160, Cl. 544-027.000.
- Takeno, Hidekazu: *See—*
  - Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
- Takeuchi, Koichi; Nakada, Teruo; and Iwahara, Mitsuo, to Isuzu Motors Ltd. Diesel throttle valve control system. 4,354,465, Cl. 123-339.000.
- Takeuchi, Tadasu; Ishikawa, Hidetsugu; and Nagase, Masaaki, to Matsushita Graphic Communication Systems, Inc. System for thermally recording data by partially overlapping successive data segment periods. 4,355,319, Cl. 346-76.0PH.

Takeuchi, Tomio: *See—*
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Takeuchi, Yo; Morikawa, Masaki; Tanaka, Chuji; Hiji, Toshiharu; and Ikeda, Hiroshi, to Mitsubushi Kinzoku Kabushiki Kaisha. Method for manufacturing stripe-patterned metal plate. 4,354,301, Cl. 29-160.600.
Taki Chemical Co., Ltd.: *See—*
Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.
Taki, Yasuo: *See—*
Mori, Kazuhiro; Taki, Yasuo; and Araki, Shigeru, 4,354,337, Cl. 53-559.000.
Takikawa, Yoshio: *See—*
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.
Takizawa, Masaaki: *See—*
Mae, Hisao; Takizawa, Masaaki; and Matsubara, Noboru, 4,354,460, Cl. 123-90.160.
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Tamura, Akihiko: *See—*
Koiso, Junichi; Tamura, Akihiko; and Ikemoto, Isao, 4,354,763, Cl. 366-181.000.
Tanaka, Chuji: *See—*
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Tanaka, Haruto: *See—*
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Tanaka, Hirokazu: *See—*
Kitaura, Yoshihiko; Nakaguchi, Osamu; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; Okada, Satoshi; Tanaka, Hirokazu; and Hashimoto, Masashi, 4,354,966, Cl. 260-112.50R.
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Reinartz, Hans-Dieter; Schopper, Bernd; Tandler, Peter; and Lowe, Derek, 4,354,712, Cl. 303-6.00C.
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Tanikawa, Keiichi; Obi, Tatsurou; Otsuka, Susumu; Manabe, Isao; Inubushi, Akiyoshi; and Maeda, Chiaki, to Nippon Steel Corporation. Method for antirust treatment of steel stocks. 4,354,881, Cl. 148-6.14R.
Tanouchi, Tadao: *See—*
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Taoayuki Matsuo: *See—*
Shimada, Kiyoo; Matuo, Masayuki; and Esashi, Masayoshi, 4,354,308, Cl. 29-571.000.
Tarantola, Luciano; and Migliarini, Cesare, to Societa Pneumatici Pirelli S.p.A. Apparatuses for applying elastomeric fillers to tire bead-cores. 4,354,892, Cl. 156-398.000.
Tarshis, Andrew: *See—*
Johnson, Tod; Tarshis, Andrew; and Goldberg, George, 4,355,372, Cl. 364-900.000.
Tasch, Al F., Jr.: *See—*
Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., 4,354,896, Cl. 156-643.000.
Tatsuoka, Masao; and Fujimura, Katsunori, to Sharp Kabushiki Kaisha. Open-cycle type air conditioner. 4,354,358, Cl. 62-271.000.
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Taylor, Dan G.; and Robertson, Walter W., to Hydro-Pac, Inc. Fail-safe valve. 4,354,664, Cl. 251-282.000.
Taylor, Lloyd D.: *See—*
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,092, Cl. 430-219.000.
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,355,101, Cl. 430-564.000.
Tazuke, Shigeo: *See—*
Nezu, Tuguo; Tsuchiya, Masuo; Sakamoto, Masahiro; Nakayama, Hiroyuki; and Tazuke, Shigeo, 4,355,053, Cl. 427-54.100.
Teach, Eugene G., to Stauffer Chemical Company. 3-Perhaloalkylhydroxy-oxaxolidines and thiazolidines herbicidal antidotes. 4,354,867, Cl. 71-88.000.
Technicon Isca Limited: *See—*
Wood, Douglas A., 4,354,622, Cl. 222-55.000.
Teijin Limited: *See—*
Norota, Susumu; Kiriyama, Tsutomu; Imoto, Tadashi; and Azumi, Toshinori, 4,355,075, Cl. 428-369.000.
Shimada, Keizo; Mera, Hiroshi; Sasaki, Noriaki; and Aoki, Akihiro, 4,355,151, Cl. 528-183.000.
Telefonaktiebolaget L M Ericsson: *See—*
Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., 4,354,292, Cl. 15-77.000.
Telestad, Ake W.; Samuelsson, Kjell A.; and Storm, Dick E. A., to Telefonaktiebolaget L M Ericsson. Arrangement for cleaning circuit cards particularly for removing soldering and resin remnants. 4,354,292, Cl. 15-77.000.
Tellert, Rudy, to Sachs-Systemtechnik GmbH. Sinusoidal output generator. 4,355,243, Cl. 307-261.000.
Ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. Derivatives of certain pyridyliminomethylbenzenes. 4,355,035, Cl. 424-263.000.
Tenne, Lave; Starp, Franz; and Holzapfel, Walter. Reflex camera having a focal plane shutter and an interchangeable variable shutter objective. 4,354,753, Cl. 354-232.000.
Tenney, Linwood P.: *See—*
Layer, Robert W.; and Tenney, Linwood P., 4,355,148, Cl. 526-281.000.
Terasaki, Masanori, to Daiichi Kashuha Kogyo Kabushiki Kaisha. Method for improving the residual stress in austenitic stainless steel pipes and the like by induction heating. 4,354,883, Cl. 148-127.000.
Terumo Corporation: *See—*
Shimizu, Masaki; and Nomura, Takeo, 4,355,111, Cl. 435-243.000.
Tessier, Aram J., to T & T Mfg. Co. Mechanical pencil. 4,354,767, Cl. 401-63.000.
Testin, William J.: *See—*
George, John B.; and Testin, William J., 4,355,415, Cl. 455-185.000.
Tevruchte, William B.; and Beecroft, Julian B. Convertible house trailer. 4,354,290, Cl. 114-344.000.
Texaco Inc.: *See—*
Hammond, Kenneth G.; and Maas, Garren E., 4,354,950, Cl. 252-51.50A.
Pitman, Herbert J.; and Harrison, Charles W., 4,354,921, Cl. 208-33.000.
Texas Gas Transmission Corporation: *See—*
Gomberg, Henry J.; Lee, Rupert A.; and Lewis, John G., 4,354,906, Cl. 204-157.10H.
Texas Instruments Incorporated: *See—*
Alsop, John H., IV, 4,355,391, Cl. 371-37.000.
Harris, William S., Jr., 4,355,237, Cl. 250-551.000.
Hunter, William R.; Tasch, Al F., Jr.; and Holloway, Thomas C., 4,354,896, Cl. 156-643.000.
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Doemer, Josef; and Thanhaeuser, Gerhard, 4,355,400, Cl. 375-4.000.
Theall, C. Earle, to Singer Company, The. Translator system for converting unipolar fiber optic signals to bipolar signals utilizing Manchester coding. 4,355,423, Cl. 455-608.000.
Third Wave Electronics Company, Inc.: *See—*
Davies, Ronald C., 4,354,587, Cl. 194-100.00A.
Thomas, William L.: *See—*
Maklad, Mokhtar S.; Akers, Francis I.; and Thomas, William L., 4,354,736, Cl. 350-96.320.
Thompson, Randall G.: *See—*
Swindell, Harold J.; and Thompson, Randall G., 4,354,957, Cl. 252-419.000.
Thompson, Robert E.: *See—*
Glavas, Xenophon; G.; and Thompson, Robert E., 4,354,645, Cl. 242-117.000.
Thompson, Thomas W., to Sanders Associates, Inc. Force motor. 4,354,662, Cl. 251-129.000.
Thomson-Brandt: *See—*
Bricot, Claude; and Robin, Gerard, 4,354,988, Cl. 264-22.000.
Thomson-CSF: *See—*
Benoit-Gonin, Roger; Berger, Jean-Luc; and Coutures, Jean-Louis, 4,355,244, Cl. 307-304.000.
Thorn Emi Limited: *See—*
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Thornton, Robert W.: *See—*
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Thury, Wolfgang A.: *See—*
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Thyssen Industrie AG: *See—*
Piepenbreier, Ernst; and Girod, Hansjochen, 4,354,850, Cl. 464-32.000.
Thyssens, Guido M. J. B.: *See—*
Ruys, Willi A. H.; O'Reilly, Dermod J. K.; Verbist, Leopold P.; Hoefkens, Daniel S. G.; and Thyssens, Guido M. J. B., 4,355,405, Cl. 375-48.000.
Tiberg, Sven-Erik: *See—*
Sinha, Brajnandan; and Tiberg, Sven-Erik, 4,355,297, Cl. 340-58.000.
Tidwell, Hubert. Self-propelled reversible irrigation machine. 4,354,637, Cl. 239-184.000.
Tihanyi, Jeno, to Siemens Aktiengesellschaft. Light-controlled transistor. 4,355,320, Cl. 357-30.000.
Tilman, Paul A., to Minigrip, Inc. Profiled plastics bag closure strip and adhesive bonding method. 4,354,541, Cl. 150-3.000.
Timor, Uzi, to Bell Telephone Laboratories, Incorporated. Adaptive spread spectrum FH-MFSK transmitter and receiver. 4,355,399, Cl. 375-1.000.
Tischer, Werner; and Liebert, Karl-Heinz, to Zahnradfabrik Friedrichshafen, AG. Hydrostatic auxiliary power steering. 4,354,350, Cl. 60-384.000.

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Kamiyama, Setsuo; Shiozawa, Kouji; Nishikawa, Eiichiro; and Kaneko, Katsumi, 4,354,961, Cl. 252-439.000.
Todokoro, Hideo; Fukuhara, Satoru; and Sakitani, Yoshio, to Hitachi, Ltd. Apparatus for measuring specimen potential in electron microscope. 4,355,232, Cl. 250-310.000.
Todoroki, Shigeo: *See—*
Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, 4,355,338, Cl. 360-15.000.
Tojiki, Hitomi: *See—*
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Toke, Laszlo; Bitter, Istvan; Karpati nee Adam, Eva; and Pfliegel, Todor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for the preparation of substituted acyl ureas. 4,355,178, Cl. 564-44.000.
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Maeda, Koichi; Ema, Sumio; and Saito, Tetsuo, 4,354,693, Cl. 280-714.000.
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fukui, Hiroyuki, 4,355,330, Cl. 358-111.000.
Futaki, Kenji, 4,354,758, Cl. 355-14.00E.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,355,389, Cl. 371-18.000.
Tollum, Ronald E.: *See—*
Spaniol, John W.; Tollum, Ronald E.; and Barthelme, Julius A., 4,355,403, Cl. 375-36.000.
Tomlinson, Leroy O.; and Cuscino, Richard T., to General Electric Company. Combined cycle system for optimizing cycle efficiency having varying sulfur content fuels. 4,354,347, Cl. 60-39.18B.
Tommasini, Giuseppe: *See—*
Martinengo, Pier C.; Giachello, Angelo; Tommasini, Giuseppe; and Popper, Paul, 4,354,990, Cl. 264-65.000.
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Koda, Yoshinobu; Ona, Isao; and Takeda, Atsushi, 4,355,149, Cl. 528-18.000.
Total, Robert V., to Canadian Stackpole Limited. Label transfer vacuum drum for labeller. 4,354,887, Cl. 156-64.000.
Toth, James M.; and Judd, Tyler W., to Republic Steel Corporation. Eddy current surface flaw detection employing signal correlation. 4,355,281, Cl. 324-232.000.
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Macnab, John E., 4,354,794, Cl. 414-607.000.
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Nagahama, Takashi; Matsumoto, Nobuyuki; Naruo, Masaki; Nioh, Susumu; Hirayama, Hiroshi; Honda, Tetsuzo; Sato, Yoshinori; Toyama, Kenji; and Shiotu, Gisaburo, 4,354,450, Cl. 118-303.000.
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Fujita, Teruhiro, 4,354,464, Cl. 123-323.000.
Koto, Masaaki, 4,354,708, Cl. 296-185.000.
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Toyo Soda Manufacturing Co., Ltd.: *See—*
Murakami, Tsugio; Igawa, Kazushige; and Hiraga, Yoichi, 4,355,014, Cl. 423-265.000.
Toyoda, Minoru, to Aisin Seiki Company, Limited. Key holder. 4,354,368, Cl. 70-456.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Mae, Hisao; Takizawa, Masaaki; and Matsubara, Noboru, 4,354,460, Cl. 123-90.160.
Murata, Yoichi, 4,354,380, Cl. 73-119.00A.
Tracy, Gene A.: *See—*
McMillin, John R.; Tracy, Gene A.; Harvill, William A.; and Credle, William S., Jr., 4,354,806, Cl. 417-393.000.
Trafalgar Industries, Inc.: *See—*
Desai, Mahendrakumar D.; and Shuren, Thomas E., 4,354,613, Cl. 221-4.000.
Trane Company, The: *See—*
Modahl, Robert J.; and Luckeroth, Virgil C., 4,354,550, Cl. 165-133.000.
Transolar, Inc.: *See—*
Malone, Kenneth B.; and Grow, Joseph A., Jr., 4,354,484, Cl. 126-425.000.
Trautmann, Horst: *See—*
Baumann, Gilbert; Deyber, Paul; Huber, Wilhelm; Lapple, Werner; and Trautmann, Horst, 4,355,124, Cl. 524-104.000.
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Treiber, John. Nestable bulk containers. 4,354,600, Cl. 206-508.000.
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Johnson, Gary R., 4,354,559, Cl. 175-71.000.
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Troeng, John: *See—*
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Trotta, Robert A., to Gillette Company, The. Shaving implement, housing therefor, and razor. 4,354,312, Cl. 30-47.000.
True Temper Railway Appliances, Inc.: *See—*
Kasuba, John A.; Fee, Graham M.; and Hoskins, Phillip M., 4,354,634, Cl. 238-338.000.
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Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,354,973, Cl. 260-245.700.
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Bailey, Rodney R.; Brown, Carl W.; Tsai, Shan P.; and Hruska, Louis W., 4,354,900, Cl. 162-106.000.
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Tsuneda, Kazuhiko; Sagane, Sigeru; and Haba, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Refueling system adapted to gasoline service station. 4,354,620, Cl. 222-14.000.
Turner, Jesse H.; and Wallace, Elmer E., to Essex Group, Inc. Manual main shutoff valve for a gas burner combination control. 4,354,633, Cl. 236-1.00H.
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Chevreux, Pierre; Nguyen, Van T.; Roman, Alain; and Turpin, Daniel, 4,355,077, Cl. 428-412.000.
Tyler, James C., Jr.: *See—*
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U-Haul International, Inc.: *See—*
Peoples, Charles B., 4,354,625, Cl. 224-329.000.
Ubel, Helmut: *See—*
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Uhler, Roger O.: *See—*
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Ullman, Myron E., Jr., to Kessler Products Co., Inc. Method for deep drawing sheet metal. 4,354,370, Cl. 72-42.000.
Ullman, Myron E., Jr.: *See—*
Kessler, Milton; and Ullman, Myron E., Jr., 4,354,610, Cl. 215-253.000.
Ulmer, Richard W.: *See—*
Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., 4,355,285, Cl. 330-9.000.
Ulveling, Leon; and Mailliet, Pierre, to Paul Wurth S.A. Valve for opening and closing a fluid conduit. 4,354,665, Cl. 251-298.000.
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Union Carbide Corporation: *See—*
Fan, You-Ling, 4,355,122, Cl. 523-423.000.
Iya, Sridhar K., 4,354,987, Cl. 264-13.000.
Keller, George E., II; and Kuo, Chia-Huei A., 4,354,859, Cl. 55-25.000.
Wessels, Anton; and Fuderer, Andrija, 4,354,929, Cl. 208-310.00Z.
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Milner, Christopher J., 4,354,356, Cl. 62-55.500.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Bosnyak, Clive P.; Haward, Robert N.; and Parsons, Ian W., 4,355,150, Cl. 528-176.000.
United States Gypsum Company: *See—*
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Agriculture: *See—*
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Kitchen, Donald R., 4,355,084, Cl. 428-672.000.
Patterson, Charles F., 4,354,419, Cl. 89-1.00A.
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Kesselring, John P.; Krill, Wayne V.; and Martin, G. Blair, 4,354,821, Cl. 431-7.000.
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Hoke, John L.; and Sudia, Theodore W., 4,354,352, Cl. 60-517.000.
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Jain, Atul. Multibeam single frequency synthetic aperture radar processor for imaging separate range swaths. 4,355,311, Cl. 343-5.0CM.
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Chai, An-Ti, 4,355,196, Cl. 136-259.000.
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Block, Sheldon A., 4,354,770, Cl. 403-409.000.
Kaufman, Martin H., 4,355,078, Cl. 428-414.000.
Kulik, John J., 4,355,328, Cl. 358-87.000.
Supcoe, Robert F.; and Radakovich, Thomas, 4,354,873, Cl. 106-18.320.
Zeidler, James R.; McCool, John M.; and Widrow, Bernard, 4,355,368, Cl. 364-728.000.
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Guidoux, Loic B. Y., 4,355,406, Cl. 375-82.000.
Kock, Hendrikus G., 4,355,323, Cl. 357-74.000.
Kools, Franciscus X. N. M.; and Strijbos, Sytse, 4,354,993, Cl. 264-86.000.
Mateika, Dieter; and Bartels, Gunter, 4,355,072, Cl. 428-336.000.
Perduijn, David J.; and Verberkt, Jacobus, 4,355,256, Cl. 310-358.000.
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Dreisbach, Raymond A., Jr.; Griffin, James G.; and Cole, Edward F., 4,354,345, Cl. 60-39.080.
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Gooding, Elwyn R., 4,354,284, Cl. 2-413.000.
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Colley, Peter S.; and Martin, Roy W., 4,354,500, Cl. 128-663.000.
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Colley, Peter S.; and Martin, Roy W., 4,354,502, Cl. 128-663.000.
UOP Inc.: *See—*
Carlson, David H. J., 4,354,926, Cl. 208-207.000.
Malloy, Thomas P.; Halter, Mark A.; and House, David W., 4,354,904, Cl. 204-59.00R.
McAndrew, Miles J., 4,354,528, Cl. 137-875.000.
Upjohn Company, The: *See—*
Nelson, Stephen J., 4,354,975, Cl. 549-220.000.
Usui, Yuzo, to Fujitsu Limited. Transistor-transistor logic circuit. 4,355,246, Cl. 307-456.000.
USV Pharmaceutical Corporation: *See—*
Youssefyeh, Raymond D., 4,355,164, Cl. 544-234.000.
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Karl, Walter, 4,354,790, Cl. 414-222.000.
Uzunoglu, Vasil, to Communications Satellite Corporation. Carrier recovery network for QPSK modems employing synchronized oscillators. 4,355,404, Cl. 375-86.000.
Valcour Imprinted Papers, Inc.: *See—*
Carte, Clyde R., 4,354,408, Cl. 83-162.000.
Van den Berg, Johan H.: *See—*
Le Sausse, Robert T.; and Van den Berg, Johan H., 4,354,293, Cl. 15-250.320.
Vanderburg, Ralph W.; and Corneillie, Jerome E., to U.S. Industries, Inc. Valve construction for sand and slurry service. 4,354,663, Cl. 251-210.000.
van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating implement. 4,354,557, Cl. 172-49.500.
van Dyke, Martin J.: *See—*
Colby, Dwight D.; van Dyke, Martin J.; and Dougherty, William R., 4,355,363, Cl. 364-509.000.
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Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,354,951, Cl. 252-8.900.
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van Turnhout, Jan; and Ahuja, Ramesh C., to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer. Process for producing a photoconductive polyimide coating upon a substrate. 4,355,089, Cl. 430-130.000.
Van Winkle, Wade L.: *See—*
Benton, Charles M.; Charlton, Homer M.; Van Winkle, Wade L.; Meyer, Jerry A.; Arnold, Franklin D.; and Kamalich, Anthony, 4,354,828, Cl. 432-24.000.
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Varian Associates, Inc.: *See—*
Yeats, Robert E., 4,355,321, Cl. 357-30.000.
Vaughan, Christopher A., to Kango Electric Hammers Limited. Drilling tools. 4,354,779, Cl. 408-241.00S.
Vaughn Corporation: *See—*
Murfitt, Robert R.; and Burtt, Richard F., 4,354,508, Cl. 128-798.000.
Vcala, Vlastimil. Method and apparatus for enhancing the twelve coin balancing puzzle. 4,354,682, Cl. 273-153.00R.
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Szanto, Elmer G.; Wu, George; and Barone, Salvatore, 4,354,405, Cl. 83-13.000.
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Saathoff, Deidrich J.; and Venkatasetty, Hanumanthiya V., 4,355,086, Cl. 429-105.000.
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Verheyden, Julien P.; and Martin, John C., to Syntex (U.S.A.) Inc. 9-(1,3-Dihydroxy-2-propoxymethyl)guanine as antiviral agent. 4,355,032, Cl. 424-253.000.
Vickers, Thomas M., to Diamond Shamrock Corporation. Composition and process for consolidating soil. 4,354,874, Cl. 106-74.000.
Vickers, Thomas M.: *See—*
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Villani, Frank J., to Schering Corporation. Tricyclic-substituted piperidine antihistamines. 4,355,036, Cl. 424-267.000.
Vinson, Mark A.; Kumar, Rakesh; Jones, Norman W.; and Gulett, Michael R., to Burroughs Corporation. Method for mass producing miniature field effect transistors in high density LSI/VLSI chips. 4,354,307, Cl. 29-571.000.
Virginia Chemicals, Inc.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
Hecht, Hans, 4,354,315, Cl. 33-182.000.
Vogelbacher, Erich: *See—*
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Vohringer, Gerhard F.; and Hestermann, Gerhard, to ESB Elektrostatische Spruh- und Beschichtungsanlagen G.F. Vohringer GmbH. Device for spray-coating a workpiece with powder particles. 4,354,451, Cl. 118-326.000.
Voigt, Alexander: *See—*
Hendrischk, Wolfgang; and Voigt, Alexander, 4,354,766, Cl. 400-708.000.
Volk, Hans-Joachim; and Forkel, Michael, to Metallwerk Max Brose GmbH & Co. Device for passive actuation of a safety belt. 4,354,696, Cl. 280-804.000.
Volkwein, Gert; Schonowsky, Hubert; and Baessler, Konrad, to Hoechst Aktiengesellschaft. Process for the preparation of 4-phenoxyphenols. 4,355,189, Cl. 568-637.000.
Vollbrecht, Kenneth A., to Briggs & Stratton Corp. Combination end bell and brush holder for a dynamoelectric machine. 4,355,253, Cl. 310-239.000.
von TREU AG: *See—*
Wittenhorst, Augustinus J. M., 4,354,955, Cl. 252-305.000.
von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Anthraquinone reactive dyestuffs. 4,355,163, Cl. 544-189.000.
von Platen, Baltzar C. Machine for recovering energy by means of a cyclic thermodynamic process. 4,354,361, Cl. 62-467.00R.
Vyrmetoder AB: *See—*
Hallberg, Rolf O., 4,354,937, Cl. 210-607.000.
W. C. Heraeus GmbH: *See—*
Bischoff, Albrecht; and Aldinger, Fritz, 4,355,082, Cl. 428-607.000.
W. M. Still & Sons Limited: *See—*
Filipowicz, Maciej K.; and Hayes, Cecil, 4,354,427, Cl. 99-307.000.
W. R. Grace & Co.: *See—*
Rosenberg, Arnold M.; and Gaidis, James M., 4,355,079, Cl. 428-469.000.
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Wachi, Yasuyuki: *See—*
Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.
Wahl, Philippe. Combination lock for attache cases and similar articles. 4,354,367, Cl. 70-333.00A.
Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Apparatus for transferring carriers at discontinuous portion of power line for power-and-free trolley conveyor. 4,354,435, Cl. 104-172.00S.
Wakui, Natsuko: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.
Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, to Hoechst Aktiengesellschaft. Hemodialysis membrane and process and apparatus for using same in hemodialysis. 4,354,938, Cl. 210-637.000.
Walker, Brooks. Carrier for garment bags and the like. 4,354,583, Cl. 190-18.00A.

Walker, Harold R., to Lowe, Frank E. Telemetering system. 4,355,205, Cl. 179-2.00A.
Walker, Loren H.: *See—*
Lezan, Georges R. E.; Smith, Marvin W.; and Walker, Loren H., 4,355,242, Cl. 307-252.00N.
Wallace, Elmer E.: *See—*
Turner, Jesse H.; and Wallace, Elmer E., 4,354,633, Cl. 236-1.00H.
Walls, John E., to American Hoechst Corporation. Process for heating exposed and developed light-sensitive lithographic printing plates with carboxylic acid and amine moiety containing compounds on surface thereof. 4,355,096, Cl. 430-302.000.
Wallshein, Melvin. Orthodontic biassing device with deformed screw threads. 4,354,832, Cl. 433-7.000.
Walser, Armin: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,354,973, Cl. 260-245.700.
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Walter, George R., Jr.: *See—*
Mahl, Mearl C.; Dick, Elliot C.; and Walter, George R., Jr., 4,355,021, Cl. 424-28.000.
Walters, Eugene G., Jr.; and Ruck, Heinz E., to Fiber-Metal Products Company, The. Welding mask corona barrier. 4,354,279, Cl. 2-8.000.
Walworth, Timothy R.: *See—*
Kempf, Mark F.; Randall, D'Arcy C.; and Walworth, Timothy R., 4,355,354, Cl. 364-200.000.
Wanek, Donald J.: *See—*
King, Francis K.; and Wanek, Donald J., 4,355,339, Cl. 360-105.000.
Wang, Chih C.; and Bates, Ronald F., to RCA Corporation. Bis(hydroxyalkyl)disiloxanes and lubricant compositions thereof. 4,355,062, Cl. 428-64.000.
Ward & Goldstone Limited: *See—*
Hampshire, Michael J.; and Williamson Jonathan H., 4,355,385, Cl. 370-85.000.
Warlick, Frank M.; and Eloff, Carl J., to Warlick, Frank M. Oil reconditioning apparatus and method. 4,354,946, Cl. 210-774.000.
Warnke, Dale F.; Cederstrand, Carl N.; and Keenan, Charles A., to Beckman Instruments, Inc. Method and apparatus for negating measurement effects of interferent gases in non-dispersive infrared analyzers. 4,355,233, Cl. 250-343.000.
Washio, Shigeaki: *See—*
Machi, Sueo; Ishigaki, Isao; Okada, Toshimi; and Washio, Shigeaki, 4,354,907, Cl. 204-159.220.
Watanabe, Akira: *See—*
Kawashima, Hirofumi; Watanabe, Akira; and Ebihara, Yasunori, 4,355,257, Cl. 310-361.000.
Watanabe, Toshiyasu: *See—*
Isogai, Nobuo; Okawa, Takashi; Hosokawa, Motoyuki; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,355,173, Cl. 560-103.000.
Watanabe, Yoshimi; Saito, Gunji; Omagari, Masaharu; and Nakamura, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. Cultivator having a vertically operated engine. 4,354,564, Cl. 180-19.00H.
Watson, Philip R.: *See—*
Lakin, John; and Watson, Philip R., 4,354,571, Cl. 180-271.000.
Wattenhofer, Jean-Pierre: *See—*
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Wattson, Robert K., Jr.: *See—*
Schenk, Karl M.; Reynolds, Peter T.; Abla, M. H.; and Wattson, Robert K., Jr., 4,354,648, Cl. 244-199.000.
Weatherholt, Floyd V. Snow attachment for a road grader. 4,354,321, Cl. 37-231.000.
Weatherly Foundry & Manufacturing Co.: *See—*
Smith, William J., 4,354,641, Cl. 241-40.000.
Weaver, Max A.: *See—*
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Webb, Shirley B.: *See—*
Ten Haken, Pieter; and Webb, Shirley B., 4,355,035, Cl. 424-263.000.
Weber, Donald J.: *See—*
Acker, Robert H.; Rosen, Frank L.; and Weber, Donald J., 4,354,393, Cl. 74-5.370.
Weber, Gunter, to Linde Aktiengesellschaft. Suppressing decomposition of alkaline solutions of salts of anthraquinonedisulfonic acid. 4,355,011, Cl. 423-224.000.
Weber, Harold J., to Coulter Systems Corporation. Indicia recognition apparatus. 4,355,300, Cl. 340-146.30C.
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, to Carl Still GmbH & Co. KG, Firma. Process for drying and preheating coal utilizing heat in dry cooling or quenching of coke. 4,354,903, Cl. 201-6.000.
Webster & Assoc. Ltd.: *See—*
Webster, William C., 4,354,876, Cl. 106-85.000.
Webster, William C., to Webster & Assoc. Ltd. Utilization of dry scrubber waste materials. 4,354,876, Cl. 106-85.000.
Weidler, Charles H., to AMP Incorporated. Two-row electrical connector composed of connector modules. 4,354,719, Cl. 339-59.00M.
Weigand, Rex O.: *See—*
Boldenow, Garry A.; Weigand, Rex O.; and Nelms, Carl L., 4,354,429, Cl. 100-5.000.
Weigert, Kurt; and Hudek, Karl, deceased (by Hudek, Amanda, Kurt Hudek, Gerd Hudek, heirs), to Siemens Aktiengesellschaft. Electromedical apparatus. 4,354,498, Cl. 128-419.00R.
Weinberg, Felix J.: *See—*
Chan, Anthony K. F.; Hilliard, John C.; Jones, Alan R.; and Weinberg, Felix J., 4,355,262, Cl. 315-111.110.
Weinstein, Jack, to Bristol-Myers Company. Spiral actuator for aerosol powdered suspension product. 4,354,638, Cl. 239-337.000.
Weiss, Eberhard, to International Standard Electric Corporation. Heater for an indirectly heated cathode. 4,355,259, Cl. 313-337.000.
Weissman, Bernard, to IPCO Corporation. Splinting device for anterior teeth. 4,354,840, Cl. 433-215.000.
Welch, Richard M.: *See—*
Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,355,179, Cl. 564-177.000.
Welden, David P. Heating apparatus. 4,354,481, Cl. 126-350.00B.
Welker, Robert H. Constant velocity diffuser. 4,354,661, Cl. 251-118.000.
Welsch, Wolfgang: *See—*
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,354,717, Cl. 316-19.000.
Wenzl, Peter: *See—*
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Werner, Franz; Schmeykal, Rudolf; and Doeinghaus, Herman, to Nixdorf Computer AG. Swivel mounting unit. 4,354,654, Cl. 248-663.000.
Werner and Pfleiderer: *See—*
Grimminger, Albert; and Koch, Heinz, 4,354,814, Cl. 425-186.000.
Wesbey, William H.: *See—*
Georges, Jean-Pierre J.; Keyes, Gary S.; and Wesbey, William H., 4,355,331, Cl. 358-111.000.
Weseloh, Roger J.; Brandsma, Russell G.; and Hoshour, John R., to American Standard Inc. Jacking tool for installing and removing draft gears on railway cars. 4,354,302, Cl. 29-252.000.
Wessels, Anton; and Fuderer, Andrija, to Union Carbide Corporation. Process for separating normal paraffins from hydrocarbons mixtures. 4,354,929, Cl. 208-310.00Z.
Westdale, Virgil W.; and Novotny, John, Jr., to Am International, Inc. Polyethylene pressure fixable electroscopic printing powder and pressure fixing method. 4,355,088, Cl. 430-98.000.
Western Electric Company Inc.: *See—*
Dodd, Thomas C.; and Emerson, John A., 4,354,911, Cl. 204-192.0EC.
Wiechard, Charles A., 4,354,995, Cl. 264-250.000.
Westinghouse Electric Corp.: *See—*
Franz, James H., Jr.; and Jones, Stanley W., 4,355,267, Cl. 318-89.000.
Gamble, James R.; Herrold, Lear C.; and Baran, Rowland S., 4,354,830, Cl. 432-258.000.
Marmo, Anthony R., 4,354,811, Cl. 425-140.000.
Phillips, John S.; and Melvin, Waymon A., Jr., 4,355,303, Cl. 340-310.00A.
Westphal, Teddy M., to Boise Cascade Corporation. Method and apparatus for forming a non-silver scored metal end. 4,354,784, Cl. 413-12.000.
Westwood Pharmaceuticals, Inc.: *See—*
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., 4,355,028, Cl. 424-230.000.
Weyandt, Ronald R., to Automated Packaging Systems, Inc. Braking method and apparatus for vibratory feeder. 4,354,618, Cl. 221-186.000.
Whatley, Roger A.: *See—*
Kelley, Stephen H.; Ulmer, Richard W.; and Whatley, Roger A., 4,355,285, Cl. 330-9.000.
Wheeler, Edward S.; and Campagna, Anthony J., to Interpace Corporation. Polymer rod insulator with improved radio noise and corona characteristics. 4,355,200, Cl. 174-140.00S.
Wheeler, James W., to Du Pont de Nemours, E. I., and Company. Supersensitizing direct positive dye combinations. 4,355,098, Cl. 430-510.000.
Whitbread, John R.: *See—*
Cribb, John A.; Whitbread, John R.; Neathway, Graham; and Durance, Robert A., 4,355,208, Cl. 179-18.0DA.
White Consolidated Industries, Inc.: *See—*
Silver, Theodore R., 4,354,294, Cl. 15-317.000.
White, George H., to National Gypsum Company. Hard-edge wallboard. 4,354,885, Cl. 156-39.000.
White, Herbert A., Jr., to American General Supply Company. Light weight ingot mold mat. 4,354,659, Cl. 249-206.000.
White, Richard L., administrator: *See—*
Markusch, Peter; Hudson, George A., deceased; and White, Richard L., administrator, 4,355,138, Cl. 525-127.000.
White, Susan M.: *See—*
Cantello, Barrie C. C.; and White, Susan M., 4,355,004, Cl. 422-246.000.
Whitehurst, Darrell D.: *See—*
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Widrow, Bernard: *See—*
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Wiebus, Ernst: *See—*
Cornils, Boy; Frohning, Carl D.; Diekhaus, Gerhard; Wiebus, Ernst; and Bahrmann, Helmut, 4,355,192, Cl. 568-902.000.
Wiechard, Charles A., to Western Electric Company, Inc. Method for making a connector conductor cutter. 4,354,995, Cl. 264-250.000.
Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, to CITO Products, Inc. Method and apparatus for mold temperature control. 4,354,812, Cl. 425-144.000.

Wieder, Klaus A.: *See—*

Wieder, Horst K.; Wieder, Klaus A.; and Haberkorn, Joseph, 4,354,812, Cl. 425-144.000.

Wiggins Teape Group Limited: *See—*

Hall, Robert J., 4,355,226, Cl. 219-384.000.

Wildhardt, Jurgen: *See—*

Walch, Axel; Bytzek, Max; Wildhardt, Jurgen; and Hammer, Klaus-Dieter, 4,354,938, Cl. 210-637.000.

Wilger, John A.: *See—*

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Wilhelm, Daniel C.: *See—*

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Wilkinson, Basil S.: *See—*

Simons, Ronald H.; and Wilkinson, Basil S., 4,355,349, Cl. 362-153.000.

Williams, Albert G., to Celanese Corporation. Spinning process for antimony oxide/halogenated aromatic polyester composition. 4,354,994, Cl. 264-169.000.

Williams, Albert G., to Celanese Corporation. Solvent resistant halogenated aromatic polyester fibers and process therefor. 4,355,152, Cl. 528-191.000.

Williams, Bradford J.: *See—*

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Williams, David C.; and Walsh, Peter A., to Lucas Industries Limited. Electrical power supply arrangement. 4,355,239, Cl. 307-41.000.

Williams, Rafelix A., to Hercules Incorporated. Process for preparing progressive burning propellant granules. 4,354,884, Cl. 149-10.000.

Williams Research Corporation: *See—*

Cruzen, Gerald S., 4,354,804, Cl. 416-230.000.

Williams, Theodore R. Audio signal responsive optical display. 4,355,348, Cl. 362-86.000.

Williamson, Jonathan H.: *See—*

Hampshire, Michael J.; and Williamson, Jonathan H., 4,355,385, Cl. 370-85.000.

Willingham, Francis Y.: *See—*

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Willis, Stephen B., Jr.; and Henry, Joseph D., to Dow Chemical Company, The. Process for ethanolamines. 4,355,181, Cl. 564-477.000.

Wilmot, Richard D.: *See—*

Bosi, Gerald L.; Hack, Randolph L.; Cantwell, Thomas C.; and Wilmot, Richard D., 4,355,312, Cl. 343-5.0VQ.

Wilson, David G.; Hoff, William B., III; and Richard, Roy V., II, to Massachusetts Institute of Technology. Machine for processing fish. 4,354,297, Cl. 17-54.000.

Wilson, Robert M., Sr. Electric fence wire mounting structure. 4,355,201, Cl. 174-166.00R.

Wilson, Stephen S.; and Joseph, Peter M. Method and apparatus for measuring the applied kilovoltage of X-ray sources. 4,355,230, Cl. 250-252.100.

Wilson, William L. Modular orthodontic appliances. 4,354,834, Cl. 433-21.000.

Winkler, Heinrich: *See—*

Herklotz, Helmut; Mehler, Gunter; Neulinger, Franz; Schummer, Helmut; Daar, Horst; Schmidt, Walter; and Winkler, Heinrich, 4,354,860, Cl. 55-105.000.

Winter, George, to Commonwealth Scientific and Industrial Research Organization. Recovery of heavy metals from solution by extraction with cross-linked vegetable protein. 4,355,137, Cl. 525-54.100.

Wippermann, Gerhard; and Keller, Peter, to Bramlage GmbH. Container for the dispensing of tablets one by one. 4,354,619, Cl. 221-263.000.

Wire Matic Regler AB: *See—*

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Wirz, Jakob, to Spuhl AG. Multi-pivotable mold carrier clamping apparatus. 4,354,819, Cl. 425-409.000.

Wisconsin Alumni Research Foundation: *See—*

Beyer, James B.; and Summers, James B., 4,355,289, Cl. 332-17.000.

Wise, Lawrence A., to Optimetrix Corporation. Shutter mechanism. 4,355,272, Cl. 318-561.000.

Wise, Richard M., to General Tire & Rubber Company, The. Adhesion of rubber to glass fibers. 4,355,131, Cl. 524-504.000.

Witek, Joseph I., to Medalist Industries, Inc. Tubing connector. 4,354,768, Cl. 403-3.000.

Wittenhorst, Augustinus J. M., to von TREU AG. Process and apparatus for producing propellant of reduced combustibility. 4,354,955, Cl. 252-305.000.

Wittmann, Rolf: *See—*

Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, 4,355,158, Cl. 536-1.000.

Wolf, Elmar: *See—*

Gras, Rainer; Obendorf, Johann; and Wolf, Elmar, 4,355,058, Cl. 427-386.000.

Wolf, Rudolf; Reiff, Fritz; Wittmann, Rolf; and Butzke, Jurgen, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the preparation of riboflavin. 4,355,158, Cl. 536-1.000.

Wolfertz, Gunter, to Schaeffer-Homberg GmbH. Device on an attachment machine. 4,354,588, Cl. 198-394.000.

Wolpert, Kris E.: *See—*

Kumar, Tribhawan; and Wolpert, Kris E., 4,354,858, Cl. 55-6.000.

Wong, Michael S. F.: *See—*

Hoskinson, Ronald M.; Cox, Ronald I.; and Wong, Michael S. F., 4,354,977, Cl. 260-397.400.

Wood, Douglas A., to Technicon Isca Limited. Flow control systems. 4,354,622, Cl. 222-55.000.

Wooding, Michael S., to British Aerospace. Intake ducts for aircraft jet propulsion plant. 4,354,346, Cl. 60-39.09P.

Woolland, Roderic F. Golfer's stance positioning aid. 4,354,683, Cl. 273-187.00R.

Worrall, Howard J.: *See—*

Austin, Eric P.; and Worrall, Howard J., 4,354,935, Cl. 210-396.000.

Wortham, Larry C.: *See—*

McCracken, Oliver W.; Wortham, Larry C.; and Higgins, Robert S., 4,355,365, Cl. 364-569.000.

Wu, George: *See—*

Szanto, Elmer G.; Wu, George; and Barone, Salvatore, 4,354,405, Cl. 83-13.000.

Wudtke, Donald J ., to Continental Emsco Company. Motion compensator and control system for crane. 4,354,608, Cl. 212-191.000.

Wunderlich, Daniel F., to Maytag Company, The. Presettable index mechanism for selectively actuatable timer. 4,355,218, Cl. 200-38.00F.

Wunderlich, Klaus: *See—*

von Oertzen, Klaus; Harms, Wolfgang; and Wunderlich, Klaus, 4,355,163, Cl. 544-189.000.

Wurtman, Richard J.: *See—*

Growdon, John H.; and Wurtman, Richard J., 4,355,027, Cl. 424-199.000.

Wysk, Stanley R.; and Clark, James P., III, to Combustion Engineering, Inc. System for recovery of sulfur dioxide in an MHD power plant. 4,354,354, Cl. 60-655.000.

X-Ray Manufacturing & Supply, Inc.: *See—*

Sullins, James R., 4,355,410, Cl. 378-199.000.

Xerox Corporation: *See—*

Ciccarelli, Roger N., 4,355,167, Cl. 546-255.000.

DuVall, Wilbur E., 4,355,273, Cl. 318-561.000.

Marsh, Dana G., 4,355,225, Cl. 219-216.000.

Yagi, Kazutomo, to Kyoritsu Manufacturing Co., Ltd. Method of making shackle. 4,354,344, Cl. 59-35.00R.

Yamada, Keiichi: *See—*

Kobayashi, Masayoshi; Sakuranaka, Toru; Yamada, Keiichi; Hayakawa, Masayasu; Nakagawa, Sachio; Iwata, Kohki; and Komori, Ryuichi, 4,354,474, Cl. 123-502.000.

Yamada, Muneki: *See—*

Nishiyama, Seiichi; and Yamada, Muneki, 4,354,996, Cl. 264-322.000.

Yamada, Shoji; Kanada, Eiji; and Haino, Kozo, to Mitsubishi Paper Mills, Ltd. Method for making a diffusion transfer lithographic printing plates with oxazolidones. 4,355,090, Cl. 430-204.000.

Yamaguchi, Jun: *See—*

Miyoshi, Noriomi; Sugiyama, Yoshio; Kawasaki, Tetsuji; Yamaguchi, Jun; Shiino, Kouji; and Shiratori, Mamoru, 4,354,602, Cl. 209-545.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*

Sanmi, Yasumaru; Harada, Norimichi; and Nishida, Yasuhiro, 4,354,849, Cl. 440-88.000.

Yamakawa, Norio: *See—*

Oki, Norihiro; Motegi, Shoji; Wachi, Yasuyuki; Takikawa, Yoshio; and Yamakawa, Norio, 4,355,254, Cl. 310-242.000.

Yamamoto, Akira; Ishihara, Toshinobu; and Taguchi, Kenichi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of cis-nonen-6-yl chloride. 4,355,193, Cl. 570-217.000.

Yamamoto, Shinichi; and Ito, Toshihiko, to Nippon Soken, Inc. Extrusion die and method for producing extrusion die for forming a honeycomb structure. 4,354,820, Cl. 425-461.000.

Yamamoto, Tatuo; Taguchi, Yoshio; Miyashita, Atsushi; Todoroki, Shigeo; Katayama, Susumu; and Eeda, Menoru, to Nippon Columbia K.K. Duplicator. 4,355,338, Cl. 360-15.000.

Yamashita, Katsuyoshi: *See—*

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; Ima, Seiichiro; and Yamashita, Katsuyoshi, 4,355,144, Cl. 526-137.000.

Yamashita, Kiyoshi: *See—*

Sugita, Hiroshi; Saito, Shizuo; Sato, Ryosuke; and Yamashita, Kiyoshi, 4,355,100, Cl. 430-544.000.

Yamashita, Kyoichi. Device for high speed feeding of a tape or the like. 4,354,627, Cl. 226-188.000.

Yamato, Akihiro: *See—*

Miyaki, Kiyoshi; Yamato, Akihiro; Nagase, Hidenobu; and Otsuka, Kazuo, 4,354,470, Cl. 123-472.000.

Yamazaki, Etsuo: *See—*

Imazeki, Ryoji; and Yamazaki, Etsuo, 4,355,362, Cl. 364-474.000.

Yan, Tsoung Y.: *See—*

Audeh, Costandi A.; and Yan, Tsoung Y., 4,354,928, Cl. 208-309.000.

Yanagiuchi, Shigenobu, to Sharp Kabushiki Kaisha. Storage format in a word memory of electronic dictionary and language interpreter. 4,355,370, Cl. 364-900.000.

Yanik, Richard W.; and Herold, Albert J., to Standard Oil Company, The. Hot water precipitation of resins containing maleic anhydride. 4,355,157, Cl. 528-499.000.

Yeats, Robert E., to Varian Associates, Inc. Optoelectronic assembly including light transmissive single crystal semiconductor window. 4,355,321, Cl. 357-30.000.

Yeh, Yu S.: *See—*

Reudink, Douglas O.; and Yeh, Yu S., 4,355,411, Cl. 455-33.000.

Yonemoto, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Speed instruction generating device for elevator. 4,354,577, Cl. 187-29.00R.

Yoshida Kogyo K. K.: *See—*

Tsubata, Noritaka, 4,354,532, Cl. 139-384.00B.

Yoshida, Mitsuo; and Matsuoka, Hiroyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for the electrolysis of an aqueous solution of an alkali metal chloride and an anode therefor. 4,354,905, Cl. 204-98.000.

Yoshida, Shinichi; and Kobayashi, Kazutaka, to Nipon Interphone Co., Ltd. Remote station. 4,355,329, Cl. 358-108.000.

Young, Ian R.; and Burl, Michael, to Picker International Limited. Nuclear magnetic resonance systems. 4,355,282, Cl. 324-309.000.

Young, Robert F.: *See—*

Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,354,848, Cl. 440-61.000.

Young, Robert J. Exercising and toning device. 4,354,677, Cl. 272-144.000.

Younge, Robert G., to Hewlett-Packard Company. Means and method for velocity decoding. 4,355,279, Cl. 324-161.000.

Youssefyeh, Raymond D., to USV Pharmaceutical Corporation. Pyridothienopyridazine anti-allergy compounds. 4,355,164, Cl. 544-234.000.

Yuda, Takuo, to Nifco Inc. Radiator grille fixing structure. 4,354,566, Cl. 180-68.00P.

Zack, Alexander T.: *See—*

Cohen, Sheppard; Barakitis, Nikolaos; and Zack, Alexander T., 4,355,265, Cl. 315-290.000.

Zahnradfabrik Friedrichshafen, AG.: *See—*

Ilg, Rudolf, 4,354,808, Cl. 418-259.000.

Lang, Armin, 4,354,555, Cl. 172-4.000.

Tischer, Werner; and Liebert, Karl-Heinz, 4,354,350, Cl. 60-384.000.

Zahnradfabrik Friedrichshafen A.G.: *See—*

Reifinger, Gunther; Fuchs, Christian; Magg, Alfred; and Bieber, Gerold, 4,354,584, Cl. 192-3.570.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*

Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; and Tatsuta, Kuniaki, 4,355,026, Cl. 424-180.000.

Zajic, James E.; Gerson, Donald F.; Gerson, Richard K.; and Panchal, Chandrakant J. Microbiological production of novel biosurfactants. 4,355,109, Cl. 435-170.000.

Zamek, Otto S.: *See—*

Lee, Yue-Guey L.; and Zamek, Otto S., 4,354,965, Cl. 524-104.000.

Zanella, Dominic A.: *See—*

Renfrew, Edgar E.; and Zanella, Dominic A., 4,355,012, Cl. 423-226.000.

Zannucci, Joseph S., to Eastman Kodak Company. Polyester-acrylic composite sheet having improved weatherability. 4,355,080, Cl. 428-483.000.

Zegarski, Ronald J.; Burnstein, Philip J.; and Pariza, George R., to Pittway Corporation. Sensor mounting assembly. 4,354,652, Cl. 248-201.000.

Zeidler, James R.; McCool, John M.; and Widrow, Bernard, to United States of America, Navy. Adaptive correlator. 4,355,368, Cl. 364-728.000.

Zeigler, Myron C., to Shakespeare Company. Composite tubular rod and method for making same. 4,355,061, Cl. 428-36.000.

Zenith Radio Corporation: *See—*

Dougherty, Lawrence W., 4,355,260, Cl. 313-404.000.

Fitzgibbon, James J.; and Sutton, Leroy, 4,355,334, Cl. 358-168.000.

Lee, Ronald B., 4,355,326, Cl. 358-37.000.

Zerfass, Hans-Reiner: *See—*

Beyer, Horst; and Zerfass, Hans-Reiner, 4,355,068, Cl. 428-290.000.

Ziegler, Ann L., heir: *See—*

Stowe, David W.; Christian, John D., deceased; Christian, Albert, heir; Christian, Martha R., heir; Ziegler, Ann L., heir; and Christian, David A., heir, 4,354,735, Cl. 350-96.290.

Zimlich, Josef: *See—*

Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,354,717, Cl. 316-19.000.

Zimmer, Erich: *See—*

Barnert, Eike; Frommelt, Wolfgang; and Zimmer, Erich, 4,354,635, Cl. 239-11.000.

Zimmer, Max: *See—*

Mathis, Paul; and Zimmer, Max, 4,354,317, Cl. 34-33.000.

Zimmerlin, Sharon L.: *See—*

Dalla Betta, Ralph A.; and Zimmerlin, Sharon L., 4,355,056, Cl. 427-126.400.

Zimmerman, Harlan S.; and Rhoads, James L., to RCA Corporation. Intensified charge coupled image sensor having universal header assembly. 4,355,229, Cl. 250-213.0VT.

Zingg, Warren M., to Dow Chemical Company, The. Slurry concentrator. 4,354,552, Cl. 166-90.000.

Zink, Stanley C., to Black Clawson Company, The. Two sided coater. 4,354,449, Cl. 118-126.000.

Zinn, Michael F., to Bio-Energy Systems, Inc. Header pair and double tube mat connection. 4,354,546, Cl. 165-1.000.

Zirps, Wilhelm, to Robert Bosch GmbH. Pressure valve. 4,354,517, Cl. 132-110.000.

Zoulek, James R. Log periodic directional antenna. 4,355,315, Cl. 343-792.500.

Zwipf, Werner H.: *See—*

Buehl, Arnold L.; and Zwipf, Werner H., 4,354,823, Cl. 431-328.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1982

Note.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- American Standard Inc.: *See—*
  - Hart, James E., Re. 31,059, Cl. 303-38.000.
- Automatic Truckloading Systems, Inc.: *See—*
  - Lutz, David W., Re. 31,060, Cl. 414-28.000.
- Burke, Edward F., Jr., to MFE Corporation. Limited-rotation motor with integral displacement transducer. Re. 31,062, Cl. 335-229.000.
- Hart, James E., to American Standard Inc. Emergency portion for a brake control valve. Re. 31,059, Cl. 303-38.000.
- Lutz, David W., to Automatic Truckloading Systems, Inc. Article handling apparatus. Re. 31,060, Cl. 414-28.000.
- MFE Corporation: *See—*
  - Burke, Edward F., Jr., Re. 31,062, Cl. 335-229.000.
- Povejsil, James H., to Towmotor Corporation. Seal and seal assembly. Re. 31,058, Cl. 277-153.000.
- Sandoz, Inc.: *See—*
  - Simpson, William R., Re. 31,061, Cl. 260-239.0BC.
- Simpson, William R., to Sandoz, Inc. 5-Amino or substituted amino-7-phenyl or substituted phenyl-2,3-dihydro-1H-1,4-diazepines. Re. 31,061, Cl. 260-239.0BC.
- Towmotor Corporation: *See—*
  - Povejsil, James H., Re. 31,058, Cl. 277-153.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Bittner, Edward D., to Cascade Corporation. Lift truck load clamp having nonresilient contact pad surfaces textured for directionally variable resistance to slippage. B1 4,209,280, Cl. 414-620.
- Cascade Corporation: *See—*
  - Bittner, Edward D., B1 4,209,280, Cl. 414-620.
- Continental Group, Inc., The: *See—*
  - Halk, Jr., Albert J.; and Boik, Arnold R., B1 4,182,460, Cl. 220-271.
- Fletcher, John K., to Harvey Engineering & Manufacturing Corporation. Detachable sling letdown apparatus for lumber sorter. B1 4,104,156, Cl. 209-521.
- Harvey Engineering & Manufacturing Corporation: *See—*
  - Fletcher, John K., B1 4,104,156, Cl. 4209-521.
- Halk, Jr., Albert J.; and Boik, Arnold R., to Continental Group, Inc., The. Lever action tab system for easy opening ends. B1 4,182,460, Cl. 220-271.
- Okamoto, Miyoshi; Yoshida, Shusuke; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, to Toray Industries, Inc. B 1 3,865,678, Cl. 428-91.
- Toray Industries, Inc.: *See—*
  - Okamoto, Miyoshi; Yoshida, Shusuki; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, B1 3,865,678, Cl. 428-91.

LIST OF DESIGN PATENTEES

- A.Ahlstrom Osakeyhtio: *See—*
  - Sarpaneva, Timo, 266,594, Cl. D26-9.000.
  - Sarpaneva, Timo, 266,595, Cl. D26-10.000.
- A/S Tasso Odense: *See—*
  - Rasmussen, Henning, 266,580, Cl. D23-90.000.
- Albertsen, Peter S.: *See—*
  - Schwartz, Larry A.; Geiter, Robert; and Albertsen, Peter S., 266,582, Cl. D23-97.000.
- American Standard Inc.: *See—*
  - Kaiser, Jack N., 266,577, Cl. D23-70.000.
- Appleman, Donald T., to Procter & Gamble Company, The. Continuous sheet material or the like. 266,616, 10-19-82, Cl. D59-2.00B.
- Appleman, Donald T., to Procter & Gamble Company, The. Continuous sheet material or the like. 266,617, 10-19-82, Cl. D59-2.00B.
- Arizona Digital Corp.: *See—*
  - White, Edward A., 266,563, Cl. D14-100.000.
- Arthur, David S. Tricycle. 266,556, 10-19-82, Cl. D12-112.000.
- Auto Register, Inc.: *See—*
  - Margolin, George D.; and Tooke, Michael, 266,564, Cl. D14-102.000.
- Barats, Jury M.; Kiklevich, Jury N.; and Selin, Valentin A. Individual heat-reflecting device. 266,579, 10-19-82, Cl. D23-77.000.
- Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,621, 10-19-82, Cl. D99-24.000.
- Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,622, 10-19-82, Cl. D99-24.000.
- Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,623, 10-19-82, Cl. D99-24.000.
- Barberena, Pablo P. Elevated multiple dome funeral mausoleum. 266,624, 10-19-82, Cl. D99-24.000.
- Bartscher, Franz, to Josef Schonlau Maschinenfabrik-und Eisengiesserei. Floor panel for a pig shed. 266,608, 10-19-82, Cl. D30-2.000.
- Bartscher, Franz, to Josef Schonlau Maschinenfabrik und Eisengiesserei. Floor panel for a pig shed. 266,609, 10-19-82, Cl. D30-2.000.
- Bartscher, Franz, to Josef Schonlau Maschinenfabrik u. Eisengiesserei. Floor panel for a pig shed. 266,610, 10-19-82, Cl. D30-2.000.
- Baumann, Dieter: *See—*
  - Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
- Baumann, Rolf: *See—*
  - Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
- Bavis, Edward F., to E. F. Bavis & Associates, Inc. Building structure. 266,592, 10-19-82, Cl. D25-31.000.
- Bee, James W. M.; and Trussler, Peter D. H., to Northern Telecom Limited. Telephone handset. 266,561, 10-19-82, Cl. D14-63.000.
- Belden Corporation: *See—*
  - Gibbs, Ronald D., 266,559, Cl. D13-28.000.
- Bennett, Harry. Acoustic ear mold. 266,590, 10-19-82, Cl. D24-35.000.
- Beretta, Angelo V., to Durastone Company, Inc. Reflective pavement marker for roads. 266,554, 10-19-82, Cl. D10-113.000.
- Bickmeyer, Robert. Stove. 266,583, 10-19-82, Cl. D23-97.000.
- Bidegain, Georgy: *See—*
  - Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
- Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, to Bidegain S.A. Footgauge. 266,552, 10-19-82, Cl. D10-70.000.
- Bidegain S.A.: *See—*
  - Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.
- Breen, John D.; and Ihrie, Ronald L., to Murray Ohio Manufacturing Co., The. Combined bicycle sprocket and chain guard. 266,558, 10-19-82, Cl. D12-123.000.

- Caldwell, John W., to Pacific Furniture Manufacturing Co. Bench. 266,545, 10-19-82, Cl. D6-60.000.
- Carlstrom, William, to Lyle/Carlstrom Associates, Inc. Shelf rest. 266,551, 10-19-82, Cl. D8-381.000.
- Chalandard, Roger, to Dessoy et Fils. Toy vehicle. 266,572, 10-19-82, Cl. D21-120.000.
- Charbonneau, Harry. Telephone list holder. 266,571, 10-19-82, Cl. D19-76.000.
- Choe, Sunjeen. Handpiece for manicure machine. 266,607, 10-19-82, Cl. D28-58.000.
- Crothers, Stephen A. Spectacle weight reliever. 266,569, 10-19-82, Cl. D16-123.000.
- Crutchfield, E. Bryant, to Mead Corporation, The. Document file. 266,544, 10-19-82, Cl. D3-72.000.
- DeKrech Enterprises, Inc.: *See—*
  - Krech, David E., 266,619, Cl. D99-5.000.
  - Krech, David E., 266,620, Cl. D99-5.000.
- Dessoy et Fils: *See—*
  - Chalandard, Roger, 266,572, Cl. D21-120.000.
- Durastone Company, Inc.: *See—*
  - Beretta, Angelo V., 266,554, Cl. D10-113.000.
- E. F. Bavis & Associates, Inc.: *See—*
  - Bavis, Edward F., 266,592, Cl. D25-31.000.
- Emary, Robert J.: *See—*
  - Gilford, Saul R.; and Emary, Robert J., 266,589, Cl. D24-31.000.
- Entex Industries, Inc.: *See—*
  - Hanzawa, Tsuneo, 266,573, Cl. D21-140.000.
- Erickson, Alve J.: *See—*
  - Thulman, Robert D.; and Erickson, Alve J., 266,584, Cl. D23-97.000.
- Famolare, Inc.: *See—*
  - Famolare, Joseph P., Jr., 266,542, Cl. D2-320.000.
- Famolare, Joseph P., Jr., to Famolare, Inc. Treaded shoe bottom. 266,542, 10-19-82, Cl. D2-320.000.
- Ferrara, Leonard H., Jr., to Superior Stove Company, Inc. Wood stove. 266,581, 10-19-82, Cl. D23-97.000.
- Foseco Trading AG: *See—*
  - Wukovich, Nick, 266,567, Cl. D15-135.000.
- Fratelli Saporiti: *See—*
  - Offredi, Giovanni, 266,547, Cl. D6-146.000.
- Gardisette International AG: *See—*
  - Stocker, Hans, 266,615, Cl. D47-6.00E.
  - Stocker, Hans, 266,618, Cl. D92-1.00C.
- Geiter, Robert: *See—*
  - Schwartz, Larry A.; Geiter, Robert; and Albertsen, Peter S., 266,582, Cl. D23-97.000.
- General Electric Company: *See—*
  - Newgard, Jon M., 266,596, Cl. D26-24.000.
- Gibbs, Ronald D., to Belden Corporation. Body for electric plug. 266,559, 10-19-82, Cl. D13-28.000.
- Gilford Instrument Laboratories, Inc.: *See—*
  - Gilford, Saul R.; and Emary, Robert J., 266,589, Cl. D24-31.000.
- Gilford, Saul R.; and Emary, Robert J., to Gilford Instrument Laboratories, Inc. Cuvette housing. 266,589, 10-19-82, Cl. D24-31.000.
- Goodwin, Richard J. Kitchen utensil rack. 266,546, 10-19-82, Cl. D6-113.000.
- Hanzawa, Tsuneo, to Entex Industries, Inc. Toy vehicle or the like. 266,573, 10-19-82, Cl. D21-140.000.
- Harmon, John R.: *See—*
  - Metts, Thomas; and Harmon, John R., 266,611, Cl. D30-15.000.
- Harrison, Jeffrey, to Kallista Baths, Inc. Bathtub. 266,576, 10-19-82, Cl. D23-55.000.
- Hattori, Yoshitaka, to Tomishiba Denki Co., Ltd. Radio set. 266,562, 10-19-82, Cl. D14-68.000.
- Huber, John, Jr. Table. 266,548, 10-19-82, Cl. D6-146.000.
- Hug, Niklaus, to Rommag P. Worwag & Co. Vacuum cleaner. 266,612, 10-19-82, Cl. D32-23.000.
- Ihrie, Ronald L.: *See—*
  - Breen, John D.; and Ihrie, Ronald L., 266,558, Cl. D12-123.000.
- Ishihara, Sadao: *See—*
  - Sakow, Toshihiko; Katayama, Isao; and Ishihara, Sadao, 266,568, Cl. D16-30.000.
- Jamestown Group: *See—*
  - Schwartz, Larry A.; Geiter, Robert; and Albertsen, Peter S., 266,582, Cl. D23-97.000.
- Josef Schonlau Maschinenfabrik u. Eisengiesserei: *See—*
  - Bartscher, Franz, 266,610, Cl. D30-2.000.
- Josef Schonlau Maschinenfabrik-und Eisengiesserei: *See—*
  - Bartscher, Franz, 266,608, Cl. D30-2.000.
  - Bartscher, Franz, 266,609, Cl. D30-2.000.
- Kabushiki Kaisha Suwa Seikosha: *See—*
  - Mori, Masahiko, 266,570, Cl. D18-22.000.
- Kaiser, Jack N., to American Standard Inc. Combined support surface and pedestal for a lavatory. 266,577, 10-19-82, Cl. D23-70.000.
- Kallista Baths, Inc.: *See—*
  - Harrison, Jeffrey, 266,576, Cl. D23-55.000.
- Katayama, Isao: *See—*
  - Sakow, Toshihiko; Katayama, Isao; and Ishihara, Sadao, 266,568, Cl. D16-30.000.
- Keck, Karl M. Razor holder. 266,606, 10-19-82, Cl. D28-44.000.
- Kelly, Chris P. Electric fence spotter. 266,553, 10-19-82, Cl. D10-109.000.
- Kiklevich, Jury N.: *See—*
  - Barats, Jury M.; Kiklevich, Jury N.; and Selin, Valentin A., 266,579, Cl. D23-77.000.
- Kimberly-Clark Corporation: *See—*
  - Ryan, Lenore S., 266,591, Cl. D24-50.000.
- Kioritz Corporation: *See—*
  - Satoh, Masatoshi, 266,587, Cl. D23-155.000.
- Krech, David E., to DeKrech Enterprises, Inc. Cremation urn. 266,619, 10-19-82, Cl. D99-5.000.
- Krech, David E., to DeKrech Enterprises, Inc. Cremation urn. 266,620, 10-19-82, Cl. D99-5.000.
- Krive, Irwin M. Scraper for ski pole or similar article. 266,574, 10-19-82, Cl. D21-230.000.
- Levolor Lorentzen, Inc.: *See—*
  - Reiss, Harold, 266,543, Cl. D3-30.100.
- Lowder, Dale E., to McGraw-Edison Company. Accessory solution tank for vacuum cleaner. 266,613, 10-19-82, Cl. D32-31.000.
- Lund, Richard G., III. Prenatal support pillow. 266,549, 10-19-82, Cl. D6-201.000.
- Lyle/Carlstrom Associates, Inc.: *See—*
  - Carlstrom, William, 266,551, Cl. D8-381.000.
- Margolin, George D.; and Tooke, Michael, to Auto Register, Inc. Point of sale terminal housing. 266,564, 10-19-82, Cl. D14-102.000.
- Matsubara, Hideyuki, to Pioneer Kabushiki Kaisha. Loudspeaker. 266,560, 10-19-82, Cl. D14-30.000.
- McGraw-Edison Company: *See—*
  - Lowder, Dale E., 266,613, Cl. D32-31.000.
- McNally, Aidan M. Miniature two-sided picture frame. 266,555, 10-19-82, Cl. D11-80.000.
- Mead Corporation, The: *See—*
  - Crutchfield, E. Bryant, 266,544, Cl. D3-72.000.
- Mellars, John W., to Warner-Lambert Company. Cuvette tray design 266,588, 10-19-82, Cl. D24-17.000.
- Metts, Thomas; and Harmon, John R. Bird feeder. 266,611, 10-19-82, Cl. D30-15.000.
- Miller, Scott W. Showerhead. 266,575, 10-19-82, Cl. D23-35.000.
- Minolta Camera Kabushiki Kaisha: *See—*
  - Sakow, Toshihiko; Katayama, Isao; and Ishihara, Sadao, 266,568, Cl. D16-30.000.
- Mori, Masahiko, to Kabushiki Kaisha Suwa Seikosha; and Shinshu Seiki Kabushiki Kaisha. Ink roll set for printing apparatus. 266,570, 10-19-82, Cl. D18-22.000.
- Moshier, William R., to Zellers, Mabel W. Combined heating and lighting fixture. 266,578, 10-19-82, Cl. D23-75.000.
- Muller, Ronald L.: *See—*
  - Rakocy, William J.; and Muller, Ronald L., 266,585, Cl. D23-149.000.
  - Rakocy, William J.; and Muller, Ronald L., 266,586, Cl. D23-149.000.
- Murray Ohio Manufacturing Co., The: *See—*
  - Breen, John D.; and Ihrie, Ronald L., 266,558, Cl. D12-123.000.
- Myodo, Kenichi, to Shinko Kinzoku Kabushiki Kaisha. Mug. 266,550, 10-19-82, Cl. D7-9.000.
- Nacinovich, Ken, to Speedo Knitting Mills Pty Limited. Shorts. 266,540, 10-19-82, Cl. D2-42.000.
- Nelles, Wilhelm. Wall inserted step or hand box. 266,593, 10-19-82, Cl. D25-69.000.
- Neville, Donald, to Plastiglide Manufacturing Corporation. Roller. 266,614, 10-19-82, Cl. D34-29.000.
- Newgard, Jon M., to General Electric Company. Floodlight. 266,596, 10-19-82, Cl. D26-24.000.
- North American Philips Corporation: *See—*
  - Rakocy, William J.; and Muller, Ronald L., 266,585, Cl. D23-149.000.
  - Rakocy, William J.; and Muller, Ronald L., 266,586, Cl. D23-149.000.
- Northern Telecom Limited: *See—*
  - Bee, James W. M.; and Trussler, Peter D. H., 266,561, Cl. D14-63.000.
- Offredi, Giovanni, to Fratelli Saporiti. Table. 266,547, 10-19-82, Cl. D6-146.000.
- Orangematic Canada Inc.: *See—*
  - Smith, Morley L., 266,565, Cl. D15-112.000.
- Pacific Furniture Manufacturing Co.: *See—*
  - Caldwell, John W., 266,545, Cl. D6-60.000.
- Perry, James M. Shirt. 266,541, 10-19-82, Cl. D2-215.000.
- Pioneer Kabushiki Kaisha: *See—*
  - Matsubara, Hideyuki, 266,560, Cl. D14-30.000.
- Plastiglide Manufacturing Corporation: *See—*
  - Neville, Donald, 266,614, Cl. D34-29.000.
- Procter & Gamble Company, The: *See—*
  - Appleman, Donald T., 266,616, Cl. D59-2.00B.
  - Appleman, Donald T., 266,617, Cl. D59-2.00B.
- Rakocy, William J.; and Muller, Ronald L., to North American Philips Corporation. Room air cleaner. 266,585, 10-19-82, Cl. D23-149.000.
- Rakocy, William J.; and Muller, Ronald L., to North American Philips Corporation. Room air cleaner. 266,586, 10-19-82, Cl. D23-149.000.
- Rasmussen, Henning, to A/S Tasso Odense. Boiler section. 266,580, 10-19-82, Cl. D23-90.000.
- Reiss, Harold, to Levolor Lorentzen, Inc. Venetian blind color sampler packet. 266,543, 10-19-82, Cl. D3-30.100.
- Roberts, Willie A. Vehicular hood-mounted lamp housing. 266,597, 10-19-82, Cl. D26-28.000.
- Rommag P. Worwag & Co.: *See—*
  - Hug, Niklaus, 266,612, Cl. D32-23.000.

Ryan, Lenore S., to Kimberly-Clark Corporation. Elasticized disposable diaper. 266,591, 10-19-82, Cl. D24-50.000.

Sakow, Toshihiko; Katayama, Isao; and Ishihara, Sadao, to Minolta Camera Kabushiki Kaisha. Combined copy machine and storage support or similar article. 266,568, 10-19-82, Cl. D16-30.000.

Sarpaneva, Timo, to A.Ahlstrom Osakeyhtio. Candlestick. 266,594, 10-19-82, Cl. D26-9.000.

Sarpaneva, Timo, to A.Ahlstrom Osakeyhtio. Combination candlestick and bowl. 266,595, 10-19-82, Cl. D26-10.000.

Satoh, Masatoshi, to Kioritz Corporation. Power blower. 266,587, 10-19-82, Cl. D23-155.000.

Schmid, Richard E. Aluminum can cruncher. 266,566, 10-19-82, Cl. D15-123.000.

Schwartz, Larry A.; Geiter, Robert; and Albertsen, Peter S., to Jamestown Group. Wood burning stove. 266,582, 10-19-82, Cl. D23-97.000.

Selin, Valentin A.: *See—*
Barats, Jury M.; Kiklevich, Jury N.; and Selin, Valentin A., 266,579, Cl. D23-77.000.

Sher, Robert B. Pipe. 266,605, 10-19-82, Cl. D27-03.000.

Shinko Kinzoku Kabushiki Kaisha: *See—*
Myodo, Kenichi, 266,550, Cl. D7-9.000.

Shinshu Seiki Kabushiki Kaisha: *See—*
Mori, Masahiko, 266,570, Cl. D18-22.000.

Smith, Morley L., to Orangematic Canada Inc. Juice vending back counter unit. 266,565, 10-19-82, Cl. D15-112.000.

Smith, Terrance R. Bicycle rack. 266,557, 10-19-82, Cl. D12-115.000.

Speedo Knitting Mills Pty Limited: *See—*
Nacinovich, Ken, 266,540, Cl. D2-42.000.

Stielhoff, Peter: *See—*
Bidegain, Pierre; Bidegain, Georgy; Baumann, Dieter; Baumann, Rolf; and Stielhoff, Peter, 266,552, Cl. D10-70.000.

Stocker, Hans, to Gardisette International AG. Curtain material. 266,615, 10-19-82, Cl. D47-6.00E.

Stocker, Hans, to Gardisette International AG. Curtain material. 266,618, 10-19-82, Cl. D92-1.00C.

Superior Stove Company, Inc.: *See—*
Ferrara, Leonard H., Jr., 266,581, Cl. D23-97.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Automobile auxiliary light. 266,598, 10-19-82, Cl. D26-28.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Fog light for automobile. 266,599, 10-19-82, Cl. D26-28.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Automobile auxiliary light. 266,600, 10-19-82, Cl. D26-28.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Lens reflector assembly for automobile auxiliary light. 266,601, 10-19-82, Cl. D26-28.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Foot cover for automobile auxiliary light. 266,602, 10-19-82, Cl. D26-113.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Cover for an automobile auxiliary light. 266,603, 10-19-82, Cl. D26-139.000.

Suzuki, Yoshikazu, to Ushio Denki Kabushiki Kaisha. Cover for automobile auxiliary light. 266,604, 10-19-82, Cl. D26-139.000.

Thulman, Robert D.; and Erickson, Alve J. Stove for burning combustible solid fuels. 266,584, 10-19-82, Cl. D23-97.000.

Tomishiba Denki Co., Ltd.: *See—*
Hattori, Yoshitaka, 266,562, Cl. D14-68.000.

Tooke, Michael: *See—*
Margolin, George D.; and Tooke, Michael, 266,564, Cl. D14-102.000.

Trussler, Peter D. H.: *See—*
Bee, James W. M.; and Trussler, Peter D. H., 266,561, Cl. D14-63.000.

Ushio Denki Kabushiki Kaisha: *See—*
Suzuki, Yoshikazu, 266,598, Cl. D26-28.000.
Suzuki, Yoshikazu, 266,599, Cl. D26-28.000.
Suzuki, Yoshikazu, 266,600, Cl. D26-28.000.
Suzuki, Yoshikazu, 266,601, Cl. D26-28.000.
Suzuki, Yoshikazu, 266,602, Cl. D26-113.000.
Suzuki, Yoshikazu, 266,603, Cl. D26-139.000.
Suzuki, Yoshikazu, 266,604, Cl. D26-139.000.

Warner-Lambert Company: *See—*
Mellars, John W., 266,588, Cl. D24-17.000.

White, Edward A., to Arizona Digital Corp. Case for data processor or similar article. 266,563, 10-19-82, Cl. D14-100.000.

Wukovich, Nick, to Foseco Trading AG. Insulating riser sleeve. 266,567, 10-19-82, Cl. D15-135.000.

Zellers, Mabel W.: *See—*
Moshier, William R., 266,578, Cl. D23-75.000.

LIST OF PLANT PATENTEES

Campbell, Rene M., to Campbell, Rene M. Almond tree (Rene). 4,896, 10-19-82, Cl. 30.000.

Duffett, William E.: *See—*
Meek, Jack M.; and Duffett, William E., 4,897, Cl. 74.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,897, 10-19-82, Cl. 74.000.

Yoder Brothers, Inc.: *See—*
Meek, Jack M.; and Duffett, William E., 4,897, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 19, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
8	4,354,279
16	4,354,280
69.5	4,354,281
115	4,354,282
413	4,354,283
	4,354,284
424	4,354,285
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CLASS 8	
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250.32	4,354,293
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232 R	4,354,854
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201 LP	4,354,298
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160.6	4,354,301
252	4,354,302
402.08	4,354,303
527.1	4,354,304
568	4,354,305
	4,354,306
571	4,354,307
	4,354,308
	4,354,309
605	4,354,310
840	4,354,311
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47	4,354,312
161	4,354,313
293	4,354,314
CLASS 33	
182	4,354,315
CLASS 34	
13.8	4,354,316
33	4,354,317
CLASS 36	
30 R	4,354,318
114	4,354,319
CLASS 37	
213	4,354,320
231	4,354,321
CLASS 42	
75 D	4,354,322
CLASS 43	
4	4,354,323
15	4,354,324
105	4,354,325
CLASS 44	
56	4,354,855
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74 D	4,354,326
CLASS 47	
58	4,354,327
CLASS 51	
206.4	4,354,328
215 H	4,354,329
CLASS 52	
28	4,354,330
66	4,354,331
514	4,354,332
CLASS 53	
48	4,354,333
	4,354,334
475	4,354,335
505	4,354,336
559	4,354,337
CLASS 54	
47	4,354,338
CLASS 55	
3	4,354,856
6	4,354,857
	4,354,858
25	4,354,859
105	4,354,860
130	4,354,861
296	4,354,862
436	4,354,863
CLASS 56	
10.2	4,354,339
27.5	4,354,340
503	4,354,341
CLASS 57	
119	4,354,342
279	4,354,343
CLASS 59	
35 R	4,354,344
CLASS 60	
39.08	4,354,345
39.09 P	4,354,346
39.18 B	4,354,347
203.1	4,354,348
299	4,354,349
384	4,354,350
456	4,354,351
517	4,354,352
554	4,354,353
655	4,354,354
CLASS 62	
6	4,354,355
55.5	4,354,356
216	4,354,357
271	4,354,358
299	4,354,359
320	4,354,360
467 R	4,354,361
474	4,354,362
CLASS 65	
27	4,354,864
29	4,354,865
99.5	4,354,866
CLASS 66	
128	4,354,363
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18 R	4,354,364
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30	4,354,365
312	4,354,366
333 A	4,354,367
456 R	4,354,368
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88	4,354,867
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38	4,354,369
42	4,354,370
53	4,354,371
177	4,354,372
247	4,354,373
389	4,354,374
449	4,354,375
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1 H	4,354,376
32 A	4,354,377
35	4,354,378
37	4,354,379
119 A	4,354,380
151	4,354,381
290 B	4,354,383
290 R	4,354,382
487	4,354,386
597	4,354,387
612	4,354,388
749	4,354,389
862.03	4,354,390
863.11	4,354,391
863.86	4,354,392
CLASS 74	
5.37	4,354,393
5.44	4,354,394
41	4,354,395
104	4,354,396
108	4,354,397
501 R	4,354,398
551.1	4,354,399
687	4,354,400
689	4,354,401
822	4,354,402
CLASS 75	
60	4,354,868
63	4,354,869
108	4,354,870
CLASS 81	
57.37	4,354,403
CLASS 82	
2 D	4,354,404
CLASS 83	
13	4,354,405
24	4,354,406
55	4,354,407
162	4,354,408
285	4,354,409
471.3	4,354,410
862	4,354,411
CLASS 84	
1.01	4,354,412
	4,354,413
1.24	4,354,414
	4,354,415
309	4,354,416
312 R	4,354,417
454	4,354,418
CLASS 89	
1 A	4,354,419
CLASS 91	
6	4,354,420
39	4,354,421
358 R	4,354,422
369 A	4,354,423
CLASS 92	
69 R	4,354,424
94	4,354,425
235	4,354,426
CLASS 99	
307	4,354,427
639	4,354,428
CLASS 100	
5	4,354,429
192	4,354,430
CLASS 101	
247	4,354,431
CLASS 102	
202.7	4,354,432
307	4,354,433
CLASS 104	
103	4,354,434
172 S	4,354,435
CLASS 106	
3	4,354,871
14.27	4,354,872
18.32	4,354,873
74	4,354,874
	4,354,875
85	4,354,876
90	4,354,877
120	4,354,878
163 R	4,354,879
CLASS 108	
123	4,354,436
153	4,354,437
CLASS 110	
234	4,354,438
245	4,354,439
346	4,354,440
CLASS 112	
79 R	4,354,441
158 E	4,354,442
440	4,354,443
CLASS 114	
105	4,354,444
218	4,354,445
230	4,354,446
255	4,354,447
344	4,354,290
CLASS 116	
161	4,354,448
CLASS 118	
126	4,354,449
303	4,354,450
326	4,354,451
413	4,354,452
426	4,354,453
658	4,354,454
700	4,354,455
721	4,354,456
CLASS 119	
3	4,354,457
CLASS 123	
52 M	4,354,458
80 BA	4,354,459
90.16	4,354,460
195 AC	4,354,461
241	4,354,462
308	4,354,463
323	4,354,464
339	4,354,465
	4,354,466
352	4,354,467
440	4,354,468
460	4,354,469
472	4,354,470
481	4,354,471
493	4,354,472
501	4,354,473
502	4,354,474
525	4,354,475
569	4,354,476
575	4,354,477
CLASS 126	
39 E	4,354,478
92 AC	4,354,479
123	4,354,480
350 B	4,354,481
409	4,354,482
419	4,354,483
425	4,354,484
CLASS 128	
70	4,354,485
132 D	4,354,486
156	4,354,487
205.25	4,354,488
206.14	4,354,489
213 A	4,354,490
214 E	4,354,492
214.4	4,354,491
276	4,354,493
294	4,354,494
348	4,354,495
403	4,354,496
419 D	4,354,497
419 R	4,354,498
653	4,354,499
663	4,354,500
	4,354,501
	4,354,502
686	4,354,503
691	4,354,504
732	4,354,505
748	4,354,506
763	4,354,507
798	4,354,508
803	4,354,509
CLASS 131	
235 R	4,354,510
324	4,354,511
CLASS 132	
88.5	4,354,512
110	4,354,517
CLASS 134	
104	4,354,513
152	4,354,514
167 C	4,354,515
CLASS 136	
254	4,355,195
259	4,355,196
CLASS 137	
98	4,354,516
112	4,354,518
312	4,354,519
543.23	4,354,520
571	4,354,521
614.02	4,354,522
614.18	4,354,523
624.14	4,354,524
625.48	4,354,526
625.5	4,354,525
625.63	4,354,527
875	4,354,528
CLASS 138	
96 T	4,354,529
CLASS 139	
54	4,354,530
66 R	4,354,531
384 B	4,354,532
435	4,354,533
	4,354,534
CLASS 140	
93 A	4,354,535
CLASS 141	
383	4,354,536
CLASS 144	
193 C	4,354,537
335	4,354,538
338	4,354,539
CLASS 145	
46	4,354,540
CLASS 148	
2	4,354,880
6.14 R	4,354,881
12 R	4,354,882
127	4,354,883
CLASS 149	
10	4,354,884
CLASS 150	
3	4,354,541
34	4,354,542
50	4,354,543
CLASS 156	
39	4,354,885
50	4,354,886
64	4,354,887
175	4,354,888
180	4,354,889
264	4,354,890
307.3	4,354,891
398	4,354,892
497	4,354,893
517	4,354,894
631	4,354,895
643	4,354,896
	4,354,897
647	4,354,898
CLASS 157	
1.17	4,354,544
CLASS 159	
13 A	4,354,899
CLASS 162	
106	4,354,900
158	4,354,901
300	4,354,902
CLASS 164	
457	4,354,545
CLASS 165	
1	4,354,546
25	4,354,547
41	4,354,548
62	4,354,549
133	4,354,550
166	4,354,551
CLASS 166	
90	4,354,552
244 C	4,354,553
321	4,354,554
CLASS 172	
4	4,354,555
19	4,354,556
49.5	4,354,557
CLASS 174	
37	4,355,197
66	4,355,198
68.5	4,355,199
140 S	4,355,200
166 R	4,355,201
CLASS 175	
45	4,354,558
71	4,354,559
267	4,354,560
321	4,354,561
CLASS 177	
210 EM	4,354,562
212	4,354,563
CLASS 178	
18	4,355,202
CLASS 179	
1 G	4,355,203
1 SA	4,355,204
2 A	4,355,205
18 DA	4,355,208
18 FA	4,355,209
18 FC	4,355,207
18 HB	4,355,206
84 VF	4,355,210
90 K	4,355,211
100 C	4,355,212
146 R	4,355,213
170.2	4,355,214
175.31 R	4,355,215
CLASS 180	
19 H	4,354,564
54 B	4,354,565
68 P	4,354,566
73 C	4,354,567
197	4,354,568
211	4,354,569
219	4,354,570
271	4,354,571
CLASS 181	
116	4,354,572
239	4,354,573
CLASS 184	
1.5	4,354,574
CLASS 187	
12	4,354,575
29 R	4,354,576
	4,354,577
71	4,354,578
95	4,354,579
CLASS 188	
4 R	4,354,580
71.9	4,354,581
196 M	4,354,582
CLASS 190	
18 A	4,354,583
CLASS 192	
3.57	4,354,584
45	4,354,585
106.2	4,354,586

CLASS 194	100 A	4,354,587
CLASS 198	394	4,354,588
	419	4,354,589
	425	4,354,590
	451	4,354,591
	703	4,354,592
	718	4,354,593
	743	4,354,594
	807	4,354,595
CLASS 200	16 A	4,355,216
	38 F	4,355,218
	38 R	4,355,217
	147 R	4,355,219
		4,355,220
CLASS 201	6	4,354,903
CLASS 204	59 R	4,354,904
	98	4,354,905
	157.1 H	4,354,906
	159.22	4,354,907
	192 EC	4,354,911
	192 N	4,354,908
		4,354,909
	192 R	4,354,910
	195 P	4,354,913
	195 S	4,354,912
	224 R	4,354,914
	242	4,354,915
	253	4,354,916
	284	4,354,917
	286	4,354,918
CLASS 206	45.31	4,354,596
	387	4,354,597
	462	4,354,598
	503	4,354,599
	508	4,354,600
	564	4,354,601
CLASS 208	10	4,354,919
		4,354,920
	33	4,354,921
	68	4,354,922
	113	4,354,923
	120	4,354,924
	140	4,354,925
	207	4,354,926
	251 H	4,354,927
	309	4,354,928
	310 Z	4,354,929
CLASS 209	221	4,354,930
	545	4,354,602
	521	B1 4,104,156
CLASS 210	136	4,354,931
	198.2	4,354,932
	257.2	4,354,933
	386	4,354,934
	396	4,354,935
	602	4,354,936
	607	4,354,937
	637	4,354,938
		4,354,939
	698	4,354,940
	706	4,354,941
	712	4,354,942
	727	4,354,943
		4,354,944
	736	4,354,945
	774	4,354,946
	790	4,354,947
CLASS 211	1.5	4,354,603
	17	4,354,604
	49 D	4,354,605
CLASS 212	175	4,354,606
		4,354,607
	191	4,354,608
CLASS 215	252	4,354,609
	253	4,354,610
CLASS 219	10.43	4,355,221
	10.57	4,355,222
	69 M	4,355,223
	137 WM	4,355,224
	216	4,355,225
	384	4,355,226
	390	4,355,227
CLASS 220	335	4,354,611
	401	4,354,612
	271	B1 4,182,460
CLASS 221	4	4,354,613
	67	4,354,614
	116	4,354,615
		4,354,616
	147	4,354,617
	186	4,354,618
	263	4,354,619
CLASS 222	14	4,354,620
	47	4,354,621
	55	4,354,622
	102	4,354,623
	608	4,354,624
CLASS 224	329	4,354,625
CLASS 226	109	4,354,626
	188	4,354,627
CLASS 227	19	4,354,628
CLASS 228	56	4,354,629
CLASS 229	39 R	4,354,630
	71	4,354,631
CLASS 233	20 A	4,354,632
CLASS 235	92 PC	4,355,228
CLASS 236	1 H	4,354,633
CLASS 238	338	4,354,634
CLASS 239	11	4,354,635
	177	4,354,636
	184	4,354,637
	337	4,354,638
	542	4,354,639
	585	4,354,640
CLASS 241	40	4,354,641
CLASS 242	18 PW	4,354,642
	55.2	4,354,643
	68.3	4,354,644
	117	4,354,645
CLASS 244	87	4,354,646
	153 R	4,354,647
	199	4,354,648
CLASS 246	187 B	4,354,649
CLASS 248	49	4,354,650
	56	4,354,651
	201	4,354,652
	317	4,354,653
	663	4,354,654
	679	4,354,655
CLASS 249	78	4,354,656
	83	4,354,657
	202	4,354,658
	206	4,354,659
CLASS 250	213 VT	4,355,229
	252.1	4,355,230
	253	4,355,231
	310	4,355,232
	343	4,355,233
		4,355,234
	376	4,355,235
	396 ML	4,355,236
	551	4,355,237
	577	4,355,238
CLASS 251	4	4,354,660
	118	4,354,661
	129	4,354,662
	210	4,354,663
	282	4,354,664
	298	4,354,665
	335 A	4,354,666
CLASS 252	8.9	4,354,951
	22	4,354,948
	39	4,354,949
	51.5 A	4,354,950
	106	4,354,952
	174.11	4,354,953
	305	4,354,955
	316	4,354,956
	419	4,354,957
	425.3	4,354,958
	429 B	4,354,959
	432	4,354,960
	439	4,354,961
	442	4,354,962
	455 Z	4,354,963
	518	4,354,964
	629	4,354,954
CLASS 254	332	4,354,667
CLASS 260	112.5 R	4,354,966
		4,354,967
	146 T	4,354,968
	156	4,354,969
	158	4,354,970
	239 BC	Re.31,061
	239.1	4,354,971
	239.55 R	4,354,972
	245.3	4,354,974
	245.7	4,354,973
	349	4,354,976
	397.4	4,354,977
	410.9 R	4,354,978
	453 P	4,354,979
	455 B	4,354,980
	465.8 R	4,354,981
	665 R	4,354,982
	990	4,354,983
CLASS 261	66	4,354,984
	100	4,354,985
CLASS 264	8	4,354,986
	13	4,354,987
	22	4,354,988
	40.6	4,354,989
	65	4,354,990
		4,354,991
	85	4,354,992
	86	4,354,993
	169	4,354,994
	250	4,354,995
	322	4,354,996
	560	4,354,997
CLASS 266	45	4,354,668
	140	4,354,669
	281	4,354,670
CLASS 270	58	4,354,671
CLASS 271	221	4,354,672
	227	4,354,673
	296	4,354,674
CLASS 272	118	4,354,675
	129	4,354,676
	144	4,354,677
CLASS 273	51	4,354,678
	58 A	4,354,679
	121 A	4,354,680
	121 R	4,354,681
	153 R	4,354,682
	187 R	4,354,683
	256	4,354,684
	342	4,354,685
CLASS 277	3	4,354,686
	26	4,354,687
	153	Re.31,058
CLASS 280	43.23	4,354,688
	47.37 R	4,354,689
	154.5 R	4,354,690
	242 WC	4,354,691
	495	4,354,692
	714	4,354,693
	802	4,354,694
	804	4,354,695
		4,354,696
CLASS 282	27.5	4,354,697
CLASS 285	98	4,354,698
CLASS 292	201	4,354,699
CLASS 293	132	4,354,700
CLASS 294	1 R	4,354,701
	9	4,354,702
	64 R	4,354,703
	74	4,354,704
	86 CG	4,354,705
	102 A	4,354,706
CLASS 296	167	4,354,707
	185	4,354,708
CLASS 297	284	4,354,709
	356	4,354,710
CLASS 301	9 CN	4,354,711
CLASS 303	6 C	4,354,712
	8	4,354,713
	38	Re.31,059
	114	4,354,714
	116	4,354,715
	119	4,354,716
CLASS 307	41	4,355,239
	44	4,355,240
	102	4,355,241
	252 N	4,355,242
	261	4,355,243
	304	4,355,244
	455	4,355,245
	456	4,355,246
	530	4,355,247
CLASS 310	42	4,355,248
	49 R	4,355,249
	88	4,355,250
	155	4,355,251
	162	4,355,252
	239	4,355,253
	242	4,355,254
	254	4,355,255
	358	4,355,256
	361	4,355,257
CLASS 313	95	4,355,258
	337	4,355,259
	404	4,355,260
CLASS 315	47	4,355,261
	111.11	4,355,262
	209 T	4,355,263
	289	4,355,264
	290	4,355,265
CLASS 316	19	4,354,717
CLASS 318	85	4,355,266
	89	4,355,267
	314	4,355,268
	436	4,355,269
	443	4,355,270
	480	4,355,271
	561	4,355,272
		4,355,273
	812	4,355,274
CLASS 320	21	4,355,275
CLASS 322	4	4,355,276
CLASS 323	351	4,355,277
CLASS 324	158 R	4,355,278
	161	4,355,279
	207	4,355,280
	232	4,355,281
	309	4,355,282
CLASS 328	61	4,355,283
	155	4,355,284
CLASS 330	9	4,355,285
	56	4,355,286
	264	4,355,287
CLASS 331	12	4,355,288
CLASS 332	17	4,355,289
CLASS 333	195	4,355,290
CLASS 335	128	4,355,291
	145	4,355,292
	229	Re.31,062
CLASS 338	184	4,355,293
CLASS 339	17 CF	4,354,718
	59 M	4,354,719
	91 R	4,354,720
	94 R	4,354,721
	95 D	4,354,722
	103 R	4,354,723
	186 R	4,354,724
	214 R	4,354,725
	230 R	4,354,726
	256 R	4,354,727
	256 S	4,354,728
	258 R	4,354,729
CLASS 340	27 R	4,355,294
	41 R	4,355,295
	52 R	4,355,296
	58	4,355,297
		4,355,298
		4,355,299
	146.3 C	4,355,300
	146.3 D	4,355,301
	146.3 Q	4,355,302
	310 A	4,355,303
	347 DD	4,355,304
		4,355,306
	347 SY	4,355,305
	679	4,355,307
	781	4,355,308
	825.53	4,355,309
	858	4,355,310
CLASS 343	5 CM	4,355,311
	5 VQ	4,355,312
	725	4,355,313
	779	4,355,314
	792.5	4,355,315
	840	4,355,316
		4,355,317
CLASS 346	76 L	4,355,318
	76 PH	4,355,319
CLASS 350	51	4,354,733
	54	4,354,730
	96.21	4,354,731
	96.23	4,354,732
	96.26	4,354,734
	96.29	4,354,735
	96.32	4,354,736
	117	4,354,737
	126	4,354,738
	311	4,354,739
	340	4,354,740
	357	4,354,741
	442	4,354,742
	464	4,354,743
CLASS 351	153	4,354,744
CLASS 353	112	4,354,745
CLASS 354	1	4,354,746
	23 D	4,354,747
		4,354,748
	33	4,354,749
	128	4,354,750
	139	4,354,751
	232	4,354,752
		4,354,753
	289	4,354,754
	322	4,354,755
CLASS 355	3 R	4,354,756
	3 SH	4,354,759
	7	4,354,757
	14 E	4,354,758
CLASS 356	350	4,354,760
	378	4,354,761
CLASS 357	30	4,355,320
		4,355,321
	38	4,355,322
	74	4,355,323
CLASS 358	29	4,355,325
	37	4,355,326
	44	4,355,327
	87	4,355,328
	108	4,355,329
	111	4,355,330
		4,355,331
	160	4,355,333
	168	4,355,334
	213	4,355,335
	217	4,355,336
	284	4,355,337
	312	4,355,324
CLASS 360	14.1	4,355,332
	15	4,355,338
	105	4,355,339
	133	4,355,340
CLASS 361	79	4,355,341
	91	4,355,342
	100	4,355,343
	103	4,355,344
	117	4,355,345
	318	4,355,346
CLASS 362	30	4,355,347
	86	4,355,348
	153	4,355,349
	347	4,355,350
CLASS 363	9	4,355,351
	16	4,355,352
	21	4,355,353
CLASS 364	200	4,355,354
		4,355,355
		4,355,356
	422	4,355,357
	424	4,355,358
	431.04	4,355,359
	431.11	4,355,360
	464	4,355,361
	474	4,355,362
	509	4,355,363
	565	4,355,364
	569	4,355,365
	717	4,355,366
	718	4,355,367
	728	4,355,368
	900	4,355,369
		4,355,370
		4,355,371
		4,355,372
CLASS 365	39	4,355,373
	149	4,355,374
	185	4,355,375
	200	4,355,376
	203	4,355,377
CLASS 366	160	4,354,762
	181	4,354,763
CLASS 367	33	4,355,378
	68	4,355,379
CLASS 368	71	4,355,380
	187	4,355,381
CLASS 369	71	4,355,382
	120	4,355,383
CLASS 370	64	4,355,384
	85	4,355,385
	100	4,355,386
	102	4,355,387
	104	4,355,388
CLASS 371	18	4,355,389
	21	4,355,390
	37	4,355,391
	45	4,355,392
	51	4,355,393
CLASS 372	16	4,355,394
	38	4,355,395
	46	4,355,396
CLASS 374	56	4,354,764
	134	4,354,384
	162	4,354,385
CLASS 375	1	4,355,399
	4	4,355,400
	5	4,355,401
	11	4,355,402
	17	4,355,397
	36	4,355,403
	48	4,355,405
	82	4,355,406
	86	4,355,404
	91	4,355,407
	110	4,355,398
		4,355,408
CLASS 376	140	4,354,998
	142	4,354,999
	205	4,355,000
	317	4,355,001
	419	4,355,002
CLASS 378	146	4,355,409
	199	4,355,410
CLASS 400	7	4,354,765
	708	4,354,766
CLASS 401	63	4,354,767
CLASS 403	3	4,354,768
	248	4,354,769
	409	4,354,770
CLASS 404	6	4,354,771
	10	4,354,772
	41	4,354,773
CLASS 405	157	4,354,774
CLASS 406	3	4,354,775
	23	4,354,776
	63	4,354,777
	137	4,354,778
CLASS 408	241 S	4,354,779
CLASS 409	122	4,354,780
CLASS 410	77	4,354,781
CLASS 411	61	4,354,782
CLASS 412	13	4,354,783
CLASS 413	12	4,354,784
CLASS 414	8	4,354,785
	28	Re.31,060
	46	4,354,786
	54	4,354,787
	55	4,354,788
	104	4,354,789
	222	4,354,790
	343	4,354,791
	359	4,354,792
	546	4,354,793
	607	4,354,794
	622	4,354,795
	676	4,354,796
	700	4,354,797
	750	4,354,798
	756	4,354,799
	620	B1 4,209,280
CLASS 415	1	4,354,800
	80	4,354,801
	207	4,354,802
CLASS 416	81	4,354,803
	230	4,354,804
CLASS 417	54	4,354,805
	393	4,354,806
CLASS 418	13	4,354,807
	259	4,354,808
	268	4,354,809
CLASS 422	206	4,355,003
	246	4,355,004
CLASS 423	41	4,355,005
	61	4,355,006
	79	4,355,007
		4,355,008
	101	4,355,009
	210	4,355,010
	224	4,355,011
	226	4,355,012
	242	4,355,013
	265	4,355,014
	336	4,355,015
	450	4,355,016
	484	4,355,017
CLASS 424	1	4,355,018
	9	4,355,019
	28	4,355,020
		4,355,021
	50	4,355,022
	85	4,355,023
	177	4,355,024
		4,355,025
	180	4,355,026
	199	4,355,027
	230	4,355,028
	232	4,355,029
	250	4,355,030
		4,355,031
	253	4,355,032
	256	4,355,033
	263	4,355,034
		4,355,035
	267	4,355,036
		4,355,037
	271	4,355,038
	273 R	4,355,039
		4,355,040
		4,355,041
	285	4,355,042
	289	4,355,043
	319	4,355,044
	322	4,355,045
	355	4,355,046
CLASS 425	91	4,354,810
	140	4,354,811
	144	4,354,812
	182	4,354,813
	186	4,354,814
	236	4,354,815
	302.1	4,354,816
	331	4,354,817
	405 H	4,354,818
	409	4,354,819
	461	4,354,820
CLASS 426	13	4,355,047
	40	4,355,048
	535	4,355,049
	615	4,355,050
	632	4,355,051
CLASS 427	39	4,355,052
	54.1	4,355,053
	61	4,355,054
	96	4,355,055
	126.4	4,355,056
	216	4,355,057
	386	4,355,058
	388.2	4,355,059
	427	4,355,060
CLASS 428	36	4,355,061
	64	4,355,062
	89	4,355,063
	178	4,355,064
	195	4,355,065
	198	4,355,066
	253	4,355,067
	290	4,355,068
	292	4,355,069
	323	4,355,070
	334	4,355,071
	336	4,355,072
	350	4,355,073
		4,355,074
	369	4,355,075
	411	4,355,076
	412	4,355,077
	414	4,355,078
	469	4,355,079
	483	4,355,080
	526	4,355,081
	607	4,355,082
	621	4,355,083
	672	4,355,084
CLASS 429	101	4,355,085
	105	4,355,086
CLASS 430	7	4,355,087
	98	4,355,088
	130	4,355,089
	204	4,355,090
	216	4,355,091
	219	4,355,092
	275	4,355,093
	286	4,355,094
	293	4,355,095
	302	4,355,096
	495	4,355,097
	510	4,355,098
	531	4,355,099
	544	4,355,100
	564	4,355,101
CLASS 431	7	4,354,821
	208	4,354,822
	328	4,354,823
CLASS 432	3	4,354,824
	14	4,354,825
	18	4,354,826
	21	4,354,827
	24	4,354,828
	117	4,354,829
	258	4,354,830
	263	4,354,831
CLASS 433	7	4,354,832
	20	4,354,833
	21	4,354,834
	30	4,354,835
	73	4,354,836
	91	4,354,837
	101	4,354,838
	126	4,354,839
	215	4,354,840
CLASS 434	157	4,354,841
	195	4,354,842
	236	4,354,843
	237	4,354,844
	410	4,354,845
CLASS 435	5	4,355,102
	34	4,355,103
	70	4,355,104
	94	4,355,105
	101	4,355,106
	142	4,355,107
	165	4,355,108
	170	4,355,109
	210	4,355,110
	243	4,355,111
	253	4,355,112
	295	4,355,113
CLASS 440	52	4,354,846
	61	4,354,847
		4,354,848
	88	4,354,849
CLASS 455	33	4,355,411
	175	4,355,412
	183	4,355,413
	184	4,355,414
	185	4,355,415
	186	4,355,416
	218	4,355,417
	303	4,355,419
	317	4,355,420
	327	4,355,421
	343	4,355,422
	608	4,355,423
CLASS 464	32	4,354,850
CLASS 501	5	4,355,114
	21	4,355,115
CLASS 521	27	4,355,116
	28	4,355,117
	108	4,355,118
	159	4,355,119
	189	4,355,120
CLASS 523	213	4,355,121
	423	4,355,122
	511	4,355,123
CLASS 524	104	4,354,965
		4,355,124
	401	4,355,125
	411	4,355,126
	423	4,355,127
		4,355,128
	435	4,355,129
	491	4,355,130
	504	4,355,131
	602	4,355,132
	604	4,355,133
	605	4,355,134
	767	4,355,135
CLASS 525	35	4,355,136
	54.1	4,355,137
	127	4,355,138
	133	4,355,139
	329.4	4,355,140
CLASS 526	62	4,355,141
	88	4,355,142
	119	4,355,143
	137	4,355,144
	195	4,355,145
	199	4,355,146
	264	4,355,147
	281	4,355,148
CLASS 528	18	4,355,149
	176	4,355,150
	183	4,355,151
	191	4,355,152
	243	4,355,153
	274	4,355,154
	301	4,355,155
	413	4,355,156
	499	4,355,157
	91	B1 3,865,678
CLASS 536	1	4,355,158
CLASS 542	417	4,355,159
CLASS 544	027	4,355,160
	181	4,355,161
		4,355,162
	189	4,355,163
	234	4,355,164
	237	4,355,165
	268	4,355,166
CLASS 546	255	4,355,167
	341	4,355,168
CLASS 548	146	4,355,169
	341	4,355,170
CLASS 549	220	4,354,975
CLASS 556	446	4,355,171
CLASS 560	29	4,355,172
	103	4,355,173
CLASS 562	469	4,355,174
	483	4,355,175
	599	4,355,176
CLASS 564	36	4,355,177
	44	4,355,178
	177	4,355,179
	398	4,355,180
	477	4,355,181
CLASS 568	11	4,355,182
	19	4,355,183
	31	4,355,184
	50	4,355,185
	52	4,355,186
	471	4,355,187
	620	4,355,188
	637	4,355,189
	754	4,355,190
	902	4,355,192
CLASS 570	217	4,355,193
CLASS 585	14	4,355,194

CLASSIFICATION OF DESIGNS

D2—	42	266,540
	215	266,541
	320	266,542
D3—	30.1	266,543
	72	266,544
D6—	60	266,545
	113	266,546
	146	266,547
		266,548
	201	266,549
D7—	9	266,550
D8—	381	266,551
D10—	70	266,552
	109	266,553
	113	266,554
D11—	80	266,555
D12—	112	266,556
	115	266,557
	123	266,558
D13—	28	266,559
D14—	30	266,560
	63	266,561
	68	266,562
	100	266,563
	102	266,564
D15—	112	266,565
	123	266,566
	135	266,567
D16—	30	266,568
	123	266,569
D18—	22	266,570
D19—	76	266,571
D21—	120	266,572
	140	266,573
	230	266,574
D23—	35	266,575
	55	266,576
	70	266,577
	75	266,578
	77	266,579
	90	266,580
	97	266,581
		266,582
		266,583
		266,584
	149	266,585
		266,586
	155	266,587
D24—	17	266,588
	31	266,589
	35	266,590
	50	266,591
D25—	31	266,592
	69	266,593
D26—	9	266,594
	10	266,595
	24	266,596
	28	266,597
		266,598
		266,599
		266,600
		266,601
	113	266,602
	139	266,603
		266,604
D27—	03	266,605
D28—	44	266,606
	58	266,607
D30—	2	266,608
		266,609
		266,610
	15	266,611
D32—	23	266,612
	31	266,613
D34—	29	266,614
D47—	6 E	266,615
D59—	2 B	266,616
		266,617
D92—	1 C	266,618
D99—	5	266,619
		266,620
	24	266,621
		266,622
		266,623
		266,624

CLASSIFICATION OF PLANTS

P.—	30	4,896
	74	4,897

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Alabama	1
Alaska	2
American Samoa	3
Arizona	4
Arkansas	5
California	6
Canal Zone	7
Colorado	8
Connecticut	9
Delaware	10
District of Columbia	11
Florida	12
Georgia	13
Guam	14
Hawaii	15
Idaho	16
Illinois	17
Indiana	18
Iowa	19
Kansas	20
Kentucky	21
Louisiana	22
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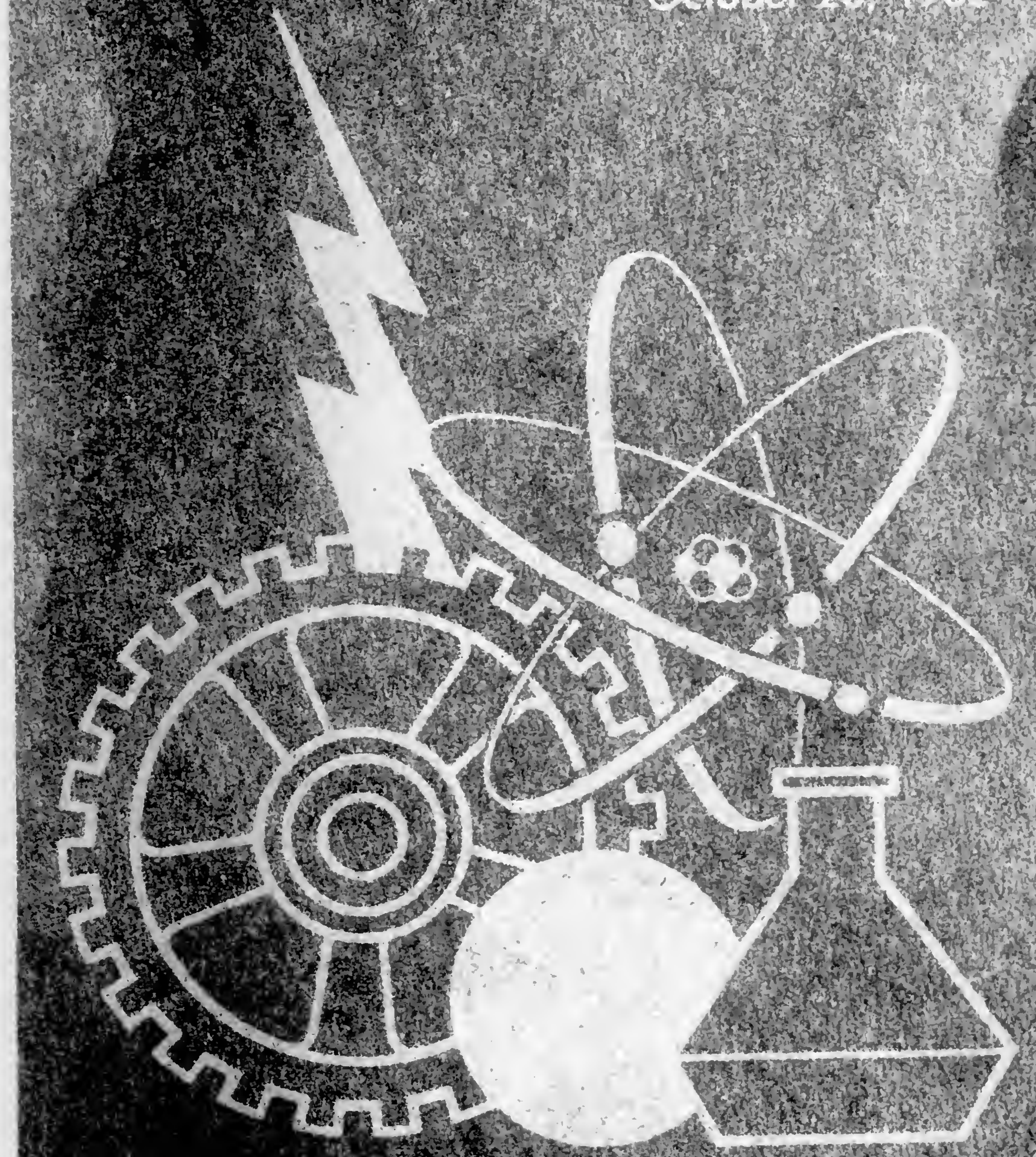
October 26, 1982



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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes, see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981. For use of the European Patent Office as a searching authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the international fees have been increased as of Jan. 1, 1982 and that the domestic PCT fees have been increased as of Oct. 1, 1982. Domestic PCT fees were increased by a rule change which was published at 1021 O.G. 11 on Aug. 10, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
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· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
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Basic Fees (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation fee (for each national or regional office)	65.00

DONALD J. QUIGG,
Sept. 10, 1982. *Deputy Commissioner*
of Patents & Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 262,279, Re. S.N. 405,581, Filed Aug. 5, 1982, Cl. 34/34, MOBILE SELF-POWERED HYDRAULIC LIFT, Rallie P. Rallis, et al., Owner of Record: *Mark Industries, Carson, Calif.*, Attorney or Agent: Robert R. Thornton, Ex. Gp.: 290

4,113,544, Re. S.N. 400,160, Filed July 20, 1982, Cl. 156/384, PORTABLE LABEL PRINTING AND APPLYING MACHINE, Yo Sato, Tokyo, Japan, Owner of Record: *Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan*, Attorney or Agent: Sidney G. Faber, et al., Ex. Gp.: 161

4,215,351, Re. S.N. 400,546, Filed July 21, 1982, Cl. 346/136, CHART RECORDS, David John Lowe, Owner of Record: *National Research Development Corp., London, England*, Attorney or Agent: L. Martin Flynn, Ex. Gp.: 211

4,256,104, Re. S.N. 397,792, Filed July 16, 1982, Cl. 128/214G, EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES, Andrew J. Muetterties, et al., Owner of Record: *Inventor*, Attorney or Agent: Robert L. Niblack, Ex. Gp.: 335

4,300,388, Re. S.N. 405,492, Filed Aug. 5, 1982, Cl. 73/49.2, METHOD FOR LEAKAGE MEASUREMENT, William B. Hansel, et al., Owner of Record: *Sun Oil Co., Philadelphia, Pa.*, Attorney or Agent: J. Edward Hess, et al., Ex. Gp.: 244

4,308,956, Re. S.N. 400,865, Filed July 22, 1982, Cl. 206/611, RESEALABLE CONTAINER, John J. Steinke, et al., Owner of Record: *Church & Dwight Co., Inc., Piscataway, N.J.*, Attorney or Agent: Nelson Littell, Jr., et al., Ex. Gp.: 241

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,551,076, Reexam. No. 90/000,255, Requested: Sept. 9, 1982, Cl. 417/385, TUBULAR DIAPHRAGM PUMP, Lawrence F. Wilson, Owner of Record: *Lapp Insulator Co., Inc., Leroy, N.Y.*, Attorney or Agent: Hart, Baxley, etc., Ex. Gp.: 343, Requester: Harold C. Wegner, Washington, D.C.

4,152,167, Reexam. No. 90/000,261, Requested: Sept. 24, 1982, Cl. 251/28, MATRIX FORMING COMPOSITION, Howard J. Horvitz, et al., Owner of Record: *Set Products, Inc., Macedonia, Ohio*, Attorney or Agent: Fay & Sharpe, Ex. Gp.: 341, Requester: J. Suzanne Siebert Of Majestic, Gallagher, Parsons & Siebert, San Francisco, Calif.

4,161,436, Reexam. No. 90/000,263, Requested: Sept. 29, 1982, Cl. 204/157.1R, METHOD OF ENERGIZING A MATERIAL, Gordon Gould, Owner of Record: *Panelrama Corp., Ardmore, Pa.*, Attorney or Agent: Lerner, David, et al., Ex. Gp.: 112 Requester: Lumonics, Inc., c/o Robert W. Duckworth, Orlando, Fla.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Nov. 15, 1982.

DONALD J. QUIGG,
Sept. 29, 1982. *Chairman, Committee*
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Frazier, Roy D., 14109 Bauer Dr., Rockville, Md. 20853
Moy, Robert C., 1600 S. Eads St., Apt. 1027N, Arlington, Va. 22202
Sabet, Sohrab, 943 Weston, Ottawa, Ont., Canada K1G 1X1

Removal From Register

The following list contains the names of persons to whom a letter was directed to the last post office address furnished to the Committee on Enrollment. No reply was received within the period of ten (10) days therein set.

Accordingly, the names of the following persons have been removed from the Register of Patent Attorneys and Patent Agents.

DONALD J. QUIGG,
Sept. 29, 1982. *Chairman, Committee*
on Enrollment.

Harper, Horace S., Samuels, Clark, Everett & Harper, 707 Keyser Bldg., Calvert & Redwood Sts., Baltimore, Md. 21202
Kreider, M. David, 2512 Crest Ave., Cheverly, Md. 20785
Strader, Frederick M., 8825 Cold Spring Rd., Potomac, Md. 20854
Tushin, Aaron A., 1300 Highfield Dr., Clearwater, Fla. 33516

Status of PTO Services

The following is an update of the status of PTO services as of Sept. 30, 1982:

Service Item	FY 1982 Performance Goal (Calendar Days)	Actual	Comment
Internal Mail Processing & Delivery	4	3	
Filing Receipts:			
Patents	22	46	Reduction from 100 days in February.
Trademarks	30	40	
Patent Copies:			
Window Coupons	5	90% within 5 days 98% within 10 days	
Mail Coupons*	29	99% within 29 days	
Letter Orders*	34	99% within 34 days	
Certified Copies:			
Trademark Regs.	30	17	
Applications-As-Filed	20	95% within 15 days	
File-Wrapper/Contents	N/A	80% within 15 days 98% within 30 days	
Walk-up Certification	1	99% within 1 day	Service now includes applications-as-filed.
Trademark Search Room:			
Filing Drawings	21	30	
Filing Reg. Certificates	3	5	
Patent Assignments	15	76	Expect reduction in FY 1983.
Trademark Assignments	21	77	Expect reduction in FY 1983.
Patent Official Gazette	Issue Date	On Schedule	
Patent Grants	Issue Date	On Schedule	
Trademark Official Gazette	Issue Date	1 day late	
Trademark Registrations	Issue Date	9 days late	

*Goal now includes mail processing and delivery time. A recent survey of mail delivery time for these services yielded the fact that the *average* amount of time required for one-way delivery is seven calendar days. Therefore the prior goal was increased by 14 days to reflect average time from mailing by requestors to receipt of copies.

User Survey

The report of the User Survey conductd early this year has been completed. This survey was conducted to gather data on the public perception of the adequacy of services provided by the PTO and identify principal areas of concerns. There were 325 respondents, 89 of which are local Bar Association members, 88 out-of-town Patent Law Association members (Cleveland and Los Angeles), and 148 Patent Public Search Room users.

Most respondents rated as good or excellent the quality of drawing corrections, certified copy services, and identification of serial numbers stamped on the applicants' self-addressed post cards; the accuracy of all services; the value of computerized search mechanisms in the Patent Search and Assignment Search Rooms; the helpfulness of the draftsmen, patent search advisors, employees in the Office of the Director of Patent and Trademark Services, and the Scientific Library staff; and the file integrity of trademark registrations and the microfilm collections for patent and trademark assignments and for patents (Scientific Library). On the other hand, most respondents rated as poor or fair all items relating to the timeliness of services, integrity of files (except for the microfilm collections and trademark registrations), search room working conditions, and quality of photocopy/microfilm reader-printer services. These items have suffered over the past several years due primarily to resource shortages.

The report contains specific data for each service area, as well as an action plan for all items for which there was predominantly a negative perception. Although only 3 out of 48 items were considered as poor by the majority of respondents, the 24 rated fair are also specifically addressed in the action plan. Progress on the action plan will be reported in this monthly newsletter.

To obtain a copy of the full report, contact:

Assistant Commissioner for Administration
U.S. Patent and Trademark Office
CP 3-11C34
Washington, D.C. 20231
(703) 557-2290

Improvements to Services

- *Official Search Services* —Substantial progress was made in efforts to improve the official search services.

  An internal "special" search service was initiated in hopes of reducing the number of incoming officials search requests. This procedure calls for PTO organizations to initiate their own internal search to locate requested files if the file is identified by the Patent Application Locator and Monitoring System (PALM) to be in their organization.

  The PALM System is now being used to expedite official searches for lost files. The serial or patent number of the missing file is entered into a "Lost Case File" in the PALM System. Upon any subsequent transaction for that file, a message will be instantly flashed to the person entering the data. The message will indicate that this file had been lost and should be sent immediately to the Official Search Unit. Use of this automated search tool should eliminate repetitive searches for files and result in more files being found.

  To enable searchers to locate lost files more quickly, a series of specially designed training sessions have been and will continue to be given to official search personnel to ensure better understanding of the patent and trademark process workflow as it relates to abandoned and registered files.

  Official search procedures are currently being revised in an attempt to decrease official search workload and eliminate wasted efforts on the part of official searchers. This new procedure involves the issuance of acknowledgements, indicating to the requester the estimated closing date of the search; the termination of requests after 60 days; and the encouragement to request recônstruction of the file, if it is critically needed. Individuals requesting official searches are being encouraged to submit prompt and non-repetitive requests for official searches, and to cancel searches if the file is located by the requester after the official search has been requested.

- *Timeliness in Providing Patented and Trademark Files* —A special service is now available to out-of-town requesters who wish to inspect patented files or abandoned or registered trademark files upon arrival in the area. Thôse who have to travel a considerable distance to inspect files may place their requests by telephone (703) 557-3560, to Mr. Lüther Campbell, five days in advance of their arrival. Normally, a 24 hour notice is sufficient to fill an order. A five day notice should be allowed in the event that the file is located in the Federal Records Center in Suitland, Md., rather than in the PTO file Repository in Crystal City. The patented files requested will be reserved in the Record Room in the Patent Search Room area. Trademark files will be held in the Trademark Search Library. Requesters will be called to confirm that the file is available. To maintain maximum file availability, telephone requests will not be accepted more than five days prior to the expected pick-up date, and files will not be reserved after close of business on the stated arrival date.

  Requests for files are now being time-stamped upon receipt and delivery, so that sample surveys can be taken monthly to determine if the processing goal of 8 work hours is being met. Data compiled during the month of August indicated that approximately 84% of all requests were processed in eight hours or less. A large portion of the requests still outstanding after eight hours involved files which had to be ordered from the Federal Records Center in Suitland, Md., or which required a bar code label to be made and placed on the file prior to forwarding to the requester.

- *Timeliness in Providing Certified Copies* —The local certification service in the Patent Public Search Room is now offered for pending and abandoned patent applications, as well as patented files. This service is normally provided within one day. Users of this service must leave document copies together with the original document or file at the certification desk in the Patent Public Search Room. A page-by-page comparison of the copy will be made with the original and, if the copies are proper, complete and in order, a certificate will be affixed. The current charge for this service is $2.00 per certificate. Beginning October 1, 1982, the charge will be $0.10 per page compared, plus $3.50 per certificate.

  Those who must have certified copies by a specific date, but do not find it convenient to use the local certification service, should indicate the due date clearly on their order form. Every reasonable effort will be made to ensure that such orders are processed in a timely fashion.

- *Patent Search Room Working Conditions* —All air registers were repaired and over 400 lights were replaced by our lessor, Charles E. Smith Cos. For the first time in a decade, all 2,700 lights were operable at the same time.

  A routine maintenance program has been instituted to ensure that adequate lighting continues.

  Maps have been placed in the lobbies of Crystal Plaza buildings 2, 3, and 4, beneath the posted directories. These should make it easier to find the Patent Public Search Room, Trademark Search Library, and all other PTO organizations spread throughout several buildings in Crystal City.

- *Quality of Photocopy/Microfilm Reader-Printer Services* —Higher magnification lenses have been installed in all microfilm reader-printers. The new lenses will provide larger, more readable images, and should eliminate any image quality deterioration that had resulted from discoloration of the old lenses.

In Oct., expanded photocopy services will be offered to users of the Public Search Room. Patent files can be deposited at the photocopy sales window for reproduction, and requested copies will generally be returned within eight working hours. There will be a fee of $0.20 per copy for this service.

Trademark Application Inspection —Members of the public report that it is now easier to locate and inspect files of pending trademark applications. Since the beginning of the year most pending applications have been stored in the examining divisions ("law offices") where they are being examined. See Official Gazette Jan. 5, 1982, 1014 TMOG 190.

Sept. 30, 1982.

THERESA A. BRELSFORD,
Acting Assistant Commissioner
for Administration.

Public Law 97-247
97th Congress

An Act

To authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Aug. 27, 1982
[H.R. 6260]

Patent and Trademark Office. Appropriation authorization.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated for the payment of salaries and necessary expenses of the Patent and Trademark Office to become available for fiscal year 1983, $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary as well as such additional or supplemental amounts as may be necessary, for increases in salary, pay, retirement, or other employee benefits authorized by law. Funds available under this section shall be used to reduce by 50 per centum the payment of fees under section 41 (a) and (b) of title 35, United States Code, by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration. When so specified and to the extent provided in an appropriation Act, any amount appropriated pursuant to this section and, in addition, such fees as shall be collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), may remain available without fiscal year limitation.

15 USC 632.

SEC. 2. Notwithstanding any other provision of law, there is authorized to be appropriated for the payment of salaries and expenses of the Patent and Trademark Office, $121,461,000 for the fiscal year ending September 30, 1982, and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law.

SEC. 3. (a) Section 41(a) of title 35, United States Code, is amended to read as follows:

Fees.

"(a) The Commissioner shall charge the following fees:

"1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

35 USC 112.

"2. For issuing each original or reissue patent, except in design or plant cases, $500.

"3. In design and plant cases:

"a. On filing each design application, $125.

"b. On filing each plant application, $200.
"c. On issuing each design patent, $175.
"d. On issuing each plant patent, $250.

"4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

"5. On filing each disclaimer, $50.

"6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

35 USC 133, 151.

"7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

"8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:
"a. On filing a first petition, $50.
"b. On filing a second petition, $100.
"c. On filing a third or subsequent petition, $200.".

(b) Section 41(b) of title 35, United States Code, is amended to read as follows:

Maintenance fees.

"(b) The Commissioner shall charge the following fees for maintaining a patent in force:
"1. Three years and six months after grant, $400.
"2. Seven years and six months after grant, $800.
"3. Eleven years and six months after grant, $1,200.

Expiration.

Surcharge.

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.".

(c) Section 41(c) of title 35, United States Code, is amended to read as follows:

Maintenance fee, delayed payment.

Surcharge.

"(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

"(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.".

(d) Section 41(d) of title 35, United States Code, is amended to read as follows:

Fees.

35 USC 13.

"(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.".

Adjusted fees.

(e) Section 41(f) of title 35, United States Code, is amended to read as follows:

"(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored,".

(f) Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is amended by deleting "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.".

(g) Section 42(c) of title 35, United States Code, is amended by adding the following sentence at the end thereof: "Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.".

Sec. 4. Section 3(a) of title 35, United States Code is amended (1) by deleting the phrase "not more than fifteen"; and (2) by inserting the phrase "appointed under section 7 of this title" immediately after the phrase "examiners-in-chief".

Sec. 5. Section 111 of title 35, United States Code, is amended to read as follows:

Applications.

35 USC 112.
35 USC 113.
35 USC 115.

"Sec. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such prescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.".

Filing date.

Sec. 6. (a) Section 116 of title 35, United States Code, is amended (1) by deleting the phrase "Joint inventors" from the title and inserting in its place "Inventors"; and (2) in the third paragraph, by deleting the phrase "a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error" and inserting in its place the phrase "through error a person is named in an application for patent as the inventor, or through error an inventor is not named in an application".

(b) Section 256 of title 35, United States Code, is amended to read as follows:

"§ 256. Correction of named inventor

"Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without any deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

"The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.".

Sec. 7. Section 6 of title 35, United States Code, is amended by deleting paragraph (d) thereof.

Sec. 8. (a) Section 8(a) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(a)), is amended (1) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

(b) Section 8(b) of the Trademark Act of 1946, as amended (15 U.S.C. 1058(b)), is amended (1) by deleting the word "still"; and (2) by inserting the phrase "in commerce" immediately after the word "use".

Sec. 9. (a) Section 13 of the Trademark Act of 1946, as amended (15 U.S.C. 1063), is amended (1) by deleting the phrase "a verified" and inserting in its place the word "an"; (2) by adding the phrase "when requested prior to the expiration of an extension" immediately after the word "cause"; and (3) by deleting the fourth sentence.

(b) Section 14 of the Trademark Act of 1946, as amended (15 U.S.C. 1064), is amended by deleting the word "verified".

Sec. 10. Section 15 of the Trademark Act of 1946, as amended (15 U.S.C. 1065), is amended by deleting the phrase "the publication" and inserting in its place the word "registration".

Sec. 11. The first sentence of section 16 of the Trademark Act of 1946, as amended (15 U.S.C. 1066), is amended to read as follows: "Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.".

Sec. 12. Section 21 of title 35, United States Code, is amended—

(1) by deleting the phrase "Day for taking action falling on Saturday, Sunday, or holiday" from the title and inserting in its place the phrase "Filing date and day for taking action";

(2) by inserting the following as subsection (a):

"(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.";

Filing date.

(3) by designating the existing paragraph as subsection (b); and

(4) by inserting the word "federal" in subsection (b), as designated above, immediately after the word "a".

Sec. 13. Section 6(a) of title 35, United States Code, is amended (1) by deleting the word "and", third occurrence, and inserting in its place a comma; (2) by inserting the phrase ", or exchanges of items or services" immediately after the word "programs"; and (3) by inserting the phrase "or the administration of the Patent and Trademark Office" immediately after the word "law", second occurrence.

Sec. 14. (a) Section 115 of title 35, United States Code, is amended by (1) deleting the phrase "shall be" and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(b) Section 261 of title 35, United States Code, is amended, in the third paragraph, by inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

(c) Section 11 of the Trademark Act of 1946, as amended (15 U.S.C. 1061), is amended by (1) deleting the phrase "shall be", first occurrence, and inserting in its place the word "is"; and (2) inserting the following immediately after the phrase "United States", third occurrence: ", or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States".

Sec. 15. Section 13 of title 35, United States Code, is amended by deleting "(a) 9" and inserting in its place "(d)".

Sec. 16. Section 173 of title 35, United States Code, is amended to read as follows: "Patents for designs shall be granted for the term of fourteen years."

Effective dates.
35 USC 41 note.

SEC. 17. (a) Sections 1, 2, 4, 7, and 13 through 15 of this Act shall take effect on the date of enactment of this Act. Sections 3 and 16 of this Act shall take effect on October 1, 1982. The maintenance fees provided for in section 3(b) of this Act shall not apply to patents applied for prior to the date of enactment of this Act. Each patent applied for on or after the date of enactment of this Act shall be subject to the maintenance fees established pursuant to section 3(b) of this Act or to maintenance fees hereafter established by law, as to the amounts paid and the number and timing of the payments.

(b)(1) Title 35, United States Code, is amended by inserting after section 293 the following new section of chapter 29:

35 USC 294.

"§ 294. Voluntary arbitration

"(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

Awards.
9 USC 1 *et seq.*

"(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

35 USC 282.

"(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

Modification.

Notices.

"(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

Modification.

"(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.".

(2) The analysis for chapter 29 of title 35 of the United States Code is amended by adding at the end the following:

"294. Voluntary arbitration.".

(c) Sections 5, 6, 8 through 12, and 17(b) of this Act shall take effect six months after enactment.

35 USC 294 note.

Approved August 27, 1982.

LEGISLATIVE HISTORY—H.R. 6260:

HOUSE REPORT No. 97-542 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 128 (1982):
    June 8, considered and passed House.
    Aug. 12, considered and passed Senate.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 18, No. 36 (1982):
    Aug. 28, Presidential statement.

97th Congress
2d Session
HOUSE OF REPRESENTATIVES
Report
No. 97-542

PATENT AND TRADEMARK OFFICE AUTHORIZATION

May 17, 1982.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. Kastenmeier, from the Committee on the Judiciary, submitted the following

REPORT

[To accompany H.R. 6260]

[Including cost estimate of the Congressional Budget Office]

The Committee on the Judiciary, to whom was referred the bill (H.R. 6260) to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment strikes out all after the enacting clause of the bill and inserts a new text which appears in italic type in the reported bill.

Purpose of the Bill

The purpose of H.R. 6260 is to authorize appropriations for the Patent and Trademark Office for fiscal years 1983 through 1985.

Statement

The Subcommittee on Courts, Civil Liberties and the Administration of Justice previously held two days of hearings on the legislation, receiving testimony from a representative group of witnesses including the Commissioner of Patents and Trademarks, the American Bar Association Section of Patent, Trademark and Copyright Law, the American Patent Law Association, the Patent, Trademark and Copyright Section of the State Bar of Virginia, the United States Trademark Association and the General Patent Counsel of the General Electric Corporation.

H.R. 6260 reflects the recommendation of the Administration with three modifications as follows. First, the Administration proposal authorized the Commissioner of Patents and Trademarks to establish fees administratively. The subcommittee approved an amendment to set forth specific fees in the statute and limited the Commissioner's authority to raise fees. Second, the Administration recommended that user fees recover 100% of the costs of actual processing of patents and trademarks. The subcommittee amended the bill to reduce by 50% patent filing and maintenance fees for individual inventors, small businesses and not for profit institutions. The effect of the amendment is to increase by $8 million the authorized appropriation which would have been provided under the original Administration request. Third, the subcommittee adopted a recommendation of the Commissioner of Patents and Trademarks, the American Bar Association and a coalition of corporate patent counsel permitting arbitration of patent disputes.

H.R. 6260 was considered by the Full Committee on the Judiciary on May 11, 1982 and was approved as reported by the subcommittee with an amendment offered by Mr. Frank described below.

Synopsis of H.R. 6260

Sections 1–3

Authorizes the Patent and Trademark Office for fiscal year 1983 at an appropriations level of $76,000,000 and for fiscal years 1984 and 1985 such sums as may be necessary. This would be augmented by additional fee income under the bill of approximately $79 million for a total budget of $155 million. In fiscal year 1982 the Patent and Trademark Office was authorized at a level of $118,961,000 of which $29,600,000 was provided through fee income. Fiscal year 1983 will be the first year in which fee income under P.L. 96-517 will be credited to the Patent and Trademark Office without being counted as part of its authorized appropriation. Had this new accounting procedure been applied to fiscal year 1982 the authorization and appropriation for the Patent and Trademark Office would have been $89 million. This constitutes the actual level of taxpayer support of the Office. Thus, H.R. 6260 authorizes the expenditure of tax revenue in fiscal 1983 to support the Patent and Trademark Office at a level $21 million lower than for fiscal 1982. H.R. 6260 proposes to double current fees as the means of making up for the difference between a lower level of taxpayer support and an increased total budget. Further, maintenance fees which were first authorized in P.L. 96-517 and which will not begin to be collected until fiscal year 1986 (October 1, 1985) will also be doubled over the amounts provided for under P.L. 96-517.

The overall objective of H.R. 6260 is to provide for increased user support for the Patent and Trademark Office costs associated with the actual processing of patent applications by fiscal year 1996. The fee schedule is designed to return to the government 100% of actual costs. However, an amendment to the original Administration proposal adopted by the subcommittee would reduce by half the fees for individuals, small businesses and nonprofit inventors. At the present time less than 25% of the actual costs of processing patent applications are supported by fee revenue and under P.L. 96-517, which becomes effective on October 1, 1982, this amount will gradually begin to rise but will only reach 50% of actual costs in 1996.

The amendment offered by Mr. Frank and approved by the Committee modifies that portion of Section 3 of H.R. 6260 dealing with Trademark fees. Public Law 96-517 (35 United States Code, section 31(a)) provides, "Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost . . . of performing the service or furnishing the material."

The Administration requested that the figure, "50 per centum", be changed to "100 per centum", thus mandating full recovery to the Treasury of all costs associated with processing trademarks. An amendment offered during subcommittee consideration of the legislation proposed to reduce fee generated revenue supporting processing of trademarks to less than the 100 per centum recovery level. The amendment was not agreed to. The author of the amendment, Mr. Frank, then proposed to amend the law to provide a statutory fee schedule which would return revenue to the Patent and Trademark Office at a level designed to recover 100 per centum of costs. However, following consultations with interested parties, Mr. Frank modified his amendment simply to repeal those portions of P.L. 96-517 which mandate a specified level of cost recovery for the processing of trademark registrations. Thus, the level of cost recovery for processing of trademark registrations will be within the discretion of the Commissioner. The Committee is aware of the concerns of users of the Trademark registration system, however, and intends to exercise vigorous oversight with respect to the Commissioner to ensure that fees remain at a reasonable level and that trademark registrations are processed in an efficient and cost effective manner. As part of this oversight, the Committee recommends the following fee structure to the Commissioner for Fiscal Year 1983.

Type of fee:	*Proposed fee*
Application filing fee per class	$175
Renewal fee	300
Late renewal	100
Section 12(c) claim	100
New certificate	100
Certificate of correction	100
Disclaimer to registration	100
Amendment to registration	100
Per class combines section 8 and 15 affidavit	200
Per class section 8 affidavit alone	100
Per class section 15 affidavit alone	100
All petitions to Commissioner	100
Cancellation opposition per class	200
TTAB appeal	100
Certified copies	10
Copies of trademarks	1
Assignments	(1)

[1] 100 plus for each mark in addition to 1.

Section 3(d) also permits the Commissioner of Patents to accept late payment of maintenance fees where it is established that the delay in payment was unavoidable.

Section 4 permits the Commissioner of Patents and Trademarks to appoint temporary examiners in chief for the Board of Patent Appeals to deal more flexibly with workload.

Section 5 permits late filing of the oath and fee accompanying submission of specifications and drawings which accompany patent claims.

Section 6 permits greater flexibility in correcting mistakes in the naming of inventors on a patent application.

Section 7 allocates funds from the Patent and Trademark Office to the Department of State to pay the financial obligations of administering the Patent Cooperation Treaty.

Section 8 clarifies the Trademark law with respect to what constitutes use of a mark "in commerce".

Section 9 deletes the burdensome technical requirement that trademark oppositions be verified.

Section 10 makes the date of registration rather than the date of publication the crucial date for purposes of establishing the incontestability of a trademark. This eliminates an ambiguity in the present law.

Section 11 limits the declaration of interferences under the trademark law to situations where extraordinary circumstances exist.

Section 12 authorizes the Commissioner of the Patent and Trademark Office the flexibility to deal with problems of delay in filing due to postal service breakdowns.

Section 13 permits the Commissioner of Patents to enter into cooperative studies, programs, exchanges and similar ventures associated with the administration of the Patent Office.

Section 14 conforms U.S. Patent and Trademark Law to a recent international treaty governing diplomatic or consular legalization of documents.

Section 15 corrects a mistaken citation in P.L. 96-517.

Section 16 creates a uniform term for design patents.

Section 17 establishes the effective dates for provisions of the Act. Increased filing fees would apply to all applications made on or after the date of enactment of H.R. 6260.

Section 18 permits voluntary arbitration of patent disputes.

SECTION-BY-SECTION ANALYSIS

SECTION 1

This section authorizes appropriations for the Patent and Trademark Office for the payment of salaries and necessary expenses of the Office. For Fiscal Year 1983, this section authorizes appropriations of $76,000,000, and in fiscal years 1984 and 1985 such sums as may be necessary, as well as such additional and supplemental amounts as may be necessary to cover any increases in salary, pay, retirement, or employee benefits which may be authorized by law. Funds made available by these appropriations are to be used to reduce by 50 per centum the amount of the fees to be paid under title 35, United States Code, section 41(a) and (b) by independent inventors and nonprofit organizations as defined in regulations established by the Commissioner of Patents and Trademarks, and by small business concerns as defined in section 3 of the Small Business Act and by regulations established by the Small Business Administration.

In addition, fees collected pursuant to title 35, United States Code, and the Trademark Act of 1946, as amended (15 U.S.C. 1051 et seq.), will augment the authorized appropriation to provide the resources needed to conduct the operations of the Office for fiscal year 1983. The total resources for the Office in fiscal year 1983, that is, the amount appropriated pursuant to this section plus fees collected pursuant to the patent and trademark laws, which will be available to the Office, are estimated to be $154,934,000. The corresponding levels for fiscal year 1984 and fiscal year 1985 are estimated in the President's Budget to be $167 million and $176 million, respectively. Any additional amounts to cover increases in salary, pay, retirement, or other employee benefits which may be authorized by law will be in addition to, and will therefore increase, those program levels. Finally, any funds appropriated pursuant to this section and all fees collected, when specified in an appropriation act, will remain available without any fiscal year limitation.

SECTION 2

This section provides that, notwithstanding any other provision of law, there is authorized to be appropriated to the Patent and Trademark Office for fiscal year 1982, $121,461,000 and such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other employee benefits authorized by law. This section increases the amount authorized for the Patent and Trademark Office by $2.5 million over that authorized in Public Law 97-35. The President is recommending a supplemental appropriation of $2,500,000 for the Patent and Trademark Office for fiscal year 1982 in order to carry out the program recommendations included in his fiscal year 1983 Budget.

SECTION 3

This section establishes certain statutory fees which are to be charged by the Commissioner and authorizes the Commissioner to establish other fees whose amounts are not specifically set. Thus, the major routine fees which are applicable to patents and patent application processing are established (e.g., filing, issuance, and maintenance fees). The Commissioner is authorized to establish fees for all other processing, services, or materials related to patents which are not specifically established by statute. The processing and service fees, which would include such items as fees for filing various petitions to the Commissioner relating to the processing of patent applications, would be established at a level to recover the estimated average costs to the Office. A more specific discussion of the various provisions of this section is set forth below.

Section 3(a) amends section 41(a) of title 35 to provide the amounts of the fees for filing and issuance of patent applications. In addition, the section includes provisions for increasing the filing fees due to increased complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. The section also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under section 41(a)1, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of title 35, United States Code, or any claim depending therefrom, will be considered as separate dependent claims in accordance with the number of claims to which reference is made. Under the section, errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner. This will enable the Commissioner to establish regulations whereby patent applicants may correct, without prejudice, errors in payment of the additional fees, i.e., those in addition to the basic fees established.

Under section 41(a)2, the fee for issuing all original and reissue patents, except in design or plant cases, would be a uniform amount of $500. No supplemental issue fees are required.

Section 41(a)3 establishes fixed fees for filing applications for, and issuance of design and plant patents. For design patent cases, the filing fee would be $125 and the issue fee $175. For plant patent cases, the filing fee would be $200 and the issue fee $250.

Section 41(a)4 relates to fees in reissue cases and establishes a fee of $300 for filing each application for the reissue of a patent. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 is due for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

Under section 41(a)5, a fee of $50 would be established for filing each disclaimer in a patent or patent application.

Section 41(a)6 establishes a fee due on filing an appeal from the examiner to the Board of Appeals of $115. In addition, a fee of $115 is due on filing a brief in support of the appeal, and a fee of $100 is due for requesting an oral hearing before the Board of Appeals.

Section 41(a)7 establishes two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees are applicable to petitions to accept the delayed payment of the fee for issuing a patent. The fees set forth in this section are due on filing the petition. Since the section provides for two alternative fees with different standards, the section would permit the applicant seeking revival or acceptance of a delayed payment of the fee for issuing a patent to choose one or the other of the fees and standards under such regulations as the Commissioner may establish. Under the section the Commissioner could establish time limits within which petitions under each of the different fees and standards can be filed. The section establishes a fee of $500 for filing each petition for revival or for acceptance of the delayed payment of an issue fee where the abandonment or the failure to pay the issue fee is unintentional. In order to prevent abuse and injury to the public the Commissioner could require a terminal disclaimer equivalent to the period of abandonment and could require applicants to act promptly after becoming aware of the abandonment. The section establishes a fee of $50 for filing a petition under sections 133 or 151 of title 35 in accordance with standards presently in effect requiring that the delay resulting in the abandonment, or the delay in payment of the issue fee, be unavoidable. Under this section a petition accompanied by either a fee of $500 or a fee of $50 would not be granted where the abandonment or the failure to pay the fee for issuing the patent was intentional as opposed to being unintentional or unavoidable. This section would permit the Commissioner to have more discretion than present law to revive abandoned applications and accept late payment of the fee for issuing a patent in appropriate circumstances.

Section 41(a)8 establishes fees for the filing of petitions for extensions of time. Various time periods are set by the Office for taking actions on matters relating to patent applications. These time periods are set pursuant to statute or by regulations established by the Commissioner under the authority granted to the Commissioner by statute. This section would provide for fees for filing petitions to extend the time periods set pursuant to statute or by regulations for taking action within any limitations set by statute.

A fee of $50 is established for filing a request for a first one month extension of time, an additional fee of $100 for filing a request for a second one month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a request for a third one month extension of time which would expire three months after the end of the time period set for taking action. A subsequent or fourth extension could be requested if additional time was available under the statute. In no case could a period be extended beyond the maximum time set by statute.

The Commissioner may issue regulations providing when, within any maximum period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. This section does preclude the Commissioner from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause.

Section 41(b) provides that the Commissioner charge the following fees for maintaining a patent other than a design or plant patent, in force: at three years and six months after grant, $400; at seven years and six months after grant, $800; and at eleven years and six months after grant, $1,200. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of

a surcharge as a condition of accepting within such six-month grace period the late payment of a maintenance fee.

In order to avoid an inequitable loss of patent rights, the Commissioner is given the authority to accept payment of any maintenance fee after the six-month grace period if it is established that the delay in payment was unavoidable. It is intended that the Commissioner will issue regulations establishing guidelines for acceptance of late payment. After the expiration of a reasonable period of time, the patentee would bear a heavy burden of proof that the delay was unavoidable. A surcharge may be imposed by the Commissioner as a precondition to acceptance of a late fee. This surcharge may be in addition to any surcharge imposed for payment during the grace period.

A provision is included to protect the rights of one who began using or who took steps to begin use of a patent which expired for failure to pay a maintenance fee and which was subsequently reestablished by acceptance of the late payment. The intervening rights provision in section 41(c)(2) is similar to the intervening rights provision in 35 U.S.C. 252 concerning reissued patents.

Section 41(d) provides that the Commissioner establish fees for all other processing services, or materials related to patents not specified in section 41 at an amount calculated to recover the estimated average cost to the Office of such processing, services, or materials. Such processing and other services includes, but is not limited to, the processing of various petitions desiring certain actions to be taken regarding patent applications, recording of assignments, reexamination of patents and the processing of international applications. Fees for materials include the price of patent copies, certifications and other copying services. The yearly fee for providing a library specified in section 13 of title 35 with uncertified copies of the specifications and drawings for all patents issued in that year is set at $50.

Section 41(f) provides that the fees established in subsections (a) and (b) of section 41 may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than one per centum may be ignored by the Commissioner in making such adjustments.

Subsection (a) of section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), is being changed to grant the Commissioner discretion to establish the level of recovery of office costs related to trademarks. It is expected that the Commissioner will set the fees in a way that the filing fee will be kept as low as possible to foster use of the Federal registration system. This may require that other fees for services or materials related to trademarks recover more than their actual estimated cost in order that the Commissioner achieve in the aggregate adequate cost recovery for the entire trademark operation.

A provision is inserted in section 42(c) of title 35 in order to ensure that the trademark fees collected are used to fund trademark operations only and not the processing of patent applications.

SECTION 4

Section 3 of title 35 is amended by deleting specific reference to the number of examiners-in-chief in the first sentence. Elimination of the upper limit on the number of permanent members of the Board of Appeals would provide greater flexibility in filling most of its personnel needs, thereby avoiding an excess of examiner details. The authority to appoint acting examiners-in-chief, however, is maintained in order that temporary fluctuations in the workload of the Board may be accommodated.

SECTION 5

Under revised section 111 of title 35, the filing date of an application would be that on which the specification and any required drawings are received by the Patent and Trademark Office. The oath or declaration and filing fee could be submitted at such later time as established by the Commissioner, without any loss of the original filing date. Under the amendment, an applicant could either file the oath or declaration (including the applicant's signature) and fee together with an application or submit them at a later time as determined by the Commissioner.

The section would also authorize the imposition of a surcharge as a condition for accepting filing of the oath of payment of the filing fee after the filing date of the application. Since an application filed without the oath or declaration would not be signed or "made" by the applicant, the amendment permits a patent attorney or agent, authorized by the applicant, to submit the specification and drawings for the purpose of obtaining a filing date. Should the applicant, however, fail to file the oath or declaration, or pay the filing fee within the time limits set by the Commissioner, the application would be regarded as having been abandoned.

SECTION 6

The third paragraph of section 116 of title 35 is amended to enlarge the possibilities for correcting misnamed inventive entities. As a consequence, correction would be permitted also in cases where the person originally named as inventor was in fact not the inventor of the subject matter contained in the application. If such error occurred without any deceptive intention on the part of the true inventor, the Commissioner would have the authority to substitute the true inventor for the erroneously named person. Although probably rarer, instances such as changes from a mistakenly identified sole inventor to a different, but actual, joint inventors, conversions from erroneously identified joint inventors to different but actual, joint inventors, and conversions from erroneously identified joint inventors to a different, but actual, sole inventor would also be permitted. In each instance, however, the Commissioner must be assured of the presence of innocent error, without deceptive intention on the part of the true inventor or inventors, before permitting a substitution of a true inventor's name.

The ability to receive a filing date based on a specification and drawings without signature as set forth in revised section 111 of title 35, and to file the oath or declaration and pay the filing fee within such period as determined by the Commissioner is also available to joint inventors.

Section 256 of title 35, which is a companion to section 116, would be amended to similarly enlarge the possibilities for correction of misnamed inventors in issued patents.

SECTION 7

Section 6(d) of title 35, which provides for the allocation of appropriated Patent and Trademark Office funds to the Department of State for payment of United States financial obligations under the Patent Cooperation Treaty, is deleted. The Department of State has traditionally assumed responsibility for financial obligations for international agreements to which the United States adheres.

SECTION 8

Section 8(a) of the Trademark Act is amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has been interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce". Although it is believed by some that omission of the words "in commerce" may have been inadvertent in the 1946 Act, this section has interpreted so that use in a foreign country, or use in intrastate commerce, is sufficient. Such interpretation is fundamentally in conflict with other requirements of the Act.

Section 8(b) of the Act is also amended to clarify that the continued use required to be shown in the sixth year be use "in commerce" for registrations published under section 12(c) of the Act. (This pertains to registrations issued under the Act of March 3, 1881 and the Act of February 20, 1905).

The word "still" has been deleted from section 8(a) and 8(b). Thus, the owner of a registration issued on the basis of a foreign registration under the provisions of section 44(e) of the Act will have to submit an affidavit to the effect that the mark is in use in commerce. Since the mark need not be used in commerce when it is registered, the requirement cannot be required to state that it is "still" in such use.

SECTION 9

Section 13 of the Trademark Act is amended to delete the requirement that an opposition be verified. The sentence which allowed an unverified application to be verified at a later date has been deleted. In addition, a phrase has been added to make it clear that any subsequent extension of time to file an opposition, beyond the first extension, must be requested before the end of the preceding extension.

Section 14 of the Trademark Act would also be amended to delete the requirement that a petition to cancel a registration be verified.

SECTION 10

Section 15 of the Trademark Act is amended to change the term "the publication" to "registration" in the first sentence. This change makes the date of registration rather than the date of publication the crucial date for purposes of incontestability. It will also make section 15 consistent with sections 22 and 33 of the Act.

SECTION 11

Section 16 of the Trademark Act is amended to limit the declaration of interferences to those situations where a petition to the Commissioner shows that extraordinary circumstances exist. Unless extraordinary circumstances exist, the rights of the parties can be determined adequately by the existing opposition and cancellation procedures. Additionally, if an interference is declared between an application and a registration and the applicant wins, a cancellation must still be initiated against the registration.

SECTION 12

A new subsection (a) has been added to section 21 of title 35 to authorize, but not to require, the Commissioner of Patents and Trademarks to give as the filing date of any paper or fee which is required to be filed in the Patent and Trademark Office the date on which the paper or fee was deposited with the United States Postal Service. The Commissioner may also give as the filing date of any paper or fee which was required to be filed in the Patent and Trademark Office the date it would have been deposited with the United States Postal Service but for postal service interruptions or emergencies which the Commissioner designates. The requirements governing whether any given paper or fee may be given the filing date of the day on which it was, or would have been, deposited with the United States Postal Service will be set forth in regulations established by the Commissioner.

Section 21(b) of title 35 is identical to existing section 21 with two minor amendments. The word "federal" has been inserted before the phrase "holiday within the District of Columbia" to clarify the nature of the holiday.

SECTION 13

This section clarifies the authority of the Commissioner in section 6(a) of title 35 to enter into a wide range of cooperative agreements concerning the patent and trademark laws or the administration of the Patent and Trademark Office. These agreements are in addition to the exchange of publications authorized in 35 U.S.C. 11(b) and 12. These cooperative agreements may take the form of studies, programs, exchanges, and other similar ventures. Thus, the Patent and Trademark Office could, for example, exchange patent copies, non-patent literature, tapes, or services in return for goods or services of value to the Patent and Trademark Office.

SECTION 14

The amendments of 35 U.S.C. 115 and Section 11 of the Trademark Act of 1946 recognize the Hague "Convention Abolishing the Requirement of Legalization for Foreign Public Documents" which entered into force in the United States on October 15, 1981. The Convention abolishes the requirement of diplomatic or consular legalization for foreign public documents which are sworn to or acknowledged by a notary public in any of the countries adhering to the Convention. For documents executed by a notary public of all other foreign countries, diplomatic or consular legalization will still be required.

The amendment of 35 U.S.C. 261 is intended to give affirmative effect to acknowledgments executed pursuant to the Hague Convention.

SECTION 15

This section corrects an incorrect citation. Public Law 96-517 amended section 41 of title 35, United States Code, in a way which eliminated 35 U.S.C. § 41(a)(9). Unfortunately, section 13 of title 35, United States Code, was not amended accordingly by Public Law 96-517. This section corrects that oversight.

SECTION 16

This section sets a uniform term of fourteen years for all design patents.

SECTION 17

Sections 17(a) and (c) specify the effective dates of the Act. Section 17(a) also specifies that the maintenance fees provided for in section 3(b) of this Act will only apply to patents in which the application was filed on and after the date of enactment or to maintenance fees later established by law.

Section 17(b) adds a section 294 to title 35 providing for the voluntary arbitration of patent disputes by the parties to the dispute. The section requires that the Commissioner be notified in writing of an award made by an arbitrator or modified by a court. Such notification will be entered in the record of the prosecution of the patent.

At present, agreements to arbitrate some aspects of disputes arising under patent licenses are enforceable by the courts; however, there have been court decisions that have disapproved arbitration of disputes concerning patent validity or infringement. In this regard, see, for example, *Zip Mfg. Co.* v. *Pep Mfg. Co.,* 44 F.2d 184, 7 U.S.P.Q. 62 (D. Del. 1930) and *Beckman Instruments, Inc.* v. *Technical Developments Corp.,* 433 F.2d 55, 167 U.S.P.Q. 10 (7th Cir. 1965).

Partly as a reaction to those decisions, during the 93rd Congress both the Department of Commerce and the Department of Justice endorsed a provision specifically authorizing arbitration of validity and infringement disputes. This provision, included in an omnibus patent law revision bill, S. 2504, was never enacted due to the many controversial aspects of that legislation.

In the view of the Committee, a statutory authorization of voluntary agreements to arbitrate validity and infringement disputes would benefit both the parties to these disputes and the public.

Statutory endorsement of arbitration agreements would assure the parties that they could avail themselves of the numerous advantages of arbitration without the possibility of having to reargue the dispute in court. The advantages of arbitration are many: it is usually cheaper and faster than litigation; it can have simpler procedural and evidentiary rules; it normally minimizes hostility and is less disruptive of ongoing and future business dealings among the parties; it is often more flexible in regard to scheduling of times and places of hearings and discovery devices; and, arbitrators are frequently better versed than judges and juries in the area of trade customs and the technologies involved in these disputes.

The enforcement of voluntary arbitration provisions would serve the public in two ways. First, the availability of arbitration with its numerous advantages will enhance the patent system and thus will encourage innovation. This view is supported by the Committee for Economic Development in their January 1980 statement entitled "Stimulating Technological Progress." Secondly, arbitration could relieve some of the burdens on the overworked Federal courts. Chief Justice Burger in his speech to the American Bar Association on January 24, 1982, generally endorsed the use of arbitration to reduce the judicial backlog. Also, I think it is important to note that the American Bar Association's Section on Patent, Trademark and Copyright Law has endorsed court enforcement of arbitration agreements calling for arbitration of validity and infringement.

The recommendations of the Secretary of Commerce to increase substantially patent and trademark user fees were made on the promise that such increases "will lay the groundwork for revitalizing the patent and trademark systems." The Secretary committed to three major goals: (1) to reach an average patent application pendency time of 18 months by FY 1987, (2) to issue an examiner's first action on trademark registrability in three months and disposal of an application within 13 months, and (3) to move realistically toward a fully automated Office by the 1990's. In accepting the Administration's recommendations on user fees, the Committee fully expects the Administration to live up to its end of the bargain to bring about a first-class Patent and Trademark Office. To provide an opportunity for timely and effective Committee oversight of progress toward improving the Patent and Trademark Office, the Committee directs that the Secretary of Commerce report annually to the Committee on progress toward achieving the three major goals of the Patent and Trademark Office, as outlined above, and, in addition, promptly inform the Committee at any time it appears that any of the goals, for any reason, is viewed as not attainable.

OVERSIGHT STATEMENT

The Committee on the Judiciary has oversight responsibility over the Patent and Trademark Office in the Department of Commerce. In addition to its ongoing oversight, the Committee's Subcommittee on Courts, Civil Liberties and the Administration of Justice held an oversight hearing with respect to the Patent and Trademark Office on March 4, 1981, published as Oversight Hearings Before the Subcommittee on Courts, Civil Liberties and the Administration of Justice of the Committee on the Judiciary, House of Representatives, Ninety-Seventh Congress, First Session on the Copyright Office, The U.S. Patent and Trademark Office, and the Copyright Royalty Tribunal. Serial No. 17.

The Committee expects to continue its oversight activities in this area.

STATEMENT OF THE BUDGET COMMITTEE

No statement has been received on H.R. 6260 from the House Committee on the Budget.

STATEMENT OF THE CONGRESSIONAL BUDGET OFFICE

Pursuant to clause 7, rule XIII of the Rules of the House of Representatives and section 403 of the Congressional Budget Act of 1974, the following is the cost estimate of H.R. 6260, as amended, prepared by the Congressional Budget Office.

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., May 13, 1982.

Hon. PETER W. RODINO, Jr.,
Chairman, Committee on the Judiciary, House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for H.R. 6260, a bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE, COST ESTIMATE

1. Bill number: H.R. 6260.
2. Bill title: A bill to authorize appropriations to the Patent and Trademark Office in the Department of Commerce, and for other purposes.
3. Bill status: As ordered reported by the House Committee on the Judiciary, May 11, 1982.

Bill purpose: H.R. 6260 would authorize 1982 appropriations at a level $2.5 million above the amount already appropriated, and would provide a $76 million authorization level in 1983 to carry out the activities of the Patent and Trademark Office (PTO). In addition, such sums as may be necessary are authorized for fiscal years 1984 and 1985, plus such additional or supplemental amounts as may be necessary for increases in salary, pay, retirement, or other benefits authorized by law for each fiscal year 1983 through 1985. PTO would also have available for obligation offsetting fee collections as provided for in Public Law 96-517, plus the additional fees as specified in H.R. 6260.

Assuming enactment of H.R. 6260, total PTO collections over time would result in recovery of approximately 100 percent of patent and trademark processing costs. Individuals, small businesses, and non-profit institutions would be exempt from the proposed additional fees, however, but would continue to follow the fee schedule outlined in P.L. 96-517, which assumes the ultimate recovery of approximately 50 percent of all processing costs.

The President's 1982 budget includes a request for a $2.5 million supplemental for the PTO. The Administration has recommended increasing user fees to ultimately recover 100 percent of processing costs beginning in 1983, but does not provide for any exemptions to the proposed fee increases relative to current law. The effect of exemptions is to increase by approximately $8 million the authorized level of appropriations relative to the Administration's request.

In addition, the bill would make a number of other changes that are not expected to have a cost impact.

5. Cost estimate:

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Authorization level:					
Specified	2.5	76.0	....	....	....
Estimated	....	6.8	86.4	86.8	....
Subtotal	2.5	82.8	86.4	86.8	....
Total estimated outlays	2.4	61.8	82.4	82.8	5.5

Including outlays from appropriations to date for PTO, total 1982 outlays are estimated to be $121.5 million, and total 1983 outlays are estimated to be $79.8.

The costs of this bill fall within budget subfunction 376.

6. Basis of estimate: The authorization levels for PTO for 1982 and 1983 are those specified in the bill. The estimate authorization levels for 1984 and 1985 assume a level of funding sufficient to maintain a program level of $167 million and $176 million, respectively, including offsetting collections. In addition, authorization for increases in pay and other benefits of approximately $6.8 million, $7.4 million, and $7.8 million for fiscal years 1983 through 1985, respectively, were estimated based on CBO's current inflators. Outlays are based on historical spending patterns.

The estimated collections to PTO as a result of fees charged to cover the costs of processing trademarks and patents were provided by the agency, and assume the fee structure outlined in the bill. The estimated collections, under current law and under H.R. 6260, are shown in the table below.

[By fiscal years, in millions of dollars]

	1982	1983	1984	1985	1986
Estimated offsetting collections:					
Current law	....	47.8	52.7	57.7	....
Added by H.R. 6260	....	31.2	35.3	39.3	....
Total—H.R. 6260	....	79.0	88.0	97.0	....

7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Mary B. Maginniss.
10. Estimate approved by: C. G. Nuckols (James L. Blum, Assistant Director for Budget Analysis).

Committee Vote

The Committee on the Judiciary ordered H.R. 6260 as amended reported by a voice vote, without objection being heard, with a quorum of Members being present.

Changes in Existing Law Made by the Bill, As Reported

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, existing law in which no change is proposed is shown in roman):

TITLE 35, UNITED STATES CODE

PART I—PATENT AND TRADEMARK OFFICE

* * * * * * *

CHAPTER 1—ESTABLISHMENT, OFFICERS, FUNCTIONS

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§ 3. Officers and employees

(a) There shall be in the Patent and Trademark Office a Commissioner of Patents and Trademarks, a Deputy Commissioner, two Assistant Commissioners, and [not more than fifteen] examiners-in-chief *appointed under section 7 of this title*. The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents and Trademarks, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law shall appoint all other officers and employees.

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§ 6. Duties of Commissioner

(a) The Commissioner, under the direction of the Secretary of Commerce, shall superintend or perform all duties required by law respecting the granting and issuing of patents and the registration of trademarks; shall have the authority to carry on studies [and], programs, *or exchanges of items or services* regarding domestic and international patent and trademark law *or the administration of the Patent and Trademark Office;* and shall have charge of property belonging to the Patent and Trademark Office. He may, subject to the approval of the Secretary of Commerce, establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent and Trademark Office.

(b) The Commissioner, under the direction of the Secretary of Commerce, may, in coordination with the Department of State, carry on programs and studies cooperatively with foreign patent offices and international intergovernmental organizations, or may authorize such programs and studies to be carried on, in connection with the performance of duties stated in subsection (a) of this section.

(c) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, transfer funds appropriated to the Patent and Trademark Office, not to exceed $100,000 in any year, to the Department of State for the purpose of making special payments to international intergovernmental organizations for studies and programs for advancing international cooperation concerning patents, trademarks, and related matters. These special payments may be in addition to any other payments or contributions to the international organization and shall not be subject to any limitations imposed by law on the amounts of such other payments or contributions by the Government of the United States.

[(d) The Commissioner, under the direction of the Secretary of Commerce, may, with the concurrence of the Secretary of State, allocate funds appropriated to the Patent Office, to the Department of State for the purpose of payment of the share on the part of the United States to the working capital fund established under the Patent Cooperation Treaty. Contributions to cover the share on the part of the United States of any operating deficits of the International Bureau under the Patent Cooperation Treaty shall be included in the annual budget of the Patent Office and may be transferred by the Commissioner, under the direction of the Secretary of Commerce, to the Department of State for the purpose of making payments thereof to the International Bureau.]

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§ 13. Copies of patents for public libraries

The Commissioner may supply printed copies of specifications and drawings of patents to public libraries in the United States which shall maintain such copies for the use of the public, at the rate for each year's issue established for this purpose in section 41[(a)9] *(d)* of this title.

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CHAPTER 2—PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE

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§ 21. [Day for taking action falling on Saturday, Sunday, or holiday] *Filing date and day for taking action.*

(a) The Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner.

(b) When the day, or the last day, for taking any action or paying any fee in the United States Patent and Trademark Office falls on Saturday, Sunday, or a *Federal* holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding secular or business day.

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CHAPTER 4—PATENT FEES

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§ 41. Patent fees

[(a) The Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

[(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

[(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months, and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

[(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.]

(a) The Commissioner shall charge the following fees:

1. On filing each application for an original patent, except in design or plant cases, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of three, $10 for each claim (whether independent or dependent) which is in excess of twenty, and $100 for each application containing a multiple dependent claim. For the purpose of computing fees, a multiple dependent claim as referred to in section 112 of this title or any claim depending therefrom shall be considered as separate dependent claims in accordance with the number of claims to which reference is made. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

2. For issuing each original or reissue patent, except in design or plant cases, $500.

3. In design and plant cases:

- *a. On filing each design application, $125.*
- *b. On filing each plant application, $200.*
- *c. On issuing each design patent, $175.*
- *d. On issuing each plant patent, $250.*

4. On filing each application for the reissue of a patent, $300; in addition, on filing or on presentation at any other time, $30 for each claim in independent form which is in excess of the number of independent claims of the original patent, and $10 for each claim (whether independent or dependent) which is in excess of twenty and also in excess of the number of claims of the original patent. Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner.

5. On filing each disclaimer, $50.

6. On filing an appeal from the examiner to the Board of Appeals, $115; in addition, on filing a brief in support of the appeal, $115, and on requesting an oral hearing before the Board of Appeals, $100.

7. On filing each petition for the revival of an unintentionally abandoned application for a patent or for the unintentionally delayed payment of the fee for issuing each patent, $500, unless the petition is filed under sections 133 or 151 of this title, in which case the fee shall be $50.

8. For petitions for one-month extensions of time to take actions required by the Commissioner in an application:

- *a. On filing a first petition, $50.*
- *b. On filing a second petition, $100.*
- *c. On filing a third or subsequent petition, $200.*

(b) The Commissioner shall charge the following fees for maintaining a patent in force:

- *1. Three years and six months after grant, $400.*
- *2. Seven years and six months after grant, $800.*
- *3. Eleven years and six months after grant, $1,200.*

Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee. No fee will be established for maintaining a design or plant patent in force.

(c)(1) The Commissioner may accept the payment of any maintenance fee required by subsection (b) of this section after the six-month grace period if the delay is shown to the satisfaction of the Commissioner to have been unavoidable. The Commissioner may require the payment of a surcharge as a condition of accepting payment of any maintenance fee after the six-month grace period. If the Commissioner accepts payment of a maintenance fee after the six-month grace period, the patent shall be considered as not having expired at the end of the grace period.

(2) No patent, the term of which has been maintained as a result of the acceptance of a payment of a maintenance fee under this subsection, shall abridge or affect the right of any person or his successors in business who made, purchased or used after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection anything protected by the patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased, or used. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased, or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the six-month grace period but before the acceptance of a maintenance fee under this subsection, and it may also provide for the continued practice of any process, practiced, or for the practice of which substantial preparation was made, after the six-month grace period but prior to the acceptance of a maintenance fee under this subsection, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced after the six-month grace period but before the acceptance of a maintenance fee under the subsection.

(d) The Commissioner will establish fees for all other processing, services, or materials related to patents not specified above to recover the estimated average cost to the Office of such processing, services, or materials. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50.

(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge.

[(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three times.]

(f) The fees established in subsections (a) and (b) of this section may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor. Changes of less than 1 per centum may be ignored.

(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register.

§ 42. Patent and Trademark Office funding

(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office. *Fees available to the Commissioner under section 31 of the Trademark Act of 1946, as amended (15 U.S.C. 1113), shall be used exclusively for the processing of trademark registrations and for other services and materials related to trademarks.*

(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required.

PART II—PATENTABILITY OF INVENTIONS AND GRANT OF PATENTS

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CHAPTER 11—APPLICATION FOR PATENT

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[§ 111. Application for patent

[Application for patent shall be made by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include: (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be signed by the applicant and accompanied by the fee required by law.]

SEC. 111. Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title; (2) a drawing as prescribed by section 113 of this title; and (3) an oath by the applicant as prescribed by section 115 of this title. The application must be accompanied by the fee required by law. The fee and oath may be submitted after the specification and any required drawing are submitted, within such period and under such conditions, including the payment of a surcharge, as may be prescribed by the Commissioner. Upon failure to submit the fee and oath within such pescribed period, the application shall be regarded as abandoned, unless it is shown to the satisfaction of the Commissioner that the delay in submitting the fee and oath was unavoidable. The filing date of an application shall be the date on which the specification and any required drawing are received in the Patent and Trademark Office.

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§ 115. Oath of applicant

The applicant shall make oath that he believes himself to be the original and first inventor of the process, machine, manufacture, or composition of matter, or improvement thereof, for which he solicits a patent; and shall state of what country he is a citizen. Such oath may be made before any person within the United States authorized by law to administer oaths, or, when, made in a foreign country, before any diplomatic or consular officer of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority [shall be] *is* proved by certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and such oath shall be valid if it complies with the laws of the state or country where made. When the application is made as provided in this title by a person other than the inventor, the oath may be so varied in form that it can be made by him.

§ 116. [Joint inventors] *Inventors*

When an invention is made by two or more persons jointly, they shall apply for patent jointly and each sign the application and make the required oath, except as otherwise provided in this title.

If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself and the omitted inventor. The Commissioner, on proof of the pertinent facts and after such notice to the omitted inventor as he prescribes, may grant a patent to the inventor making the application, subject to the same rights which the omitted inventor would have had if he had been joined. The omitted inventor may subsequently join in the application.

Whenever [a person is joined in an application for patent as joint inventor through error, or a joint inventor is not included in an application through error] *through error a person is named in* *an application for patent as the inventor, or through error an inventor is not named in an application,* and such error arose without any deceptive intention on his part, the Commissioner may permit the application to be amended accordingly, under such terms as he prescribes.

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CHAPTER 16—DESIGNS

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§ 173. Term of design patent

[Patents for designs may be granted for the term of three years and six months, or for seven years, or for fourteen years, as the applicant, in his application, elects.]

Patents for designs shall be granted for the term of fourteen years.

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PART III—PATENTS AND PROTECTION OF PATENT RIGHTS

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CHAPTER 25—AMENDMENT AND CORRECTION OF PATENTS

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[§ 256. Misjoinder of inventor

[Whenever a patent is issued on the application of persons as joint inventors and it appears that one of such persons was not in fact a joint inventor, and that he was included as a joint inventor by error and without any deceptive intention, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate deleting the name of the erroneously joined person from the patent.

[Whenever a patent is issued and it appears that a person was a joint inventor, but was omitted by error and without deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate adding his name to the patent as a joint inventor.

[The misjoinder or nonjoinder of joint inventors shall not invalidate a patent, if such error can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.]

§ 256. Correction of named inventor

Whenever through error a person is named in an issued patent as the inventor, or through error an inventor is not named in an issued patent and such error arose without and deceptive intention on his part, the Commissioner may, on application of all the parties and assignees, with proof of the facts and such other requirements as may be imposed, issue a certificate correcting such error.

The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred if it can be corrected as provided in this section. The court before which such matter is called in question may order correction of the patent on notice and hearing of all parties concerned and the Commissioner shall issue a certificate accordingly.

CHAPTER 26—OWNERSHIP AND ASSIGNMENT

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§ 261. Ownership; assignment

Subject to the provisions of this title, patents shall have the attributes of personal property.

Applications for patent, patents, or any interest therein, shall be assignable in law by an instrument in writing. The applicant, patentee, or his assigns or legal representatives may in like manner grant and convey an exclusive right under his application for patent, or patents, to the whole or any specified part of the United States.

A certificate of acknowledgment under the hand and official seal of a person authorized to administer oaths within the United States, or, in a foreign country, of a diplomatic or consular officer of the United States or an officer authorized to administer oaths whose authority is proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* shall be prima facie evidence of the execution of an assignment, grant or conveyance of a patent or application for patent.

An assignment, grant or conveyance shall be void as against any subsequent purchaser or mortgagee for a valuable consideration, without notice, unless it is recorded in the Patent and Trademark Office within three months from its date or prior to the date of such subsequent purchase or mortgage.

CHAPTER 29—REMEDIES FOR INFRINGEMENT OF PATENT, AND OTHER ACTIONS

Sec.
281. Remedy for infringement of patent.

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294. Voluntary arbitration.

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§ 294. Voluntary arbitration

(a) A contract involving a patent or any right under a patent may contain a provision requiring arbitration of any dispute relating to patent validity or infringement arising under the contract. In the absence of such a provision, the parties to an existing patent validity or infringement dispute may agree in writing to settle such dispute by arbitration. Any such provision or agreement shall be valid, irrevocable, and enforceable, except for any grounds that exist at law or in equity for revocation of a contract.

(b) Arbitration of such disputes, awards by arbitrators and confirmation of awards shall be governed by title 9, United States Code, to the extent such title is not inconsistent with this section. In any such arbitration proceeding, the defenses provided for under section 282 of this title shall be considered by the arbitrator if raised by any party to the proceeding.

(c) An award by an arbitrator shall be final and binding between the parties to the arbitration but shall have no force or effect on any other person. The parties to an arbitration may agree that in the event a patent which is the subject matter of an award is subsequently determined to be invalid or unenforceable in a judgment rendered by a court to competent jurisdiction from which no appeal can or has been taken, such award may be modified by any court of competent jurisdiction upon application by any party to the arbitration. Any such modification shall govern the rights and obligations between such parties from the date of such modification.

(d) When an award is made by an arbitrator, the patentee, his assignee or licensee shall give notice thereof in writing to the Commissioner. There shall be a separate notice prepared for each patent involved in such proceeding. Such notice shall set forth the names and addresses of the parties, the name of the inventor, and the name of the patent owner, shall designate the number of the patent, and shall contain a copy of the award. If an award is modified by a court, the party requesting such modification shall give notice of such modification to the Commissioner. The Commissioner shall, upon receipt of either notice, enter the same in the record of the prosecution of such patent. If the required notice is not filed with the Commissioner, any party to the proceeding may provide such notice to the Commissioner.

(e) The award shall be unenforceable until the notice required by subsection (d) is received by the Commissioner.

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TRADEMARK ACT OF 1946

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Sec. 8 (a). Duration of registration—Cancelation at end of 6 years unless affidavit of use filed

Each certificate of registration shall remain in force for 20 years: *Provided,* That the registration of any mark under the provisions of this Act shall be canceled by the Commissioner at the end of 6 years following its date, unless within 1 year next preceding the expiration of such 6 years the registrant shall file in the Patient and Trademark Office an affidavit showing that said mark is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark. Special notice of the requirement for such affidavit shall be attached to each certificate of registration.

Sec. 8(b). Cancelation of republished prior registrations unless affidavit of use filed

Any registration published under the provisions of subsection (c) of section 12 of this Act shall be canceled by the Commissioner at the end of 6 years after the date of such publication unless within 1 year next preceding the expiration of such 6 years and registrant shall file in the Patent and Trademark Office an affidavit showing that said marks is [still] in use *in commerce* or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

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Sec. 11. Acknowledgments and verifications

Acknowledgments and verifications required hereunder may be made before any person within the United States authorized by law to administer oaths, or, when made in a foreign country, before any diplomatic or consular officer of the United States or before any official authorized to administer oaths in the foreign country concerned whose authority [shall be] *is* proved by a certificate of a diplomatic or consular officer of the United States, *or apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States,* and shall be valid if they comply with the laws of the state or country where made.

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Sec. 13. Opposition to registration of marks on the Principal Register

Any person who believes that he would be damaged by the registration of a mark upon the principal register may upon payment of the required fee, file [a verified] *an* opposition in the Patent and Trademark Office, stating the grounds therefor, within thirty days after the publication under subsection (a) of section 12 of this Act of the mark sought to be registered. Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause *when requested prior to the expiration of an extension.* The Commissioner shall notify the applicant of each extension of the time for filing opposition. [An unverified opposition may be filed by a duly authorized attorney, but such opposition shall be null and void unless verified by the opposer within a reasonable time after such filing to be fixed by the Commissioner.] An opposition may be amended under such conditions as may be prescribed by the Commissioner.

SEC. 14. A [verified] petition to cancel a registration of a mark, stating the grounds relied upon, may, upon payment of the prescribed fee, be filed by any person who believes that he is or will be damaged by the registration of a mark on the principal register established by this Act, or under the Act of March 3, 1881, or the Act of February 20, 1905—

(a) within five years from the date of the registration of the mark under this Act; or

(b) within five years from the date of publication under section 12(c) hereof of a mark registered under the Act of March 3, 1881, or the Act of February 20, 1905; or

(c) at any time if the registered mark becomes the common descriptive name of an article or substance, or has been abandoned, or its registration was obtained fraudulently or contrary to the provisions of section 4 or of subsections (a), (b), or (c) of section 2 of this Act for a registration hereunder, or contrary to similar prohibitory provisions of said prior Acts for a registration thereunder, or if the registered mark is being used by, or with the permission of, the registrant so as to misrepresent the source of the goods or services in connection with which the mark is used; or

(d) at any time if the mark is registered under the Act of March 3, 1881, or the Act of February 20, 1905, and has not been published under the provisions of subsection (c) of section 12 of this Act; or

(e) at any time in the case of a certification mark on the ground that the registrant (1) does not control, or is not able legitimately to exercise control over, the use of such mark, or (2) engages in the production or marketing of any goods or services to which the certification mark is applied, or (3) permits the use of the certification mark for purposes other than to certify, or (4) discriminately refuses to certify or to continue to certify the goods or services of any person who maintains the standards or conditions which such mark certifies:

Provided, That the Federal Trade Commission may apply to cancel on the grounds specified in subsections (c) and (e) of this section any mark registered on the principal register established by this Act, and the prescribed fee shall not be required.

Sec. 15. Incontestability under certain conditions of right to use mark

Except on a ground for which application to cancel may be filed at any time under subsections (c) and (e) of section 14 of this Act, and except to the extent, if any, to which the use of a mark registered on the principal register infringes a valid right acquired under the law of any State or Territory by use of a mark or trade name continuing from a date prior to the date of [the publication] *registration* under this Act of such registered mark, the right of the registrant to use such registered mark in commerce for the goods or services on or in connection with which such registered mark has been in continuous use for 5 consecutive years subsequent to the date of such registration and is still in use in commerce, shall be incontestable: *Provided,* That—

(1) there has been no final decision adverse to registrant's claim of ownership of such mark for such goods or services, or to registrant's right to register the same or to keep the same on the register; and

(2) there is no proceeding involving said rights pending in the Patent Office or in a court and not finally disposed of; and

(3) an affidavit is filed with the Commissioner within 1 year after the expiration of any such 5-year period setting forth those goods or services stated in the registration on or in connection with which such mark has been in continuous use for such 5 consecutive years and is still in use in commerce, and the other matters specified in subsections (1) and (2) hereof; and

(4) no incontestable right shall be acquired in a mark which is the common descriptive name of any article or substance, patented or otherwise.

Subject to the conditions above specified in this section, the incontestable right with reference to a mark registered under this Act shall apply to a mark registered under the Act of March 3, 1881, or the Act of February 20, 1905, upon the filing of the required affidavit with the Commissioner within 1 year after the expiration of any period of 5 consecutive years after the date of publication of a mark under the provisions of subsection (c) of section 12 of this Act.

The Commissioner shall notify any registrant who files the above-prescribed affadavit of the filing thereof.

Sec. 16. Interference

[Whenever application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive, the Commissioner may declare that an interference exists.] *Upon petition showing extraordinary circumstances, the Commissioner may declare that an interference exists when application is made for the registration of a mark which so resembles a mark previously registered by another, or for the registration of which another has previously made application, as to be likely when applied to the goods or when used in connection with the services of the applicant to cause confusion or mistake or to deceive.* No interference shall be declared between an application and the registration of a mark the right to the use of which has become incontestable.

* * * * * * *

§ 31. Fees

(a) The Commissioner of Patents will establish fees for the filing and processing of an application for the registration of a trademark or other mark and for all other services performed by and materials furnished by the Patent and Trademark Office related to trademarks and other marks. [Fees will be set and adjusted by the Commissioner to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. Fees for all other services or materials related to trademarks and other marks will recover the estimated average cost to the Office of performing the service or furnishing the material.] However, no fee for the filing or processing of an application for the registration of a trademark or other mark or for the renewal or assignment of a trademark or other mark will be adjusted more than once every three years. No fee established under this section will take effect prior to sixty days following notice in the Federal Register.

(b) The Commissioner may waive the payment of any fee for any service or material related to trademarks or other marks in connection with an occasional request made by a department or agency of the Government, or any officer thereof. The Indian Arts and Crafts Board will not be charged any fee to register Government trademarks of genuineness and quality for Indian products or for products of particular Indian tribes and groups.

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Official Gazette Notice

Filing Of Verified Statements Claiming Small Entity Status

In view of the fact that the rules implementing the definition of small business concern were not published in the Federal Register until September 30, 1982, any verified statement claiming small entity status will be accepted as timely filed if (1) the first fee in a patent application has been paid on or after October 1, 1982, but before February 27, 1983, in the amount established for a non-small entity and (2) such verified statement is filed within 3 months of the date of payment of the first fee in a patent application paid on or after October 1, 1982, but before February 27, 1983. If such a verified statement is timely filed within three months of the date of payment of the first fee paid on or after October 1, 1982, but before February 27, 1983, the statement will be treated as though it were present on the date the fee was paid. The correct amount of the fee will be determined and any excess will be refunded upon request. Section 1.28(a) of 37 CFR is waived until February 27, 1983 to the extent it is inconsistent with this practice.

10-15-82 Donald J Quigg

Date

Donald J. Quigg
Acting Commissioner of Patents & Trademarks

PATENT NOTICES

Certificates of Correction for the Week of Oct. 26, 1982

Re. 30,789
Re. 30,846
Re. 30,945
Re. 30,948
Re. 30,995
Re. 31,015
D. 263,808
D. 265,283
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4,347,727
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4,348,588

Disclaimers

3,388,755.—*Derrel D. Webb,* Houston, Texas. COMBINATION SHOCK ABSORBER AND JAR. Patent dated May 2, 1966. Disclaimer filed Feb. 26, 1979, by the assignee, *Houston Engineers, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,396,542.—*Bruce A. Lamberton,* Berea, Ohio. METHOD AND ARRANGEMENTS FOR PROTECTING SHORELINES. Patent dated Aug. 13, 1968. Disclaimer filed Mar. 17, 1982, by the inventor.

The term of this patent subsequent to Aug. 13, 1985 has been disclaimed.

3,867,822.—*Lynn H. Morse,* Venice, Fla. and *Anker J. Nielsen, Jr.,* Holden, Mass. LOCKING MEANS FOR ELECTRIC METERS. Patent dated Feb. 25, 1975. Disclaimer filed Aug. 26, 1982, by the assignee, *Omco, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,876,498.—*Edgar J. Justus,* Beloit, Wis. CONTROLLED FORMING WIRE SEPARATION ON IMPERVIOUS ROLL OF TWIN-WIRE PAPERMAKING MACHINE. Patent dated Apr. 8, 1975. Disclaimer filed Aug. 7, 1981, by the assignee, *Beloit Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,028,433.—*Richard Prinz,* Leverkusen; *Salah Elabd Elghani,* Duesseldorf; *Windried Fischer,* Cologne and *Heinrich Alberts,* Cologne, Germany. THERMOPLASTIC MOULDING COMPOUNDS. Patent dated June 7, 1977. Disclaimer filed Sept. 7, 1982, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to all claims of said patent.

4,125,777.—*James T. O'Brien,* Leola; *Albert C. Limm,* Lancaster; *Paul Nyul,* New Holland and *Vincent S. Tassia, Jr.,* York, PA. RADIATION EMITTER-DETECTOR PACKAGE. Patent dated Nov. 14, 1978. Disclaimer filed June 22, 1982, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,141,691.—*Joseph M. Antonetti,* Burgettstown, PA. and *Glen F. Snow,* Birmingham, Ala. USE OF WATER SOLUBLE POLYMERS IN COAL FLOTATION CIRCUITS. Patent dated Feb. 27, 1979. Disclaimer filed Aug. 8, 1980, by the assignee, *Calgon Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,150,074.—*Peter J. Tilgner,* Akron, Ohio. METHOD OF EFFECTING MULTI-STATION IN-PLACE REACTION INJECTION MOLDING ALL FOAMABLE REACTIVE POLYMERIC RESIN COMPOSITION. Patent dated Apr. 17, 1979. Disclaimer filed Jan. 7, 1982, by the assignee, *The Upjohn Co.*

Hereby enters this disclaimer to claim 1 of said patent.

4,162,504.—*Sheng T. Hus,* Lawrenceville, New Jersey, FLOATING GATE SOLID-STATE STORAGE DEVICE. Patent dated July 24, 1979. Disclaimer filed Aug. 2, 1982, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1–7 of said patent.

4,265,915.—*Mary E. MacLennan* and *Martial Lawson,* New South Wales, Australia. PROTEIN-CONTAINING FOOD MATERIAL. Patent dated May 5, 1981. Disclaimer filed Sep. 9, 1982, by the assignee, *Bioenterprises Pty. Ltd.*

Hereby enters this disclaimer to claim 29 of said patent.

4,339,156.—*Richard E. Livesay,* Peoria, Ill., ROLLER-IDLER ASSEMBLY FOR CRAWLER UNDERCARRIAGE. Patent dated July 13, 1982. Disclaimer filed Aug. 23, 1982, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claim 12 of said patent.

Dedications

3,597,121.—*Samuel B. McClocklin,* Owatonna, Minn. AIR-DRIVEN HYDRAULIC PUMP. Patent dated

Aug. 3, 1971. Dedication filed May 14, 1980, by the assignee, *Owatonna Tool Co.*

Hereby dedicates to the public the entire term of said patent.

3,616,114.—*Tsuneji Hamaguchi,* Osaka and *Hajimu Tanaka* Suita-City, Japan. REUSABLE COMPOSITE ADHESIVE SEALING TAPES. Patent dated October 26, 1971. Dedication filed Aug. 27, 1982, by the assignee, *The Procter & Gamble Co.*

Hereby dedicates to the public the entire term of said patent.

4,308,364.—*Kishore Udipi,* East Longmeadow, Mass. LACTONES FROM GAMMA-HYDROXY ACIDS AS COUPLING AGENTS. Patent dated Dec. 29, 1981. Dedication filed Aug. 9, 1982, by the assignee, *Phillips Petroleum Co.*

Hereby dedicates to the public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4559
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF September 4, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-06-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-17-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-13-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-09-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-12-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-18-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-30-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	7-30-80
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	7-21-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-12-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	8-14-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-25-80

Expiration of patents: The patents within the range of numbers indicated below expire during September 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,204,251 to 3,209,368, inclusive
Plant Patents	Numbers 2,552 to 2,557 inclusive

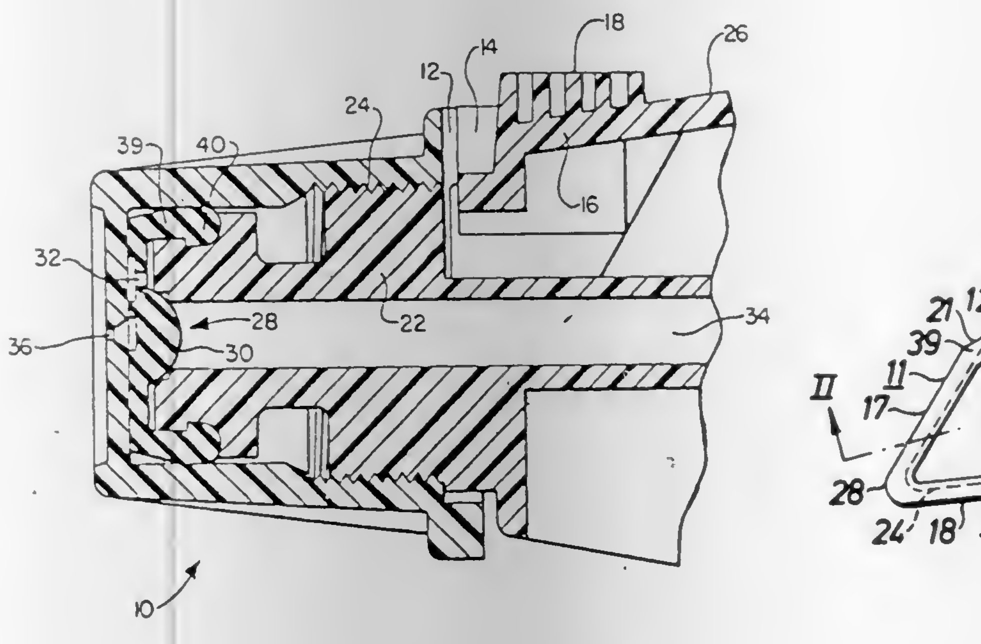
REEXAMINATIONS

OCTOBER 26, 1982

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,257,561 (27th)
CHILD-RESISTANT DISPENSING NOZZLE ASSEMBLY

James C. McKinney, Alpharetta, Ga., assignor to Ethyl Products Company, Richmond, Va.
Reexamination Request No. 90/000,045, Aug. 4, 1981.
Reexamination Certificate for Patent No. 4,257,561, issued Mar. 24, 1981, Ser. No. 45,637, Jun. 5, 1979.
U.S. 239/58. Int. Cl.^{3} B05B *1/30*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **3,** having been finally determined to be unpatentable is cancelled.

Claims 1, 4, and 6 are determined to be patentable as amended.

1. A child-resistant nozzle assembly for a liquid dispenser comprising:

a. nozzle means having a downstream end and an upstream end and being generally hollow inside, said nozzle means having slot means in the upstream end, said nozzle means having thread means thereon which engage thread means **[**on said**]** *provided on a dispenser* body means for connecting said nozzle means to said *dispenser* body means;

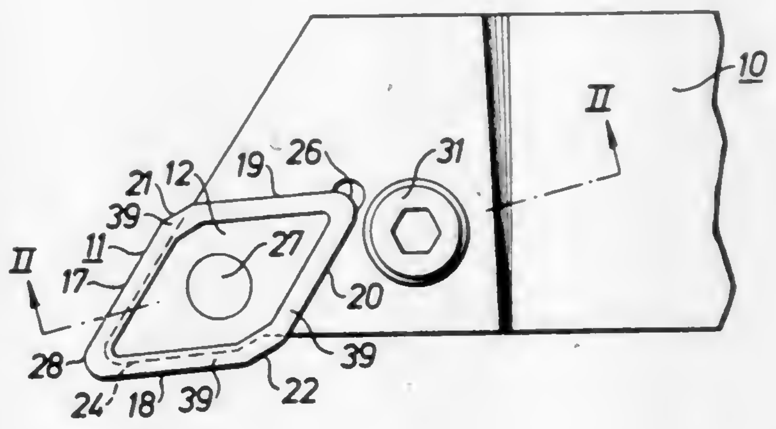
b. *said* dispenser body means **[**connectable to said nozzle means**]** having lug means flexibly connected thereto for selective receipt within said slot means to prevent said nozzle means from turning when said lug means is received in said slot means;

c. conduit means in said dispenser body means for supplying liquids to said nozzle means; and

d. flexible valve means located between said nozzle means and said conduit means **[**.**]**, *said valve means being adapted to make contact with said nozzle means to force said valve means to close said conduit means to prevent liquids from escaping from said nozzle means when said lug means is received in said slot means.*

B1 3,848,303 (28th)
CUTTING INSERT AND CUTTING TOOL ASSEMBLY

Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden.
Reexamination Request No. 90/000,148, Jan. 27, 1982.
Reexamination Certificate for Patent No. 3,848,303, issued Nov. 19, 1974, Ser. No. 379,205, Jul. 16, 1973.
U.S. Cl. 407/77 Int. Cl.^{3} B26D *1/00*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–4 is confirmed.

1. A tool holder and cutting insert combination for copy turning consisting of a tool holder (**10**) and a basically rhombic insert (**11**), said insert having edge portions (**21, 22**) which separate pairs of edges (**17** and **18** from **19** and **20**) extending towards the cutting tips and which extend symmetrically relative to the longest diagonal and substantially parallel thereto, at least one of a pair of edges extending to one cutting tip being formed as a main cutting edge and the insert having substantially flat side surfaces (**12, 13**) being located at a right angle of the intersection of the edge surfaces (**14, 15, 16**), means being disposed in said holder to securely clamp the insert against a bottom supporting surface of basically rhombic configuration and complementary side supports in a recess in said holder, characterized in that the recess is formed in such a manner that, with the insert clamped in position in the holder **10**, the edge forming the main cutting edge (**18**) as well as the edge forming the out-facing cutting edge (**22**) located adjacent thereto are laid bare in their entirety with respect to said holder **10** for enabling those two cutting edges (**18, 22**) to be brought into cutting engagement with a workpiece.

B1 3,777,341 (29th)
CUTTING INSERT AND CUTTING TOOL ASSEMBLY

Kurt Heinrich Albert Erich Faber, Sandviken, Sweden assignor to Sandvik Aktiebolag, Sandviken, Sweden

Reexamination Request No. 90/000,149, Jan. 27, 1982.

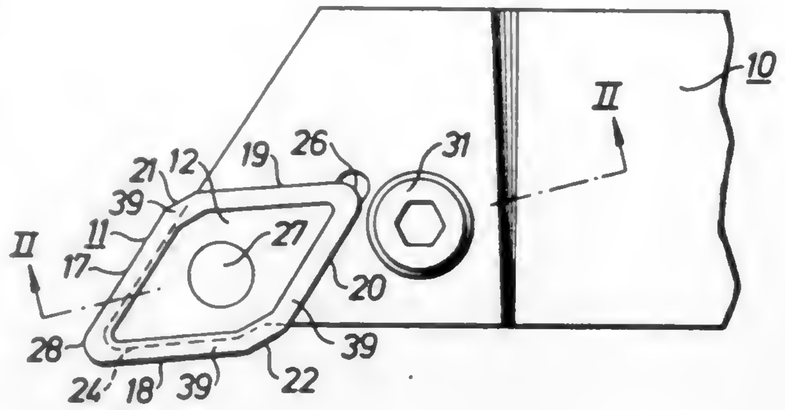
Reexamination Certificate for Patent No. 3,777,341, issued Dec. 11, 1973, Ser. No. 257,530, May 30, 1972.

U.S. Cl. 407/114 **INT. Cl.³ B26D** *1/00*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

1. A copy turning indexible cutting insert having cutting tip angles below 60°, the cutting insert **11** being basically of rhombic configuration and having edge portions **21, 22** which separate the edges **17, 18, 19, 20** extending towards the cutting tips and which extend symetrically relative the longest diagonal and substantially parallel thereto, at least one of two edges extending to one cutting tip being formed as a main cutting edge and the insert having substantially flat side surfaces **12, 13** being located at a right angle at the intersection of the edge surfaces, **14, 15, 16,** characterized in that each of said parallel edge portions **21, 22** is formed as an out-facing cutting edge for co-operation with the main cutting edge **18, 19** located adjacent thereto, and said main cutting edges and said outfacing cutting edges being provided with chip breaking grooves **39, 40** said insert being adapted for engagement in a recess in a tool holder in such a manner that the edge forming the main cutting edge as well as the out-facing edge located adjacent thereto are laid bare with respect to said holder.



REISSUES

OCTOBER 26, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

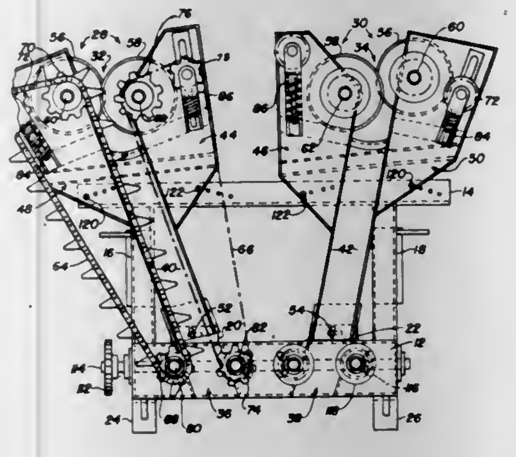
Re. 31,063
ADJUSTABLE WIDTH ROW CROP HEADER

James G. Greiner, Leola; John E. Brelsford, Terre Hill, and Louis R. Thomas, Jr., New Holland, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Original No. 4,086,749, dated May 2, 1978, Ser. No. 714,534, Aug. 16, 1976. Application for reissue Sep. 5, 1980, Ser. No. 184,600

Int. Cl.³ A01D *45/02*

U.S. Cl. 56—98 **11 Claims**



1. A multi-row crop header for a harvesting machine comprising:

(a) a frame;

(b) a plurality of fore-and-aft row crop units adaptable to receive respective rows of crop as the machine advances forwardly over a field of crop planted in spaced apart rows, each row crop unit having an elongated passageway with a front inlet opening for receiving a row of crop and a rear discharge opening;

(c) means for pivotally mounting each row crop unit individually on said frame for [laterally] *lateral* movement relative to the forward direction of travel whereby the lateral spacing between said front inlet openings of said respective row crop units may be varied to receive rows of crop planted in a plurality of different row widths;- [and]

(d) means for fastening said respective row crop units in a plurality of laterally spaced positions corresponding to said plurality of different row [widths.] *width; and*

(e) an adjustable divider mounted on said frame and pivotally interconnecting two adjacent row crop units to guide crop into said adjacent row crop units, the width of each said divider being telescopically adjustable in a scissors-like manner to accommodate the variable spacing between the front inlet openings of said adjacent row crop units.

Re. 31,064
ADJUSTABLE WIDTH ROW CROP HEADER

Joe E. Shriver, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Original No. 4,086,749, dated May 2, 1978, Ser. No. 714,534, Aug. 16, 1976. Application for reissue Sep. 5, 1980, Ser. No. 184,599

Int. Cl.³ A01D *14/02*

U.S. Cl. 56—98 **11 Claims**

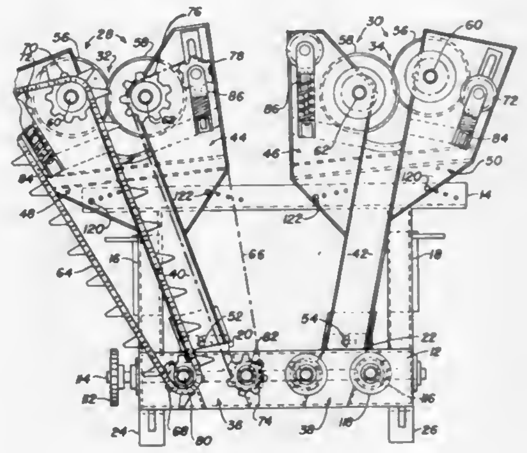
1. A multi-row crop header for a harvesting machine comprising:

(a) a frame;

(b) a plurality of fore-and-aft row crop units adaptable to receive respective rows of crop as the machine advances forwardly over a field of crop planted in spaced apart rows, each row crop unit having an elongated passageway with a front inlet opening for receiving a row of crop and a rear discharge opening, *said elongated passageway being defined by a channel member extending between said front inlet opening and said rear discharge opening;*

(c) means for pivotally mounting each row crop unit individually on said frame for [laterally] *lateral* movement relative to the forward direction of travel whereby the lateral spacing between said front inlet openings of said respective row crop units may be varied to receive rows of crop planted in a plurality of different row widths [and], *said means for mounting including a mounting bracket affixed to said frame, each said channel member having a rearward end adjacent to the corresponding rear discharge opening, said rearward end of each said channel member being pivotally attached to the corresponding mounting bracket;*

(d) means for fastening said respective row crop units in a plurality of laterally spaced positions corresponding to said plurality of different row widths[.]*;*



(e) gathering means associated with each of said row crop units for conveying crop rearwardly toward said rear discharge opening, said gathering means including a pair of drive sprockets, a pair of driven sprockets and a pair of idler sprockets, said drive sprockets being rotatably mounted on said frame and being disposed on opposite sides of each of said elongated passageways proximate to said rear discharge opening, said drive sprockets being mounted in a fixed position relative to said frame, said driven sprockets being mounted on opposite sides of each of said elongated passageways adjacent said front inlet opening, each said gathering means further including a pair of flexible elements operable positioned on opposing sides of said elongated passageway, each said flexible element cooperating with the corresponding drive sprocket, driven sprocket and idler sprocket to engage crop material and convey it rearwardly along said passageway; and

(f) drive means for powering said drive sprockets.

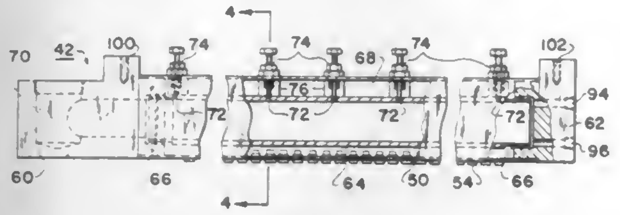
Re. 31,065
STEAM DISTRIBUTION SYSTEM

Clifford D. Shelor, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Original No. 3,574,338, dated Apr. 13, 1971, Ser. No. 877,615, Nov. 18, 1969. Application for reissue Apr. 7, 1980, Ser. No. 137,568

Int. Cl.^{3} B05B *1/14;* **D21F** *5/18*

U.S. Cl. 239—120 **15 Claims**



1. Apparatus for distributing steam *onto a traveling paper machine web* comprising:

a. *first* means forming a *single, continuous* chamber *space extending substantially across the width dimension of said web and* having a multiplicity of steam distribution outlets spaced *uniformly* along a *surface* portion of [its surface] *said first means adjacent said web*

b. *second* means forming a [plurality] *multiplicity* of steam supply ports [in], *each port having individual* fluid communication with diverse portions of said chamber *space*; and

c. *third* means for variably regulating the passage of steam through at least a number of said ports individually to effect *continuously transitioned* variation in the distribution of steam throughout said chamber *space* as such steam passes thereinto and thereby produce *continuously transitioned* variation in the steam distribution profile established at said steam distribution outlets.

Re. 31,066
STEERING LINKAGES

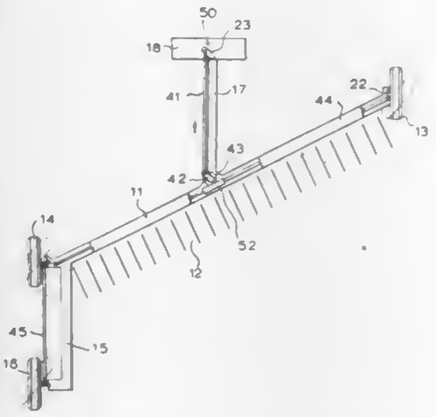
Donald G. M. Whittaker, Ballasalla, Isle of Man

Original No. 4,070,031, dated Jan. 24, 1978, Ser. No. 673,431, Apr. 5, 1976. Application for reissue Jan. 24, 1980, Ser. No. 115,072

Claims priority, application United Kingdom, May 13, 1975, 20070/75

Int. Cl.^{3} B62D *7/00;* **A01B** *69/08*

U.S. Cl. 280—103 **4 Claims**



1. In a steering linkage for a trailer vehicle or implement comprising a frame and steerable wheels mounted on the frame wherein the improvement comprises a transverse frame member, a bar slidably mounted on the said transverse frame member, a rack formed on the said bar, a pinion rotatably mounted in the transverse frame member in mesh with the said rack, means for rotating said pinion comprising a link [rod, said link rod] *means* interconnected with said pinion, the rotation of the pinion imparting sliding motion to the bar, and means for linking the bar and the steerable wheels whereby sliding motion of the bar provides rotary motion to the steerable wheels, a forwardly extending frame member, means for connecting said forwardly extending frame member to said transverse frame [at the mid-point of said transverse frame,], a crossmember adapted to be connected to a trailer hitch, and means for pivotally connecting said forwardly extending frame member to said crossmember.

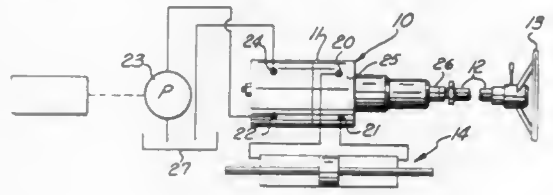
Re. 31,067
HYDROSTATIC CONTROL UNIT

Maurice P. Roberts, Otterbein, Ind., assignor to TRW Inc., Cleveland, Ohio

Original No. 3,895,888, dated Jul. 22, 1975, Ser. No. 407,776, Oct. 19, 1973. Application for reissue Jul. 20, 1977, Ser. No. 817,177

Int. Cl.^{3} F01C *1/10;* **F04C** *2/10;* **B62D** *5/08*

U.S. Cl. 418—61 B **37 Claims**



36. A control unit comprising an input shaft, housing means having an inlet port and a pair of outlet ports, a directional control valve means for porting fluid from said inlet port selectively to one of said outlet ports, said directional control valve means comprising a fixed valve means and a controlling valve member movable through a predetermined limited distance relative to said fixed valve member to control fluid flow therethrough, and metering means in said housing interconnecting said input shaft and said controlling valve member for moving said controlling valve member said limited distance in response to initial rotation of said input shaft and for directing fluid flow to said directional control valve as said shaft rotates, said metering means comprising a gerotor mechanism having an internally toothed gerotor member and an externally toothed gerotor member, means connecting said input shaft to one of said gerotor members for rotation with said shaft, and means connecting the other of said gerotor members with said controlling valve member to move said controlling valve member, said other gerotor member being rotatable about its central axis in response to initial rotation of said one gerotor member to effect movement of said controlling valve member and said valve members constraining said other gerotor member to then orbit only relative to said one gerotor member during continued rotation of said one gerotor member by rotation of said input shaft when the force applied to said controlling valve member is not sufficient to move same.

Re. 31,068
SUBSTITUTED BENZOTHIAZOLINES AND THEIR USE AS PLANT GROWTH REGULANTS

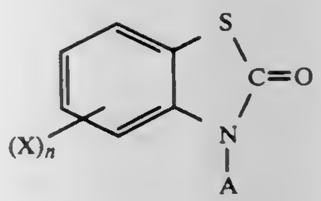
John J. D'Amico, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Original No. 4,160,658, dated Jul. 10, 1979, Ser. No. 839,875, Oct. 6, 1977. Division of Ser. No. 735,658, Oct. 26, 1976, Pat. No. 4,075,216. Application for reissue Oct. 24, 1979, Ser. No. 88,212

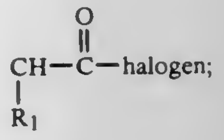
Int. Cl.^{3} A01N *43/78*

U.S. Cl. 71—90 **39 Claims**

1. A composition for regulating the growth of soybean plants consisting essentially of a compound having the formula

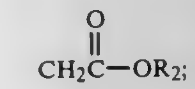


wherein A is selected from the group consisting of



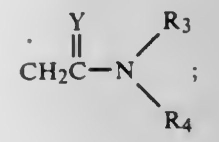
$$\underset{\displaystyle R_1}{\underset{|}{CH}}-\overset{\displaystyle O}{\overset{\|}{C}}-\text{halogen};$$

(I)



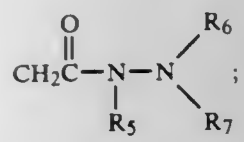
$$CH_2\overset{\displaystyle O}{\overset{\|}{C}}-OR_2;$$

(II)



$$CH_2\overset{\displaystyle Y}{\overset{\|}{C}}-N\begin{matrix} \diagup R_3 \\ \\ \diagdown R_4 \end{matrix};$$

(III)



$$CH_2\overset{\displaystyle O}{\overset{\|}{C}}-\underset{\displaystyle R_5}{\underset{|}{N}}-N\begin{matrix} \diagup R_6 \\ \\ \diagdown R_7 \end{matrix};$$

(IV)

wherein R_1 is selected from the group consisting of hydrogen and lower alkyl; X is halogen; Y is selected from the group consisting of oxygen and sulfur; R_2 is selected from the group consisting of lower alkenyl, monohalo lower alkenyl, dihalo lower alkenyl, trihalo lower alkenyl, lower alkynyl, benzyl and benzyl optionally substituted by up to three substituents selected from the group consisting of lower alkyl, trifluoromethyl and halogen; R_3 is selected from the group consisting of [hydrogen, lower alkenyl, lower alkynyl,] pyridyl[,] *and* pyridyl[;] substituted by halogen; R_4 is [selected from the group consisting of] hydrogen [and lower alkenyl]; R_5 is selected from the group consisting of hydrogen and lower alkyl; R_6 and R_7 are independently selected from the group consisting of hydrogen, phenyl and lower alkyl; n is 0 or 1; provided that R_3 and R_4 may both be hydrogen only when Y is sulfur; further provided that R_6 may not be hydrogen when R_7 is hydrogen; the remaining parts being composed of one or more suitable diluents, carriers and/or adjuvants.

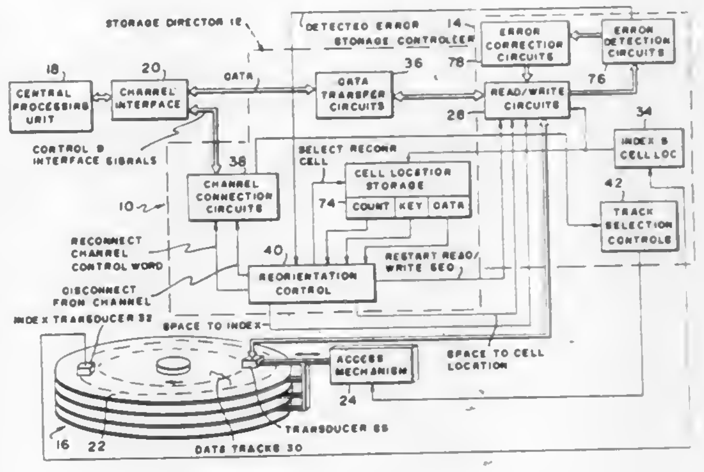
Re. 31,069
APPARATUS AND METHOD FOR RECORD REORIENTATION FOLLOWING ERROR DETECTION IN A DATA STORAGE SUBSYSTEM

Henry K. Chang, and Wolfgang H. Hausen, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,209,809, dated Jun. 24, 1980, Ser. No. 940,949, Sep. 11, 1978. Application for reissue Nov. 26, 1980, Ser. No. 210,631

Int. Cl.^{3} G11B *5/09*

U.S. Cl. 360—53 **12 Claims**



5. A method of reorienting a transducer within a cyclically repeating track having a succession of different *failure independent* fields recorded therein, different groups of the fields defining a succession of different records *each of which has a unique address independent of its physical location* along the track, comprising the steps of:

providing an indication of the location of each *failure independent* field relative to a common reference location on the track;

moving the transducer in a given direction along the track;

identifying the indication of the location of the last *failure independent* field presented to the transducer upon the occurrence of an error;

storing the identified indication;

terminating data processing at the transducer upon the occurrence of an error;

advancing the transducer relative to the track in the given direction past the common reference location [to] g *and any failure independent fields in the record in error preceding* the *precise* field the indication of which was stored; and *only thereafter* attempting to continue data processing at the transducer.

PLANT PATENTS

GRANTED OCTOBER 26, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,898

MINIATURE ROSE PLANT

Leslie E. Strawn, 10422 Morningside Ave., Garden Grove, Calif. 92643

Filed Mar. 9, 1981, Ser. No. 241,759

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are in a color hue similar to Stacey Sue (miniature — U.S. Plant Pat. No. 4,158) giving a coloring effect of blended shades of pink with coral undertones and resembling Peaches 'N Cream (miniature — U.S. Plant Pat. No. 4,278) in form and size, having buds and flowers of a distinct and unusual appearance as compared to other miniature rose plants; said flowers being fully double, uniquely formed with high centers; and further characterized by its vigor, abundant foliage and ease of propagation from soft wood cuttings and by budding, and with an abundance of flowers.

4,899

ROSE PLANT—75-20364

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Dec. 22, 1980, Ser. No. 218,730

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright plant producing blunt top buds of very white petals, occasionally having green streaks on outer petals.

4,900

APPLE TREE

William P. Marsland, Rte. 3, Box 166, Spring Hill, Kans. 66083

Filed Oct. 16, 1980, Ser. No. 197,640

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree substantially as herein shown and described characterized particularly as to novelty by the unique combination of the general resemblance to the variety Stayman apple (unpatented) but having fruit that ripens under normal conditions approximately 5–10 days ahead of the standard variety that is a brighter red color with less prominent dots borne on a tree which is smaller and more open growing with more fruiting spurs than known Stayman variety, a tendency to fruit, especially in younger trees, on one year old wood, much more waxy skin than the standard variety of Stayman apple which increases resistance to cracking and enhances shelf storage life.

4,901

SPUR TYPE WINTER BANANA APPLE TREE—FRECON CULTIVAR

Richard S. Frecon, Boyertown, Pa., assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Jan. 12, 1981, Ser. No. 224,628

Int. Cl.^{3} A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of winter banana apple tree, substantially as illustrated and described, characterized by (a) a vigorous compact upright growth habit with only a slightly spreading tendency, (b) the ability to heavily bear fruit having a whitish-yellow skin color upon maturity which is substantially identical to that of the standard winter banana apple tree and which has substantially less skin russeting than the fruit of the Housden spur type winter banana apple tree, (c) the ability to form large long green leaves, and (d) the propensity to form more fruit spurs per unit length of two and three year old wood than the standard winter banana apple tree and less spurs per unit length of two and three year old wood than the Housden spur type winter banana apple tree.

4,902

PLUM TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Mar. 23, 1981, Ser. No. 246,301

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety fo plum tree, substantially as illustrated and described, particularly characterized by the regular and very productive bearing of large, globose, symmetrical, semi-freestone fruit uniform both in size and form, the fruit having burgundy red skin, red flesh with a yellow tinge near the base, and a red pit cavity; the fruit, of mild, delicate flavor, most nearly resembling the yellow-flesh fruit of the Queen Ann but ripens approximately a week earlier, and also somewhat earlier than the red-flesh fruit of the Frontier.

4,903

PEACH TREE

John H. Weinberger, Fresno, Calif., assignor to Superior Farming Company, Bakersfield, Calif.

Filed Apr. 10, 1981, Ser. No. 253,161

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, particularly characterized by the bearing of uniform, medium size, symmetrical, globose, freestone fruit having yellow skin blushed with medium light red, and yellow flesh; the fruit ripening about a week later than Springcrest, and about three weeks earlier than Flavorcrest.

4,904

GREEN ASH TREE

Paul L. Bergeson, Rte. 1, Fertile, Minn. 56540

Filed Jun. 20, 1980, Ser. No. 161,648

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of green ash tree, substantially as shown and described herein, characterized particularly as to novelty by the unique combination of a rapid, straight, quick-branching, vigorous, upright, uniform and seedless growth habit which requires little or no pruning to produce a desirable nursery-grown tree for commercial sale in a minimum of growing time, with narrow glossy green leaves, an attractive bronze-color bark, a pronounced stronger caliper, a tendency to branch the first year of growth, and with leaves which stay on the tree longer in the autumn.

4,905

RHODODENDRON PLANT—HACPUT VARIETY

Johannes Hachmann, Barmstedt in Holstein, Fed. Rep. of Germany, assignor to Conard-Pyle Company, West Grove, Pa.

Filed Jun. 25, 1980, Ser. No. 162,916

Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of *Rhododendron russatum*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) a bushy, well-branched and vigorous growth habit,
(b) flowers of striking violet-blue color,
(c) improved hardiness compared to the *russatum* species, and
(d) improved tolerance to extremes of both cold and heat when compared to the Blue Tit and Blue Diamond varieties and varieties of the *impeditum* species.

4,906
LILY NAMED TEMPO

Ted T. Kirsch, Myrtle Point, Oreg., assignor to Sun Valley Bulb Farms, Inc., Myrtle Point, Oreg.
Filed Dec. 11, 1980, Ser. No. 215,233
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of oriental hybrid lily plant substantially as herein shown and described, characterized by its large, brilliant, reddish purple, outwardly facing flowers borne on strong, stiff pedicels, and by its dark green, glossy foliage.

4,907
MINIATURE CARNATION

Angelo J. Siri, 825 Woolsey St., San Francisco, Calif. 94134
Filed Feb. 9, 1981, Ser. No. 232,893
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

4,908
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., 639 Summit St., P.O. Box 112, Doylestown, Ohio 44230; William E. Duffett, 2632 Ira Rd., Akron, Ohio 44313, and Marvin D. Mix, P.O. Box 308, Bend, Oreg. 97701
Filed Mar. 7, 1972, Ser. No. 232,393
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the parent cultivar bronze Princess Anne and its closely related cultivar Gay Anne by its more intense flower color, with more red tones, its relatively slower fading characteristic, and its more attractive flower color when faded.

4,909
CHRYSANTHEMUM NAMED CHERRY WESTLAND

Jacques C. M. van der Knaap, De Lier, Netherlands, assignor to Pan-American Plant Company, Parrish, Fla.
Filed Oct. 2, 1980, Ser. No. 193,090
Int. Cl.^{3} A01H *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct chrysanthemum cultivar, substantially as herein shown and described, characterized particularly by the unique bronze coloration of its flowers.

PATENTS

GRANTED OCT. 26, 1982

ERRATA

For CLASS	See PATENT NO.
237–012	4,355,752
237–012	4,355,753
238–083	4,355,754
376–254	4,356,061
376–272	4,356,062
524–837	4,356,116
549–475	4,356,125
373–107	4,356,340
378–138	4,356,400

PATENTS

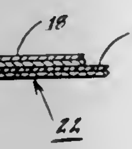
GRANTED OCTOBER 26, 1982

GENERAL AND MECHANICAL

4,355,424

X-RAY GLOVES AND LINER

William J. McCoy, Jr., 26 Quarry Rd., Stamford, Conn. 06903
Filed Sep. 2, 1980, Ser. No. 182,955
Int. Cl.^{3} A41D *19/00*
U.S. Cl. 2—161 R **9 Claims**



1. Apparatus for protecting the human hand from radiation comprising

an outer glove made from radiation barrier material, the innermost surface of which is smooth and has a low coefficient of friction,

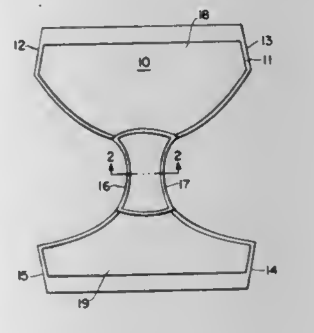
and a removeable laminated liner for said glove, the outer lamination of which liner has a high coefficient of friction with respect to said innermost surface of said glove, and the inner lamination of which is moisture absorbent,

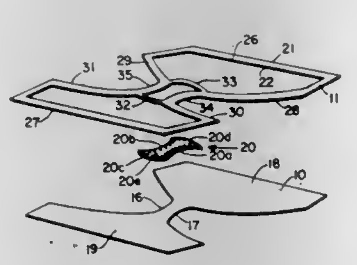
said apparatus including means for removeably affixing the interior of said glove in the cuff region thereof to the exterior of said liner in the cuff region thereof.

4,355,425

PANTY WITH A BUILT-IN ELASTIC SYSTEM TO MINIMIZE GATHERING AND PROVIDE A COMFORTABLE, CONFORMING FIT AND METHOD TO ASSEMBLE A PANTY

Bradley N. Jones, Cerritos, Calif., and Lawrence H. Sanford, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 1, 1980, Ser. No. 117,427
Int. Cl.^{3} A41B *9/02, 9/04*
U.S. Cl. 2—402 **8 Claims**





1. A nongathered panty comprising a porous fabric panel means and elastic member means defining waist and leg openings wherein said fabric panel means and said elastic member means are manufactured from a nonwoven material which is elastic in all directions said fabric panel means and said elastic member means being manufactured from a nonwoven material and having the same composition.

4,355,426

POROUS FLEXIBLE VASCULAR GRAFT

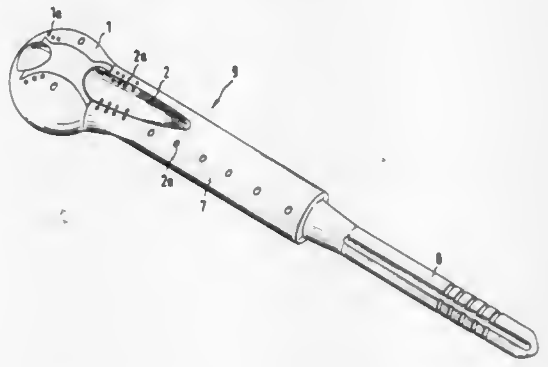
David C. MacGregor, 81 Wimbleton Rd., Islington, Ontario, Canada
Division of Ser. No. 824,296, Aug. 15, 1977, which is a continuation-in-part of Ser. No. 683,382, May 5, 1976, Pat. No. 4,101,984. This application Nov. 20, 1979, Ser. No. 95,965
Claims priority, application Canada, May 9, 1975, 226993; United Kingdom, Dec. 22, 1975, 52474; Canada, Oct. 19, 1976, 43407
Int. Cl.^{3} A61F *1/24*
U.S. Cl. 3—1.4 **20 Claims**

1. A small bore flexible vascular graft constructed of flexible biocompatible hydrophilic polymeric material and comprising an elongate tube having an inside diameter of from about 2 to about 6 mm and a strength at least sufficient to withstand venous blood pressure of greater than 25 mm Hg in the physiological environment for at least one year, said tube having an inner porous surface in fluid flow communication with a network of interconnected sphere-like pores in the adjacent subsurface which has a pore size of less than about 50 microns and a porosity of about 10 to about 70% by volume, said tube having an outer porous surface in fluid flow communication with a network of interconnected pores in the adjacent subsurface which has a pore size of less than about 200 microns and a porosity of about 10 to about 70% by volume.

4,355,427

ARTIFICIAL HUMERUS HEAD

Wolfgang Schneider, Weddigenufer 12, D-4900 Herford, Fed. Rep. of Germany
Filed Dec. 12, 1980, Ser. No. 215,979
Int. Cl.^{3} A61F *1/03*
U.S. Cl. 3—1.91 **7 Claims**



1. An artificial humerus head comprising an elongated unitary member having a pin at one end thereof for insertion into the shaft of a humerus, a substantially spherical head at the other end thereof, and a shaft between said pin and head adapted to act as a continuation of the humerus when said pin is inserted into the shaft of the humerus, said spherical head having an elongated groove formed in its exterior surface for

longitudinally receiving the long biceps tendon, said groove extending generally in the direction of elongation of said member between spaced points on the outer periphery of said head and being oriented at a slight angle to the longitudinal axis of said elongated member, and a cover member covering said groove and cooperating with said groove to form an open-ended, enclosed channel for the long biceps tendon extending through said head generally in the direction of elongation of said member.

4,355,428
SURGICAL PROSTHESIS WITH GRAINY SURFACE

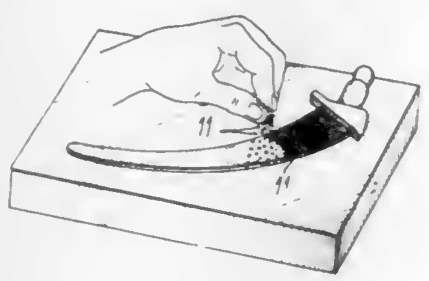
Victor Deloison, Courbevoie, and Gilbert Pottier, Calvados, both of France, assignors to S.A. Benoist Girard & Cie, Val de Marne, France

Continuation of Ser. No. 810,772, Jun. 28, 1977, Pat. No. 4,819,984. This application Nov. 5, 1979, Ser. No. 91,165

Claims priority, application France, Jul. 2, 1976, 76 20297

Int. Cl.³ A61F *1/20*

U.S. Cl. 3—1.91 **4 Claims**



1. A bone prosthesis having a body portion and a grainy multiple planed surface portion comprising a multitude of projections which are approximately in the shape of spherules cast in one piece with the body of the prosthesis from which they project and to which they are directly joined, said projections having interstitial spaces between them with the interstitial space between two neighboring projections being non-uniform throughout the projection height and having at least a constriction at a point intermediate between the body of the prosthesis and the external free end of said projections and said space being not smallest at the base of the projections where attached to the body of the prosthesis.

4,355,429
SLIDE PROSTHESIS FOR THE KNEE JOINT

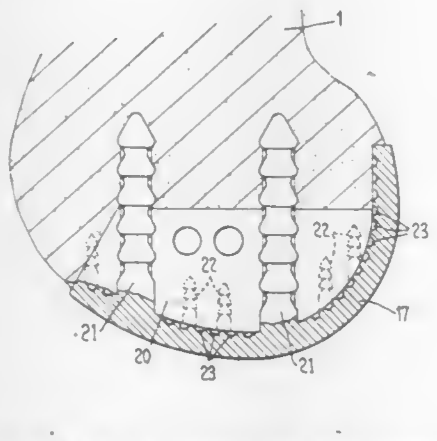
Heinz Mittelmeier, Blieskastel, Fed. Rep. of Germany; Heinz Moser, Selzach, and Beat Leu, Ipsach, both of Switzerland, assignors to Osteo AG, Selzach, Switzerland

Filed Jan. 23, 1980, Ser. No. 114,335

Claims priority, application European Pat. Off., Jan. 26, 1979, 79810010.3

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.911 **9 Claims**



1. A slide prosthesis for cementless attachment to a knee joint, comprising:

a joint member having a joint surface and an opposite mounting surface;

at least two primary securing pins extending from the mounting surface of said joint member to attach the prosthesis to the joints;

a plurality of secondary securing pins extending from the mounting surface of said joint member adjacent the periphery thereof to supplement the attachment of the prosthesis to the joint, said secondary securing pins being smaller than and parallel to said primary securing pins;

each of said primary and secondary securing pins having a ridged profiled with interstices for admission of bone growth so as to preclude unintentional dislodgement of the prosthesis from the knee joint; and

a support plate extending from the mounting surface of said joint member and connected to and extending between said primary securing pins.

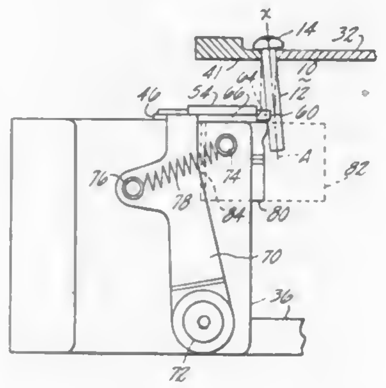
4,355,430
POINTING MACHINE

Edwin J. Skierski, Campbellsville, Ky., assignor to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 75,744, Sep. 14, 1979, abandoned. This application May 4, 1981, Ser. No. 260,304

Int. Cl.³ B23G *9/00*

U.S. Cl. 10—9 **11 Claims**



1. A pinch pointing machine for pinch pointing a point on screw blanks, said machine comprising:

a pair of dies for pinch pointing, by a pinching operation, screw blanks therebetween;

means for supporting successive screw blanks between said pair of dies; and

alignment means for accurately securing both tangentially and radially each successive screw blank between said dies during the pinching of each of said blanks to permit their longitudinal axis to be properly aligned with said dies, whereupon said axis and the point on said screw blank are coaxial, said alignment means including a pivotable member with a screw blank locating portion thereon to help control the tangential and radial orientation of said screw blank between said dies.

4,355,431
BRIDGE ELEMENT

Wolfgang Diefendahl, and Karl-Friedrich Koch, both of Duisburg, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,622

Int. Cl.³ E01D *15/14*

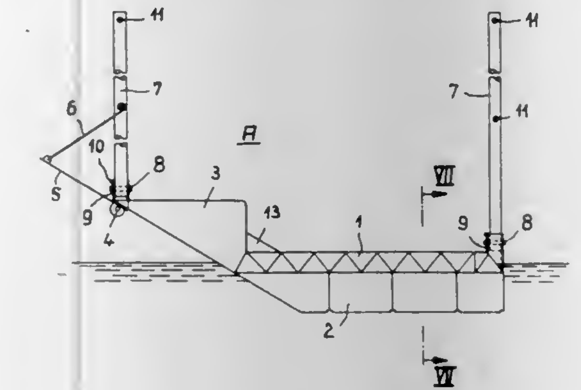
U.S. Cl. 14—27 **8 Claims**

1. A floatable bridge element, having a roadway and being inclined at the lower edge along one longitudinal side, for bridging obstacles, especially bodies of water, said bridge element comprising in combination:

a substantially flat hollow compartment panel, the upper surface of which serves as said roadway;

a rigid buoyancy body extending below and rigidly connected with the lower surface of said compartment panel, a portion of the underside of said buoyancy body being inclined; and

coupling means, connected to said compartment panel along the non-inclined longitudinal side of said bridge element as well as along both end faces, for interconnecting bridge elements along their non-inclined longitudinal sides as well as along their end faces, said coupling means including at least one coupling section, which conforms to a coupling section of another bridge element and is adapted to latch same during interconnection of the pertaining bridge elements, said coupling means being arranged in such a way that at least during end face interconnection of two bridge elements, the latter are in alignment with each other.



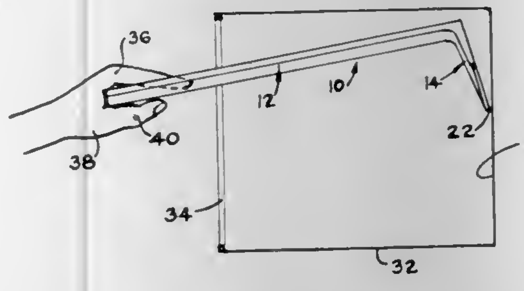
4,355,432
HAND TOOL FOR SCRAPING PAINT FROM PAINT CAN

James P. Storm, Jr., 329 Linfield Pl., Menlo Park, Calif. 94025

Filed Jun. 13, 1980, Ser. No. 159,251

Int. Cl.³ A47G *21/00*

U.S. Cl. 15—245 **6 Claims**



1. A hand tool for scraping paint from the bottom and curved sidewall of a paint can comprising: a handle member having a pair of opposed ends; and a blade member integral with one end of the handle member and extending laterally therefrom, the blade member being fan-shaped and having an outer periphery provided with a curvature substantially complemental to the curvature of the sidewall of the paint can, said blade member having a flat surface for engaging the bottom of the paint can, the flat surface of the blade member extending throughout substantially the entire area of the blade member, the members being flexible to permit them to yield as the flat surface engages and moves along the bottom of the paint can.

4,355,433
APPARATUS FOR CLEANING ROOT CROPS IN THE FIELD

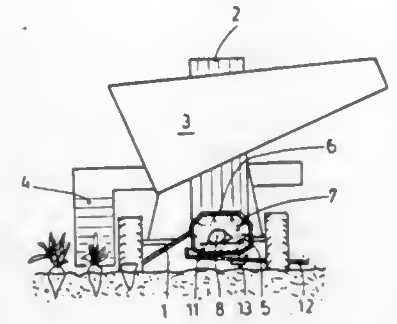
Martin Dietrich, Paternoster 5, Mertingen, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,363

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938439

Int. Cl.³ B08B *3/02*

U.S. Cl. 15—302 **7 Claims**



1. An installation mounted on a harvester for cleaning root crops in the field by spraying jets of water on all sides of the root crop after its removal from the soil, comprising:

a cleaning unit mounted on the harvesting machine having a plurality of inwardly directed peripherally arranged jets for spraying a cleaning liquid on all sides of the root crops to clean them;

conveyor means passing through said cleaning unit and permeable to the spray from said jets, capable of transporting the root crops to be cleaned through the cleaning unit and depositing them after cleaning in a crop storage bunker;

means for supplying cleaning liquid to the jets of said cleaning unit under pressure;

means for collecting the cleaning liquid after it has been sprayed to clean the crops;

means for removing residues cleaned from the crops from the collected water;

means for recycling said residue-removed water to the jets; and

receiving device means for pre-soaking the root crops in cleaning liquid comprising:

a conveyor means for conveying the root crops from the ground to a pre-soaking reservoir containing cleaning liquid, and

a conveyor means for conveying the root crops through said pre-soaking reservoir, wherein the receiving device is embodied by a reservoir (**23**) having an opening for the introduction of the root crops and being located at a lower level than the cleaning unit (**6**) and in which passes the third conveyor belt (**5**) having carriers for the root crops to be cleaned, the cleaning unit (**6**) being a strainer (**48**) having nozzles (**10**) and being enveloped by a jacket (**49**) the interior of which can be emptied into the reservoir (**23**).

4,355,434
CANNISTER TYPE SUCTION CLEANER

Dean W. Gongwer, 66607 C.R. 1, Wakarusa, Ind. 46573

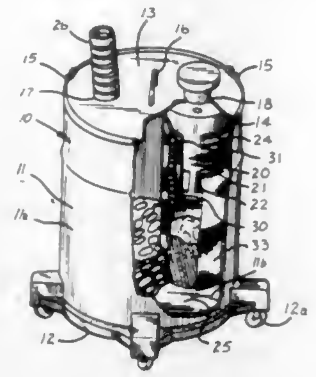
Filed Nov. 10, 1980, Ser. No. 205,685

Int. Cl.³ F23J *1/02*

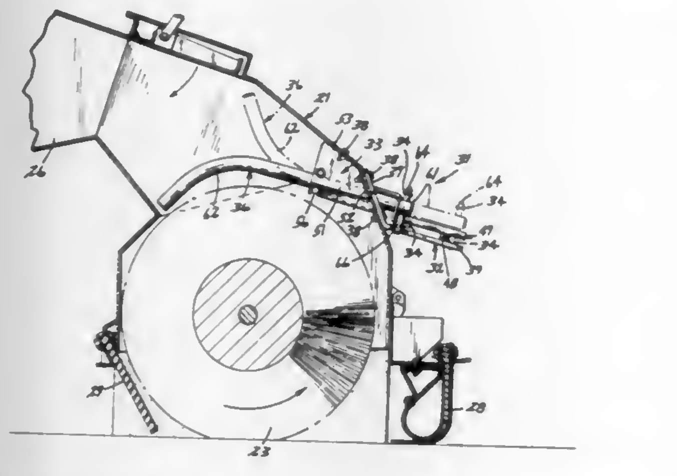
U.S. Cl. 15—327 R **7 Claims**

1. In a suction cleaner of the type having an open top metal container, sidewalls and a bottom wall, a metal cover closing the open top of the container, a suction creating impeller disposed within the container, a housing enclosing the impeller and provided with an orifice, and an electric motor drivingly connected to the impeller, the container being provided with an air inlet opening and an air discharge opening, the improvement comprising, a perforated metal member adjacent to the

orifice in the housing enclosing the impeller, and a filtering member of fire resistant material interposed between the perforated member and the impeller, the space between the inner surface of the sidewalls and the perforated member being adapted to receive hot coals and ashes entering through the air inlet opening, the perforated member restricting passage of the hot coals through the perforated member, the filtering member being pervious to air and preventing passage of ashes through the orifice of the housing enclosing the impeller and through the discharge opening.



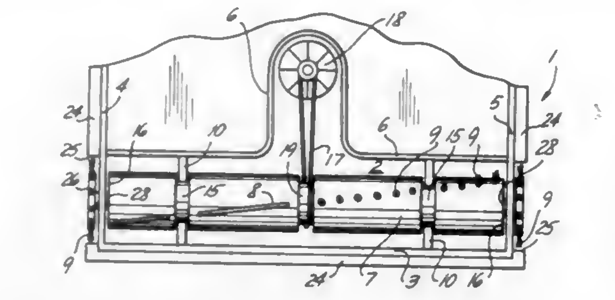
4,355,435
SURFACE MAINTENANCE EQUIPMENT
Paul W. Kimzey, St. Louis Park, and Daniel J. Super, New Hope, both of Minn., assignors to Tennant Company, Minneapolis, Minn.
Filed Sep. 12, 1980, Ser. No. 186,704
Int. Cl.^{3} A47L *5/12*
U.S. Cl. 15—347 **15 Claims**



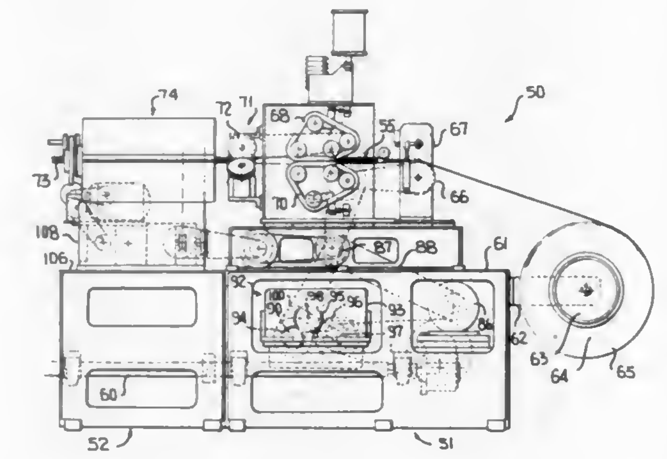
1. Surface maintenance equipment comprising a body structure, a plurality of wheels for supporting said body structure, a downwardly opening housing defining a pickup chamber, said housing having a debris exit, said housing being carried by said body structure, means for storage of dirt and debris which are picked up from said chamber, duct means for interconnecting said housing and said storage means, a plurality of spaced, anti-clog bars overlying the exit of said housing whereby said anti-clog bars prevent oversized debris from entering and clogging said duct means.

4,355,436
VACUUM CLEANERS
Samuel Hertzberg, 29 Country Club La., Pomona, N.Y. 10970
Filed Jan. 19, 1981, Ser. No. 226,396
Int. Cl.^{3} A47L *5/30*
U.S. Cl. 15—383 **15 Claims**

1. In a vacuum cleaner characterized by a revolvable brush roll horizontally supported in the nozzle area within the side walls of a housing, the combination of a brush roll with a free end, an aperture in the side wall of the housing adjacent the said free end in axial alignment with it, a stub shaft, at least a portion of a disk brush incorporating at least a portion of the rim section and its circumference bristles and a portion of the hub section, and a bumper guard with a gap therein affixed to the aforesaid exterior side wall of the housing, the gap adjacent the aperture; the disk brush portion positioned within the gap in the bumper guard rigidly affixed at the hub section to an end of the stub shaft and the balance of the stub shaft loosely penetrating the aperture in the housing side wall in rigid axial engagement with the brush roll end, the rim bristles capable of making contact with a floor surface, and the hard, unyielding parts of the disk brush portion confined within the aforesaid gap; the disk brush portion thereby revolvable with the brush roll and the room wall protected against abrasion as the bumper guard is run along a wall-floor edge.

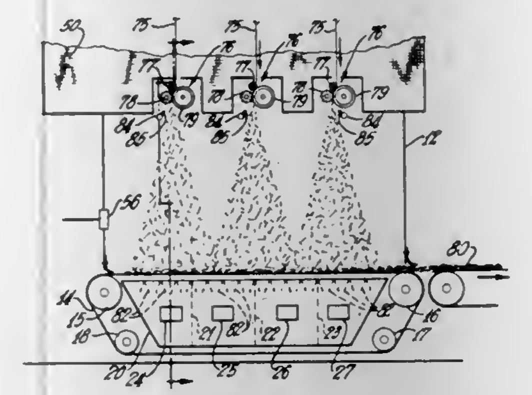


4,355,437
QUICK CHANGE DRIVE FOR SHIRRING MACHINE CONTROL SHAFT
Norbert L. Wright, Park Ridge, and Wayne L. Hahn, Chicago, both of Ill., assignors to Teepak, Inc., Chicago, Ill.
Filed May 8, 1980, Ser. No. 147,771
Int. Cl.^{3} A22C *13/02*
U.S. Cl. 17—42 **2 Claims**



1. A shirring machine for continuously shirring a tubular casing and separating the continuously shirred casing into separate strands, said shirring machine comprising a control motor, drive means for continuously feeding casing and continuously shirring casing coupled to said control motor, a control shaft for controlling subsequent operations of said machine including casing separation, a quick change drive between said control motor and said control shaft for varying the rotational speed of said control shaft relative to the speed of continuous casing feed and shirring to change cycle time whereby the length of a separted shirred casing strand from a continuous shirred casing and subsequent operations may be varied, said quick change drive being of the type wherein there may be change in the rotational relationship between said drive means and said control shaft during a drive change, and timing means mounted on one end of said control shaft adjacent said quick change drive for assuring the proper rotational position of said control shaft relative to said drive means after a drive change.

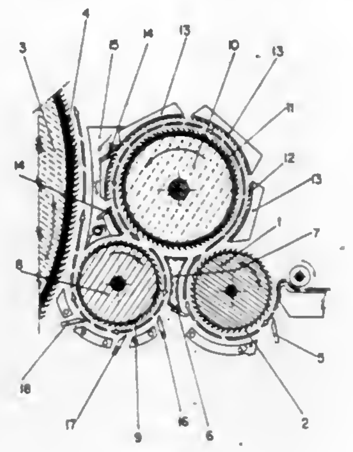
4,355,438
MAT FORMING APPARATUS
James E. Reeves, Jr., Anderson, S.C.; Michael P. Dunn, Newark, and John L. Patterson, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Feb. 17, 1981, Ser. No. 235,263
Int. Cl.^{3} D04H *1/00*
U.S. Cl. 19—0.51 **10 Claims**



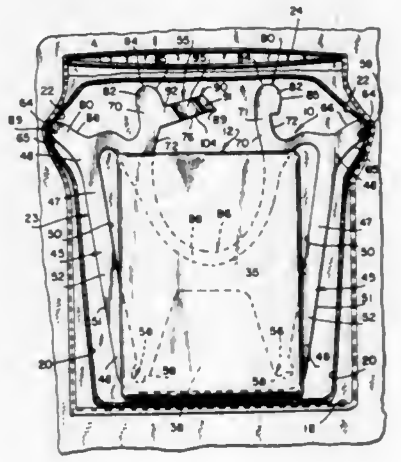
1. A mat forming apparatus comprising an air temperature and humidity control chamber, a supply-air plenum, a first fan having an inlet connected to the temperature and humidity control chamber and an outlet connected to the supply-air plenum, a chopper room connected to the supply-air plenum, strand choppers in the chopper room, a forming hood beneath the choppers for receiving chopped strands from the choppers, an endless conveyor chain beneath the forming hood for collecting the chopped strands, forming them into a mat, and transferring the mat away from the forming hood for further processing, a chopped strand collecting chamber for collecting chopped strands which happen to pass through the conveyor chain, a suction chamber disposed beneath an upper flight of the conveyor chain and having an inlet communicating with the forming hood through the conveyor chain and an outlet communicating with the chopped strand collecting chamber, nozzle-forming downstream convergent baffle plates in the inlet of the suction chamber, a second fan having an inlet connected to the chopped strand collecting chamber and an outlet connected to the temperature and humidity control chamber, each of said first and second fans having blades which are movable to change the pitch thereof, mechanism for moving the blades to change the pitch thereof, and an actuator for operating said mechanism, a static pressure sensor associated with the forming hood for sensing the static pressure therein, and a fan blade pitch controller operatively connected to the static pressure sensor and to the actuators of each of said fans for controlling the pitch of the fan blades in accordance with the static pressure in the forming hood.

4,355,439
CLEANER-OPENER-COMBER DEVICE FOR TEXTILE FIBERS IN COMBING MACHINES
Juan B. Estebanell, Av. Dr. Fleming, 8-San Fructuoso Del Bages, Barcelona, Spain
Filed Mar. 7, 1980, Ser. No. 128,006
Claims priority, application Spain, Mar. 7, 1979, 241.864
Int. Cl.^{3} D01G *15/40*
U.S. Cl. 19—105 **5 Claims**

1. A cleaner-opener-comber device for cleaning, opening and combing a fibrous wet in a combing machine having a large drum means rotatable in a first direction, comprising first taker-in means mounted in said machine for rotation in a direction opposite to said first direction and having first pin means around the periphery thereof slanted in said opposite direction for taking in said fibrous web; second taker-in means mounted intermediate said first taker-in means and said large drum means in said machine for rotation in said opposite direction and having second pin means around the periphery thereof slanted in said opposite direction for taking in said fibrous web; separation means for isolating the fibrous web portion taken in by said first taker-in means from the fibrous web portion taken in by said second taker-in means; cylindrical drum means mounted proximate said first and second taker-in means for rotation in said first direction and for cooperation with said first and second taker-in means, said cylindrical drum means having third pin means disposed around the periphery thereof and slanted in said first direction; and plate means partially surrounding said cylindrical drum means and selectively adjustable with respect thereto, said plate means having fourth pin means slanted in a direction opposite to said third pin means, said fibrous web passing from said first taker-in means to intermediate said cylindrical drum means and said plate means and then to said second taker-in means for transporting said fibrous web to said large drum means.



4,355,440
WALLET THEFT GUARD
Francis J. Johansson, 135 Rhodes Dr., and Thomas Christenson, 7 Maple Dr., both of New Hyde Park, N.Y. 11040
Continuation-in-part of Ser. No. 51,106, Jun. 2, 1979, Pat. No. 4,241,476. This application Sep. 25, 1980, Ser. No. 190,623
Int. Cl.^{3} A45C *13/18;* **A45F** *5/02*
U.S. Cl. 24—3 H **13 Claims**



1. A wallet guard for use with a wallet and adapted to be used when placed in a pocket having a lower seam and a pair of side seams defining the width thereof to prevent removal therefrom, the wallet guard comprising:

A. a frame having a base with a pair of arms extending upwardly from said base, each said arm including a lower section integrally coupled to said base and an upper section terminating in a free end, said arms movable between an open position and a closed position, whereby in the open position the distance between said free ends is normally greater than the width of the pocket such that said arms will be biased inwardly by the side seams when inserted into the pocket with the base adjacent the lower seam to provide the upper portion of the pocket in tension,

- B. engaging means including a gripping jaw formed at said free end of said upper section of each of said arms, each said gripping jaw having a distal end extending outwardly from said arm, such that said jaws engage the side seams of the pocket in the open position of the wallet guard to prevent removal therefrom, and said arms are narrower than the width of the pocket in the closed position thereof,
- C. retaining means associated with said arms for removably securing said arms at said upper sections thereof in releasably fixed relationship to each other to maintain the closed position when insertion or removal of the wallet guard and wallet with respect to a pocket is desired, such that in the closed position of the wallet guard it may be inserted within the pocket of the user and in the open position removal thereof is prevented,
- D. locking means associated with said retaining means so as to readily maintain said arms in the closed position thereof when said arms are compressed towards each other a defined distance,
- E. said locking means includes a protrusion having a slot therein extending from one of said arms, and a neck on the other of said arms adapted to extend in frictional interlocking relationship within said slot in the closed position and readily separable for movement to its open position, and
- F. guide means at one end of said protrusion for guiding said neck along said protrusion until said slot is reached and said neck is received therein for said interlocking relationship.

4,355,441

ROPE-LOCK

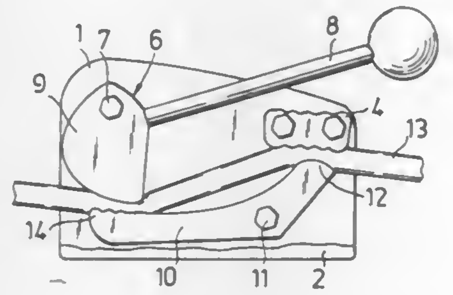
Gunnar B. Häll, Kornvägen 8, S-736 00 Kungsör, Sweden

Filed Nov. 16, 1979, Ser. No. 94,913

Claims priority, application Sweden, Nov. 24, 1978, 7812117; Feb. 15, 1979, 7901324; Feb. 15, 1979, 7901327; May 1, 1979, 7900113; May 1, 1979, 7900114

Int. Cl.^{3} F16G *11/04*

U.S. Cl. 24—134 KB **6 Claims**



1. A rope lock for selectively securing a rope having a tensile force applied thereto comprising:
  - an abutment;
  - a locking member pivotal about a locking member pin and having a thrust portion on a first end for clamping said rope against said abutment in a locking position, said locking member further having a contact portion on a second end thereof; and
  - an eccentric cam pivotal about a cam pivot pin and including an operating portion for selectively applying a latching force against said contact portion of said locking member;
  - the latching force selectively applied to said locking member by said operating portion of said eccentric cam producing a torque on said locking member to thereby clamp said rope between said abutment and said thrust portion of said locking member in said locking position;
  - said operating portion of said eccentric cam being selectively adapted, at least in said locking position, to operatively secure said rope between said operating portion and said contact portion.

4,355,442

CONNECTING DEVICE FOR AUTOMOBILE SEAT BELT

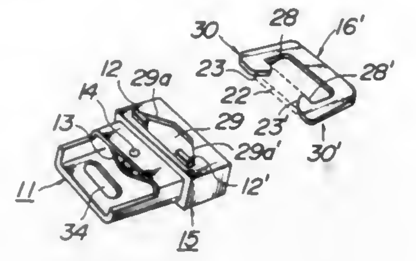
Yoshimi Sato, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 23, 1980, Ser. No. 199,849

Claims priority, application Japan, Oct. 31, 1979, 54-150798[U]

Int. Cl.^{3} A44B *11/25*

U.S. Cl. 24—230 AL **7 Claims**



1. In a connecting device for an automobile, which includes a buckle and a tang, said buckle comprising a base and a slider block slidably fitted with each other, said base comprising at least two latches urged away from each other by means of a spring and slidable in directions perpendicular to that of insertion of said tang, said spring being fixed at substantially the center of said base and integrally constructed with a spring forcing said tang out of said buckle when the former is released from the latter, said slider block provided with a guide hole engaging said latches of said base and having guides for moving said latches toward each other in response to a movement of said slider block, and said tang being made in the form of a C and having a pair of guides for moving said latches toward each other in response to an insertion of said tang into said buckle and a pair of anchoring portions adjoining said pair of guides for said latches.

4,355,443

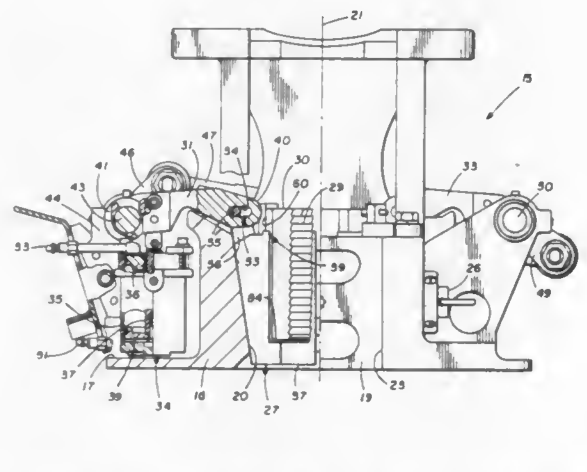
BOWL AND SLIPS ASSEMBLY WITH IMPROVED SLIP INSERTS

Henry W. Blackwell, Venus, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 9, 1980, Ser. No. 148,430

Int. Cl.^{3} F21B *19/06*

U.S. Cl. 24—263 D **11 Claims**



1. In a bowl and slips assembly having a plurality of tapered slip bodies with associated gripping inserts angularly spaced about the central axis of and mounted on a support bowl for movement between retracted and set positions with respect to a tapered opening in the bowl for the inserts to grip against the outside surface of tubing to support the latter upwardly in a well, the improvement in said assembly comprising a cantilever connection hang supporting each of said inserts from their respective slip bodies in a load bearing position so the reaction of forces through the assembly when supporting tubing places said slip bodies in compression, each of said connections including a top surface on said slip bodies and each of said inserts including an inner gripping surface and a lip projecting outwardly therefrom with said lips being in overlapping abutting engagement with said top surfaces of said slip bodies in said load bearing position, and with said inserts being substantially identical to each other and said inner gripping surfaces thereof being comprised of a plurality of vertically spaced, substantially parallel teeth, and said top surface of one slip body being offset vertically from said top surface of an adjacent slip body.

4,355,444

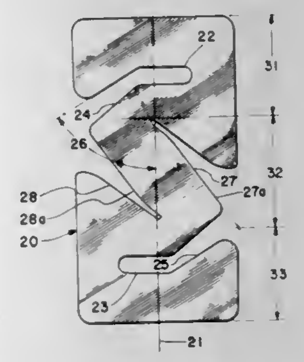
TIE CONNECTORS

Ivan L. Haney, 600 W. Orange, Greenville, Mich. 48838

Filed Mar. 28, 1980, Ser. No. 134,978

Int. Cl.^{3} F16G *11/04*

U.S. Cl. 24—129 B **2 Claims**



1. In combination with a flexible tension member, a connector plate having two longitudinally spaced apart connecting points establishing an axis of tension transmission, the improvement comprising:
  - one of said connecting points being formed by a laterally open, connecting point forming slot, in a side of said plate, at least the outer part of said slot being inclined to the axis of tension by an angle of less than ninety degrees, measured toward the other of said connecting points, said plate having a jam cleat forming, laterally open slot disposed in the side of the plate opposite to the side containing the connecting point forming slot, said jam cleat forming slot converging inwardly towards the axis of tension and being inclined relative to the axis of tension by an angle less than ninety degrees, measured toward the other of said connecting points, said jam cleat forming slot converging to a width less than the minimum transverse dimension of said tension member, whereby tension on said member tends to pull and jam said member into the converging inner portion of said jam cleat forming slot.

4,355,445

APPARATUS FOR PRODUCING INTERLACED MULTIFILAMENT YARNS

Tadayuki Matsumoto, Mishima; Kozo Imaeda, Shizuoka; Masatoshi Mineo, and Kiyoshi Nakagawa, both of Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

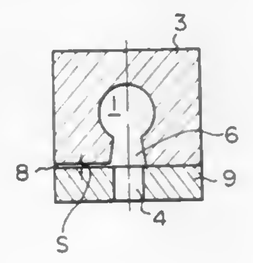
Continuation-in-part of Ser. No. 865,667, Dec. 29, 1977, abandoned, which is a division of Ser. No. 705,145, Jul. 14, 1976, Pat. No. 4,115,988. This application Dec. 14, 1979, Ser. No. 103,592

Claims priority, application Japan, Jul. 18, 1975, 50-87372

Int. Cl.^{3} D02J *1/08*

U.S. Cl. 28—274 **10 Claims**

1. An apparatus for producing an interlaced multifilament yarn comprising, in combination,
  - an interlacing nozzle having a hollow longitudinal space therein open at both ends thereof; at least one fluid conduit having an outlet for supplying a jetted fluid into said hollow longitudinal space; members defining a yarn passage of a material yarn in said hollow longitudinal space;
  - said fluid conduit being fixed with respect to said members defining said yarn passage; said interlacing nozzle being provided with a rectifying and diffusing portion formed between said hollow longitudinal space and said outlet of said fluid supply conduit;
  - said rectifying and diffusing portion being provided with a fluid ejecting aperture having a maximum width opening into said hollow longitudinal space;
  - wherein the maximum width T of the rectifying and diffusing portion, at the point where the fluid conduit encounters the rectifying and diffusing portion, and measured along a direction perpendicular to the axis of said yarn passage, is less than 1.25 times of the maximum width t of the fluid ejecting aperture which is directly opened to the yarn passage from said rectifying and diffusing portion, and measured along a direction perpendicular to the axis of said yarn passage, and also the axis of said fluid supply conduit is perpendicularly crossing the axis of said yarn passage, the height of said portion being h, with h being equal to 0.3 t to 20 t;
  - whereby said fluid coming from said fluid conduit is diffused in said rectifying and diffusing portion substantially in the direction of said axis of the yarn passage;
  - said nozzle having a thread-in slit for threading said yarn into said yarn passage; said slit extending from the point where said rectifying and diffusing portion meets said fluid conduit; and
  - said slit communicating with said portion;
  - the minimum distance from the top edge of said slit in said diffusing portion to the point where said yarn passage encounters said diffusing portion being at least 0.2×h.



4,355,446

AUTOMATIC TOOL CHANGER OF MACHINING CENTER

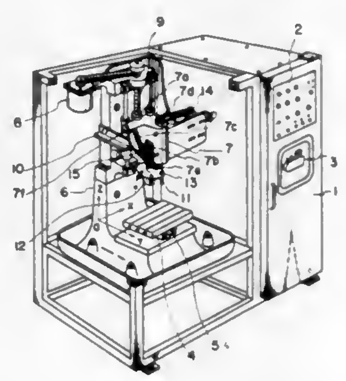
Tokiji Shimajiri, Kawasaki; Kenichi Toyoda, Hino, and Takahumi Yamazaki, Suita, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,794

Claims priority, application Japan, Oct. 14, 1978, 53/126373

Int. Cl.^{3} B23B *39/20;* B23Q *3/157*

U.S. Cl. 29—26 A **7 Claims**



1. An automatic tool changer of a vertical machining center of the type having a spindle carrier adapted to be moved up and down by a rotary drive source for spindle carrier drive, a

turret capable of rotational and upward and downward movement provided on the spindle carrier, a member for interconnecting the spindle carrier and the turret for relative movement with respect to each other, a turret drive shaft connected at one end to the spindle carrier and at the other end to the turret, and a restraining member for blocking the upward movement of the turret so that tools are automatically changed through rotation of the turret caused by the relative movement between the turret and spindle carrier when the upward movement of the turret is blocked by the restraining member, comprising:

speed signal generating means for generating an analog signal representative of a command speed for the vertical drive motor;

tachometer generator means for generating an analog signal representative of the actual speed of the vertical drive motor;

mixing circuit means connected to both the speed signal generating means and the tachometer generator means for generating a speed difference signal;

speed control circuit means responsive to the speed difference signal for driving the vertical drive motor so as to reduce the difference to zero;

pulse generator means for generating a feedback pulse whenever the vertical drive motor rotates through a predetermined angle;

down-counter means for receiving a number corresponding to a predetermined movement of the spindle carrier, the content of the down-counter means being down counted every time the feedback pulse generator means generates a feedback pulse; and

a monitor means for monitoring the content of the down-counter means and generating a speed changeover signal when the content reaches a predetermined value,

wherein the speed signal generating means is responsive to the speed changeover signal and reduces the command speed of the vertical drive motor when the speed changeover signal is generated.

4,355,447

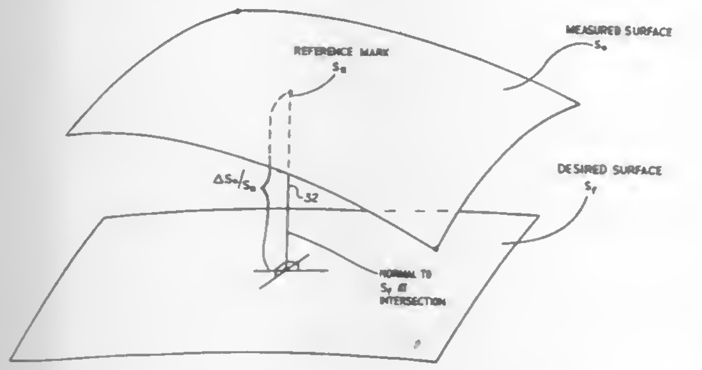
GAUGING SYSTEM FOR SCULPTURED SURFACES

Paul DiMatteo, Huntington; Robert Segnini, Stony Brook, and Paul Rademacher, Glen Head, all of N.Y., assignors to Solid Photography, Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 157,435, Jun. 9, 1980, Pat. No. 4,337,566. This application Nov. 6, 1980, Ser. No. 204,693

Int. Cl.³ B23Q *35/02*

U.S. Cl. 29—26 A **10 Claims**



1. A method for removing material from an object to provide a desired finished surface having at least a portion with a substantially small radius of curvature, comprising the steps of: cutting grooves into the object so that the bottoms of the grooves lie on the desired finished surface, said grooves having a shape so that the observed groove width at the prevailing surface of the object is dependent on the groove depth and thereby dependent on the amount of material remaining to be removed between the prevailing surface and the desired finished surface; observing and measuring the prevailing surface; calculating depths of material to be removed in a sequence of material removing steps dependent on measurements of the prevailing surface and desired finished surface; controlling the depth of material removed from said calculated step during each of said material removing steps; and carrying out said material removing steps in sequence so that after the completion of the last step the surface exposed on the object coincides with the desired finished surface; said grooves being cut at least in said portion having a radius of curvature sufficiently small below a predetermined magnitude for defining said desired finished surface with a predetermined accuracy.

4,355,448

TRIM AND PRODUCING METHOD THEREOF

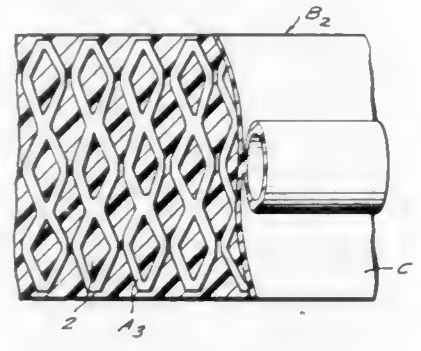
Sazo Ezaki, Bisai, Japan, assignor to Toyoda Gosei Co., Ltd., Nagoya, Japan

Filed Jul. 17, 1979, Ser. No. 58,385

Claims priority, application Japan, Jul. 17, 1978, 53-98073[U]; Apr. 30, 1979, 54-53618

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—413 **3 Claims**



1. A method for producing a channel-shaped trim including a core member embedded within a covering material and having a longitudinally extending opening for embracing and clamping an edge flange of a support member comprising the steps of:

preparing a band-shaped metal network comprised of a deformable material by forming a plurality of connecting portions and a plurality of lozenge shaped spaces which are linearly disposed in rows in both the longitudinal and transverse directions of the trim, respectively, each space being disposed between adjacent connecting portions in both the longitudinal and transverse directions of the trim;

forming predetermined ones of the connecting portions as weakened portions which are easily broken by bending stresses applied in a direction perpendicular to the longitudinal direction of the network;

said weakened portions being comprised of all connecting portions which are disposed in every other transversely extending row;

covering the network with a covering material to form a covered network;

applying bending stress to the covered network in a direction perpendicular to the longitudinal direction thereof to break the weakened connection portions thereby separating the network at predetermined locations along the length thereof; and

bending the covered network in the transverse direction to form a longitudinally extending channel-shaped opening in the trim and in the core member composed of the separated network embedded within the covering material.

4,355,449

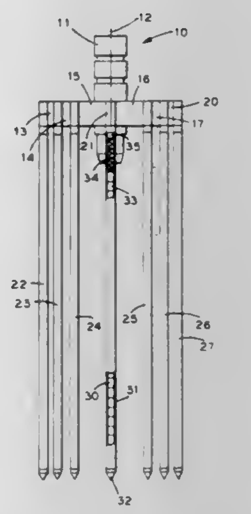
METHOD OF ASSEMBLING AND DISASSEMBLING A CONTROL COMPONENT STRUCTURE

Gerald T. Edwards, and Donald C. Schluderberg, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 952,523, Oct. 18, 1978, Pat. No. 4,314,885. This application Jun. 1, 1981, Ser. No. 269,188

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—426.2 **5 Claims**



1. A method of assembling and disassembling a control component structure for a nuclear reactor comprising the steps of; providing a spider having at least one arm having a bore formed therein, a burnable poison rod having an end cap with a larger diameter than the bore's diameter, and a flanged stem, inserting the stem in an axial direction into the spider bore until further insertion is precluded by a retaining force which is provided by the flange resting against the spider

affixing the inserted end of the stem to the burnable poison rod,

applying a force to the rod and stem in the axial direction with respect to the spider bore with sufficient force to overcome the retaining force by breaking the flange, and

withdrawing the stem from the spider bore while maintaining structural unity of the poison rod and maintaining structural unity of the spider.

4,355,450

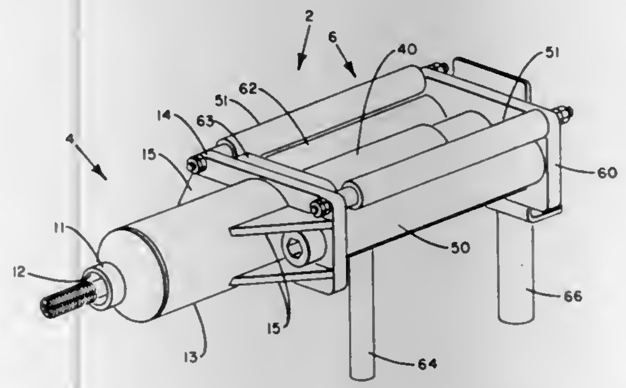
METHOD OF OPERATING A TUBE EXTRACTING MECHANISM

Charlie D. Miller, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 18,549, Mar. 8, 1979, Pat. No. 4,283,826, and a continuation-in-part of Ser. No. 907,239, May 18, 1978, abandoned. This application Jun. 1, 1981, Ser. No. 268,933

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—426.5 **3 Claims**



1. A method of operating a tube extracting apparatus to extract a tube from a tube sheet, the tube extracting apparatus including a longitudinally extending stationary frame, a movable frame connected to the stationary frame and having a mid plate located rearward thereof, a sleeve supported for longitudinal movement within the stationary frame and connected to a front side of the mid plate for unitary longitudinal movement therewith, radially expandable jaw means also supported for longitudinal movement within the stationary frame, expansion means extending within the jaw means, and expansion power means supported by the movable frame, extending through the mid plate and having a surface abutting against a back side thereof, and connected to the expansion means, the method comprising the steps of:

extending the expansion power means to move the expansion means forward relative to the stationary frame and to expand radially the jaw means into engagement with the tube;

engaging the jaw means with the sleeve for unitary longitudinal movement therewith; and

moving the mid plate rearward relative to the stationary frame to move the sleeve, the jaw means, the expansion power means, and the expansion means rearward, and thereby to pull the tube from the tube sheet.

4,355,451

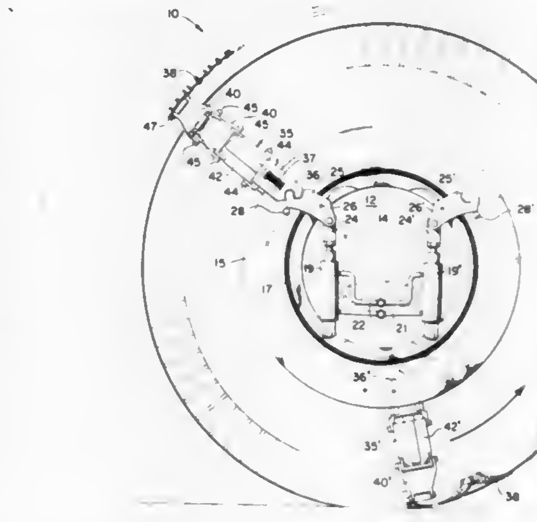
RETRACTABLE DEVICE AND METHOD FOR PROVIDING TRACTION

Marvin C. Thomas, Pinewood Springs, Lyons, Colo. 80504

Filed May 12, 1980, Ser. No. 148,874

Int. Cl.³ B23P *19/02, 19/04;* **B60C** *27/20, 27/14*

U.S. Cl. 29—426.6 **43 Claims**



1. A traction apparatus for a vehicle wheel, comprising:

mounting means adapted to be fixedly supported adjacent a rotatable vehicle wheel;

an outer assembly rotatably carried by the mounting means at a journal positioned substantially concentric to the rotation of the vehicle wheel;

a pair of deployment arms mounted on the outer assembly for concentric movement around the center of rotation of the journal and extending radially from the outer assembly;

an expandable and retractable track supported by the traction apparatus substantially by suspension between the ends of the two deployment arms;

means positioned substantially internally of the rotatable outer assembly to selectively drive the deployment arms in opposite rotational directions from a retracted to a deployed position and back to the retracted position; and

means to radially extend and retract the deployment arms as a function of the position thereof relative to the rotatable outer assembly, whereby the track may be encircled around the wheel by driving the deployment arms in one direction, and secured to the wheel by moving the deployment arms radially inward at such position, or, alternatively, the track may be retracted and stored by moving the track away from the wheel by radially extending the deployment arms and rotating the deployment arms to store the track in a retracted position.

25. A method of operating a traction device for a wheeled vehicle comprising:

mounting a fixed support adjacent a rotatable vehicle wheel, rotating an outer assembly concentrically with the rotation of the vehicle wheel around a journal between the outer assembly and the mounting means;

extending a length of track to encircle the vehicle wheel by moving a pair of deployment arms in opposite rotational directions around circular paths substantially concentric to the rotation of the outer assembly, the arms being moved by spring means bearing thereon;

moving the deployment arms radially inward to engage the attached track to the rotating wheel upon substantial completion of the encirclement thereof by the track; and

retracting the length of track by first moving the deployment arms radially outward and then in opposite rotational directions to compress and position the track at a position radially spaced from the rotating wheel, the spring means being compressed by latching one of the deployment arms to the fixed support and causing the rotating wheel to at least partially retract the track and compress the spring means.

4,355,452

METHOD OF FORMING A MOUNTING FOR A TANK COVER

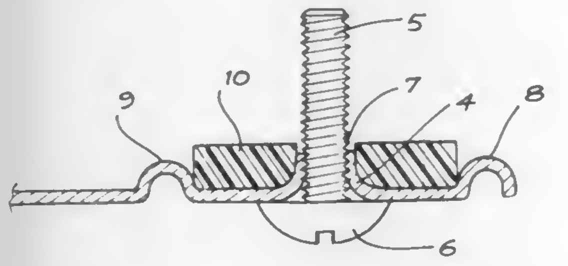
Raymond D. Massey, Cambridge Park, and Vincent Di Santo, Marrickville, both of Australia, assignors to Zip Heaters (Aust.) Pty. Limited, Marrickville, Australia

Filed Nov. 12, 1980, Ser. No. 206,223

Claims priority, application Australia, Nov. 19, 1979, PE1390

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—437 5 Claims



1. A method of forming a mounting for an inspection cover or the like in a sheet metal tank, said method comprising the steps of forming the desired opening in the sheet metal wall of said tank, bursting a plurality of holes through said sheet metal around the periphery of said opening, inserting headed, threaded fasteners into said holes so that the headed portions thereof lie on the opposite side of said sheet metal from the burst portions of said holes supporting said headed portions of said fasteners, pressing said burst portions inwardly to engage the threaded portions of said fasteners and pressing a reinforcing flange in said sheet metal around the periphery of said openings.

4,355,453

METHOD OF PROTECTING THE SURFACES OF CONCRETE STRUCTURES

Hans Pause, Ratingen, and Walter Stiller, Essen, both of Fed. Rep. of Germany, assignors to Philipp Holzmann Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 206,893

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948255

Int. Cl.³ B23P *3/00, 19/04*

U.S. Cl. 29—460 **10 Claims**

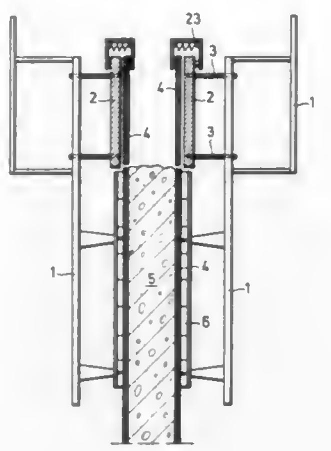
1. A method of constructing a poured concrete structure protected from corrosive agents comprising the steps of:

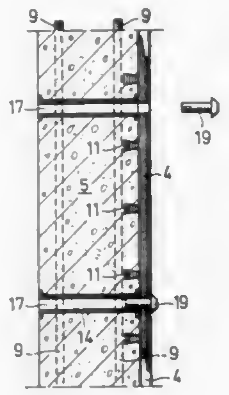
applying large surface sealing elements supported by a formwork and defining at least one surface having a component in an upright direction of said concrete structure before pouring said concrete;

overlapping perimeter areas of adjacent sealing elements to provide protection to the concrete from liquids flowing under gravity forces;

providing anchoring elements on said sealing elements extending into a region into which concrete for said structure is to be poured;

attaching climbing rails for a climbing formwork to said anchoring elements;





applying a sealing strip having a high modulus of elasticity and great resistance to corrosion in a region of said climbing rails;

pouring said concrete inside said sealing elements and said formwork; and

setting said concrete whereby said sealing elements become anchored to said structure by said anchoring elements in set concrete whereby said climbing formwork is movable on said rails to another higher position.

4,355,454

COATING DEVICE WITH AS_2-O_3-SIO_2

Al F. Tasch, Jr., Richardson, Tex., and Horng-Sen Fu, Sunnyvale, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 72,803, Sep. 5, 1979, Pat. No. 4,319,260. This application May 5, 1981, Ser. No. 260,579

Int. Cl.³ H01L *21/22, 21/283*

U.S. Cl. 29—571 **4 Claims**

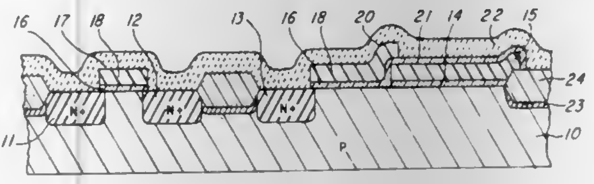
1. A method of making a semiconductor device comprising the steps of:

forming regions of another conductivity type in a substrate of one conductivity type;

forming an insulator layer on said substrate;

forming at least one layer of gates and gate interconnects on said insulating layer;

forming a multilevel interconnect system insulating layer of arsenic doped glass on said layer of gates and gate interconnects; and



reflowing said multilevel interconnect system insulating layer by heating said multilevel interconnect system insulating layer sufficiently to smooth said insulating layer.

4,355,455

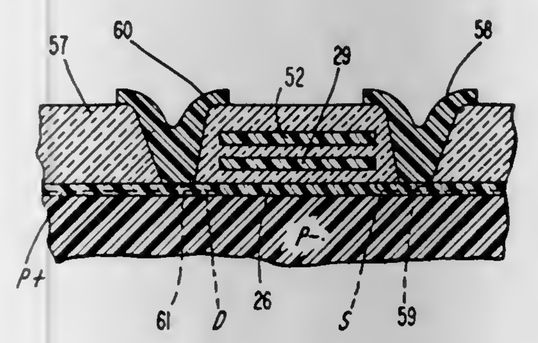
METHOD OF MANUFACTURE FOR SELF-ALIGNED FLOATING GATE MEMORY CELL

Charles E. Boettcher, Sandy, Utah, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 59,235, Jul. 19, 1979, Pat. No. 4,272,774. This application Nov. 17, 1980, Ser. No. 207,653

Int. Cl.³ H01L *21/22*

U.S. Cl. 29—571 **4 Claims**



1. In a method of producing a floating gate memory cell on a substrate of one conductivity type, the steps comprising:

forming insulation over the substrate,

forming a conductor over said insulation,

forming a pattern over said conductor,

preferentially etching the conductor with the pattern as a mask to leave the conductor as a partially formed floating gate defined in the direction transverse to the source-to-drain direction as coextensive with and overlapping the future channel region,

forming over said cell including said floating gate a further layer of insulation,

forming over said further insulation a second conductive layer,

etching said further layer by a pattern as a mask in the source-to-drain direction and by the same pattern as a mask removing sufficient insulation to expose unmasked conductor, and etching the unmasked portion of said conductor, thereby defining the said conductor as a floating gate which is coextensive with and overlapping the future channel in the source-to-drain direction, and

forming at one end of said channel region a source and at the opposite end of said channel region a drain, the source and drain surface regions being of opposite conductivity type from the substrate.

4,355,456

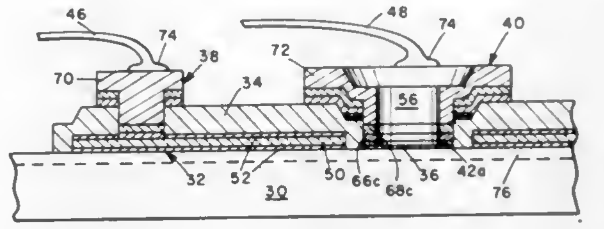
PROCESS OF FABRICATING A SCHOTTKY BARRIER PHOTOVOLTAIC DETECTOR

Gary L. Harnagel, La Verne; Gerry T. Laga, Placentia, both of Calif.; Joseph M. Harrison, San Dimas, all of Calif., and Victor A. Twaddell, Fairport, N.Y., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 128,325, Mar. 7, 1980, Pat. No. 4,319,258. This application Jul. 8, 1981, Ser. No. 281,258

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 2 Claims



1. A process of fabricating a Schottky barrier photovoltaic detector comprising the steps of:

slicing a wafer from a single crystalline cadmium sulfide ingot, the wafer having upper and lower substantially planar surfaces which are substantially perpendicular to the c-axis of the hexagonal crystal of the cadmium sulfide, the upper surface being the cadmium-rich side of the wafer;

lapping, polishing and etching the upper surface of the wafer to produce a substrate having a smooth upper surface and a lower surface;

depositing and delineating an infrared shield structure on the upper surface of the substrate, the shield structure having a first central window therein, including the steps of depositing a layer of titanium which is approximately 50 angstroms to approximately 5,000 angstroms thick, then a layer of gold which is approximately 500 angstroms to approximately 10,000 angstroms thick, followed by another layer of titanium which is approximately 50 angstroms to approximately 5,000 angstroms thick;

depositing and delineating an insulating layer which covers the infrared shield structure, the insulating layer being made of silicon dioxide and being approximately 500 angstroms to approximately 20,000 angstroms thick, the insulating layer having a second central window and a side window therein, the second central window being coincident with and slightly smaller than the first central window;

depositing and delineating a Schottky barrier metallization layer within the second central window so that it completely covers the portion of the upper surface of the substrate which is located therein, the Schottky barrier metallization layer being made of platinum and being approximately 5 angstroms to approximately 50 angstroms thick;

depositing and delineating a boundary layer which overlies the Schottky barrier metallization layer, the boundary layer being made of gold and being approximately 100 angstroms to approximately 300 angstroms thick;

depositing a contact adhesion layer made of titanium which is approximately 50 angstroms to approximately 5,000 angstroms thick, the contact adhesion layer covering the insulating layer;

depositing a contact metallization layer made of gold which is approximately 1,000 angstroms to approximately 2,000 angstroms thick, the contact metallization layer covering the contact adhesion layer;

electroplating barrier and ohmic contact pads made of gold within the second central window and the side central window so that the contact pads extend above the insulating layer;

etching away portions of the contact metallization layer, contact adhesion layer, and boundary layer to isolate the contact pads from each other and expose a major portion of the platinum Schottky barrier metallization layer located within the second central window; and

bonding the ends of a pair of gold lead wires to respective ones of the barrier and ohmic contact pads.

4,355,457

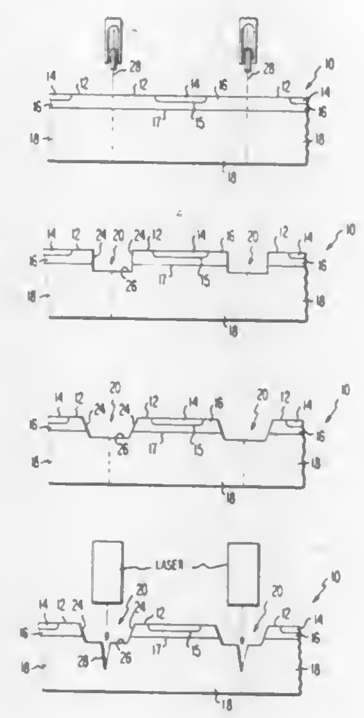
METHOD OF FORMING A MESA IN A SEMICONDUCTOR DEVICE WITH SUBSEQUENT SEPARATION INTO INDIVIDUAL DEVICES

Salvadore P. Barlett, Hazleton; Daniel J. Dougherty, Exeter, and Frederick P. Lokuta, Dupont, all of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,826

Int. Cl.^{3} H01L *21/78*

U.S. Cl. 29—583 **6 Claims**



1. A method of forming a mesa in a semiconductor device, said method comprising:

forming a plurality of semiconductor devices each having at least one PN junction on a wafer;

mechanically cutting a first set of relatively wide generally U-shaped channels extending in a first direction on opposite sides of each of said devices and cutting a second set of relatively wide generally U-shaped channels extending in a second direction generally perpendicular to the first direction on opposite other sides of each of said devices, said channels having a bottom generally planar surface located below said PN junction and a pair of generally planar mesa walls at which said junctions terminate;

etching said channels for a short time in a dilute etchant to smooth the channel surfaces and to provide a slight arcuate contour to each said mesa wall; and,

separating said devices from each other by breaking the wafer along the midline of said channels.

4,355,458

METHOD OF MAKING AN ELECTRICAL CONTROL

Lee O. Woods, Morrison, and Donald L. Haag, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 940,589, Sep. 8, 1978, Pat. No. 4,237,508. This application Jun. 5, 1980, Ser. No. 156,845

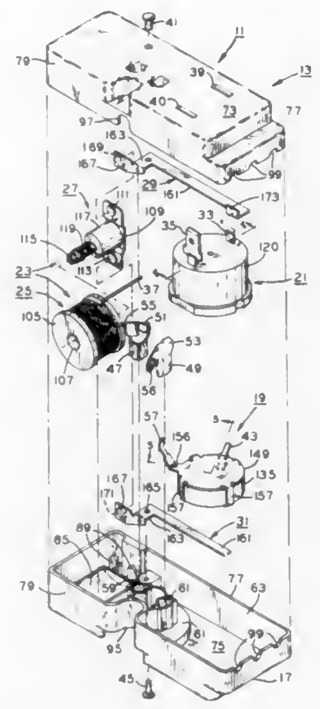
Int. Cl.^{3} H01F *41/00*

U.S. Cl. 29—602 R **8 Claims**

1. A method of making an electrical control having a pair of housing parts with at least a pair of openings in one of the housing parts and at least another opening in the other of the housing parts, and the electrical control also having a plurality of electrical components including at least a pair of female terminals, a solid state starter device having a PTCR interposed between a pair of contact plates, a relay device having coil means with an armature member adapted for magnetic coupling relation therewith, an overload protector device having at least a pair of terminal means, and a pair of contact members, the method comprising the steps of:

(a) connecting the female terminals of the at least pair thereof with the coil means of the relay device and one of the contact plates of the starter device, respectively, and also connecting the contact members with the other of the contact plates of the starter device and with the coil means of the relay device and one terminal means of the at least pair thereof on the overload protector device, respectively;

(b) mounting one of the contact members to the other housing part with the coil means of the relay device and the overload protector device connected to the one contact member and extending the other of the terminal means of the overload protector device through the another opening in the other housing part exteriorly thereof;



(c) mounting the other of the contact members to the one housing part with the starter device and one of the female terminals of the at least pair thereof respectively connected to the other contact member and inserting the one female terminal into one of the openings of the at least pair thereof in the one housing part;

(d) inserting the other female terminal of the at least pair thereof into the other of the openings of the at least pair thereof in the one housing part; and

(e) assembling the one housing part and the other of the housing parts together so that the overload protector device and the starter device are positioned adjacent each other and so that the contact members are positioned for contacting engagement with the armature means in the coil means of the relay device.

4,355,459

METHOD OF COILING A WIRE IN A TUBE

Teruo Takahashi, 7-42, 1-chome, Shimoizumi-cho, Niihama-shi, Ehime-ken, and Rintaro Ito, 8-11, 2-chome, Nakamura, Niihama-shi, Ehime-ken, both of Japan

Filed Mar. 10, 1980, Ser. No. 128,651

Claims priority, application Japan, Mar. 10, 1979, 54/028047

Int. Cl.^{3} H01F *41/06*

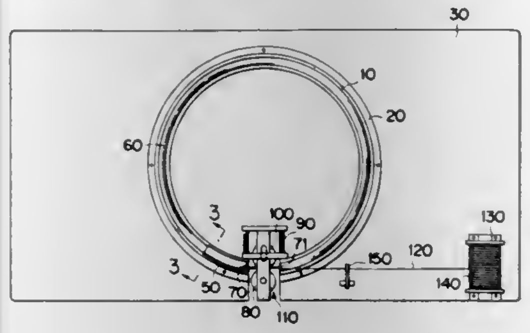
U.S. Cl. 29—605 **7 Claims**

1. Method of coiling a wire comprising:

positioning a hollow tubular member in a frame in such manner that the tubular member is held in a fixed position and a first gap is formed between first and second ends of the tubular member;

inserting a leading end of wire into the tubular member through the first end;

continuously feeding the wire into the tubular member by wire feeding means having a friction driving roll cooperating with a vibratory friction roll so that the leading end of the wire advances through the tubular member and wire enters the tubular member through the first gap, the leading end of the wire exiting from the second end of the tubular member and entering again the first end whereby continuous feeding of the wire forms a coil within the tubular member;



removing the tubular member and coil from the frame;

sliding a sleeve over an end of the tubular member prior to positioning the tubular member in the frame; and

sliding the sleeve with respect to the tubular member after formation of the coil so that the sleeve is moved into a covering position covering a portion of the coil located in the first gap.

4,355,460

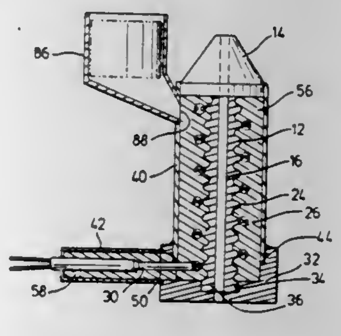
SPRUE BUSHING AND METHOD OF MANUFACTURE

Jobst U. Gellert, 233 Armstrong Ave., Georgetown, Ontario, Canada (L7G 4X5)

Continuation-in-part of Ser. No. 217,115, Dec. 17, 1980, abandoned. This application Feb. 17, 1981, Ser. No. 234,641

Int. Cl.^{3} H05B *3/00*

U.S. Cl. 29—611 **11 Claims**



1. A method of manufacturing an integral electrically heated sprue bushing having a hollow elongated inner core portion defining a central runner passage extending between an enlarged front portion and an enlarged back collar portion, a helical heating element encircling the inner core portion, a highly conductive elongated portion around the heating element, and an elongated outer sleeve portion over the conductive portion, comprising the steps of:

(a) manually assembling the heating element onto the core portion to extend between the front and back portions;

(b) securing an outer sleeve in a position to enclose a space around the heating element between the front and back portions to form an assembly with the space being sufficiently sealed to prevent substantial leakage;

(c) vacuum filling the space with a highly conductive molten material to provide the intermediate portion; and

(d) allowing the highly conductive material to cool sufficiently to solidify.

4,355,461

APPARATUS FOR HOLDING SLIDERS ON AN ANGULARLY MOVABLE INDEXING MEANS

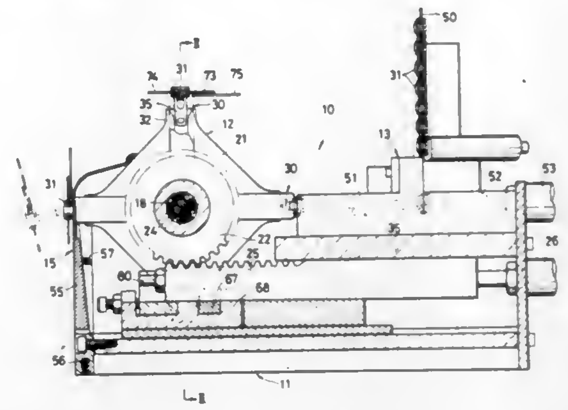
Hisashi Doori, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Japan

Filed Sep. 4, 1980, Ser. No. 184,028

Claims priority, application Japan, Sep. 7, 1979, 54-115388

Int. Cl.^{3} B23P *19/04*

U.S. Cl. 29—768 **12 Claims**



1. An apparatus for holding sliders for application to pairs of slide fastener stringers, comprising:

(a) a frame;

(b) an indexing plate having a plurality of angularly spaced supports each for carrying one slider and rotatably mounted on said frame, and means for intermittently indexing said plate to advance sliders carried on the respective support through at least three successive, angularly spaced positions, each of said slider supports having a slot receptive of the pull tab of the slider and a spring-biased ball normally urged toward said slot to partly enter therein;

(c) means for supplying sliders one at a time to said slider supports at a first position by inserting pull tabs of said sliders in said slots;

(d) a spring-biased presser mounted on said frame for normally urging into pressing engagement with said spring-biased ball of one of said slider supports at a succeeding second position for coaction therewith to lock the slider on said support, whereby a pair of slide fastener stringers can be threaded through the slider as locked; and

(e) means for successively removing the sliders from said supports at a succeeding third position.

4,355,462

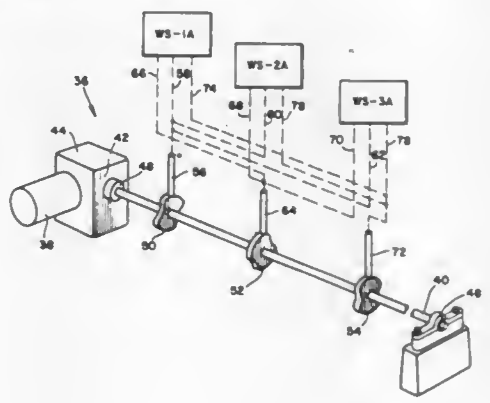
PROCESS MACHINE HAVING A SINGLE CAM ACTUATOR PER CATEGORY OF PROCESSING FUNCTION

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 4, 1980, Ser. No. 137,435

Int. Cl.^{3} B23P *19/00*

U.S. Cl. 29—791 **11 Claims**



1. Apparatus for performing a series of operations on a

workpiece at a plurality of spaced-apart workstations, comprising:

energizable drive means;

cam means having a plurality of rotatably mounted cams remote from at least one of said workstations, each of said cams being coupled to said drive means to provide a plurality of specific cam-shape related motions to each of said workstations when rotated by said drive means;

a plurality of movably mounted tools with at least one tool at each of said workstations, each tool movable between a displaced position where it does not interfere with workpiece movement and a work position where it can be actuated to perform a particular operation on a workpiece at a workstation; and

coupling means for coupling the motions provided by each of said cams to said workpiece for moving said workpiece into each of said plurality of workstations, for positioning said tools between their said displaced positions and their said work positions, and for actuating said tools when in their said work positions to perform said particular operation on said workpiece, with all of the cam motions that are needed to move a workpiece into a particular workstation, to position a tool for a subsequent operation on a workpiece at said particular workstation and to actuate a tool to perform said subsequent operation on a workpiece being provided by said cams to each of said workstations within a single cam means rotational cycle.

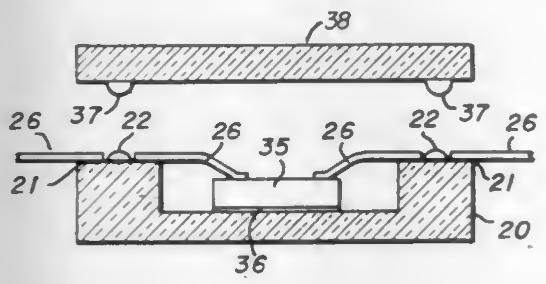
4,355,463
PROCESS FOR HERMETICALLY ENCAPSULATING SEMICONDUCTOR DEVICES

Carmen D. Burns, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 24, 1980, Ser. No. 133,053

Int. Cl.^{3} H01R *43/02*

U.S. Cl. 29—827 10 Claims



1. A tape assembly process for hermetically encapsulating semiconductive devices secured to a tape having a plurality of fingers defining a plurality of metal finger patterns, one pattern each for each semiconductive device, said finger patterns including an inner end arrayed to conform with the contact pads of the semiconductive device which is secured thereto, said process comprising the steps:

applying a series of conductive patterns around the periphery of a first ceramic part that is to become a portion of a housing for said semiconductive device, said conductive patterns being arrayed so that individual conductors register with said fingers in said finger patterns and radiate outward toward an outer edge of said first ceramic part;

applying a first ring of sealing glass over said conductive patterns so as to lie wholly within said conductive patterns which thereby extend on both sides of said first ring;

forming a metal ring on said metal finger pattern, thereby to mechanically join the fingers thereof together in each successive pattern on said tape, said metal ring having regions of mechanical weakness where it joins each finger and being shaped so as to conform with said first glass ring;

aligning said first ceramic part with respect to said tape so that said first glass ring is located in registry with said metal ring;

bonding said fingers in said patterns to said conductive patterns to secure adherence thereto, on both sides of said glass ring, whereby said metal ring lies over said glass ring;

removing said metal ring by stripping so as to break said regions of mechanical weakness, thereby exposing said first glass ring;

forming a second ceramic part that mates with said first ceramic part;

applying a second ring of sealing glass to the periphery of said second ceramic part to conform to said glass ring on said first ceramic part;

bringing said first and second ceramic parts together so that said first and second glass rings abut; and

sealing said first and second ceramic parts together by means of said first and second glass rings.

4,355,464
SHAVING APPARATUS

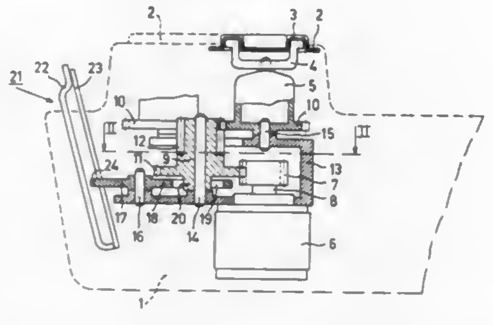
Wijtse Bergsma, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,972

Claims priority, application Netherlands, Oct. 18, 1979, 7907681

Int. Cl.^{3} B26B *19/00*

U.S. Cl. 30—34.1 1 Claim



1. A shaving apparatus which comprises a drivable shaving member; an electric motor having a motor shaft; a gear-wheel transmission coupling the shaving member to the electric motor, said gear-wheel transmission including a pinion mounted on the motor shaft, a gear-wheel connected to the shaving member, and an additional gear-wheel; a trimmer; and an eccentric mechanism coupling the trimmer to the electric motor; the additional gear-wheel being a double gear-wheel having a first toothing in mesh with the pinion on the motor shaft and a second toothing in mesh with the gear-wheel connected to the shaving member, said additional gear-wheel also having an eccentric cylindrical portion forming part of the eccentric mechanism.

4,355,465
HANDLES FOR HOUSEHOLD UTENSILS

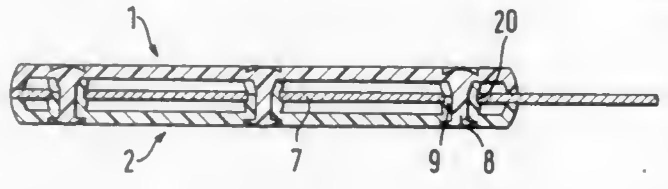
Gilbert Besson, Grenoble, France, assignor to A. Raymond, Lorrach, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,020

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939306

Int. Cl.^{3} B25G *3/00*

U.S. Cl. 30—344 3 Claims



1. In a handle made of plastic for an apertured support blade of a household utensil comprising: (a) two handle havles resting on both sides of the support blade and terminating flush with the blade rim, and (b) rivet elements to join the handle halves after the support blade has been inserted between them, the improvement wherein the rivet elements comprise at least two projecting rivet sockets formed as one piece with one of the handle halves and the same number of corresponding rivet pins formed as one piece with the other handle half, the outside diameter of the rivet sockets being such that they pass through the apertures of the support blade when the rivet pins are introduced into the rivet sockets, and wherein each rivet pin consists of three segments H_1, H_2 and H_3 of which the segment H_1 beginning at the inside wall of the handle half tapers down to a cross section corresponding to the inside diameter of the rivet socket, the next section H_2 remaining at this diameter and the third section H_3 ending in a tip which extends sufficiently beyond the rivet socket that it projects by an amount sufficient for clinching on the back side of said socket, and wherein each of said rivet sockets includes at least two slits uniformly distributed along its circumference and extending approximately from its center to its end face for facilitating expansion of the rivet socket when the tapered segment H_1 of the rivet pin is introduced into the rivet socket.

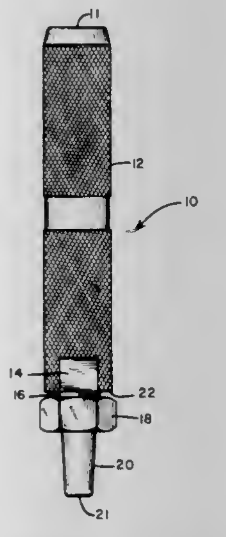
4,355,466
PUNCHING TOOL HAVING REPLACEABLE TIPS

Michael S. Quiring, 3100 Yukon Ave., North, Crystal, Minn. 55427

Filed Feb. 20, 1981, Ser. No. 236,142

Int. Cl.^{3} B26F *1/32*

U.S. Cl. 30—358 8 Claims



1. A punching tool adapted for accepting a plurality of punch tips, and a punch tip therefor, comprising:

(a) a punch body having a first end adapted for hammering, and having a second end formed into a decreasing conical taper;

(b) a threaded section on said punch body immediately adjacent said second end taper, and a nut threadably fastened only on said punch body for removing said tip by engagement of a facing surface of said nut with an end face of said punch tip; and

(c) said punch tip having a conical recess therein, the depth of said recess being greater than the length of said punch body taper.

4,355,467
METHOD AND APPARATUS FOR CHECKING PARTS OF A CONSTANT VELOCITY JOINT

Gastone Albertazzi, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S.Marino di Bentivoglio, Italy

Filed Nov. 24, 1980, Ser. No. 209,975

Claims priority, application Italy, Dec. 3, 1979, 3558 A/79

Int. Cl.^{3} G01B *7/28*

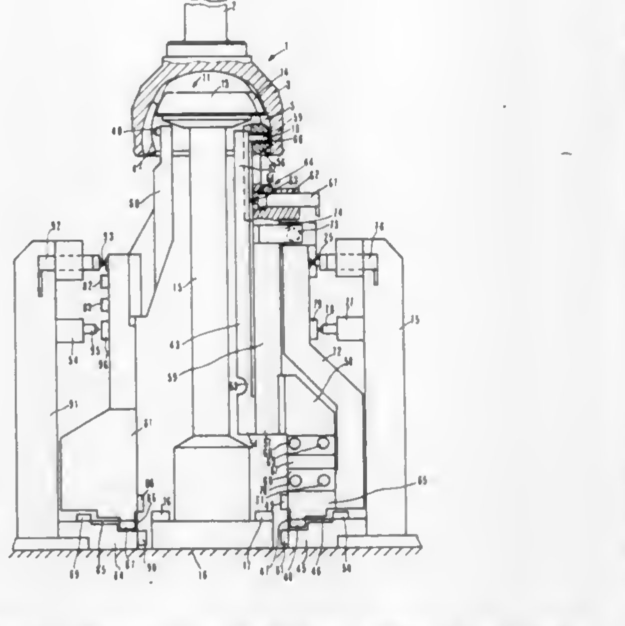
U.S. Cl. 33—143 L 11 Claims

8. Apparatus for checking a member of a constant velocity joint, the member defining a geometrical axis and ball races angularly spaced with respect to the geometrical axis, comprising:

a first support means for supporting the member;

a gauging means including a plurality of gauging heads for providing measurement signals representative of dimensions of the ball races in an equatorial plane of the ball races, said measurement signals depending on the positions of the centers of the races in said equatorial plane;

second support means coupled to the first support means for supporting the gauging means; and



processing means connected to the gauging heads for processing the measurement signals for defining said centers of the ball races and for determining the center of a circumference approximating the centers of the ball races, whereby this center provides a reference point for the member checking, said processing means being adapted to provide second signals representative of the distances of the centers of the ball races from said reference point and to provide a third signal representative of the mislocation of the ball races as the difference between the maximum and minimum values of said second signals.

4,355,468
MICROMETER

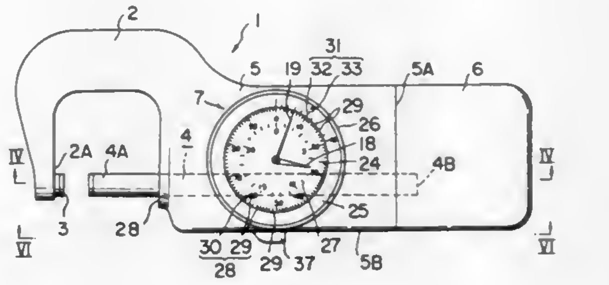
Ichiro Mizuno, and Masao Nakahara, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1981, Ser. No. 247,273

Claims priority, application Japan, Mar. 31, 1980, 55-42992[U]; May 14, 1980, 55-66051[U]

Int. Cl.^{3} G01B *5/02*

U.S. Cl. 33—147 F 6 Claims



1. A micrometer comprising a letter 'U' shaped frame, an anvil fixed on one end of said frame and directed to the other end thereof and a spindle supported on said frame in a manner to be axially movable from the other end to one end and, during measuring, the forward end thereof comes into abutting contact with an article being measured, characterized in that said micrometer further comprises; a body integral with the

frame; an arm connected to said spindle and projected outwardly from the body; a rack formed on said spindle in the axial direction thereof; a dial indicator driven by the spindle through pinions being meshed with said rack when the spindle moves in the axial direction thereof; and a control knob tiltably connected to the outer end of said arm and biased in one direction of tilting by means of a spring, whereby said control knob is pressed at one end thereof against the body side in the normal condition and, when said control knob is pressed at the other end against a biasing force of the spring, said control knob is brought out of contact from the body side.

4,355,469

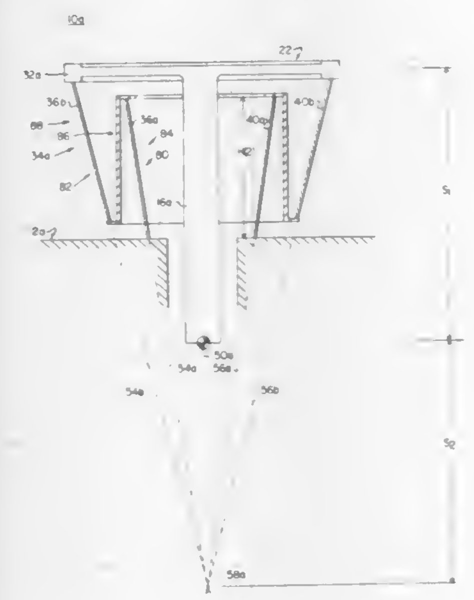
FOLDED REMOTE CENTER COMPLIANCE DEVICE

James L. Nevins, Burlington, and Joseph Padavano, Shrewsbury, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Nov. 28, 1980, Ser. No. 211,357

Int. Cl.^{3} G01B *5/25*

U.S. Cl. 33—185 R **9 Claims**



1. A folded remote center compliance device including first and second structures serially connected between a mounting member and an operator member for enabling translational motion and rotational motion of said operator member about a remote center at, near or beyond the end of said operator member; one of said structures including at least two stages connected in series, each stage including flexure means disposed along radii from a focus, a first of said stages being connected with the other of said structures and a second of said stages being connected with one of said members, the other of said members being connected with the other of said structures, and an intermediate section for interconnecting flexure means in adjacent stages.

4,355,470

EQUATORIAL SUNDIAL

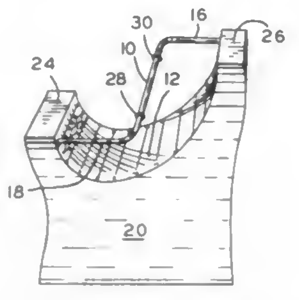
Timothy E. Doyle, 1010 Bell Ave., New Haven, Ind. 46774

Filed Jan. 12, 1981, Ser. No. 224,432

Int. Cl.^{3} G01C *17/34*

U.S. Cl. 33—270 **14 Claims**

1. A sundial comprising a dial surface and an elongated, rod-like gnomon fixedly secured in operative relation thereto, said surface having an upward curvature outwardly from the central portion as developed from a flat plane about a given axis, said gnomon paralleling said axis, said surface between its ends extending transversely of said gnomon at an obtuse angle therewith, whereby the opposite end portions of said surface



are offset in a direction parallel to said axis, and spaced time lines on said surface parallel to said axis.

4,355,471

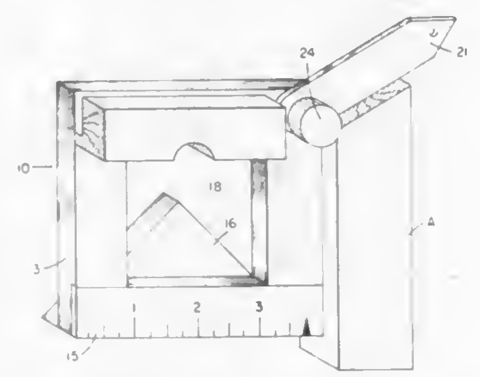
SQUAREANGLE

L. Allan Cross, Groveville, N.J., assignor to Richard M. McMahon, Baltimore, Md.

Filed Oct. 8, 1980, Ser. No. 195,244

Int. Cl.^{3} B43L *13/00*

U.S. Cl. 33—422 **13 Claims**



1. An integral, mobile combination drafting and carpentry device comprising:

a rigid square body bounded by four sides and having a front and back surface and having a square opening through said surfaces located precisely at the center of the said body;

a rigid triangle having forty-five degree angles at its base with the length of the triangle base being the same as one side of said body and secured to the back surface of said body with the triangle base parallel to and coextensive with the edge of said one side of said body;

a measuring scale on the front surface of said body and located near said one side and including a levelness reference mark located near another side which intersects said one side;

a rigid movable blade having a pointed end and being rotatably attached to said body front surface at the junction of said other side with a side that is parallel to said one side and said pointed end cooperating with said reference point;

a means of firmly holding said blade at any angle through its rotation.

4,355,472

DRAFTING AID

Richard Wedge, 11927 Venice Blvd., #4, Los Angeles, Calif. 90066

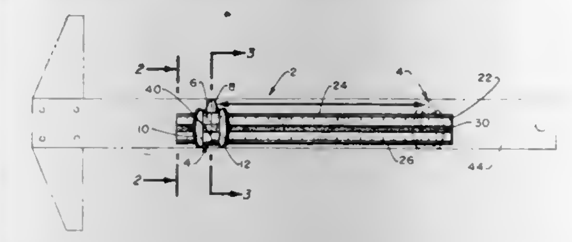
Filed Aug. 25, 1980, Ser. No. 180,646

Int. Cl.^{3} B43L *7/00*

U.S. Cl. 33—486 **9 Claims**

1. A drafting aid comprising the combination of:

a linear member having spaced, lateral, bead-like protuberances extending the length thereof, an integral member having an inside surface configuration defining spaced channels to receive said bead-like protuberances on said linear member for slidable movement in cooperation with said linear member and having a protuberance generally defining a normal reference relative to said linear member, and having cooperative means for fixed securement with said linear member, said cooperative means being normally disposed in the fixed securement position and releas-



able for linear movement of said integral member along the extent of said linear member, said cooperative means comprising upstanding ears having depending abutment stops that engage said linear member in high friction manner between said bead-like protuberances and wherein said cooperative means are flexible to disengage said abutment stops for sliding movement along the extent of said linear member.

4,355,473

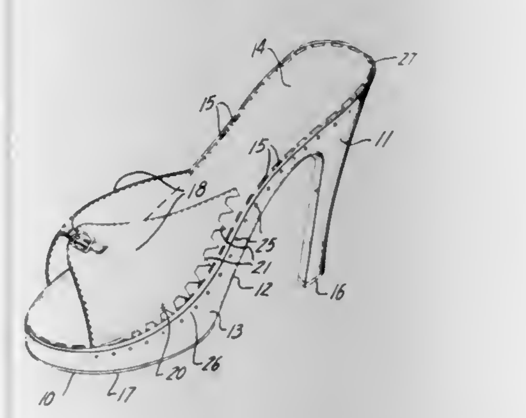
MOLDED SHOE

Zelik M. Ilitzky, Enrique Rodo 2986, Providencia, Guadalajara, Mexico

Filed Sep. 29, 1980, Ser. No. 191,674

Int. Cl.^{3} A43B *3/12, 23/00*

U.S. Cl. 36—11.5 **6 Claims**



1. A shoe comprising a molded lower portion having a platform, shank and heel, a plurality of slots in the top surface of said platform extending downwardly and adjacent the periphery thereof, an upper having depending sides, a plurality of sections extending downwardly from the edges of said depending sides, said sections adapted to be placed within said slots and means for securing said sections in said slots, wherein said slots are substantially V-shaped slots extending downwardly from said platform and having elongated openings extending along said periphery and said sections are substantially V-shaped.

4,355,474

ROLLER SKATE SOLE

Gary Grim, 1391 Poplar, Clarkston, Wash. 99403

Filed Jan. 12, 1981, Ser. No. 224,059

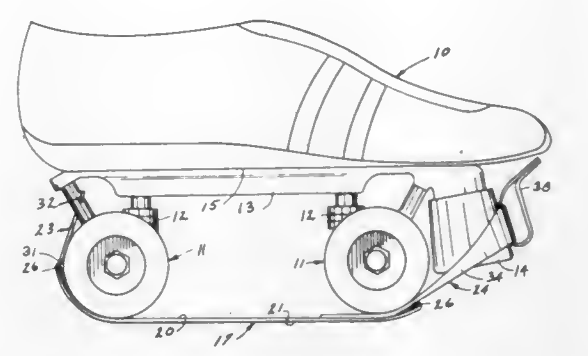
Int. Cl.^{3} A43B *5/00;* A63C *3/00*

U.S. Cl. 36—132 **16 Claims**

1. A movable flexible sole for releasable attachment to a roller skate having longitudinally spaced front and rear pairs of wheels at the respective front and rear ends of the skate to cover the wheels and hold them immobile and to allow relatively normal walking by one wearing the roller skate, said sole comprising:

an elongated sheet of flexible material having opposed ends and first and second opposed outer surfaces extending between said ends;

said sheet having a transverse width dimension greater than transverse spacing between paired wheels of the roller skate;



first and second releasable mounting means at the respective sheet ends for selectively attaching the sheet to the front and rear ends of the skate with the sheet taut and the first sheet surface engaging all wheels to hold them immobile and with the second sheet surface exposed outwardly as a supportive walking surface.

4,355,475

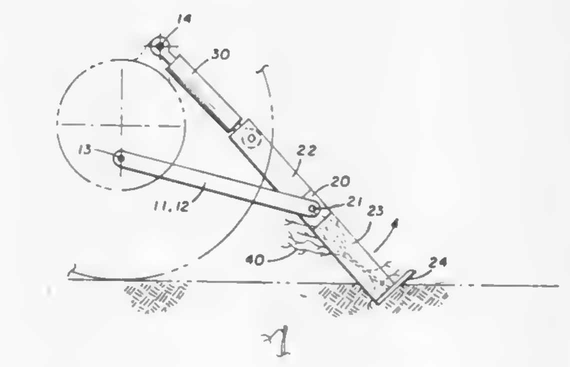
ROOT GRUBBING PLOW

Travis O. Harkness, Rte. 1, Box 95-A, Kaufman, Tex. 75142

Filed Oct. 28, 1980, Ser. No. 201,543

Int. Cl.^{3} A01B *13/00;* A01G *23/06*

U.S. Cl. 37—2 R **5 Claims**



1. A grubbing plow for extraction of vegetation from soil said plow being mounted to a vehicle by a 3-point hitch having two lower arms and an upper attachment point, said grubbing plow including means enabling the extraction of vegetation from the soil while said vehicle is maintained stationary comprising:

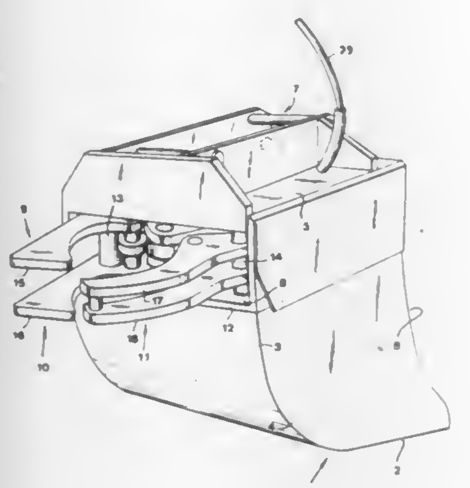
(a) a frame having a horizontal pivot bar journaled at opposite ends thereof on said lower arms and having an upper member and a lower member, said pivot bar being pivotally mounted for rotational movement about a horizontal axis, said upper and lower members being aligned and oppositely directed from said pivot bar;

(b) a knife-edged, V-shaped blade rigidly attached to the lower end of said lower member and lying in a plane perpendicular to the length of said lower member; and

(c) a double acting hydraulic cylinder connected between said upper attachment point and the upper end of said upper member for forcibly swinging said blade in an arc around the axis of said pivot bar, said double acting hydraulic cylinder moving said blade between a first position within the soil for engaging the vegetation to be grubbed through said arc to a second position for lifting and removing the vegetation from the soil, such that the vegetation is extracted from the soil by operation of said hydraulic cylinder swinging said blade through said arc while the vehicle is maintained stationary.

4,355,476
BUCKET ASSEMBLY

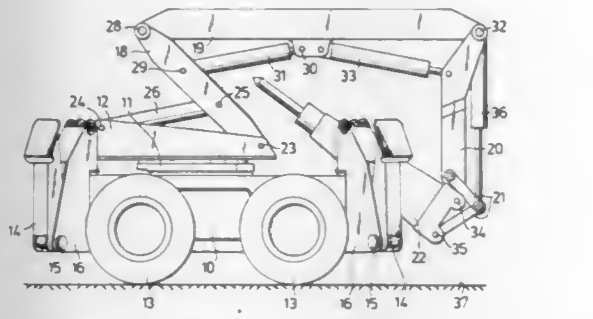
Lars G. Engkvist, Kilafors, Sweden, assignor to Soneruds Maskin Aktiebolag, Hudiksvall, Sweden
PCT No. PCT/SE80/00001, § 371 Date Sep. 3, 1980, § 102(e) Date Sep. 3, 1980, PCT Pub. No. WO80/01393, PCT Pub. Date Jul. 10, 1980
PCT Filed Jan. 3, 1980, Ser. No. 202,441
Claims priority, application Sweden, Jan. 3, 1979, 79000040
Int. Cl.³ E02F *3/76*
U.S. Cl. 37—117.5 **9 Claims**



1. A bucket assembly for excavators or loaders, comprising:
a bucket having walls defining a volume, and an opening coplanar with one of said walls; and
a gripping tool adapted to be movable between two positions, the first of said positions being entirely within said volume defined by said walls, and the second of said positions extending partially out of said volume through said opening.

4,355,477
WORKING MACHINE WITH IMPROVED JIB SECTION

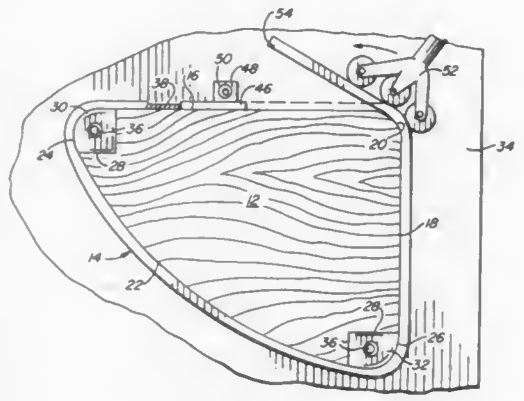
Lars Holmgren, and Per-Martin Holmgren, both of Skelleftea, Sweden, assignors to Aktiebolaget P. E. Holmgren, Skelleftea, Sweden
Filed Mar. 20, 1981, Ser. No. 246,066
Claims priority, application Sweden, Mar. 24, 1980, 8002258
Int. Cl.³ E02F *3/76*
U.S. Cl. 37—117.5 **6 Claims**



1. A working machine for such work as demolishing and excavating operations, comprising a chassis; an upper part arranged on said chassis for rotation about a substantially vertical axis; an arm arrangement carried by said upper part and consisting of a first, short jib section pivotally connected at one end thereof directly to said upper part, and a second, longer jib section pivotally connected at one end thereof to the free end of said first jib section; an intermediate arm pivotally connected at one end to the free end of said second jib section and carrying at the other end thereof a tool fitting; a first pressure cylinder device operative between said upper part and said first jib section; a second pressure cylinder device operative between said second jib section and said intermediate arm; a further pressure cylinder device operative between said first and said second jib sections; and means for controlling said first and said further pressure cylinder devices such that a given one of said devices can only be driven together with the other, whereat the arrangement of said first and said further cylinder devices is such that when they operate simultaneously they swing the jib sections at the same angular speed in opposite directions.

4,355,478
METHOD FOR MAKING FRAMED STRUCTURES

Joe W. Armstrong, 1229 E. Highland, Phoenix, Ariz. 85014
Filed Jun. 19, 1980, Ser. No. 160,977
Int. Cl.³ E06B *3/26;* B23B *3/26;* E06B *7/16;* B32B *3/26*
U.S. Cl. 40—154 **9 Claims**

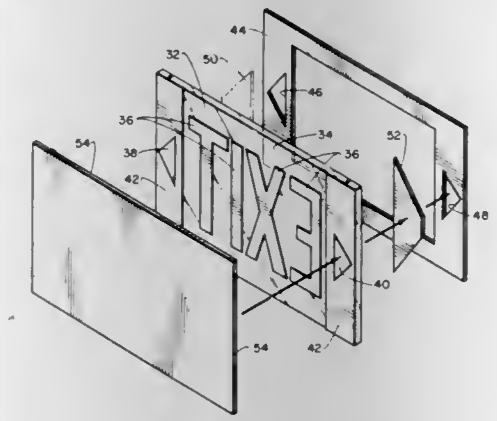


1. A method for making a rigid irregularly shaped metal frame and attaching a flexible sheet of material thereto, said method comprising the steps of:
(a) forming a planar pattern with a desired irregular peripheral configuration;
(b) sizing an elongated metal channel so that its length is equal to the peripheral dimension of said pattern, said metal channel having a groove extending along one of its longitudinal surfaces;
(c) heating said channel at predetermined locations along the length thereof;
(d) pressing said metal channel into demountable conformity with the irregular periphery of said pattern to bring the opposite ends of said channel into abutting engagement with each other and to form the groove of said metal channel into an endless groove which faces outwardly of said pattern:
(e) interconnecting the opposite ends of said metal channel to form a rigid endless metal frame of irregular configuration:
(f) removing said rigid endless metal frame from its position of conforming with the periphery of said pattern;
(g) placing a sheet of flexible material on a holding fixture which is provided with means for demountably gripping the edges of said sheet so that it is held in a stretched planar attitude:
(h) supporting said holding fixture on a support surface so that said sheet is in spaced parallel relationship with said supporting surface;
(i) placing said rigid endless metal frame in juxtaposed bearing engagement with one of the planar surfaces of said sheet of flexible material held in said holding fixture;
(j) exerting a force on said endless metal frame to holdingly deflect said sheet into contiguous engagement with said support surface to draw said sheet taut;
(k) releasing the edges of said sheet from said holding fixture;

(l) inserting the edges of said flexible sheet of material in the endless groove of said rigid endless metal frame; and
(m) wedging an elongated spline into the endless groove of said rigid metal frame atop the edges of said flexible sheet of material, said spline having means which form an interference fit with the endless groove of said rigid metal frame upon insertion therein.

4,355,479
SIGN CONSTRUCTION HAVING SELECTIVELY DISPLAYABLE DIRECTIONAL SIGNALS AND IMPROVED MOUNTING BRACKET

Arthur G. Thornton, 1312 Merona Pl., Anaheim, Calif. 92805
Filed Aug. 18, 1980, Ser. No. 179,046
Int. Cl.³ G09F *13/04, 7/00*
U.S. Cl. 40—570 **4 Claims**

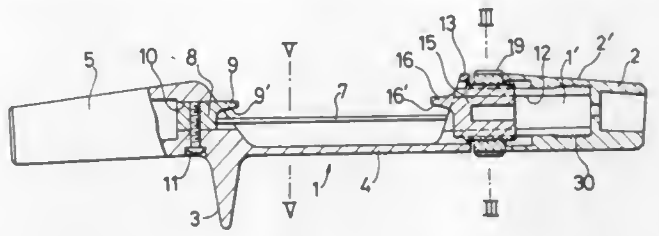


1. In a sign construction of the type having a box-like frame with a bordering flange defining a front face opening and a message plate enclosed by said frame displaying a message unit discernible forwardly through said frame front face opening; the improvements comprising: opaque opposite side border strips between said message plate and said frame bordering flange, said border strips extending oppositely inwardly along and forwardly of said message unit positioned therebetween, a directional signal opening formed through each of said border strips inwardly of said frame bordering flange; said message plate displaying contrasting coloration relative to said border strips through said directional signal openings of said border strips so as to be normally discernible forwardly through said directional signal openings; each of said directional signal openings of said border strips being formed in the pattern of a directional signal; selectively slideably removable cover strips overlying said message plate and underlying said border strips covering said directional signal openings of said border strips and of the same coloration as said border strips, said cover strips being selectively removable by sliding along said message plate from beneath said border strips without appreciably disturbing assembly of said message plate and border strips; whereby, when said cover strips are in assembly covering said border strips directional signal openings, said same coloration as said border strips prevents discernment of said directional signal openings, and when said cover strips are slideably removed, said message plate contrasting coloration display permits ready discernment of said directional signal openings.

4,355,480
REEL MOUNTING HANDLE

Yasomatsu Morishita, Kure, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan
Continuation of Ser. No. 10,444, Feb. 8, 1979, abandoned. This application Jul. 9, 1980, Ser. No. 167,079
Claims priority, application Japan, Feb. 8, 1978, 53-15493
Int. Cl.³ A01K *87/06*
U.S. Cl. 43—22 **4 Claims**

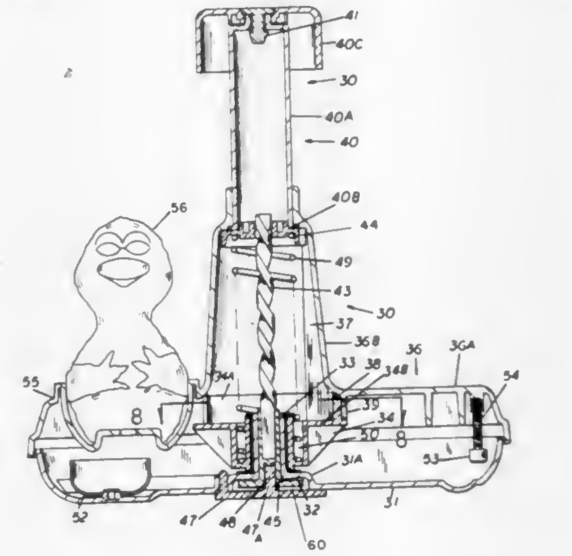
1. In a reel mounting handle including a gripper at its rear portion, a reel mounting portion at its intermediate portion, and a rod holder at its front portion, said reel mounting portion being formed with groove to mount a reel foot thereon, the improvement comprising:
(a) a stationary member disposed at a front end of the gripper to secure one end of the reel foot, said stationary member having a hook at its front end,
(b) a movable member slidably disposed in a front portion of the reel mounting portion to secure the other end of the reel foot,
(c) a guide member positioned at the front portion of the reel mounting portion, and adapted to enclosed guide the movable member for sliding movement, and
(d) a sleeve rotatably disposed in the front portion, the movable member being of cruciform shape in cross section and having major and minor generally rectangular projections



and a reel foot holder formed integrally therewith, the major projections extending outwardly of the guide member to engage the sleeve, the minor projections being guided within the guide member and preventing relative rotation between the movable member and the guide member, the guide member being formed substantially along the entire length of said front portion with a bore having a cruciform shape complementary to that of the movable member, said bore being open rearwardly toward the reel mounting portion for removal and insertion of the movable member therethrough, the upper and lower portions of the bore being opened along the length thereof such that the major projections extend outwardly of the openings.

4,355,481
MECHANICAL CAROUSEL TOP

John Joslyn, Bayview Ave., Sag Harbor, Long Island, N.Y. 11963
Filed Jan. 12, 1981, Ser. No. 224,393
Int. Cl.³ A63H *1/06*
U.S. Cl. 46—68 **7 Claims**



1. A carousel top comprising a base member for supporting said top on a supporting surface, an upper frame member connected to said base member, said upper frame member having opposed leg portions extending upwardly from said base member and a cross member interconnected between said leg portions, a turn table rotatably mounted on said base mem-

ber, a clutch housing connected to said turn table, said turn table being spaced above said base member, audio sounding means connected to the leg portion of said upper frame member adjacent to the periphery of said turn table, a clutch member disposed in said housing, a driver in the form of a twist bar extending through said clutch member, said driver extending above said cross member and disposed in alignment with said clutch member, a spring means for normally biasing said driver toward an inoperative position, said twist bar being longitudinally displaceable relative to said clutch whereby it effects engagement of said clutch in one direction of displacement to effect the drive of said turn table, and to disengage said clutch when displaced in the opposite direction to render said turn table free wheeling, a striker mounted on said turn table to strike said audio sounding means as said table rotates, and detachable animated figures carried on said turn table.

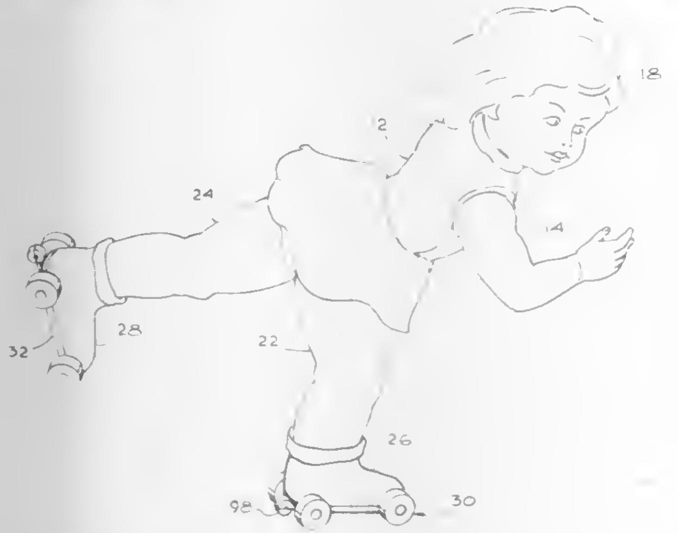
4,355,482
SKATING DOLL

Jurgis Sapkus, Manhattan Beach; J. Stephen Lewis, Pacific Palisades, and Toshio Yamasaki, Long Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 26, 1980, Ser. No. 210,454

Int. Cl.^{3} A63H *11/00, 30/04*

U.S. Cl. 46—106 **2 Claims**



1. A skating doll comprising in combination:

a body including a head and a pair of arms;

a pair of legs;

means for pivotably attaching the legs to the body;

a pair of feet;

means for attaching each said foot to the lower end of a respective leg;

a skate affixed to the bottom of each foot, each skate having at least three spaced apart wheels rotatably mounted thereon;

drive means operatively coupled to each skate and located adjacent each skate for driving at least one of the skate wheels;

means for powering the drive means for each skate, and

in which the means for pivotably attaching the legs to the body includes means rotatably coupling the upper ends of the legs to the lower portion of the body about an axis oriented so that the legs may be rotated toward the front or rear of the body, and which further includes leg detent means for locking the legs in predetermined rotational positions relative to the body, and the means for attaching the feet to the legs includes means rotatably coupling the upper end of at least one said foot to the lower end of the adjoining leg about an axis parallel to the skating surface and oriented so that the one foot may be rotated thereabout toward the left or right of the body, and which further includes foot detent means for locking the one foot in predetermined rotational positions relative to the adjoining leg, whereby rotating the legs and the one foot of the skating doll to the predetermined positions allows the doll to balance on the one foot.

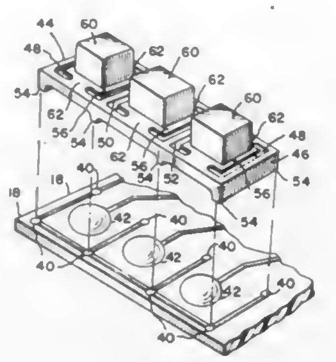
4,355,483
SWITCH MECHANISM

Donald G. Korzelius, Darien, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,583

Int. Cl.^{3} A63H *33/26;* **H01H** *3/12*

U.S. Cl. 46—232 **11 Claims**



1. A switch mechanism comprising a body of resilient, electrically conductive material having a base with an opening therein and a bridge across said opening, said bridge having a push button portion and webs flexurally connecting said push button portion to said base for reciprocal movement when pushed, a wall having an aperture therein, a member having a plurality of fixed electrical contacts thereon, said body being disposed between said wall and said member with said push button projecting through said aperture, means for positioning said base and push button in alignment with said member and with different ones of said plurality of contacts to make a connection there between when said button is pressed and to break said connection when said button is released.

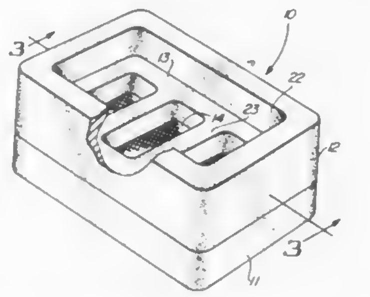
4,355,484
HYDROPONIC TRAY AND METHOD OF MANUFACTURE

Theodore O. Mandish, Rte. 2, Box 184, Titusville, Fla. 32780

Filed Sep. 8, 1981, Ser. No. 299,806

Int. Cl.^{3} A01G *31/02*

U.S. Cl. 47—58 **14 Claims**



1. A method of making a floating hydroponic apparatus having a tray with a floating base portion and a tray portion comprising the steps of:

mixing foamed polymer beads and cement;

mixing the foamed polymer beads and cement with water;

molding a hydroponic tray having a floating base portion and a tray portion and a screen attached between the base portion and tray portion and having the tray portion open through to the base portion;

dipping said tray portion in an acidic solution; and

coating at least a portion of said tray with an alkaline resistant coating.

4,355,485
STACKING CONTAINERS

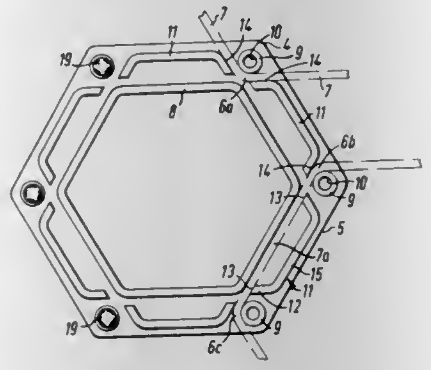
Peter A. Frank, 46/47 Frith St., London W1, England

Filed Aug. 15, 1980, Ser. No. 178,477

Claims priority, application United Kingdom, Aug. 15, 1979, 7928478

Int. Cl.^{3} A01G *9/02*

U.S. Cl. 47—82 **5 Claims**



1. A stackable container having an open upper end, an underside with projections thereon adapted to cooperate with an edge of the upper end of a similar container, at least the upper and lower ends of the container being polygonal in plan view and said projections on the underside comprising:

(a) an essentially polygonal projection having the same number of sides as the polygonal lower end of the container, the sides of said projection being parallel to respective sides of the container and spaced inwardly therefrom;

(b) a plurality of corner projections between respective bottom corners of the container and adjacent corners of said polygonal projection, said corner projections having drain holes formed therethrough with removable plugging means and

(c) further projections at positions between the polygonal projection and the bottom edges of the container and spaced from said corner projections, said further projections being spaced from said polygonal projection by at least the thickness of the upper edges of the container and said further projections and said corner projections defining between them channels corresponding in shape to the corners of the upper edge of the container, whereby a plurality of such containers can be stacked one above the other in a horizontally staggered corner-to-corner or edge-to-edge formation with each upper container having at least one said drain hole opening into a lower one when its respective plugging means is removed.

4,355,486
SLIDABLE DOOR ASSEMBLY

Edward F. Sherwood, Gettysburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 23, 1980, Ser. No. 171,587

Int. Cl.^{3} E05D *13/02*

U.S. Cl. 49—409 **3 Claims**

1. An arrangement for limiting the forces applied to spaced hanger rollers and spaced up-thrust rollers associated with a slidable door assembly, which provide the normal support and normal up-thrust protection, respectively, for the door assembly, comprising:

a structure defining a door opening,

a hanger plate having a pair of spaced hanger rollers and a pair of spaced up-thrust rollers mounted thereon,

a support assembly for said hanger plate disposed above said door opening,

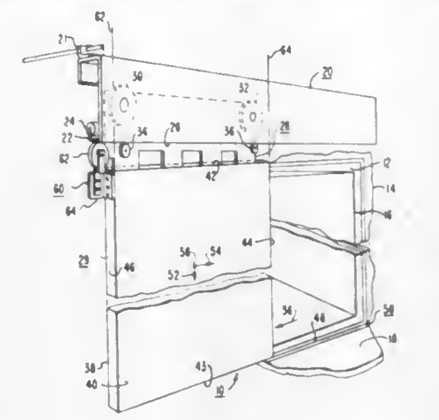
said support assembly including a hanger roller track on which the hanger rollers of said hanger plate travel, and a horizontally oriented guide surface for cooperating with said up-thrust rollers,

a door panel having top, bottom, and first and second side edges,

means fixing said door panel to said hanger plate such that predetermined movement of said hanger plate relative to said support assembly causes said door panel to move between open and closed positions relative to the door opening, with the first and second side edges of the door panel being leading and trailing edges, respectively, as said door panel moves from its open to its closed position, and

door stabilizer means fixed to said door panel, adjacent to its trailing edge,

said door stabilizer means including a stabilizer roller whose rotational axis is: (a) spaced from the trailing edge of the door panel, (b) outside the vertical projection of the door panel, (c) outside the spacing between the pair of spaced hanger rollers, and (d) outside the spacing between the pair of spaced upthrust rollers, said stabilizer roller cooperating with the horizontally oriented guide surface of said support assembly when a predetermined force is applied to the leading edge of said door panel, with said roller contacting said guide surface, at least during the application of the predetermined force, to limit the forces applied to said up-thrust and hanger rollers and prevent said hanger rollers from being displaced from the hanger roller track.



4,355,487
AIR-POWERED SANDER

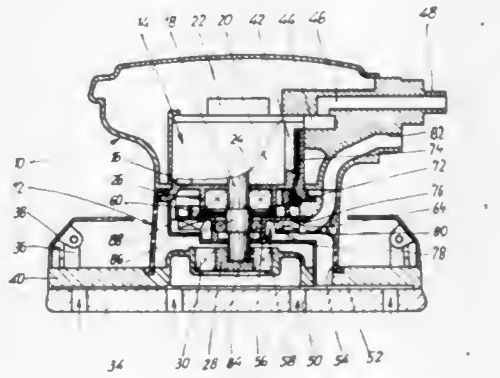
Peter Maier, Gerokstrasse 1, 7311 Neidlingen/Teck, and Dieter Tschacher, Hohenzollernstrasse 4, 7313 Reichenbach, both of Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,035

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003805

Int. Cl.^{3} B24B *55/06, 23/00*

U.S. Cl. 51—170 MT **11 Claims**



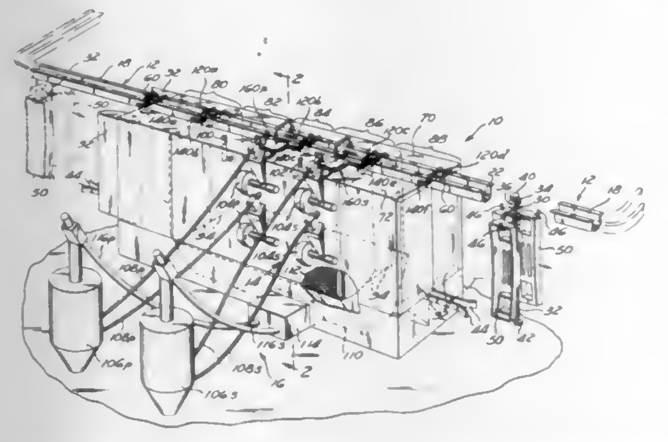
1. In an air-powered sander with a housing, with a compressed air motor within said housing, with a pad movingly joined to said housing and designed to be moved by said motor for sanding a workpiece, and with a dust clearing system for dust produced on working with said sander, the improvement comprising wherein said sander further has an impellor wheel

freely turningly bearinged in said housing and having first and second groups of blades thereon, a structure of said housing enclosing an input airway to said motor, a further structure of said housing forming an air nozzle joined with said input airway and designed for producing an air jet blowing against said first group of blades, a further structure of said housing forming a dust take-up airway extending from a position near said pad to a position near radially inner ends of said second group of blades on said wheel, and forming a dust output airway extending from radially outer ends of said second group blades to a point at which said dust may be forced out of said housing in an air current as produced by said impellor wheel.

4,355,488
CRYOGENIC DEFLASHING METHOD

Robert E. Schmitz, Santa Ana; David T. Stearns, Turtle Rock; Erwin Stegmann, Tustin, all of Calif.; Thomas E. McWhorter, Whitehall; Warren F. Geiger, Ft. Washington, both of Pa., and Thomas J. Abrahamsen, Kloster, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 14, 1980, Ser. No. 111,783
Int. Cl.^{3} B24B *1/00*
U.S. Cl. 51—319 1 Claim

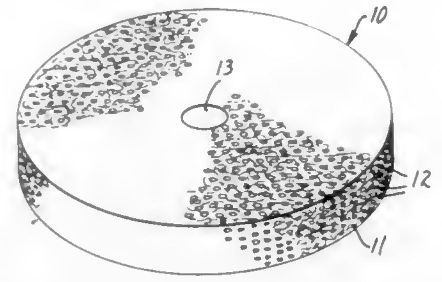


1. A method of optimizing the continuous cryogenic removal of residual flash from molded articles comprising the sequential steps of:
(1) transporting said molded articles into an isolated entry station in a housing to serve as a buffer region to prevent interaction between the ambient air and a cryogenic environment;
(2) transporting said molded articles from said entry station into a pre-freezing station in said housing maintained at a pressure higher than ambient atmospheric pressure to hinder ambient air from traveling into said pre-freezing station and a cryogenic temperature to embrittle said residual flash;
(3) transporting said molded articles from said pre-freezing station to a first deflashing station maintained at the higher pressure of said pre-freezing station and dispersing a first deflashing media at a high velocity to impinge against said molded articles, said media being of a first size sufficient to remove the majority of said embrittled residual flash on said article;
(4) transporting said molded articles from said first deflashing station to a second deflashing station maintained at said higher pressure and dispersing a second deflashing media at a high velocity to impinge against said molded articles, said media being of a second size smaller than said first size to remove the remaining embrittled residual flash on said articles; and
(5) transporting said deflashed articles from the second deflashing station to an exit station isolated from the cryogenic environment and the ambient atmosphere.

4,355,489
ABRASIVE ARTICLE COMPRISING ABRASIVE AGGLOMERATES SUPPORTED IN A FIBROUS MATRIX

Raymond F. Heyer, and William R. Lovness, both of Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Sep. 15, 1980, Ser. No. 186,470
Int. Cl.^{3} B24D *11/00*
U.S. Cl. 51—400 13 Claims

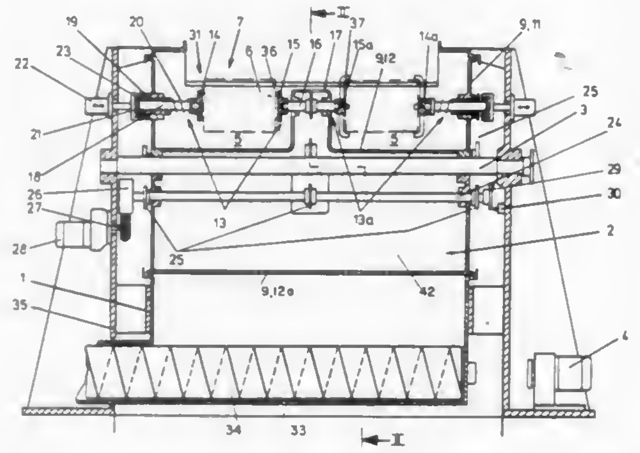


1. An abrasive article comprising:
a matrix comprising undulated filaments bonded at points of mutual contact; and
a plurality of separated abrasive agglomerates at least 2 mm in average particle size distributed within said matrix, said abrasive agglomerates comprising abrasive particles bonded together with a bonding agent to provide an abrasive particle to bonding agent weight ratio of about 1:1–20:1.

4,355,490
MULTISTATION BLAST PROCESSING APPARATUS

Henri G. Lepere, Schaffhausen, and Wolfgang Walter, Hallau, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Jun. 24, 1980, Ser. No. 162,573
Claims priority, application Switzerland, Jun. 29, 1979, 6090/79
Int. Cl.^{3} B24C *3/18, 9/00*
U.S. Cl. 51—419 9 Claims

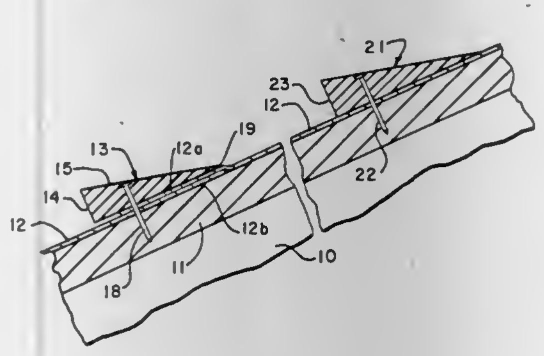


1. A multistation blast processing apparatus comprising
a blast housing having a generally cylindrical shape, a generally horizontal axis and an open side located at the upper part of said housing;
workpiece conveying means rotatable about said generally horizontal axis for supporting a plurality of workpieces, said conveying means including
a plurality of walls for separating the interior of said housing into at least two chambers, said chambers being rotatable to be sequentially positionable at a loading and unloading station at said open side of said housing and to at least one blast processing station within said housing,
a driven shaft operatively associated with each said chamber, said shaft being translatable as said chambers are rotated, and
holding means at each of said chambers for clamping at least one workpiece therein, each of said holding means being rotatable to rotate said at least one workpiece about an axis generally parallel with the axis of rotation of said conveying means;
means on said housing for propelling a blasting agent toward a workpiece at said at least one blast processing station;
a control disc on each of said driven shafts; and
control means mounted on said housing and engageable by said control disc for stopping said driven shafts in a predetermined position.

4,355,491
ROOF CONSTRUCTION AND METHOD

Otis M. Martin, 5624 Bodie Ct., San Jose, Calif. 95123, and John K. Kough, Morgan Hill, Calif., assignors to Otis M. Martin, San Jose, Calif.

Filed Aug. 18, 1980, Ser. No. 178,727
Int. Cl.^{3} E04D *1/36, 3/362*
U.S. Cl. 52—540 15 Claims



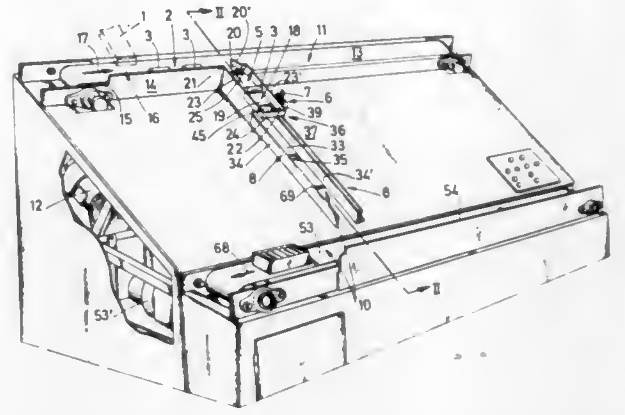
1. In a roof construction applicable to an inclined roof structure, strips of roofing composition applied to the structure in courses extending generally horizontally along the structure with the lower edge margin of each strip being disposed in overlapping contact with the upper edge margin of the next lower strip, and elongate members providing shadow line forming surfaces extending in spaced parallel relation along the structure, each of said members being applied over one of the joints formed by the overlapping edge portions of the composition strips and over the lower edge of the uppermost strip at the joint.

4,355,492
APPARATUS FOR AUTOMATICALLY BOXING CYLINDRICAL GOODS

Angel E. Torrenteras, Avenue du Roi Albert, 176, and Antonio E. Torrenteras, Kruipweg, 66, both of Brussels, Belgium

Filed Mar. 14, 1980, Ser. No. 130,333
Claims priority, application Belgium, Mar. 16, 1979, 0/194069; Nov. 5, 1979, 0/197970
Int. Cl.^{3} B65B *5/10, 57/20*
U.S. Cl. 53—58 29 Claims

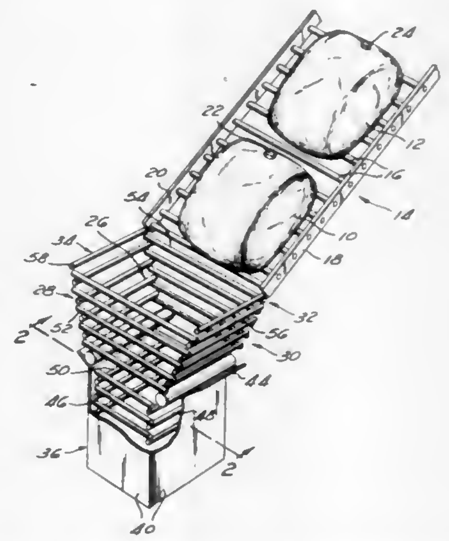
1. Apparatus for automatically boxing cylindrical goods, particularly a plurality of uniformly-dimensioned cylindrical rolls of coins fed by at least one machine producing such cylindrical goods, which apparatus comprises:
means to longitudinally align a plurality of individuals of said goods and to move them in said aligned condition in parallel with said axis;
means to change the movement direction of said goods and to align a plurality of them by gravity with the longitudinal axes thereof in parallel relationship and to move said goods at a right angle to said axes;
means to arrange one-by-one a plurality of empty prefabricated boxes on the goods path as said goods move by gravity at a right angle to the axes thereof;
means to immobilize, temporarily, each said box during the filling thereof;
means controlled by a counting mechanism driven by the passage of said goods, and so arranged as to release by gravity each respective, resultingly filled box and to operate said arranging and temporarily immobilizing means to replace the respective resultingly filled box by an empty box;
means to discharge the filled box;
said means for aligning the goods along the axis thereof and for moving same in aligned condition in parallel relationship therewith being comprised of an endless belt driven with a continuous motion, on the top side of which individuals of the goods from said machine are dumped one at a time, the lengthwise axis of said belt side lying in a horizontal plane and the belt side making an angle therewith, and a guide extending in parallel relationship with said lengthwise axis of the belt side adjacent the belt side edge lying underneath said horizontal plane, said guide projecting over a distance at least equal to the radius of said individuals of said goods, relative to the belt side and extending on either side of that location where the goods are dumped.



4,355,493
ROLLER CHUTE

Roger H. Ellert, San Clemente, Calif., assignor to Scholle Corporation, Irvine, Calif.

Filed Jun. 17, 1980, Ser. No. 160,556
Int. Cl.^{3} B65B *39/00, 5/04*
U.S. Cl. 53—113 2 Claims



1. A roller chute for packaging a flexible bag filled with liquid in a container having an open top and sidewalls, comprising:
four stacks of rotatably supported, vertically spaced rollers, each of said stacks forming one of four sides of said chute, and each of said stacks having an upper portion and a

lower portion, said lower portion stacks being oriented vertically;

said upper portion stacks extending upward above respective lower portion stacks, at least one opposing pair of said upper portion stacks inclined relative to the corresponding pair of said lower portion stacks to form a funnel-like opening for guiding said flexible containers into the opening formed by said lower portion stacks, said inclined pair of upper portion stacks forming a junction with the corresponding pair of said lower portion stacks; and

a pair of power driven rollers for urging said flexible bag into said container, said rollers located at said junction to maximize the contact area between said rollers and said flexible bag as said bag is urged to said container by said rollers.

4,355,494

RECLOSABLE BAGS, APPARATUS AND METHOD

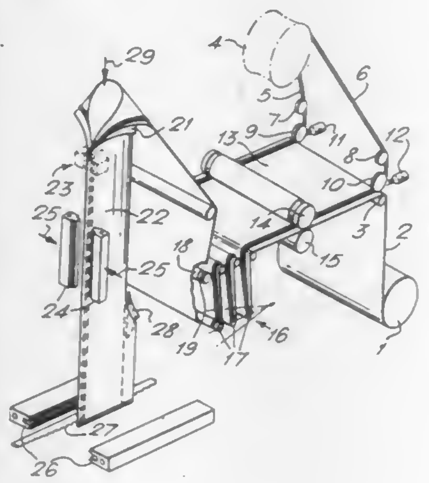
Paul A. Tilman, Canvey Island, England, assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,755

Claims priority, application United Kingdom, Aug. 6, 1979, 7927390

Int. Cl.^{3} **B65B** *61/00, 9/12*

U.S. Cl. 53—416 19 Claims



1. A method including the steps of making and shaping a permanent assembly of bag making plastic sheet and separable and reclosable fastener strip into vertical upwardly opening tubular form adapted for gravitationally receiving bag filling contents in vertical form/fill/seal packaging; and the successive steps of sealing lower end portions of the vertical tube into bag sections, effecting cyclical dwell and intermittent downward advancing of the tube by bag sections and severing the bag sections from the lower end of the tube; the improvement consisting in supplying the bag making assembly to said tube forming step from a location adjacent to the location of said tube forming step, and comprising the steps of:

providing continuous length bag sheet material from a supply means;

providing continuous length separable fastener strip from a supply means;

continuously effecting joinder and securement of said sheet material and said fastener strip as derived from said supply means into a permanent assembly;

at a location downstream from said joinder and securement step uninterruptedly advancing said assembly toward said shaping step, while said successive steps of tube sealing, severing and cyclical dwell and intermittent advancing of the tube continue progressively;

and at a location intermediate said assembly advancing step and said tube shaping step, accumulating the uninterruptedly advancing assembly to compensate for dwells in the intermittent advance of the tube.

4,355,495

METHOD AND APPARATUS FOR HANDLING PACKAGING CONTAINERS

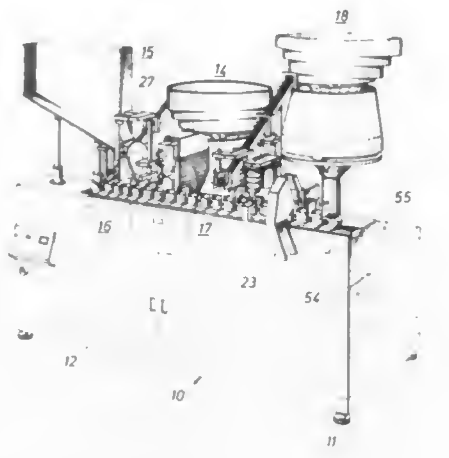
Roy D. Lewis, Farjestaden, and Bernt V. Borg, Kalmar, both of Sweden, assignors to Norden Packaging Machinery Aktiebolag, Sweden

Filed Jan. 16, 1980, Ser. No. 112,546

Claims priority, application Sweden, Jan. 17, 1979, 7900398

Int. Cl.^{3} **B65B** *43/00, 3/12, 3/14*

U.S. Cl. 53—579 13 Claims



1. An apparatus for handling of containers in which each of said containers includes a sleeve having a closed end surface having an opening extending therethrough and an open end displaced from said closed end surface, and an associated displaceable plunger for sealingly engaging the inner sidewall of said sleeve and being displaceable along the length of said sleeve between said open end and said closed end surface, said apparatus comprising:

an endless conveyor having at least one socket thereon and being operable to move said at least one socket along a path of movement;

first insertion means for inserting a plunger into said at least one socket on said conveyor means as said at least one socket moves therepast, said first insertion means being located at a first location along said path of movement;

second insertion means for inserting a sleeve into said one socket in a manner to receive said plunger in said open end thereof, said second insertion means being located at a second location displaced from said first location along said path of movement;

displacing means for displacing said plunger towards said closed end surface of said sleeve after said plunger and said sleeve have been inserted into said at least one socket on said conveyor means, said displacing means being located at a third location displaced from said first and second locations along said path of movement; and

filling means for filling said container with a material through said opening in said closed end surface of said sleeve and for simultaneously moving said plunger in a direction away from said opening of said closed end surface towards said open end of said sleeve as said container is filled through said opening, said filling means being located at a fourth location displaced from said first, second and third locations along said path of movement.

4,355,496

WRAPPING MACHINE AND METHOD

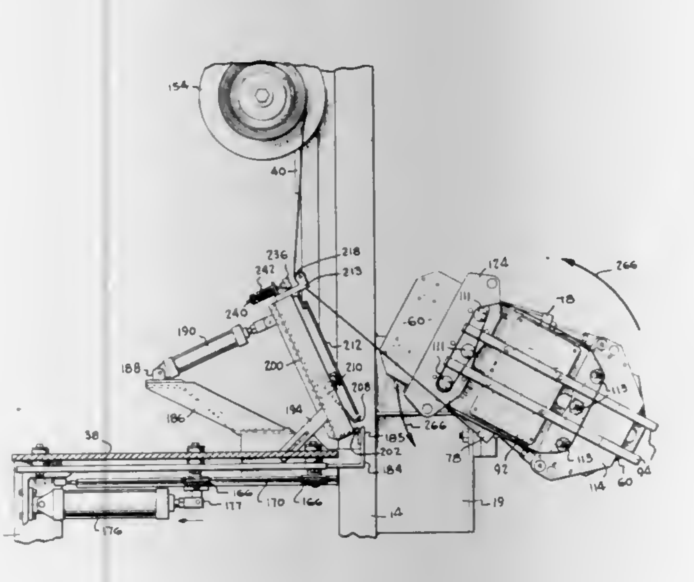
N. Grove Teates, Wheaton, and Riley H. Mayhall, Jr., Burtonsville, both of Md., assignors to Systemation Inc., Wheaton, Md.

Filed Mar. 31, 1978, Ser. No. 893,324

Int. Cl.^{3} **B65B** *11/04, 13/04*

U.S. Cl. 53—587 14 Claims

1. A package wrapping machine comprising frame means, a power driven rotary member mounted on said frame means for movement with respect to said frame limited solely to rotation about a horizontal axis, a loading and wrapping station including clamping means mounted on said rotary member for linear movement thereon and rotation therewith about said horizontal axis while clamping and holding package components to be wrapped, power drive means carried on said rotary member for actuating said clamping means, plastic film feeding and supply means mounted on said frame means for providing a web of plastic film extending to said clamping means and package components held by clamping means so that rotation of said rotary member and said clamping means about said horizontal axis effects the wrapping of said package components by said web of plastic film while said package components are held by said clamping means, film cut-off means for severing the web of plastic film from the wrapped package following the wrapping of the package, control means for actuating said clamping means, said rotary member and said film cut-off means in timed sequence, wherein said plastic film feeding and supply means includes roll support means supporting a roll of plastic film for rotation about a horizontal axis at a fixed location on said frame means, a carriage mounted for reciprocation between inner and outer limit positions toward and away from package components held by said clamping means, film guide means mounted on said carriage, said web of plastic film extending through said film guide means, said film cut-off means comprising an elongated heated means supported on said carriage for engagement with said web upon movement of said carriage toward said package through a position near said inner limit position, carriage support means supporting said carriage for reciprocation between said inner and outer limit positions, a vertically extending swing gate extending upwardly from said carriage, pivotal support means on said carriage supporting said swing gate along a lower portion thereof for pivotal movement about a horizontal axis, a back plate on said swing gate facing said package components, said swing gate being pivotable between an erect position in which said back plate is vertically oriented and a canted position in which the upper portion of said back plate is tilted away from said package components toward the outer limit position of said carriage, said back plate being oriented in its vertical position when said carriage is in its inner limit position and serving as a positioning means against which the components of a package to be wrapped are positioned preparatory to the clamping thereof by said clamping means and power tilt means mounted on said carriage for moving said back plate between its vertical position and its canted position and carriage drive means for moving said carriage between its inner limit position and its outer limit position.



4,355,497

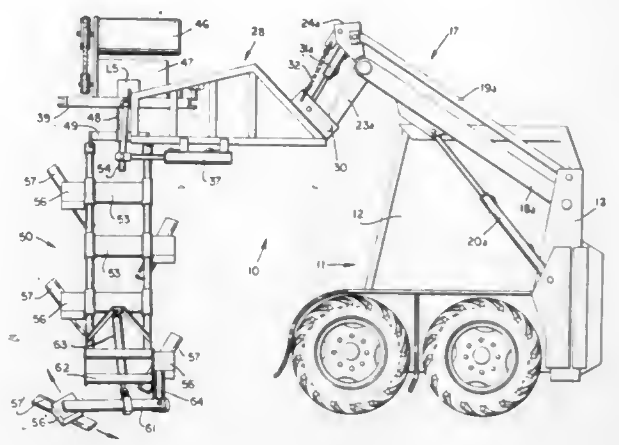
APPARATUS FOR TRIMMING TREES

Bruce Murphy, Rte. 2, Coolidge, Ga. 31738

Filed Jan. 5, 1981, Ser. No. 222,656

Int. Cl.^{3} **A01D** *55/18*

U.S. Cl. 56—235 12 Claims



1. Apparatus for trimming living trees or the like, comprising:

motive means operative to traverse the ground adjacent a row of trees to be trimmed;

boom means mounted on said motive means and having a free end selectably operative to be adjustably positioned in predetermined relation to a tree to be trimmed;

cutter support means depending from said outer end of said boom means;

interconnection means interposed between said cutter support means and said outer end, and selectably operative to position said cutter support means relative to said boom means;

tilt responsive means responsive to the angular position of said cutter support means and operative to provide signals responsive to the angular position of said cutter support means with respect to a predetermined reference attitude; and

said interconnecting means being operative in response to said signals from said tilt responsive means to maintain said cutter support means in a certain angular position relative to said reference attitude, irrespective of the angular position assumed by said motive means or said boom means.

4,355,498

DEVICE FOR SPLICING TEXTILE YARNS WITH THE AID OF COMPRESSED AIR

Luciano Bertoli, Salo', Italy, assignor to Mesdan S.p.A., Brescia, Italy

Filed Jun. 11, 1981, Ser. No. 272,728

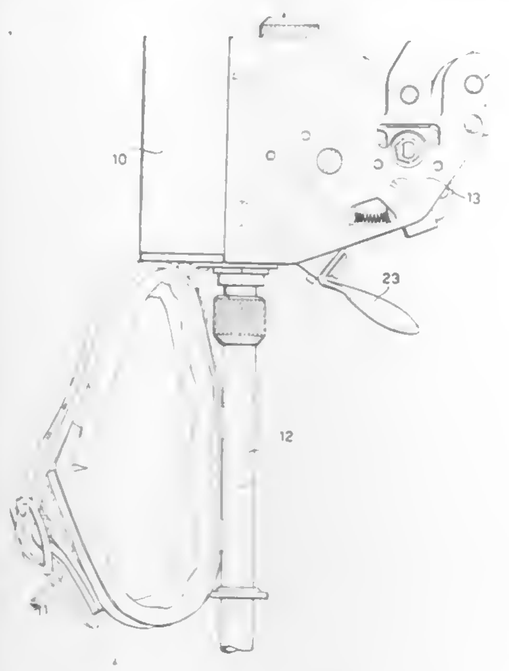
Claims priority, application Italy, Jun. 13, 1980, 22768 A/80

Int. Cl.^{3} **B65H** *69/06;* **D02J** *1/08*

U.S. Cl. 57—22 6 Claims

1. A device for splicing textile yarns by admixing and intermingling their component fibers with the aid of compressed air, which comprises a blending chamber having a substantially V-shaped cross-sectional outline and having a port opening centrally through its bottom wall and connected through a cutoff valve to a source of compressed air, a lid for closing said chamber frontally means for shifting said lid from an inoperative position away of said chamber to a position of closure of said chamber and vice versa, means synchronized with said lid-shifting means to open said valve as the lid is in its closed position, and members for positioning and introducing the yarns to be spliced in the blending chamber and for severing the free ends thereof, said members being controllable synchronously with the motion of said lid from its inoperative position to the position of closure of the blending chamber, the device being characterized in that it is comprised of a pneumatic control unit having an air intake duct connected to a

source of compressed air and an air outlet duct in direct communication with said port opening into the blending chamber, said air intake duct communicating with the outlet duct through a channel in which said cutoff valve controllable by said means synchronized with said lid-shifting means is inserted serially with a second cutoff member, there being formed in the pneumatic control unit a timing reservoir connected through a passageway to a point, downstream of said second cutoff members, of said communication channel, said reservoir having at least one wall shiftable against the bias of resilient means and carrying said second cutoff member.



4,355,499
FABRICS HAVING SALT-AND-PEPPER PATTERNS AND CRIMPED FILAMENT YARNS FOR PRODUCING THE SAME

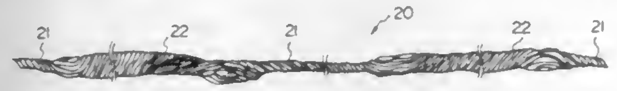
Isao Takai, Komatsu, Japan, assignor to Oda Gosen Kogyo Kabushiki Kaisha, Komatu, Japan

Filed Mar. 18, 1980, Ser. No. 131,314

Claims priority, application Japan, May 16, 1979, 54-59094; May 16, 1979, 54-59095

Int. Cl.^{3} D02G *3/26, 3/34, 3/40*

U.S. Cl. 57—205 **8 Claims**



6. A crimped filament yarn, comprising first portions each being twisted in one direction and relatively tightly bundled and locally fused together and second portions twisted in the other direction while being bundled relatively loosely, said first and second portions being distributed alternately along the length of the filament yarn.

4,355,500
PNEUMATIC YARN GUIDING APPARATUS FOR DOUBLE TWISTING MACHINE

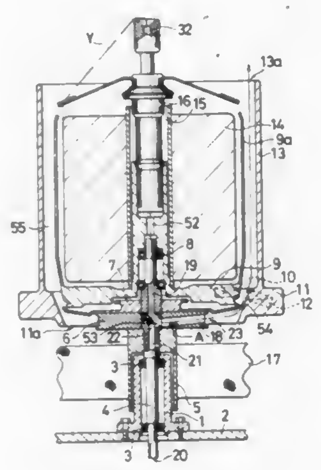
Hideo Yanobu, and Kazuyuki Fujiwara, both of Kyoto, Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 21, 1980, Ser. No. 113,645

Claims priority, application Japan, Jul. 23, 1979, 54-102232[U]; Jul. 25, 1979, 54-103255[U]; Jul. 27, 1979, 54-96431

Int. Cl.^{3} D01H *15/00, 7/86*

U.S. Cl. 57—279 **6 Claims**



1. In a textile yarn processing machine, such as a two-for-one twister or the like, having a spindle assembly including a driven rotor mechanism defining a vertically extending yarn passageway and a horizontally extending passageway mating with said vertically extending passageway, a carrier means for carrying a hollow package of yarn and rotatably mounted on said rotor mechanism so that said rotor mechanism may rotate relative thereto, said carrier means including a basket device surrounding the package of yarn carried thereby so that yarn withdrawn from the package can form a balloon over said basket device as it passes from said rotor mechanism, a balloon limitor device surrounding said basket device so that the yarn balloon will pass between said basket device and said balloon limitor device in a generally upward vertical path of travel, air operated threading mechanism for automatically threading yarn pulled from said package through said passageways of said rotor mechanism, said threading mechanism comprising means for supplying air under pressure through said passageway so that yarn pulled from said package will be pulled downward through said vertically extending passageway and outwardly through said horizontally extending passageway; the improvement comprising tension means disposed toward the upper part of said vertical passageway, and an inclined surface means disposed in the vicinity of said mating of said vertical and said horizontal passageways, said inclined surface means having an air outlet provided at about the center or lower portion of said inclined surface so that yarn passing from the vertical passageway to the horizontal passageway will be acted upon by air passed through said air hole at substantially the turning point of the yarn from vertical to horizontal positions, whereby during threading operation said tension means is moved from the threading path of said yarn and cooperatively said air is supplied through said air hole of said inclined surface, thereby to produce a smooth and uninterrupted threading of said yarn, wherein said tension means comprises a guide tube having an inclined portion on the lower end thereof and a collar, said guide tube being inserted and fitted in said spindle assembly, and wherein said tension means further comprises a tensor and a yarn contact guide so that the central axial line of said yarn guide tube coincides with the central axial line of an opening of said yarn contact guide, and is normally urged upward by a spring winding around said collar, whereby the inclined portion of said yarn guide tube falls in contact with said tensor to displace the tensor from the central axial line of the opening of said yarn contact guide when the yarn guide tube is brought down against said spring.

4,355,501
EXPANSION BAND, SUCH AS A WATCH BAND, JEWELRY BAND OR THE LIKE

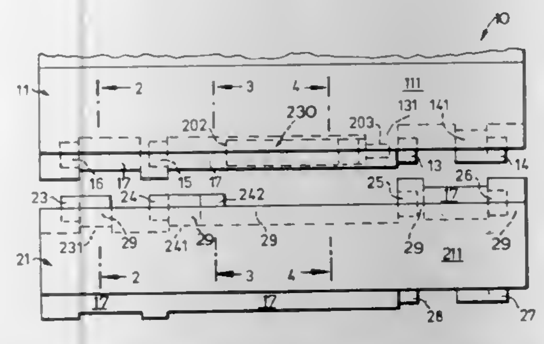
Bernhard Tesch, Ennetbuergen, Switzerland, assignor to Zwyro A.G., Schaffhausen and Tesch A.G., Ennetburgen, both of, Switzerland

Continuation of Ser. No. 941,251, Sep. 11, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,230

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740916

Int. Cl.^{3} F16G *13/00*

U.S. Cl. 59—82 **17 Claims**



1. An expansion band particularly adapted for use as a watchband, jewelry band, bracelet or the like comprising a plurality of links, means pivotally connecting adjacent links to each other, means for locking adjacent links to each other, adjacent links having sides in contiguous relationship to each other, fin means projecting laterally from the side of one adjacent link for reception in recess means in the side of a second adjacent link whereby a gap between adjacent links is bridged by said fin means, said pivotal connecting means including a male pivot pin projecting from the side of one link and being received in a bore of a trunnion projecting from the side of another link, and said fin means being defined by a wall common to said trunnion.

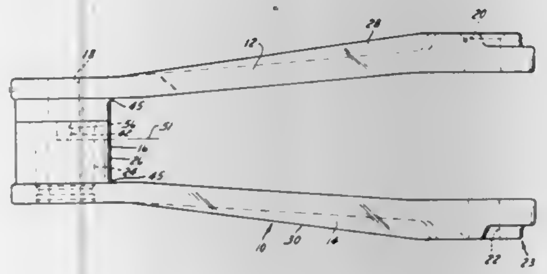
4,355,502
POLYMERIC CHAIN LINK WITH INTEGRAL TELESCOPING BARREL

Jerome F. Sheldon, Milwaukee, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 24, 1980, Ser. No. 219,687

Int. Cl.^{3} F16G *13/06*

U.S. Cl. 59—84 **10 Claims**



1. A polymeric chain link, comprising:

first and second sidebars, each of said sidebars having a bore through both ends; and

a hollow cylindrical barrel connected to one end of said first sidebar and to one end of said second sidebar, said barrel comprising:

a. a male barrel portion integral with said first sidebar and projecting inward from said first sidebar at one end, said male barrel portion including an outer mating surface in which an annular surface portion of relatively small outer diameter is bounded on both sides by surface portions of larger diameter; and

b. a female barrel portion integral with said second sidebar and projecting inward from said second sidebar at one end, said female barrel portion including an inner mating surface in which an annular surface portion of relatively small internal diameter is bounded on both sides by surface portions of larger diameter, said inner mating surface being complementary in shape to said outer mating surface, such that said barrel portions are adapted to be coupled by inserting said male barrel portion into said female barrel portion until said annular surface portion of small internal diameter on said female barrel portion fits into said annular surface portion of small outer diameter on said male barrel portion, whereby said barrel portions are mechanically locked together, forming said barrel.

4,355,503
EXHAUST GAS TURBOCHARGER

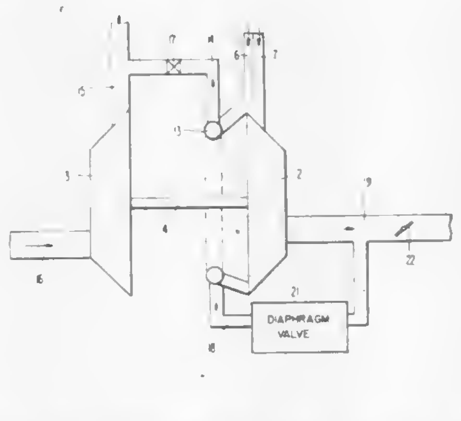
Michael Grohn, Esslingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jan. 9, 1980, Ser. No. 110,702

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901041

Int. Cl.^{3} F02B *37/00*

U.S. Cl. 60—602 **18 Claims**



1. An exhaust gas turbocharger for a vehicle engine, the exhaust gas turbocharger including a turbine means, a compressor means, the turbine means including a rotor means operatively connected to the compressor means, and a spiral housing means, a plurality of inlet channel means provided in said spiral housing means, the inlet channel means are combined only directly ahead of and at a periphery of the turbine rotor means, characterized in that a circumferential substantially circular edge is formed in an outer surface of the rotor means, annular channel means are provided for conducting a flow of exhaust gases, and annular gap is provided within an area of the circular edge for enabling a part of the exhaust gases to flow from the spiral housing means into the annular channel means, the compressor means includes a charging air channel means, a return line communicating the annular channel means with the charging air channel means, a turbine exhaust gas line is provided, and a bypass line means for bypassing the turbine means leads to the turbine exhaust gas line, and in that said return line and the bypass line means branch off from the annular channel means.

4,355,504
APPARATUS FOR REDUCING PARTICLES DISCHARGED BY COMBUSTION MEANS

Benjamin Y. H. Liu, North Oaks; David B. Kittelson, Minneapolis; Daniel F. Dolan, St. Anthony, and David Y. H. Pui, Minneapolis, all of Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

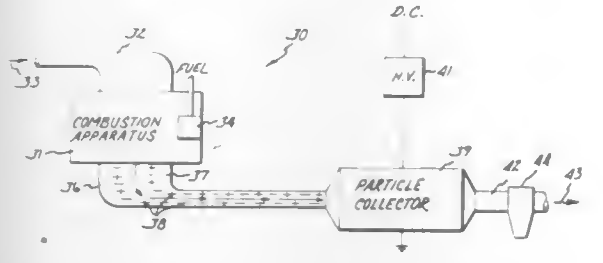
Division of Ser. No. 38,077, May 11, 1979, Pat. No. 4,304,096. This application Dec. 11, 1980, Ser. No. 215,460

Int. Cl.^{3} F01N *3/00*

U.S. Cl. 60—275 **60 Claims**

1. An apparatus for reducing the amount of particles discharged into the atmosphere comprising: first means having at least one combustion chamber for receiving hydrocarbon fuel and air and accommodating combustion of the fuel and air, said

combustion imparting electrical charges on at least some of the particles formed during the combustion of the fuel and air, during said imparting of electrical charges on the particles a substantially equal number of particles are positively charged and negatively charged whereby the particles as a whole are a substantially electrical neutral mass of particles, particle collecting means for collecting at least some of the charged particles, second means for directing the charged particles from the combustion chamber directly to the particle collecting means without subjecting the charged particles to a charging step with an intermediate particle charging means whereby the electrical charges on the particles remains substantially the same, and means associated with the particle collecting means to establish an electric field whereby at least some of the charged particles moving into the electric field are collected on the collecting means.



4,355,505
ROTATABLE CONTROLLER VALVE

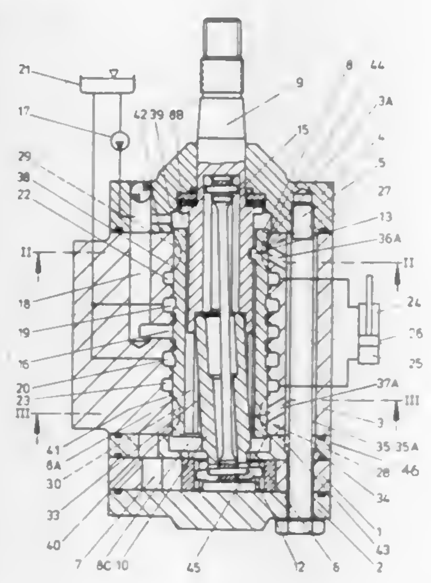
Karl-Heinz Liebert, Schwabisch Gmund, and Werner Tischer, Bobingen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,471

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917298

Int. Cl.³ F15B *13/04*

U.S. Cl. 60—384 **8 Claims**



8. In a fluid power steering system having a source of pressurized fluid (**17**), a fluid metering device (**1–6**), a servomotor (**26**), controller valve means for conducting flow of the pressurized fluid between the source and the servomotor through the metering device, including a valve housing (**3**), a tubular valve element having opposite axial end portions enclosed in the housing, valve actuating drive means (**9, 13, 14**) operatively connected to the valve element for imparting axial and angular displacement thereto, passage means in the valve housing and the valve element for controlling said flow of the fluid in response to said axial displacement of the valve element, and torsional coupling means operatively connecting the fluid metering device to the valve element for controlling operation of the metering device in response to said angular displacement of the valve element, the improvement residing in means for enhancing end bearing support of the valve element in the housing at said opposite axial end portions, including pressure spaces (**8B, 8C**) formed in the housing into which the axial end portions of the valve element extend, and means for establishing fluid communication between said pressure spaces and the passage means including distributor grooves (**29, 30**) formed externally in the valve element at said axial end portions thereof.

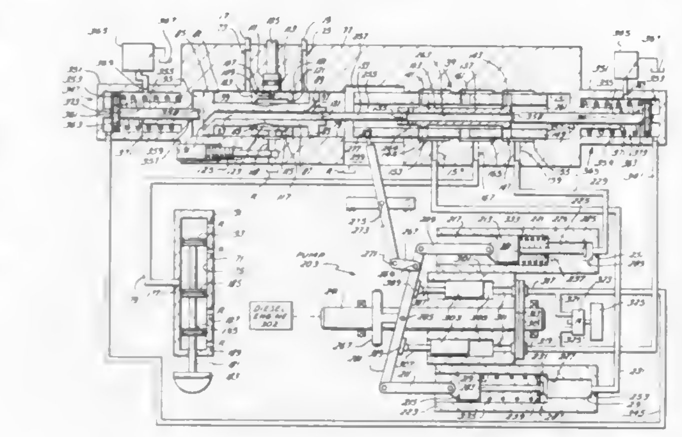
4,355,506
PUMP-MOTOR POWER LIMITER AND PRESSURE RELIEF

Willie B. Leonard, 5902 Royalton, Houston, Tex. 77081

Continuation-in-part of Ser. No. 828,045, Aug. 26, 1977, Pat. No. 4,227,440, which is a continuation-in-part of Ser. No. 772,560, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, which is a continuation-in-part of Ser. No. 521,036, Nov. 5, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Apr. 25, 1979, Ser. No. 33,036

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—389 **20 Claims**



1. In combination with a pump-motor hydraulic power transmission system including a pump, a motor, and two hydraulic fluid transmission lines interconnecting the pump and motor, at least one of said pump and motor having a variable angle swash-plate,

servo motor means to vary the angle of said swash plate,

control valve means for controlling the servo means, said control valve means including a three-way valve for alternate connection of one side of said servo-motor means to a source of fluid pressure and a reservoir, and

operator means for positioning the control valve means;

travel limit means at each opposite end of said three-way valve positionable in the path of travel of said three-way valve for abutment therewith and

motor means associated with each respective travel limit means and responsive to the pressure in the higher pressure one of said transmission lines to adjust the position of a said respective travel limit means,

a spring means biasing each of said motor means to a position where said travel limit means is disengaged from said three-way valve,

said travel limit means being movable between

(1) a normal position disengaged from said three-way valve,

(2) positions in the path of travel of said three-way valve but out of contact therewith, and

(3) positions in abutting engagement with said three-way valve and determining the position of the three-way valve.

4,355,507
SYSTEM FOR INFRARED EMISSION SUPPRESSION (SIRES)

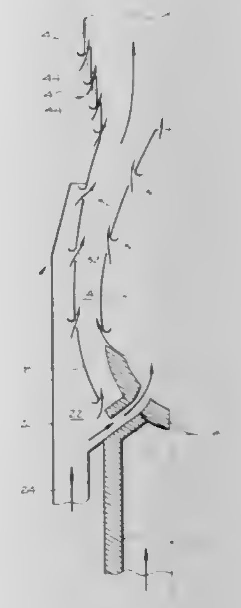
Clayton G. Coffey, Medicine Hat; Stephen B. Murray, Montreal, and Donald L. Bayly, Calgary, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jun. 25, 1980, Ser. No. 162,931

Claims priority, application Canada, Aug. 9, 1979, 333602

Int. Cl.³ F02K *3/04;* F23L *13/00;* B64D *33/04*

U.S. Cl. 60—39.5 **14 Claims**



1. Film cooling apparatus adapted to be connected into a conduit carrying a hot gaseous medium, said apparatus comprising:

contoured duct means for channeling the gaseous medium having an external surface, an internal surface, and a single thickness of material therebetween, said contoured duct means adapted to be connected to said conduit and having slot means for the passage of coolant fluid therein;

a central body aerodynamically shaped and supported within said contoured duct means so as to form therewith an annular channel having a zero pressure gradient, said central body having slot means therein to enable cooling flow of a coolant fluid over exterior surfaces of the central body for maintaining an acceptably low surface temperature thereof;

a network of ducting to interconnect the contoured duct means and interior of the central body to a source of said coolant fluid, said network of ducting and said contoured duct means defining a plenum chamber therebetween which is adapted to be in flow communication with said source of coolant fluid; and

an entraining diffuser section connectible to downstream portions of the contoured duct means and operative to promote the entrainment of further quantities of a coolant fluid and to promote the deceleration of exhaust gases for the purposes of energy recovery.

4,355,508
AIR POWER MOTOR

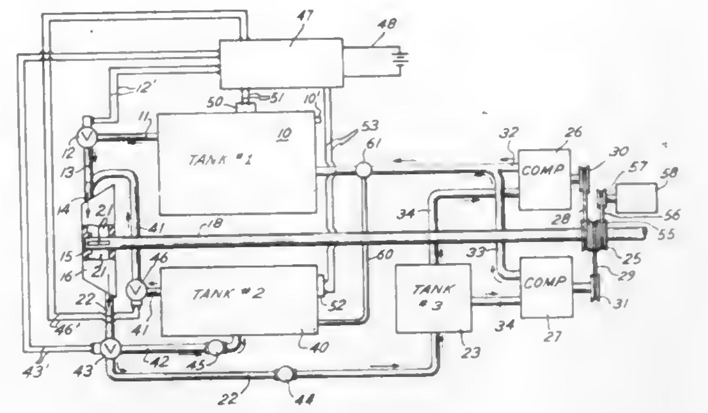
Joseph F. Blenke, and Stanley J. Blenke, Sr., both of Three Oaks, Mich., assignors to U.S. Foam Mfg. Co., Inc., Three Oaks, Mich.

Filed May 2, 1980, Ser. No. 146,042

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—416 **5 Claims**

1. An air power motor comprising, a first tank adapted to be pressurized with compressed air; an air reactance means having air inlet port, an air outlet port circumferentially spaced from said outlet port, and a drive shaft, conduit means for conducting compressed air from said first tank to the inlet port of said reactance member; a second tank connected to receive reduced pressure air from said reactance member, a compressor driven by said shaft to pressurize said second tank with compressed air at lower pressure than said first tank and conduit means for conducting compressed air from said second tank to said reactance member to supplement the driving force exerted by air from said first tank.



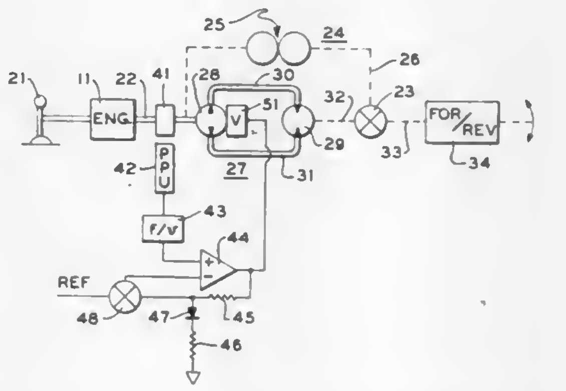
4,355,509
SPLIT TORQUE TRANSMISSION CONTROL

Thomas R. Fulkerson, Watertown, and Royal R. Hawkins, Bloomington, both of Minn., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 31, 1979, Ser. No. 108,871

Int. Cl.³ F15B *7/00*

U.S. Cl. 60—449 **20 Claims**



1. A system for controlling a split torque transmission of a vehicle comprising, the split torque transmission including first and second throughputs and a summing junction connected to the first and second throughputs and having a transmission output dependent upon said first and second throughputs, each throughput having an input connected to an output of an engine of the vehicle,

sensing means adapted to sense the output of said engine; and

control means connected to said sensing means and adapted to control said second throughput solely dependent upon said engine output, said second throughput being controlled from a negative value cancelling said first throughput to a positive value so that said transmission output is varied from idle to a predetermined value.

4,355,510

UNLOADING MEANS FOR FLOW-PRESSURE COMPENSATED VALVE

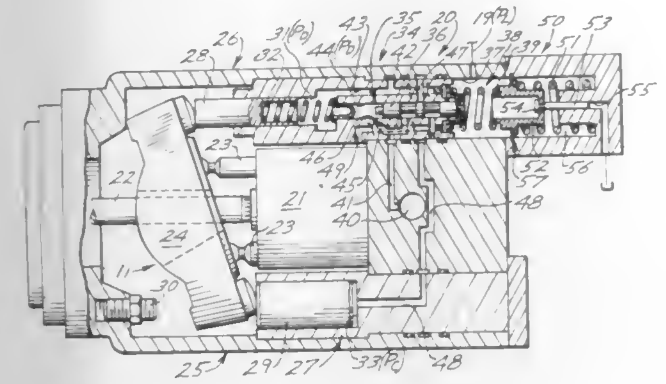
Walter Z. Ruseff, New Lenox, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01192, § 371 Date Sep. 12, 1980, § 102(e) Date Sep. 12, 1980, PCT Pub. No. WO82/01044, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 12, 1980, Ser. No. 261,117

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—452 **12 Claims**



1. In a fluid circuit (**10**) having a fluid actuator (**13**), a variable displacement pump (**11**) including a control member (**24**) movable between first and second displacement positions, first biasing means (**26**) for urging said control member (**24**) towards its first displacement position, second biasing means (**27**) for urging said control member (**24**) towards its second displacement position in opposition to said first biasing means (**26**) and in response to a variable control pressure (P_C), first means (**35**) for varying said control pressure (P_C) in response to variations in the discharge pressure (P_D) of said pump (**11**), second means (**37**) for controlling said first means (**35**) to modulate said control pressure (P_C) in response to variations in a load pressure signal (P_L) received from said fluid actuator (**13**), and third biasing means (**38**) for applying a margin force to said first means (**35**) to maintain a pressure differential between said pump discharge pressure (P_D) and said load pressure signal (P_L) during a predetermined range of said load pressure signal (P_L), the improvement comprising:

- unloading means (**50**/**50***a*) for unloading the margin force applied to said first means (**35**) in response to said load pressure signal (P_L) exceeding a maximum pressure level and for inactivating said third biasing means (**38**) to at least substantially equalize said pump discharge pressure (P_D) and said load pressure signal (P_L) in response to said unloading.

4,355,511

WAVE ENERGY CONVERSION

Dedger Jones, 885 Freeway Dr. North, Columbus, Ohio 43229

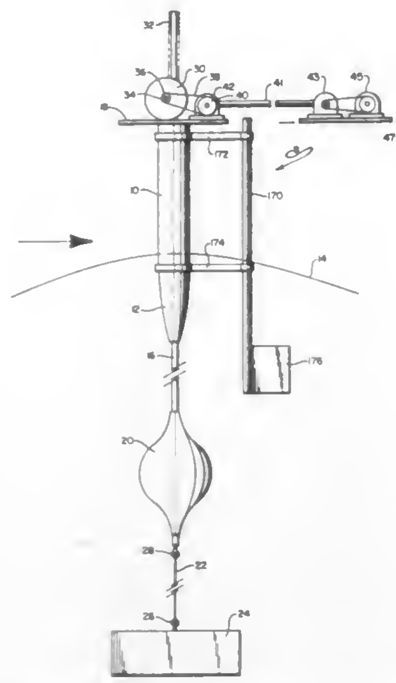
Continuation-in-part of Ser. No. 817,973, Jul. 22, 1977, abandoned. This application Jun. 23, 1978, Ser. No. 917,363

Int. Cl.³ F03B *13/12;* **F04B** *17/00*

U.S. Cl. 60—507 **49 Claims**

1. A method for converting the energy of waves generated within a large body of water into useful power comprising the steps of:

- providing a buoyant body floatable within said water;
- submerging said buoyant body to a predetermined level beneath the immediate surface of said water when situated at the trough of a given said wave;
- retaining said buoyant body at said level of submergence;
- releasing said retained buoyant body for vertical flotational movement through the crest defined portion of a said wave; and



- converting said vertical flotational movement into useful power.

4,355,512

RESERVOIR FOR USE WITH TANDEM MASTER CYLINDER

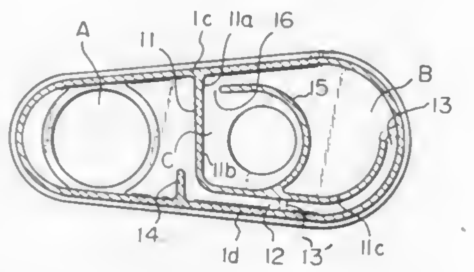
Hitoshi Kubota, Fujisawa; Toshiyuki Takahashi, Hayamamachi, and Yoshihiro Hayashida, Kawasaki, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Oct. 15, 1980, Ser. No. 197,129

Claims priority, application Japan, Oct. 17, 1979, 54-143594[U]

Int. Cl.³ B60T *17/22*

U.S. Cl. 60—534 **4 Claims**



1. A reservoir for use with a tandem master cylinder comprising: an elongated housing generally extending along the longitudinal axis of the master cylinder and including top and bottom walls and first and second side walls, said housing defining therein a first chamber, a second chamber, and a liquid level warning device receiving chamber positioned between said first and second chambers, first and second outlets provided respectively in said first and second chambers in communication with the master cylinder, a partitioning wall extending between the top and bottom walls and having laterally and longitudinally extending portions, said laterally extending portions extending from the first side wall to an end adjacent to the second side wall and thereby partitioning the first chamber and the liquid level warning device receiving chamber, said longitudinally extending portion extending from said end along the second side wall and being spaced therefrom by a small distance to define a corridor-like passage communicating the second and the first chambers, and an additional wall extending between the top and bottom walls laterally from the longitudinally extending portion of said partitioning wall to the first side wall, said additional wall partitioning the second chamber and the liquid level warning device receiving chamber and including a slit extending between the top and bottom walls.

4,355,513

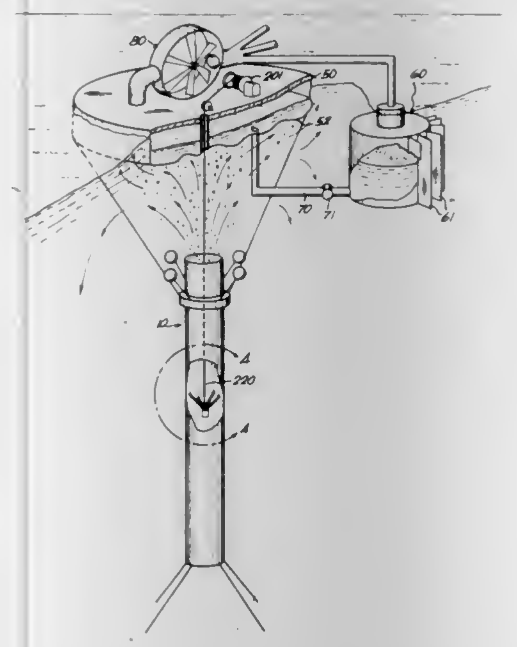
METHOD AND APPARATUS FOR PRODUCING ELECTRICITY FROM THERMAL SEA POWER

Barney B. Girden, 1281 NW. 43rd Ave., Lauderhill, Fla. 33313

Filed Mar. 6, 1980, Ser. No. 127,642

Int. Cl.³ E03G *7/04*

U.S. Cl. 60—641.7 **10 Claims**



1. An improved method of producing useful energy from the thermal power of a large body of water, having a depth of at least 700 feet and having cold subsurface water and warmer surface water comprising the steps of:

- upwelling said cold subsurface water creating an area of cold subsurface water on the surface of said body of water said area being surrounded by the warmer surface water; and,
- positioning a substantially vertical duct within said body of water, said duct having an open lower end located within said cold subsurface water and an open upper end positioned within said warmer surface water; and,
- releaing a multitude of compressed air bubbles through an air jet assembly positioned within the upper portion of said duct to create a buoyant mixture of air bubbles and water above said release point, said buoyant mixture causing a lessened weight of the total water within the duct thereby forcing cold subsurface water into the open bottom end of the duct, rising up within the duct, being mixed with the released air bubbles and finally surfacing at and becoming the surface of said body of water; and, adjusting the depth of said air jet asembly within said upper portion of said duct until the bubbles' size achieve their greatest lifting power and to adjust the weight difference between the water within the duct and an equivalent volume of water outside the duct thereby adjusting the eddy velocity of the water within the duct; and,
- utilizing the temperature differential between said area having cold subsurface water thereon and said surrounding warmer surface water to generate electricity.

4,355,514

CONTROL DEVICE FOR STEAM TURBINES WITH REHEATER

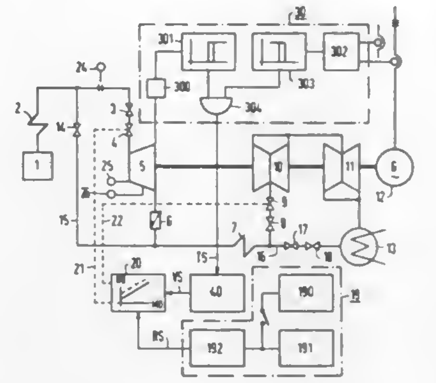
Rolf Reifenberg, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,843

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939534

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—660 **15 Claims**



1. Control device for a steam turbine having a high-pressure and a medium or low-pressure turbine part, comprising a reheater, at least one live steam control valve disposed upstream of the high-pressure turbine part, at least one intercept control valve disposed upstream of the medium or low-pressure turbine part and downstream of said reheater, control means having at least one turbine controller for simultaneously acting on said live steam control valve in accordance with a predetermined live steam valve characteristic and acting on said intercept control valve in accordance with a predetermined intercept valve characteristic, said live steam control valve and said intercept control valve having a normal characteristic correlation therebetween determining a correlation of high-pressure and medium or low-pressure steam mass flow, limit detecting means associated with said high-pressure turbine part for responding when a predetermined thermal stress is reached in said high-pressure turbine part, and positioning means controlled by said limit detecting means for changing said normal characteristic correlation and increasing said high-pressure steam mass flow in said steam mass flow correlation.

4,355,515

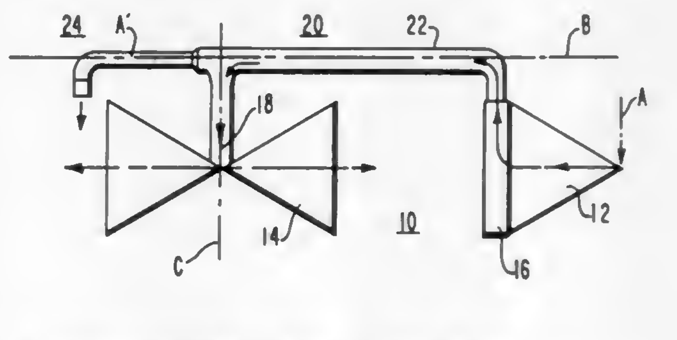
MOISTURE REMOVAL STRUCTURE FOR CROSSOVER CONDUITS

Albert Cohen, Nether Providence; Ralph D. Brown, Springfield, and William D. Scott, Upper Chichester, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 3, 1980, Ser. No. 183,688

Int. Cl.³ F01K *21/06*

U.S. Cl. 60—657 **2 Claims**



1. A steam turbine apparatus comprising:

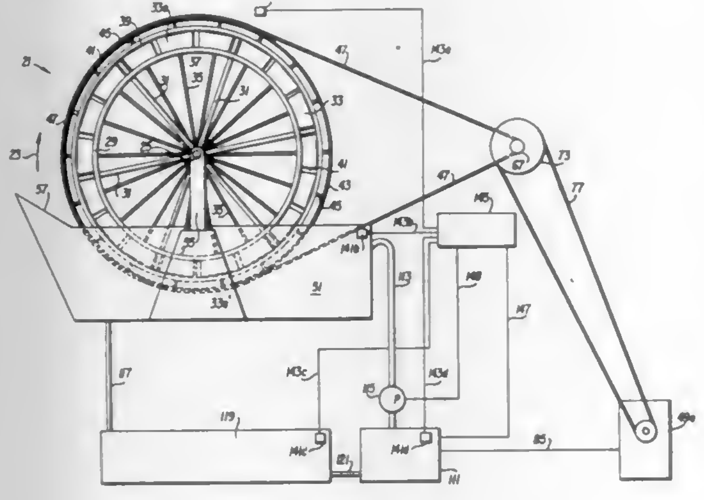
first and second turbine sections respectively including exhaust and inlet portions; and a steam crossover structure for transmitting steam from said exhaust portion to said inlet portion, said crossover structure including a conduit having a longitudinal axis perpendicular to the longitudinal axis of said inlet portion and a moisture removal structure disposed beyond said inlet portion in the direction of steam flow through said conduit, said moisture removal structure constituting

a tapered transition section having first and second ends, said first end being adjacent said inlet portion and having an inside diameter at least as large as said conduit's inside diameter, said second end being disposed relatively remotely from said inlet portion and having an inside diameter less than said first end,

means for transmitting water away from said transition section's second end, and

means for regulating steam and water flow through said water transmitting means.

4,355,516
THERMODYNAMIC MOTOR AND PULLEY SYSTEM
Charles V. Jones, 539 Missimer La., Vinton, Va. 24179
Filed Apr. 3, 1980, Ser. No. 137,064
Int. Cl.^{3} F03G *3/00*
U.S. Cl. 60—675 **11 Claims**



1. A thermodynamic motor and pulley system comprising:

an essentially cylindrical frame rotatable about a horizontal axis, said frame having an essentially vertical cross section, said horizontal axis extending through the center of said frame vertical cross section;

a plurality of oppositely disposed pairs of containers mounted on said frame, each of said containers having an essentially rectangular vertical cross section, wherein a larger dimension of said rectangular vertical cross section is oriented essentially tangentially with respect to said cylindrical frame, a smaller dimension of said rectangular vertical cross section is oriented essentially orthogonally to said larger dimension, and an axial dimension of said container is oriented essentially parallel to said axis, and wherein

the ratio of the length of said larger dimension to the length of said smaller dimension of said vertical cross section of said container is between 3:1 and 1:1; and,

the ratio of the length of said axial dimension to the length of said smaller dimension of said vertical cross section of said container is between 1:5 and 1:15;

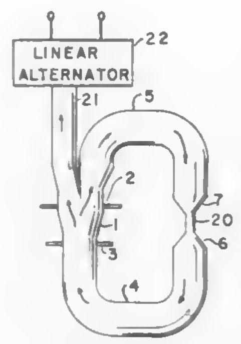
at least one tube interconnecting each oppositely disposed pair of containers;

a volatile liquid substantially filling at least one container of each pair;

means to effect a temperature differential between the containers in each pair to cause said volatile liquid in one such container to transfer through said interconnecting tube to the other container paired therewith, thereby shifting the center of gravity of said pair of containers about said axis to cause the rotational motion of said frame; and,

transmission means extending semi-circumferentially around said frame, said transmission means being ultimately connected to a rotationally driven member, said transmission means being adapted to transmit the rotational motion of said frame to said rotationally driven member.

4,355,517
RESONANT TRAVELLING WAVE HEAT ENGINE
Peter H. Ceperley, 4803 Clemons Ct., Annandale, Va. 22003
Filed Nov. 4, 1980, Ser. No. 204,328
Int. Cl.^{3} F03G *7/00*
U.S. Cl. 60—721 **7 Claims**



1. A travelling wave heat engine comprising:

a. a compressible fluid capable of supporting propagation of an acoustical travelling wave,

b. a means for adding thermal energy to the fluid in one region of space (region A),

c. a means for extracting thermal energy from the fluid in another region of space (region B),

d. at least one stationary object in and/or between the two regions in approximate thermal equilibrium with the fluid there, which causes the temperature gradient which exists in the fluid there to remain essentially stationary in the presence of wave induced fluid motion through the gradient, and

e. a means for causing an acoustical travelling wave to propagate on a path through the fluid from region B, through the region of stationary temperature gradient, into region A, in such a manner that the wave moves fluid back and forth through the stationary temperature gradient and so causes the fluid there to be heated and/or cooled in conjunction with the compression and expansion of the wave, for the purpose of transforming energy between the thermal form of the temperature gradient and the acoustical form of the travelling wave,

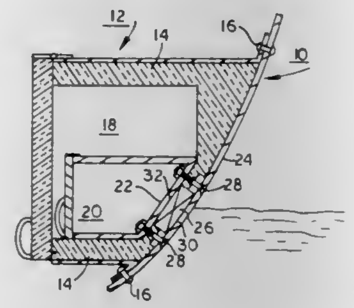
wherein the improvement comprises:

f. a means for superimposing a standing wave in with the travelling wave such that its velocity node and its pressure maximum are approximately positioned in the region of the stationary temperature gradient for the purpose of enhancing the pressure component of the travelling wave without appreciably increasing the velocity component for the purpose of causing a reduction in viscous losses in the regenerator for a given acoustical power level or increasing the maximum power throughput of the engine for a given viscous loss level.

4,355,518
REFRIGERATOR-VEHICLE COMBINATION METHOD
Shlomo Beitner, Tel-Aviv, Israel, assignor to Bipol Ltd., Tel-Aviv, Israel
Filed Aug. 18, 1980, Ser. No. 178,924
Int. Cl.^{3} F25B *21/02*
U.S. Cl. 62—3 **18 Claims**

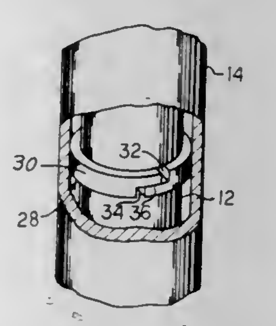
1. In a watercraft having an exterior wall at least part of which is exposed to ambient water, and apparatus within said

exterior wall for effecting refrigeration by means of a thermoelectric element having hot and cold faces adapted to be activated by the impression of a direct current potential across said faces, the improvement which comprises static heat-transfer



means for conducting heat from said hot face into the water to which said exterior wall is exposed, said static heat-transfer means being openly and unrestrictedly exposed to said water and being free of moving parts and forced circulation of coolant.

4,355,519
SPLIT RING SEAL FOR CRYOGENIC REFRIGERATOR
John E. Kercheval, Wyland/Natick, and Harry G. Nicoll, Norwell, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.
Filed Apr. 20, 1981, Ser. No. 255,467
Int. Cl.^{3} F25B *9/00*
U.S. Cl. 62—6 **10 Claims**



1. A refrigerator of the type comprising a displacer which reciprocates axially within a cylinder for expanding a refrigeration gas and a split seal positioned within a circumferential groove at the interface between the displacer and the cylinder, the seal having a split seal ring and a spring ring exerting a radial spring force on the seal ring, the split seal in the refrigerator characterized by:

loading means for exerting an axial spring force against on axially directed face of the seal ring to press that ring against one face of the circumferential groove and maintain continuous seals at the split in the seal ring and at said face of the groove.

4,355,520
PROCESS FOR THE SEPARATION OF SOLUTE IN CRYOHYDRATE AND APPARATUS THEREFOR
Toshio Kobayashi, Tokyo, Japan, assignor to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries, Ibaraki, Japan
Filed Feb. 27, 1981, Ser. No. 239,138
Claims priority, application Japan, Mar. 29, 1980, 55-40853
Int. Cl.^{3} B01D *9/04*
U.S. Cl. 62—123 **5 Claims**

1. An apparatus for the separation of solute or solutes from a cryohydrate which comprises

an endless member fabricated of a material having a high tensile strength;

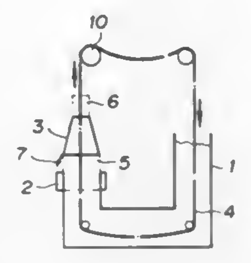
a reservoir to store a solution therein and including means for applying said solution to said endless member;

a freezing unit;

a pressure-application unit;

means for drawing said endless member sequentially through said solution applying means, said freezing unit and said pressure-application unit such that all surfaces of said endless member are enveloped in said solution, the solution enveloping said endless member being frozen onto said endless member as it is drawn through said freezing unit;

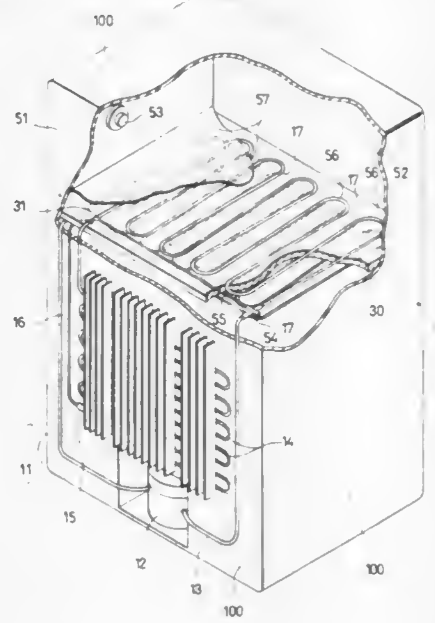
said pressure-application unit having fixed position and static pressure applying means, and being located downstream of said freezing unit and through which said endless member passes, said pressure applying means including a sleeve-like member surrounding a portion of said endless member and



extending longitudinally of said endless member, said sleeve-like member having static inner walls defining an inner sectional area which is reduced in the direction in which said endless member passes therethrough, the inner sectional area being positioned and dimensioned to apply surrounding pressure to frozen solution enveloping said endless member by applying pressure between opposing portions of said endless member and said inner walls of said sleeve-like member under drawing force applied to said endless member by said drawing means; and

said pressure-application unit further including a liquid receiving reservoir at a lower portion thereof.

4,355,521
REFRIGERATOR-OVEN COMPLEX
Yun-Ting Tsai, 7, Chung Cheng Rd., Sec. 1, Yangmingshan, Taipei, Taiwan (113)
Filed Sep. 19, 1980, Ser. No. 188,928
Int. Cl.^{3} F25B *41/00, 29/00*
U.S. Cl. 62—196 B **10 Claims**



1. A refrigerator-oven complex comprising a refrigerator space and an oven space thermally insulated from one another, and a refrigerating-heating system for cooling said refrigerator space and for heating said oven space, said system containing a refrigerant and comprising a cooling coil in said refrigerator space, a heating coil in said oven space, a motor-driven compressor for compressing refrigerant vapor received from said

cooling coil, a condensor for compressed refrigerant vapor, a trident valve having an inlet connected with the output of said compressor, one outlet connected with an inlet of said heating coil and another outlet connected by a bridge pipe to an inlet of said condenser, an outlet of said heating coil being connected with an inlet of said condenser, refrigerant storage means having an inlet connected with an outlet of said condenser and an outlet connected through a controllable capillary valve with said cooling coil whereby said cooling coil with said capillary valve comprises a volitilator, means for sensing the temperature in said oven space, and means responsive to said sensing means for controlling said trident valve to direct hot compressed refrigerant vapor from said compressor through said heating coil to said condenser when the temperature in said oven space is below a predetermined value and to direct said hot refrigerant vapor through said bridge pipe to said condenser when the temperature in said oven space is above a predetermined value.

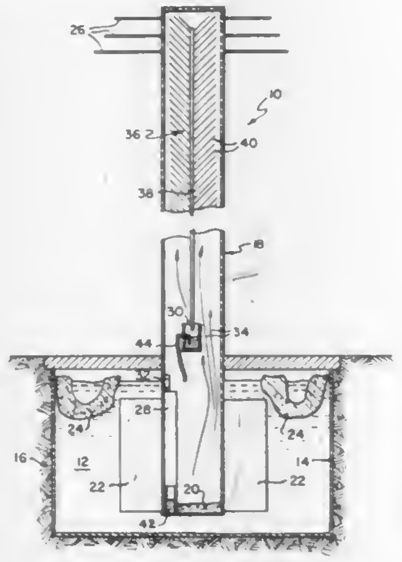
4,355,522
PASSIVE ICE FREEZING-RELEASING HEAT PIPE

Anthony J. Gorski, Lemont, and William W. Schertz, Batavia, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1980, Ser. No. 191,611

Int. Cl.^{3} F25C *1/00*

U.S. Cl. 62—340 **15 Claims**



1. A passive ice freezing-release heat pipe assembly comprising a diode heat pipe, a fluid disposed within said heat pipe, heat exchange means coupled to said heat pipe and capable of dissipating heat to the ambient during the freezing cycle of said heat pipe, a fluid proportioner means disposed within said heat pipe for collecting said fluid condensed from the vapor phase formed by said fluid absorbing heat and thereby boiling away during the freezing cycle, a passive on timer means disposed within said heat pipe and for accumulating fluid collected by said fluid proportioner means, a passive off-timer means disposed within said heat pipe and for collecting fluid condensed from the vapor phase and for holding the fluid until the end of the defrost part of the freezing cycle, and a means disposed within said heat pipe and capable of effectuating fluid transfer from said off-timer means to said on-timer means precedent to the defrost part of the freezing cycle.

4,355,523
AUTOMATIC CAR-COOLER CLUTCH CONTROL APPARATUS

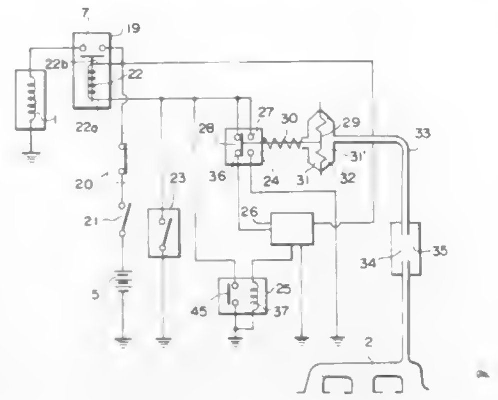
Yukio Shimada, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 12, 1980, Ser. No. 215,826

Claims priority, application Japan, Dec. 18, 1979, 54-163467

Int. Cl.^{3} B60H *3/04;* **F25B** *27/00*

U.S. Cl. 62—133 **1 Claim**



1. An automatic car-cooler clutch control apparatus for an automobile having a passenger compartment, an engine with an intake manifold, and a cooler having a cooler compressor, said apparatus comprising:

(1) a clutch coil for engaging/disengaging said car-cooler compressor with the engine;

(2) a clutch relay connected to said clutch coil for energizing said clutch coil;

(3) a vacuum pressure switch for energizing said clutch relay, said switch including:

(a) a movable contact;

(b) a first pair of fixed contact points; and

(c) a second pair of fixed contact points, one terminal of each pair of said fixed contact points being connected to said clutch relay;

(4) a vacuum chamber including:

(a) a diaphragm disposed therein so as to provide two separate compartments, one being communicated with the atmosphere and the other being communicated with said intake manifold, said diaphragm being directly connected to said movable contact; and

(b) a spring for urging said movable contact toward said first pair of fixed contact points when a vacuum pressure within the intake manifold is less than a predetermined value, said movable contact being brought into contact with the second pair of fixed contact points against the action of said spring when the vacuum pressure is more than the predetermined value; and

(5) a temperature switch connected in parallel with said vacuum pressure switch, said temperature switch being operatively connected to said passenger compartment and said clutch relay for energizing said clutch relay when the temperature within the passenger compartment rises above a predetermined value, regardless of the state of said vacuum pressure switch.

4,355,524
COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Kidde, Inc. (Presto Lock Company Division), Garfield, N.J.

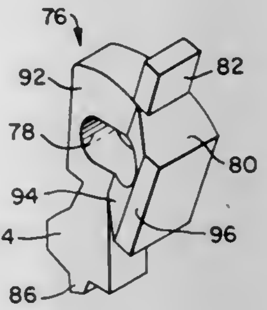
Filed Jul. 11, 1980, Ser. No. 167,919

Int. Cl.^{3} E05B *37/02*

U.S. Cl. 70—312 **9 Claims**

1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift member for moving said elements axially, means mounting said shift member in said casing for movement

substantially transversely to said common axis, said shift member including an actuator portion extending through an opening in said casing and means providing a camming action between said shift member and said elements for causing said shift member to move said elements axially responsive to transverse movement of said shift member when operated by said actuator portion, wherein said shift member is located between said combination elements and a reaction surface of said casing extending transversely to said axis and wherein said means providing a camming action includes a camming portion on a surface of said shift member facing the combination elements, the camming portion extending obliquely to said axis whereby movement of said actuator portion in said opening causes said camming surface to move said elements axially by reaction of said shift member with said reaction surface without axial movement of the shift member.



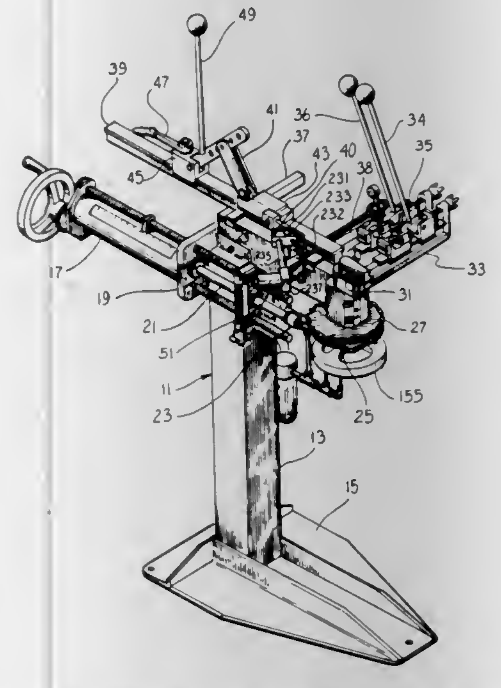
4,355,525
PRODUCTION TUBE BENDING MACHINE

James W. Carson, Rte. 1 Box 62, Fayetteville, Ark. 72701

Filed Sep. 4, 1979, Ser. No. 72,455

Int. Cl.^{3} B21D *7/04, 9/05*

U.S. Cl. 72—149 **10 Claims**



1. In a tubing bending machine including a linear actuator having an operating rod, a rotatable die table with a top adapted to support a die, a die with a bottom adapted to rest on said table, a tubing clamp, and a wiper block to bend a tubing workpiece, the improvement comprising,

a sprocket secured to rotate with said die table and clamp,

at least one projection on said top of said die table mating with a depression in said bottom of said die,

a draw bolt with a threaded upper end and a lower end,

a hand wheel secured to the lower end of said draw bolt, said draw bolt extending through said sprocket and die table and adapted to threadedly engage a tapped hole in the bottom of said die and secure it to said table,

a chain wrapped partially around said sprocket and having one end secured thereto; the other end of said chain being secured to the operating rod of said actuator, and

a torsion spring connected to said sprocket to rotate said sprocket in a direction to apply tension to said chain.

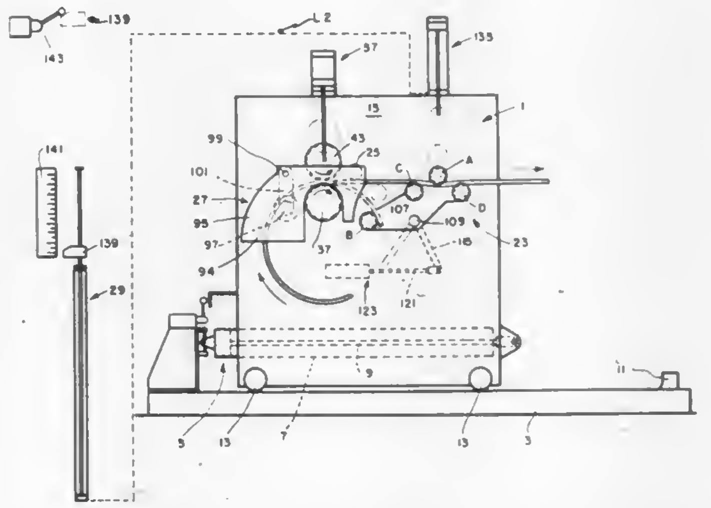
4,355,526
METHOD AND APPARATUS FOR UNCOILING AND STRAIGHTENING MATERIAL FOR PROCESSING THEREOF

John H. Miles, Ravenna, Ohio, assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Mar. 24, 1980, Ser. No. 133,054

Int. Cl.^{3} B21F *1/02*

U.S. Cl. 72—164 **22 Claims**



1. In combination with an apparatus for uncoiling material such as wire from a circular coil and feeding it along a passline for further processing comprising:

means for uncoiling said coil in a manner that the leading end of the wire assumes its natural curvature,

bending means located along said passline constructed and arranged for receiving said wire upon its exit from said uncoiling means,

said bending means including a first means positionable in an inoperative position away from said passline for engaging a leading end of said wire and positionable in an operative position close to said passline for bending said leading end against its natural curvature to cause it to take a path generally parallel to said passline, and

wire straightener means located along said passline constructed and arranged to receive said wire after said wire exits said bending means,

said straightener means including first means locatable close to said passline for assuming a straightening position with a longitudinal surface of said wire and second means positionable in a feeding position away from said passline and in an operative position close to said passline for assuming a straightening position with an opposite longitudinal surface of said wire, and

means for associating said first means of said bending means with said second means of said straightener means in a manner so that when said first means of said bending means is positioned in its said inoperative position away from said passline said second means of said straightener means is positioned in its said operative position close to said passline, and when said first means of said bending means is positioned in its said operative position close to said passline, said second means of said straightener means is positioned in its said feeding position away from said passline.

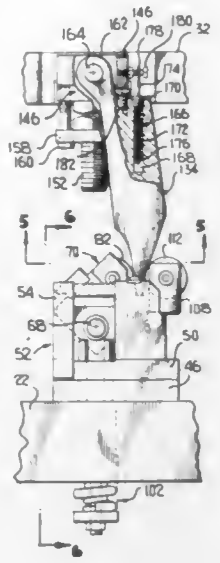
4,355,527
HOLD DOWN MECHANISM

Donald E. Miller, Mount Prospect, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Nov. 12, 1980, Ser. No. 206,330

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—351 **13 Claims**



1. A hold down mechanism for clamping in place an element, said mechanism comprising a support positioned adjacent the intended clamped position of said element, a carrier mounted in said support for guided movement away from said support in a controlled direction generally parallel to but opposite to an intended direction of clamping force on said element, resilient means reacting on said carriage opposite to said controlled direction for resiliently seating said carriage on said support, a pivot member extending transversely of said controlled direction and being mounted on said carriage for movement therewith in said controlled direction against the restraint of said resilient means, a hold down arm carried by said pivot member for swinging movement between a retracted position and an element clamping position, a hold down surface projecting from said arm for clamping engagement with said element, and actuating means engageable with said arm for first pivoting said arm about said pivot member to engage said hold down surface with said element and effect clamping of said element in place and then pivoting said arm about said hold down surface while moving said carrier and pivot member in said controlled direction against the resistance of said resilient means to apply a resilient predetermined clamping force against said element.

4,355,528
DEVICE FOR BENDING METAL PIPE

Günter Rothenberger, Bad Homburg, Fed. Rep. of Germany, assignor to Rothenberger GmbH & Co., Frankfurt am Main, Fed. Rep. of Germany

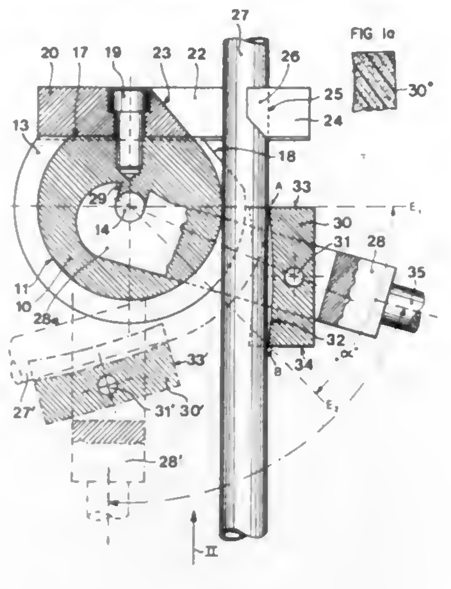
Filed Feb. 21, 1980, Ser. No. 123,324

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904885

Int. Cl.³ B21D *7/02*

U.S. Cl. 72—388 **15 Claims**

1. A bending device for metal pipe with and without plastic jacketing comprising: a short cylindrical segment including a circumferential groove which determines the bending radius of the pipe to be bent; support means for holding the pipe to be bent tangentially with respect to the groove; a lever; means mounting the lever for continuous concentric pivotable movement about the axis of the segment; a pressing block; means mounting the pressing block on the lever for pivotal movement about an axis parallel to the segment axis; and wherein the pressing block includes means forming a working surface which has an approximately semicircular, concave cross section in a plane disposed parallel to the pivot axis of the pressing block and the segment axis and a concave cross section in a plane disposed perpendicular to those axes.



4,355,529
APPARATUS FOR MANUFACTURING A CYLINDRICAL MEMBER

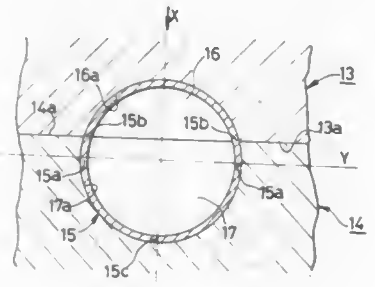
Tatsuhiko Fukuoka; Shigeo Ichikawa, and Satoru Nomichi, all of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

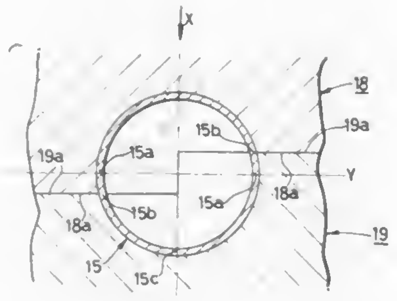
Filed Oct. 11, 1979, Ser. No. 84,034

Claims priority, application Japan, Oct. 16, 1978, 53/127017

Int. Cl.³ B21D *37/10*

U.S. Cl. 73—412 **5 Claims**





1. A sheet-shaping die structure for manufacturing a cylindrical article by bending a sheet, comprising: a pair of dies having opposed parallel faces, said dies being adapted to be supported for reciprocal relative movement in a first direction between a first position in which said faces are spaced from each other and a second position in which said faces abut against each other, said dies having opposed, complementary, concave, partially cylindrical recesses in said faces thereof, said recesses mating with each other when said dies are in said second position to define a cylindrical cavity of precise cylindrical shape so that a sheet disposed within said recesses is bent into a precise cylindrical shape as said dies are moved from said first position to said second position, said faces having portions extending outwardly from the longitudinal edges of said recesses, each said portion forming a sharp corner with the adjacent edge of its associated recess, said portions of said faces being offset from a first plane which includes the axis of said cylindrical cavity and which first plane is perpendicular to said first direction of relative reciprocal movement of said dies, said portions of said faces being offset from said first plane by a sufficient distance that the portions of said sheet that are bent last as said dies are moved from said first position to said second position contact diametrically opposite unbroken wall portions of said cavity which are vertically offset from said sharp corners, such that said sheet is bent into said cylindrical article without formation of outwardly projecting bulges on said cylindrical article at positions corresponding to said sharp corners.

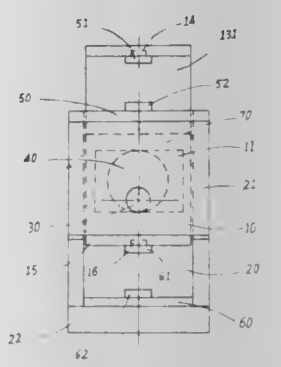
4,355,530
PUNCHING MACHINE FOR MAKING DIFFERENT PRODUCTS AT THE SAME STEP

Ho L. Chen, 480, Chang Sui Rd., Sec. 2, Fu An Tsun, Shu Sui Hsiang, Chang Hua, Taiwan

Filed Dec. 2, 1980, Ser. No. 212,259

Int. Cl.³ B21J *9/18*

U.S. Cl. 72—452 **4 Claims**



1. A punching machine for making different products in the same cycle of operation comprising

a driven shaft;

an eccentric cam driven by said driven shaft;

a normally upright body having two lead plates,

- a rear member with two sides united with said two lead plates, and
- a bottom seat located at the bottom of said body and having a horizontal section;

a sliding member mounted for reciprocal vertical movement on said lead plates, said sliding member having a central part with a recess for receiving and being driven by said eccentric cam, said sliding member having a top part with a horizontal portion that is extended above said central part, and said sliding member having vertically aligned holes, an upper hole at the center of the bottom surface of said top part horizontal portion for retaining a top punch and a lower hole in the bottom surface of said sliding member for retaining a bottom punch;

a first fixture for mounting a top punching-die and mounted at a central location in the top part of said machine body; and

a second fixture for mounting a bottom punching-die and mounted on said bottom seat.

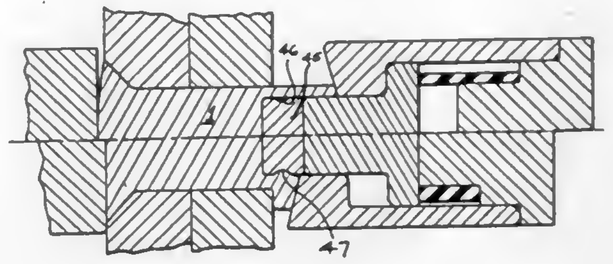
4,355,531
RIVET FASTENER SYSTEM

Irwin E. Rosman, Woodland Hills, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Division of Ser. No. 914,858, Jun. 12, 1979, Pat. No. 4,223,433, which is a division of Ser. No. 681,431, Apr. 29, 1976, Pat. No. 4,126,076, which is a division of Ser. No. 549,330, Feb. 12, 1975, Pat. No. 3,995,406, which is a continuation-in-part of Ser. No. 360,533, May 15, 1973, abandoned, and Ser. No. 480,760, Jun. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 321,457, Jan. 5, 1973, abandoned. This application May 5, 1980, Ser. No. 146,604

Int. Cl.³ B21J *13/02*

U.S. Cl. 72—479 **3 Claims**



1. A tool having a central axis, for upsetting the tubular upsettable end portion of a rivet having a coincident central axis, a solid shank, said tubular upsettable portion having a free end, and within said free end, a recess with an inner circular wall within which there is disposed a core pin to engage said inner circular wall of said tubular upsettable end portion, said tool comprising a tool piece having an annular end face to exert an endwise compressive force on said free end of said upsettable end portion, an inner tool portion with a peripheral surface adapted to engage said inner circular wall so as to enter the tool, said inner tool portion also being adapted to exert an axial compressive force on said core pin, whereby an axial end load exerted by said tool piece on said free end causes said tubular upsettable portion to bulge and form an upset head, said free end being deflected inwardly toward said inner tool portion which limits the inward excursion of said free end, and yielding means axially interposed between the two tool portions, whereby the inner tool portion can exert force on the core pin only after the outer tool portion has at least partially formed the upset head.

4,355,532
APPARATUS FOR TESTING DAMPING FORCES OF SHOCK ABSORBERS

Jun-ichi Ikeda, Tokyo, and Yasuo Hasegawa, Sagamihara, both of Japan, assignors to Tokico Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 22, 1980, Ser. No. 199,518

Claims priority, application Japan, Oct. 23, 1979, 54-136843

Int. Cl.³ G01M *17/04*

U.S. Cl. 73—11 **5 Claims**

1. An apparatus for testing a shock absorber, wherein the shock absorber has first and second ends connected by a damping mechanism, and wherein the apparatus measures the damping forces of the damping mechanism during both the compression and extension strokes, the apparatus comprising:

a frame means for supporting the shock absorber;

first holding means for mounting the first end of the shock absorber on the frame means;

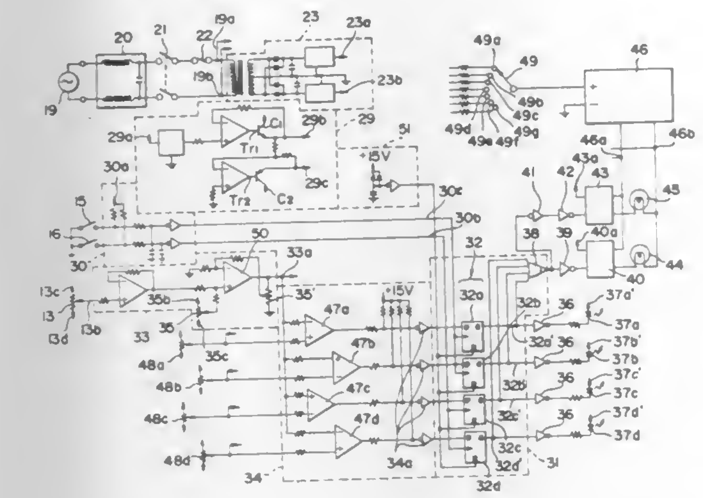
second holding means for mounting the second end of the shock absorber on the frame means;

means for reciprocating the first holding means with respect to the second holding means to compress and extend the shock absorber, said reciprocating means including:

- a rotor member mounted on the frame means, for rotating the rotor member and means attached between the rotor and the first holding means for converting the rotation of the rotor member to reciprocating motion to thereby reciprocate the reciprocating means;

angular, position-sensing means juxtaposed between the rotor member and frame member for monitoring directly the angular position of the rotor member, said position-sensing means including means for generating a position signal indicative of the compression or extension of the shock absorber;

force detecting means attached to the second holding means for measuring the force imparted to the second holding means as the first holding means reciprocates with respect thereto, said force detecting means including analogue signal generating means for generating an analogue signal which is proportional to the force measured;



a monitoring circuit connected to both the position and analogue signal generator means for providing a periodic output signal during outer limits of the compression and extension strokes which output is indicative of the damping force at the outer limits of extension and compression;

reference circuit means for providing a reference signal indicative of desired levels of damping force at compression and extension of the shock absorber;

decision circuit means for comparing the output of the monitoring circuit with the reference signal, and

means for indicating when the output of the monitoring circuit is less than the reference signal to thereby indicate whether the damping forces are within acceptable limits.

4,355,533

GAS MEASUREMENT AND ANALYSIS SYSTEM

James F. Muldoon, Neptune, N.J., assignor to Electronic Associates, Inc., West Long Branch, N.J.

Continuation of Ser. No. 946,784, Sep. 28, 1978, Pat. No. 4,229,968. This application Aug. 6, 1980, Ser. No. 175,725

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.^{3} G01N *31/08*

U.S. Cl. 73—23.1 **12 Claims**

1. A system for on-line measurement and real-time analysis of a gas mixture from a gas source input comprising:

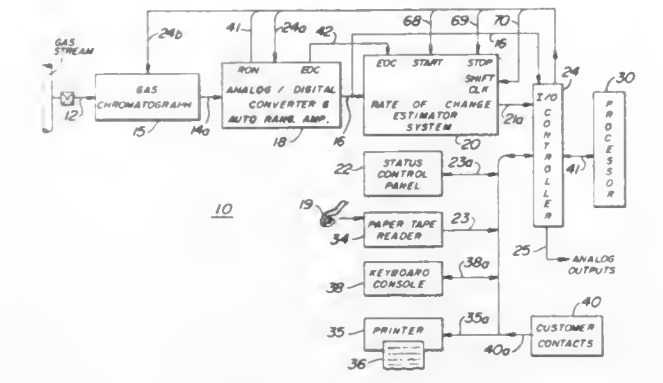
(a) gas chromatograph means for converting said mixture from said gas source input to a continuous, time-varying signal which is a function of the concentration of the constituent gases emanating serially from the output of said chromatograph,

(b) auto-ranging amplifier means for amplifying said time-varying signal over a dynamic voltage range,

(c) analog-to-digital converter means for sampling said amplified time-varying signal to convert said signal to digital form as a sampled data signal,

(d) on-line digital feedback means for providing an estimated rate of change of said sampled data signal, said feedback means including means for combining past time value signals with said sampled data signal for producing an area signal defined during a predetermined time period which area signal is proportional to the estimated rate of change signal thereby to perform differentiation and integration at the same time,

(e) continuous detector means coupled to said sampled data signal and said digital feedback means for determining the relative amount of each constituent gas of said gas mixture,



(f) on-line evaluation means responsive to said relative amount of each constituent gas and the time that said constituent gases emerged from said chromatograph for determining the correct chemical identity of each constituent gas of said gas mixture, and

(g) on-line determination means responsive to said chemical identity of each constituent gas for determining the correct overall heating value of said gas mixture.

4,355,534

DEVICE FOR DETECTING DEFECTIVE COMBUSTION IN AN INTERNAL COMBUSTION ENGINE

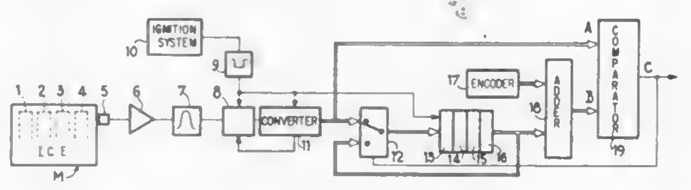
Raymond Roger, Versailles, France, assignor to Automobiles Peugeot and Automobiles Citroen, both of Paris, France

Filed Dec. 31, 1980, Ser. No. 221,570

Claims priority, application France, Jan. 7, 1980, 80 00191

Int. Cl.^{3} G01L *23/22*

U.S. Cl. 73—35 **4 Claims**



1. In a device for detecting combustion defects in an internal combustion engine comprising a detector for placing on the cylinder head of the engine and a system for utilising signals delivered by said detector and comprising means for temporarily storing in the course of each cycle data relating to each cylinder of the engine, and means for comparing the data relating to each cylinder, stored in succession in the course of a cycle, with corresponding data obtained in the course of the following cycle; the improvement wherein the utilisation system comprises means connected to the detector for converting analog data delivered by the detector into digital data and said temporary storing means comprise as many shifting registers connected in series as the engine has cylinders, said registers being connected to a switching circuit which is connected to an output of said comparing means so as to be controlled by the output signal of said comparing means, said switching means being capable of selectively connecting a first shifting register with an output of the converting means and with an output of a last shifting register, the last-mentioned output being furthermore connected to means for adding a threshold value and connected to said comparing means.

4,355,535

APPARATUS FOR AUTOMATICALLY MEASURING THE PROPERTIES OF AIR-PERMEABLE ROD-LIKE ARTICLES

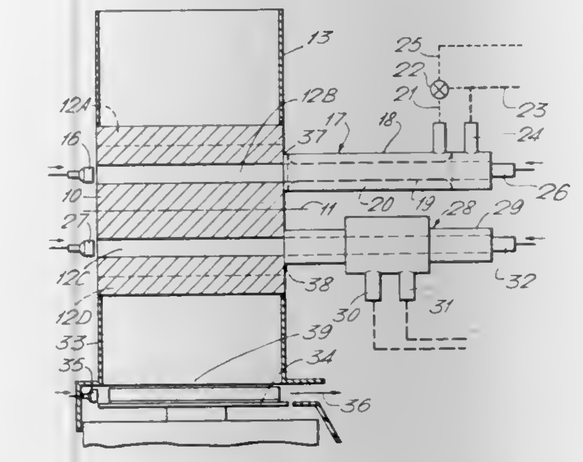
Roger Vaughan, Pill, England, assignor to Imperial Group Limited, Bedminster, England

Filed Oct. 15, 1980, Ser. No. 197,285

Claims priority, application United Kingdom, Oct. 19, 1979, 7936345

Int. Cl.^{3} G01M *3/26*

U.S. Cl. 73—37.8 **10 Claims**



1. An apparatus for automatically measuring a plurality of physical properties of air-permeable rod-like articles comprising:

(a) a plurality of measuring stations,

(b) an indexing drum arranged to receive an article and to rotate to present the article sequentially at each of the measuring stations,

(c) means for transferring the article from the drum to the measuring station at which it is presented,

(d) means at said measuring station to measure a respective physical property of the article,

(e) means for generating a signal indicative of the magnitude of the physical property measured at the measuring station,

(f) means for transferring the article from the measuring station back to the drum in readiness for being presented at the next measuring station, and

(g) means for measuring and recording said signals.

4,355,536

SLUDGE MEASURING APPARATUS AND ULTRASONIC PROBE ASSEMBLY THEREFOR

James L. McShane, Churchill Borough; Leonard R. Golick, Penn Township, Allegheny County, and Stanley R. Spiegelman, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1979, Ser. No. 80,976

Int. Cl.^{3} G01N *29/00*

U.S. Cl. 73—633 **19 Claims**

1. Apparatus for ultrasonically measuring sludge accumulations between the tubes of a heat exchanger having a plurality of tubes straddling a central vertical aisle defined between vertical portions thereof, and contained within a vessel filled with water as a medium for propagating ultrasounds, comprising:

a probe carrier of elongated shape having rigidity in one plane and being bendable out of said plane;

an ultrasonic probe head mounted at one end of said probe carrier;

electrical conductors for said probe head carried by said probe carrier;

an elongated support adapted to be mounted horizontally within said aisle and on said vessel;

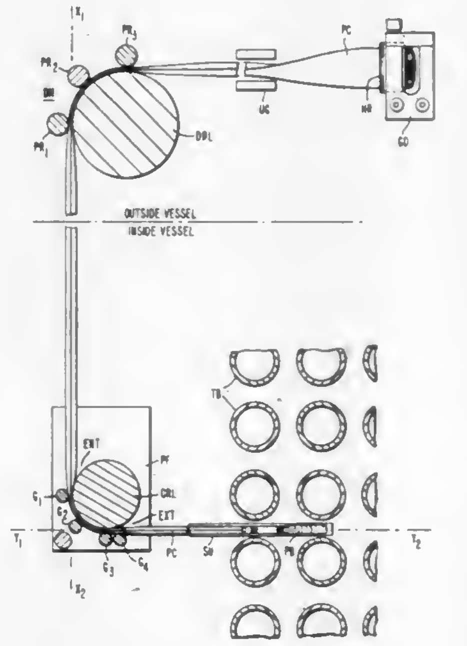
a carriage mounted for movement at successive positions along said elongated support;

guider means on said carriage defining in the horizontal plane an L-shaped path between an entry and an exit thereof;

said probe carrier being passed in said one plane and in a flexed condition across said entry and exit of said guider means into said L-shaped path;

means for feeding said probe carrier forward through said guider means in relation to one of said carriage positions and for extending said probe head horizontally into a lane defined at 90 degrees to said aisle between adjacent vertical portions of tube for said one carriage position;

said probe head being adapted to generate ultrasonic signals in said lane through said medium toward said sludge accumulations and to detect ultrasonic signals reflected back therefrom when positioned by said feeding means at a given distance inside said lane; and



means connected at the other end of said probe carrier and to said electrical conductors for deriving an indication of the depth of said sludge accumulations in relation to successive said carriage positions and under the operation of said feeding means for each corresponding lane.

19. An ultrasonic transducer assembly comprising:

a grounded metallic frame,

a piezoelectric element having a front and back electrode;

said back electrode being separated from said frame by an isolation spacer having a central opening;

an electrical lead connected to said back electrode through said central opening of said spacer and through said frame;

a peripheral insulation between said front and back electrodes at the periphery thereof;

an electrical connection between said front electrode and said frame externally of said spacer and

said frame, spacer, peripheral insulation, electrical connection and front electrode being embedded altogether in an epoxy resin and said epoxy resin being machined to provide front and side faces for the overall assembly.

4,355,537
TEMPERATURE COMPENSATION FOR TRANSDUCER COMPONENTS

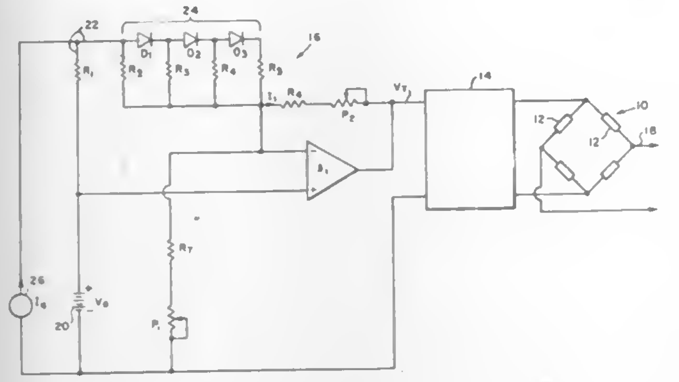
Leonard A. vander Have, Milford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

PCT No. PCT/US80/01000, § 371 Date Nov. 6, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO82/00519, PCT Pub. Date Feb. 18, 1982

PCT Filed Aug. 4, 1980, Ser. No. 262,072

Int. Cl.^{3} G01L *19/04*

U.S. Cl. 73—708 **8 Claims**



1. An electrical circuit for compensating the temperature dependence of a sensor element in a transducer system, the system having a signal generator for activating the sensor element, comprising:

a current source maintained at substantially the same temperature as the sensor element and having an output that is linear with temperature;

a temperature-independent reference voltage source;

a variable conductance ladder connected as one branch of a Norton divider having a fractional input current from said current source and a current output that is piece-wise linear with increasing current from said current source;

an operational amplifier connected between the variable conductance ladder and the voltage source, and having an output which is the difference between the reference voltage and a voltage which is proportional to the fractional current passing through the variable conductance ladder;

whereby the output voltage of the amplifier varies inversely in accordance with the temperature dependent properties of the sensor.

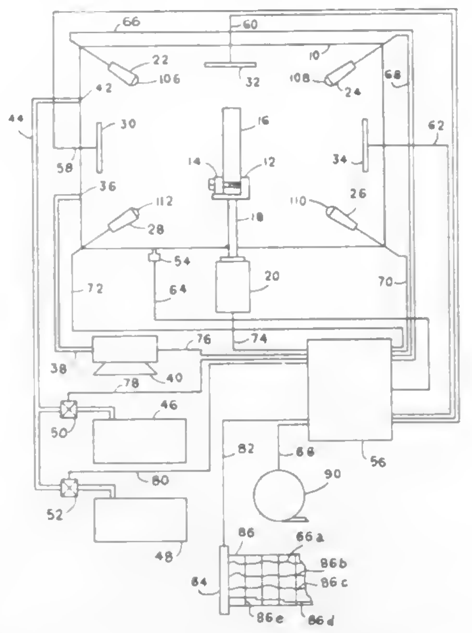
4,355,538
EXO-ELECTRON NON-DESTRUCTIVE TEST DEVICE AND METHOD

Edward N. Hall, Rolling Hills Estates, Calif., assignor to Chromalloy American Corporation, St. Louis, Mo.

Filed Feb. 26, 1981, Ser. No. 238,478

Int. Cl.^{3} G01N *3/32*

U.S. Cl. 73—811 **20 Claims**



1. A non-destructive testing device comprising:

a test enclosure;

holding means in said enclosure including means for removably holding a test piece to be tested;

vibratable means connected to said holding means for vibrating said holding means and a test piece held thereby;

radiant energy emitting means in said enclosure for irradiating a test piece in said holding means;

measuring means in said enclosure for measuring electrons given off by a test piece held in said holding means responsive to the irradiation of said test piece by said radiant energy emitting means; and

means for controllably introducing a gas into said enclosure.

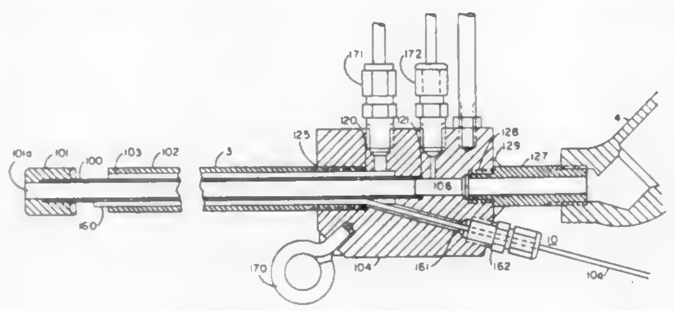
4,355,539
FLUID SAMPLING PROBE

Klaus W. Schatz, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,483

Int. Cl.^{3} G01N *1/22*

U.S. Cl. 73—863.11 **3 Claims**



1. A probe for obtaining high temperature fluid samples comprising:

(a) a fluid sampling conduit through which the fluid samples pass,

(b) a sheath surrounding said fluid sampling conduit along a portion of its length to form an annulus between said fluid sampling conduit and said sheath,

(c) a supply of cooling fluid,

(d) a cooling fluid conduit for providing cooling fluid flow through said annulus to cool the fluid samples flowing through said fluid sampling conduit,

(e) a thermocouple having its sensing end located within said annulus to provide a signal representative of the temperature of said cooling fluid, and

(f) means for deflecting the cooling fluid exiting from said annulus away from the sampling end of said fluid sampling conduit.

4,355,540
CENTRIFUGAL BRAKE FOR A GYROSCOPE WITH CARDAN SUSPENSION

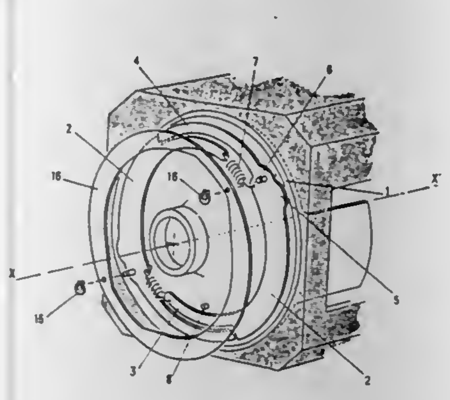
Pierre A. Chombard, Boulogne, and Daniel Darni, Villeneuve St Georges, both of France, assignors to Societe Francaise d'Equipements pour la Navigation Arrienne, Velizy Villacoublay, France

Filed Jul. 3, 1980, Ser. No. 165,942

Claims priority, application France, Jul. 4, 1979, 79 17319

Int. Cl.^{3} G01C *19/26*

U.S. Cl. 74—5.1 **3 Claims**



1. A centrifugal brake for a gyroscope with Cardan suspension mounted in a housing fixed to a mobile support, said suspension having an outer ring which rotates about an external axis of the suspension, said brake comprising two identical weights mounted on one face of said outer ring, said weights being articulated on two diametrically opposed axes with respect to and parallel with said external axis of the suspension, each of said weights comprising a raised portion adapted to rub on a fixed part of said housing to thus exert a braking action on the assembly of the gyroscope and its suspension about said external axis, at least one return spring means interconnecting said weights, at least one stop limiting travel of said weights towards said external axis, said two weights comprising two inertial elements each of substantially "C" shape; each of said elements including a central portion and two end portions thinner measured radially than said central portion; one of said end portions on each of said weights comprising, with respect to said external axis, an outer end portion and the other of said end portions comprising an inner end portion; said at least one return spring means being fixed at one end to said central portion of one of said elements and at its other end to said radially inner end portion of the other of said elements; each of said elements being formed with a shoulder at the junction of its central portion and the radially inner end portion, and said shoulder of each element being in contact with said outer end portion of the companion element under the urging of said spring means.

4,355,541
MAGNETIC GYROSCOPE

Shigeo Okubo, Menlo Park, Calif., assignor to Design Professionals Financial Corp., Monterey, Calif.

Filed Sep. 22, 1980, Ser. No. 189,545

Int. Cl.^{3} G01C *19/28*

U.S. Cl. 74—5.6 E **14 Claims**

1. A magnetic gyroscope comprising:

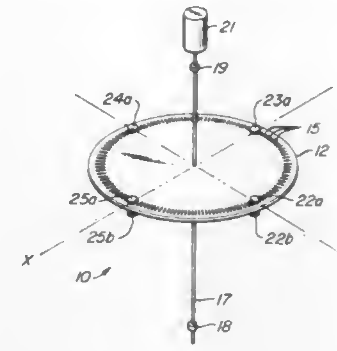
a member having an axis of rotation;

driving means for rotating the member about its axis of rotation;

a plurality of magnetic regions on the member; and at least one sensing means positioned in proximity to the member for detecting changes in the distance between at least one sensing means and each of the plurality of magnetic regions as each region passes the at least one sensing means, the at least one sensing means generating an output signal in relation to any change in said distance;

the at least one sensing means including a cylindrical housing for providing an internal magnetic path, electrically conductive cylindrical coil means within the housing, said coil means and said housing having a common axis of symmetry, and means for generating a magnetic field within the internal magnetic path through the coil means and in a region exterior to the housing, whereby variations in the strength of that portion of the field in the region exterior to the housing are sensed by the electrically conductive coil means;

the magnetic field generating means including first and second means for generating first and second opposing magnetic fields, the first magnetic field extending from the first pole of the first field generating means through an upper portion of the internal magnetic path through the coil means and to the other pole of the first field generating means, the second magnetic field extending from a first pole of the second field generating means along the exterior region through a lower portion of the internal magnetic path and through the coil means to the other pole of the second field generating means.



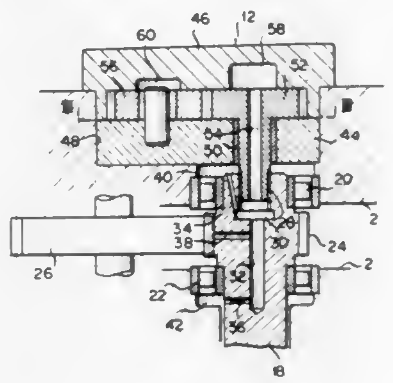
4,355,542
SCAVENGING PUMP

Yoshio Tsutsumi, Hirakata, and Tomoyuki Takahashi, Yawata, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 180,893

Int. Cl.^{3} F16H *57/04;* **F01M** *9/00*

U.S. Cl. 74—467 **2 Claims**



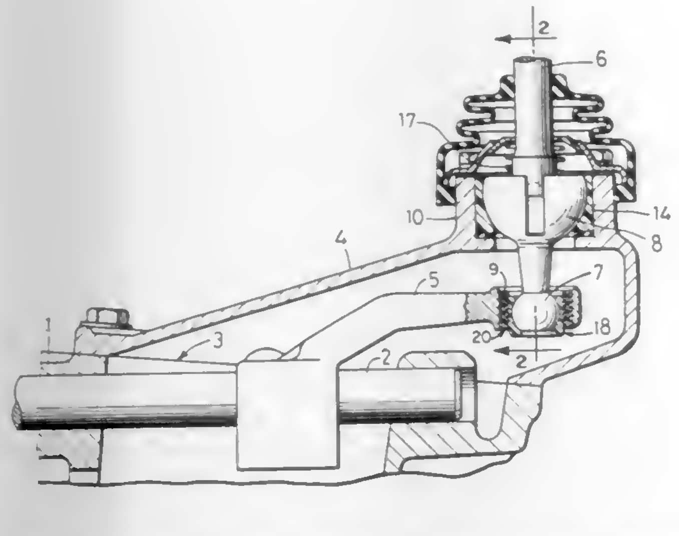
1. A scavenging gear pump for use in a final drive including a casing for the final drive, the casing having formed therein a fluid reservoir for lubricant, and an input shaft rotatably supported through bearing means in said casing, said input shaft having formed therein a first fluid chamber leading to said bearing means, said scavenging gear pump comprising:

a housing detachably mounted on said casing, said housing having formed therein an inlet port and an outlet port of said pump and a second fluid chamber communicating with said outlet port, said inlet port being communicated with said fluid reservoir;

a drive gear rotatably mounted in said housing, said drive gear being coupled with said input shaft and having formed therein a fluid passage interconnecting said first and second fluid chambers; and a driven gear rotatably mounted in said housing, said driven gear being in mesh with said drive gear.

4,355,543
DEVICE FOR SUPPORTING A SHIFT LEVER IN A MANUAL TRANSMISSION FOR AN AUTOMOBILE

Kazuhito Ikemoto; Nobuaki Katayama; Yukio Terakura, all of Toyota, and Kan Sasaki, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Dec. 12, 1980, Ser. No. 215,702
Claims priority, application Japan, Aug. 20, 1980, 55-118555
Int. Cl.³ G05G *9/18;* F16C *11/08*
U.S. Cl. 74—473 P 6 Claims

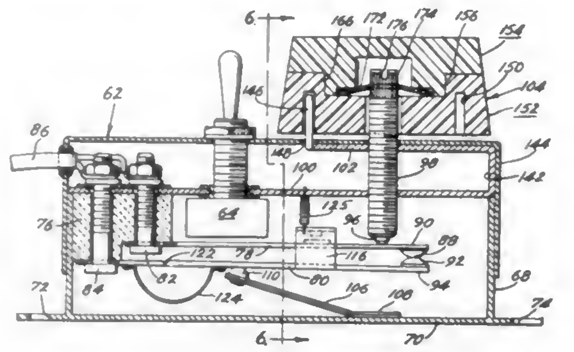


1. In combination with a manual transmission for an automobile including a shift lever having a large spherical portion and a small spherical portion provided in the lower end thereof, a shift lever retainer supporting said large spherical portion of said shift lever for shift-and-select operation, a resin bushing having a cylindrical outer surface spherically engaging with said small spherical portion of said shift lever and a shift lever housing fixed to an operation lever shaft extending toward said transmission, said bushing being inserted into a hole formed in said shift lever housing for connecting said shift lever with said shift lever housing, a device for supporting said shift lever comprising a cylindrical vibration preventing bushing interposed between said cylindrical outer surface of said resin bushing and the inner surface of said hole in said shift lever housing, said cylindrical vibration preventing bushing comprising a metallic outer cylinder inserted under pressure into said inner surface of said hole in said shift lever housing, a cylindrical vibration absorbing member secured to the inner surface of said outer cylinder and a resin layer formed on the inner surface of said cylindrical vibration absorbing member for slidingly contacting said outer surface of said resin bushing engaging with said small spherical portion of said shift lever, said resin layer having a low coefficient of friction.

4,355,544
CONTROL KNOB WITH ROTATION LIMITER

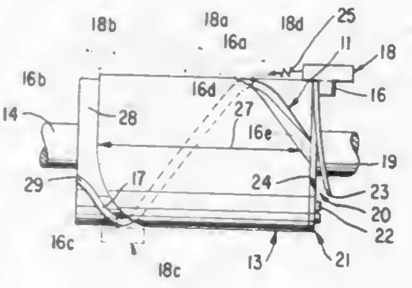
Arnold R. Post, 133 Pelham Rd., Philadelphia, Pa. 19119
Division of Ser. No. 953,005, Oct. 20, 1978, Pat. No. 4,240,579. This application Aug. 25, 1980, Ser. No. 181,178
Int. Cl.³ G05G *1/12, 5/04;* H01H *37/28*
U.S. Cl. 74—526 4 Claims

1. Apparatus for establishing a predetermined limit in the rotation of a manually rotatable control shaft comprising a manually operable knob, speed nut means, fixed with respect to said knob, and having an opening for receiving said shaft, said speed nut means securing said knob permanently to said shaft in fixed relationship, and means located underneath said knob and engageable with said knob for limiting the rotation of said knob.



4,355,545
CONTROLLED SINGLE-OPERATION CAM MECHANISM

Roger J. Ross, Mont St-Gregoire, Canada, assignor to The Singer Company, Stamford, Conn.
Division of Ser. No. 150,254, May 15, 1980. This application Aug. 21, 1981, Ser. No. 295,040
Int. Cl.³ F16H *53/02*
U.S. Cl. 74—567 3 Claims

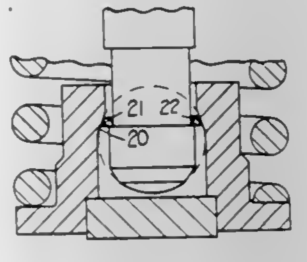


1. A single operation cam arrangement comprising: a rotatable cam body; a cam follower; means shiftably supporting said cam follower for movement back and forth between a waiting position adjacent a first part of the cam body and an actuated position adjacent a remote part of the cam body; a cam surface extending along the cam body from an entrance portion at the remote part of the cam body to an exit end adjacent the first part of the cam body to engage and shift said cam follower to said waiting position adjacent said first part of the cam body when the cam follower is in its actuated position and the cam is rotated; a resilient trap attached to the cam body between said exit end of the cam surface and said waiting position of the cam follower adjacent said first part of the cam body, the trap being resiliently movable to allow the cam follower to be forced past the trap by pressure of the cam surface as the cam rotates; and means for shifting said cam follower independently of said cam surface from said waiting position adjacent said first part of said cam body to said actuated position adjacent said remote part of said cam body.

4,355,546
RECIPROCABLE PLUNGER FUEL INJECTION PUMP

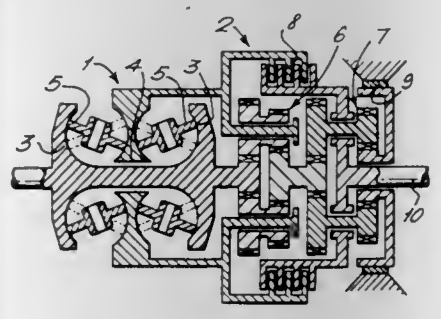
Kieron J. Moloney, Cheltenham, and Gerald S. Thomas, Longlevens, both of England, assignors to Lucas Industries Limited, Birmingham, England
Filed Jul. 3, 1980, Ser. No. 165,672
Claims priority, application United Kingdom, Aug. 9, 1979, 7927794
Int. Cl.³ F16H *21/14*
U.S. Cl. 74—569 3 Claims

1. A reciprocable plunger fuel injection pump comprising a pumping plunger reciprocable within a bore from which it extends, a spring abutment mounted about the outer end of the plunger, said spring abutment being of generally cylindrical form and having a flange for engagement by a spring, a stepped bore defined in the abutment and into which the outer end portion of the plunger extends, the outer end of the plunger being of part spherical form, a thrust member carried by the spring abutment for engagement with the outer end of the plunger, an inclined annular surface formed by the step in the bore, said surface inclining outwardly towards the thrust member, and a ring defining a part spherical surface engageable with said inclined surface carried by the plunger, the portion of the spherical surface of the ring which engages with said inclined surface lying on the projected portion of a sphere of which the part spherical end of the plunger forms part, whereby the thrust member and spring abutment can rock relative to the plunger under the action of forces applied to the thrust member.



4,355,547
CONTINUOUSLY VARIABLE RATIO TRANSMISSION

Joseph J. Poole, Coventry, and Victor E. Strange, Solihull, both of England, assignors to BL Cars Limited, London, England
Filed May 30, 1979, Ser. No. 43,614
Int. Cl.³ F16H *15/08, 13/00, 3/74*
U.S. Cl. 74—690 17 Claims

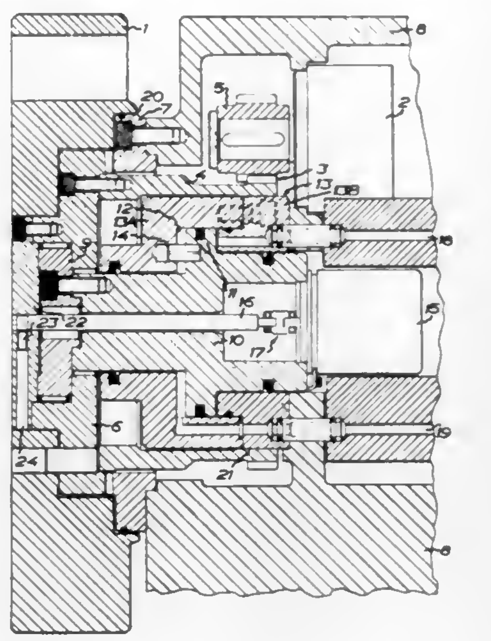


1. A continuously variable ratio transmission of the rolling friction type including a plurality of tiltable rollers and a hydraulic circuit for controlling the tilt angle of said rollers, said control circuit comprising:

a source of pressurized fluid;
a valve means;
a sink for said fluid;
a pair of outlets from said valve means for conveying fluid to said sink;
a flow restriction means for restricting fluid flow from each of said outlets to said sink; and
means operative in response to pressure difference in the fluid in said outlets for providing a force to balance roller torque reaction;
said valve means being arranged to have an actuating force which is proportional to said pressure difference, at least under steady state conditions.

4,355,548
TOOL TURRET

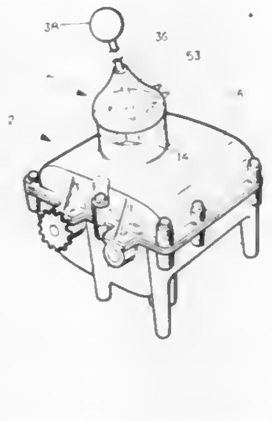
Rolf Svensson, and Ingemar Svensson, both of Västeras, Sweden, assignors to SMT Machine Company AB, Sweden
Filed Aug. 19, 1980, Ser. No. 179,394
Int. Cl.³ B23Q *17/00*
U.S. Cl. 74—826 5 Claims



1. A tool turret comprising a turret head (1) which is displaceable between a rotational position and a working position, drive means (4, 5) adapted to rotate said turret head in said rotational position and being in constant engagement with the turret head, fixation means (6, 7) locking the turret head in said working position, and a transducer (15) sensing the position of the turret head which is rotatable with respect to a non-rotary body (10) axially displaceable with the turret head and having a circumferential projection (11) which serves as a piston and is received and axially displaceable in an annular recess (12) serving as a cylinder and being formed in a seat, receiving said body, of a member (13) supporting said body, said projection and said annular recess cooperating with each other to provide axial shifting of said body with the turret head between said rotational position and said working position, characterized in that said transducer (15) which is fixedly connected and axially displaceable with said body (10) is a pulse transducer adapted to sense the relative angular position between said body and said turret head.

4,355,549
SAFETY SWITCH FOR SMALL TRANSMISSION

Anton J. Reinhard, Fredericktown; and Hans Hauser, Chippewa Lake, both of Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio
Filed Nov. 8, 1979, Ser. No. 92,534
Int. Cl.³ B60K *41/06*
U.S. Cl. 74—850 9 Claims



1. A transmission including shift means having at least one gear-engaged position and a neutral position, said transmission

including a housing, said shift means comprising two adjacent shifter forks linearly moveable in parallel paths and a shift lever having a shift rod selectively engagable with either of said shifter forks, a terminal housing affixed to said transmission housing and having an opening through which said shift lever extends, said terminal housing having two terminals extending therefrom, said terminal housing forming an elongate channel with two terminal buttons positioned transversely in the bottom of said channel and electrically connected with said terminals, a switch slider located in said elongate channel and having an elongate slot extending transversely to the longitudinal extent of said channel, with said shift lever extending through said elongate slot, and an end of said slider having a conducting strip extending transversely across the lower surface thereof and positioned to contact both of said terminal buttons when said shift lever is in the neutral position.

4,355,550
TORQUE CONTROL FOR INTERNAL COMBUSTION ENGINES

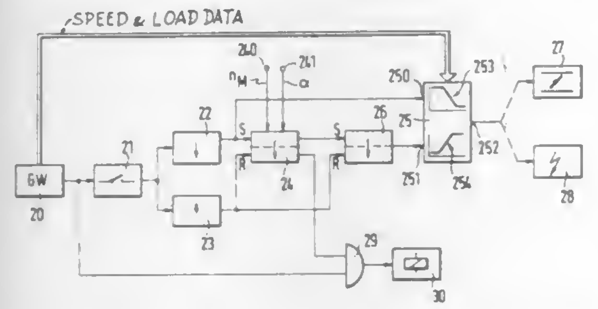
Gerhard Will, Steinheim; Walter Stroh, Cleebronn, and Martin Zechnall, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 28, 1979, Ser. No. 80,005

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842389

Int. Cl.³ B60K *41/06;* **F02D** *5/00, 13/02*

U.S. Cl. 74—872 **11 Claims**



1. In a drive system having an internal combustion engine, an automatic transmission having an input coupled to said internal combustion engine and an output, and a load coupled to said output of said automatic transmission,

apparatus for controlling the torque of said internal combustion engine during shifting from a prevailing gear to a subsequent gear, comprising

means for generating a gear selection signal;

function generator means (25) having a first input (250) connected to said gear selection signal generator means for generating a control signal gradually changing the torque of said internal combustion engine as a predetermined function of time, and a second input;

first timing means (24) connected to said gear selection signal generator means for generating a first timing signal in response to said gear selection signal;

means (30) connected to said first timing means for disengaging said prevailing gear in response to said first timing signal; and

second timing means (26) having an input connected to said first timing means and an output connected to said second input of said function generator means.

4,355,551
CHAIN SAW BAR ATTACHMENT

Pete D. Kolleas, 10855 SW. Park St., Tigard, Oreg. 97223

Filed Jun. 30, 1980, Ser. No. 164,328

Int. Cl.³ B23D *63/16*

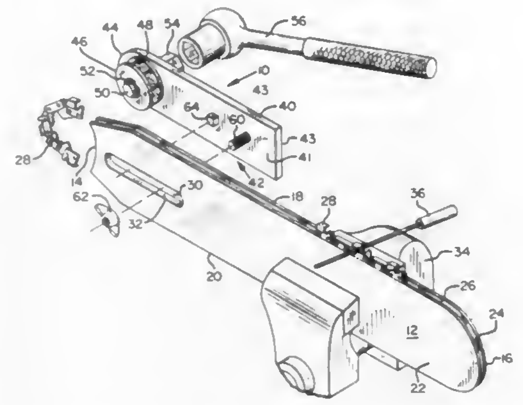
U.S. Cl. 76—78 R **5 Claims**

1. A chain saw bar attachment for a chain saw bar having a peripheral track for guiding a saw chain and which is detached from a chain saw comprising:

an elongated body;

mounting means for mounting said body to the connecting end portion of the bar with a free end portion of the body projecting outwardly from the connecting end; and

said body including a first elongated planar face which abuts one side surface of the chain saw bar and a free end which projects outwardly from the chain saw bar when the body is mounted, the free end of said body having a first peripheral edge of arcuate shape; and



a nonrotatable saw chain guiding member mounted to the free end of said body, said saw chain guiding member having a second peripheral edge of an arcuate shape which is positioned parallel to and spaced from the first peripheral edge so as to define an arcuate saw chain guide track therebetween which is generally in the plane of the track of the saw chain bar so as to guide saw chain carried by the bar from the track at one side edge of the bar, about the connecting end of the bar and to the track at the other side edge of the bar as the saw chain is sharpened.

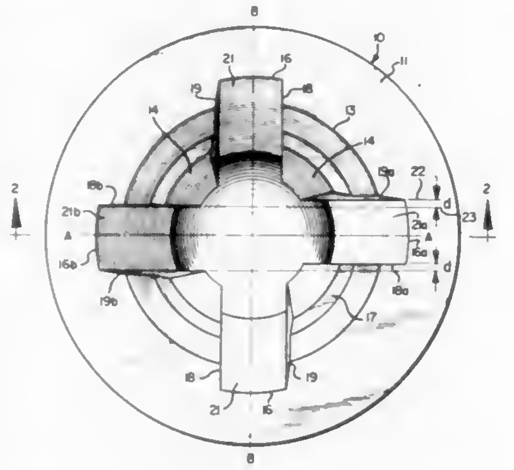
4,355,552
RECESSED HEAD SCREW

Charles E. Gutshall, Rockford, Ill., assignor to Technofast, Inc., Willowbrook, Ill.

Filed Apr. 14, 1980, Ser. No. 139,818

Int. Cl.³ F16B *23/00*

U.S. Cl. 81—460 **10 Claims**



1. A recessed head fastener having a recess including a central axially extending socket and a plurality of radially extending slots opening into said socket, each slot having a bottom surface of substantially uniform width interconnecting two opposed sidewalls;

said slots being arranged in diametrically opposite pairs, the slots in each pair being symmetrically offset in opposite directions with respect to a plane including the axis of the fastener,

the offset distance between diametrically opposite pairs of said slots being within the range of 0.005 to 0.0085 inches and sufficiently small to permit the insertion into said recess of a driver having a plurality of radial flutes corresponding in number with said slots, said flutes being symmetrically spaced about the axis of said driver,

insertion of said driver causing deflection of said flutes into frictional engagement with the walls of said slots, said engagement being sufficient to provide a cling fit of said fastener to said driver.

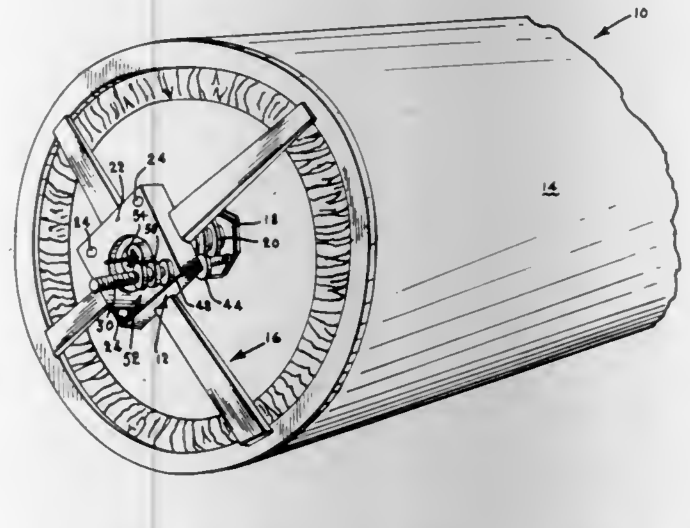
4,355,553
PORTABLE TURNING TOOL

Fredrick Z. Church, 27 Vandenberg Ct., Travis Air Force Base, Calif. 94535, and Calvin M. Swesey, 149 Glasgow Way, Vacaville, Calif. 95688

Filed Sep. 9, 1980, Ser. No. 185,470

Int. Cl.³ B23B *5/00;* **B24B** *19/00*

U.S. Cl. 82—4 R **10 Claims**



1. A portable turning tool for removing material from a workpiece mounted for rotation within a rigid member, said tool comprising an elongated element, means adjustably mounted at one end of said elongated element for removing material from the workpiece positioned in contact therewith, means mounted upon said elongated element proximate said one end of said elongated element for slidably but nonrotatably supporting said elongated element with respect to the workpiece thereby positioning said material removing means in a predetermined position with respect to the workpiece, means on said supporting means for removably and nonrotatably securing said supporting means to the rigid member, means mounted upon said elongated element proximate the other end of said elongated element for moving said elongated element with respect to said supporting means, and means mounted upon said elongated element interposed between said moving means and said supporting means for spacing said moving means from said supporting means and permitting said elongated element to move with respect thereto whereby upon simultaneous rotation of the workpiece adjacent said material removing means and movement of said elongated element with respect to the workpiece, a preselected amount of material can be removed from the workpiece.

4,355,554
WEB SECTIONING APPARATUS INCLUDING AN INTERFERENCE INDICATOR

Joseph L. Gregory, III, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 10, 1980, Ser. No. 195,759

Int. Cl.³ B26D *1/40, 7/26*

U.S. Cl. 83—37 **20 Claims**

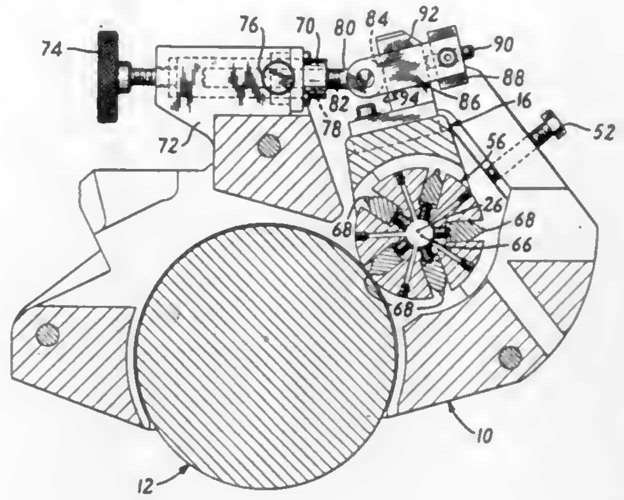
1. Web sectioning apparatus comprising:

a rotatable drum;

a rotatable knife assembly, said knife assembly including a cutting edge repetitively engagable with said drum upon rotation of said knife assembly and said drum, whereby a web carried by said drum may be sectioned during each such engagement;

indicator means responsive to the engagement of said cutting edge and said drum for providing an indication of the force resulting from said engagement, said indicator means including:

a force sensor for providing a signal indicative of said engagement force; and



processing and display means responsive to said signal for providing an observable display, said processing and display means including first and second comparators responsive to said signal and to first and second predetermined signals respectively indicative of first and second preselected engagement forces, and first, second and third lamps responsive to said first and second comparators.

4,355,555
BANDSAW BLADE DEVIATION DETECTING APPARATUS FOR HORIZONTAL BANDSAW MACHINES

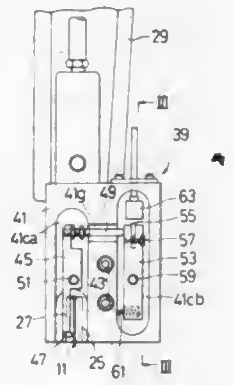
Morimasa Kobayashi, Isehara, and Nobuo Sakurai, Yokohama, both of Japan, assignors to Amada Company, Limited, Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,236

Claims priority, application Japan, Sep. 25, 1979, 54-122021

Int. Cl.³ B23D *53/00, 55/00, 59/00*

U.S. Cl. 83—62.1 **6 Claims**



1. A bandsaw blade deviation detecting apparatus for a bandsaw machine, said apparatus detecting the lateral deviations of a bandsaw blade which is guided by a pair of guide assemblies disposed along the line of cut, said apparatus comprising detecting means for detecting lateral division of the bandsaw blade, means for transforming the detected deviation signals into signals related to the span between the guide assemblies and the lateral deviation of the bandsaw blade from the line of cut, means for previously setting positive and negative allowable limits of the deviations of the bandsaw blade from the line of cut, comparing means for comparing said

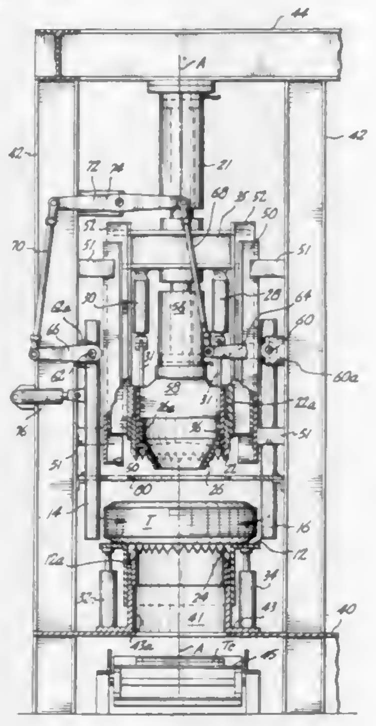
detected deviation and said previously set allowable limits and for generating a stop signal representative of deviation outside said allowable limits, and a control circuit for stopping the bandsaw machine when said stop signal is generated by said comparing means.

4,355,556
VEHICLE TIRE RIM CORE REMOVER

Carl M. Ulsky, Lake Stevens, Wash., assignor to KACA Corporation, Lake Stevens, Wash.

Filed Sep. 12, 1980, Ser. No. 186,498
Int. Cl.^{3} B26F *1/00*

U.S. Cl. 83—124 19 Claims



1. Apparatus for cutting the reinforcing rim cores out of used automotive tires and the like comprising:

coaxially vertically aligned, cooperably formed upper and lower annular cutters having matched cutting edges extending substantially around their respective mutually adjacent inside peripheries,

carrier means maintaining said cutters normally separated by a distance permitting lateral insertion and removal of a tire between the cutters,

support means substantially surrounding the lower cutter for supporting a tire in horizontally disposed position inserted between the separated cutters and substantially in coaxial alignment with the cutters,

carrier actuator means for said carrier means operable to move at least the upper cutter axially downward toward the lower cutter and into initial cutting engagement with the upper side of the supported tire for initiating severance of the rim cores from the carcass of such tire and thereafter to effect relative closure of the cutters substantially to sever the tire walls between the cutters,

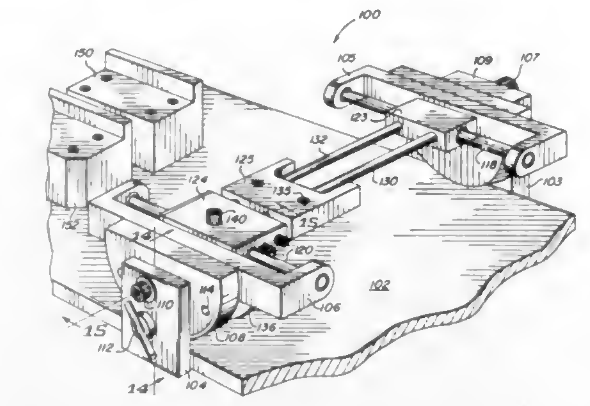
tire-engaging axially movable stripper means within the upper cutter and extending closely alongside its cutting edge,

and stripper actuator means operable upon such relative closure of the cutters to press the stripper means downwardly against the upper rim core and force the rim cores downwardly into the interior of the lower cutter and in the process thereof complete the severance by shearing action on the tire walls along the lower cutter's cutting edge.

4,355,557
APPARATUS FOR SAWING A WOOD PIECE IN CONFORMANCE WITH A TEMPLATE CONFIGURATION

Michael A. Mecsey, 2323 S. Butte Ave., Tempe, Ariz. 85282
Continuation-in-part of Ser. No. 947,354, Oct. 2, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,603
Int. Cl.^{3} B27B *11/04*

U.S. Cl. 83—565 4 Claims



1. An apparatus for cutting a work piece in a configuration conforming to a predetermined shape comprising:

(a) a base defining a work area;

(b) a pair of supports oppositely disposed at opposite lateral sides of said work area;

(c) brackets pivotally secured at said supports and adapted to pivot about an axis extending transversely of said work area, said brackets each carrying a longitudinally extending rail member;

(d) block means longitudinally slideable at each of said rail members having rod means extending transversely across said work area therebetween;

(e) table means transversely slideable along said rod means adapted to receive a cutting member having a depending blade and a depending follower means; and

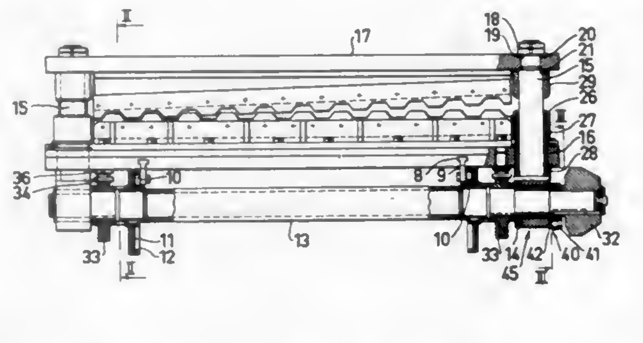
(f) work piece holder means disposed at either longitudinal side of said work area and template holder means disposed at either longitudinal side of said work area, said template holder means adapted to detachably secure a template thereto whereby movement of the follower means along said template is translated to corresponding motion to said blade at the work area whereby said entire table and attached blade member can be rotated about a transverse axis for imparting angular cuts.

4,355,558
SHEARS FOR SHEET METAL CUTTING

Leo Hofer, Pitea, Sweden, assignor to Nordtool AB, Ojebyn, Sweden

Filed Jun. 11, 1980, Ser. No. 158,637
Claims priority, application Sweden, Jun. 21, 1979, 7905344
Int. Cl.^{3} B26D *5/10, 5/16*

U.S. Cl. 83—587 10 Claims



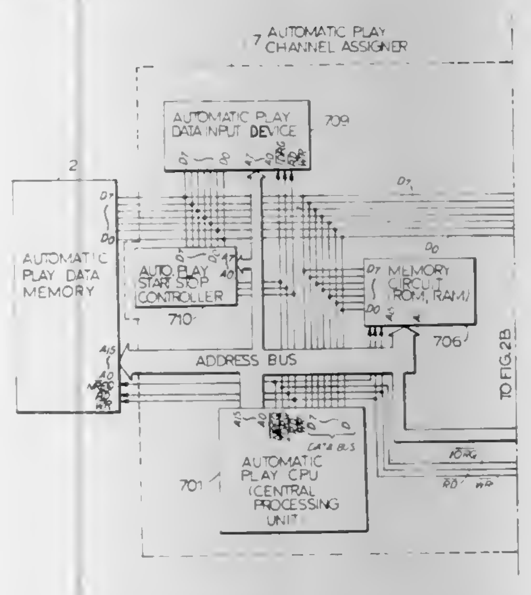
1. Shearing apparatus for shearing sheet material comprising: a horizontal stand; a lower stationary shearing blade rigidly attached to the stand; an upper shearing blade movable downwardly relative to the lower shearing blade to effect a shearing action; and a drive mechanism for supporting the movable blade and for raising and lowering the movable blade relative to the stationary blade, said drive mechanism including a horizontal shaft, mounting means vertically movable with respect to said stand and connected to said movable blade, said mounting means mounting said shaft for rotation about its axis and for vertical movement with said mounting means, means rotatable with said shaft for cooperating with said stand upon rotation of said shaft in one direction from a starting position to move said shaft, said mounting means and said movable blade downwardly relative to said stand whereby the weight of the movable blade and said drive mechanism is supported by said stand and whereby the dead weight of said drive mechanism and said movable blade is utilized by gravity action during downward shearing movement of the movable blade.

4,355,559
ELECTRONIC MUSICAL INSTRUMENT

Masaru Uya, Kadoma, and Kinji Kawamoto, Yahata, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 9, 1980, Ser. No. 138,516
Claims priority, application Japan, Apr. 12, 1979, 54-44919
Int. Cl.^{3} G10F *1/00*

U.S. Cl. 84—1.03 4 Claims


7 AUTOMATIC PLAY CHANNEL ASSIGNER
AUTOMATIC PLAY DATA INPUT DEVICE
709
2
AUTOMATIC PLAY DATA MEMORY
AUTO PLAY START STOP CONTROLLER
710
MEMORY CIRCUIT (ROM, RAM)
706
ADDRESS BUS
DATA BUS
AUTOMATIC PLAY CPU (CENTRAL PROCESSING UNIT)
701
TO FIG.2B

1. An electronic musical instrument having a plurality of musical tone signal generating channels for generating tones and comprising:

an automatic play means having a memory for controlling the tone generation of said plurality of musical tone signal generating channels on the basis of automatic play data recorded in said memory so as to successively and automatically generate musical tones;

a manual play means having a keyboard and other manual performance controls for controlling the tone generation of said plurality of musical tone signal generating channels in response to said keyboard and other manual performance controls so as to generate musical tones;

wherein the tone generation by said plurality of musical tone signal generating channels is jointly controlled by said automatic play means and manual play means;

further having means wherein each of said musical tone signal generating channels are arranged so as to be controlled by either said automatic play means or by said manual play means so as to enable tone generation;

and further comprising a channel-use assigning means for assigning at least part of said musical tone signal generating channels previously specifically assigned for control by said automatic play means, so as to change them over to control by said manual play means;

and further comprising a channel assigner means which, along with having means for controlling the tone generation, based on said automatic play data, of the musical tone signal generating channels assigned for automatic play use by said automatic play means and controlled by said channel-use assigning means, also has means which enable the control of tone generation, based on play data generated by said manual play means, of the musical tone signal generating channels assigned for manual play use and controlled by said channel-use assigning means;

wherein said channel assigner means comprises:

(a) an automatic play channel assigner means for reading and decoding said automatic play data recorded in said memory and for outputting pitch data and tone generation control signals corresponding to said musical tone signal generating channels assigned for automatic play use and for outputting said automatic play assigning channel data which indicates which of the musical tone signal generating channels are assigned for automatic play use;

(b) a channel-use data generator which, based on assignment data from said channel-use assigning means and said automatic play assigning channel data, outputs channel-use data indicating which of said plurality of musical tone signal generating channels can be used for automatic play;

(c) a manual play channel assigner means which, based on said play data of said manual play means, outputs tone generation control signals and pitch data which is assigned to said plurality of tone signal generating channels other than those tone signal generating channels indicated as being for automatic play by said channel-use data; and

(d) a data supplier means which receives said pitch data and tone generation control signals outputted from said automatic play channel assigner means and said pitch data and tone generation control signals outputted from said manual play channel assigner means, and then, in accordance with said channel-use data, matches said pitch data and tone generation control signals outputted in accordance with said plurality of musical tone signal generating channels used for automatic play from said automatic play channel assigner means and supplies them to respective musical tone signal generating channels and matches said pitch data and tone generation control signals outputted in accordance with said plurality of musical tone signal generating channels used for manual play from said manual play channel assigner means and supplies them to respective musical tone signal generating channels;

and wherein said automatic play channel assigner means comprises:

(a) an automatic play CPU means, including a data bus and automatic play data memory, for executing programmed commands for automatic play processing and for storing automatic play data and automatic play assignment channel data and pitch data and for generating tone generation control signals;

(b) an automatic play data readout means which is connected to said data bus of said automatic play CPU means and reads automatic play data from said automatic play data memory of said CPU means;

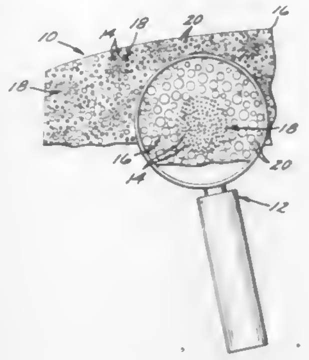
(c) a latching means for storing automatic play assignment channel data which is connected to said data bus and latches automatic assignment channel data from said data bus; and

(d) an additional latching means for storing automatic play assignment data which is connected to said data bus and latches pitch data and tone generation control signals for automatic play from said data bus and assigned to said plurality of musical tone signal generating channels.

4,355,560

REED CONSTRUCTION

David W. Shaffer, 1214 Borden Rd., San Marcos, Calif. 92026
Continuation of Ser. No. 47,744, Jun. 12, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,634
Int. Cl.^{3} G10D *9/02*
U.S. Cl. 84—383 A **19 Claims**



1. A reed for a musical instrument, said reed having a longitudinal axis and comprising:

a plurality of fiber means oriented substantially longitudinally of said reed and arranged in generally uniformly spaced-apart relationship cross-sectionally of said reed;

binding means combined with said fiber means for securing same, said fiber means having a modulus of elasticity that is greater than that of said binding means; and

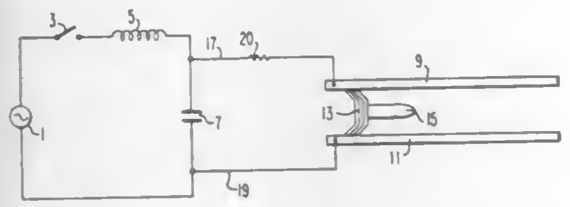
filler means substantially uniformly dispersed in said binding means in regions between said fiber means, said filler means having a density less than the density of the binding means;

said fiber means, binding means and filler means having relative proportions selected to produce an acoustic impedance of said reed at least comparable to the acoustic impedance of natural cane.

4,355,561

PROJECTILE LAUNCHING SYSTEM WITH ASSURED CURRENT DIVISION

George A. Kemeny, Wilkins Township, Allegheny County, Pa., and John P. Barber, Kettering, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 10, 1980, Ser. No. 185,705
Int. Cl.^{3} F41F *1/00*
U.S. Cl. 89—8 **12 Claims**



1. An electromagnetic projectile launching system comprising:

a pair of conductive rails:

means for conducting current between said rails and for propelling a projectile from one end of said rails to another;

a source of high current;

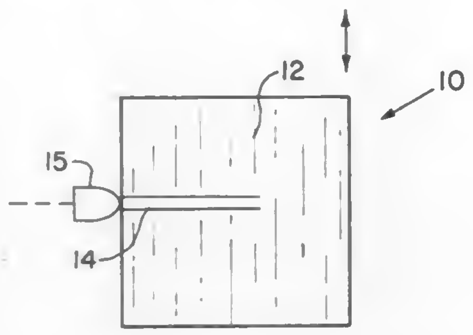
means for commutating current from said current source to said rails connected to said rails in parallel with said means for conducting current and said means for propelling the projectile; and

a resistance electrically connected between said current conducting and projectile propelling means and said means for commutating current for limiting the flow of current to said rails prior to the commutation of current to said rails and for carrying the full current during the entire launch.

4,355,562

ARMOR

Robert G. S. Sewell; John K. Pringle; Marvin E. Backman, all of Ridgecrest, and Stephen A. Finnegan, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 12, 1980, Ser. No. 129,046
Int. Cl.^{3} F41H *5/00*
U.S. Cl. 89—36 A **4 Claims**



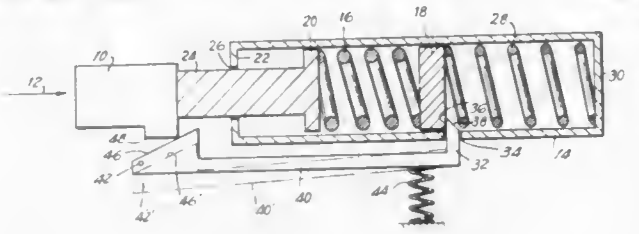
1. Lightweight armor plating for protecting vital installations or control centers which comprises:

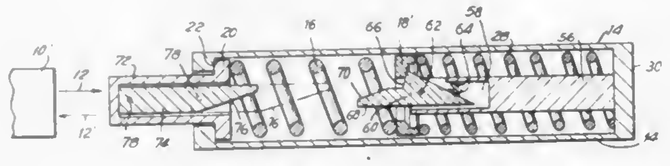
travertine material of a predetermined thickness that causes an incident projectile to form shear lines that are perpendicular to the pattern of striations engrained in said material, said shear lines being restricted to relatively narrow, parallel lines and not expanding out into a conical form as the force from the projectile travels deeper into said armor, thereby dissipating the projectile's kinetic energy.

4,355,563

DUAL RATE FIRING MECHANISM

Henry P. Swieskowski, Sparta, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 26, 1980, Ser. No. 163,372
Int. Cl.^{3} F41D *11/12*
U.S. Cl. 89—130 **6 Claims**





1. A dual-rate firing mechanism for an automatic weapon of the type having a bolt driven in a recoil action and returned in a counter recoil action, comprising:

means for storing energy of said bolt during said recoil action and for returning at least part of the stored energy to said bolt during said counter recoil action,

said means for storing energy including a recoil spring having first and second ends and a spring constant, means for applying kinetic energy of said bolt to said first end, and means for holding said second end stationary whereby said kinetic energy is transformed into spring potential energy in said recoil spring,

said means for holding said second end stationary including a mass in abutment with said second end and a sear effective to substantially latch said mass against displacement while said kinetic energy is being transformed,

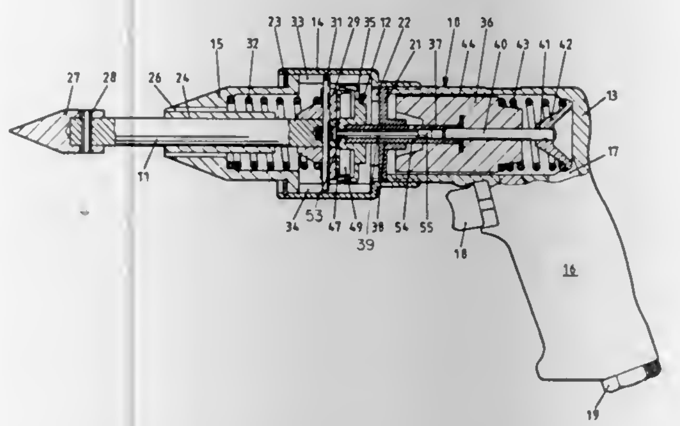
means for selectively dissipating a portion of the stored energy during said said recoil action whereby less than substantially all of said stored energy remains for return to said bolt during said counter recoil action,

said means for selectively dissipating including a positioning spring having a second spring constant effective to urge said mass in a direction opposite to the direction of applying said kinetic energy to said recoil spring, and means for releasing said mass from latching by said sear after a predetermined amount of said kinetic energy is transformed in said recoil spring whereby a portion of the stored kinetic energy is dissipated in moving said mass against said positioning spring.

4,355,564

PNEUMATIC RECIPROCATING MECHANISM

Per L. A. Gidlund, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Mar. 28, 1980, Ser. No. 134,761
Claims priority, application Sweden, Mar. 30, 1979, 7902873
Int. Cl.^{3} F01B *15/02;* **F01L** *21/02*
U.S. Cl. 91—217 **8 Claims**



1. In a pneumatic impact mechanism, comprising a working member **(11)** reciprocably guided in a housing **(10)** and balanced between a spring **(32)** and a pressure air supplied working chamber **(49)**; the working chamber **(49)** being defined by a rear end portion **(29)** of the working member **(11)**, a reaction support member **(12)** and an elastic seal element **(47)** located between the working member **(11)** and the reaction support member **(12)**,

the improvement wherein:

the seal element **(47)** comprises an annular axially extending valve collar **(48)** which is radially expandible by the air pressure in the working chamber **(49)** to an outer diameter exceeding its nominal outer diameter; and

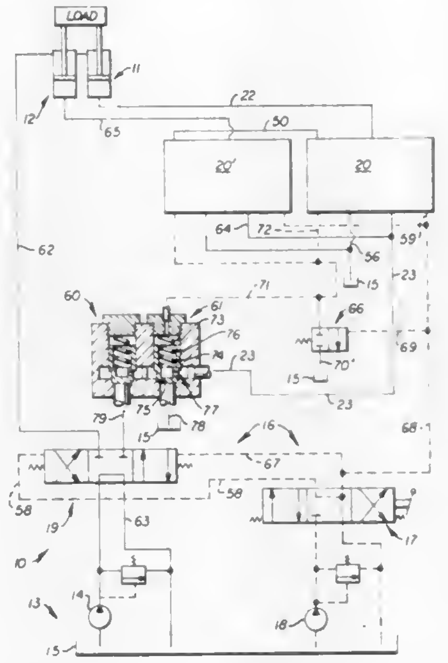
the reaction support member **(12)** comprises a depression **(51)** located coaxially with said radially expandible valve collar **(48)**, said depression **(51)** having an inner peripheral wall **(52)** conically diverging in the working stroke direction of said working member **(11)**, and having at its forward end facing the seal element **(47)** a diameter exceeding the nominal diameter of said radially expandible valve collar **(48)**;

said radially expandible valve collar **(48)** during each reciprocation cycle of the working member **(11)** entering said depression **(51)** and by radial expansion therein establishing an air tight seal with said peripheral wall **(52)** of said depression **(51)**.

4,355,565

FLUID CIRCUIT WITH ZERO LEAK LOAD CHECK AND BY-PASS VALVE

Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US80/00321, § 371 Date Mar. 24, 1980, § 102(e) Date Mar. 24, 1980, PCT Pub. No. WO81/02768, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 24, 1980, Ser. No. 206,192
Int. Cl.^{3} F15B *11/16*
U.S. Cl. 91—518 3 Claims



1. In a fluid circuit **(10)** having a pair of extensible and retractable fluid cylinders **(11,12)**, load check valve means **(20,20')** for communicating fluid pressure to each of said cylinders to extend or retract the same, and control means **(47)** for interconnecting said load check valve means to permit gradual retraction of said cylinders upon loss of fluid pressure between said load check valve means, the improvement comprising, said control means including resolver valve means **(47')** for movement between first and second positions and (1) for moving to said first position to equalize the fluid pressures in said cylinders upon retraction of said cylinders and when the level of fluid pressure in one of said cylinders exceeds the level of fluid pressure in the other one of said cylinders, and (2) for moving to said second position gradually reducing the level of fluid pressure in said cylinders upon loss of fluid pressure between said load check valve means.

4,355,566

VALVE DRIVING APPARATUS

Shoichi Kaji, Yamanashi, Japan, assignor to Kitazawa Valve Co., Ltd., Tokyo, Japan
Filed Jan. 3, 1980, Ser. No. 109,404
Claims priority, application Japan, Jun. 8, 1979, 54-78107[U]; Jun. 8, 1979, 54-78109[U]
Int. Cl.^{3} F15B *15/24;* **F01B** *29/04, 9/00*
U.S. Cl. 92—13.6 **3 Claims**

1. A valve driving apparatus comprising:

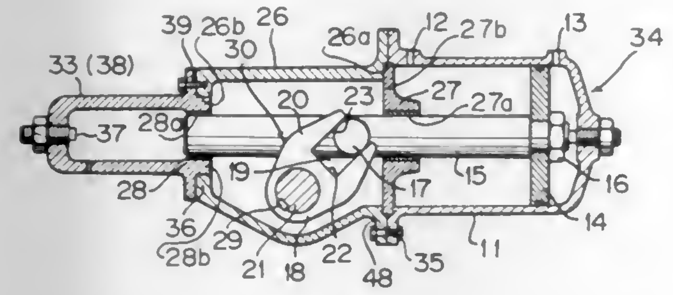
a casing having a first bearing portion receiving aperture at a first end thereof and a second bearing portion receiving aperture at a second end thereof and aligned with said first bearing portion receiving aperture along an axis;

a valve driving shaft extending through said casing transverse to and offset from said axis;

a movement conversion-transmission mechanism connected to said valve driving shaft;

a plurality of rods interchangably positionable in said casing along said axis and through said apertures and being connectable to said movement conversion-transmission mechanism, and each having a first end projecting through said first bearing portion receiving aperture and a second end projecting through said second bearing portion receiving aperture, each piston rod having a piston attaching means at the first end thereof and one piston rod having the second end free of any attaching means and a second piston rod having the second end with plate attaching means thereon;

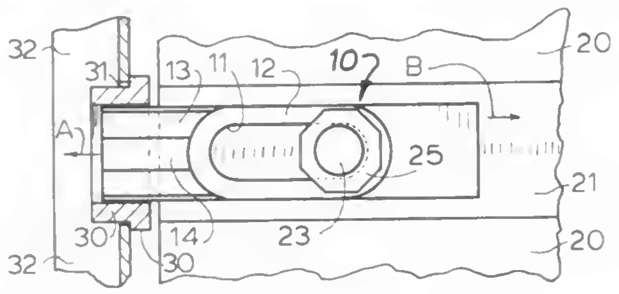
a plurality of different size piston-cylinder mechanisms interchangably attachable to said first end of said casing, each piston-cylinder mechanism having **(1)** a cylinder with ports for the inlet and outlet of pressure fluid, **(2)** a piston slidable in said cylinder and attachable by the piston attaching means to the first end of a piston rod, and **(3)** a first bearing portion on the end of the cylinder which is toward said casing, said first bearing portion having a bearing aperture therethrough through which a piston rod extends when said piston-cylinder mechanism is attached to said casing and supporting the piston rod, and said first bearing portion further having a circumferential portion fitting into said first aperture in said casing, and each piston cylinder mechanism having a means for attaching it to said first end of said casing; and



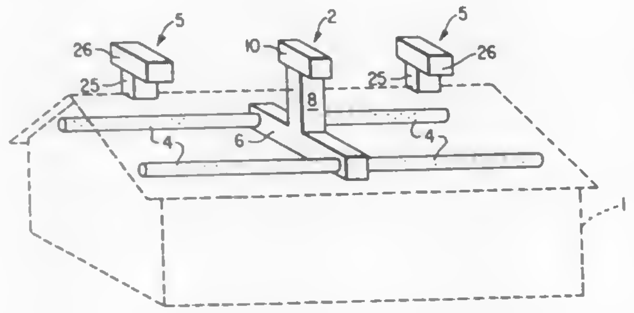
a plurality of piston rod movement control means interchangably attachable to said second end of said casing, each having **(1)** a housing with a bearing portion constituting an end plate with a projection thereon of a size for being matingly receiving in said second bearing portion receiving aperture in said casing, said bearing portion having a bearing aperture therethrough through which a piston rod extends when said piston rod movement control means is attached to said casing and supporting the piston rod, and **(2)** means for attaching said piston rod movement control means to said second end of said casing, one of said piston rod movement control means having a stop at the end thereof remote from the end plate thereof and the interior of said housing receiving only the piston rod and being traversed thereby and the housing being attached to said second end of said casing when the one piston rod is positioned in said casing, and a second of said piston rod movement control means having a stop at the end thereof remote from the end plate and a spring holder slidable in said housing and being attached to the second end of said second piston rod when said second piston rod is positioned in said casing and also having a spring in said housing between said spring holder and the end of the housing at which said stop is positioned.

4,355,567
PIVOTED BLADE DAMPER AND PIN
Louis Josephson, Yonkers, N.Y., assignor to American Hardware & Paint Co., Inc., Elizabeth, N.J.
Filed Feb. 28, 1980, Ser. No. 125,675
Int. Cl.³ F24F *13/14*
U.S. Cl. 98—121 A **6 Claims**

1. In combination a pivoted blade having a mounting pin comprising a cylindrical shaft having a centrally positioned hole extending therethrough, said hole being surrounded on one side of the pin with an upstanding flat seat, and said hole being longer than it is wide so that it extends longitudinally of the pin, said mounting pin being mounted at a side margin of said blade in a pin-receiving depression in said blade by means of a bolt extending through a hole in said blade and through the longitudinally extending hole in said pin, and a nut associated with said bolt, said nut locking against the flat seat of said pin.

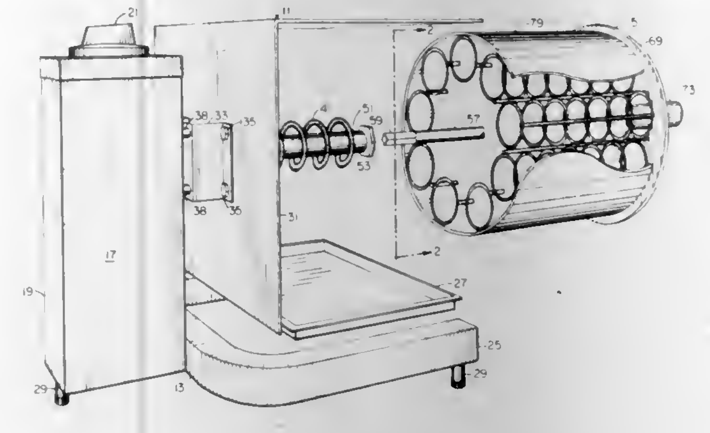


4,355,568
LIVESTOCK BARN VENTILATION SYSTEM
Dale Steckley, R.R. #2, Carstairs, Alberta, Canada (T0M 0N0)
Filed Dec. 4, 1980, Ser. No. 213,192
Claims priority, application Canada, Dec. 5, 1979, 341263
Int. Cl.³ F24F *7/06*
U.S. Cl. 98—33 A **1 Claim**



1. A barn ventilating system comprising a vertically oriented, hood-protected inlet duct mounted centrally in a barn roof for feeding fresh air into the barn; a manifold in said barn coupled to said inlet duct for receiving fresh air from said inlet duct and distributing the fresh air toward both sides of the barn; elongated distribution ducts comprising plastic tubes connected to openings in the outer free ends of said manifold and extending normally to said manifold and in opposite directions therefrom for receiving air from the inlet duct and distributing the air along substantially the entire length of the barn; elongate supports extending along the upper surface of, and connected to, said plastic tubes for supporting said tubes from the barn roof; fan means in said manifold for drawing fresh air into the inlet duct and hence into the manifold, and for feeding the air into said distribution ducts, said fan means being located adjacent the outer free ends of said manifold generally in said openings and aligned with the connected ends of respective ones of said distribution ducts, and said manifold having removable access closures at its outer free ends for permitting ready access to said fans; recirculation openings in said vertical duct between said manifold and the barn roof, and hence lying upstream of said fan means, controllable hinged doors mounted on said inlet duct for selectively varying the open or closed state of said recirculation openings, and hence the ratio of outside air to inside air passed to said manifold and hence to said fan means; openings in said distribution ducts for discharging air into the barn along substantially the entire lengths thereof; at least one hood-protected outlet located generally at the uppermost point of the roof of the barn remote from said inlet duct for discharging air from the barn; and a pressure responsive closure member in said outlet.

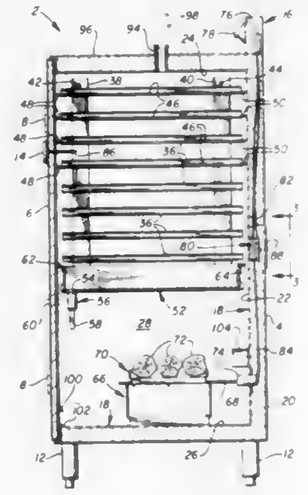
4,355,569
ROTARY HOT DOG COOKER
Thomas L. Sage, 21319 Castillo St., Woodland Hills, Calif. 91364
Filed Nov. 24, 1980, Ser. No. 209,549
Int. Cl.³ A47J *43/18*
U.S. Cl. 99—427 **8 Claims**



1. Cooking apparatus comprising
a base,
an elongated heating element,
means for supporting said element in a horizontal position above said base,
a carrier unit adapted to extend lengthwise of said heating element and having a central rod with first and second ends and a plurality of hot dog holders in the form of elongated hollow cages rigidly supported from the second end of said rod in a circular array with axes of said cages parallel to said rod, said cages having a transverse dimension large enough to permit hot dogs to roll therein, said array having an internal diameter greater than that of said heating element and being adapted to surround said heating element when in operating position, and
a motor driven rotator having a coupling element arranged to be rotated thereby, said rotator being mounted on said base with the axis of rotation of said coupling element extending lengthwise of said heating element and said coupling element being adapted to couple to said first end of said rod to rotate it and the carrier unit.

4,355,570
BARBECUE OVEN
Edward W. Martin; Kenneth R. Meyers, and Fred E. Tucker, III, all of Dallas, Tex., assignors to Fred B. Bearden, Jr., Richardson, Tex.
Continuation-in-part of Ser. No. 892,398, Mar. 31, 1978, Pat. No. 4,307,659. This application Aug. 5, 1980, Ser. No. 175,578
Int. Cl.³ A47J *27/00*
U.S. Cl. 99—446 **1 Claim**

1. A barbecue oven for cooking and smoking food comprising:
a main body portion defining a cooking area and having a front opening;
a door assembly hingably mounted to said main body portion for closing said front opening;
said door assembly comprising a main door section, a door inset extending inwardly into said cooking area, hinge means for hingably mounting said door assembly to said main body portion, latch means for securing said door assembly closing said front opening, seal means interposed between said main door section and the periphery of said main body portion about the front opening to form an airtight seal therebetween and door grease deflectors extending inwardly and downwardly from a lower portion of said main door section between said door inset and said seal means, said door inset and said door grease deflectors deflecting grease and moisture deposited on and flowing down the inner surface of said main door section and said door inset and causing said grease and moisture to drip onto the bottom interior surface of said main body portion;
said bottom interior surface including a kick-up portion angled upwardly adjacent the door assembly of the oven and being disposed beneath said door assembly for containing grease and moisture on the bottom interior surface within the oven;
racks supports mounted on two interior sidewalls of said oven;
a plurality of substantially planar cooking racks for supporting the food during cooking, said racks being slidably mounted within said cooking area on said rack supports in a horizontal position, said racks being mounted in vertically spaced apart horizontal planes;
a drip pan supported below said cooking racks for catching grease and moisture dropping from the food during cooking;
side grease deflectors disposed below said cooking racks and above said drip pan and extending inwardly from said oven main body portion to deflect grease and moisture droppings from the food during cooking into said drip pan;
the lowermost rack support comprising two parallel flanges disposed horizontally along the interior sidewalls of the oven and extending away from said interior sidewalls in an inward direction, each of said flanges including a back raised portion for directing grease and moisture droppings toward the front of the oven and including a front raised portion for directing grease and moisture drippings toward the rear of the oven;



an aperture disposed in said drip pan for draining grease and moisture from said drip pan;
a valve mounted on said drip pan to control the flow of grease and moisture through said aperture;
a lever handle extending from said valve for opening and closing said valve to selectively allow grease and moisture to flow through said aperture, said handle being positioned to engage the door assembly of the oven to prevent the door assembly from being closed when said valve is in an open position;
an electrical heating element disposed within said cooking area for providing heat;
an electrical receptacle connected to said electrical heating element for providing electrical current to said electrical heating element;
a grease shroud disposed above said electrical receptacle for preventing grease and moisture from dripping onto said electrical receptacle;
a heater support for supporting said heating element a predetermined distance above the bottom of said oven, said heater support comprising a substantially horizontal top surface, substantially vertical sidewalls extending downwardly from two edges of said top surface, substantially horizontal ledge portions extending inwardly from the lower edge of said vertical sidewalls, substantially vertical spacer portions extending downwardly from the inner edge of said horizontal ledge portions and substantially

horizontal flange portions extending outwardly from the lower edge of said vertical spacer portions, said top surface, vertical sidewalls and horizontal ledge portions cooperating to enclose and support said electrical heating element, said vertical spacer portions acting to separate said heating element a predetermined distance from the bottom of said oven and said horizontal flange portions forming means for attaching said heater support to said oven;

the heat generated by said heating element being confined within said heater support so that air beneath said top surface is maintained at a relatively higher temperature than the surrounding air within the cooking area to enhance the convection of the heated air from beneath said top surface to provide even heating throughout the cooking area;

said top surface and said vertical sidewalls having a plurality of apertures formed therein permitting circulation of air about the heating element, said apertures being positioned to prevent grease and moisture from dropping on said heating element;

a wood tray positiioned on said top surface and guided thereon by pin means on said top surface, said wood tray containing wood for smoking said food and comprising a wood container and a cover, the temperature of the heated air beneath said top surface being sufficient to cause heat conduction through said top surface and said wood tray to smoulder the wood therein;

said wood container comprising a horizontal bottom portion and vertical sidewalls for containing the wood and ash generated by the decomposition of the wood;

said cover having a plurality of holes formed therein and hingably mounted on said wood container so that the wood is entirely contained within said cover and container, said holes permitting smoke and heated air to escape from within said wood container while preventing flareup of the wood during the cooking operation and when said door assembly of said oven is opened; and

said cover being hingably mounted to said container by pin means secured to said container passing through elongated slot means within said cover, said elongated slot means permitting adjustment of said cover to permit enclosure of wood extending beyond the upper edge of the sidewalls of said wood container.

4,355,571

AROMATIZING APPARATUS

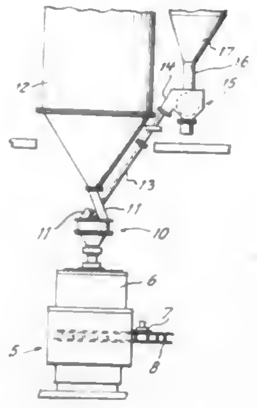
Oscar W. Stoeckli, Rye, N.Y., and David J. Berry, Montvale, N.J., assignors to General Foods Corporation, White Plains, N.Y.

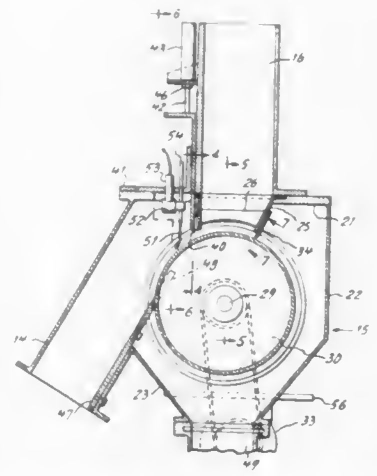
Filed Dec. 29, 1980, Ser. No. 220,927

Int. Cl.³ A23L *3/34*

U.S. Cl. 99—485 10 Claims

1. In an aromatizing apparatus for dispersing an aroma-enriched liquid throughout a mass of adsorbent particulate material comprising, a circular member mounted for rotation in an assembly which includes a material in-feed chute and a material discharge chute, said member containing at least one peripheral groove of uniform cross-section disposed to receive material from said in-feed chute, said member while rotating carrying a ribbon of said material within the confines of said groove from said in-feed to said discharge chute, an injector member disposed to continually dispense said liquid into said ribbon carried from said in-feed to said discharge chute, and a pump member in liquid communication with said injector and driven in synchronism with said circular member for supplying said injector with said liquid at a predetermined weight ratio to the material discharged by said circular member.





4,355,572

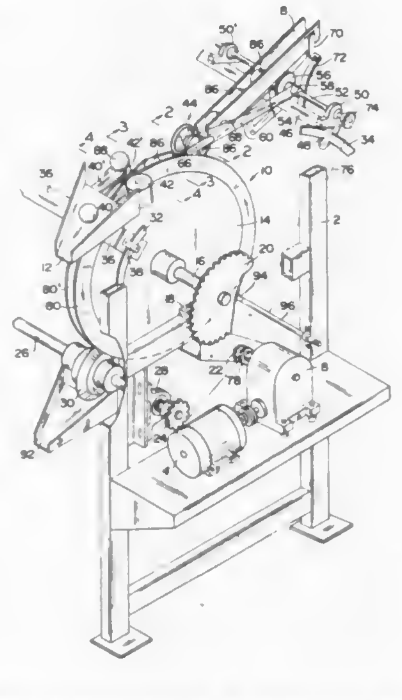
APPARATUS FOR SEPARATING THE PULP FROM THE SKIN OF FRUIT SUCH AS TOMATOES

Jesus A. Silvestrini, Mendoza, Argentina, assignor to IMDEC S.R.L., Mendoza, Argentina

Filed Apr. 13, 1981, Ser. No. 253,373

Int. Cl.³ A23N *7/00*

U.S. Cl. 99—516 12 Claims



1. Apparatus for separating the pulp from the skin of fruit, such as tomatoes, which are supplied to the apparatus, comprising:

a support frame for mounting the component parts of said apparatus;

carrying means rotatively driven and rotatively mounted to said support frame;

gripping means, comprising mutually opposed members travelling around an endless circular path, supported by said carrying means and interposed between said supplied fruit and said carrying means, said gripping means comprising resiliently deflectable members formed from a resilient synthetic resin and extending toward one another in the direction toward said carrying means, whereby is formed a trough for the gripping support of said supplied fruit by gripping the outer surface of the skin of each said supplied fruit on opposite sides of a plane extending through said fruit and for transporting said fruit along a first predetermined portion of said circular path extending between a fruit receiving position and a pulp discharge position;

means positioned generally adjacent said gripping and transporting means, between said receiving position and said pulp discharge position, for producing a cut through a portion of said fruit skin remote from said gripping and transporting means and in a plane generally through the stem axis of the fruit;

means operatively mounted to said support frame and positioned adjacent said pulp discharge position for cooperating with the centrifugal force imparted by transport of the fruit around said circular path for urging said pulp away from said gripping and transporting means through said cut in said skin while retaining said skin gripped thereby, whereby the pulp may be separated from the skin.

4,355,573

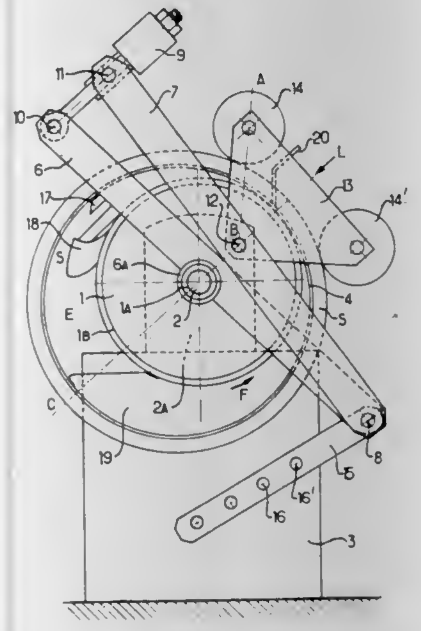
CONTINUOUS PRESS FOR DEHYDRATING PULPS

Jean-Luc Berry, Compiegne, France, assignor to Gie Valpron, France

Filed Dec. 1, 1980, Ser. No. 211,689

Int. Cl.³ B30B *9/20*

U.S. Cl. 100—121 7 Claims



1. A continuous press adapted to press products such as vegetables, fruits, fodder or the like, comprising: an external crown; a central wheel mounted for rotation on a shaft and having a diameter smaller than the diameter of said crown, said wheel being mounted within said crown so as to form a rotary assembly of two cylinders internally tangent with respect to each other and between which said products are pressed; at least one support on which freely-rotating spools are mounted, said spools bearing upon the outer circumference of said external crown; and means for tangentially urging said crown and said wheel against one another to impart a contact force between them, said means comprising first and second pairs of levers located on either side of said rotating assembly, said first pair of levers being pivotally mounted on said shaft on which said wheel is mounted and said second pair of levers being pivotally connected to said at least one support on which said spools are mounted, said two pairs of levers being pivotally connected at one of their end regions about a common point, said urging means further comprising an adjustable tightening means provided at the other of the end regions of said pair of levers for urging said respective pairs of levers towards or away from one another for varying the force with which said spools bear upon the outer circumference of said external crown to correspondingly vary the force of contact between said crown and said wheel.

4,355,574

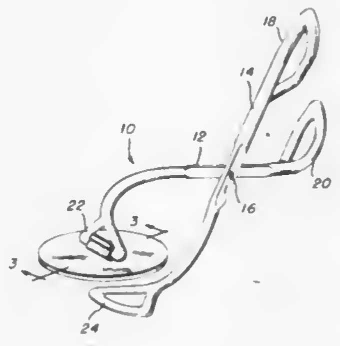
CAN PRESS IMPLEMENT FOR CANNED FOOD PRODUCTS

James M. Bond, 106 W. Church St., and Robert P. Dail, P.O. Box 426, both of Edenton, N.C. 27932

Filed Mar. 26, 1981, Ser. No. 248,025

Int. Cl.³ B30B *7/00*

U.S. Cl. 100—234 10 Claims



1. A liquid-expressing tong-like implement for removing liquid from a can of food product containing solid food product immersed in liquid, comprising tongs formed of a pair of scissor-like elongated arms pivoted together at intermediate portions thereof, each arm having a finger loop formation at a handle-forming rear end portion thereof by which to manipulate the tongs, the arms having front end portions at the ends opposite said finger loop formations providing loop-shaped jaw formations, one of the jaw formation loops having a generally straight rod-like front leg portion extending transversely of its associated elongated arm, a flat platen member sized to fit into an opened food product can to exert pressing forces onto the solid food product and a coupling formation pivotally coupling the platen to said rod-like leg portion for pivotal movement about that transversely arranged leg portion, the other of said jaw formation loops having surfaces defining a flat portion to engage the bottom of the opened can whereby the food product may be compressed between said platen and the bottom of the can while the tongs hold the can to express the liquid therefrom.

4,355,575

PRESS PLATE DRIVE FOR A BALING PRESS

Albert Goldhammer, Zum Hecht 46, 7770 Überlingen, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,177

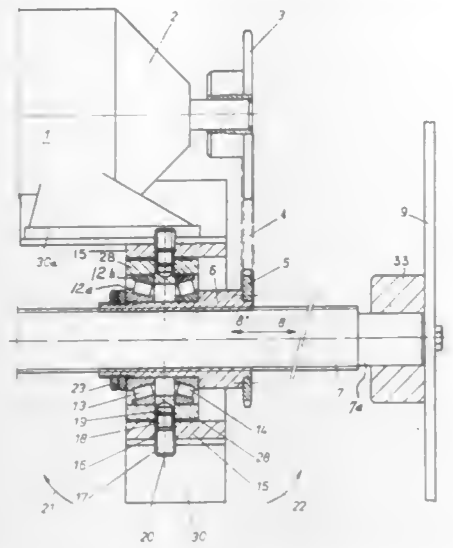
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942227; Oct. 18, 1979, 2942239

Int. Cl.³ B30B *1/18*

U.S. Cl. 100—245 6 Claims

1. A pressing plate drive construction for a baling press or the like which comprises, a housing, a pressing plate operatively mounted in a guided track means within the housing for longitudinal advancing movement therewithin, a longitudinally extending operating spindle carrying said plate on a front end thereof, bearing means carrying said spindle in an axially forwardly movable relation within the housing, said spindle

having a threading therealong, a spindle sleeve having a cooperating inner threading to operatively mount it on said spindle shaft, rotatable motor means mounted on the housing, driving connections between said motor means and said spindle sleeve for rotating said sleeve to move said spindle shaft longitudinally within said housing, universal bearing means positioned between said housing and said spindle sleeve for taking up axial and radial thrust exerted by said spindle shaft on said spindle sleeve, said bearing means having a group of axially opposed sets of roller bearings, a pressure housing carried by said housing to support said roller bearings, and said roller bearings being mounted in an axially inclined relation between said spindle sleeve and said pressure housing.



4,355,576
PROCESS OF OFFSET PRINTING ON SHEET MATERIAL WITH HIGH VISCOSITY GREASY INK

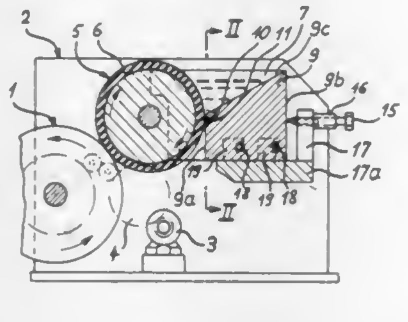
Jarl-Erik S. I. Ohlsson, Stockholm, Sweden, assignor to Texogesa S.A., Switzerland

Division of Ser. No. 681,199, Apr. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 624,295, Oct. 20, 1975, abandoned, which is a continuation of Ser. No. 500,550, Aug. 26, 1974, abandoned. This application Aug. 4, 1977, Ser. No. 821,949

Claims priority, application Switzerland, Sep. 28, 1973, 12278/73; Jul. 31, 1974, 10554/74

Int. Cl.³ B41F *31/06;* **B41L** *27/08*

U.S. Cl. 101—426 **8 Claims**



1. A process of offset printing on sheet material with high viscosity greasy ink with a rotary offset printing press having a horizontal rotatable plate cylinder, a horizontal rotatable inking cylinder for applying ink to the plate cylinder, said inking cylinder having a covering layer of flexible plastic material, means for rotating said plate cylinder and inking cylinder in contact with one another in opposite directions at equal peripheral speeds about parallel horizontal axes, and an inking device for applying a uniform thin film of said high viscosity greasy ink to the inking cylinder for transfer to the plate cylinder,

said inking device comprising a rotary small diameter horizontal wiping rod disposed laterally of said inking cylinder and engaging the peripheral surface of the inking cylinder in a contact zone extending horizontally along the inking cylinder on the side thereof where the peripheral surface of the inking cylinder is moving downwardly, means for pressing the wiping rod against and into the elastic covering layer of the inking cylinder in said contact zone, variable speed electric motor means for rotating the wiping rod independently of said inking cylinder at a continuously variable speed in the same direction of rotation as the inking cylinder so as to move the peripheral surface of the wiping rod upwardly in said contact zone, and trough means for holding a body of said greasy ink against said inking cylinder in a space extending upwardly from said contact zone, said pressing means comprising a horizontal rigid elongate body having at one side thereof a longitudinal V-shaped groove facing said inking cylinder and rotatably receiving said wiping rod, said elongate body having in said groove bearing surfaces of very hard material which bear on said wiping rod in line contact and thereby wipe ink from the peripheral surface of said wiping rod in a zone between exposure of said wiping rod to said body of ink and engagement of said wiping rod with said inking cylinder,

said process comprising supplying to said trough means, high viscosity greasy ink having a viscosity at least of the order of 50 poise, rotating said inking cylinder and plate cylinder in directions to move the peripheral surface of said inking cylinder downwardly through said contact zone so as to carry a film of said ink on said inking cylinder from said body of ink down past said wiping rod, pressing said wiping rod against and into the elastic covering of said inking cylinder so that variation in penetration of said wiping rod into said elastic covering has little effect on the thickness of said ink film, rotating said wiping rod in the same direction of rotation as said inking cylinder at a selected speed of rotation so that the peripheral surface of said wiping rod moves upwardly in said contact zone, wiping ink from the peripheral surface of said wiping rod subsequently to exposure of said peripheral surface of the wiping rod to said body of ink and prior to engagement of said peripheral surface of the wiping rod with inking cylinder in said contact zone, sensing the optical density of an area printed on said sheet material and controlling the speed of said variable speed electric motor to adjust the speed of rotation of said wiping rod to maintain the optical density of said printing constant and uniform at a selected value.

4,355,577
MODEL ROCKET PROPULSION SYSTEM

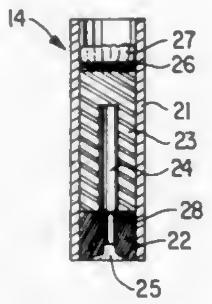
Michael S. Ady, 506 - 11011 - 86 Ave., Edmonton, Alberta, Canada (T6G 0X1); Roger F. Lufkin, 504 - 9809 - 110 St., Edmonton, Alberta, Canada (T5K 1J1), and Kevin L. Lynch, 12015 - 133 Ave., Edmonton, Alberta, Canada (T5E 1E8)

Filed Aug. 25, 1980, Ser. No. 180,917

Claims priority, application Canada, Aug. 24, 1979, 334399

Int. Cl.³ F42B *15/10*

U.S. Cl. 102—378 **5 Claims**



1. A propulsion motor for a toy rocket comprising:
(a) an elongate, open ended tubular casing;
(b) nozzle means formed from a plastic composition comprising the following ingredients in the following percentages by weight ranges:

Furan Resin Binder (liquid)	40–99
Corn Starch Filler (fine powder)	0–60
Catalyst	1–5; and

located within said casing adjacent the lower end thereof, said nozzle means having a passageway formed longitudinally therethrough, which passageway, at one end, is provided with a restricted throat section;
(c) a solid propellant grain located within said casing intermediate the length thereof, said grain having a substantially cylindrical elongate burning port extending partway therethrough, said port having a diameter substantially greater than the diameter of said nozzle throat section, said grain being further located within said casing adjacent said nozzle means such that said port is indexed with said passageway, and;
(d) ejection charge means, located within said casing in intimate contact with the top end surface of said propellant grain.

4,355,578
RAILWAY WHEELS AND RAILS DAMPING STRUCTURES

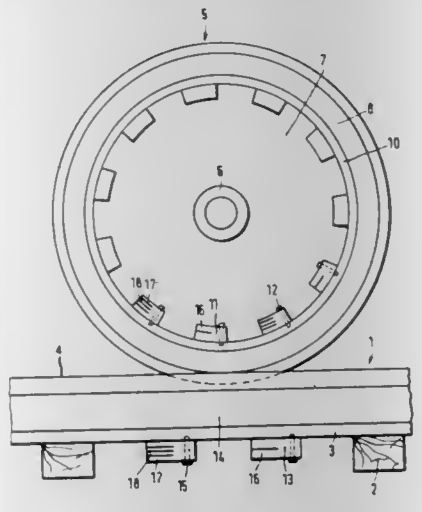
Erwin Raquet, Witten, Fed. Rep. of Germany, assignor to Fried. Krupp Hüttenwerke AG, Bochum, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 30,861, Apr. 17, 1979, abandoned. This application Jul. 24, 1979, Ser. No. 60,181

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816561

Int. Cl.³ B60B *17/00;* **B60C** *7/06;* **E01B** *19/00;* **F16F** *15/12*

U.S. Cl. 104—1 A **11 Claims**



1. In a system for absorbing a rail wheel's radial vibrations, said rail wheel having a rim, an axle hub and a web interconnecting said axle hub with said rim, said system including a plurality of independent vibration absorbers, the improvement comprising:

a circumferential series of said vibration absorbers forming wheel vibration absorbers circumferentially interspaced along said rim;

said wheel vibration absorbers being tuned to a radial resonant frequency of said rail wheel induced by said rail wheel's radial vibrations; and

said wheel vibration absorbers being oriented to damp radial vibration.

7. In a system for absorbing a rail wheel's radial vibration, includes a rail on which a rail wheel is adapted to ride, said rail is supported by conventional railroad ties and is provided with vibration absorbers, the improvement comprising:

a series of said vibration absorbers forming rail vibration absorbers connected on said rail and interspersed between said railroad ties;

said rail vibration absorbers being tuned to absorb the vertical vibrations forced onto said rail by said wheel vibrations; and

said rail vibration absorbers being oriented to damp vertical vibrations.

4,355,579
TRACK TAMPER

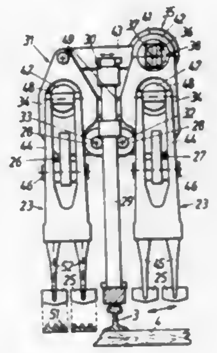
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 17, 1980, Ser. No. 207,336

Claims priority, application Austria, Dec. 12, 1979, 7847/79

Int. Cl.³ E01B *27/16*

U.S. Cl. 104—12 **10 Claims**



1. A mobile track tamper comprising a frame arranged on a track consisting of a multiplicity of ties and two rails fastened to the ties, the rails intersecting each tie at respective points of intersection and ballast supporting the track rails at each point of intersection, and a tamping head vertically movably mounted on the frame for vertical alignment with the respective points of intersection, the tamping head including
(a) a carrier supporting two pairs of ballast tamping tool implements arranged for reciprocation in the direction of track elongation towards and away from each other and a respective one of the ties positioned between the tamping tool implements of each pair, each pair of the ballast tamping tool implements being arranged at a respective side of each rail in a direction transverse to the track and the ballast tamping tool implements being immersible in the ballast upon vertical movement of the tamping head for tamping ballast under the respective tie upon reciprocation of the implements,
(b) a reciprocating power drive for the ballast tamping tool implements of each pair,
(c) a respective carrier part supporting a respective one of the pairs of the ballast tamping tool implements on each side of the rail,
(d) a pivot extending in the direction of elongation of the machine and supporting the carrier part on the carrier for pivoting in a plane extending transversely of said direction, and
(e) a vibrating power drive means connected to the carrier part and imparting to the tamping tool implements an oscillatory vibrating motion in a plane extending perpendicularly to the pivot in each position of the tamping tool implements.

4,355,580
INEXPENSIVE DRIVERLESS VEHICLE

Russell Scheel, Easton, Pa., assignor to SI Handling, Inc., Easton, Pa.

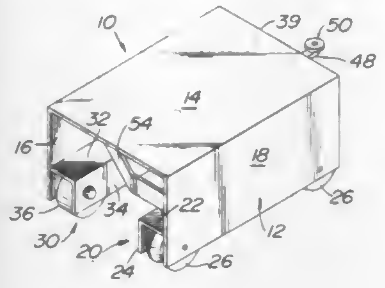
Filed Nov. 24, 1980, Ser. No. 209,810

Int. Cl.³ B61B *13/12*

U.S. Cl. 104—166 **10 Claims**

1. A driverless vehicle comprising an inverted U-shaped metal body with the bight being a horizontal load supporting surface, said body being open at the front and rear end, a pair of wheels supported by each leg of said body, a friction drive

wheel supported by said bight between said legs for contact with a drive shaft, an upright support member for said drive wheel, a first cam follower rotatably supported by said upright support member for contact with a control member for moving the drive wheel from its drive position to an accumulation position, means biasing said drive wheel to a drive position, a bumper projecting from the front end of the body and connected to said drive wheel for moving the drive wheel from its drive position to an accumulation position, and a cam disposed between said legs adjacent the rear end of the body for causing a bumper on a similar vehicle to move its drive wheel to an accumulation position, said cam being at an elevation which at least partially overlaps the elevation of a second cam follower on one end of said accumulation bumper.



4,355,581
TRUCK DRIVING APPARATUS

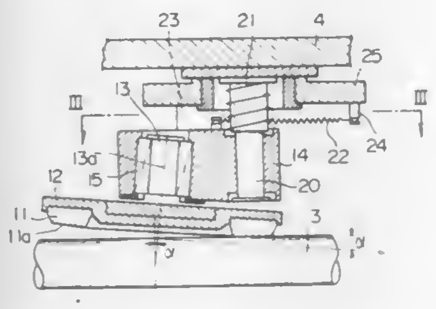
Yoshio Mitani, Inayama, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kajo, Japan

Filed Jan. 28, 1980, Ser. No. 115,727

Claims priority, application Japan, Jan. 31, 1979, 54-10553; Oct. 30, 1979, 54-140758

Int. Cl.^{3} B61B *13/12*

U.S. Cl. 104—166 **5 Claims**



1. A driving means for a truck having at least one wheel rotatably connected to said truck and positioned on at least one track for moving said truck, and a drive shaft disposed along said track for providing motor power to said driving means to propel said truck; said driving means comprising

(A) a supporting shaft vertically fixed to and hung from said truck;

(B) a bracket supported on said supporting shaft so that the bracket can move along said supporting shaft and rotate relative to said supporting shaft;

(c) a rotation shaft rotatably supported on said bracket;

(D) a ring like friction disc fixed to a lower end of said rotation shaft, wherein said friction disc has a friction face intersecting the rotational axis of said rotation shaft substantially at right angles;

(E) a spring mounted on said supporting shaft to urge said bracket to press said friction face onto said driving shaft, said rotation shaft being disposed so that the rotation axis of said rotation shaft is slightly inclined with respect to a plane intersecting the rotation axis of said driving shaft at right angles;

(F) a second spring;

wherein said bracket is urged by said second spring to turn around said supporting shaft;

(G) a stop means positioned to control the stopped turning movement of said bracket so that said stop means falls in abutting contact with said bracket at the stopped position;

(H) a cam mounted on said track; and

(I) an arm fixed to said bracket whereby said arm is abutted against said cam to turn said bracket around said support shaft.

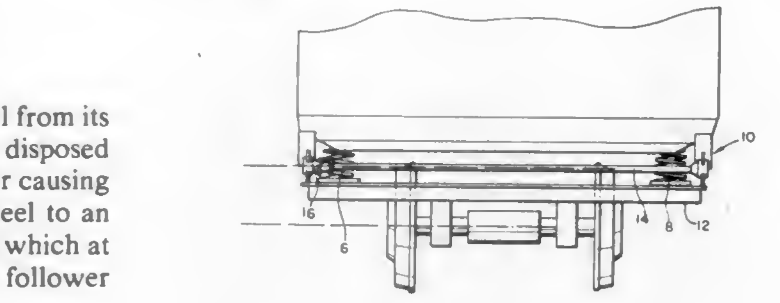
4,355,582
RAILWAY CAR TILT CONTROL SYSTEM

John A. Germer, Doylestown, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jul. 3, 1980, Ser. No. 165,948

Int. Cl.^{3} B61F *3/08, 5/24, 5/50*

U.S. Cl. 105—164 **10 Claims**



1. In combination with means for tilting a railway car body with respect to a truck in response to lateral acceleration forces,

(a) means for detecting lateral acceleration forces in said railway car;

(b) an actuator included in said means for tilting for receiving forces to cause said tilting;

(c) means connected between said lateral acceleration forces and said actuator to tilt said railway car when said acceleration forces exceed predetermined levels, and

(d) means for limiting the amount of tilting of said railway car.

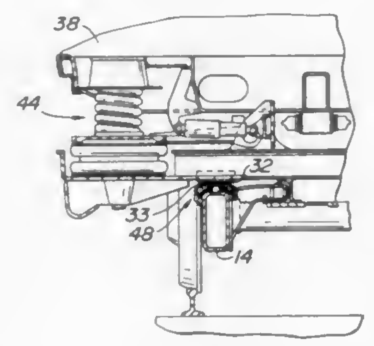
4,355,583
SIDE BEARING FOR A RAILWAY CAR

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Nov. 12, 1980, Ser. No. 206,305

Int. Cl.^{3} B61F *5/014*

U.S. Cl. 105—199 CB **6 Claims**



1. In combination with a car body carried by a bolster supported on a pair of side frames,

an integral bearing assembly disposed between said bolster and each of said side frames, comprising:

(a) top and bottom plate members extending along each of said side frames;

(b) an elastomeric cushion member disposed between said top and bottom plate members;

(c) an elastomeric strip secured to said bottom plate members between said bottom plate and said associated bolster;

(d) said elastomeric member including a plurality of openings therein; and

(e) said openings extending in opposite directions and becoming progressively larger as they extend from the center of said side bearing.

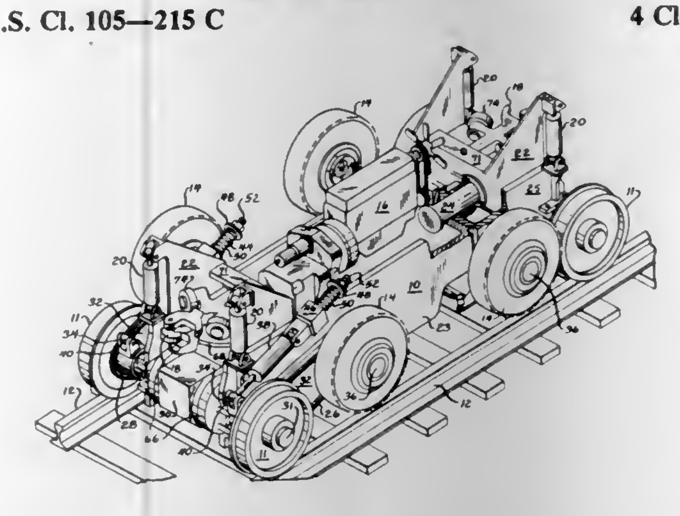
4,355,584
RETRACTABLE WHEELED VEHICLE

Eugene B. White, Jr., Park Forest, Ill., assignor to White Machinery Corporation, Joliet, Ill.

Filed May 21, 1979, Ser. No. 40,855

Int. Cl.^{3} B61C *11/00*

U.S. Cl. 105—215 C **4 Claims**



1. In a rail car moving vehicle including non-retractable front and rear pairs of rail wheels, and a plurality of retractable road wheels, which vehicle can move on the rails when said road wheels are retracted and can move on the ground when said road wheels are extended downwardly, certain of said road wheels being upwardly retractable by rotation of arm means carrying said retractable wheels, and hydraulic cylinder means controlling the rotational position of said arm means and retractable wheels, the improvement comprising, in combination:

movable rod means connected to said hydraulic cylinder means, and coil spring means urging said rod means toward a position where said hydraulic cylinder means and arm means position said retractable wheels in a relatively downward rotational position, whereby said retractable wheels may be alternatively retracted and lowered by the hydraulic cylinder means, while also possessing a spring suspension system.

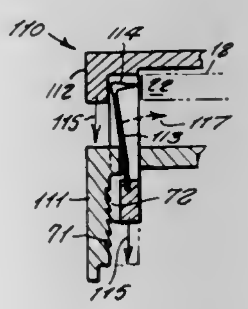
4,355,585
SHELF BUILDERS

Wilbert O. Bottamiller, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Aug. 18, 1978, Ser. No. 935,015

Int. Cl.^{3} A47B *3/06*

U.S. Cl. 108—153 **2 Claims**



1. A shelf builder comprising in combination a vertical wall and a horizontal shelf, said wall including an upper member and a lower member for retaining said shelf therebetween said members being relatively adjustable including interfitting ratchet teeth on both said members for retaining said members in adjustable positions wherein an end of said shelf extends part way inside an opening inside said wall wherein a flexible inclined pin is mounted at its lower end on a ratchet clip and at its upper end in a recess in said upper member adjacent said shelf said pin includes a pointed tip for piercing transversely an end of said shelf, said inclined pin being urged by an abutting portion of said upper member to move transversely when said members are adjusted together so that said tip pierces said shelf end.

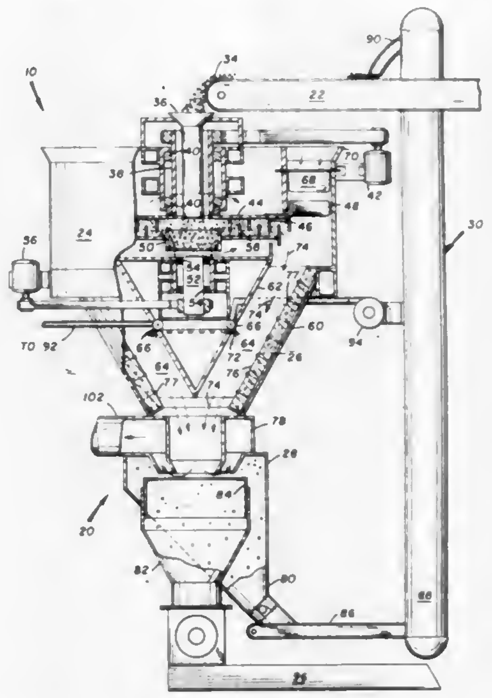
4,355,586
SOLID FUEL GASIFICATION SYSTEM

Charles K. Brown, 8317 Robert Bruce Dr., Richmond, Va. 23235

Filed Nov. 17, 1980, Ser. No. 207,648

Int. Cl.^{3} F23G *5/00*

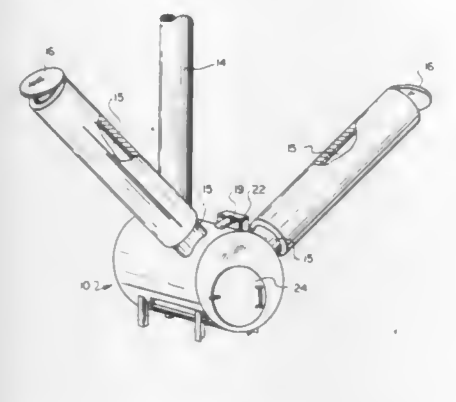
U.S. Cl. 110—229 **9 Claims**



1. A solid fuel gasification system, comprising:

a solid fuel gasification section, said solid fuel gasification section having a fuel feed means, a gas cleaning section, said gas cleaning section being connected to said solid fuel gasification section, a fuel pulverizing means, a thermal gasification means, and a separation means, said fuel pulverizing means being connected to said fuel feed means, said thermal gasification means being connected to said fuel pulverizing means, and said separation means being connected to said thermal gasification means, said fuel pulverizing means having a hollow shaft means, an upper pulverizing rotor, a plurality of first annular concentric rings, a lower pulverizing rotor, a plurality of second annular concentric rings, and a solid shaft means, said upper pulverizing rotor being centrally affixed to said hollow shaft means, said upper pulverizing rotor having an upper and a lower surface, said plurality of first annular concentric rings being affixed to the lowermost surface of said upper pulverizing rotor, said plurality of first annular concentric rings projecting downwardly from said lowermost surface of said rotor, said lower pulverizing rotor having an upper and a lower surface, the plane of said lower pulverizing rotor being parallel to and spaced from the plane of said upper pulverizing rotor, said plurality of second annular concentric rings being affixed to the uppermost surface of said lower pulverizing rotor, said plurality of second annular concentric rings projecting upwardly from said uppermost surface of said rotor, said solid shaft means being centrally affixed to said lower pulverizing rotor, the centerline of said solid shaft means coinciding with the centerline of said hollow shaft means, said thermal gasification means having an outside wall means, an inside wall means, and an annular ring burner, said outside wall means being of a conical-like configuration, said inside wall means being of a conical-like configuration and spaced from and parallel to said outside wall means, said spaced area between said outside and said inside wall means forming a gasification chember, said annular ring burner encircling said inside wall means and being spaced from the ends of said inside wall means, said annular ring burner being capable of supplying a peripheral flame around and across said gasification chamber.

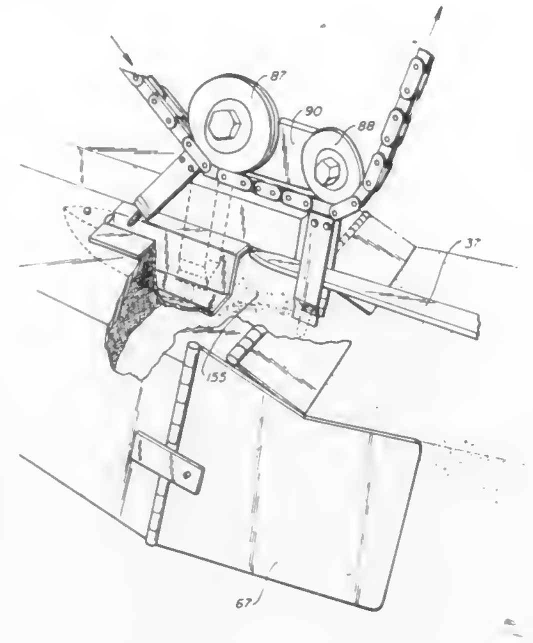
4,355,587
SELF-FEEDING WOOD BURNING HEATING UNIT
Wilfred T. Lemon, P.O. Box 1293, Hailey, Id. 83333
Filed Oct. 25, 1979, Ser. No. 87,826
Int. Cl.^{3} F23K *3/00*
U.S. Cl. 110—293 **10 Claims**



1. A wood burning heating unit capable of being stoked for continuous or extended burning and of achieving effective combustion of smoke, said stove comprising:
- a fire box or combustion chamber;
- a pair of elongate, fuel feeding conduits extending downwardly and inwardly into the fire box or combustion chamber, with the lower ends of said conduits being beveled so as to have substantially vertically disposed spaced apart openings which face each other, and with the upper ends of said conduits being adjusted to receive elongate pieces of firewood longitudinally therein, so that the respective, generally upstanding columns of firewood are formed in the conduits, with the lower ends of the firewood columns contacting each other in the space between the openings in the lower ends of said conduits, whereby the columns of firewood continuously move downwardly in the conduits as the lower ends of the wood columns are burned;
- an exhaust conduit in flow communication with the fire box or combustion chamber for exhausting combustion gases therefrom; and
- manifold means for supplying a flow of combustion air to the proximity of the contact between the two columns of firewood.

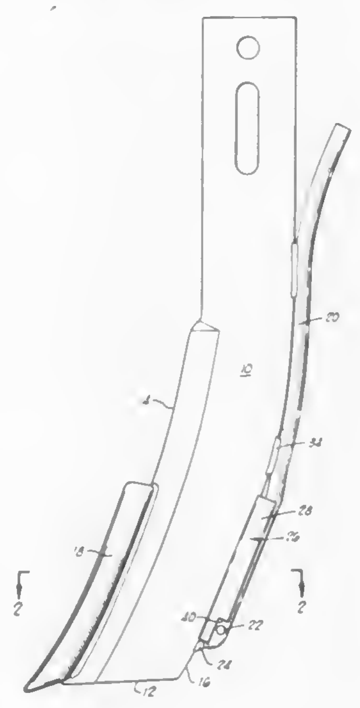
4,355,588
TRANSPLANTING MACHINE
Errol C. Armstrong; Javier Diaz-Infante, and David J. Hall, all of Salinas, Calif., assignors to Bud Antle, Inc., Salinas, Calif.
Filed May 16, 1980, Ser. No. 150,486
Int. Cl.^{3} A01C *11/02*
U.S. Cl. 111—3 **12 Claims**

1. A method for planting a cylindrical plug containing a seedling in the ground from a moving platform comprising the steps of:
- opening a furrow of controlled depth in the ground by means attached to said platform;
- gripping a plug between opposing faces of bladelike pieces of a clip means;
- conveying said gripped plug by said clip means to a vertical position along a horizontal path within said furrow while said platform is moving, a portion of said blade-like pieces being disposed below ground level with edges aligned along the direction of movement;
- maintaining said plug generally stationary at said vertical position with said gripping mechanism while means attached to said moving platform closes soil around said plug at a controlled depth partially covering a portion of said blade-like pieces;



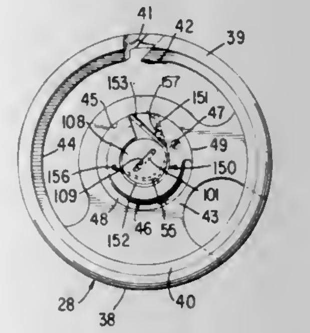
- thereafter separating said blade-like pieces to release said plug; and
- thereupon withdrawing said blade-like pieces from the soil along a plane of narrowest cross section of said blade-like piece to minimize disturbance of soil about said plug.

4,355,589
FERTILIZER APPLICATOR KNIFE ASSEMBLY
Halsey J. Wetmore, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.
Filed Mar. 16, 1981, Ser. No. 244,037
Int. Cl.^{3} A01C *23/02*
U.S. Cl. 111—7 **9 Claims**



1. A fertilizer applicator knife assembly comprising:
- a shank having a leading edge, a trailing edge and a foot;
- an earth-cutting wear insert mounted on the leading edge of the blade shank;
- an elongated fertilizer tube secured at spaced intervals to the trailing edge of the shank; and
- a tube protective spacer removably inserted and wedged between the tube and shank at a location between points of securement of the tube to the shank trailing edge, said tube protective spacer being unsecured to said shank and unsecured to said tube to facilitate removal thereof from between said shank and said tube, said spacer being an elongated metal block having a generally rectangular cross section, a front, a back, and two sides.

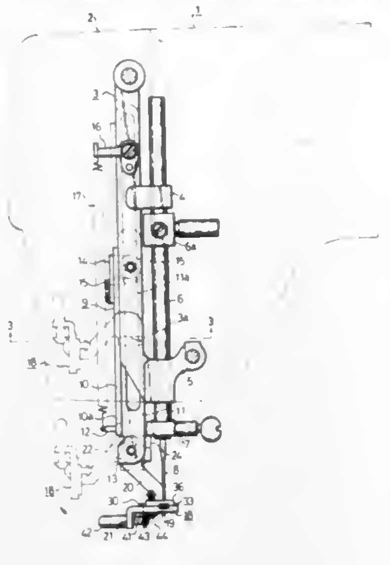
4,355,590
VARIABLE BOBBIN THREAD CONTROL FOR LOCKSTITCH LOOPTAKER
Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.
Continuation of Ser. No. 55,847, Jul. 9, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,412
Int. Cl.^{3} D05B *57/14, 59/00*
U.S. Cl. 112—184 **7 Claims**

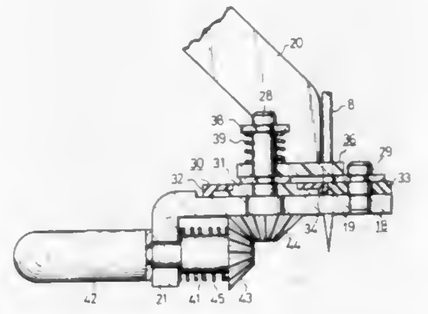


1. In a lockstitch forming sewing machine having a looptaker comprising a circularly moving looptaker body formed with an annular raceway for accommodating a bobbin within a bobbin case constrained against motion with said looptaker having thread guiding means for directing a bobbin thread from said bobbin between said stationary bobbin case and said circularly moving looptaker body, variable bobbin thread pull-off and retraction means carried by said looptaker body in a position to act on said bobbin thread for drawing a supply of bobbin thread from said bobbin and selectively retracting bobbin thread following stitch formation, and means for enabling variation of the position of said variable bobbin thread pull-off and retracting means on said looptaker body without removing said bobbin so that variation of said variable bobbin thread pull-off and retracting means may be effected at stitch selection to change the timing of engagement with said bobbin thread of said bobbin thread pull-off and retracting means to change the pull-off amount, or retraction amount.

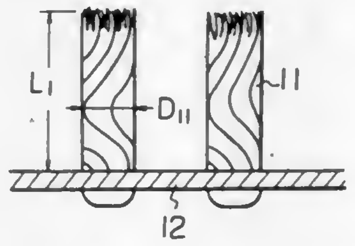
4,355,591
NEEDLE THREADERS FOR A SEWING MACHINE
Minoru Itoh, Kisozaki, and Toshio Sasaki, Inazawa, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan
Filed Jun. 3, 1981, Ser. No. 270,140
Claims priority, application Japan, Jun. 24, 1980, 55-86033
Int. Cl.^{3} D05B *87/02*
U.S. Cl. 112—225 **4 Claims**

1. A needle threader for threading the eye of a needle on a sewing machine with a frame, comprising
- a support movably mounted on said frame and provided with a needle accommodating notch,
- a pair of resilient rollers rotatably mounted on said support in the proximity of said notch, and contacting at the respective peripheral edge with each other for gripping the thread therebetween,
- means disposed between said support and said needle for positioning said support with the tangent line passing through the contact portion of said rollers in alignment with the eye of said needle accommodated in said notch, and
- thread guide means provided on said support at the opposite side of said notch relative to the contact portion of said rollers, and guiding the insertion of the thread toward the proximity of the contact portion of said rollers,
- said resilient rollers being rotated to grip and transfer the thread toward the eye of said needle.





4,355,592
COHESIVE BULKY CARPET YARN OF A POLYAMIDE CONTINUOUS MULTIFILAMENT AND A CUT PILE CARPET
Koji Tajiri; Mikio Oohara, and Kiyoshi Maruo, all of Mihara, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Jul. 12, 1979, Ser. No. 56,843
Claims priority, application Japan, Jul. 19, 1978, 53-87141; Jul. 20, 1978, 53-98828[U]; Jul. 26, 1978, 53-90376
Int. Cl.^{3} D05C *17/02;* **D02G** *1/02, 3/26*
U.S. Cl. 112—410 **5 Claims**



1. A cohesive bulky carpet yarn having a total thickness between 600 de and 6000 de and made of polyamide continuous multifilament yarn, each of which filaments has a thickness between 6 de and 30 de, wherein the total crimp of said yarn is between 3% and 15%, filaments composing said yarn are partially and thermally adhered to each other and said yarn has alternate twists so that S twist portions and Z twist portions are distributed randomly along the lengthwise direction of said yarn, and said yarn has a coherent factor between 5 and 100, a

latent torque index between 20 T/m and 300 T/m, and an adherent ratio between 0.5% and 40%.

2. A cut pile carpet comprising a substrate and cut piles of a cohesive bulky synthetic multifilament yarn having a total thickness between 600 de and 6000 de tufted on said substrate, wherein said cut piles of a cohesive bulky synthetic multifilament yarn are composed of polyamide filaments, each of which filaments has a thickness between 6 de and 30 de, and said filaments are thermally and partially adhered to each other and have alternate twists therein so that S and Z twist portions are randomly distributed along the lengthwise direction of said yarn, and said cut piles have a total crimp between 3% and 15%, a coherent factor between 5 and 100 and a latent torque index between 20 T/m and 300 T/m, and the adherent ratio of said cohesive bulky polyamide multifilament yarn is between 0.5% and 40%.

4,355,593

ANIMAL LITTER

Ronald B. Stapley, Bellevue, Wash., assignor to Carnation Company, Los Angeles, Calif.

Filed Jun. 27, 1977, Ser. No. 809,985

Int. Cl.³ A01K *1/015*

U.S. Cl. 119—1 **16 Claims**

1. An animal litter which comprises an absorptive litter material and a minor amount of a sagebrush material sufficient to mask odors emanating from animal wastes deposited on the litter.

4,355,594

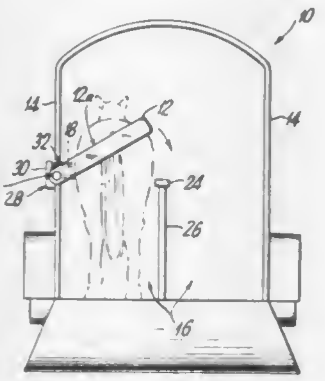
LOADING DEVICE AND LOADING METHOD FOR HORSE TRAILERS AND THE LIKE

Mary H. Wagner, 1009 Forest Rd., Perkasie, Pa. 18944

Filed Oct. 17, 1979, Ser. No. 85,538

Int. Cl.³ B60P *3/04*

U.S. Cl. 119—7 **17 Claims**



15. A method for enabling one person to load a horse, or other animal, onto a transport device, comprising the steps of:
- leading the horse onto the device and positioning the horse in the desired location in a stall space on the device; and
- causing, from the front of the stall space, a restraining arm member located generally at the back end of the device to move behind the horse, generally at about the level of the horse's rump, by causing the arm member to rotate from a generally vertically extending orientation to a generally horizontally extending orientation; and
- positioning catch means on the device to prevent rotation of the arm member beyond a predetermined point, such that when the horse tries to back up it is essentially restrained from further backward movement by said arm member.

4,355,595

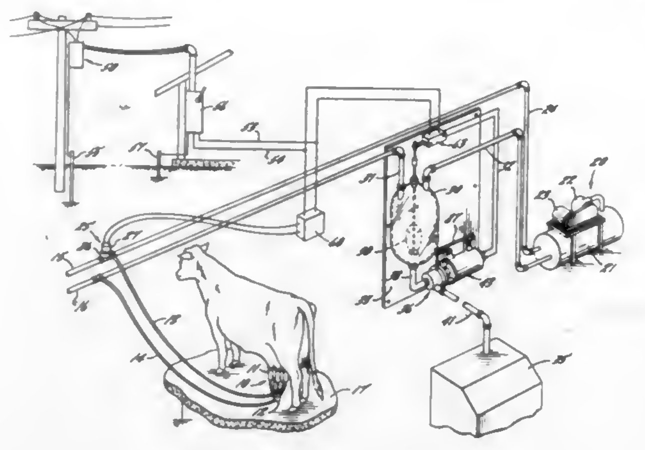
CENTRAL MILKING SYSTEM WITH REDUCED STRAY CURRENT PROBLEMS

Roger A. Ackerman, 3517 N. Henderson Rd., Freeport, Ill. 61032, and Kurt A. Ackerman, Freeport, Ill., assignors to Roger A. Ackerman, Freeport, Ill.

Filed Mar. 16, 1981, Ser. No. 244,103

Int. Cl.³ A01K *1/12*

U.S. Cl. 119—14.03 **11 Claims**



1. In a piped, central collection milking system which includes electrical units associated with an electrical power source having an earth grounded neutral conductor, said system further including electrically conductive components which are directly electrically connected to said neutral conductor, the improvement in said system comprising, means creating a highly electric-insulating path between (a) all electrically conductive components of the system which are directly connected to said neutral conductor and (b) all bodies or films of liquid milk which extend to the teat of an animal being milked.

4,355,596

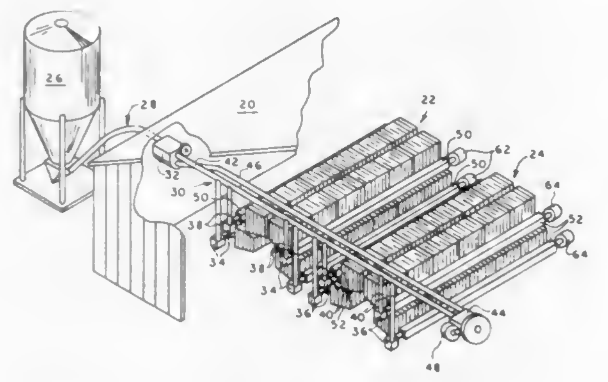
POULTRY FEEDER HAVING SEQUENTIAL CONTROL

William Peppler, Decatur, Ala., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Mar. 7, 1980, Ser. No. 128,271

Int. Cl.³ A01K *5/00, 39/012*

U.S. Cl. 119—18 **11 Claims**



6. A system for conveying feed to a plurality of groups of animals comprising: a plurality of feed conveying means associated with each group of animals for conveying feed to each said group; feed supply means connected in common to all said feed conveying means for supplying feed to said feed conveying means; and control means for automatically sequentially operating said feed conveying means so that fewer than all of said feed conveying means are operative at a time and wherein said control means is arranged to interrupt the operation of said feed supply means between the sequential operations of said feed conveying means.

4,355,597

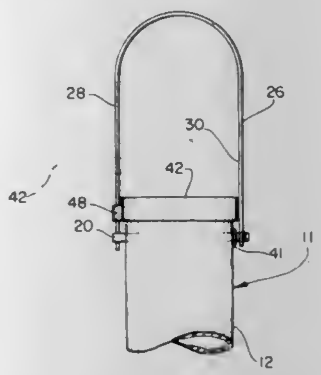
BIRD FEEDER CONSTRUCTION

Morton L. Blasbalg, 26 Sandro Dr., Warwick, R.I. 02887

Filed Aug. 7, 1981, Ser. No. 290,888

Int. Cl.³ A01K *39/00*

U.S. Cl. 119—51 R **5 Claims**



1. A bird feeder and the like comprising a vertically disposed housing including a hollow tubular body adapted to receive and dispense feed, said housing further including a generally U-shaped wire-like bail having opposite legs thereof respectively connected to said housing adjacent opposed body sidewall positions at its upper end thereof and through which said body is supported in such vertical disposition, said body upper end being normally open and a top cover adapted for positioning over said normally open upper body end so as to close such in order to protect said seed from weather, feeding pests, and the like, said closure connected to only one of said bail legs for vertically slidable and horizontally rotatable movement with respect thereto such that free access for feed filling may be had to said body without removing either said cover from said bail or said bail from said body by initially sliding said cover upwardly out of contact with said body along said one bail leg and then subsequently rotating said cover around said bail to a position horizontally offset from said body so as to expose said open body top said cover having an outwardly extending ear through which a vertically oriented bore extends, said one of the bail legs extending through said bore whereby said cover is rotatable about said one bail leg, said bail legs connected to supporting means disposed on opposite sidewall portions near the open body top, the other of said bail legs frictionally releasably connected to said supporting means such that the bail may be moved relative to its connection by said one bail leg to both said closure and said supporting means such that the feeder may be easily released from a running length support.

4,355,598

ANIMAL FEEDER WITH AUTOMATIC DISPENSER

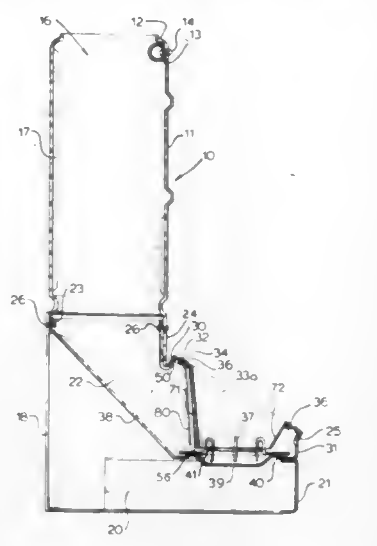
Dana H. Saylor, 1572 Renderer, Warson Woods, Mo. 63122

Filed Feb. 12, 1981, Ser. No. 233,902

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—52 A **8 Claims**

1. An animal feeder comprising, a hopper, a feed pan member attached to the lower end of said hopper and having a first floor portion which extends downwardly from said hopper and a substantially horizontal second floor portion which joins said first floor portion, a cover member attached to said feed pan member, an inverted conically-shaped animal mouth receptacle formed in said cover member and formed with a lower open end which is spaced from said second floor portion of said feed pan member, and a ring shaped agitator mounted in the lower end of said conically-shaped member for movement in the horizontal plane and having feeder fingers which extend beyond the lower end of said conically-shaped member to engage feed and move it into said opening wherein said agitator has a plurality of substantially vertical members with lower portions engageable with said second floor portion and having upper portions which extend up into said opening in the lower end of said conically-shaped receptacle and including a depression formed in said second floor portion under said conically-shaped receptacle into which said lower portions of said agitator are received to hold the agitator in position.



4,355,599

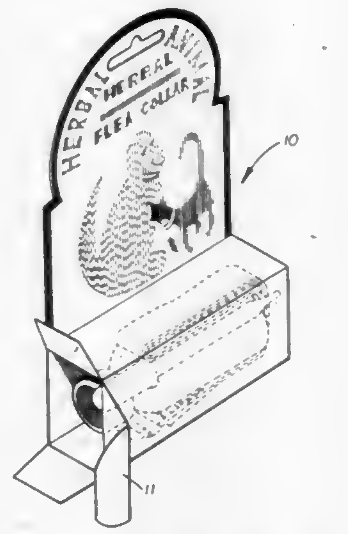
FLEA COLLAR KIT

Scott A. Fickes, 461 Cavour St., Oakland, Calif. 94618, and William A. Welch, 1161 Langley Way, Rodeo, Calif. 94572

Filed May 12, 1981, Ser. No. 263,010

Int. Cl.³ A01K *27/00;* **B65D** *77/02*

U.S. Cl. 119—106 **5 Claims**



1. A flea collar kit for controlling flea infestation of an animal comprising
- a container having a liquid flea repellent therein,
- dispensing means for selectively drawing a predetermined quantity of said liquid flea repellent from said container,
- elongated and adjustable collar means, composed of a porous material, for absorbing drops of said liquid flea repellent from said dispensing means, and
- a holding means for retaining said container, dispensing means, and collar means.

4,355,600

PROTECTIVE BODY SUIT FOR ANIMALS

Gloria J. Zielinski, 716 Scenic Dr., West Trenton, N.J. 08628

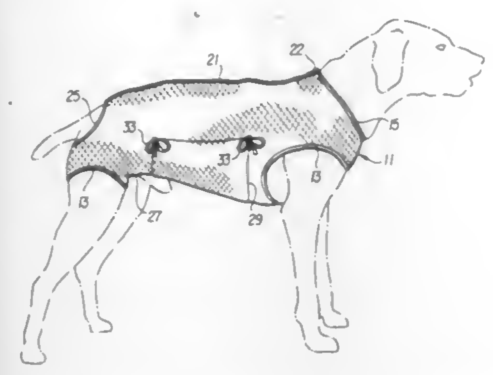
Filed Dec. 19, 1980, Ser. No. 218,436

Int. Cl.³ B68C *5/00;* **A61D** *9/00;* **A01K** *29/00;* **A61F** *5/40*

U.S. Cl. 119—143 **10 Claims**

7. A protective body covering for an animal comprising:
a tube of open mesh elastic fabric;
a pad,

means engaged with said open mesh of said fabric and extending therethrough for attaching said pad to said covering,



whereby said pad is capable of being attached to said fabric at substantially any position along said body of said animal.

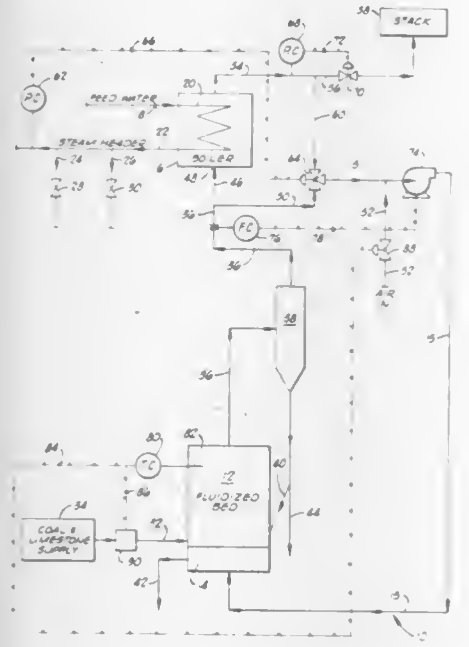
4,355,601
RECIRCULATING FLUE GAS FLUIDIZED BED HEATER

Uday S. Hattiangadi, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Sep. 25, 1981, Ser. No. 305,755

Int. Cl.³ F22B ***1/02***

U.S. Cl. 122—4 D **20 Claims**



1. A method of operating a fluidized bed heater, said method comprising the steps of:

(a) fluidizing a particulate bed by injecting a stream of fluidizing gas into said bed;
(b) charging fuel into said fluidized particulate bed;
(c) burning said fuel in said fluidized particulate bed;
(d) extracting a high temperature flue gas stream from said fluidized particulate bed;
(e) directing to a heat exchanger means a first portion of said high temperature flue gas stream;
(f) transferring heat energy from said first portion of said high temperature flue gas stream in said heat exchanger means;
(g) recycling a second portion of said high temperature flue gas stream to said fluidizing gas stream and thus to said fluidized particulate bed;
(h) adding a stream of combustion gas to said fluidizing gas stream and thus to said fluidized particulate bed;
(i) directing a first portion of a low temperature flue gas stream exiting said heat exchanger means to an exhaust stack; and
(j) recycling a second portion of said low temperature flue gas stream to said fluidizing gas stream and thus to said fluidized particulate bed.

12. A fluidized bed heater system comprising:

a fluidized particulate bed;
first conduit means for injecting a stream of fluidizing gas into said fluidized particulate bed;
charge means for charging fuel into said fluidized particulate bed;
second conduit means for extracting a high temperature flue gas stream from said fluidized particulate bed;
heat transfer means for transferring heat energy from said high temperature flue gas stream;
third conduit means for directing a first portion of said high temperature flue gas stream from said second conduit means to said heat transfer means;
fourth conduit means for recycling a second portion of said high temperature flue gas stream from said second conduit means to said first conduit means;
fifth conduit means for directing a stream of combustion gas to said first conduit means;
sixth conduit means for extracting a low temperature flue gas steam from said heat transfer means;
seventh conduit means for directing a first portion of said low temperature flue gas stream from said sixth conduit means to an exhaust stack; and
eighth conduit means for recycling a secong portion of said low temperature flue gas stream from said sixth conduit means to said first conduit means.

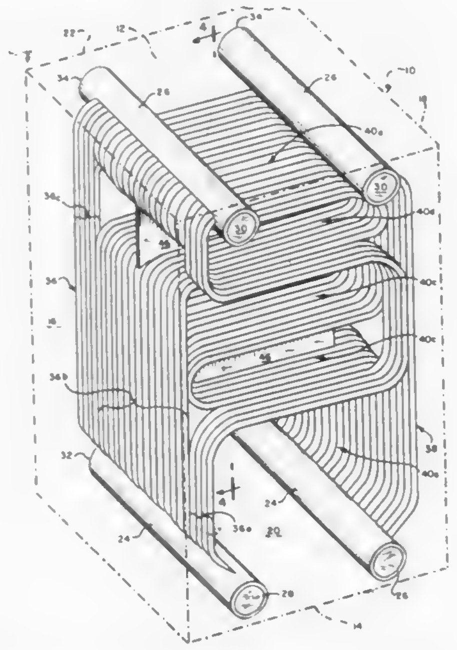
4,355,602
BOILER

George Cooke, Willowdale, Canada, assignor to Cedar Dunes Investments Ltd., Ontario, Canada

Filed Aug. 10, 1981, Ser. No. 291,693

Int. Cl.³ F22B ***15/00, 7/00***

U.S. Cl. 122—235 R **5 Claims**



1. A boiler comprising a housing having a top provided with a gas outlet, bottom, left and right sides and a front and back, the housing containing an upper manifold and a lower manifold substantially parallel to the top, bottom and side walls, two sets of tubes, each set comprising a plurality of tubes, one set joining the upper manifold to the lower manifold on the left and the other set joining the upper manifold to the lower manifold on the right, the tubes of each set rising from the lower manifold upwardly along their respective side wall, crossing the housing to the opposite side wall, rising adjacent the opposite side wall, re-crossing the housing to their respective side wall, rising therealong and eventually joining the upper manifold, the horizontal runs of the tubes of one set being vertically offset relative to the horizontal runs of the tubes of the other set so as to form a plurality of superposed chambers, individual tubes of the sets being differently bent so as to form access openings from each chamber to the chambers above and below, the openings from chamber to chamber being offset so as to require a gas flowing through said chambers to traverse one chamber from front to back and the next chamber from back to front, means for introducing liquid into one of the manifolds and for withdrawing the liquid from the other manifold, and means for introducing a hot gas into the lowermost of the superposed chambers, the hot gas rising successively through the chambers which it successively and alternately traverses from front to back and then from back to front until it exits from the uppermost chamber through the gas outlet in the top, liquid flowing through the manifolds and tubes being heated by the hot gas, at least one baffle within at least one of the chambers extending from top to bottom and from one of the sides toward but terminating short of the other, whereby hot gas traversing that chamber from front to back is additionally forced to flow laterally to get around said baffle.

4,355,603
INTERNAL COMBUSTION ENGINE

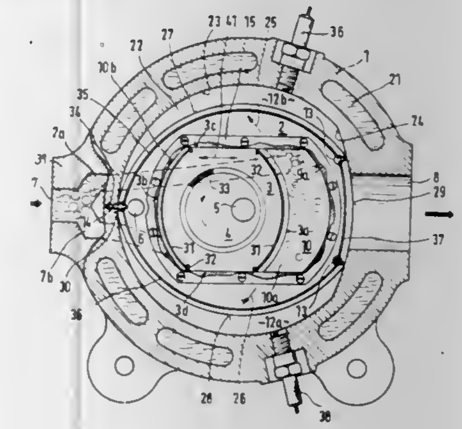
Freder Stuckenbrok, Roennelstrasse 87, 2933 Jade 2, and August Stuckenbrok, Gewerbegehiet, 2948 1 Schortens, both of Fed. Rep. of Germany

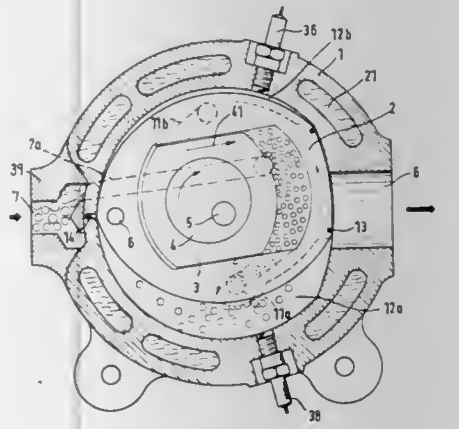
Filed Jan. 28, 1980, Ser. No. 116,063

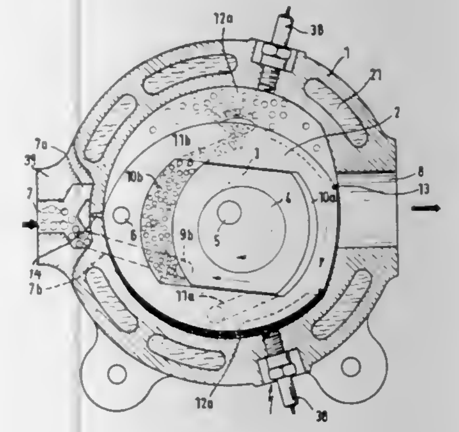
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909715

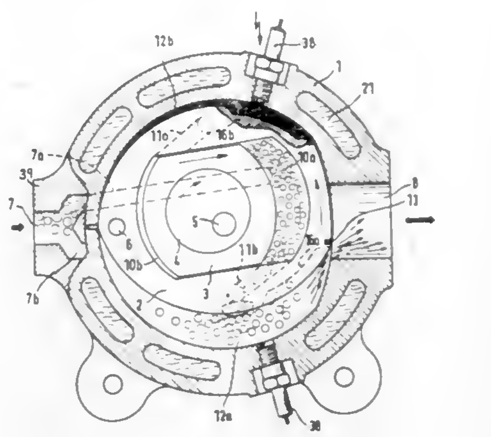
Int. Cl.³ F02B ***53/00***

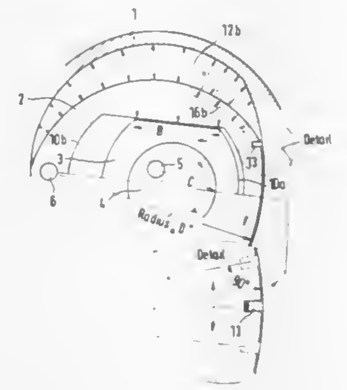
U.S. Cl. 123—18 R **6 Claims**











1. Internal combustion engine including piston means of the type having a convexly rounded peripheral portion and two generally flat face portions spaced from and generally parallel with each other and generally perpendicular to said rounded peripheral portion;

(a) said piston means being arranged for movement within a housing formed in an engine block;
(b) said piston means including first seal means slidably engaging a part of an interior wall of said housing to thus define therewith combustion chamber means limited by a part of said peripheral portion;
(c) said piston means being arranged for oscillating movement about a first axis generally perpendicular to said face portions, disposed adjacent a section of said peripheral portion and arranged near a section of interior wall portion of said housing;
(d) said piston means having an elongate slot open at both face portions of the piston means, said slot having two straight, parallel side walls generally perpendicular to said face portions, and two end walls, one disposed near the first axis, the other remote from said first axis;
(e) slide means disposed for reciprocating movement within said slot between said end walls;
(f) second seal means operatively associated with said slide means, with said piston means and with said housing to define a charging chamber at each end of the slot, each charging chamber being limited by said second seal means, by respective portions of said side walls of the slot, by a respective end wall of the slide and by adjacent part of the interior wall portion of said housing;
(g) output shaft means parallel with said first axis and including an eccentric rotatably engaging said slide means, whereby the combination of said oscillating movement of said piston means and of said reciprocating movement of said slide means is transformed into rotary movement of said output shaft means;
(h) fuel mixture feeding means for feeding fuel mixture into said combustion chamber means and including first channel means having port means coincident with at least one

of said end wall portions of the interior of said housing, said port means being disposed such as to be alternatively closed by said slider means or by said piston means and open for communication with the charging chamber at one end of the slot, and second channel means having port means in at least one of said end wall portions of the interior of said housing, the port means of said second channel means being arranged to become alternatively closed and open by said piston means or slide means for selective opening and closing of a communication with the charging chamber at the other end of said slot, said fuel mixture feeding means further comprising transfer channel means having inlet ports disposed such as to be alternatively closed or opened by said piston means, for interrupted communication between the charging chamber at one end of the slot with a first combustion chamber, and between the charging chamber at the other end of the slot with a second combustion chamber,

said first and second combustion chambers forming said combustion chamber means and being disposed one at each of mutually opposite sections of said convexly rounded peripheral portion,

whereby said piston means is driven in both directions of the oscillating movement;

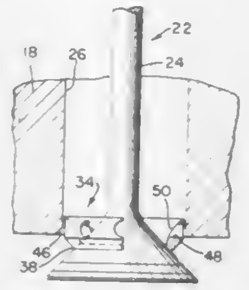
(i) fuel ignition means for selectively igniting said fuel mixture in said combustion chamber means; and

(j) exhaust means for releasing exhaust gas from said combustion chamber means.

4,355,604
SHROUDED VALVE FOR INTERNAL COMBUSTION ENGINE

Sampao Chaibongsai, 33278 Linsdale Ct., Sterling Heights, Mich. 48077

Filed May 27, 1980, Ser. No. 153,039
Int. Cl.^{3} F01L *3/06*
U.S. Cl. 123—188 VA **16 Claims**



1. A valve shroud for an internal combustion engine intake valve having a cylinder block formed with a cylinder bore slidably receiving a piston therein, a cylinder head closing the bore and, together with the upper surface of the piston, defining combustion chamber means therebetween; an intake valve through which a combustible charge is introduced from induction passage means into the combustion chamber, the intake valve including a stem portion and a head portion interconnected by a face portion; the valve shroud comprising:

a collar having a generally cylindrical configuration;

said collar having centrally located bore means defining an inner annular surface portion establishing sealing contact with the valve face portion;

said collar centrally located bore means including a surface portion having a convex air foil cross-section taken through the axis of rotation of said collar;

means securing said collar on the intake valve with said annular surface portion in sealing contact with said valve face portion;

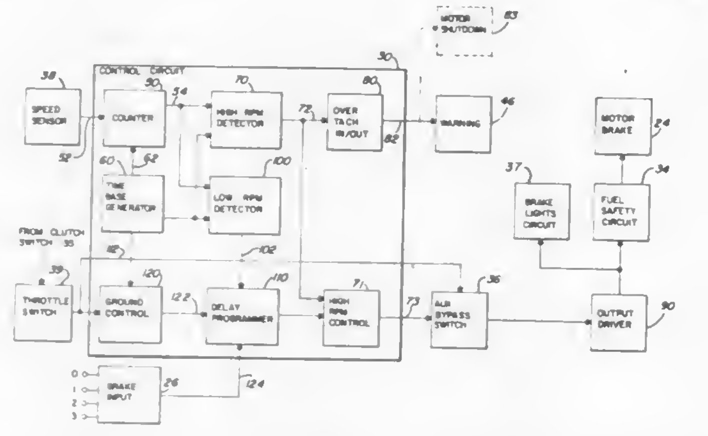
said collar having port means extending through said convex surface portion for providing communication between the induction passage means and the combustion chamber means during the opening of the intake valve and for increasing the efficiency of the charge flowing through said port means; and

said collar characterized in that said port means have an axis generally perpendicular to said stem and said port means divide all of the entering charge from the induction passage means into a plurality of jet-like flows entering the combustion chamber means, such that turbulence of the charge is intensified providing rapid and complete combustion of the charge.

4,355,605
MOTOR BRAKE CONTROL METHOD

Charles E. Robinson, Livermore, Colo. 80536, and Melvin Nieberger, Ft. Collins, Colo., assignors to Charles E. Robinson, Livermore, Colo.

Division of Ser. No. 691,724, Jun. 1, 1976, Pat. No. 4,223,649. This application Nov. 28, 1978, Ser. No. 964,282
Int. Cl.^{3} F02D *17/00, 13/04, 17/01*
U.S. Cl. 123—320 **5 Claims**



1. A method for activating and deactivating retardation in a motor having cylinders, motor brake retarders, and a switch for activating and deactivating said motor brake retarders, said method comprising the steps of:

manually selecting in said switch a given number of said motor brake retarders to be activated,

automatically activating a selected number of said motor brake retarders in response to said manual selection and comprising the steps of:

(a) generating a signal in response to said manual selection in said switch,

(b) automatically activating a predetermined number of said motor brake retarders in response to said signal, said predetermined number being less than said selected number,

(c) generating a delay signal in response to said activation of said predetermined number of motor brake retarders, and

(d) repeating steps (b) and (c) until all of said selected number of motor brake retarders are automatically activated,

manually switching said switch to a desired number of said selected number of activated motor brake retarders to be deactivated, and

automatically deactivating the motor brake retarders corresponding to said desired number.

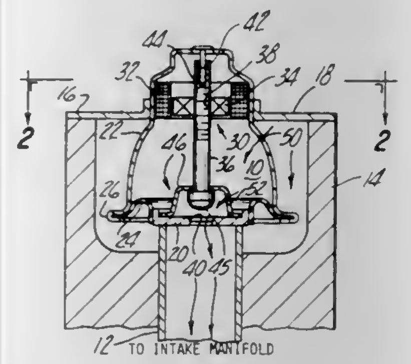
4,355,606
IDLE SPEED CONTROL VALVE

Gary L. Casey, Troy, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 947,909, Oct. 2, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 99,230
Int. Cl.^{3} F16K *31/128;* F02M *3/00*
U.S. Cl. 123—327 **1 Claim**

1. A method of controlling the flow of fluid from a pressurized source of fluid to a volume adapted to have a reduced pressure relative to the pressurized source with a valve having a valve seat and a valve element associated therewith for controlling the fluid flow, the valve element having a first fully opened and a second fully closed position, the valve element

having a pilot valve seat formed therein, a pilot valve member mateable with the pilot valve seat, and an actuator connected to the pilot valve member, the method for fixing the position of the valve element at a position intermediate the first and second position irrespective of the magnitude of the pressure of the pressurized source or the reduced pressure, comprising the steps of: operating an actuating means for moving the actuator to move the pilot valve member away from the pilot valve seat to an intermediate incremented position, wherein said actuating means comprises a rotor member for rotating the actuator in one direction to axially increment the actuator progressively away from the valve seat and rotating the actuator in an opposite direction to axially increment the actuator progressively toward the valve seat and maintaining the actuator at the incremented position of the valve element in the absence of rotation; and

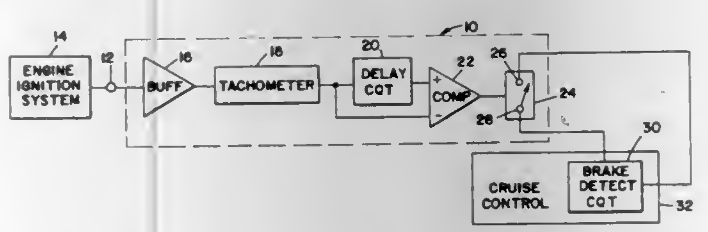


then moving the valve element away from the valve seat to an intermediate position, with the pressurized source and reduced pressure acting on said valve element whereby said intermediate position of the valve element being correlated with the incremented position of the pilot valve irrespective of the magnitude of the pressure of the pressurized source or the reduced pressure.

4,355,607
SAFETY DISENGAGEMENT DEVICE FOR AUTOMOTIVE SPEED CONTROL SYSTEM

Peter G. Blaney, Walnut Creek, Calif., assignor to Zemco, Inc., San Ramon, Calif.

Filed Sep. 8, 1980, Ser. No. 185,352
Int. Cl.^{3} F02B *77/08*
U.S. Cl. 123—350 **4 Claims**

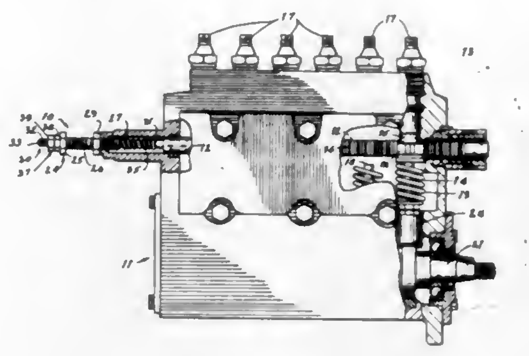


1. A device for automatically disengaging a speed control system on a vehicle with an internal combustion gasoline engine having an ignition system, said device comprising: (1) an input buffer circuit adapted for connection to the vehicle ignition system for isolating ignition noise; (2) a tachometer circuit connected to said buffer circuit for generating a signal proportional to the vehicle engine speed; (3) a delay circuit connected to the output of said tachometer circuit for generating a signal proportional to the engine speed but delayed in time; (4) comparator means for comapring the tachometer circuit output to the delay circuit output and for producing a trigger signal whenever the tachometer signal exceeds the delayed signal by a preselected amount; and an output switch means connected to said comparator means for controlling the operation of the vehicle speed control system, whereby, whenever the comparator means is triggered, the output switch means will cause the speed control system to disengage.

4,355,608
SURGE BRAKE

Earl T. Purcell, 1329 Chestnut, Clarkston, Wash. 99403, and Clifford A. Porter, 1305 Grelle, Lewiston, Id. 83501

Filed Dec. 16, 1980, Ser. No. 217,096
Int. Cl.^{3} F02D *31/00*
U.S. Cl. 123—364 **9 Claims**



1. A surge brake for conditioning axial movement of a throttle rod in a fuel injection pump, comprising:

a carrier bolt having an axially threaded shank adapted to be fitted to the pump, said bolt including an abutment surface at one end of the shank adapted to be located at a selected position axially adjacent to the throttle;

said carrier bolt including an open axial bore;

an elongated plunger received within the axial bore of the carrier bolt for axial movement therein, said plunger having a plunger head at one end and a remaining end, the plunger head extending axially beyond the carrier bolt abutment surface and adapted to axially engage the throttle rod;

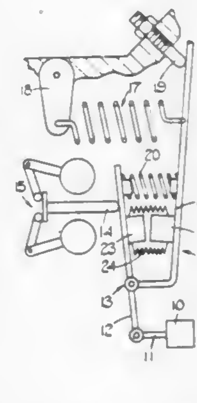
biasing means operably engaged between the plunger and carrier bolt for yieldably resisting axial movement of the plunger head toward the carrier bolt abutment surface; and

axial adjustment means on the plunger for selectively limiting the extension of said plunger head beyond said carrier bolt abutment surface and adapted to vary resistance of the biasing means to axial motion of the plunger head toward the carrier bolt abutment surface independently of the axial position of the carrier bolt in relation to the throttle rod.

4,355,609
LIQUID FUEL PUMPING APPARATUS

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 12, 1980, Ser. No. 148,680
Claims priority, application United Kingdom, Jun. 26, 1979, 7922172
Int. Cl.^{3} F02M *59/42;* F02D *1/09*
U.S. Cl. 123—373 **6 Claims**



1. A liquid fuel pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a fuel pump having a quantity control member movable in one direc-

tion to increase the amount of fuel supplied by the pump and in the other direction to reduce the amount of fuel supplied by the pump, first means responsive to the speed of operation of the pump for effecting movement of the member in said other direction, a governor spring acting in opposition to said means, manually operable means for varying the force exerted by the governor spring, a pair of levers pivotally mounted about a common axis and movable relative to each other, one of said levers being connected to said control member and to said means responsive to the pump speed, the other lever being connected to said governor spring, a stop positioned to be contacted by said other lever to limit the movement of the other lever under the action of said governor spring, and second means operatively connected to said levers, said second means producing a force acting to effect relative movement of said levers, the force exerted by said second means reducing as the levers move relative to each other under the action of said first means, the arrangement being such that when the apparatus is at rest, the levers will be moved away from a fixed relative position by the second means so that said one lever can move the control member to a position in which an excess of fuel is supplied and as the engine speed increases following starting of the engine, the levers will be moved relative to each other, to said fixed relative position and will be retained in said position by the action of the first means even when the engine speed subsequently falls to its idling value, said second means causing relative movement of said levers only in the event that the engine is stopped.

4,355,610
SERVO BOOSTED GOVERNOR CONTROL FOR ENGINES

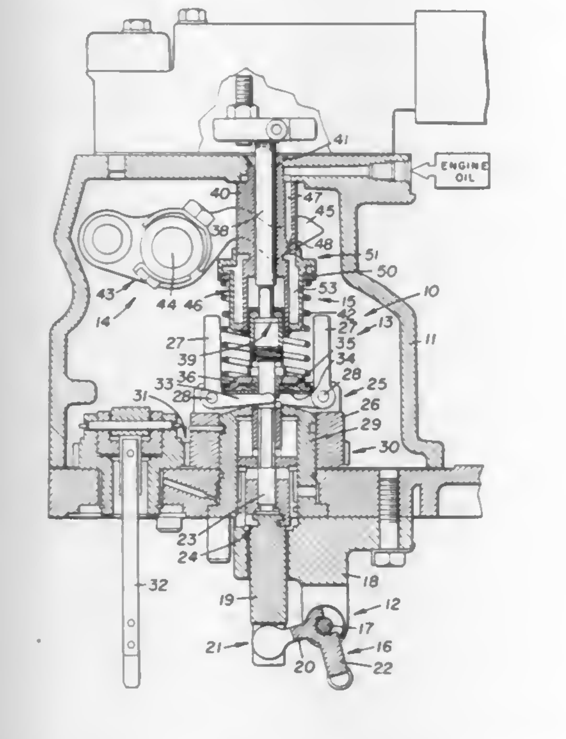
John H. Parks; Charles E. Alstrin, and Dennis M. King, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00338, § 371 Date Mar. 28, 1980, § 102(e) Date Mar. 28, 1980, PCT Pub. No. WO81/02763, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 28, 1980, Ser. No. 211,531

Int. Cl.^{3} F02D *7/00*

U.S. Cl. 123—386 **26 Claims**



1. In a fuel control system having fuel control means (**12**) for controlling supply of fuel to an engine, governor means (**13**) for automatically controlling supply of fuel to said engine by said fuel control means (**12**) in response to the speed of said engine, operator input means (**14**) for selectively applying a first force to said governor means (**13**) to oppose a counteracting force thereof, and booster means (**15,15*a***) for applying a second force to said governor means (**13**), additive to said first force, to aid said operator input means (**14**) in controlling said governor means (**13**), the improvement comprising

said booster means (**15,15*a***) including an actuating chamber (**53,53*a***), control means (**51,51*a***) for continuously maintaining a predetermined fluid pressure in said actuating chamber (**53,53*a***) in a predetermined ratio to said first force and when said operator input means (**14**) is moved to a predetermined position, and

vent means (**49,49*a*,58**) for venting fluid pressure from said actuating chamber (**53,53*a***) when the speed of said engine is in a first speed range and for closing when the speed of said engine exceeds said speed range.

4,355,611
THROTTLE LINKAGE SYSTEM IN AN AUTOMOBILE PROVIDED WITH AN INTERNAL COMBUSTION ENGINE

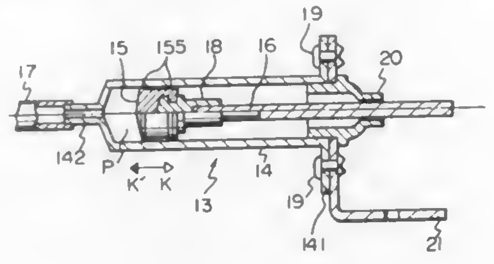
Akira Hasegawa, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 168,640

Claims priority, application Japan, Jul. 19, 1979, 54-90913

Int. Cl.^{3} F02D *11/08*

U.S. Cl. 123—396 **5 Claims**



1. An apparatus for transmitting movement of the accelerator pedal of an automobile to the throttle valve arranged in an intake system of an internal combustion engine of the automobile, said apparatus comprising:

linkage means connecting the accelerator pedal with the throttle valve for transmitting movement of the accelerator pedal to the throttle valve, which movement turns the throttle valve;

spring means co-operating with the linkage means for urging the accelerator pedal to move toward a position wherein the throttle valve is in its idle position;

a damper comprising a cylinder and a piston member arranged in the cylinder, said piston member comprising a piston made of a rubber material and having at least one annular deformable lip portion slidably contacting the inner surface of the cylinder, a piston holder fitted on one end to the piston, and a piston rod connected to the other end of the piston holder, the piston rod being connected to the linkage means, a vacuum pressure chamber formed in said cylinder at the end of the piston opposite said piston holder and means for connecting said chamber to a vacuum source for urging said piston into a position for closing said throttle valve.

4,355,612
COOLING SYSTEM WITH REMOVABLE VALVE MEMBER

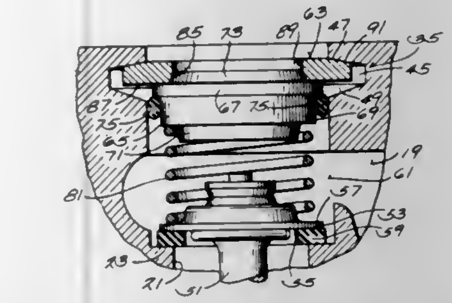
Heinrich E. Luksch, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 6, 1981, Ser. No. 231,982

Int. Cl.^{3} F01D *7/16*

U.S. Cl. 123—41.08 **24 Claims**

1. An engine cooling system comprising an engine block including an exterior surface, first wall means in said engine block defining a coolant jacket including an upstream coolant jacket portion, a downstream coolant jacket portion, and a passage portion extending between said upstream portion and said downstream portion and including therein a valve seat, second wall means in said engine block defining a void opening into said exterior surface of said block and communicating with said coolant jacket in general alignment with said passage portion, third wall means in said engine block defining a recess opening into said exterior surface of said block and communicating with said void, a valve member engaging said seat, a spring having a first end engaging said valve member and having a second end, a plug located in said void, and having a surface engaging said second spring end, and an outer surface, and a non-deformable retainer located in said recess and engaging said outer plug surface to releasably retain said retainer in said recess and to releasably retain said valve member against movement away from said seat.



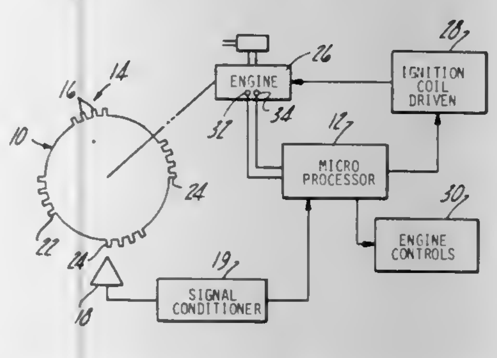
4,355,613
IGNITION ADVANCE TIMING SYSTEM

Melvin A. Rode, West Bloomfield, and Alvin D. Toelle, Fenton, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 29, 1980, Ser. No. 221,139

Int. Cl.^{3} F02P *5/04*

U.S. Cl. 123—414 **7 Claims**



1. An ignition advance timing system for internal combustion engines combining angle-base and time-base ignition timing systems for generating an ignition signal, said system comprising:

a timing disk operatively coupled to the crankshaft of the engine, said timing disk having a plurality of equally and angularly spaced groups of indicia thereon, each of said indicia representing a known angular displacement from the last indicia in each of said groups, said last indicia representing zero degrees advance in ignition timing for one of the cylinders of the engine;

sensing means responsive to each of said indicia for generating an electrical signal;

a plurality of engine operating parameter sensors each operable for generating electrical signals indicating an engine operating condition;

a microcomputer means having a stored program therein responsive to said engine operating parameter signals for calculating ignition advance timing for each cylinder during a computing period initiated by said last indicia of the preceding group of indicia for calculating the ingition advance timing for such cylinder;

said microcomputer means further including means responsive to each of said indicia for generating an INTERRUPT signal to said mirocomputer means and operable to compare the known angular displacement of said indicia with said calculated ignition advance timing signal for determination if said advance timing signal is within the angular displacement before the next adjacent indicia and generate a comparison signal therefrom; and

timing means responsive to said comparison signal and said calculated ignition advance timing signal for generating an interval at the end of which an ignition signal at the calculated advance between adjacent indicia is generated.

4,355,614
ELECTRONIC FUEL INJECTION CONTROL APPARATUS OF AN INTERNAL COMBUSTION ENGINE

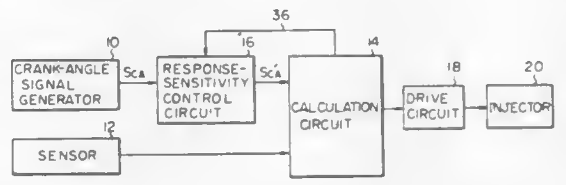
Kunihisa Hayashi, and Masakazu Moriyama, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 14, 1981, Ser. No. 263,468

Claims priority, application Japan, May 16, 1980, 55-064030

Int. Cl.^{3} F02B *3/00*

U.S. Cl. 123—436 **6 Claims**



1. An electronic fuel injection control apparatus of an internal combustion engine having a crankshaft, said apparatus comprising:

means for generating a first electrical signal at every crankshaft rotation of a predetermined angle;

means for generating a second electrical signal having a level which corresponds to a varying quantity in the period of said first electrical signal;

means, in response to said first electrical signal, for generating a third electrical signal having a variable period, a varying quantity of said third electrical signal period being maintained at a constant value or constant values irrespective of the varying quantity of said first electrical signal period when said second electrical signal is smaller than or equal to a predetermined value, a varying quantity of said third electrical signal period being changed in response to the varying quantity of said first electrical signal period when said second electrical signal is greater than the predetermined value; and

means for adjusting the amount of fuel injected into the engine, in response to the period of said third electrical signal.

4,355,615
AIR/FUEL RATIO CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka; Shoji Furuhashi, and Hideyuki Tamura, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 2, 1980, Ser. No. 145,987

Claims priority, application Japan, May 4, 1979, 54-54061

Int. Cl.^{3} F02B *3/08, 33/00, 3/00;* F02D *3/04*

U.S. Cl. 123—437 **20 Claims**

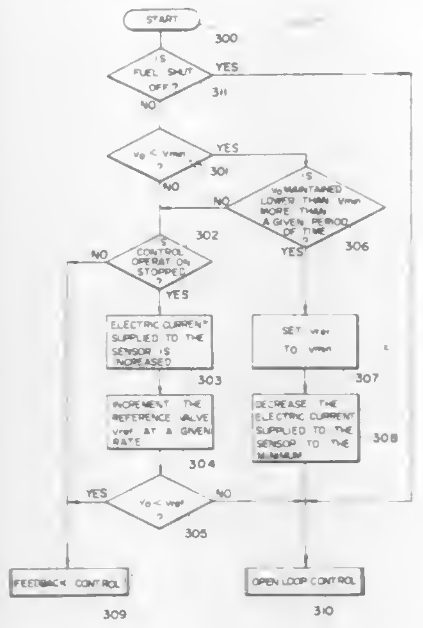
1. An air/fuel control device for an internal combustion engine having a fuel supply comprising:

an exhaust gas sensor provided in an exhaust gas passage of said internal combustion engine for determining an exhaust gas component concentration and for generating a sensor signal indicative of the determined concentration;

a discriminating circuit for comparing said sensor signal value with a first reference value and determining if said exhaust gas sensor temperature condition satisfies a feedback control condition, said discriminating circuit producing a switching signal when said feedback control condition is satisfied;

a control circuit, responsive to said switching signal, for effecting feedback control operation and open loop control operation selectively, said control circuit feedback controlling said fuel supply and producing a control signal indicative of a determined fuel rate, said control circuit resetting said first reference value to a minimum value when control operation mode is switched from feedback control to open loop control; and

an electric power supply control circuit for controlling an electric current supplied to said exhaust gas sensor, said power supply control circuit including a switching means for adjusting the electric current value, said switching means having first means for comparing said sensor signal value with a minimum value for determining the sensor condition, second means for measuring a period of time during which said first means determines said sensor signal value is lower than said minimum value and a third means for supplying a minimum value of electric current when said second means determining said sensor is not in a condition to effect feedback control.


START
300
IS FUEL SHUT OFF ?
YES
311
NO
$V_0 < V_{min}$?
YES
301
NO
IS V_0 MAINTAINED LOWER THAN V_{min} MORE THAN A GIVEN PERIOD OF TIME ?
NO
302
306
IS CONTROL OPERATION STOPPED ?
NO
YES
ELECTRIC CURRENT SUPPLIED TO THE SENSOR IS INCREASED
SET V_{ref} TO V_{min}
303
307
INCREMENT THE REFERENCE VALVE V_{ref} AT A GIVEN RATE
DECREASE THE ELECTRIC CURRENT SUPPLIED TO THE SENSOR TO THE MINIMUM
308
304
YES
$V_0 < V_{ref}$?
NO
305
FEEDBACK CONTROL
OPEN LOOP CONTROL
309
310

4,355,616

FUEL SUPPLY CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE OF AN AUTOMOTIVE VEHICLE

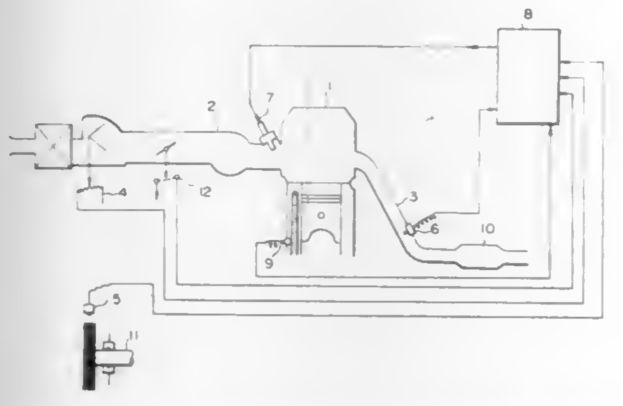
Hideyuki Tamura, Yokohama, and Kenji Ikeura, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 14, 1980, Ser. No. 149,144

Claims priority, application Japan, May 15, 1979, 54-58681

Int. Cl.^{3} F02B *3/00*

U.S. Cl. 123—440 **18 Claims**



1. A fuel supply control system for an internal combustion engine having open loop and λ-control modes of operation comprising:

first sensor means for determining the air flow rate flowing through an air intake passage of said engine and generating a first sensor signal indicative of the determined air flow rate;

second sensor means for determining engine speed and generating a second sensor signal corresponding to the determined engine speed;

third sensor means for determining oxygen concentration in an exhaust gas of the engine and generating a third sensor signal corresponding to the determined oxygen concentration for use in said λ-control mode of operation;

fourth means for determining a basic fuel injection amount based on values of said first and second sensor signals;

fifth means for determining a correction coefficient based on said first and second sensor signal values for correcting said basic fuel injection amount; and

sixth means for discriminating whether said correction coefficient exceeds a first given value, said sixth means responsive to said fifth means for clamping λ-control when said correction coefficient exceeds said first given value and subsequently carrying out open loop control.

4,355,617

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH CONTINUOUS INJECTION IN THE INTAKE PIPE

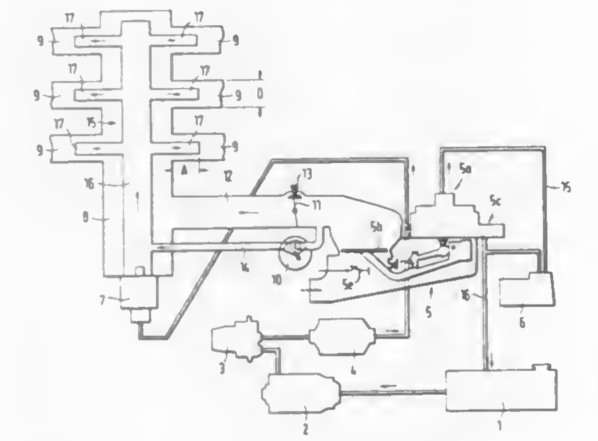
Heinz Dorsch, Weissach, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Stuttgart, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 189,866

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1979, 2938406

Int. Cl.^{3} F02M *59/32*

U.S. Cl. 123—453 **6 Claims**



1. A fuel injection system for a mixture compressing, external ignition, four stroke cycle internal combustion engine with fuel injection in an intake pipe, comprising a primary intake pipe in which an air metering element and an intentionally actuated choke are arranged in succession, a plurality of intake lines for supplying an air-fuel mixture to engine cylinders, all of the intake lines and the primary intake pipe opening into a common manifold intake pipe and an electromagnetically actuated injection nozzle for cold starting of the internal combustion engine, characterized in that a fuel distribution arrangement is provided within the manifold intake pipe and comprises a fuel admitting portion and fuel feed components each of which extends from said admitting portion to a corresponding one of said intake lines, wherein an air supply means bypassing said choke is provided for forcing air directly into the fuel admitting portion bypassing the choke, and wherein said injection nozzle supplies fuel into said fuel admitting portion, whereby the air from said air supply means and fuel from said injection nozzle are thoroughly mixed within said admitting portion and uniformly distributed by the fuel feed components to the respective intake lines to the engine cylinders.

4,355,618

METHOD AND APPARATUS FOR OBTAINING A CONTROL VARIABLE FOR THE CLOSED-LOOP CONTROL OF THE FUEL-AIR RATIO IN THE OPERATING MIXTURE OF INTERNAL COMBUSTION ENGINES

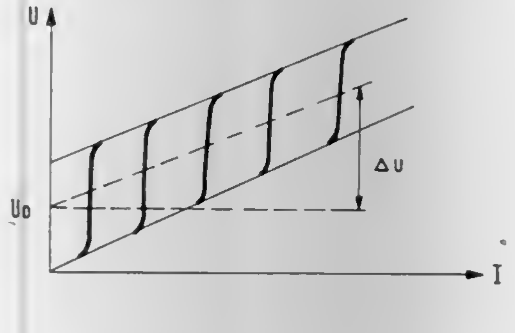
Klaus Müller, Tamm; Franz Rieger, Aalen-Wasseralfingen; Helmut Maurer, Schwieberdingen; Ernst Linder, Mühlacker; Harald Reber, and Hermann Dietz, both of Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,560

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946440

Int. Cl.^{3} F02B *3/00*

U.S. Cl. 123—489 **5 Claims**



1. A method for obtaining a control variable for a closed-loop control device for the closed-loop control of the fuel-air ratio of the operating mixture in internal combustion engines utilizing an exhaust gas threshold-current sensor exposed to the exhaust gas flow and a control device for adjusting the fuel-air ratio of the operating mixture, said sensor operating on the principle of oxygen ion conduction when exposed to voltage and having a body made of fixed electrolyte material which conducts oxygen ions and furnishes a control signal corresponding to the oxygen content in the exhaust gas, wherein the threshold current of the sensor, defined by the diffusion speed of the measured gas, is a standard for the oxygen content in the exhaust gas, the method comprising the steps of:

generating a voltage difference signal which corresponds to the change in the air number λ of the operating mixture when there is a change in the operational state of the engine;

generating a reference measurement voltage signal;

adding the generated voltage difference signal and the generated reference measurement voltage signal; and

applying the added generated voltage difference signal and the generated reference measurement voltage signal to the exhaust gas threshold-current sensor and measuring the resultant current through the exhaust gas threshold-current sensor, said resultant current serving as a standard for the percentage oxygen content in the closed-loop control circuit with the oxygen content which is to be maintained; whereby the closed-loop control device corrects the fuel-air ratio accordingly.

2. An apparatus for obtaining a control variable for a closed-loop control device for the closed-loop control of the fuel-air ratio of the operating mixture in internal combustion engines, comprising:

means for ascertaining the operational state of the engine;

control means connected to the means for ascertaining the operational state of the engine for generating a voltage difference signal corresponding to the change in the air number λ resulting from the ascertained change in the operational state of the engine;

an exhaust gas threshold-current sensor exposed to the flow of exhaust gas, said sensor having a fixed electrolyte body which conducts oxygen ions;

means for adding the voltage difference signal to a reference measurement voltage signal and applying the added voltage signals to the exhaust gas threshold-current sensor; and

current measuring means for measuring the resultant current through the exhaust gas threshold-current sensor as a result of applying the added voltage signals, whereby the resultant current serves as the control variable for the control device.

4,355,619

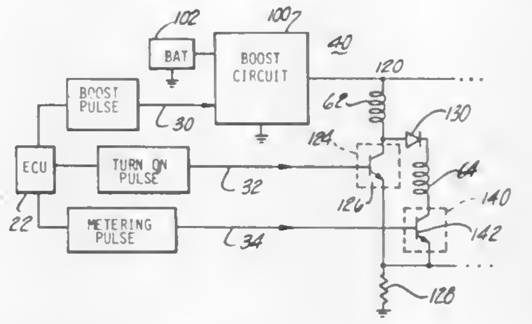
FAST RESPONSE TWO COIL SOLENOID DRIVER

John R. Wilkinson, Dearborn, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 1, 1980, Ser. No. 193,331

Int. Cl.^{3} F02B *3/00;* H01H *47/04*

U.S. Cl. 123—490 **16 Claims**



1. A fuel control system for an internal combustion engine comprising:

at least one fuel injector adapted to receive fuel and for injecting a determinable quantity of fuel to a cylinder of the engine, including metering chamber means for storing the determinable quantity of the received fuel prior to the injection of the fuel into the cylinder and solenoid means operatively situated relative to said metering chamber means for selectively permitting, upon activation, the received fuel to flow therein, said solenoid means including a first or pull-in coil and a second or hold coil that are magnetically coupled to each other;

generator means responsive to at least one engine operating parameter for generating a plurality of pulse train signals, phased relative to one another and synchronized to the combustion process within the engine for energizing of said solenoid means for controlling the activation time of said solenoid means and for controlling the duration of fuel flow to said metering means;

source means, including a battery, for providing a ready source of electrical energy;

boost means, responsive to a first pulsed signal of said plurality of signals for generating a first voltage greater than the voltage of said source means comprising:

a boost coil connected to said source means;

first switch means, including a first transistor, connected to said boost coil, for transferring a first quantity of electrical energy from said source means to said boost coil in response to said first pulsed signal;

first and second diodes having their cathode terminals connected in common and having the anode of said first diode connected to said source means and having the anode of said second diode connected to said boost coil at the junction of said boost coil and said first switch means;

current limiting means, including a first resistor connected to said first switch means for limiting the current flow therethrough;

second switch means, one associated with each of said at least one fuel injector, responsive to a second pulsed signal of said plurality of pulsed train signals and connected to one terminal of said pull-in coil for permitting current to flow through said pull-in coil in timed relationship with the generation of the first pulsed signal and wherein the other terminal of said pull-in coil is connected to the anode of said first diode;

a third diode, one associated with each of said at least one fuel injector having its anode connected to said one terminal of said pull-in coil, and its cathode connected to a first terminals of said hold coil;

third switch means, one associated with each said at least one fuel injector and responsive to a third pulsed signal of said plurality of pulsed train signals and connected to a second terminal of said hold coil for activating said hold coil to maintain said solenoid means in an activated state thereby permitting continued fuel flow into said metering chamber means.

9. A circuit for activating at least one fuel injector of an internal combustion engine, the at least one fuel injector including:

solenoid means including a first or pull-in coil and a second or hold coil that are magnetically coupled to each other, the circuit comprising:

generator means responsive to at least one engine operating parameter for generating a plurality of pulse train signals, phased relative to one another and synchronized to the combustion process within the engine for energizing of said solenoid means, for controlling the activation time of said soneoid means;

source means, including a battery, for providing a ready source of electrical energy;

boost means, responsive to a first pulsed signal of said plurality of signals for generating a first voltage greater than the voltage of said source means comprising:

a boost coil connected to said source means;

first switch means, including a first transistor, connected to said boost coil, for transferring a first quantity of electrical energy from said source means to said boost coil in response to said first pulsed signal;

first and second diodes having their cathode terminals connected in common and having the anode of said first diode connected to said source means and having the anode of said second diode connected to said boost coil at the junction of said boost coil and said first switch means;

current limiting means, including a first resistor connected to said first switch means for limiting the current flow therethrough;

second switch means, one associated with each of said at least one fuel injector, responsive to a second pulsed signal of said plurality of pulsed train signals and connected to one terminal of said pull-in coil for permitting current to flow through said pull-in coil in timed relationship with the generation of the first pulsed signal and wherein the other terminal of said pull-in coil is connected to the anode of said first diode;

a third diode, one associated with each said at least one fuel injector having its anode connected to said one terminal of said pull-in coil, and its cathode connected to a first terminal of said hold coil;

third switch means, one associated with each said at least one fuel injector and responsive to a third pulsed signal of said plurality of pulsed train signals and connected to a second terminal of said hold coil for activating said hold coil to maintain said solenoid means in an activated state thereby permitting continued fuel flow into said metering chamber means.

4,355,620
FUEL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

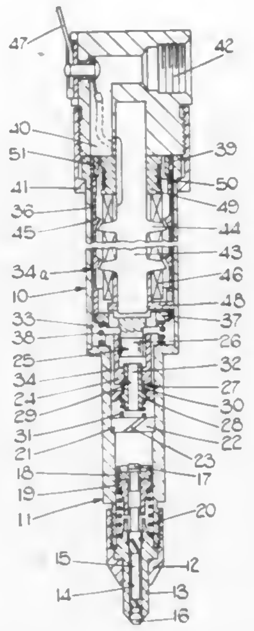
Alec H. Seilly, North Wembley; Dorian F. Mowbray, Burnham; John E. Mardell, Uxbridge, and Michael J. Davison, London, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Nov. 16, 1979, Ser. No. 94,720

Claims priority, application United Kingdom, Feb. 8, 1979, 7904536; Mar. 3, 1979, 7907556

Int. Cl.^{3} F02M *51/04*

U.S. Cl. 123—499 10 Claims



1. A fuel system for an internal combustion engine of the type in which fuel is injected into a combustion space of the engine, the system comprising an injection nozzle positioned on the engine so that fuel delivered to the nozzle will be injected into the combustion space, an injection pump for delivering fuel to the nozzle in timed relationship with the associated engine, said pump comprising a piston movable in a bore to vary the size of a pumping chamber, resilient means biasing the piston in a direction to increase the size of the pumping chamber, electromagnetic means operable to move the piston against the action of the resilient means to displace fuel from the pumping chamber through the associated nozzle, a valve controlled fuel inlet to said pumping chamber and through which fuel can flow into the bore from a source of fuel when the piston is moved by the action of the resilient means, the system including first electronic means for supplying power to the electromagnetic means when delivery of fuel by the pump is required, second electronic means for providing a first control signal to said first electronic means when it is desired to energize the electromagnetic means, third electronic means for providing a second control signal to said first electronic means to cut off the supply of power to said electromagnetic means thereby to allow fuel to flow into the pumping chamber, said third electronic means being operative to determine from signals supplied to it, the time required for the pumping chamber to fill with the desired quantity of fuel thereby to determine the instant the second control signal is supplied, fourth electronic means for determining the desired amount of fuel to be supplied to the engine and fifth electronic means for determining the desired timing of delivery of fuel, the signals provided by said fourth and fifth electronic means being supplied to said third electronic means, and said fifth electronic means comprising a store in which is stored information regarding the required timing of delivery of fuel for different engine speeds and load, said fifth electronic means receiving a signal from said fourth electronic means and also a signal indicative of the speed of the associated engine.

4,355,621
INJECTION ADVANCE DEVICE

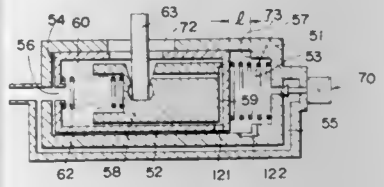
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 30, 1980, Ser. No. 145,155

Claims priority, application Japan, May 1, 1979, 54-53602; Sep. 3, 1979, 54-112590; Sep. 3, 1979, 54-112591

Int. Cl.^{3} L02M *39/00;* F02M *39/00;* F02D *1/16*

U.S. Cl. 123—502 13 Claims



1. In a fuel injection pump for use in a diesel engine, said fuel injection pump including a pump housing defining an interior pump chamber, said housing containing a feed pump for supplying fuel under pressure substantially proportionally to engine speed to said pump chamber, and a fuel-injection timing control member movable to determine a fuel-injection timing corresponding to its position, an injection advance device comprising:

(a) a casing fixed to said pump housing;

(b) a cylinder slidably located in said casing to form first and second chambers at the respective ends of said cylinder, said first chamber being in communication with said feed pump inlet side and said second chamber being in communication through a release passage with said feed inlet side;

(c) first spring means located in said second chamber for urging said cylinder toward said first chamber so as to advance the fuel-injection timing;

(d) a piston slidably located in said cylinder to form third and fourth chambers at the respective ends of said piston, said third chamber communicating with said feed pump inlet side, said fourth chamber communicating with said pump chamber, said piston being drivingly connected to said control member;

(e) second spring means located in said third chamber for urging said piston towards said fourth chamber; and

(f) valve means provided in said release passage for interrupting communication between said second chamber and said feed pump inlet side so as to prevent said cylinder from moving towards said second chamber in response to at least one engine operating parameter.

4,355,622
AIR/FUEL MIXTURE HEATING DEVICE FOR INTERNAL COMBUSTION ENGINE

Mitsumasa Inoue, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

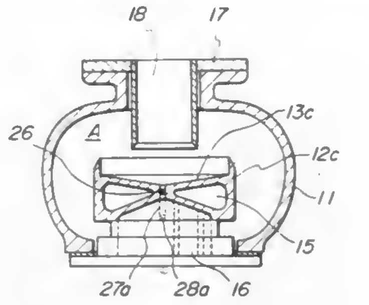
Filed Jul. 1, 1980, Ser. No. 164,906

Claims priority, application Japan, Jul. 18, 1979, 54-99039[U]

Int. Cl.^{3} F02M *31/00*

U.S. Cl. 123—548 1 Claim

1. An air/fuel mixture heating device for an internal combustion engine, arranged in an intake manifold including fuel supply means upstream of a riser space in said intake manifold, comprising: a riser extending substantially vertically into said intake manifold to a relatively high position in said riser space and having a riser surface slowly inclined downwardly toward its center substantially opposite to a carburetor outlet for introducing a fuel air mixture to the riser surface, said riser being formed at a circumference of said riser surface with a barrier for collecting condensed fuel, a hot water jacket through said riser below said riser surface for passing engine cooling water therethrough to heat condensed fuel in said barrier, and with paths through said riser for the condensed fuel.



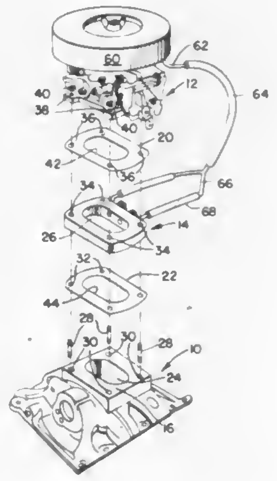
4,355,623
AIR INLET FUEL SAVER DEVICE FOR INTERNAL COMBUSTION ENGINES

Lewis N. Graham, 1864 E. Maxwell St., Pensacola, Fla. 32503

Filed Feb. 27, 1981, Ser. No. 238,836

Int. Cl.^{3} F02M *23/04*

U.S. Cl. 123—585 5 Claims



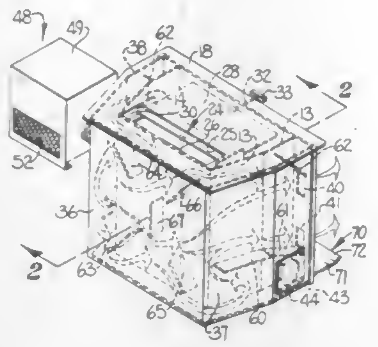
2. In combination with an internal combustion engine having an intake manifold and a carburetor with air filter for mixing fuel and air together prior to induction into the engine combustion area comprising: an auxiliary body having a throat aperture therein for alignment between and with the carburetor and intake manifold openings, at least one auxiliary air inlet hole orientated at a pre-determined angle between the auxiliary body throat aperture and the exterior thereof, valve adjusting means associated with said auxiliary air inlet hole at another predetermined angle thereto, and provided with adjusting means therein for effecting violent turbulence of air flowing through the auxiliary hole at the exit thereof in addition to creating high frequency sound vibrations therein for the purpose of increasing the homogenization of fuel-air mixture with resultant increase in engine efficiency, said adjusting means including a valve member having a rounded blunted end which projects into the exit opening of said auxiliary air inlet hole, and said adjusting means further including said valve member having a deflecting blade at the rounded blunted end extremity thereof for the purpose of effecting violent turbulence of the air being sucked through the auxiliary air inlet hole exist and also for the purpose of creating vibration sound effects.

4,355,624
FUEL BURNING HEATER
James C. Hardin, 1261 Westbrook Cir., and Gerald D. Hardin, Rte. 1, Box 523, Sparrow Springs Rd., both of Gastonia, N.C. 28052

Filed Mar. 6, 1980, Ser. No. 127,783

Int. Cl.^{3} F24B *3/00*

U.S. Cl. 126—66 **5 Claims**



1. A fuel burning heater characterized as having a relatively low temperature on the top wall thereof so as to minimize warpage and deterioration of such wall, and comprising

a front wall, a back wall, opposite side walls, a bottom wall, and a top wall collectively defining an enclosed combustion chamber,

an access opening in said front wall to permit access to said combustion chamber,

a flue opening in said top wall adjacent said back wall for communicating with a flue or the like,

a relatively flat damper plate having an overall area comparable to at least a substantial portion of that part of the area of said top wall within said combustion chamber forwardly of said flue opening, and means slideably mounting said damper plate within said combustion chamber immediately below and parallel to said top wall, and for movement between a rearward position underlying and substantially closing said flue opening and a forward position wherein the damper plate is spaced forwardly of said flue opening and underlies a substantial portion of that part of the area of the top wall forwardly of said flue opening to thereby insulate the top wall from the heat of combustion within said combustion chamber, said mounting means including a rod fixed to said damper plate and extending forwardly through said front wall, and handle means fixed to said rod forwardly of said front wall.

4,355,625
FIREPLACE BOILER WITH AIR TIGHT FRONT AND CONTROLLED DRAFT
William C. Kincaid, 322 Sherwood Dr., Suffolk, Va. 23434

Filed Feb. 6, 1980, Ser. No. 77,149

Int. Cl.^{3} F24B *9/04*

U.S. Cl. 126—132 **11 Claims**

1. A water-heating device adapted to be placed in a fireplace cavity having a front opening comprising

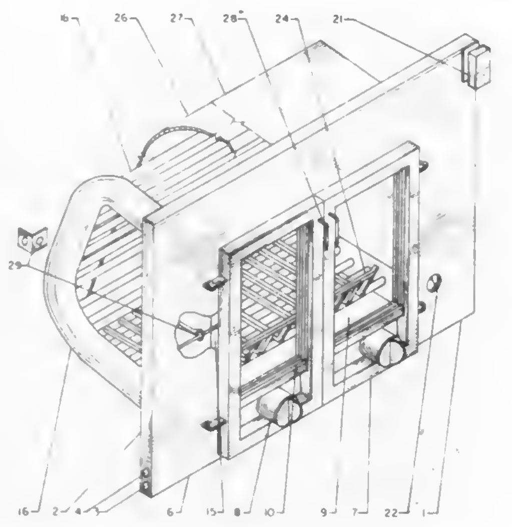
(a) a vertically disposed front steel wall of substantially rectangular periphery having front and rear surfaces and adapted to make an airtight fit with the front opening of said fireplace cavity,

(b) two substantially identical C-shaped headers disposed in upright manner in mirror image relationship adjacent each vertical side of said steel wall, each header consisting of a back portion and forwardly extending portions emerging from the upper and lower extremities of said back portion and communicating therewith, said back portions being spaced closer together than said forwardly extending portions, the forwardmost extremities of said forwardly extending portions being attached to and sealed by the rear surface of said steel wall,

(c) a plurality of horizontal tubes extending between said headers and communicating therewith,

(d) a series of substantially parallel spaced apart bars attached to the top sides of those horizontal tubes extending between the lower forwardly extending portions of said header, and perpendicular thereto, thereby forming a grate capable of supporting combustible solid fuel,

(e) conduit means associated with the rear surface of said steel plate adjacent the outer periphery thereof, said conduit means comprising upper and lower horizontal members and opposed side members, said upper and side members being continuous and in communication with an upper forwardly extending portion of a header, and said lower horizontal member communicating with a lower forwardly extending portion of a header,



(f) means associated with said lower horizontal member of said conduit means to permit ingress of water to be heated,

(g) means associated with said conduit means, above the means permitting ingress of water, to permit removal of heated water,

(h) means for sensing the temperature of water within said conduit means adjacent the upper portion of said steel plate,

(i) first baffle means disposed at the rear of said device and behind said horizontal tubes adapted to reflect heat toward said grate, and

(j) a hinged door substantially centered within said steel plate adapted to admit solid fuel to said grate.

4,355,626
STOVE HAVING EXTRUDED DOOR OPENING AND METHOD OF MAKING SAME
Charles L. Bailey, Homer, and Roy D. Baker, Brooklyn, both of Mich., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 163,923, Jun. 30, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,310

Int. Cl.^{3} F23M *7/00*

U.S. Cl. 126—190 **9 Claims**

1. Door and door opening structure for wood-burning stove, the door opening structure comprising,

a stove front plate having a fueling opening in it,

a door flange projecting fowardly around the opening, the flange being integral with the plate, there being a round corner where the flange joins the plate;

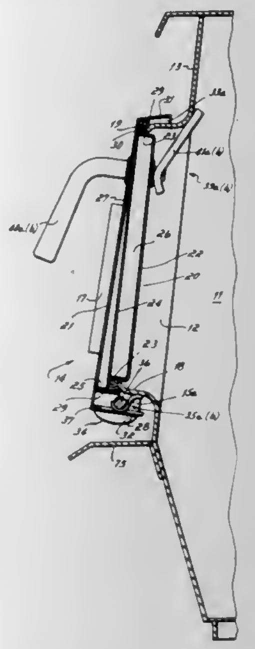
the flange having an inturned lip at its outer edge,

the door comprising,

an outer plate, an inner plate, and a shim plate, said shim plate being connected between the outer and inner plates and providing spacing between them,

wherein said spacing increases from the top to the bottom of said inner and outer plate, and

wherein said shim plate at an upper edge portion thereof adjoins the outer plate and at a lower edge portion thereof has an outwardly turned lip mounted to said outer plate and which angulates said shim plate with respect to the outer plate, there by defining said spacing between the inner and outer plates,



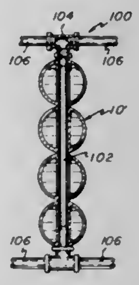
said inner plate being mounted to said shim plate and being angulated by the shim plate with respect to said outer plate.

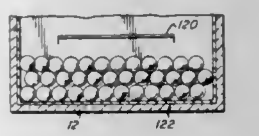
4,355,627
THERMAL STORAGE SYSTEM
Robert W. Scarlata, 913 Heritage Rd., Moorestown, N.J. 08057

Continuation-in-part of Ser. No. 912,961, Jun. 6, 1978, Pat. No. 4,205,656. This application May 29, 1980, Ser. No. 154,575

Int. Cl.^{3} F24H *7/00;* **F24J** *3/02*

U.S. Cl. 126—400 **10 Claims**





1. A thermal storage system for use with a circulating fluid that is passed through the thermal storage system for exchange of energy between the fluid and the system, wherein the system comprises:

(a) a storage bin having means associated therewith for, in use, receiving and discharging the circulating fluid;

(b) a plurality of discrete heat storage reservoirs within said bin, each having a shell of regular sphere-like geometric shape defining an interior cavity within the reservoir and defining a substantially diametric passageway through the sphere-like shell;

(c) an elongated carrying member in said bin having a plurality of said reservoirs engaged thereon through said passageway; and

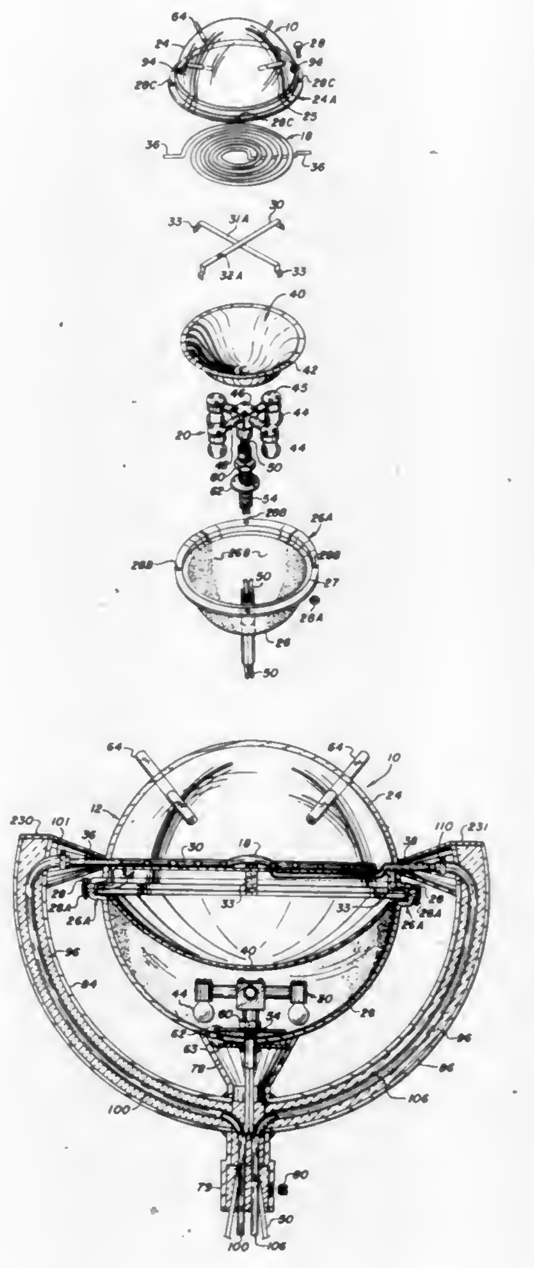
(d) heat storage media contained within said cavity, the shell conducting heat between the fluid and the heat storage media.

4,355,628
ILLUMINATED SOLAR ENERGY COLLECTOR
Ralph M. Watts, Little Rock, Ark., assignor to John W. Lowery, Jacksonville, Ark.

Filed Jan. 29, 1982, Ser. No. 343,780

Int. Cl.^{3} F24J *3/02;* **F21V** *33/00*

U.S. Cl. 126—427 **5 Claims**



1. An illuminated solar energy collection unit comprising:

a generally spherical collector adapted to be exposed to sunlight, said collector comprising upper and lower generally hemispherically shaped, flanged halves adapted to be coupled together;

heat exchange means disposed within said spherical collector substantially at the center thereof for warming fluid passing therethrough with solar energy, said heat exchange means including fluid input means and fluid output means;

means for supporting said heat exchange means within said collector, said supporting means including at least a portion thereof secured between said flanged collector halves;

mirror means disposed within said collector for reflecting solar energy toward said heat exchange means;

lighting means disposed interiorly of said collector for selectively providing illumination, said lighting means disposed between said mirror means and a lowermost portion of said collector whereby heat generated by said lighting means will warm the collection unit thereby resisting build-up of the moisture and accumulation of snow, ice and the like; and,

pedestal means adapted to be disposed upon a supporting surface for securely mounting said collector at an elevated position above said surface.

4,355,629

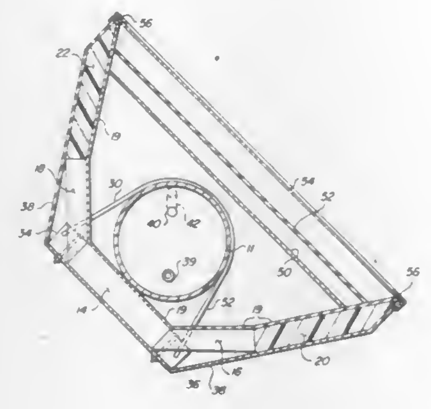
SUPERIOR PERFORMANCE PASSIVE SOLAR WATER HEATER

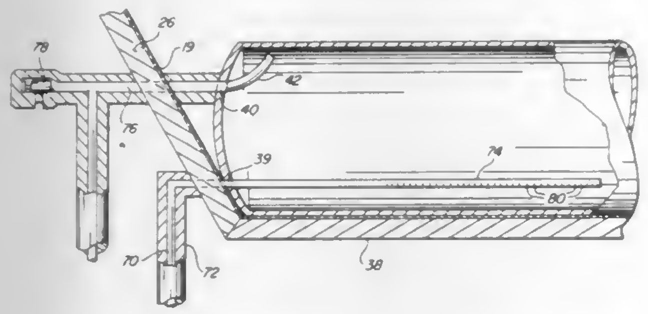
S. Douglas Cornell, III, 911 S. Marvin Ave., Tucson, Ariz. 85710

Filed Nov. 24, 1980, Ser. No. 209,756

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—437 **3 Claims**





1. A passive solar heater of the type combining the heat absorber and fluid storage in a tank adapted to be exposed to solar energy, said heater comprising:

(a) an enclosure having walls defining an interior chamber therein, said enclosure having an opening adapted to admit the sun's rays therethrough;

(b) a fluid storage tank positioned within the chamber in said enclosure, said tank including a selected surface coating characterized by high heat absorptance and low heat emissivity;

(c) insulative lining on the interior walls of said enclosure, said insulative lining including a sun reflective foil surface lining the inside walls of said insulative material so aligned to reflect the sun's rays impinging on the foil and redirect the rays toward the said tank;

(d) tank support means connecting the tank to the enclosure, said tank support means including intermediate insulative means adapted to receive and hold said supports in fixed, non-contact arrangement with the enclosure;

(e) said supports including a selected coating characterized by high heat absorptance and low heat emissivity;

(f) multiple glazings extending across said opening in said enclosure, said glazings being spaced apart and extending to said insulative lining, said glazings being secured at the inner side of said enclosure side wall at said lining with nonconductive air sealant being interposed between said glazing edges and said insulative material lining whereby the opening of the enclosure is made substantially airtight; and

(g) means to interrupt the heat conduction path along the sun reflective foil from the inside of the enclosure, said means including scribing in said sun reflective foil proximate to each glazing, said scribing extending through the foil and being covered by non-heat-conductive sealant.

4,355,630

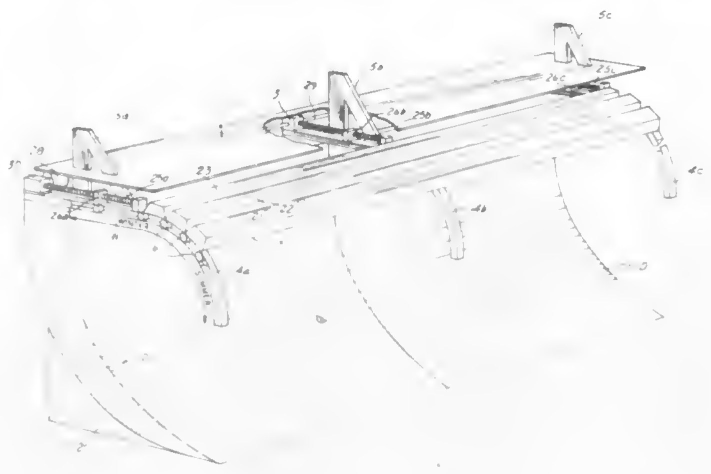
CONCENTRATING SOLAR COLLECTOR WITH TRACKING MULTIPURPOSE TARGETS

Arthur Fattor, 5380 S. Holly, Englewood, Colo. 80111

Filed Mar. 27, 1980, Ser. No. 134,702

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **8 Claims**



1. A solar energy collector comprising:

(a) a reflective surface means positioned so as to be nonmovable and having such a curvature as to produce a line focus of solar radiation at any incident angle of the sun's rays,

(b) plural collector target means mounted above said reflective surface means in a plurality of substantially separate housings, any one of such target means being capable of being positioned to accept a line focus, and each target means being capable of generating a distinct form of energy as distinguished from the other target means,

(c) plural track means having a concave, reverse curvature with respect to the reflective surface means, on which is mounted said plural target means over said reflective surface means and providing a path of movement for said target means to intercept maximum solar reflected flux at various seasons of the year,

(d) means for moving said plural target means to position one of said target means in said line focus so as to energize said target means, and

(e) means for recovering a specific generated energy form from said one of said target means.

4,355,631

SURGICAL RETRACTOR APPARATUS WITH IMPROVED CLAMPING DEVICE

Bruce A. LeVahn, Robbinsdale, Minn., assignor to Minnesota Scientific, Inc., Minneapolis, Minn.

Filed Mar. 19, 1981, Ser. No. 245,378

Int. Cl.³ A61B *1/32, 17/02*

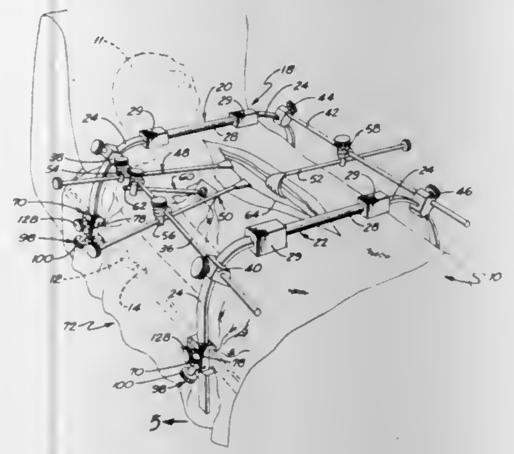
U.S. Cl. 128—20 **7 Claims**

1. A retractor apparatus for fastening to the side rails of an operating table covered by a surgical drape having a sterile and an unsterile side, said retractor apparatus including support members to be secured to the side rails and extending upwardly above the level of said operating table surgical retractors adjustably secured to said support members and, clamping devices for securing said support members to said side rails and supporting said apparatus on the sterile side of said surgical drape covering the operating table, each of said clamping devices comprising:

a first member having a first clamping portion for engaging the sterile side of the surgical drape to clamp the unsterile side of the surgical drape against the side rail and having

a first passage extending therethrough, through which one of the support members extends;

a second member pivotally attached to the first member having a second clamping portion for engaging the sterile side of the surgical drape to clamp the unsterile side of the surgical drape against the side rail, the second member pivoting to a clamping position with the first clamping member, and said second member having a second passage extending therethrough alignable with the first passage, the support member of the retractor apparatus extending from the first passage into and through the second passage;



means for tightening the first and second clamping members into the clamping position; and

means for holding the support member of the retractor apparatus in fixed position within the first and second passages.

4,355,632

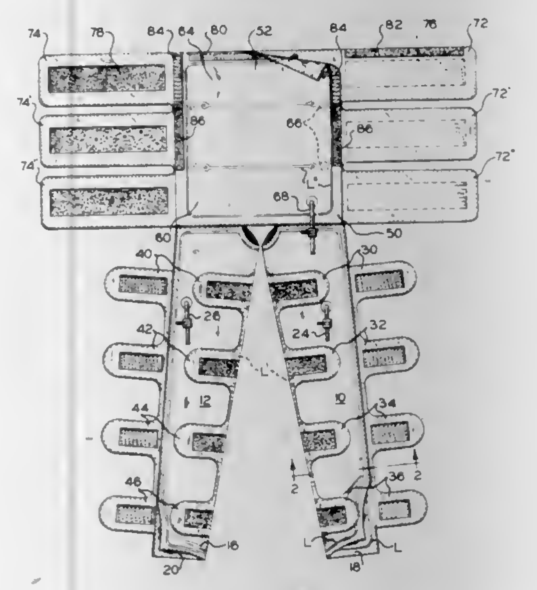
ANTI-SHOCK PRESSURE GARMENT

Terry L. Sandman, Toledo, Ohio, assignor to Jobst Institute, Inc., Toledo, Ohio

Filed Aug. 6, 1980, Ser. No. 175,733

Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 R **5 Claims**



1. An anti-shock pressure garment to cover the thorax and abdominal regions of a patient comprising:

(a) a rear flexible panel for flatwise application to the back of the patient;

(b) an inflatable front flexible panel for covering and imposing pressure on the patient's thorax and abdomen; said inflatable front panel including a plurality of horizontally disposed inflatable bladders providing vertically spaced individual sections, the uppermost section being foldable downwardly and forwardly upon itself for height adjustment, means holding said section in folded position, and means for connecting said sections to a source of pressure fluid; and

(c) fastener means for securing and maintaining said panels in operative position.

4,355,633

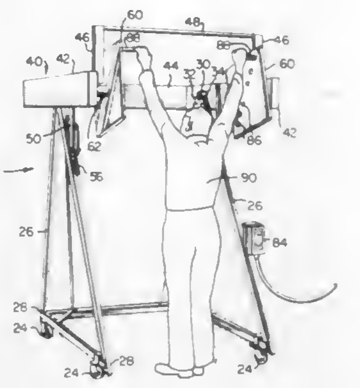
ADJUSTABLE MULTI-FUNCTION ROTARY EXERCISE APPARATUS

Harold Heilbrun, P.O. Box 397, Scottsbluff, Nebr. 69361

Filed Aug. 5, 1980, Ser. No. 175,471

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—25 R **9 Claims**



1. An exercise apparatus for physical therapy, muscle rehabilitation and the like, comprising:

a rigid stationary support frame including a pair of substantially parallel spaced-apart A-frame side members between which a patient may stand or sit when operating the machine,

a substantially U-shaped pivotal support frame mounted on said stationary support frame medially of said pivotal frame and having means thereon for positively locking said pivotal support frame in a selectable fixed pivotal condition with respect to said stationary support frame, said pivotal support frame including first and second parallel lateral support arms each pivotally mounted at the top of a respective one of said side frame members, and cross-arm means fixedly attached between the open set of proximate ends thereof and interconnecting said support arms for forming a rigid open box for maintaining the support arms in parallel relationship for all positions of said pivotal movement,

first and second peg-support members mounted respectively on said first and second support arms for rotation about respective horizontal axes,

first and second pegs mounted respectively on said first and second peg-support members at a position spaced from said respective horizontal axes, each said peg extending in a horizontal orientation,

an electric motor having a rotary output shaft, and

mechanical drive means interconnecting said motor output shaft and each of said first and second rotary peg-support members for effecting rotation of each of the latter.

4,355,634

LOCATOR DEVICE FOR EXTERNAL CARDIAC COMPRESSION DURING CARDIOPULMONARY RESUSCITATION

Spencer I. Kanter, 123 Charter Rd., Wethersfield, Conn. 06109, assignor to Spencer I. Kanter, Wethersfield, Conn.

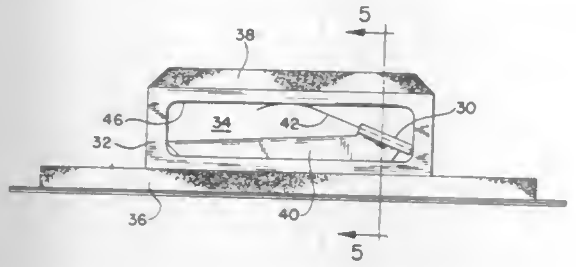
Filed Dec. 31, 1980, Ser. No. 221,538

Int. Cl.³ A61H *31/00*

U.S. Cl. 128—28 **7 Claims**

1. A disposable external cardiac compression device particularly well suited for accurate placement and retention on a patient longitudinally along the patient's lower sternum during CPR use comprising an elongated main body portion of relatively noncompressive unyielding material and top and bottom

layers of relatively softer cushion-like material on opposite sides of the main body portion along the longitudinal extent thereof, said bottom layer extending longitudinally beyond said main body member to form projecting locator flange portions, said top layer having an outer top surface of a length and width sufficient to conformably accommodate engagement by the heel of a hand placed thereon, said top surface being spaced from the outer bottom surface of said bottom layer by the distance of at least the minimum CPR recommended compression depth, said projecting locator flange portions having a length substantially equal to the width of two fingers and being of sufficient flexibility to permit ready yielding upon application of pressure against said top surface, said bottom surface having adhesive means thereon for removably adhering the device to a patient during CPR use.



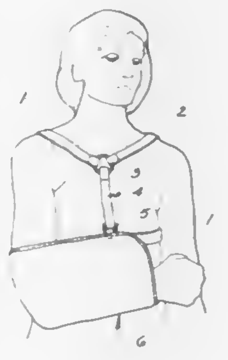
4,355,635
ADJUSTABLE ARM SLING WITH POUCH

Claudia J. Bihl, Franklin Furnace, and Michael C. Molloy, Cincinnati, both of Ohio, assignors to Jung Products, Inc., Cincinnati, Ohio

Filed Jul. 14, 1980, Ser. No. 167,772

Int. Cl.³ A61F *5/40*

U.S. Cl. 128—94 **14 Claims**



1. An adjustable arm sling consisting essentially of:

(a) a ring member adapted to be centrally disposed one the wearer's chest,

(b) a pair of elongated strap members each secured at one end to said ring member, said strap members being of a length to pass upwardly and rearwardly over the wearer's shoulders and cross diagonally downwardly across the wearer's back, the strap members passing around the opposite sides of the wearer's upper body and meeting across the front of wearer's upper body, said ring and said strap members thereby establishing a figure 8 loop configuration over the shoulders and around the torso of the wearer when said sling is worn,

(c) fastening means on the ends of said strap members for adjustably joining together their meeting ends,

(d) an arm supporting pouch, and

(e) an elongated connector tab for adjustably securing said pouch to said ring member.

4,355,636
HUMDIFIER AND HEATER FOR AIR TO BE INHALED FOR CONNECTION TO AN INHALATION CONDUIT OF A RESPIRATOR

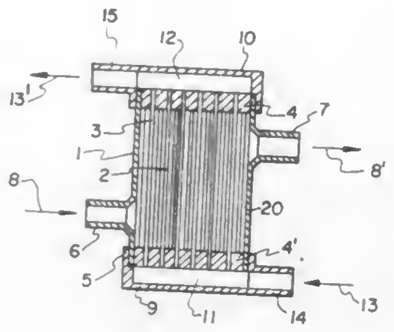
Georg-Wilhelm Oetjen, Lübeck, and Frank Benthin, Lübeck, both of Fed. Rep. of Germany, assignors to Dragerwerk AG., Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,352

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929706

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—204.13 **3 Claims**



1. A respirator humidifier and heater for air to be inhaled for connection to an inhalation conduit of a respirator, comprising a housing having a bundle of vapor permeable fiber tubes with evaporation fiber wall surfaces extending therethrough, a packing adjacent each end of said tubes sealing a space in said housing around said tubes between said packings, said tubes and the interior of said housing having a thin porous coating on their exterior surfaces of at least one of copper and silver, means for passing inhalation air into the housing in the space around said tubes between said packings, means for circulating warm water through said tubes, wherein said at least one of copper and silver are evaporated onto the surfaces in a vacuum.

4,355,637
SURGICAL MASKS

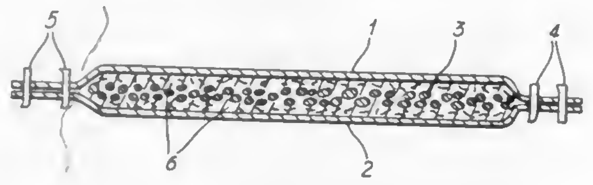
Alan Dyer, Manchester, England, assignor to Laporte Industries Limited, London, England

Filed Mar. 4, 1980, Ser. No. 127,069

Claims priority, application United Kingdom, Mar. 9, 1979, 7908368

Int. Cl.³ A62B *7/10*

U.S. Cl. 128—206.19 **11 Claims**



1. An improved disposable surgical mask of the type comprising at least two layers, wherein the improvement comprises a layer comprising particles of a molecular sieve based on silicon dioxide and having an affinity for nitrous oxide, which layer is disposed between two adjacent layers of the mask, said particles being present in said layer in an amount of not more than 50 grams.

4,355,638
INFUSION APPARATUS

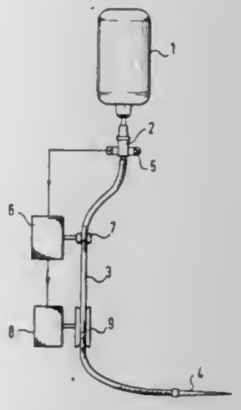
Peter Iwatschenko, Neunkirchen, Fed. Rep. of Germany, and Josef Hirschmann, Fliederstr. 2a, 8021 Neuried, Fed. Rep. of Germany, assignors to Josef Hirschmann, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,513

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853200

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 F **20 Claims**



1. Infusion apparatus operable by gravity, and comprising:

a solvent container for being suspended at a higher level than the infusion point; a drop chamber means beneath the container and connected to the container for infusion to drop through;

an infusion needle; an infusion tube connecting the drop chamber means and the needle, the infusion tube being clampable for changing the cross-section thereof;

a tube clamp means connected on the tube for clamping the tube to vary the cross-section thereof to a selected cross-section for controlling the normal gravity flow infusion rate;

pressure increasing means connected externally of the tube at a portion of the tube between the tube clamp means and the needle; the pressure increasing means being selectively actuated in response to predetermined flow conditions in said tube for periodically increasing the pressure in the section of the tube between the tube clamp means and the needle and for thereafter permitting the pressure in that section of the tube to decrease by compressing and then releasing the tube at spaced time intervals.

4,355,639
APPARATUS FOR THE PARENTERAL ADMINISTRATION OF LIQUIDS AT A CONSTANT, ADJUSTABLE FLOW RATE

Francesco Di Salvo, Como, Italy, assignor to Sis-Ter S.p.A., Palazzo Pignano, Italy

Filed Jul. 8, 1980, Ser. No. 166,842

Claims priority, application Italy, May 21, 1980, 22227 A/80

Int. Cl.³ A61M *5/14*

U.S. Cl. 128—214 R **12 Claims**

1. Apparatus for the parenteral administration of a liquid at a constant, adjustable flow rate, comprising

means (**5, 1**) supplying said liquid under essentially constant, controlled conditions of pressure and having a supply outlet (**17**);

a dripping tube or funnel (**1*a***) secured to said liquid supply means;

support means (**4**) supporting said dripping tube or funnel (**1*a***) at a predetermined level or elevation;

a flow stabilization device (**2**) including

a body (**44**) formed with

a cavity (**51**) therein,

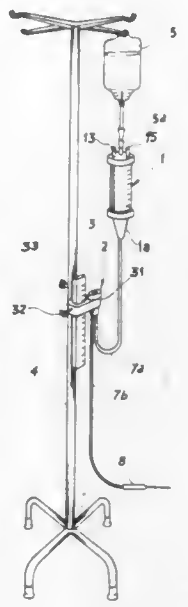
a tubular inlet passage (**42**) communicating with said cavity and a first tubing (**7*a***) connecting said inlet passage with the bottom of said dripping tube or funnel (**1*a***),

a tubular outlet passage (**47**) communicating with said cavity, and a second tubing (**7*b***) adapted for connection of said outlet passage to a cannula (**8**) for administration of the liquid to a patient,

said inlet passage (**42**) having a smaller diameter than the outlet passage (**47**),

and a flexible membrane (**43**) closing off said cavity against ambient air and further removably covering the opening of the outlet passage (**47**) within the cavity;

a stationary scale (**3**) vertically positioned at a controlled level with respect to said predetermined level or elevation;



a slider (**31**) slidable vertically along said stationary scale for vertical adjustment therealong positioned at an elevation below said predetermined level or elevation supported by said slider and vertically adjustably positioned thereby;

and means (**32**) for securing said slider (**31**) and hence said stabilization device (**2**) in vertically adjustable position along said scale to permit reproducibly adjustably positioning of said stabilization device at a level below said predetermined level and to permit controlled flow from said dripping tube or funnel (**1*a***) to and through said stabilization device (**2**) as a function of level difference between the liquid level in said dripping tube or funnel (**1*a***) and said stabilization device.

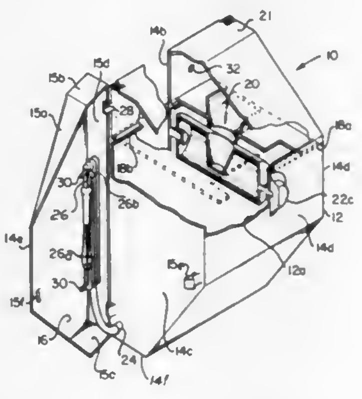
4,355,640
HYGIENIC DISPENSER

Robert C. Johnson, c/o L. Newfield, 2210 Wilshire Blvd. #372, Santa Monica, Calif. 90403

Filed May 13, 1980, Ser. No. 149,495

Int. Cl.³ A61M *3/00*

U.S. Cl. 128—227 **6 Claims**



1. A dispensing hygienic device, comprising:

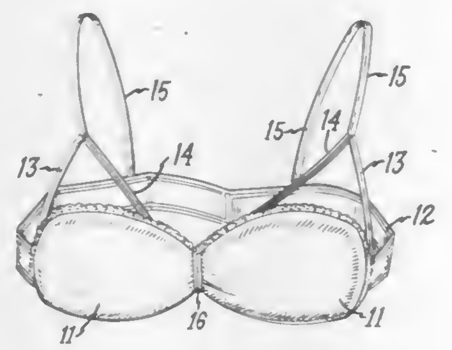
(a) a cabinet having front, rear, lateral, and bottom wall surfaces, respectively, a liquid holding space therewithin, an outlet therefrom and a closable top.

(b) a cylinder, having a centered cavity for holding a non-liquid matter, mounted invertibly between two opposite wall surfaces of the cabinet, causing, when the cylinder is inverted, non-liquid matter therein to drop into and disperse within liquid in the holding space;
(c) a knob disposed rotatably exteriorly to the cabinet and connected to the cylinder through a wall surface of the cabinet, facilitating the inversion of the cylinder;
(d) Dispensing means including a hose, connected to the outlet of the cabinet and terminating in a pipe for dispensing the solution of liquid and non-liquid matters to parts of a living body;
(e) a resilient clip, applicable to a portion of the hose to restrict or release the flow of solution dispersed therethrough.

4,355,641
NURSING BRA

Barbara Dastoli, 45 Brenton Ter., Pittsfield, Mass. 01201; Brigitte Garner, and Ellen Gorski, both of The Hancock Inn, Hancock, Mass. 01237

Filed Sep. 2, 1980, Ser. No. 182,967
Int. Cl.³ A41C *3/04*
U.S. Cl. 128—460 18 Claims

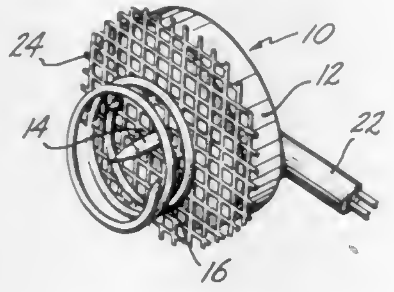


1. A nursing bra comprising:
A pair of support cups;
An upper strap and a lower strap attached to said cups for providing support to said cups;
A support band connecting said cups and adapted to be disposed along the back of the person wearing said bra, said upper strap being composed of a flexible material and said bottom strap being composed of a non-flexible material.

4,355,642
MULTIPOLAR ELECTRODE FOR BODY TISSUE

Clifton A. Alferness, Woodinville, Wash., assignor to Physio-Control Corporation, Redmond, Wash.

Filed Nov. 14, 1980, Ser. No. 206,638
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—642 18 Claims

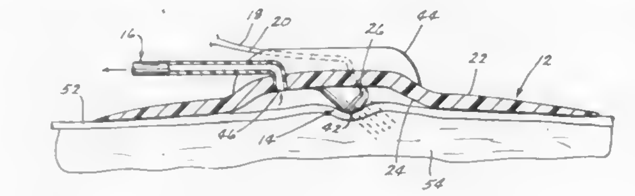


1. A multipolar electrode that is adapted to be implanted in body tissue, said electrode comprising:
a base member having a surface adapted to be brought into proximity to a surface of the body tissue;
an inner electrode supported by said base member and extending in a predetermined direction from said base member surface, at least a portion of said inner electrode being composed of conductive material;
a first outer electrode supported by said base member and extending in said predetermined direction from said base member surface, at least a portion of said first outer electrode being composed of conductive material, said first outer electrode being in the form of a helix which surrounds said inner electrode and said conductive portion of said first outer electrode extending further in said predetermined direction from said base member surface than said conductive portion of said inner electrode;
a first electrical lead connected to said conductive portion of said inner electrode; and,
a second electrical lead connected to said conductive portion of said first outer electrode.

4,355,643
VACUUM CUP DOPPLER FLOW TRANSDUCER AND METHOD FOR USING SAME

Donald E. Laughlin, and Paul J. Krumm, both of West Branch, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Mar. 5, 1980, Ser. No. 127,370
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—663 17 Claims



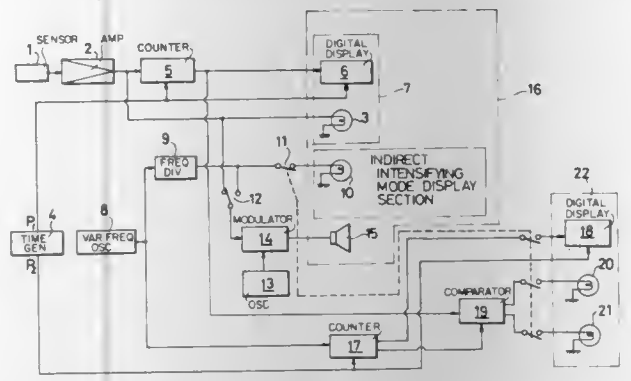
1. A device for sensing the velocity of fluid flow to human and animal vessels, said device comprising:
a cup means having a concave undersurface and being made of a flexible material which permits said cup means to be yieldably deflected into a substantially flat configuration;
transducer means mounted on said undersurface of said cup means, said transducer means comprising a piezoelectric member having opposite surfaces, a pair of closely spaced sheet members being mounted on one of said opposite surfaces of said piezoelectric member;
electrical lead means connected to said transducer means and leading from said transducer means to above said cup means for connection to a source of electrical signals;
said lead means comprising a pair of electrical leads, each of which is in electrical connection with one of said sheet members;
a vacuum conduit having a first end in communication with the space below said concave surface of said cup means and a second end adapted to be connected to a vacuum source for drawing air from beneath said cup means.

4,355,644
HEART RATE BIO-FEEDBACK SYSTEM

Iwao Saito, 33, Hon-cho, Eniwa, Hokkaido, Japan

Filed Dec. 10, 1979, Ser. No. 101,906
Claims priority, application Japan, Dec. 12, 1978, 53-152718
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—689 4 Claims

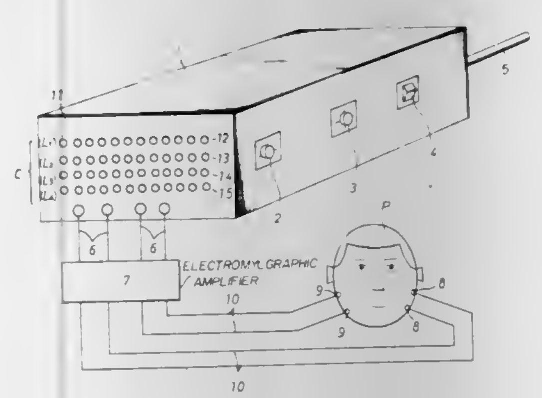
1. A heart rate bio-feedback system comprising:
detector means for detecting the pulse rate of a subject and converting it into a pulse rate signal;
integrating circuit means for integrating said pulse rate signal over a set time interval;
timing generator means for setting said time interval;
display means comprising a display indicator means coupled to said detector means for displaying the momentary pulses of said pulse rate signal, and a digital display means coupled to said integrating circuit means for displaying the integrated pulse rate signal for said set time interval;
variable controlled oscillator means for providing indicating signals independent of the pulse rate at a selective predetermined rate for use as an external stimulus for intensifying the biofeedback process, and
an external stimulus visual display means for displaying said indicating signal simultaneously with the display of said momentary pulses.



4,355,645
DEVICE FOR DISPLAYING MASTICATORY MUSCLE ACTIVITIES

Haruyasu Mitani, Kyoto, and Eiko Mushimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Oct. 18, 1979, Ser. No. 86,052
Claims priority, application Japan, Oct. 18, 1978, 53-128767
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—777 8 Claims

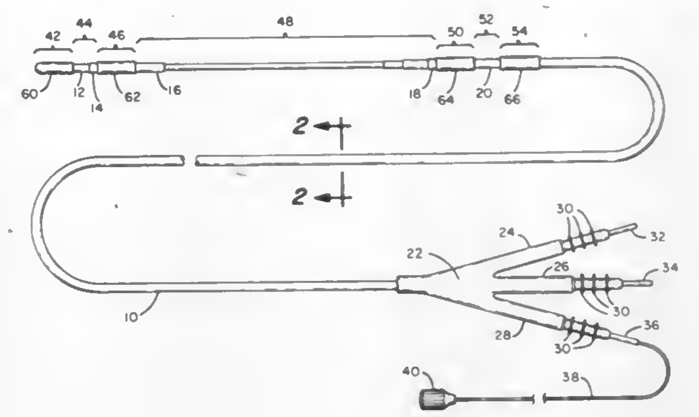


1. A device for displaying masticatory muscle activities for use in correcting unbalanced and abnormal occlusion patterns characterized in that the device comprises a plurality of sets of electrodes (8) and (9) each set consisting of a pair of right and left electrodes, said electrodes being attachable to the surfaces of the masseter and temporal muscles on both sides of a face of a person to be examined so as to detect electromyographic potentials during mastication, a means (I), (II), (III), (IV) and (V) for converting the electromyographic potentials detected by said electrodes (8) and (9) respectively into electrical signals for display, a display means (C), and a means (B) for selectively energizing said display means (C) in response to said signals, said display means (C) comprising display lines (L_1), (L_2), (L_3) and (L_4) of light-emitting members (12) and (13) which are independent over one another for each of said electrodes (8) and (9) whereby the masticatory muscle activity can be displayed during a plurality of consecutive occlusions.

4,355,646
TRANSVENOUS DEFIBRILLATING LEAD

Michael J. Kallok, New Brighton, and John D. Doring, Spring Lake Park, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 26, 1980, Ser. No. 210,656
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 5 Claims



1. A transvenous defibrillator lead for insertion into a right ventricle of a heart by way of a superior vena cava comprising:
an insulated conductive lead body having a proximal end and a distal end, said conductive lead body comprising three mutually insulated conductors of drawn brazed strand arranged in a triaxial configuration and an outer sheath of polyurethane;
an electrical connector at said proximal end;
a first electrode having a distal tip with a hemispherical shape attached to said distal end of said insulated conductive lead body;
a second electrode attached to said insulated conductive lead body at a distance from said first electrode wherein said first distance is sufficiently short that said second electrode is within said right ventricle when said first electrode is at an apex of said right ventricle;
a third electrode attached to said insulated conductive lead body at a second distance from said first electrode wherein said second distance is such that said third electrode is within said superior vena cava when said first electrode is at said apex of said right ventricle; and
a fourth electrode attached to said insulated conductive lead body at a third distance from said first electrode wherein said third distance is different from said second distance and wherein said fourth electrode is within said superior vena cava when said first electrode is at said apex of said right ventricle.

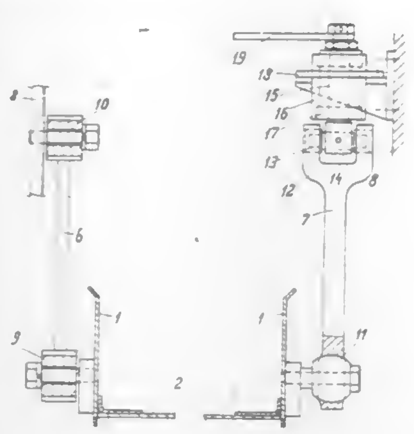
4,355,647
DEVICE FOR DISTRIBUTING SCREEN MATERIAL

Franz Heidjann, and Werner Fromme, both of Harsewinkel, Fed. Rep. of Germany, assignors to Claas Ohg, Harsewinkel, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 241,457
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008385
Int. Cl.³ A01F *12/32, 12/44*
U.S. Cl. 130—24 8 Claims

1. In a combine harvester having a longitudinal axis, a combination comprising a sieve box having a receiving plate for receiving the grain threshed by the combine harvester and at least one sieve receiving the grain from said receiving plate; drive means operatively connected to said sieve box for oscillating the same in a predetermined direction; and further means operatively connected to the sieve box for changing the direction of oscillation of the latter during movement of the combine harvester over a slope inclined in a direction transverse to said longitudinal axis and concomitant lateral inclination of

said receiving plate and said at least one sieve in dependence on said lateral inclination to thereby obtain a uniform distribution of the grain on said receiving plate and said at least one sieve by changing the transportation direction of the grain.



4,355,648
METHOD OF CURING TOBACCO

Gordon H. Bokelman, Boulder, Colo., and Dewitt J. Gooden, III, Barnwell, S.C., assignors to Philip Morris, Incorporated, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,491

Int. Cl.^{3} A24B *3/12, 15/20, 15/22, 15/30*

U.S. Cl. 131—290 **11 Claims**

1. A method of artificially curing green tobacco which comprises:
   (a) photobleaching harvested tobacco; and
   (b) thermally browning the photobleached tobacco.

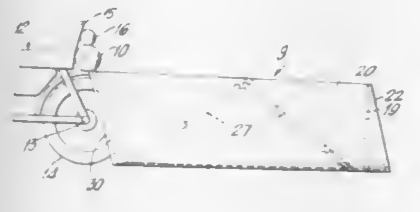
4,355,649
PORTABLE TENT FOR MOTORCYCLISTS

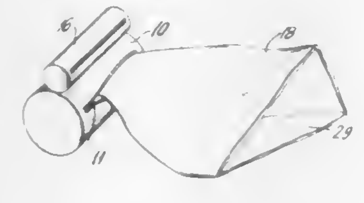
Allen E. Deragon, Salt Point Rd., Poughkeepsie, N.Y. 12601

Filed Feb. 6, 1981, Ser. No. 232,145

Int. Cl.^{3} A45F *1/00*

U.S. Cl. 135—1 A **7 Claims**





1. A portable tent for use with motorcycles and the like and being mounted to said motorcycle comprising:

a main pouch having a substantially oval configuration and including a zipper mounted axially along the length thereof and a secondary oval pouch of a smaller size being affixed along the length of the main pouch and having a zipper running axially along the length thereof, said main pouch being mountable on the rear of a motorcycle,

a sheet of tenting material having a plurality of sewn-in pockets along the tent edges thereof and in predetermined intermediate locations on the sides, said sheet being normally packed within the main pouch and extractable therefrom to form a tent extending rearwardly from the motorcycle,

a plurality of adjustable battens being mounted in the smaller pouch and each being insertable in a corresponding side pocket in the sheet of tenting material at intermediate locations on each side of said tent to provie shape and support thereto,

a plurality of adjustable rods being insertable in the end pockets in the sheet of tenting material and being normally contained in the secondary pouch, and,

an adjustable pole being positioned to engage the sheet of tenting material at the front end thereof to form a vertical support together with the motorcycle, said pole being normally contained in said pouch.

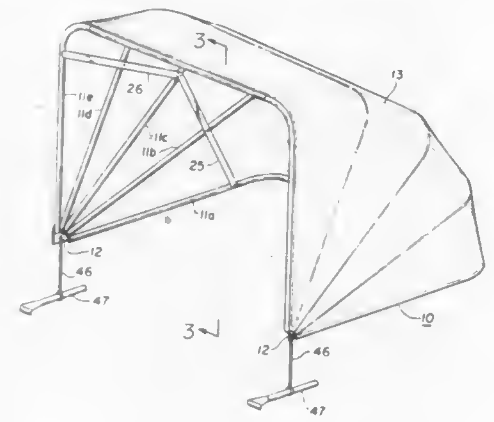
4,355,650
PORTABLE SHELTER

Jean Beaudry, Apt. 411, 565 St. Charles West, Longueuil, Quebec, Canada (J4H3X8)

Filed Jun. 2, 1980, Ser. No. 155,841

Int. Cl.^{3} A45F *1/14*

U.S. Cl. 135—7.1 R **12 Claims**



1. A shelter of the type which is portable and collapsible adapted for use on either a natural ground surface or a man-made surface comprising

frame means for supporting said shelter when said shelter is fully erected

cover means extending over said frame means and attached thereto for applying compressive forces to said frame means and for applying forces tending to collapse said frame means when fully extended

brace means attached to said frame means for opposing said collapsing forces,

wherein said frame means comprises a first substantially vertical, a last substantially horizontal, and at least one intermediate curved bow members, pivotally attached to their ends to a pair of spaced hub members forming a curved structure having substantially vertical sides, and said brace means includes a pair of oppositely disposed braces attached to said substantially vertical sides, said braces each comprising a first link pivotally attached at one end to said vertical bow and a second link attached at one end to said horizontal bow, the other ends of said links being pivotally attached to each other at their other ends by a connector having a headed stem extending therefrom, said intermediate bow having a keyhole slot formed therein with a larger round portion of said slot being disposed toward said hub member and an elongated portion of said slot extending away from said hub member, said headed stem being received within said keyhole slot and being positioned at the elongated portion of said slot when said structure is fully erected, said links forming an angle therebetween having the apex thereof extending away from said hub member.

4,355,651
METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

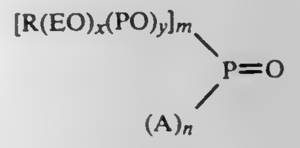
Gifford G. McClaflin, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 150,468, May 16, 1980, abandoned. This application Aug. 13, 1981, Ser. No. 292,389

Int. Cl.^{3} F17D *1/17*

U.S. Cl. 137—13 **9 Claims**

1. In the method of pumping a viscous hydrocarbon through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing an effective amount, in the range of about 100 to about 5,000 parts per million, based on said hydrocarbon, of a phosphate ester of a block copolymer which is represented by the formula



$$[R(EO)_x(PO)_y]_m(A)_nP{=}O$$

wherein
- R is a C_2 to C_{30} alkyl group,
- EO is an ethylene oxide unit,
- PO is a propylene oxide unit,
- x is a number in the range of about 2 to about 7,
- y is a number in the range of about 2 to about 5,
- A=OH,
- m is an integer of 1 to 3
- n is an integer of 0 to 2 with the sum of m+n being 3

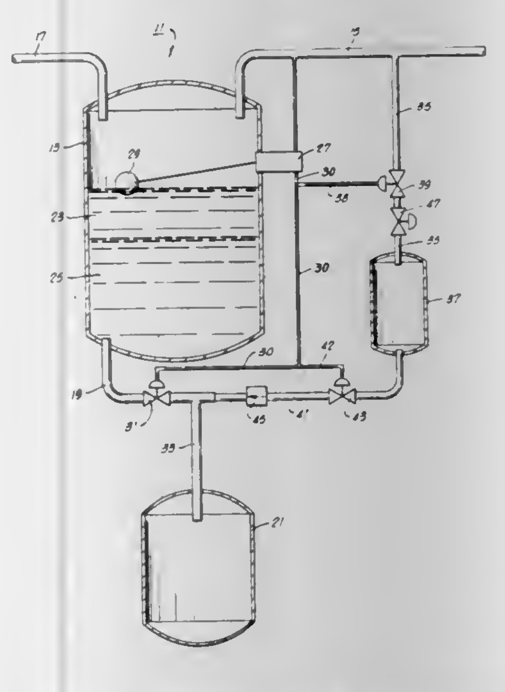
4,355,652
PURGING DEVICE

Lawrence B. Perkins, 1616 Ninth St., Woodward, Okla. 73801

Filed Jul. 21, 1980, Ser. No. 170,512

Int. Cl.^{3} B08B *9/02*

U.S. Cl. 137—15 **12 Claims**



12. A method to prevent freezing of a dump line on a gas well separator of the type having a float valve responsive to the liquid level in a separator tank which actuates a dump line valve to regulate the flow of liquid from the separator tank to the holding tank, comprising the steps of:

filling a gas reservoir connected between a source of pressurized gas and said dump line with pressurized gas while the dump line valve is open and liquid is being transferred from said separator tank to the holding tank in response to a first position of said float valve; and

after the dump line valve is closed, discharging said pressurized gas in the gas reservoir into said dump line between the dump line valve and the holding tank to clear the dump line of liquid in response to a second position of said float valve such that liquid is not stagnant in the dump line and prone to freeze.

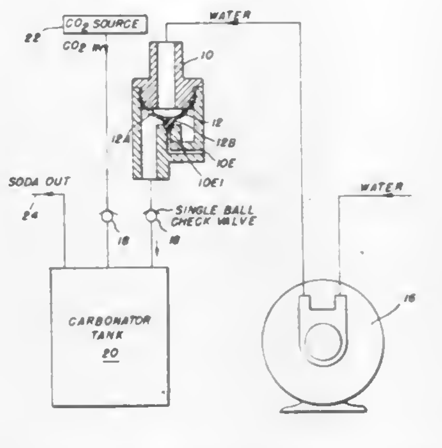
4,355,653
VENTED CHECK VALVE

William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed May 12, 1981, Ser. No. 263,093

Int. Cl.^{3} G05D *7/00*

U.S. Cl. 137—102 **4 Claims**



1. In a post-mix beverage carbonator system including a water supply, a source of carbon dioxide gas, a carbonator tank for mixing the water from the water supply with the carbon dioxide gas and producing a carbonated water mixture, supply pipes for connecting said carbonator tank to said water supply, pumping means for pumping the water from the water supply to the carbonator tank, and check valve means disposed between said carbonator tank and said pumping means, the improvement comprising:

vented check valve means disposed between said check valve means and said pumping means for passing said water therethrough in one direction during normal operation and preventing the carbonated water mixture in the carbonator tank from backflowing into said supply pipes in an opposite direction in the event of a malfunction in the operation of said check valve means, said vented check valve means including a body portion having a chamber therein containing a movable valve element, an inlet passage and two outlet passages communicating with said chamber, a first of said outlet passages having a first opening on an opposite side of said chamber from said inlet passage and aligned therewith and a second opening communicating with the atmosphere, the walls of said chamber surrounding said inlet passage defining a first valve seat, said first opening of said first outlet passage defining a second valve seat, a second outlet passage communicating with said chamber in a position offset from said inlet and said first outlet passages, said movable valve element connecting only said inlet passage and said second outlet passage though said chamber during said normal operation and connecting only said first and second outlet passages through said chamber during said backflow condition, an improvement in said movable valve element comprising:

a flexible diaphragm having an annular sealing portion for operative engagement with said first valve seat and a plug-shaped sealing portion extending therefrom and integral therewith for operative engagement with said second valve seat;

said flexible diaphragm in the absence of fluid flow through said valve body being self-biased in a first shape so that said annular sealing portion firmly seats on said first valve seat and said plug-shaped portion firmly seats in said opening defining said second valve seat;

said flexible diaphragm during said normal operation having a second shape wherein said annular sealing portion is unseated from said first valve seat and said plug-shaped portion is firmly seated in said second valve seat;

said flexible diaphragm during said backflow condition having a third shape wherein said annular sealing portion firmly seats on said first valve seat and said plug-shaped portion is unseated from said second valve seat; and

wherein said opening defining said second seat has sloped side walls converging from the walls of said chamber toward said first outlet passage, said opening at the walls of said chamber being larger than the diameter of the tip of said plug-shaped portion, whereby said plug-shaped portion self-centers in said opening.

4,355,654

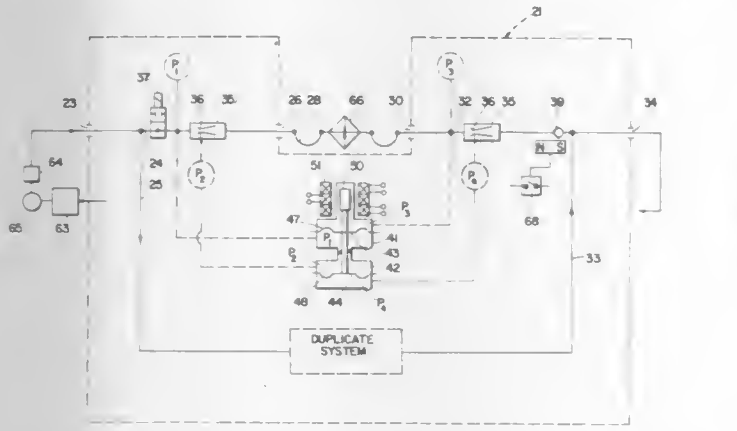
FLUID FLOW CONTROL DEVICE FOR MONITORING THE FLUID FLOW IN A CONDUIT FOR LEAKAGE OF FLUID

Paul N. Levesque, Bristol, and Neal M. Lavado, Watertown, both of Conn., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 26, 1981, Ser. No. 238,497

Int. Cl.^{3} G01M *3/28;* G05D *7/06*

U.S. Cl. 137—110 **13 Claims**



1. A device for monitoring the flow of fluid in at least one pair of conduits attached thereto, and blocking the flow of fluid in at least one of the conduits when leakage of fluid occurs therein, comprising:

(a) a housing;

(b) a fluid inlet through which fluid from a source outside the housing, enters the housing;

(c) a plurality of inlet passageways within the housing for receiving and dividing the flow of fluid entering the fluid inlet into branches, the inlet passageways terminating at a plurality of discharge ports to which fluid conduits are attachable for carrying fluid from the device;

(d) a plurality of reentry ports to which fluid conduits are attachable and through which fluid carried by the fluid conduits is returned to the housing of the device;

(e) an outlet passageway within the housing for each reentry port and communicating therewith for receiving fluid returning to the device, the outlet passageways terminating at a fluid outlet through which fluid exits the device, for example, to return to the source;

(f) means associated with each of the inlet and outlet passageways for monitoring the flow of fluid therein and translating such flow into electrical signals; and

(g) means responsive to the electrical signals for operating a shutoff valve to block the flow of fluid through an inlet passageway when there is a variance in the electrical signals from a norm, indicating leakage of fluid in a fluid conduit communicating with the blocked inlet passageway.

4,355,655

HYDRAULIC CONTROL APPARATUS FOR LOAD INDEPENDENT FLOW REGULATION

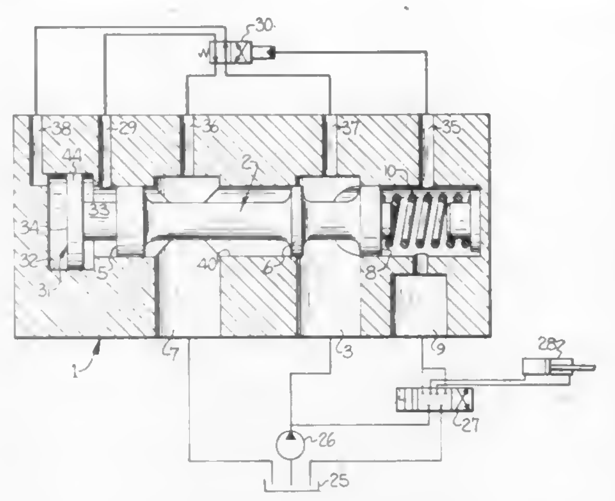
Siegfried Hertell, Radevormwald; Claus Kirchherr, Remscheid; Horst Kahl, Wermelskirchen, and Siegfried Hoffmann, Leichlingen, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Division of Ser. No. 125,096, Feb. 27, 1980, Pat. No. 4,303,091. This application Sep. 23, 1981, Ser. No. 304,716

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2908018

Int. Cl.^{3} F15B *13/04*

U.S. Cl. 137—117 **2 Claims**



1. A flow control apparatus adapted to provide load independent flow regulation in a hydraulic power system or the like, and characterized by the ability to minimize the idling power consumption of the pump when the load is removed from the system, and comprising,

a housing having a cylindrical bore therein, said bore having closed opposite ends so as to define first and second opposite end portions;

a pump inlet channel, a sump outlet channel, and a consumer channel, all communicating with said bore in said housing,

a balance piston slidably disposed in said bore and movable between a bypass or idling postion wherein fluid flows from said pump inlet channel through said bore to said sump outlet channel, and an operating postion wherein such flow is precluded,

means for conducting fluid from said pump inlet channel into said first end portion of said bore and so as to act against a first end of said piston to urge the piston in a direction toward its bypass position,

means for urging the piston in the opposite direction and toward its operating postion, and including

(a) passageway means for conducting fluid from the consumer channel into said second end portion of the bore and so as to act against the second end surface of the piston, and

(b) a spring disposed in said second end portion of said bore and having one end thereof disposed in contact with said second end of said piston, the improvement therein comprising

a retaining piston slidably mounted in a cavity disposed in said housing in communication with said first end portion of said bore, said cavity having a transverse dimension substantially greater than that of said bore and said retaining piston having an enlarged head closely received within said cavity and a body portion extending axially toward said first end of said balance piston, with said head defining a forward bore portion between said head and said first end of said balance piston, and a rearward bore portion on the opposite side of said head,

control means for alternatively

(a) conducting fluid from said pump inlet channel to said forward bore portion while opening said rearward bore

portion to said sump outlet channel, to thereby withdraw said retaining piston from contact with said balance piston, or

(b) conducting fluid from said pump inlet channel to said rearward bore portion while opening said forward bore portion to said sump outlet channel, to thereby bias said retaining piston into contact with said balance piston,

whereby the retaining piston is adapted to amplify the force tending to move the balance piston toward the bypass position and against the spring during non-operation of a consumer load, and the amplifying force is removed during operation of the consumer load, to thereby minimize the pressure of the fluid in the pump inlet channel which is required to move the balance piston to the bypass position.

4,355,656

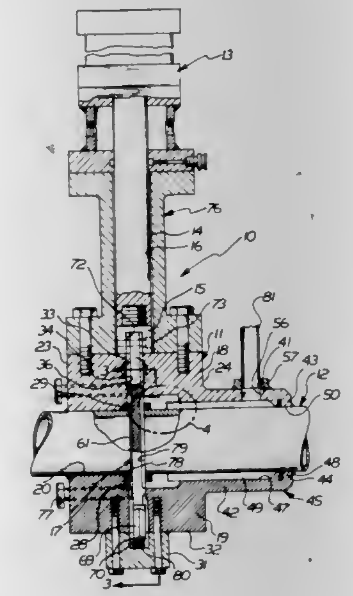
PIPELINE PLUG AND BYPASS

William B. Smith, Berea, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Filed Apr. 28, 1981, Ser. No. 258,476

Int. Cl.^{3} F16K *43/00;* F16L *55/10, 55/18*

U.S. Cl. 137—318 **9 Claims**



1. Apparatus for diverting flow through a pipeline in service, comprising a fluidtight housing for assembly around the pipeline, said housing forming a work chamber around an axial length of pipeline, means operable in the work chamber to cut an opening through the wall of the pipeline, means operable in the housing to seal off one side of the pipeline in a zone adjacent the cut formed by said cutting means from the other side of the pipeline, and passage means for directing bypass flow between said one pipeline side, said opening, and the exterior of said housing, said passage means directing bypass flow through said opening radially around the cut edge of the pipe wall between the cutting means and the cut wall edge, said passage means in the area defined by an axial limit of the cutting means being within the radial extent of the cutting means and, out of said area of the cutting means, extending through a space radially interiorly bounded by said one side of the pipeline and radially exteriorly by said housing thereby completely isolating said bypass flow from said work chamber.

4,355,657

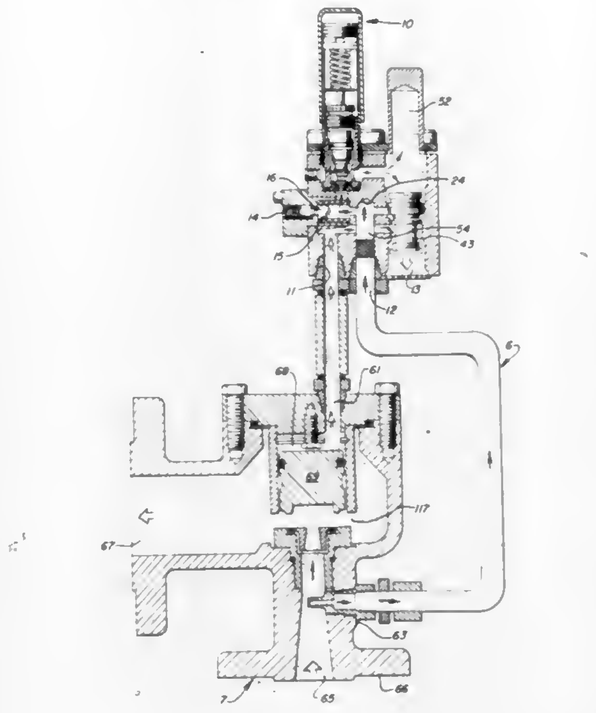
PILOT OPERATED RELIEF VALVE

Raymond G. Reip, Indian Head Park, Ill., assignor to Vapor Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 943,377, Sep. 18, 1978, abandoned. This application Sep. 30, 1980, Ser. No. 192,312

Int. Cl.^{3} F16K *31/122*

U.S. Cl. 137—492 **7 Claims**



1. A pressure sensitive pilot valve for operating a main product pressure relief valve comprising;

a valve body;

a valve seat in said body;

a product inlet in said body, in pressure communication with said seat;

a poppet contained in said body and mounted for reciprocal movement therein, said poppet seated on and restricting flow through said seat for product pressures below a predetermined value, and allowing flow through said seat for pressures exceeding said predetermined value;

a test port in said body;

means, in said body, fluid communicating said test port, and seat;

means in said body fluid communicating said product inlet and communicating means;

fluid permeable guide means intermediate said test port and communicating means thereby fluid communicating said inlet test port and seat;

a flow sensitive closure member contained in said guide means for reciprocal motion therein, said member sealing said test port or inlet at either end of said reciprocal motion;

wherein introduction of a test vapor at a pressure greater than normal product pressure isolates said product inlet, and operating said poppet providing pilot operation exclusive of increasing said product pressure.

4,355,658

PILOT VALVE WITH INDICATING LOCKOUT KNOB

David E. Snyder, Longview, Tex., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,811

Int. Cl.^{3} F16K *37/00*

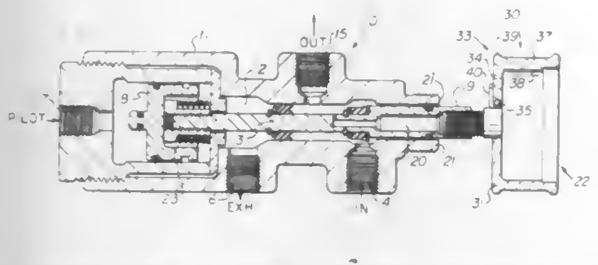
U.S. Cl. 137—557 **9 Claims**

1. In a pilot valve for controlling a supply of control fluid to a controlled valve, having a body, an inlet port, an outlet port, an exhaust port, a pilot port, a valving element responsive to a pilot pressure shiftable between an inlet position allowing communication between the inlet and outlet port and an exhaust position allowing communication between the outlet and

exhaust ports, said valving element having a shaft portion extending exteriorly of the valve body, and a resilient means for biasing the valving element toward its exhaust position, the improvement comprising a pilot bypass locking and indicating means comprising:

(1) a valve knob connected to the valving element for manually shifting the element from its exhaust to its inlet position;

(2) a generally L-shaped locking and indicating member pivotally connected to said knob having
  a first leg adapted to engage the valve body to lock the valving element in its inlet position, and
  a second leg having an indicating surface thereon for indicating the locked inlet position,



said locking member being rotatable between a first position in which said first leg extends toward and engages the valve body to lock the valving element in its inlet position against the action of the first resilient means and in which said second leg extends away from the shaft portion to position said indicating surface visibly above said knob, and

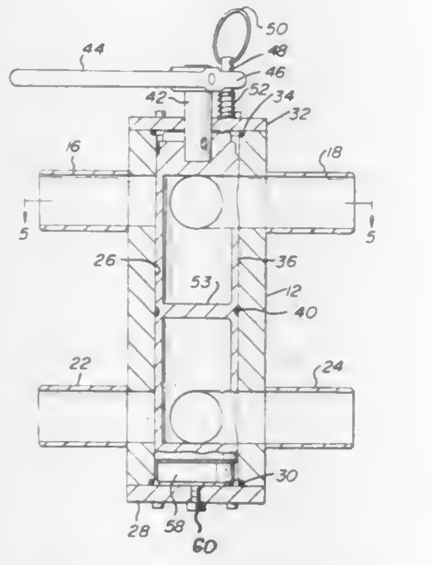
a second position in which said locking member has said first leg disengaged from the valve body and said second leg extending along and adjacent to said knob to conceal said indicating surface from view, and

(3) a second resilient means carried by said knob and one of said leg portions and engaging said locking member for biasing it toward its second position.

4,355,659
ROTARY PLUG VALVE

Jay R. Kelchner, Montour Falls, N.Y., assignor to The Hilliard Corp., Elmira, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,513
Int. Cl.^{3} F16K *11/07*
U.S. Cl. 137—625.19 **3 Claims**

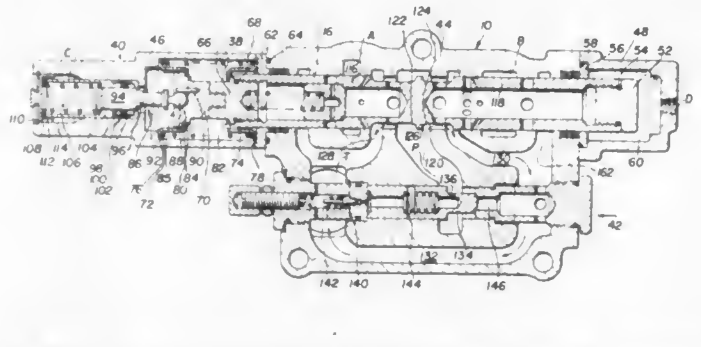


1. A multiple inlet multiple outlet rotary plug valve comprising a valve body having an upper set of three ports and a lower set of three ports, each set occupying about 180° of valve body circumference, one set of ports including a single inlet and multiple outlets, the other set of ports including multiple inlets and one outlet, each port of the upper set being above a port of the lower set, a cylindrical bore of uniform diameter in said housing and communicating with each port of each set, a cylindrical plug of uniform diameter rotatably mounted in said bore, said plug having a peripheral groove intermediate its ends, means including a deformable seal in said groove for preventing cross-flow between the ports of said sets, said plug having a discrete peripheral flow passage associated with each set of ports, each plug flow passage occupying about 180° of the plug circumference, whereby each valve body port communicates with the associated valve body ports of its set in one position of the plug, and a handle connected to one end of said plug for rotating said plug about its longitudinal axis between open and closed positions.

4,355,660
PNEUMATICALLY CONTROLLED, FOUR POSITION HYDRAULIC VALVE

Theron M. Huffman, Paw Paw, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 15, 1980, Ser. No. 140,519
Int. Cl.^{3} F16K *11/07*
U.S. Cl. 137—625.63 **10 Claims**



1. A fluid control system for a fluid operated motor comprising:

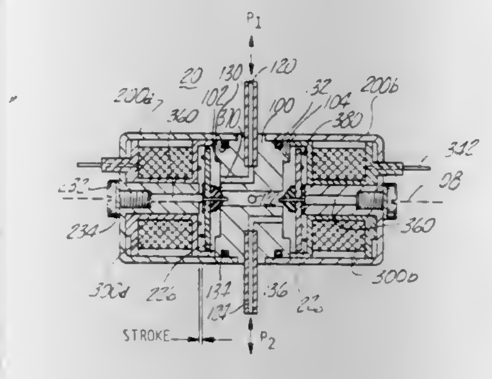
a hydraulic valve including an inlet for receiving fluid under pressure from a pump, first and second work ports adapted to be contacted to a fluid operated motor, a return outlet, a power spool means for selectively establishing communication (a) between said inlet and one work port and between the other work port and said return outlet at a first power position; (b) between said inlet and said other work port and between said one work port and said return outlet at a second power position; (c) between said inlet, said return outlet and both work ports simultaneously at a float position, and (d) no communication to or between said work ports at a hold position, first and second pilot ports communicating with said power spool means for receiving pressurized pilot fluid to move said power spool in opposite axial directions, detent means for maintaining said power spool in said float position after said second power position upon cessation of said pressurized pilot fluid at said first pilot port until overcome by pressurized pilot fluid at said second pilot port, and return means for positioning said power spool (a) to said hold position after said first power position, (b) to said float position after said second power position, and (c) to said hold position after said detent is overcome; and

a low pressure pilot valve including an inlet for receiving fluid under pressure from a pump, first and second work ports connected to said first and second pilot ports of said hydraulic valve respectively, an outlet, spool means for selectively establishing communication (a) between said inlet and one work port and between said outlet and the other work port at a first drive position, (b) between said inlet and said other work port and between said outlet and said one work port at a second drive position, (c) between said outlet and both said first and second work ports at a neutral position, and return means for positioning said spool in said neutral position after said first and second drive positions.

4,355,661
DUAL SOLENOID VACUUM MODULATOR

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 946,883, Sep. 28, 1978, Pat. No. 4,258,749. This application Apr. 21, 1980, Ser. No. 142,525
Int. Cl.^{3} F15B *13/044*
U.S. Cl. 137—881 **1 Claim**



1. A control valve comprising:

a valve body having a central axis, and a first end and a second end both perpendicular to said central axis of said valve body, each end containing a countersunk boss concentric to said central axis, said valve body further having a central bore coaxial to said central axis and joining each of said bosses, said central bore and each boss therein forming a pair of valve seats, said valve body further containing a first port, extending through said valve body connecting with one of said bosses, a second port extending through said valve body, connecting with the other of said bosses and a third port extending through said valve body connecting with said central bore;

a split housing means having two housing sections for enclosing said first end and second end;

each housing section being a generally cylindrical cupshape structure containing sidewalls, a bottom, and a valve guide means having a central channel, which when assembled is coaxial with the central axis of said valve body;

a pair of valve means for controllably establishing pressure communications among said first, second and third ports, each of said valve means slideably disposed within the central channel of a corresponding one of said valve guide means and biased against one of said valve seats to close each end of said central bore and including:

a pair of electrically actuatable solenoid coil assemblies concentrically disposed in said housing about said valve guide means for generating a magnetic holding force for unseating said valve means from said valve seat; and

a nonmagnetic spacer disposed on said valve means between said valve means and said valve guide means for limiting the magnetic holding force exerted on said valve means;

wherein each of said valve means includes:

a rod-like member, adapted to be received within said central bore;

a resilient valve attached to one end of said rod-like member; and

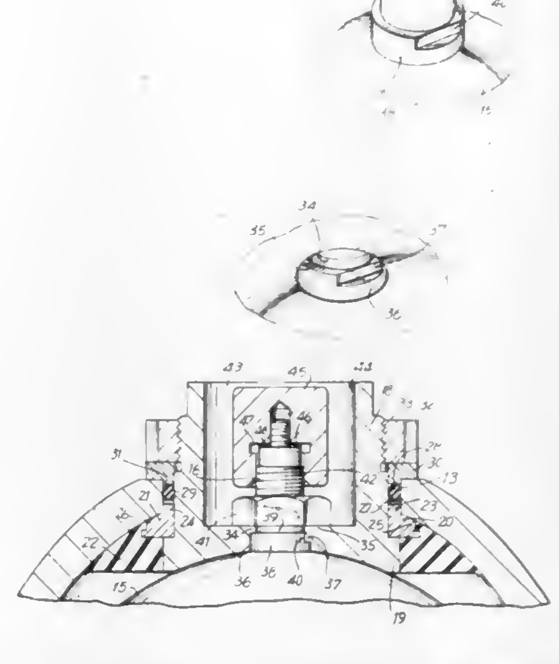
a ferro-magnetic plate situated between said rod-like member and said valve, said plate having a larger diameter than said valve; and

wherein said nonmagnetic spacer comprises a washer-like member mounted to said plate on an opposing surface opposite from said valve.

4,355,662
REPAIRABLE ACCUMULATOR DEVICE

James K. Floyd, Yorba Linda, Calif., assignor to VSI Corporation, Pasadena, Calif.

Filed Apr. 29, 1981, Ser. No. 258,458
Int. Cl.^{3} F16L *55/04*
U.S. Cl. 138—30 **4 Claims**



1. A top repairable accumulator device comprising, in combination, a pressure vessel having an oil port at a bottom end and a gas charging port at a top end, a gas charging valve assembly mounted in said top end, said valve assembly including a fitting member removably mounted in said gas charging port, a generally cylindrical chamber on said fitting externally of said port, a transverse wall portion on said fitting having a bore therein, said bore being aligned generally coaxially of said chamber, a bladder assembly disposed within said vessel, said assembly including a bladder having an opening, a generally cylindrical hollow valve mounting stem disposed in said opening and bonded to said bladder, said stem having an external thread portion, said stem extending through said bore of said fitting and into said cylindrical chamber, eccentric interfit means extending between said stem and said fitting for keying said stem against rotation relative to said fitting, and a jam nut disposed within said chamber and threadedly connected to said thread portion of said stem and clamping said stem to said fitting.

4,355,663
NOZZLE/VALVE DEVICE FOR A DUCTED ROCKET MOTOR

William M. Burkes, Jr., and William H. Miller, both of McGregor, Tex., assignors to Hercules Incorporated, Wilmington, Del.

Filed Mar. 11, 1980, Ser. No. 129,284
Int. Cl.^{3} F15D *1/02;* B64C *15/08;* F02K *9/04*
U.S. Cl. 138—44 **10 Claims**

1. A nozzle/valve for controlling the flow of combustion products from a fuel generator to a secondary combustion chamber of a ducted rocket motor, said nozzle/valve comprising

a valve body having a stem section and a flow section intersecting and attached to said stem section, said stem section comprising an outer stem member and a stem insulator for said outer stem member housed within said outer stem member and extending throughout the length of the outer stem member, said stem insulator having a central longitudinal stem cavity extending throughout the length of the insulator,

a flow section comprising an outer flow member and a flow insulator for said outer flow member housed within and extending throughout the length of the outer flow member, said flow insulator having side walls and a central longitudinal cavity extending throughout the length of the flow insulator, the cavity in said flow insulator defining a flow channel through said flow section, and a second cavity extending through the side wall of said flow insulator which second cavity is in registration with the stem cavity in the stem insulator,

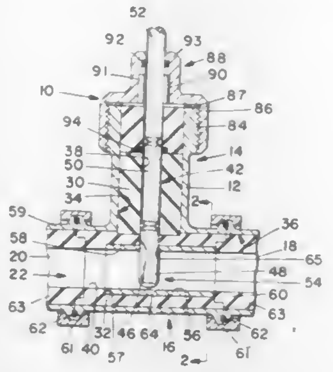
a valve plunger housed within the stem insulator and having its outer surface contiguous with the interior surface of the stem insulator which is defined by the stem cavity in the stem insulator, said plunger forming the flow blockage element for the flow channel,

a stem closure in locking engagement with said stem section,

first seal means for sealing between the stem closure and the stem section,

second seal means for sealing between the stem closure and the valve plunger, and,

actuator means for imparting translational movement to the valve plunger to move said plunger between a closed position in which said plunger partially blocks the flow channel and an open position in which said plunger is removed from the flow channel.



4,355,664

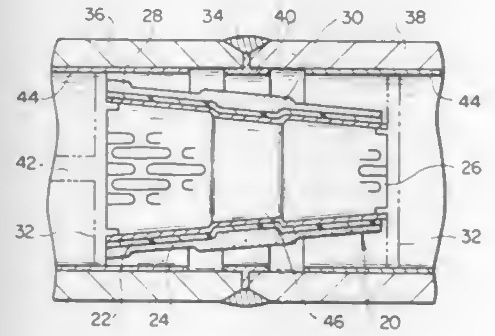
APPARATUS FOR INTERNAL PIPE PROTECTION

Paul M. Cook, Menlo Park; Richard F. Otte, Los Altos Hills; James L. Claypool, Mountain Vew; Lawrence J. White, San Jose; Harry C. Broyles, Sunnyvale, and Peter L. Brooks, Los Altos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 31, 1980, Ser. No. 174,304

Int. Cl.^{3} F16L *9/14*

U.S. Cl. 138—110 **10 Claims**



1. A device for protecting the inside of a pipe, the pipe comprising a cylindrical member, said device comprising:

tubular delivery means, said delivery means being generally frustro-conical in shape and having a radially continuous sidewall which is cage-like with a plurality of slots therein, said delivery means being flexible in both radial and axial directions, said delivery means being capable of radial expansion upon application of heat;

tubular liner means outside of and in contact with said delivery means, said liner means being generally frustro-conical in shape, corrosion resistant and deformable substantially only radially upon application of heat; and

bonding means outside of and in contact with said liner means to bond said liner means to the inside surface of a cylindrical pipe, said bonding means being flowable and activated by application of heat, said delivery means expanding radially upon application of heat uniformly along the length of the device, the radial expansion of the frustro-conical shaped delivery and liner means causing said bonding means to progressively contact the inside of a cylindrical pipe and to flow progressively axially along the outer surface of said liner means to preclude air entrapment between said liner means and the inside of a cylindrical pipe.

4,355,665

HEDDLE

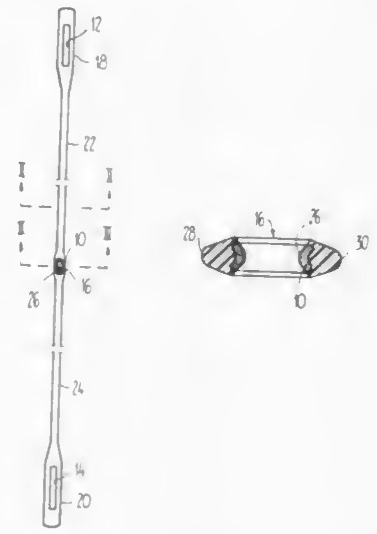
Paul Ramseier, Pfäffikon, and Hans Burkhalter, Schönenberg, both of Switzerland, assignors to Bräcker AG, Pfäffikon, Switzerland

PCT No. PCT/CH79/00115, § 371 Date May 26, 1980, § 102(e) Date May 8, 1980, PCT Pub. No. WO80/00719, PCT Pub. Date Apr. 17, 1980

PCT Filed Aug. 31, 1979, Ser. No. 190,313

Int. Cl.^{3} D03C *9/00*

U.S. Cl. 139—96 **8 Claims**



1. A heddle comprising:

a plastics material portion formed of a plastics material;

a warp thread guiding eye inserted into said plastics material portion;

said thread guiding eye possesses a substantially crescent-shaped cross-sectional configuration;

said thread guiding eye being formed of a material which is harder than the plastics material of said plastics material portion;

said thread guiding eye being embedded in the plastics material of the plastics material portion;

said thread guiding eye being partially surrounded by the plastics material of said plastics material portion;

said thread guiding eye having outer edges which are molded around and interengaged by said plastics material of said plastics material portion; and

said thread guiding eye having an inner surface which forms a smooth transition to the plastics material portion.

4,355,666

SHUTTLE PROPELLING MECHANISM IN CIRCULAR LOOM

Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

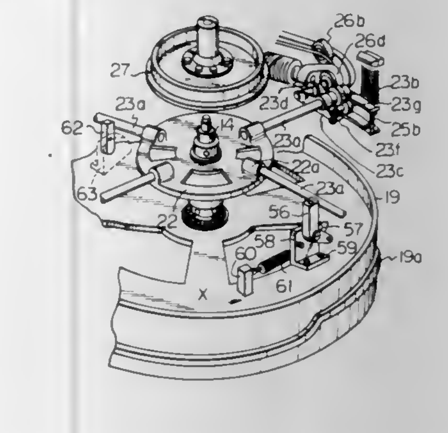
PCT No. PCT/JP79/00138, § 371 Date Jul. 23, 1980, § 102(e) Date Jul. 23, 1980, PCT Pub. No. WO80/01173, PCT Pub. Date Jun. 12, 1980

PCT Filed May 29, 1979, Ser. No. 196,915

Claims priority, application Japan, Nov. 29, 1978, 53-148529

Int. Cl.^{3} D03D *37/00*

U.S. Cl. 139—13 R **5 Claims**



1. In a circular loom comprising an annular guide means for guiding at least one shuttle in a predetermined direction, a warp guide annular member disposed above said annular guide means coaxially therewith and having a plurality of warp guide slits, a plurality of shed forming mechanisms arranged annularly outside said warp guide annular member, a cylindrical cam mechanism mounted coaxially with said shuttle guide means, means for operating said shed forming mechanisms prior to arrival of the shuttle to form moving sheds, in a condition of successively forming sheds along said annular guide means, a mechanism for taking out a woven fabric along the axis of said shuttle guide means and driving means for rotating the cylindrical cam mechanism around the axis thereof in the direction of guiding the shuttle by the shuttle guide means, a shuttle propelling mechanism comprising a horizontal supporting member mounted rotatably at a position above said cylindrical cam mechanism on an upward extension of the rotation shaft of the cylindrical cam mechanism, at least one horizontal shaft corresponding to the shuttle to be used, said horizontal shaft being fixed to said supporting member and being extended to a position adjacent to said shuttle guide means, a shuttle engaging mechanism mounted on a free end portion of said horizontal shaft and means for transmitting the rotation of the cylindrical cam mechanism to any of said horizontal shafts.

4,355,667

HEDDLE FRAME

Yoichi Shimizu, Izumishi, Japan, assignor to Kabushiki Kaisha Maruyama Seisakusho, Sakaishi, Japan

Filed Jun. 11, 1980, Ser. No. 158,352

Claims priority, application Japan, Sep. 3, 1979, 54-120467

Int. Cl.^{3} D03C *9/06*

U.S. Cl. 139—91 **4 Claims**

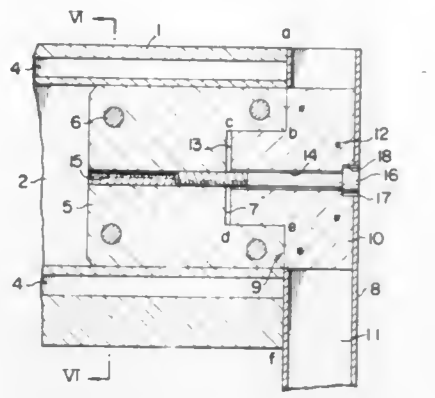
1. In a heddle frame having at least one hollow horizontal aluminum bar and at least one hollow side stay, a joint connecting one end of one said at least one aluminum bar and one said at least one side stay, said joint comprising:

a receptacle fixedly fitted into the hollow of said one aluminum bar at said one end of said one aluminum bar with one face of said receptacle flush with said one end, said one face defining a channel section, and a fixing bore extending into said receptacle from said channel section in the longitudinal direction of said aluminum bar;

a connecting piece fixedly fitted into the hollow of said side stay and having one face flush with a surface of said side stay, said one face of said connecting piece including a projecting portion adapted to mate with said channel section whereby said one face of said receptacle and said one face of said connecting piece mate with one another, said connecting piece also including a second bore extending therethrough from said projecting portion, said second bore being in alignment with said fixing bore when said channel section and said projecting portion are mated to one another; and

fixing means connected between said bores and fixing said projecting portion in mating relation with said channel section whereby said aluminum bar and said side stay are joined,

whereby the strength of said joint may be increased without increasing the size of said aluminum bar and said side stay.



4,355,668

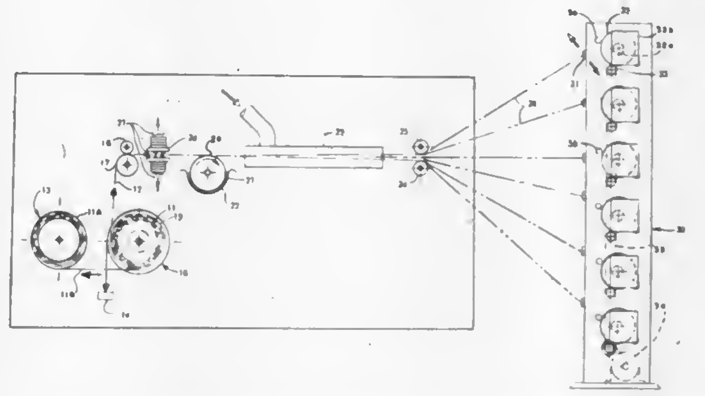
GRAPHITE FIBER ALIGNMENT PROCESS AND APPARATUS AND FABRIC PRODUCED THEREFROM

Frederick H. Curzio, Garden Grove, Calif., assignor to Textile Products, Incorporated, Anaheim, Calif.

Division of Ser. No. 933,658, Aug. 14, 1978, Pat. No. 4,271,570. This application Jan. 25, 1980, Ser. No. 115,391

Int. Cl.^{3} D03D *15/00*

U.S. Cl. 139—420 R **8 Claims**



1. A fabric of aligned graphite fibers having a uniform density and weave and uniform physical properties in both the warp and fill direction, the fabric being adapted to follow the contours of a support substrate, the fabric being formed from strands derived by unwinding from a graphitized strip produced in a graphitizing furnace, the unwinding process subsequent to the graphitizing furnace comprising the steps of:

i. initially separating individual graphite strands from the strip;

ii. diverging the strands while separating the strands from the graphitized strip under tension;

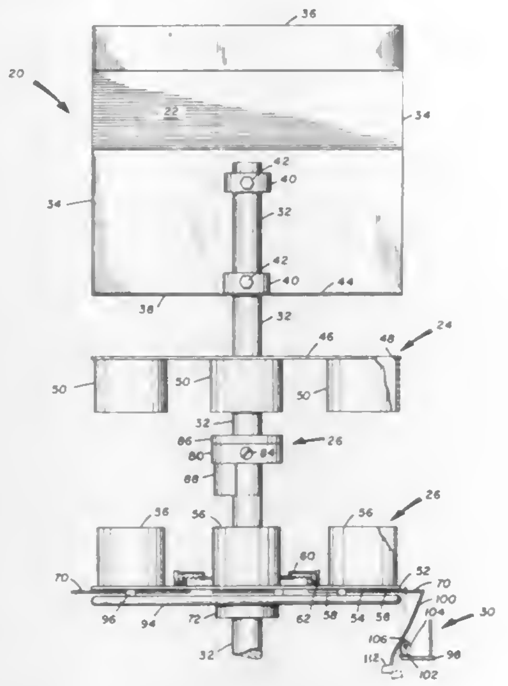
iii. feeding each strand through a separate alignment tube; and,

iv. winding up a plurality of strands, each strand being on a separate aligned reel, a plurality of aligned reels having at least one drive rod therefor, each reel being maintained forwardly in off-centered contact with the drive rod due to strand tension, whereby release of strand tension causes the reel to move out of alignment.

4,355,669

APPARATUS FOR CANNING FOOD

James H. Miller, P.O. Box 623, Eastpoint, Fla. 32328
Filed Aug. 25, 1980, Ser. No. 180,922
Int. Cl.^{3} B65B *43/42*
U.S. Cl. 141—147 **6 Claims**



1. An apparatus for canning food, comprising:

a hopper means, said hopper means having walls therearound, said hopper means holding a supply of food to be measured into predetermined amounts for filling into containers;

a funnel system, said funnel system interfacing and communicating with said hopper means, said funnel system receiving a portion of said food from said hopper means;

a measuring system, said measuring system slidingly and removably mating telescopably with said funnel system and communicating therewith, said portion of food flowing from said funnel system into said measuring system, said measuring system having a first main plate member and a plurality of cylindrically formed tube-like measuring means, said first main plate member having a plurality of apertures therethrough to each of which is assembled and affixed one of said plurality of said cylindrically formed tube-like measuring means, the interior of each said cylindrically formed tube-like funnel means communicating with the aperture to which it is assembled, said first main plate having a centrally located aperture therethrough, said cylindrically formed tube-like measuring means projecting slightly through said first main plate member;

a dispensing system, said dispensing system being affixed to said measuring system and operating therewith, said dispensing system having a plurality of dispensing gates, each dispensing gate of said plurality of dispensing gates having an outstanding lug and a projecting trip arm extending therefrom, each of said dispensing gates being slidably and movably affixed to the underside of said first main plate member by said outstanding lug on said dispensing gate, each said dispensing gate being slidably movable across the end of said slightly projecting cylindrically formed tube-like measuring means projecting through said first main plate member, each said dispensing gate further having said projecting trip arm extending past the outside periphery of said first main plate member to operate said dispensing gate and slidably move it off said end of said projecting cylindrically formed tube-like measuring means to dispense food therefrom;

an assembly and support means, said assembly and support means being centrally located for removable assembly and support of said hopper means and for removable assembly of said funnel and measuring means, said first main plate being slidably and removably assembled to said assembly and support means through said aperture in said first main plate;

a locator means, said locator means being slidably and removably assembled and affixed to said assembly and support means between said funnel system and said measuring system, said locator means fixing spaced relationship between said funnel system and said measuring system, said spaced relationship determining amount of said portion of said food received from said hopper means and flowing into said measuring system, said locator means having a main collar member, a non-metallic member, an arc-like cam member, and an attachment means, said main collar member being centrally located on said assembly and support means, said main collar member having an aperture therethrough to fit said assembly and support means, said attachment means rigidly affixing said main collar means to said assembly and support means, said non-metallic member being affixed to the topmost side of said main collar member, and said arc-like cam member being affixed to the underside of said main member

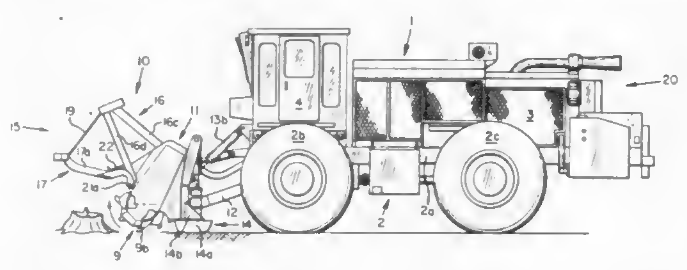
a trigger mechanism, said trigger mechanism being separately located and positioned to operate said dispensing system, and

a control means, said control means being for said dispensing gate, said control means consisting of a pin member, a lever-like arm, and a tension spring, said pin member being rigidly affixed to said outstanding lug, said pin member movably projecting through said second main plate member and being rigidly affixed to said lever-like arm, said lever-like arm being connected to said tension spring member, said tension spring member being suitably anchored to said second main plate member to automatically close said dispensing gate when dispensing of food is completed, said arc-like member of said locator means controlling the operation of said lever-like arm if and when said tension spring member fails.

4,355,670

FORESTRY SITE PREPARATION SYSTEM

George E. Ohrberg, Bogalusa, and James R. O'Dair, Alexandria, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Continuation-in-part of Ser. No. 853,054, Nov. 21, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,967
Int. Cl.^{3} A01G *23/08*
U.S. Cl. 144—34 R **22 Claims**

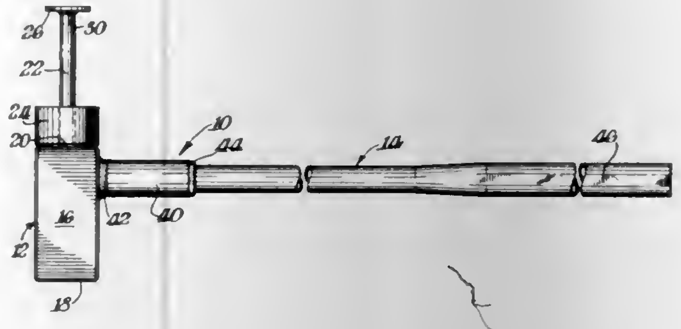


1. A forestry site preparation system adapted for use with an apparatus capable of transporting said system through woody terrain, comprising means for clearing woody material, including trees, tree stumps, and slash, for said woody terrain, said clearing means including means for fragmenting said woody material into particulate masses and said system also comprising at least one auxiliary fragmenting means for further fragmenting said particulate masses, thereby substantially controlling the size of said particulate masses, said clearing means further including means for conveying said particulate masses toward said auxiliary fragmenting means.

4,355,671

WOOD SPLITTING TOOL

Albert B. Senior, III, Box 290, Middletown, Del. 19709
Filed Jan. 28, 1981, Ser. No. 229,106
Int. Cl.^{3} B27L *7/00*
U.S. Cl. 144—193 C **9 Claims**

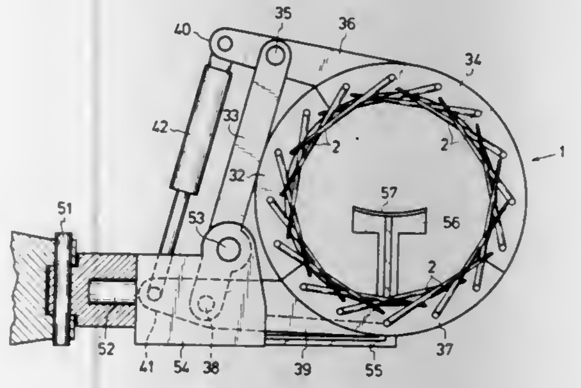


1. A wood splitting tool comprising a head with handle means secured thereto and extending therefrom, the head including a wedge having a wood engaging edge portion and an opposite top surface portion, a pin secured to the wedge and extending outwardly from the top surface portion thereof, an impact weight slidably mounted on the pin, and means at the free end of the pin for preventing removal of the impact weight whereby upon swinging the tool the weight slides along the pin and strikes the top surface portion of the wedge to provide a second hit immediately after the edge portion of the wedge engages the wood, and wherein the wood engaging edge portion of the wedge and the impact weight are on opposite sides of the axis of the handle means.

4,355,672

APPARATUS FOR REMOVING BRANCHES AND BARK FROM FELLED TREES

Johann C. F. Hiller von Gaertringen, Schloss, 8601 Weiher, Fed. Rep. of Germany
Filed Feb. 27, 1979, Ser. No. 15,805
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1978, 2808613
Int. Cl.^{3} B27L *1/00*
U.S. Cl. 144—208 E **22 Claims**



1. An apparatus for removing branches and bark from felled trees which are moved through said apparatus, said apparatus comprising:

(a) a ring member for moving therethrough a felled tree, said ring member having first and second axially spaced surfaces;

(b) a plurality of first knives mounted on said ring member at said first surface thereof for pivotal movement between an operative position in working engagement with the respective tree being moved through said ring member and a rest position disengaged from the tree, each of said first knives having a longitudinal central plane extending substantially perpendicular to the surface of the tree and cutting edge for cutting off branches from the tree, said cutting edge extending substantially parallel to said first surface;

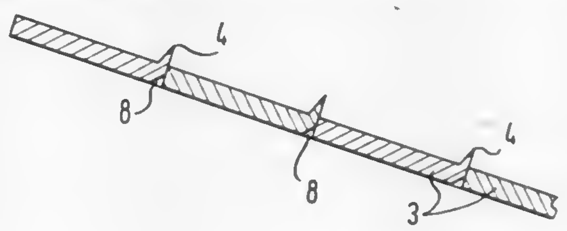
(c) a plurality of second knives mounted on said ring member at said second surface thereof for pivotal movement between an operative position in working engagement with the tree and a rest position disengaged from the tree, each of said second knives having a longitudinal central plane extending at a small angle with respect to the surface of the tree and a cutting edge for removing bark from the tree after cutting off the branches, said second knife cutting edge extending at an angle of from 20° to 60° with respect to said second surface; and

(d) means for retaining said first and second knives in resilient engagement with the tree in their operative position.

4,355,673

CUTTER FOR WOOD CHIPPERS

Karl-Heinz Köstermeier, Eckelsheimerstr. 18, 6556 Wöllstein, Fed. Rep. of Germany
Filed Dec. 11, 1980, Ser. No. 215,273
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950494; Oct. 22, 1980, 3039833
Int. Cl.^{3} B27G *13/00*
U.S. Cl. 144—230 **6 Claims**

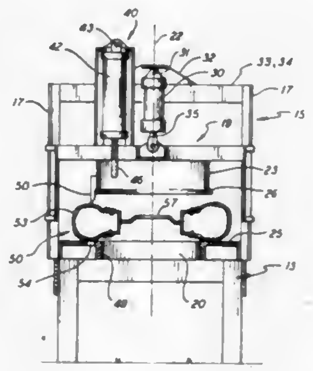


1. A cutter for wood chippers on which the chip separation surface formed with chip separator tips for chip separation, characterized by a plurality of connected single profile pieces of essentially L-shaped cross-section their short legs forming a rib and their long legs forming cutting edges of the cutter, the base of said cutter being provided with slots which aee open on one side, and a central depression in in said slot for receipt of a releasable clamping device for affixing the cutter to a holder.

4,355,674

APPARATUS FOR SEPARATING CASINGS FROM TIRE RIMS

Joseph F. Grasso, 119 Ridge St., Rome, N.Y. 13440
Filed Jan. 23, 1981, Ser. No. 227,627
Int. Cl.^{3} B60C *25/06*
U.S. Cl. 157—1.2 **10 Claims**



1. Apparatus for separating a casing from the rim of a wheel that includes

a worktable for supporting a tire in a horizontal position thereupon, said worktable further having a circular opening passing therethrough that has a diameter greater than the outer diameter of the wheel rim and smaller than the outer diameter of the casing,

a cylindrical clamping tool for passing over the outer periphery of the rim and securely locking the casing against the top surface of the worktable,

drive means connected to the cylindrical clamping tool for moving the tool between a loading position over the top of the table wherein a wheel may be positioned over the opening in the worktable and a clamping position wherein the lower edge of the clamping tool securely locks the casing against the table, and

an extendable bar positioned over the opening in the worktable that is arranged to move downwardly into the opening formed in said table to force the rim of a wheel positioned upon the worktable downwardly through the opening.

4,355,675

DEVICE FOR REMOVING A TIRE FROM ITS RIM

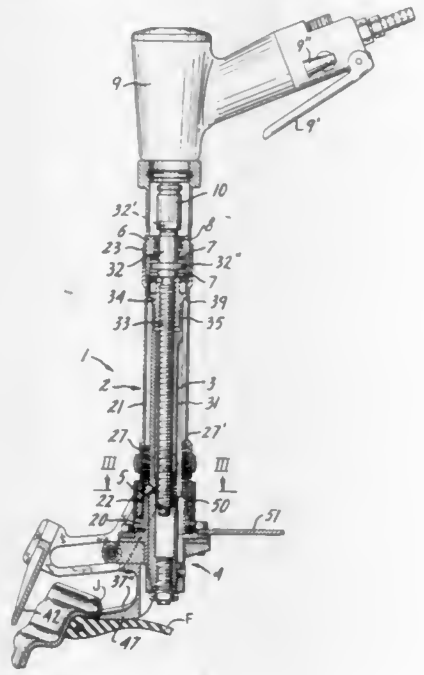
Raymond Freixinos, Chamalieres, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Feb. 24, 1981, Ser. No. 237,759

Claims priority, application France, Feb. 26, 1980, 80 04288

Int. Cl.^{3} B60C *25/06*

U.S. Cl. 157—1.17 **12 Claims**



1. A device for removing a tire from a rim having at least one circumferential flange, said device, which comprises a fixed jaw, a movable jaw cooperating with the fixed jaw and a tire push member which is driven by a mechanism which assures its axial displacement with respect to the jaws, being characterized by the fact that it comprises outer and inner tubular assemblies which bear a jaw-holder block and are engaged one within the other and are axially slidable, limited by stops, with respect to each other and with respect to the jaw-holder block; by the fact that one end of the outer tubular assembly bears an articulation for the movable jaw while its other end is fastened to a motor which controls the axial sliding of the two tubular assemblies; by the fact that the inner tubular assembly bears the tire push member; and by the fact that an interlock system is interposed radially between the inner tubular assembly, the jaw-holder block and the outer tubular assembly in order to make the sliding of the inner tubular assembly subject to the sliding of the outer tubular assembly.

4,355,676

MOVABLE GLAZING AND INSULATION FOR WINDOWS

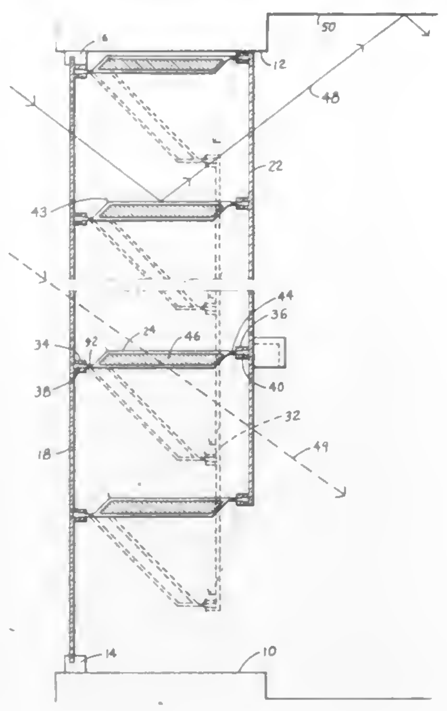
Kenneth S. Lee, 1711 Palomar, Ann Arbor, Mich. 48103

Filed Mar. 5, 1981, Ser. No. 240,925

Int. Cl.^{3} A47H *1/00;* E06B *3/32*

U.S. Cl. 160—107 **24 Claims**

1. A window assembly comprising an exterior glazing pane, an interior glazing pane spaced from said exterior pane and movable relative to said exterior pane, a plurality of louvers positioned between said exterior pane and said interior pane, a plurality of opposed parallel mullions extending from said exterior and interior panes, said mullions being parallel with said louvers, said louvers being longitudinally attached to pairs of said opposed parallel mullions and including longitudinal hinge means to permit the movement of the interior pane relative to the exterior pane.



4,355,677

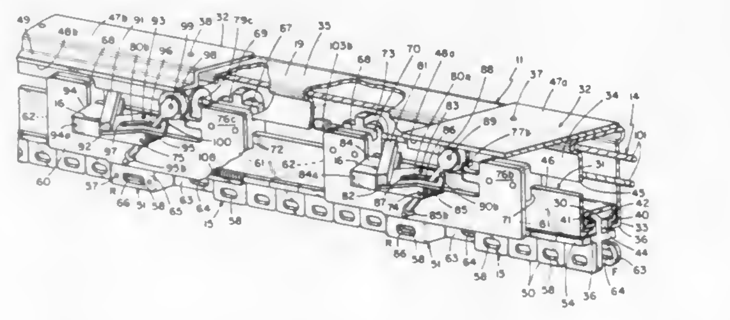
DRAPERY HANGER AND MANIPULATOR

Harold L. Madsen, 14615 Clark St., Dolton, Ill. 60419

Filed Aug. 17, 1981, Ser. No. 293,652

Int. Cl.^{3} A47H *1/00*

U.S. Cl. 160—126 **11 Claims**



1. An improved drapery hanger and manipulator for supportably hanging and manipulating one or more drapery curtain panels having a leading and a trailing edge comprising a traverse track bridge to be positioned over an area to be covered by drapery, said bridge having a first track means therealong to slidably support a drapery hook hanger means, said bridge having a second track means therealong to slidably support a drapery carrier means, said bridge having cam means longitudinally spaced apart therealong, drapery hook hanger means slidably supported in said first bridge track for supporting drapery hooks slidably movable along said bridge to support the drapery panels from the leading to the trailing edge thereof, drapery carriers serially slidably supported in said second bridge track for independent movement along said bridge, said carriers having a hook extension connected to respective selected ones of said series of hook hangers to cause said selected hook hangers to respectively move with said carriers, a linear drive means having forward and reverse drive means for selectively providing forward and reverse linear drive along said bridge, said carriers having forward drive receiving means adapted to sequentially receive forward drive from said linear drive means for respectively moving said panels by urging the leading edge along said bridge in a direction away from the trailing edge thereof, said carriers having reverse drive receiving means disconnectably and respectively receiving said reverse drive means to normally respectively drive said carriers in a reverse direction along said bridge for respectively moving said panels by urging the leading edge along said bridge in a direction toward the trailing edge thereof for collapsing said panels, a cam follower on one or more of said carriers and responsive to said cam means as said carriers are moved in reverse along said bridge for disconnecting respective reverse drive receiving means to selectively and respectively disconnect the reverse movement of said carriers from said linear drive means, and retainer means longitudinally spaced apart on said bridge respectively and progressively in the linear path of said drapery hook hanger means frictionally supporting and normally retaining and positioning the respective panel trailing edges along said first track to correspondingly retain and position said hook hanger means in groups along said bridge as said carriers are moved along said bridge, whereby said carriers can be driven in the forward direction by said forward drive means to sequentially position drapery curtain panels over a given drapery area, and in the reverse direction by said reverse drive means toward and against the frictional retention and position to individually respectively collapse said panels toward said frictionally positioned retainers or to withdraw said panels from the given area by continuous reverse movement to provide respective separate light openings for each panel or to selectively completely remove or collapse said panels from the given area.

4,355,678

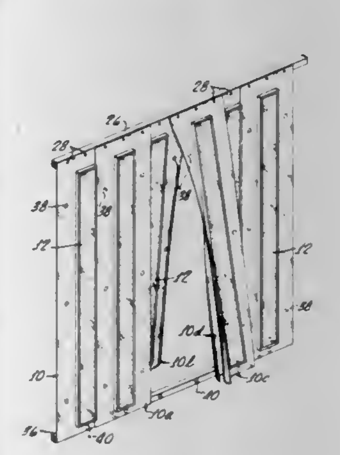
ACOUSTIC STRIP CURTAIN

Paul L. Romano, Orange, Calif., assignor to Acoustic Standards, Orange, Calif.

Filed Mar. 3, 1981, Ser. No. 240,185

Int. Cl.^{3} A47H *1/00*

U.S. Cl. 160—332 **24 Claims**



1. An acoustic strip curtain comprising

a plurality of elongated curtain strip assemblies secured to and suspended from a support, all assemblies of a group of said assemblies hanging in side-by-side relation, each assembly of said group comprising

a flexible acoustic barrier sheet having first and second longitudinally extending outer sections and a longitudinally extending inner section,

an absorber panel of acoustic absorber material secured to said inner section of said sheet and extending longitudinally thereof, said panel having a thickness greater than the thickness of said sheet and having laterally facing longitudinally extending edges,

each outer section of a group of said barrier sheets overlapping an outer section of an adjacent sheet for substantially the entire length and width of such outer sections, and

each sheet of said group having a longitudinally extending edge portion positioned adjacent an edge of the panel of an adjacent assembly of said group, whereby sound passing between overlapping outer sections passes around an edge of a barrier sheet in proximity to an absorber panel.

4,355,679

CASTING METALS

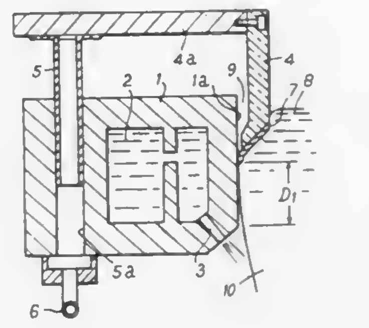
Rennie F. T. Wilkins, Chigwell, England, assignor to British Aluminum Company Limited, England

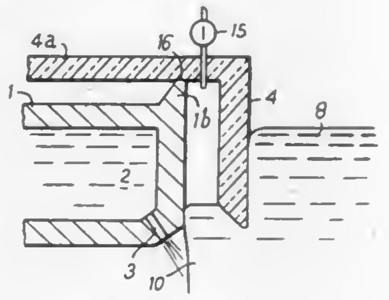
Filed Feb. 16, 1979, Ser. No. 12,765

Claims priority, application United Kingdom, Feb. 18, 1978, 6527/78

Int. Cl.^{3} B22D *11/04, 11/08*

U.S. Cl. 164—466 **37 Claims**





1. A method of direct chill casting of non-ferrous metals through a water cooled open mould having a mould wall and a rigid sleeve means of thermally insulating material which is movable within and relative to the mould wall in the direction of liquid metal flow to increase an overlap therebetween and in which, during the casting operation, liquid metal is supplied to the interior said rigid sleeve means, said sleeve means is moved and pressure is applied to a peripheral region of a pool of liquid metal in the mould so that the axial length of the mould wall in contact with the liquid metal is varied, independently of variations of the quantity of liquid metal within the sleeve means.

4,355,680

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF HOLLOW ARTICLES

John G. Frantzreb, Sr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 3, 1980, Ser. No. 203,008

Int. Cl.^{3} B22D *11/10, 11/00*

U.S. Cl. 164—484 **10 Claims**

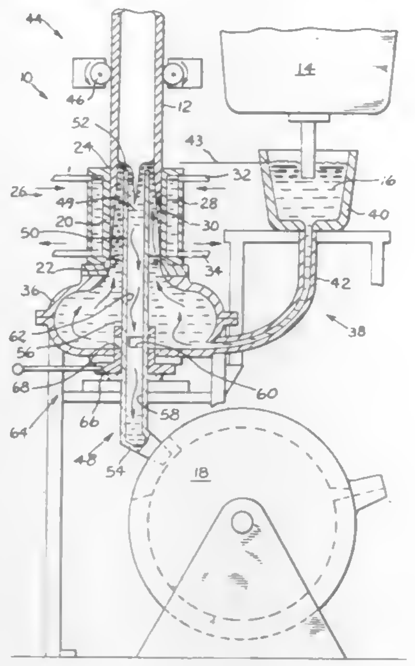
1. A method for the continuous casting of hollow articles (**12**), comprising:

feeding molten metal (**16**) into a casting breech (**36**) disposed at a bottom end (**22**) of a vertically oriented mold (**20**);

solidifying a first portion of the molten metal (**16**) in said mold (**20**) to form a hollow articles (**12**);

withdrawing said hollow articles (**12**) from an upper end (**24**) of said mold (**20**); and,

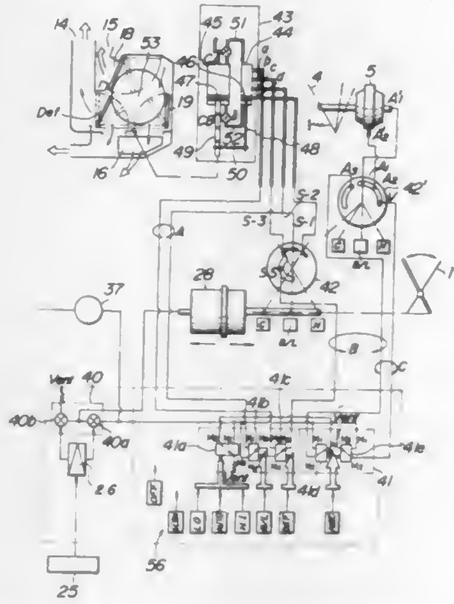
concurrently removing a liquid second portion (**49**) of said molten metal (**16**) from the upper end (**24**) of said mold (**20**) and discharging said liquid second portion through a discharge end of a liquid metal removing means located below said bottom end of said mold.



4,355,681
SYSTEM FOR CONTROLLING A VEHICLE MOUNTED AIR CONDITIONER

Yukio Shimada; Naoyoshi Suzuki; Toshio Ohashi, all of Yokohama, and Yasushi Inoshita, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,271
Claims priority, application Japan, Nov. 15, 1979, 54-147067
Int. Cl.^{3} F25B *29/00*
U.S. Cl. 165—16 **4 Claims**



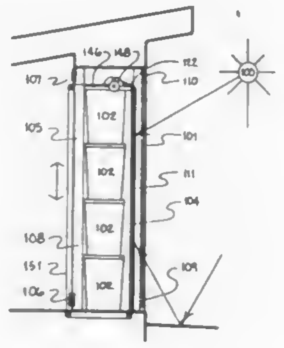
1. A system for automatically controlling a vehicle mounted air conditioner having an air intake port for introducing outer air, cabin air or a mixture thereof, an air intake door controlling the source and mixture of the intake air, and a vacuum-operated air intake door actuator, a hot air passage, a cold air passage, an air mix door controlling the proportions of the intake air passing through the hot air passage and the cold air passage, and an air mixing door actuator, a plurality of blower outlets for conditioned air and a blower outlet door for each of said blower outlets, in which the flow of conditioned air through the outlets is in response to a controlling program of an automatic temperature adjusting system in either an automatic selection mode or a manual selection mode,

wherein the improvement is characterized in that the system comprises a mode controlling vacuum switch for placing the system in either the automatic selection mode or the manual selection mode, a controlling vacuum circuit system controlled by said vacuum switch for supplying a uni-directional vacuum signal and including said air intake door actuator, a shift actuator for actuating said blower outlet doors, and vacuum selectors for transmitting the vacuum signal from said vacuum switch to the shift actuator and the air intake door actuator, said vacuum selectors being controlled by a temperature-responsive power servo.

4,355,682
ENVIRONMENTALLY DRIVEN HEATING AND COOLING SYSTEM

Timothy Maloney, Winchester, Va., assignor to One Design, Inc., Winchester, Va.

Division of Ser. No. 941,735, Sep. 12, 1978, Pat. No. 4,257,477. This application Aug. 18, 1980, Ser. No. 179,240
Int. Cl.^{3} F25B *29/00*
U.S. Cl. 165—48 S **12 Claims**



1. In an environmentally driven heating and cooling system, which includes:

wall means defining at least two containers each for a quantum of thermal storage mass, each including surface means for collecting and radiating heat;

each said container in a use condition having a filling of said quantum of thermal storage mass;

a building structure for a situs, and including a glazed portion sited for sunlight to fall along a path directly or indirectly thereon;

said containers being deployed in a group in said building structure when in said use condition, behind said glazed portion, relative to the path of sunlight falling on said glazed portion;

the improvement wherein:

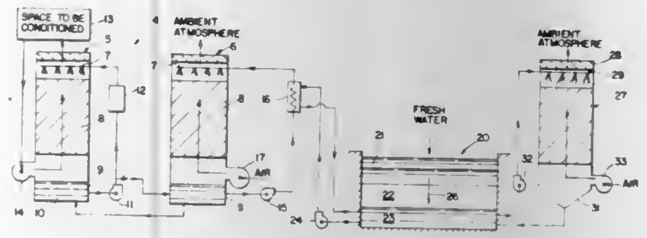
the at least two containers further have a shipping condition wherein the at least two containers lack said filling and are more condensed relative to one another than when grouped, so that while being shipped to said situs in said shipping condition, said at least two containers occupy less space than when grouped and in said use condition;

each container being an integrally molded unit made of synthetic plastic material and each includes sidewalls and a bottom cooperatively provided with a nesting feature and a stacking feature, so oriented that when two such containers are aligned and vertically juxtaposed in one congruent relationship, the upper one will nest in the lower one without the stacking feature of the lower one supporting the upper one, but when said two such containers are aligned and vertically juxtaposed in an opposite relationship, in which one is turned end-for-end relative to the other, the upper one will stack upon the lower one without substantial nesting.

4,355,683
SYSTEM OF MOISTURE AND TEMPERATURE CONDITIONING AIR USING A SOLAR POND

William C. Griffiths, Lebanon, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed May 11, 1981, Ser. No. 262,047
Int. Cl.^{3} F24F *3/14;* **F24J** *3/02*
U.S. Cl. 165—60 **13 Claims**



1. A system of moisture and temperature conditioning air, comprising:

(a) a first tower, comprising (I) means for simultaneously moisture and temperature conditioning air circulated through the tower, including distribution means adjacent the vertically uppermost top of the tower for directing liquid sorbent downwardly into contact with air circulating through the tower, and (II) a first sump adjacent the vertically lowermost bottom of the tower in which liquid sorbent, diluted with moisture, collects after it moves downwardly through the tower;

(b) a vertically elongated second tower in which diluted liquid sorbent is concentrated, the second tower being in spaced relation from the first tower and comprising, (I) means for evaporating water from the liquid sorbent into air circulated through the second tower, including distribution means for directing liquid sorbent into contact with the air, and (II) a second sump in which liquid sorbent collects after it moves downwardly through the second tower;

(c) means for circulating liquid sorbent between the first and second sumps;

(d) a solar pond, remote from the towers, including a liquid which is heated by the sun and in which heating energy is stored, the pond having a bottom which is spaced from an upper surface which is closer the sun, the liquid of the pond being a brine solution having a concentration of salt which increases with the depth of the pond;

(e) means for using heating energy from the solar pond to evaporate water from the sorbent brine into air circulated through the second tower; and

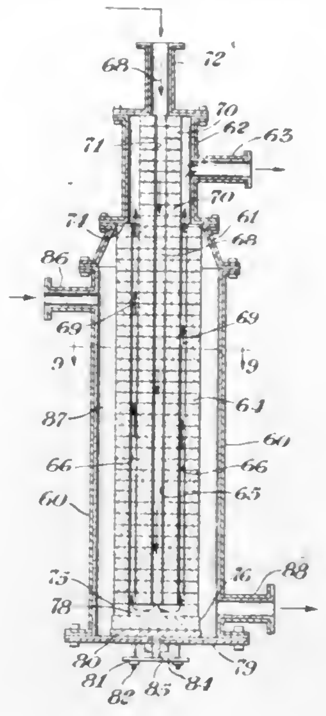
(f) means for maintaining the concentration of salt in the pond.

4,355,684
UNIAXIALLY COMPRESSED VERMICULAR EXPANDED GRAPHITE FOR HEAT EXCHANGING

Ronald S. Caines, Stone Mountain, Ga., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 13, 1979, Ser. No. 48,127
Int. Cl.^{3} F28D *7/10;* **F28F** *21/02, 3/08*
U.S. Cl. 165—154 **1 Claim**

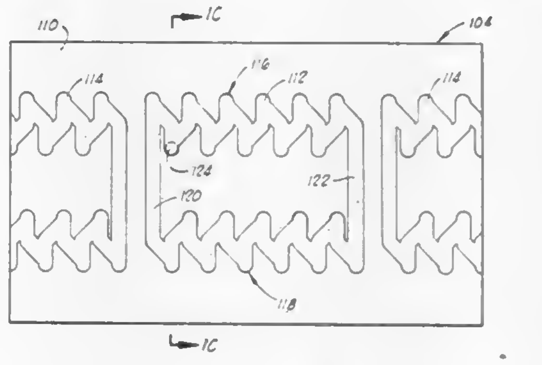
1. A heat exchanger comprising a cylindrical core member composed of a plurality of circular plates, each plate being composed of vermicular expanded graphite which has been compressed along an axis normal to the radius of said plate to a density of at least 100 pounds per cubic foot, means for compressing said plates in a fluid tight relationship against one another and along an axis normal to the radius of said plates, means for passing a first fluid in contact with said core member, and means for passing a second fluid through said core member in separate but heat exchanging relationship with said first fluid, the axis of heat exchange between the first and second fluids being along the radius of said plates.



4,355,685
BALL OPERATED J-SLOT

Harold K. Beck, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Filed May 22, 1980, Ser. No. 152,162
Int. Cl.^{3} E21B *23/00*
U.S. Cl. 166—240 **24 Claims**



1. In a lug and slot assembly for guiding a relative movement between first and second telescoping tubular members of a downhole tool, the improvement comprising:

said slot having a semicircular cross section;

said lug being a spherical ball approximately one-half of which is received in said slot; and

biasing means for resiliently biasing said ball toward said slot, said biasing means including a displaceable fluid under pressure.

4,355,686
WELL SYSTEM AND METHOD

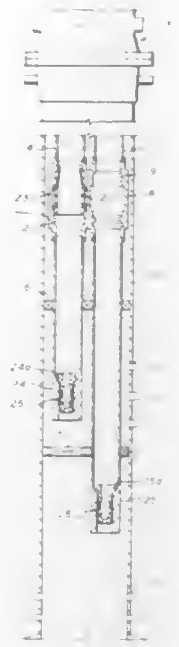
Henry P. Arendt, and Thomas J. Heard, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 4, 1980, Ser. No. 212,994
Int. Cl.^{3} E21B *34/08*
U.S. Cl. 166—313 **8 Claims**

1. The method of operating an injection well having a pair of tubing, an H-member in said pair of tubing with a pair of bores interconnected by a lateral passageway and a normally closed sliding sleeve valve in one bore controlling flow through said lateral passageway, and landing nipples connected to each lower leg of the H-member, comprising,

landing a fluid control means in each landing nipple,

establishing a selected differential across said interconnecting means to move said sleeve valve upwardly to open position,



carrying out TFL procedures in said pair of tubing,

landing a plug in the valve member of said sleeve valve,

and establishing a selected pressure differential across said plug to close said sleeve valve and pump said plug through said sleeve valve.

4,355,687

BALLAST LEVELING APPARATUS AND METHOD

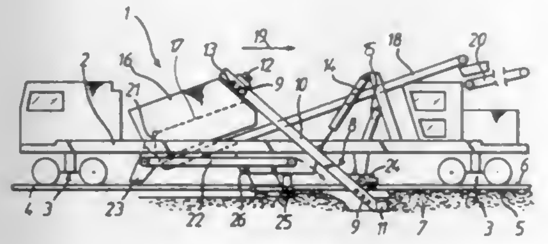
Josef Theurer, Vienna, and Karl Fölser, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Oct. 30, 1980, Ser. No. 202,079

Claims priority, application Austria, Nov. 23, 1979, 7461/79

Int. Cl.³ E01B *27/10*

U.S. Cl. 171—16 **10 Claims**



1. A ballast leveling apparatus mounted on a ballast cleaning machine including a frame and adapted to move in an operating direction on a track including ties resting on a ballast bed having two shoulders laterally adjacent the track, the machine frame supporting a ballast excavating means for removing ballast from a region of the ballast bed underneath the track, a ballast screening arrangement for separating the removed ballast into cleaned ballast and waste, and conveyor means for redistributing cleaned ballast to the excavated region of the ballast bed, and the ballast leveling apparatus being comprised of

(a) a pair of endless ballast leveling chains for distributing the redistributed cleaned ballast over the ballast bed and for leveling the distributed cleaned ballast,

(b) a vertical pivot supporting a respective one of the endless ballast leveling chains for pivoting inwardly from a respective one of the ballast bed shoulders in a plane underneath the track,

(c) a rotary drive for driving each ballast leveling chain, and

(d) a power drive linking each ballast leveling chain to the machine frame for vertically adjusting the ballast leveling chain independently of the ballast excavating means.

4,355,688

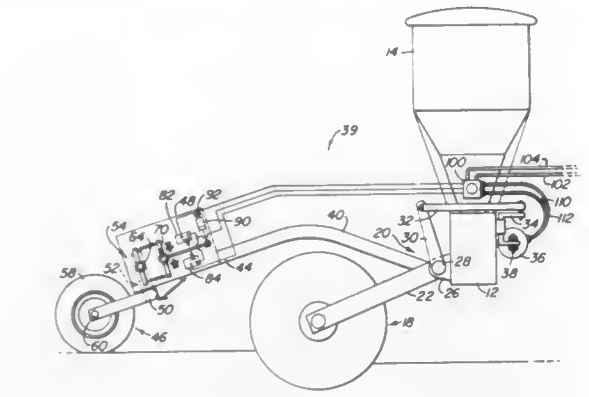
AGRICULTURAL IMPLEMENT AND DEPTH CONTROL THEREFOR

Nicholas Hamm, Vineland, and John Rosbak, Fonthill, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Jan. 29, 1981, Ser. No. 229,399

Int. Cl.² A01B *63/114*

U.S. Cl. 172—4 12 Claims



1. In an earthworking implement, a main frame supported for forward movement over the ground, an earthworking tool assembly having a tool frame and soil penetrating tools connected to the tool frame, means for rockably connecting the tool frame to the main frame, power means for rocking the tool frame to raise and lower the tools with respect to the main frame to vary the depth of penetration of the tools, a fore-and-aft extending support arm fixed at one end to the tool frame forwardly of the soil penetrating tools for rocking therewith and extending rearwardly from said one end up and over the soil penetrating tools to an opposite end thereof spaced rearwardly from the tool assembly, said opposite end movable vertically as the tool frame is raised and lowered, depth gauging means extending downwardly from said opposite end of the support arm so as to be movable into contact with the soil for sensing the position of the arm relative to the ground, said depth gauging means comprising a wheel connected to said opposite end of the arm for castering about an upright axis and for rocking vertically about a generally horizontal transverse axis adjacent the upright axis as the support arm rocks, and means responsive to the rocking of the caster wheel about said transverse axis for providing a signal indicative of whether the depth of penetration of the tools is above or below a preselected range, and wherein said power means is responsive to the signal for rocking and tool frame to maintain the depth of penetration of the tools within the preselected range.

4,355,689

FLEXIBLE WING IMPLEMENT WITH UNIVERSAL HINGES AND SELECTIVE LOCKING STRUCTURE ASSOCIATED WITH WINGS THEREOF

Terrance Friggstad, Frontier, Canada, assignor to Friggstad Manufacturing Ltd., Saskatchewan, Canada

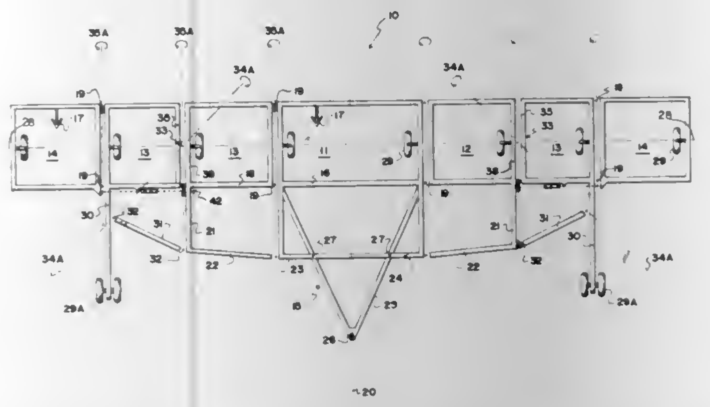
Continuation-in-part of Ser. No. 902,120, May 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 807,556, Jun. 17, 1977, abandoned. This application May 5, 1980, Ser. No. 146,408

Int. Cl.³ A01B *73/00*

U.S. Cl. 172—311 **32 Claims**

21. A ground working implement comprising in combination a center section, a hitch assembly extending forwardly from said center section, at least one wing section upon each side of said center section, movable from a field working position to a transport position and vice-versa, said each of said wing sections including an inner side and an outer side, the inner side of said wing sections being adjacent said center section, a wing

hitch member extending forwardly from the outer side of each of said wing sections, a transverse hitch member extending between the distal end of said wing hitch member and said hitch assembly of the center section, means for pivotally connecting one end of said transverse hitch member to the distal end of said wing hitch member and the other end of said transverse hitch member to said hitch assembly of said center section, ground engaging wheels supporting each of said wing sections and said center section and a castor wheel assembly on the front end of each of said wing hitch members, a universal hinge assembly operatively connecting each of said wing sections to said center section intermediate the front and rear sides of said sections, said universal hinge, and said pivotal connecting means between said corresponding transverse hitch member and said hitch assembly of said center section, lying on a first axis parallel to and spaced from the central fore and aft axis of said center section; the pivotal connecting means are between said corresponding transverse hitch member and said wing hitch member; and said universal hinge lying on a second axis extending diagonally between said last mentioned pivotal connecting means and said universal hinge, and means to selectively lock and release said wing sections relative to the center section such that each of said wing sections is free to pivot around said first and second axis when in the ground working position but are restricted to pivot around said first axis only, prior to and during movement of said wing sections towards said transport position.



4,355,690

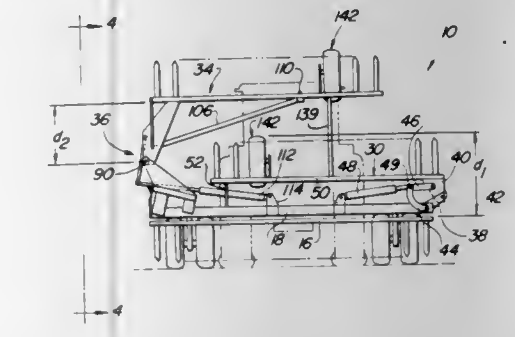
STACK FOLDING OUTRIGGER SYSTEM

Thomas C. Jensen; Phillip E. Stevens, and Henry J. Landry, Jr., all of Ankeny, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 18, 1980, Ser. No. 217,717

Int. Cl.³ A01B *73/00*

U.S. Cl. 172—311 **20 Claims**



3. In a foldable farm implement adapted for forward movement over the ground and having a laterally extending horizontal main frame with first and second ends and first and second transverse outrigger frames with depending earthworking tools, first means hingedly connecting the first outrigger frame to the first end of the main frame for swinging about a first axis between a transversely outward working position with the tools extending in a downwardly direction with respect to the main frame and a storage position above and parallel to the main frame with the tools extending in an upwardly direction a first distance above the main frame, and second means hingedly connnecting the second outrigger frame to the second end of the main frame for swinging between a working position transversely outwardly of and parallel to the main frame and a substantially transverse and horizontal storage position above the upwardly extending tools on the first outrigger frame, said second means including a fore-and-aft extending pivot connecting the second outrigger and main frames, said pivot offset vertically a second distance above the second outrigger frame and a third distance above the main frame, wherein the total of said second and third distances is at least equal to or greater than said first distance.

4,355,691

HYDRAULIC DRILLING APPARATUS

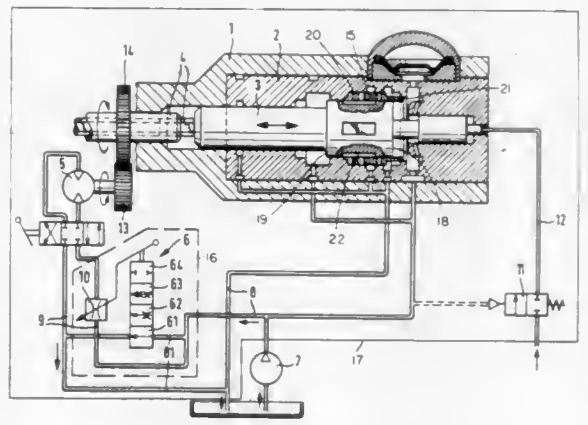
Esa Karru; Pekka Salmi, both of Tampere; Hannu Paasonen, Nokia, and Aimo Helin, Tampere, all of Finland, assignors to Oy Tampella AB, Finland

Filed Jun. 23, 1980, Ser. No. 162,160

Claims priority, application Finland, Jun. 26, 1979, 792018

Int. Cl.³ B25D *9/26*

U.S. Cl. 173—106 **5 Claims**



1. A hydraulic drilling apparatus, especially a rock drill, comprising a body, a cylinder in said body, a percussion piston reciprocating in said cylinder, a tool connected to said body, a motor rotating said tool, a control valve for the percussion power, a control valve for the rotational motor speed, both of said control valves being operated interdependently by one lever, a hydraulically operated flushing valve, a hydraulic pump and hydraulic channels which form a percussion circuit and a rotation circuit, said rotation circuit being parallelly coupled with said percussion circuit and operatively connected with said hydraulic pump, a flushing valve circuit controlled by said percussion circuit, and a free circulation circuit operatively connected with said hydraulic pump, said circulation circuit being parallelly coupled with said percussion circuit.

4,355,692

THICK FILM RESISTOR FORCE TRANSDUCERS AND WEIGHING SCALES

Michael J. Ostrelich, Easton, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,749

Int. Cl.³ G01G *3/14;* **G01L** *1/22*

U.S. Cl. 177—211 **4 Claims**

1. Means for measuring a force between at least two opposed force-transmitting members comprising:

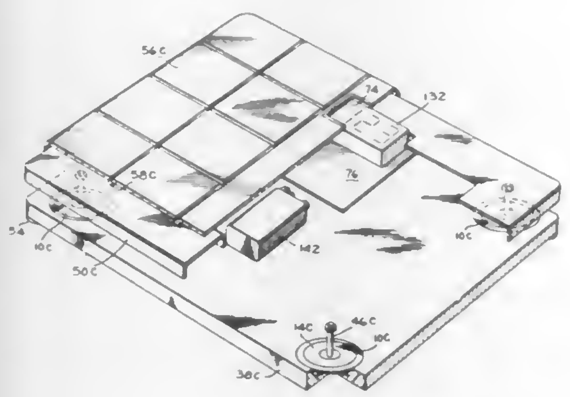
a mechanical force to electrical signal transducer comprising:

a thin flexible circular wafer of substantially uniform thickness including a flexible metal substrate member, said circular wafer having a central depression therein,

at least a part of one surface of said substrate member being flat and being comprised of an electric insulating material, and a resistance element fused upon said electrical insulating material to form an integral part of said flexible member, said resistance element comprising a substantially uniform thickness of a thick film resistor ink of the type used for thick film integrated circuits, the resistance of said resistance element varying in a predictable manner with strain applied to said flexible body, said film layer comprising a substantially circular pattern surrounding and centered upon said central depression, and

means for mounting and positioning said circular wafer in a plane substantially perpendicular to the direction of the force to be measured, said mounting means including means positioned to engage the outer peripheral edges of said wafer body to confine said body within said mounting means,

said force-transmitting members including force-transmitting elements engaging the flat faces of said wafer body respectively on opposite sides thereof to provide bending



stress in said body to be measured by said film layer as a measure of said force,

said opposed force-transmitting members comprising a substantially circular support shelf member substantially uniformly engaging and supporting one face of said wafer near the outer peripheral edge thereof outside of said film layer and a pin member engaging the opposite face of said wafer at said central depression, the end of said pin member being shaped and dimensioned to fit into said central depression,

the position of said resistance element upon said body and the positions of engagement of said force-transmitting elements with said body thereby being arranged to be mutually exclusive so that said force-transmitting elements do not directly engage the portion of said body upon which said resistance element is formed,

whereby the force applied to said flexible body may be measured by sensing the change in resistance of said resistance element in response to the application of the force.

4,355,693

WORKING VEHICLE

Masami Hirooka, Sakai, and Denzaburo Harada, Katano, both of Japan, assignors to Kubota Ltd., Japan

Filed Nov. 13, 1980, Ser. No. 206,449

Claims priority, application Japan, Sep. 29, 1980, 55-139201[U]

Int. Cl.^{3} B62D *11/00*

U.S. Cl. 180—6.48 **4 Claims**

1. In a working vehicle having right and left traveling means (**1***a*, **1***b*) adapted to be driven and stopped simultaneously or individually to effect traveling and turning round of the vehicle, traveling speed changing means (**8**) for providing a high speed drive and a low speed drive and including an operator member (**8***a*), and switch means (**13**) adapted to automatically and reversibly switch the traveling speed changing means (**8**) from a position to provide the high speed drive to a position to provide the low speed drive when the vehicle traveling straight turns round, said switch means (**10**) comprising,

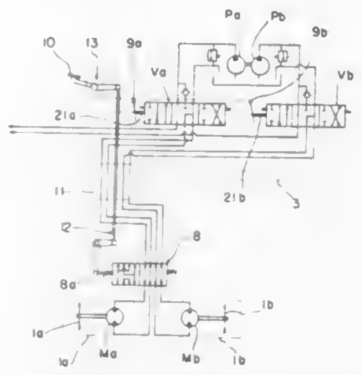
a high speed switching panel (**10**) operatively connected to said operator member (**8***a*) of said speed changing means (**8**),

resilient control means (**14**) operatively connecting said pedal (**10**) to said operator member (**8***a*) to permit said speed changing means (**8**) to move to the position to provide the low speed drive when said pedal (**10**) has been operated for the high speed drive,

a pivotable member having first and second ends and being pivotable on an axis intermediate and first and second ends,

said pivotable member (**15**) being operatively connected to said operator member (**8***a*) at said first end,

right and left operator levers (**9***a*, **9***b*) pivotable on axes aligned to one another and adapted to operate said pivotable member (**15**) and said right and left traveling means (**1***a*, **1***b*) individually, said operator levers being arranged parallel to one another and pivotable on the axes substantially parallel to the pivotal axis (Y) of said pivotable member (**15**),



a pair of cam follower means (a, a') connected to said second end of said pivotable member (**16**) to be opposed to one another relative to said pivotal axes (X) of said operator levers (**9***a*, **9***b*) and adapted to be oscillatable respectively on axes (**Z1**, **Z2**) substantially parallel to the axis (Y) of said pivotable member (**15**), and

cam means (b, b') connected to said right and left operator levers (**9***a*, **9***b*) respectively and adapted to act on said cam follower means (a, a') to move said speed changing means (**8**) to the position to provide the low speed drive when said operator levers (**9***a*, **9***b*) are oscillated relative to one another during high speed running of the vehicle and to move said speed changing means (**8**) to the position to provide the high speed drive when said operator levers (**9***a*, **9***b*) are oscillated in the same direction.

4,355,694

TRANSMISSION CONTROL SYSTEM FOR A COMBINATION CAR SYSTEM

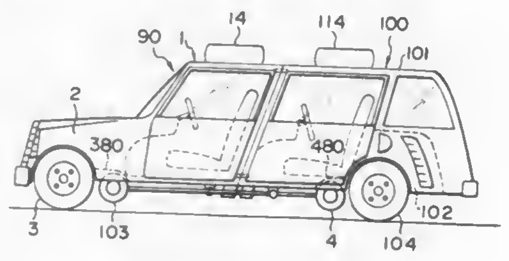
Isao Igarashi, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1980, Ser. No. 207,428

Claims priority, application Japan, Nov. 16, 1979, 54-158752

Int. Cl.^{3} B60D *7/00;* B62D *63/00;* B60K *26/04*

U.S. Cl. 180—14 R **11 Claims**



1. In a combination car system, comprising:

(a) a first car, capable of running independently, comprising a first pair of front wheels, a first pair of rear wheels, a first engine, and a first transmission which drivingly connects said first engine to said first pair of front wheels; and

(b) a second car, capable of running independently, comprising a second pair of front wheels, a second pair of rear wheels, a second engine, and a second transmission which drivingly connects said second engine to said second pair of rear wheels, and which is an automatic transmission, comprising a range switching valve, which can be set at least to N, D, L, and R ranges according to the position of said switching valve;

(c) said first car and said second car being couplable together into a coupled car which runs on said first pair of front wheels of said first car and said second pair of rear wheels of said second car, with said first pair of rear wheels of said first car and said second pair of front wheels of said second car being removed from road contact:

a transmission control system, comprising:

(c) an electrically operated servo device for positioning said switching valve to any one of said ranges;

(d) a first electrical switching system provided in said first car;

(e) a second electrical switching system provided in said second car;

and

(f) an electrical connecting system which can selectively provide control either by said first electrical switching system, when said first car and said second car are coupled together into said coupled car, or by said second electrical switching system, when said second car is running independently, to said electrically operated servo device so as to control it;

(g) whereby, when said first car and said second car are coupled together into said coupled car, the operation of said second transmission of said second car may be controlled from said first car by operation of said first electrical switching system, the controlling operation of said second electrically operated switching system being at this time unavailable.

4,355,695

ARTICLE RESTRAINING DEVICE

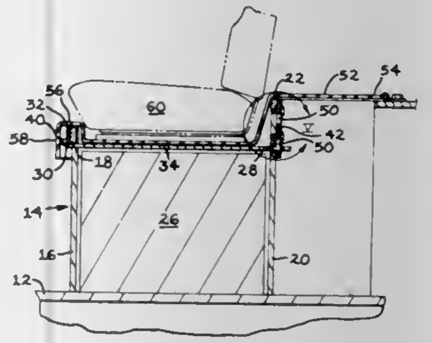
Edward V. Leskovec, Eastlake, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/01396, § 371 Date Oct. 20, 1980, § 102(e) Date Oct. 20, 1980, PCT Pub. No. WO82/01353, PCT Pub. Date Apr. 29, 1982

PCT Filed Oct. 20, 1980, Ser. No. 228,812

Int. Cl.^{3} B60K *1/04*

U.S. Cl. 180—68.5 **19 Claims**



1. An article restraining device (**10**) for a removable component (**26**) of a vehicle having a main frame (**12**), comprising:

a cover (**52**) attached to said vehicle and movable to an operating position overlying said removable component (**26**);

an enclosure frame (**14**) having a pair of spaced upwardly extending frame members (**16**,**20**) connected to said main frame (**12**), one of said pair having a first aperture (**30**) disposed therein and the other of said pair having a second aperture (**28**) disposed therein; and

restraining means (**34**) movable to a restraining position at which it passes through said apertures (**30**,**28**) and overlies said removable component (**26**), said restraining means (**34**) permitting movement of said cover (**52**) to said operating position only when said restraining means (**34**) occupies said restraining position.

4,355,696

AXLE SUSPENSION FOR THE DRIVEN AXLE OF A ROAD VEHICLE

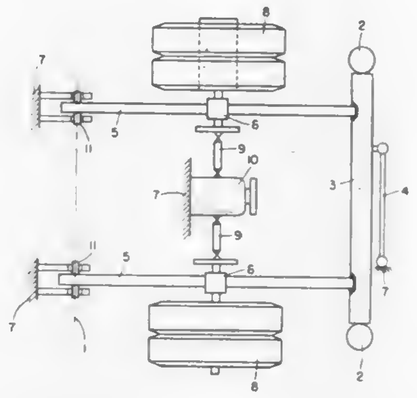
Hans Moll, Gräfelfing, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,299

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932685

Int. Cl.^{3} B60G *9/002*

U.S. Cl. 180—73 TL **6 Claims**



1. In an axle suspension for the driven axle of a road vehicle such as a motor bus, including a subframe arranged between the drive wheels and the vehicle body of said vehicle; the improvement comprising:

(a) said subframe including a torsionally flexible, flexurally rigid cross support member; and a pair of axial trailing links, one end of each of said links being rigidly connected in a cranklike manner proximate each end of said member;

(b) means supporting the free ends of said axial trailing links on the vehicle body for pivotal movement about a transverse axis; and a track bar to provide support for said subframe in the vehicle body;

(c) wheel bearings for said drive wheels being arranged approximately in the central region of said axial trailing links;

(d) and a differential being fastened to said vehicle body; and double cardan shafts connecting said differential with said wheels.

4,355,697

VEHICULAR STEERING AND SUSPENSION SYSTEM

Nicolae V. Orlandea, Davenport, Iowa, and Jack C. Wiley, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Filed Sep. 2, 1980, Ser. No. 183,536

Int. Cl.^{3} B60K *17/30*

U.S. Cl. 180—261 **23 Claims**

1. In a vehicle having a frame, a differential, a pair of power shafts which extend coaxially and laterally outward from opposite sides of said differential, and a pair of drive wheels, a steering and suspension system comprising:

(a) an elongated gear case pivotally supported at one end on each of said power shafts;

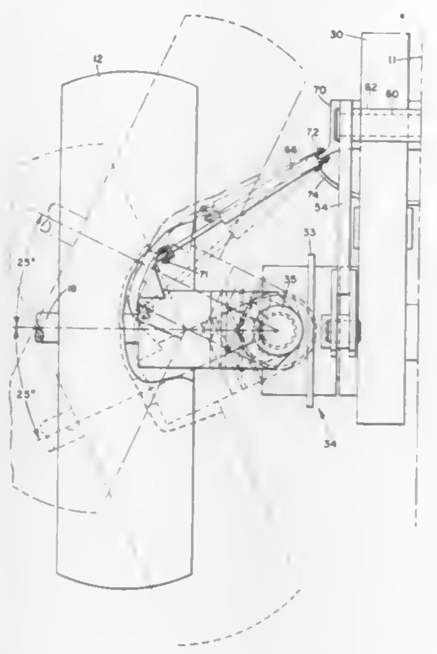
(b) a gear train contained within each of said gear cases including an input gear fixed to said power shaft, an output gear, and an intermediate gear meshing with both said input and said output gear;

(c) a drive shaft extending laterally outward from a second end of each of said gear cases, said drive shaft supporting said output gear;

(d) a first support member movably mounted to said second end of each of said gear cases, said support member coaxially aligned with said drive shaft;

(e) a second support member pivotally mounted on each of said first support members for movement about a steering axis;

(f) support means for maintaining the steering axis in a fixed direction with respect to said frame, said support means including first and second arms, said first arm extending outward from said first support member and said second arm pivotally connected at its ends to said first arm and to said frame;



(g) an axle connecting each of said drive wheels to each of said respective second support member;

(h) bevel gears adjacently mounted on an end of each of said drive shafts and on an end of each of said axles;

(i) a pair of idler gears rotatably mounted on each of said first support members for rotation concentric about said steering axis, said pair of idler gears meshing with said bevel gears; and

(j) extending and retracting control means joining each of said second support members to said frame for moving said second support members about said steering axis and thereby angularly turning said drive wheels with respect to said frame.

4,355,698

BRAKE AND TRANSMISSION CONTROL

Charles A. Barnes, Bellevue; Dean E. Davis, Battle Creek, and Carl L. Wykoff, Jackson, all of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jul. 21, 1980, Ser. No. 170,360

Int. Cl.^{3} B60T *7/02*

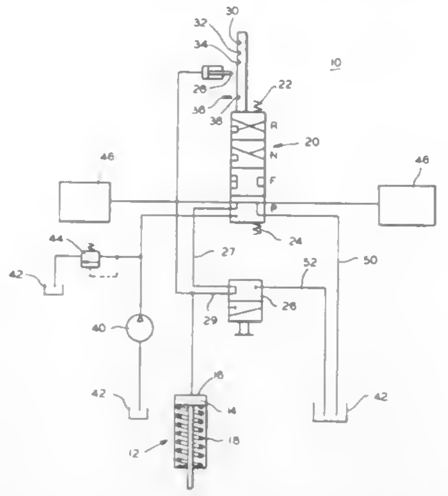
U.S. Cl. 180—273 **4 Claims**

1. A brake and transmission control system for a vehicle having a spring applied fluid pressure released brake, a fluid pressure controlled transmission including a control valve with a neutral position and at least one operating position and biased to the neutral position, and a source of pressurized fluid, comprising

a two position valve having an operating position and a drain position,

a fluid pressure actuated detent arranged to hold the control valve in the operating position when energized, and

conduit means connecting both said brake and said detent to be energized from said source when said two position valve is in the operating position and when said two position valve is then moved to its drain position said detent is deenergized causing said control valve to move from the operating position to the neutral position and remain there until it is moved manually.



4,355,699

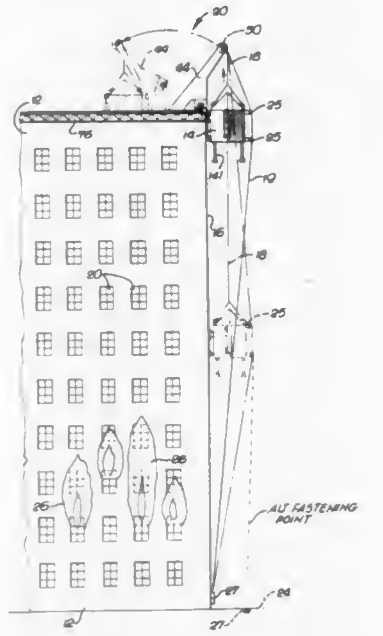
EMERGENCY RESCUE SYSTEM

Charles P. Smith, Jr., 336 N. Palm Dr., Beverly Hills, Calif. 90210

Filed Nov. 24, 1980, Ser. No. 209,708

Int. Cl.^{3} A62B *1/02*

U.S. Cl. 182—12 **16 Claims**



1. An emergency rescue system for use in rescuing persons from a multistory building, comprising:

a movable carriage mounted at the top of the building for lateral movement with respect to an exterior face of the building, said carriage including a base having first and second sections movable laterally with respect to each other and respectively supporting a pair of davits extending upwardly generally in parallel for pivoting movement between an operative position overhanging the exterior face of the building and an inoperative position pivoted away from the exterior face of the building, each of said davits including a pulley mounted near its upper end;

a gondola for suspension alongside the exterior face of the building;

a pair of suspension cables extending respectively between said first and second sections of said movable carriage over said pulleys on said davits and connected to said gondola whereby said gondola is suspended from said carriage;

means on said carriage for adjusting the length of said suspension cables for adjusting the elevational position of said gondola;

means for urging said gondola into bearing engagement with the exterior face of the building; and

means for laterally moving said carriage to adjust the lateral position of said gondola;

said carriage further including means for driving said first and second sections of said carriage base relatively away from each other to spread said davits and facilitate swinging movement of said davits between said operative position with said gondola overhanging the exterior face of the building and said inoperative position with said gondola on top of the building, and for driving said first and second sections back toward each other.

4,355,700

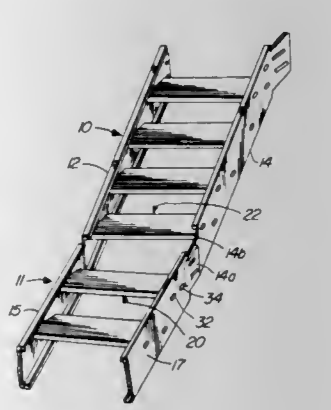
MODULAR STAIRWAY SYSTEM FOR INSTALLATION ON STRUCTURES HAVING NON-LINEAR WALLS

Wesley D. Matthews, and Floyd G. Matthews, both of R.R. 1, Mechanicsburg, Ill. 62545

Filed Feb. 17, 1981, Ser. No. 235,089

Int. Cl.^{3} E06C *9/02;* E04F *11/00*

U.S. Cl. 182—83 **7 Claims**



1. A modular stairway system for structures having non-linear walls comprising:

a plurality of first stringer means each having first connecting means integral therewith at opposite ends thereof for joining the first stringers;

a plurality of second stringer means horizontally spaced from and substantially parallel to the first stringer means each having adjustable second connecting means integral therewith at opposite ends thereof for adjustably joining the second stringers such that the combination of first and second stringers conform to the curvature of the structure;

a plurality of stairs horizontally interposed between the first and second stringers;

mounting means for securing the first and second stringers to the structure;

whereby the stairway system may be easily installed on structures having non-linear walls.

4,355,701

LADDER

Agnew W. Nicholson, 21 Nipigon Ave., Willowdale, Ontario, Canada

Filed Aug. 18, 1980, Ser. No. 178,909

Int. Cl.^{3} E06C *9/10*

U.S. Cl. 182—97 **13 Claims**

1. A lightweight, compact, marine ladder assembly including:

a ladder member and a supporting bracket to mount the assembly on the stern of a marine vessel,

said ladder member comprising an elongated tubular pole having first and second ends,

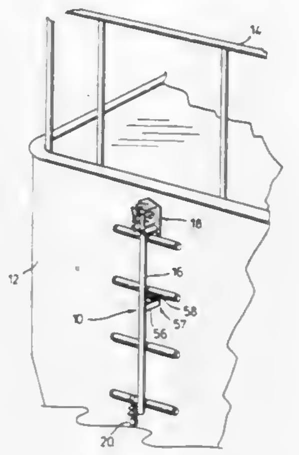
a plurality of spaced apart tubular rung members extending transversely of said tubular pole between said first and second ends, said rung members being mounted on said tubular pole at the middle of their axial length such that each rung member forms a pair of tubular rungs extending transversely of said tubular pole, in opposite directions,

said rungs including grip means over at least a portion of their outer surface to counteract hand and foot slippage,

a stand-off on said tubular pole adapted to abut said stern and support said ladder member outwardly of the vessel,

a tubular hinge member extending transversely of said pole on said first end,

said supporting bracket comprising a base wall adapted to be mounted on the stern, and a pair of spaced apart bracket arms extending substantially perpendicularly of said base wall, said bracket arms having opposed facing inner walls, and each of said bracket arms including an arm wall defining a curved pivoting and load bearing surface for engagement with said tubular hinge member, to pivotally mount said ladder member in said supporting bracket for movement between a raised and a lowered position of the ladder member and to support the ladder member and a load on the rungs thereof, when said ladder member is in the lowered position extending generally downwardly from the supporting bracket, and guide means on said tubular hinge member to prevent lateral movement of the hinge member out of engagement with said arm walls.



4,355,702

METHOD AND APPARATUS FOR INJECTING VISCOUS MATERIALS

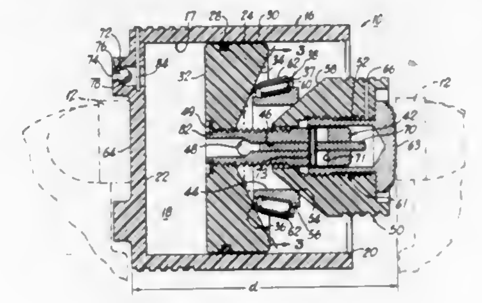
William E. Shultz, 239 N. Main St., Lombard, Ill. 60148

Continuation of Ser. No. 115,062, Jan. 24, 1980, Pat. No. 4,345,667. This application Oct. 13, 1981, Ser. No. 310,539

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.^{3} F01M *11/00;* F16N *3/10*

U.S. Cl. 184—1 D **5 Claims**



1. An assembly for packing wheel bearings and the like comprising:

a cylindrical housing including a first closed end and a second open end;

a piston adapted to be inserted into said housing said piston further including a first planar side and a second concave side;

a stem secured to said piston and the like from said first side of said piston to said second means for communicating grease and the like;

a spool slideably mounted on said stem including a conical end; and

said bearing being positioned between said second side of said piston and said conical end of said spool during said packing.

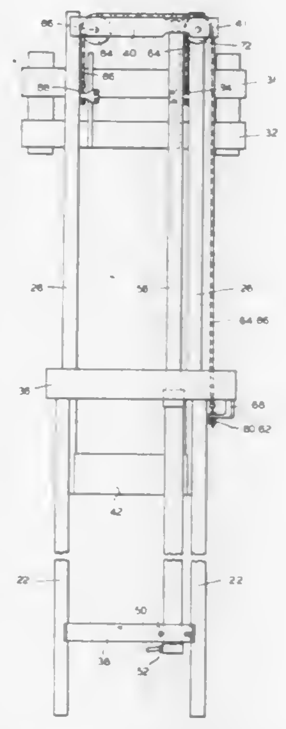
4,355,703
UPRIGHT FOR LIFT TRUCK

Richard J. Bartow, Athens, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 17,779, Mar. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 842,765, Oct. 17, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,292

Int. Cl.^{3} B66B *9/20*

U.S. Cl. 187—9 E **29 Claims**



1. In an upright structure for lift trucks and the like having one upright section including transversely spaced vertical rails, a telescopic upright section including transversely spaced vertical rails mounted for elevation relative to said one section and elevatable load carrier means mounted for elevation relative to said telescopic section, the improvement comprising a sole asymmetric lift cylinder assembly mounted in the upright structure which is operatively connected to said telescopic upright section, first and second flexible lifting elements reeved on first and second wheel elements and operatively connected to said cylinder assembly, to said one upright section and to said load carrier means, one end of each flexible lifting element being secured a substantial distance outwardly of one side only of the cylinder assembly, the other end of the first flexible lifting element being secured to said load carrier means adjacent the adjacent side of the upright and the other end of the second flexible lifting element being secured to said load carrier means adjacent the opposite side of the upright, said cylinder assembly together with said first and second flexible lifting elements being adapted to elevate said load carrier means relative to the telescopic upright section and the latter section relative to the one upright section, the lift cylinder being located substantially at one side of the upright structure such that it projects at least partially into the area of interference by an adjacent vertical rail with the visibility of the operator from his normal line of sight through said adjacent vertical rail.

4,355,704
PROCEDURE FOR FINE POSITIONING AN ALTERNATING CURRENT LIFT

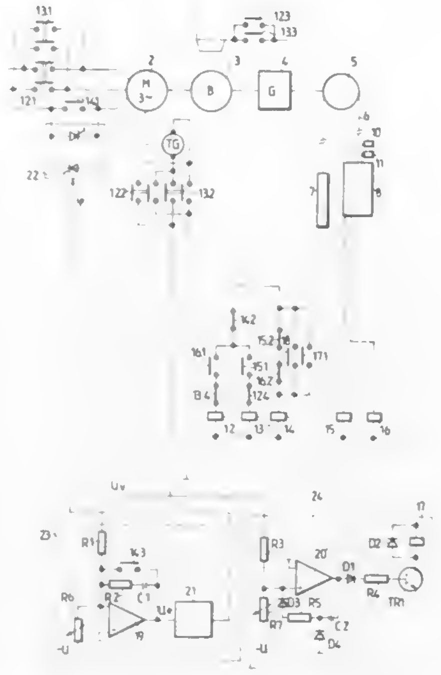
Heimo Mäkinen, Hyvinkää, Finland, assignor to Elevator GmbH, Zug, Switzerland

Filed Aug. 26, 1980, Ser. No. 182,409

Claims priority, application Finland, Aug. 28, 1979, 792674

Int. Cl.^{3} B66B *1/28*

U.S. Cl. 187—29 R **1 Claim**



1. An improved method for exact alignment of an elevator car with the floor level of a building, said elevator being driven by an alternating current drive motor connected to a speed control, the current in one or several phases of the elevator drive motor being choked with a controllable choke element, wherein the improvement comprises the steps of: governing elevator car control by a control unit receiving elevator car true velocity from a feedback control loop imparting fine adjustment to the elevator car running at a slow speed, stopping at a selected floor level within a required tolerance range; operating speed control of the drive motor only in a range in which counter-torque of said motor is positive, and when motor counter-torque is negative, controlling the velocity of the elevator car with the aid of a velocity measuring unit acting upon an elevator car brake.

4,355,705
GROUP CONTROL FOR ELEVATORS

Joris Schröder, Lucerne; Hans Bosshard, Würenlos; Jiri Kiml; Miroslav Kostka, both of Ebikon, and Walter Zimmermann, Buochs, all of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Nov. 24, 1980, Ser. No. 210,007

Claims priority, application Switzerland, Dec. 21, 1979, 11396/79

Int. Cl.^{3} B66B *1/18*

U.S. Cl. 187—29 R **16 Claims**

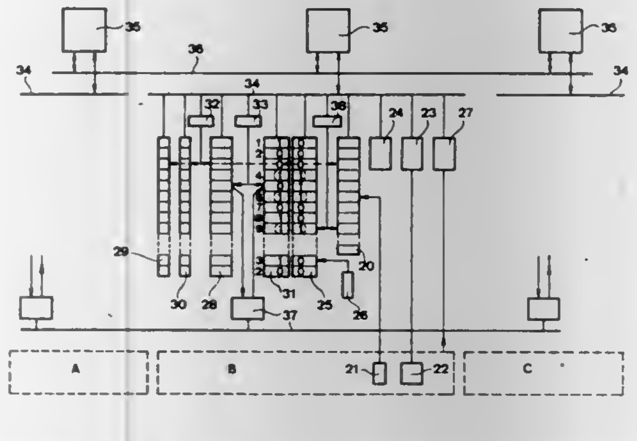
1. In a group control for elevators each having an elevator cabin and containing at least one storey call storage controllable by means of a storey call transmitter, cabin call storages for controlling by means of cabin call transmitters each cabin of the group, selectors operatively correlated with each elevator of the group indicating that storey at which the cabin still could stop, load measuring devices operatively correlated with each elevator cabin, a scanner device having at least one position for each storey, wherein each elevator is provided with a computer device possessing an adder which forms at least the distance between a considered storey and the selector position, the number of intermediate stops to be expected within such distance based upon the prevailing cabin and allocated storey calls as well as the momentary cabin load, a time-proportional

sum corresponding to the servicing capability of a cabin of the group with respect to the considered storey, and at least one comparison device by means of which the cabin having the lowest servicing costs corresponding to the smallest previously computated loss time and therefore the optimum servicing capability can be allocated to the considered storey, the improvement which comprises:

each elevator being provided with a computer device for counting the number of allocated storey calls and one of a number of cabin calls between a selector position and the considered storey;

each elevator further being provided with a device which stores the momentary operating state of the elevator cabins;

the computer device being provided with a subtractor unit for forming a difference from the number of said allocated storey calls multiplied by a number of passengers expected to enter the elevator cabin and the number of cabin calls multiplied by a number of passengers expected to exit from the elevator cabin;



said difference and a momentary operating state of the elevator cabin being infeedable as a further summand to the adder of the computer device;

the scanner device being connected with the computer device which for each position of the scanner device forms the sum corresponding to the servicing costs of a cabin with respect to a real or imaginary storey call of such position;

a storage device connected with the computer device and the scanner device;

said storage device can be filled by means of said scanner device; and

said storage device receiving the correlations of the momentarily most optimumly employable cabin having the lowest servicing costs for the relevant position of the scanner device.

4,355,706
BICYCLE REAR BRAKE MOUNTED WITH SPROCKET WHEEL

Sheang Y. Pan, 5, Alley 146, Lane 114, Yen Huan E. Rd., Fong Yuan, Taiwan

Filed Oct. 20, 1980, Ser. No. 198,758

Int. Cl.^{3} B62L *3/02;* **F16D** *55/16*

U.S. Cl. 188—24.11 **2 Claims**

1. A bicycle rear brake mounted with a sprocket wheel comprising:

a hub barrel member defining a first axial hole therein, said barrel having a narrower central neck portion and two wider end portions, a first end portion of the two end portions being provided with a first larger space which communicates axially with the outside and said first axial hole, the inner surface of the first portion slightly sloping in the axial direction to form a cone-shaped space, located between the cone-shaped space and the neck portion being a first bearing surface which has its axis aligned with that of said first axial hole; a second end portion of the two end portions being provided with a second larger space which communicates axially with the outside and said first axial hole, provided between the second larger space and the neck portion being a second bearing surface which has its axis aligned with that of said first axial hole, the outer surface of said second end portion being threaded, and defining a first annular groove and a slot, said annular groove being located between said neck portion and said threaded end, said slot intersecting said first annular groove;

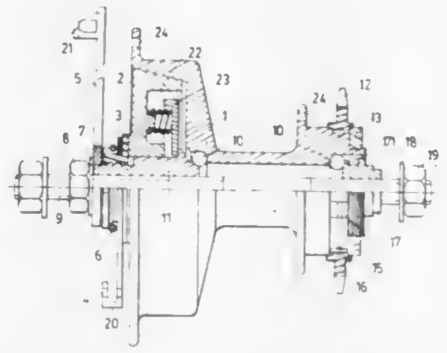
a pawl member having a second groove thereon corresponding to the first annular groove, the bottom of the pawl member being rotatably inserted in the slot by fixing a ring spring around the first annular groove and the second groove, the pawl member being so sustained that the pointed end of the pawl member may protrude out of the periphery of the first annular groove;

a sprocket wheel having an inner annular surface thereof provided with a ratchet which cooperates with the pawl member so that the sprocket wheel can drive or release the hub barrel;

means for hindering the movement of the sprocket wheel along the axial direction of the hub barrel;

an axle having two threaded end portions;

a first bearing cap member defining a second axial opening therein, the inner surface of the first bearing cap member being threaded so that the first bearing cap member can be threadably engaged to the axle and cooperate with the second bearing surface to form a first ball race;



a second bearing cap member defining a third axial opening therein, an end portion thereof being provided with a pocket, the outer surface of the other end portion thereof being threaded, the central portion thereof being provided with a block, the inner surface of the second bearing cap member being threaded so that the second bearing cap member can be threadably engaged with the axle and the pocket thereof can cooperate with the first bearing surface to form a second ball race;

a spring stop member defining an opening therein whose shape corresponds to the block so that the block can hinder the spring stop member from rotating around the axle;

a brake cone member defining an axial opening therein, said opening having a shape corresponding to the block so that the block can hinder the brake cone member from rotating around the axle, and a spring holder being provided therein for holding a spring so that as the brake cone member is pressed against the cone-shaped space of the hub barrel the spring is compressed against the spring stop member, such that upon release of the pressure, the brake cone member is returned to its original position, by the return force of the compressed spring;

a brake cone driving member defining an axial hole, the inner surface thereof being threaded for engagement with the second bearing cap to press against the brake cone member; and

a brake arm member which can move the brake cone driving member back and forth along the axle.

4,355,707
DISC BRAKE WITH QUICKLY CHANGEABLE PADS

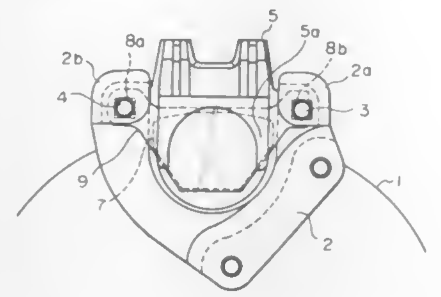
Kazuo Saito, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Oct. 15, 1980, Ser. No. 197,326

Claims priority, application Japan, Oct. 20, 1979, 54-145234[U]

Int. Cl.³ F16D *65/12*

U.S. Cl. 188—73.32 **3 Claims**



1. A disc brake comprising a holder adapted to be secured to a non-rotatable part of a vehicle and having two arm portions spaced in the direction of the circumference of a rotatable disc, said arm portions respectively straddling the outer circumferential edge of the disc, two guide pins respectively extending in the direction of the axis of the disc, each of said guide pins having a first portion and further having a second portion extending from one end of the first portion, the opposite ends of the first portion of each of the guide pins being supported on the respective arm portions of the holder, a caliper means slidably supported on said second portions of the guide pins, a pair of friction pads disposed on opposite sides of the disc and engaged by said caliper means, said friction pads each having a bifurcated end slidably supported on the intermediate portion of the first portion of one of the guide pins and the other end being slidable on the other of said pins, and the other of said pins being removable axially thereof for dismounting the friction pads from the disc brake, said arm portions being open radially inwardly of the disc for permitting removal of the pads.

4,355,708
DISC BRAKES

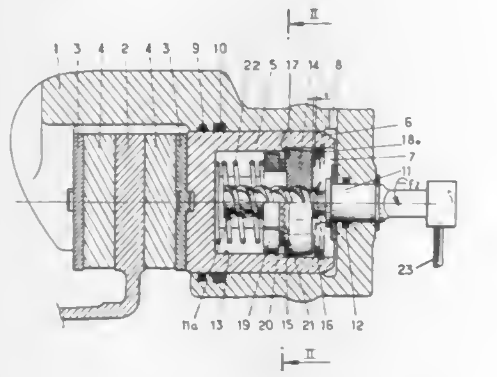
Robert P. Papagni, St. Remy-les-Chevreuse, France, assignor to S. A. Automobiles Citroen and S. A. Automobiles Peugeot, both of Paris, France

Continuation of Ser. No. 961,500, Nov. 17, 1978, abandoned. This application Jul. 30, 1980, Ser. No. 173,455

Claims priority, application France, Nov. 23, 1977, 77 35976

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—196 D **2 Claims**



1. In a disc brake wherein a yoke straddling a disc forms a cylinder in which a hollow piston with an open end remote from the disc and a closed end proximal to the disc is axially displaceable under fluid pressure toward said disc to clamp the latter between a pair of friction linings respectively carried by the piston and by the yoke, there being further provided a mechanical brake actuator including a rotatable large-pitch screw extending axially within the cylinder and engaging a nut inside said piston adjoining an axially shiftable locking ring nonrotatably secured to the piston, said nut and said locking ring having confronting faces formed with interengaging first and second ratchet teeth, rotation of said screw in a predetermined direction causing an axial shaft of said nut toward said disc with entrainment of said piston, fluidic displacement of said piston toward said disc with said screw stationary causing relative rotation of said nut and said locking ring with compensation of wear of said linings by a realignment of their ratchet teeth,

the improvement wherein said locking ring is separated from the closed end of said piston by a compression spring tending to maintain said confronting faces in contact with each other, said piston being provided with abutment means enabling limited relative axial displacement of said nut between two positions separated by an operating clearance, said screw being provided with means preventing axial displacement thereof relative to said yoke in all positions of said piston, said abutment means comprising a first ring on said piston engaged by said nut upon rotation of said screw for axially entraining said piston and a second ring engaged by said nut upon fluidic displacement of said piston for axially entraining said nut, said rings being axially spaced by a distance greater than the axial thickness of said nut.

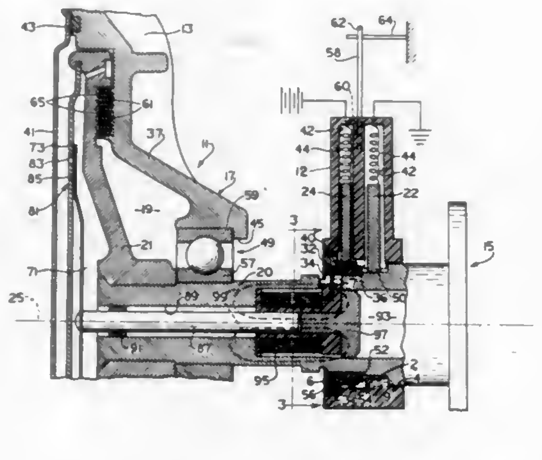
4,355,709
VISCOUS FAN DRIVE WITH SELF-SUPPORTING BRUSH HOLDER ASSEMBLY

Gerard M. Light, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 9, 1980, Ser. No. 167,086

Int. Cl.³ F16D *35/00, 43/25;* **H01R** *39/38*

U.S. Cl. 192—58 B **25 Claims**



1. A self-supporting brush holder assembly for transmitting power to a rotatable commutating ring disposed on the cylindrical outer surface of a shaft assembly comprising a first portion having a generally C-shaped concave surface and a second portion having a generally C-shaped concave surface which is adaptable to mate with said generally C-shaped concave surface of said first portion to define an annular surface defining a cylindrical opening having its longitudinal axis adapted to be disposed coaxial to said axis of rotation, said cylindrical opening defined by said annular surface being adapted to surround said cylindrical outer surface of the shaft with said annular surface being disposed contiguous to the cylindrical outer surface of said shaft and supporting said first and second portions on the shaft to prevent radial movement between the shaft and said first and second portions, channel means located on one of said first and second portions and disposed in a generally radial direction relative to the axis of rotation, brush means located in said channel means and being biased in a radially inwardly direction to engage with the commutating ring located on the shaft, a surface projection disposed on one of said annular surface or said cylindrical outer surface of the shaft and an indentation disposed on the other of said annular surface or the cylindrical outer surface of the shaft, said projection cooperating with said indentation to positively locate said brush holder relative to the shaft and prevent movement in the axial direction therebetween.

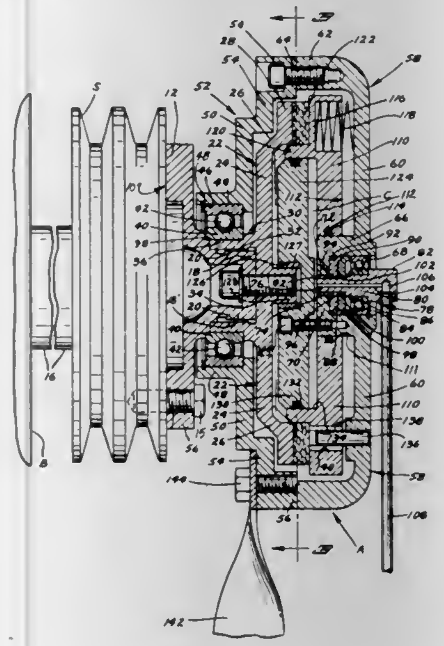
4,355,710
SPRING ENGAGED FLUID RELEASED FAN CLUTCH FOR A LIVE SHAFT

Hugh K. Schilling, St. Paul, Minn., assignor to Horton Industries, Inc., Minneapolis, Minn.

Filed Aug. 25, 1980, Ser. No. 180,846

Int. Cl.³ F16D *13/44, 25/063*

U.S. Cl. 192—91 A **11 Claims**



1. A spring engaged fluid released fan clutch for a live shaft comprising:

(a) a sheave for connection with a live shaft,
(b) means connecting said sheave to a friction disc,
(c) a first outer shell portion,
(d) means rotatably mounting said first outer shell portion on said connecting means,
(e) a second outer shell portion connected to said first outer shell portion,
(f) an annular piston, having a friction facing mounted thereon,
(g) means slidably mounting said piston on a hub connected to and within said second outer shell portion,
(h) a cylinder plate spaced from said piston and forming a cylinder cavity therebetween,
(i) means rotatably mounting said cylinder plate on said friction disc,
(j) means connecting said hub of said second outer shell with said cylinder plate,
(k) means rotatably mounting said second outer shell portion on fluid introducing means,
(l) fan blades connected to said first shell portion, radially and directly adjacent of said means rotatably mounting said first outer shell,
(m) a multiplicity of springs,
(n) means mounting said springs on said piston in pressure contact with said second outer shell portion thereby urging said friction facing on said piston into pressure contact with said friction disc whereby said shell portions and said blades thereon rotate with said sheave,
(o) means for supplying fluid pressure to said fluid introducing means and into said cylinder cavity whereby said piston is moved from said cylinder plate and said friction facing thereon is moved out of contact with said friction disc against the urging of said spring whereby said shell portions and fan blades thereon cease to rotate.

4,355,711
BANK NOTE DEPOSITING DEVICE FOR A TRANSACTION MACHINE

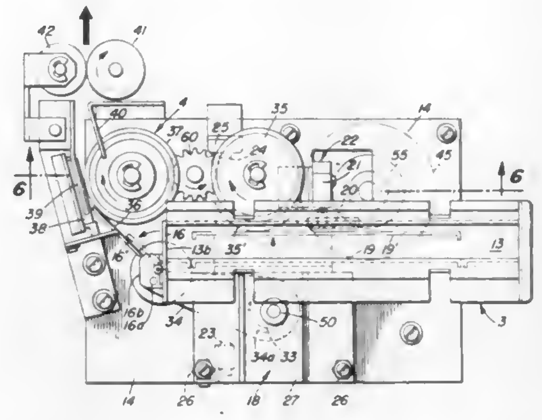
Minoru Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 6, 1980, Ser. No. 147,281

Claims priority, application Japan, May 15, 1979, 54-59299

Int. Cl.³ G07F *7/04*

U.S. Cl. 194—4 C **13 Claims**



1. A bank note depositing device for a transaction machine comprising:

a cabinet having a depositing inlet through which at least one bank note is deposited into said transaction machine;
a storing means positioned within said cabinet and adjacent said depositing inlet for temporarily storing the bank notes entering said machine through said depositing inlet, said storing means having an oulet through which said notes are discharged;
a discharge roller means for discharging the notes from said storing means, said discharge roller means movable between a retracted position our of contact with said notes and an extended discharging position in contact with said notes;
a support member positioned opposite said roller means on the opposite side of said notes, said support member movable between a retracted position away from said discharge roller means and an extended discharge position toward said roller means to urge said notes into contact with said roller means; and,
said storing means comprising a closure means positioned adjacent said outlet for opening and closing said outlet.

4,355,712
APPARATUS FOR FEEDING PRODUCTS TO A WORK STATION

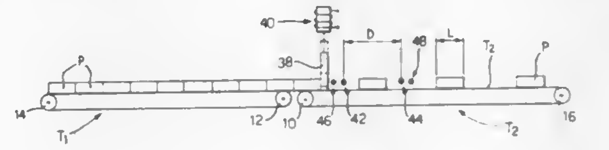
Carlo L. Bruno, Oundle, England, assignor to Alisyncro S.a.s. di Bruno & C., Turin, Italy

Filed Mar. 10, 1980, Ser. No. 128,598

Claims priority, application Italy, Mar. 29, 1979, 67656 A/79

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—460 **6 Claims**



1. Apparatus for feeding products in mutually spaced relation to a work station such that successive products are received thereby at substantially the same point of successive working cycles of the work station, said apparatus comprising:

(a) a first conveyor on which said products are received to form a longitudinal row thereupon in which adjacent products are touching,

(b) a second conveyor aligned with said first conveyor and having a loading end located adjacent a discharge end of said first conveyor, the second conveyor being arranged to feed products received from said first conveyor to said work station,

(c) first drive means selectively operable to advance the first conveyor at a first speed V_1 or at a second speed V_2, greater than the first speed V_1,

(d) second drive means operable to advance the second conveyor at a speed V_3 defined by the expression:

$$V_3 = V_M P_T / L$$

where:

V_M is the mean value between the said first and second speeds V_1, V_2 of the first conveyor,

L is the length of a said product, and

P_T is the value of the spacing between said products when located on said second conveyor at theoretical desired positions appropriate to cause the products to be successively fed to said working station at the same desired point of successive said working cycles thereof,

(e) a first sensor unit and a second sensor unit each arranged to detect the presence of a product at respective locations along said second conveyor; the first said sensor unit being positioned upstream of the second sensor unit and said locations being spaced from each other by a distance D defined by the expression:

$$D = L + 2(\Delta p/2)$$

where $\Delta p/2$ is equal to the maximum permissible offset between the actual position of a product on the second conveyor and its said theoretical desired position thereon; and

(f) control means operative to sample said sensor units at a frequency dependent on the speed of the second conveyor with each successive sampling taking place at the moment at which each successive product would, if in its said theoretical desired position on the second conveyor, be disposed midway between the two said sensor units, the said control means being arranged to control said first drive means to advance the first conveyor at its first speed V_1 when the second sensor unit detects the presence of a said product at a said moment of sampling and to advance the said first conveyor at its second speed V_2 when the first sensor unit detects the presence of a product at a said sampling moment.

4,355,713

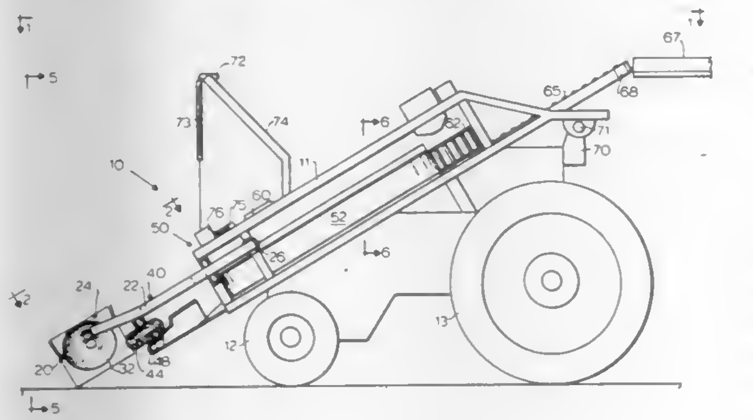
DEVICE FOR LIFTING AND LOADING BOXES AND CARTONS, ESPECIALLY FROM AN AGRICULTURAL FIELD

Richard E. Adam, 914 E. Hermosa, Santa Maria, Calif. 93454

Filed Mar. 2, 1981, Ser. No. 239,679

Int. Cl.³ B65G ***65/02***

U.S. Cl. 198—514 15 Claims



1. Apparatus for lifting filled parallelepiped cartons with vertical side walls from an argicultural field, or the like, including in combination:

a wheel-supported main frame,

a pickup device at the forward end of said frame comprising a pair of facing discs supported for rotation on two generally vertical planes that converge rearwardly and downwardly, said discs being spaced apart from each other a distance such that at their forward and upper portions they are further apart than the width of the carton to guide it into the space between them and, later, to enable release from them, and at their rear and lower portions they are slightly closer together than the width of the carton, to grip it,

said discs having high friction faces for engaging said carton side walls,

first driving means supported on said frame for rotating said discs,

a gripping device supported by said frame to the rear of said pickup device and comprising a substantially coplanar pair of rotatable yieldable tired wheels facing each other and inclined rearwardly upwardly and slightly closer together than the width of the carton, the tires providing high friction surfaces for engaging the carton side walls and yielding to prevent damage to the carton while gripping them firmly, the gripping device being located so that it positively takes away the carton from the pickup device and supports it while conveying it rearwardly and upwardly,

second driving means supported on said frame for rotating said wheels so that their facing surfaces move upwardly and rearwardly, and

conveyor means on said frame for receiving said carton from said gripping means and moving the carton upwardly and rearwardly therefrom.

4,355,714

BUCKET ELEVATOR

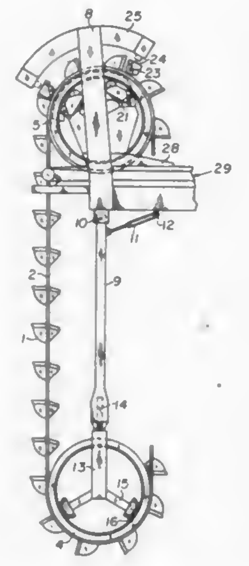
Rene Chever, Paris, France, assignor to Fives-Cail Babcock, Paris, France

Filed Sep. 13, 1977, Ser. No. 832,825

Claims priority, application France, Sep. 15, 1976, 76 27649

Int. Cl.³ B65G ***17/36***

U.S. Cl. 198—701 8 Claims



1. In apparatus for transporting material, including a support, two traction members, guide means for guiding said traction members on said support in respective, spacedly parallel, closed loops, drive means for simultaneously moving said traction members in said loops, a plurality of receptacles mounted between said traction members for receiving the material to be transported, and conveying means for further moving material transported by said receptacles, the improvement in said guide means which comprises:

(a) two pairs of wheels,

(1) the wheels of each pair being mounted on said support for rotation about respective axes, one of the axes being upwardly spaced from the other axis,

(2) said traction members being trained over respective wheels of each pair, and

(3) each of said wheels of one of said pairs having an annular rim portion bounding a free space about the associated axis in a radially outward direction; and

(b) at least one roller rotatably mounted on said support in each of said free spaces in rolling, pressure transmitting and frictional contact with said rim portions and supporting said wheels on said support.

4,355,715

ROLLER CONVEYOR PERMITTING LOW PRESSURE ACCUMULATION OF ARTICLES

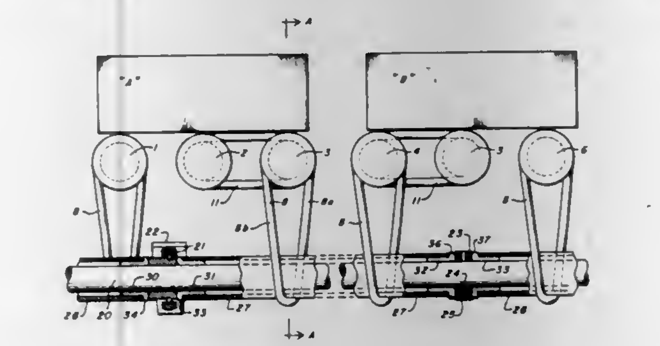
Derek C. Chorlton, Stafford, England, assignor to Conveyor Manufacturing Company, Ltd., England

Continuation of Ser. No. 966,587, Dec. 5, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,679

Claims priority, application United Kingdom, Dec. 9, 1977, 51476/77

Int. Cl.³ B65G ***13/06***

U.S. Cl. 198—781 9 Claims



1. In a roller conveyor including a frame, a plurality of article transporting rollers carried by said frame for free rotation therein and a drive shaft supported for rotation and extending adjacent said rollers and at an angle thereto, wherein the improvement comprises

a plurality of drive sleeves rotatably carried on the said drive shaft for frictional engagement therewith, said drive sleeves each having two end portions and a cylindrical surface extending between said end portions,

stop means located on and rotatable with said drive shaft to restrain said drive sleeves from axial movement along said shaft and to provide drive between the end portions of said sleeve and said stop means when the rollers are transporting an article, there being a running clearance between said end portions of said sleeves and said stop means when said driven rollers are not transporting an article,

a plurality of resilient drive belts looped between said sleeves and at least some of said rollers, being driven rollers, to transmit power from said drive shaft to said driven rollers, said belts acting directly on said sleeves and being free to move along the cylindrical surface of the said sleeves to take up a stable position thereon, and

each said sleeve being arranged to drive at least two said rollers.

4,355,716

CIGARETTE CASE

Alicia Berrio de la Fe, 63 Pi y Margall, Las Palmas de Gran Canaria, Spain

Filed Dec. 17, 1980, Ser. No. 217,456

Claims priority, application Spain, Dec. 17, 1979, 247.523

Int. Cl.³ B65D ***77/24;*** **A24F** ***15/00, 27/00***

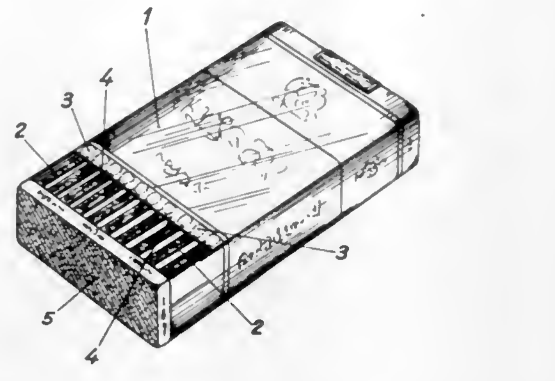
U.S. Cl. 206—90 1 Claim

1. A cigarette case, comprising:

a generally rectangular cigarette package having an inner lining and an outer wrapper;

a plurality of matches, each having an igniting head and a stem, said matches being arranged parallel each other and traversely spaced apart on a major side of said package;

said outer wrapper having a transverse slit, the heads of said matches being introduced into said slit and positioned



between said wrapper and said lining, each of said matches being affixed directly to said package proximate the end of said stem opposite said igniting head, with a major portion of said stem being exposed on the exterior of said package; and

an abrasive portion affixed to said package, whereby a selected one of said matches can be easily removed from said package and lighted on said abrasive portion.

4,355,717

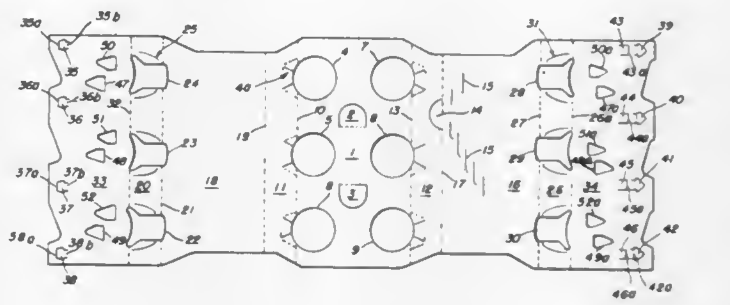
WRAPAROUND ARTICLE CARRIER WITH ADJUSTABLE GIRTH

James R. Oliff, Austell, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 7, 1982, Ser. No. 337,777

Int. Cl.³ B65D ***65/00, 75/00***

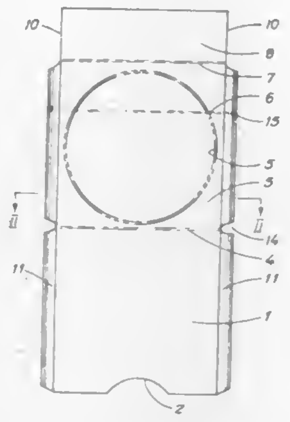
U.S. Cl. 206—140 7 Claims



1. In an article carrier of the wraparound type formed from a blank of generally rectangular configuration and having lap panels at its ends which are overlapped and secured together in flat face contacting relation in alternate relative positions of long and short overlaps to form tubular structures of different girths respectively, an improved interlocking means comprising a combination locking and retaining tab struck from one of said lap panels, a locking tab struck from the other of said lap panels, and a retaining tab struck from the other of said lap panels and disposed in spaced transverse alignment with said locking tab, whereby said combination locking and retaining tab is driven through the aperture defined by said retaining tab when said one lap panel is disposed in an outer overlapping position relative to said other lap panel and said locking tab is driven through the aperture defined by said combination locking and retaining tab when said other lap panel is disposed in an outer overlapping position relative to said one lap panel.

4,355,718
GRAMMOPHONE RECORD SLEEVE

Gabriella Hagelberg, Stockholm, Sweden, assignor to Bengt Petersson New Products Investment AB, Askim, Sweden
PCT No. PCT/SE79/00106, § 371 Date Jan. 11, 1980, § 102(e) Date Jan. 11, 1980, PCT Pub. No. WO79/01059, PCT Pub. Date Dec. 13, 1979
PCT Filed May 10, 1979, Ser. No. 187,836
Claims priority, application Sweden, May 11, 1978, 7805372; Japan, Nov. 13, 1978, 53-139746
Int. Cl.³ B65D *85/57, 27/20;* **A44B** *17/00, 19/14*
U.S. Cl. 206—312 **7 Claims**



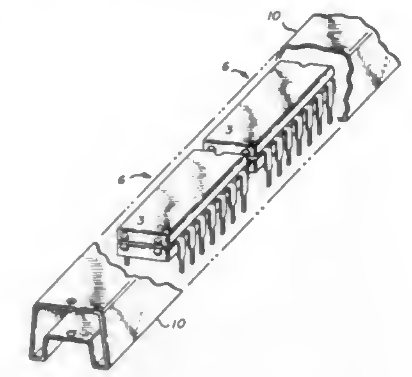
1. A grammophone record sleeve made of thin material, such as paper or cardboard, comprising: a first section, a second section connected to said first section along one edge thereof, said sections having such a substantially square shape and a size that they are adapted to substantially cover a record to be stored therebetween; said first section also having opposite, first edge portions perpendicular to said connecting edge; said second section having opposite, second edge portions essentially perpendicular to said connecting edge; and first and second locking means respectively provided at said first and second edge portions for connecting said sections, said locking means consisting of two stripes one running along one of said second edge portions of said first section and attached thereto and continuing along the corresponding edge portion of said second section and the other one running along the other of said second edge portion of said first section and attached thereto and continuing along the adjacent edge portion of said second section, said stripes being substantially unchanged in their crossection along their entire length and each carrying pairs of rims having widened portions at their free ends, said stripes being displaced so that the respective portions running along the edges of said first section are offset with respect to the respective portions running along the edge of said second section, so that one rim of each stripe located on said first section can be inserted and locked between the respective pair of rims of said second section and one of the respective rims of said second section can be inserted and locked between the pair of rims of said first section to thereby form a releasable connection between said sections.

4,355,719
MECHANICAL SHOCK AND IMPACT RESISTANT CERAMIC SEMICONDUCTOR PACKAGE AND METHOD OF MAKING THE SAME

Sally K. Hinds, Santa Clara; Peter M. Weiler, Palo Alto, and Robert R. Hewitt, Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Aug. 18, 1980, Ser. No. 179,146
Int. Cl.³ B65D *85/30;* **H05F** *3/02;* **H05K** *5/00, 3/00*
U.S. Cl. 206—334 **9 Claims**

1. In a ceramic package, adapted to hermetically house an electronic device, which is to be handled in plural numbers pursuant to testing and using wherein such handling may act to impact the devices and thereby chip said ceramic, the improvement comprising:

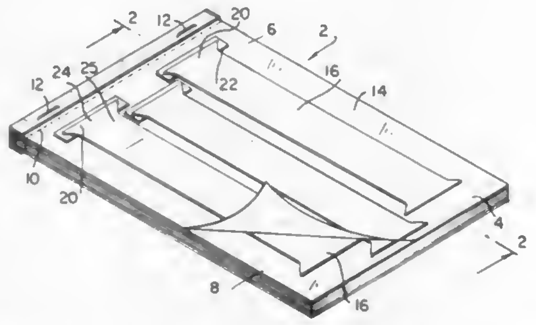
coating means comprising a non-conductive, heat-resistant, non-absorbent, resilient material located on said package to render it resistant to mechanical shock and impact,



whereby the incidence of chipping is reduced or eliminated.

4,355,720
PACKAGE FOR DISPENSING PRECUT TAPE SEGMENTS

Robert Hofberg, 866 Morefield Rd., Philadelphia, Pa. 19115; Bonnie D. Goldstein, 6647 Kindred St., Philadelphia, Pa. 19149, and Roy H. Wepner, 7 Quince Pl., North Brunswick, N.J. 08902
Filed Aug. 27, 1980, Ser. No. 181,882
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—460 **7 Claims**

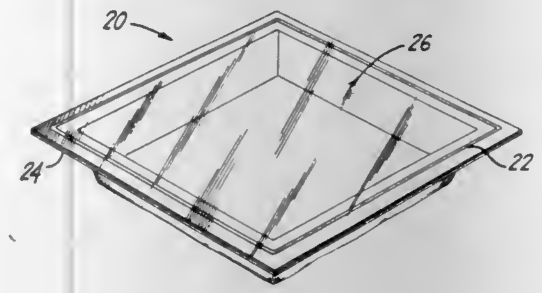


1. A package for storing and dispensing precut segments of tape with adhesive backing comprising: a plurality of pieces of sheet material having first and second ends and at least an upper surface with a smooth texture adapted to releasably retain tape with adhesive backing, said pieces of sheet material being releasably bound at said first ends of said pieces of sheet material and constructed and arranged to allow removal of one of said sheets from said package, and a plurality of elongated segments of tape with adhesive backing on a first face thereof releasably mounted to said upper surface of said sheets, said tape segments including at least a first end portion having no exposed adhesive material adapted to be manually grasped for removal of said tape segments from said pieces of sheet material.

4,355,721
PACKAGE FOR FOOD PRODUCTS

Jack E. Knott, II, Menasha; Matthew S. Koschak, and John P. Adams, both of Appleton, all of Wis., assignors to American Can Company, Greenwich, Conn.
Continuation of Ser. No. 38,187, May 11, 1979, abandoned. This application Jul. 30, 1980, Ser. No. 173,748
Int. Cl.³ B65D *85/72, 65/40, 81/18;* **B32B** *9/04*
U.S. Cl. 206—524.2 **16 Claims**

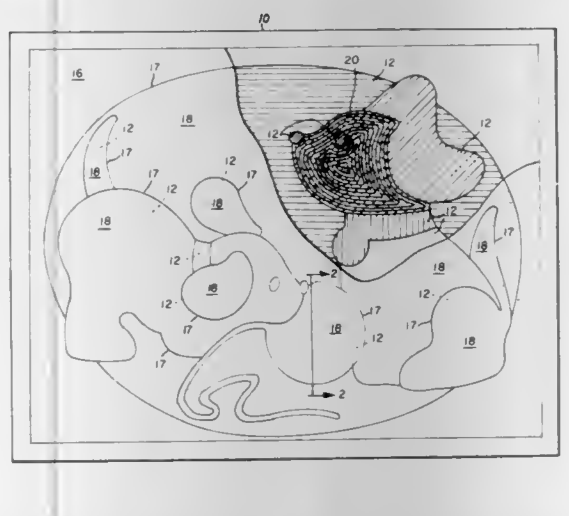
1. A heat sealed package for commercial sterilization and unrefrigerated storage of food products, said package comprising multi-layer polymeric material, the layer which forms the outside surface of the package being relatively permeable to moisture at temperatures of unrefrigerated storage, the layer which forms the inside surface of the package being relatively impermeable to moisture at the temperatures of unrefrigerated storage, being relatively permeable to moisture at temperatures of commercial sterilization, and being a heat sealable polymer



to produce a seal which will withstand commercial sterilization temperature, and an interior oxygen barrier layer consisting essentially of a vinyl alcohol polymer which is essentially free of acetal groups.

4,355,722
YARN COLORING PICTURE SET AND METHOD OF COLORING

Gary R. Lemmeyer, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 27, 1981, Ser. No. 228,871
Int. Cl.³ A01C *1/00;* **B65D** *69/00;* **B44C** *1/00;* **B32B** *31/00*
U.S. Cl. 206—575 **3 Claims**



1. A yarn coloring picture set comprising:

a board having a picture formed thereon, said picture comprising a plurality of colored areas, the edges of each of said colored areas closely adjoining like edges of others of said colored areas to substantially cover a major portion of said board;

a transparent adhesive layer covering a surface of said board;

a protective sheet cover releasably secured to said adhesive layer, said cover sheet having a die-cut picture imprinted thereon to form adjacent die-cut cover sheet sections, one such cover sheet section in registration with and substantially the same size and shape as each of said colored areas;

means for selectively removing said cover sheet sections to expose different parts of said adhesive layer;

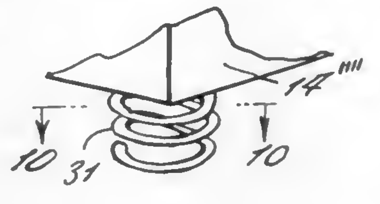
a supply of different color yarns; and,

a yarn pencil for applying said yarns from a spool disposed therein; and

means for applying said different colored yarns to said exposed parts of said adhesive layer, said applied yarns adhering to said adhesive to form a yarn colored picture.

4,355,723
SHIPPING CONTAINER WITH COIL SPRING SUPPORTS

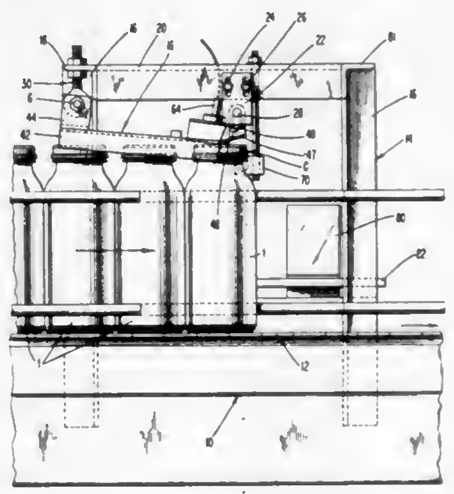
Fred M. Loeber, 1907 New Castle Ct., Arlington, Tex. 76013
Filed Apr. 29, 1980, Ser. No. 144,832
Int. Cl.³ B65D *90/16*
U.S. Cl. 206—599 **2 Claims**



1. A shipping container, for commercial carrier use, comprising, in combination, a box, an access door on said box for loading and unloading of goods therein, and said box being collapsible; said box including thermal insulation means, padding, and shock absorbing means consisting of compression coil springs affixed to an underside of pads mounted beneath said box, each said spring including a plurality of elliptical turns, each of which is thinned at diametrically opposite longitudinal ends, so as to be more resilient at said longitudinal ends.

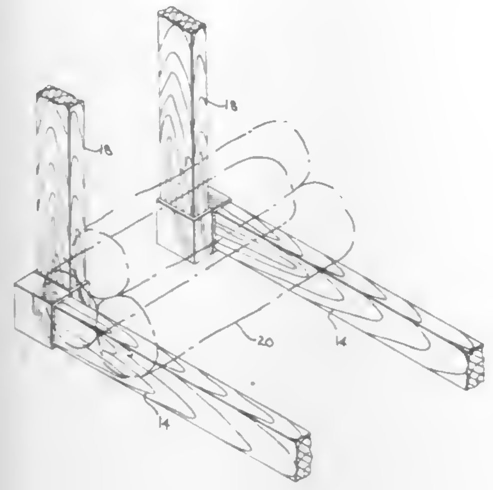
4,355,724
APPARATUS FOR SENSING DEPRESSIONS IN TOP PANELS OF CONTAINERS

Frank H. Erdman, Newtown Square, Pa., and William Ellis, Bradenton, Fla., assignors to Tropicana Products, Inc., Bradenton, Fla.
Filed Jun. 18, 1980, Ser. No. 160,498
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—529 **19 Claims**



1. In apparatus for detecting whether the top panel of a container cap is properly depressed as capped containers are conveyed along a travel path, said apparatus being of the type comprising a floating shoe disposed over the travel path and carrying a sensing element, said shoe including a reference portion arranged to be contacted by the caps to conform the shoe to the orientation of the cap, the improvement wherein said floating shoe includes guide flange means movable with said reference portion and extending generally fore-to-aft and arranged to be contacted by the caps to maintain a predetermined lateral alignment between said cap and said sensing element so that said sensing element is positioned over the same place on successive caps.

4,355,725
JOINT DEVICE FOR STACKING APPARATUS
Gerald A. Humphrey, Rte. 5, Box 798, Lake Geneva, Wis. 53149
Filed Mar. 20, 1980, Ser. No. 132,128
Int. Cl.^{3} A47F *7/00*
U.S. Cl. 211—49 R **4 Claims**

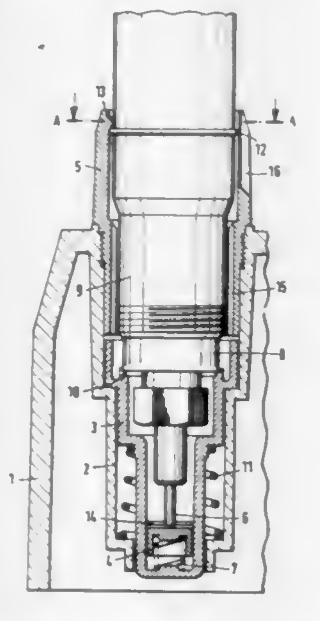


1. Apparatus for stacking firewood adjacent the ground comprising:

a pair of spaced elongated horizontal members of rectangular cross-section configuration positionable adjacent the ground and on which firewood is stacked to provide stability to said members;

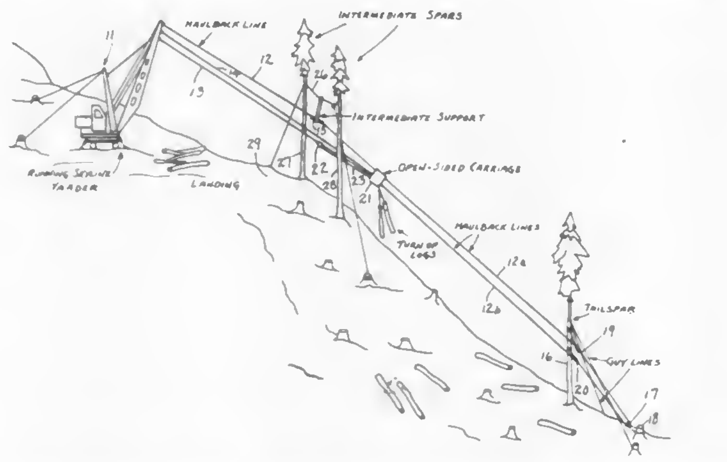
a joint device at the end of each of said spaced elongated members, said joint device consisting of a first tubular element having a rectangular cross-section receiving said horizontal member and a second tubular member secured to the side of said first tubular member and having a rectangular cross-section receiving a vertical member, said first and second elements being so joined as to present at least one flush exterior planar surface abuttable with the ground.

4,355,726
STAND FOR HOLDING AND SEALINGLY RETAINING INDIA INK DRAWING IMPLEMENTS
Otto Mutschler, Ludolf-Krehl-Str. 21, Heidelberg, Fed. Rep. of Germany (D-6900)
Filed Aug. 27, 1980, Ser. No. 181,947
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010862
Int. Cl.^{3} A47F *7/00*
U.S. Cl. 211—69.5 **8 Claims**



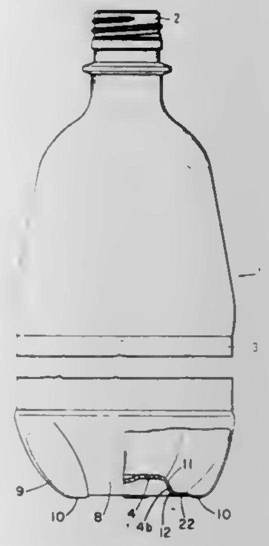
1. A stand for holding and sealingly retaining a plurality of India ink drawing implements each comprising a tubular drawing point, a grip having a front end to which the tubular drawing point is attached and an annular bead of the grip rearwardly of the front end, the stand including a like plurality of sleeves for holding the drawing implements and for sealingly retaining the implements to prevent India ink therein from drying, a tubular packing in each sleeve and surrounding the drawing point, the tubular packing having an annular sealing lip at an end thereof remote from the drawing point, a packing insert in the interior of the tubular packing has a plane face adjacent the drawing point, a tubular clamping element inserted in each sleeve and surrounding the grip, the clamping element being adjacent the packing and having inwardly projecting camming means, a first spring means biasing the packing insert to press the plane face thereof against the drawing point, and a second spring means biasing the annular sealing lip of the tubular packing into contact with the front end of the grip while engaging the annular bead of the grip with the camming means whereby the drawing implement is doubly sealed and retained.

4,355,727
INTERMEDIATE SUPPORT FOR A SKYLINE LOGGING SYSTEM
Cleveland J. Biller, Morgantown, W. Va., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Jan. 25, 1980, Ser. No. 115,538
Int. Cl.^{3} B66C *21/00*
U.S. Cl. 212—121 **15 Claims**



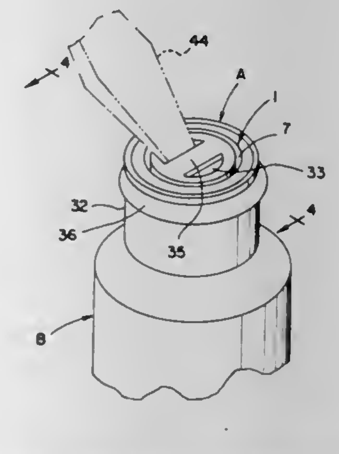
1. In a skyline cable system of the type including a load-supporting cable and a load carrying carriage having an open side and having supporting pulley means engaged on said cable, an intermediate supporting assembly comprising intermediate spar means provided with attachment means overlying an intermediate portion of said cable, suspension means supportingly engaged with said attachment means, support body means located below and substantially in vertical alignment with said suspension means, guide means on the support body means slidably and retentively receiving the load-supporting cable, elongated rail means rigidly connected to said support body means and spaced above and extending substantially parallel to said cable and being formed to engage with and elevate the carriage off of said cable as the carriage moves past said intermediate supporting assembly on said rail means, and said rail means being formed with a top surface simulating said cable, whereby the rail means serves the function of said cable and directly supports said carriage when said carriage passes said intermediate supporting assembly, and whereby said guide means causes said cable to pass smoothly over said intermediate supporting assembly.

4,355,728
SYNTHETIC RESIN THIN-WALLED BOTTLE
Akiho Ota, and Hiroaki Sugiura, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co. Ltd., Tokyo, Japan
Division of Ser. No. 101,172, Dec. 7, 1979, Pat. No. 4,301,933. This application Jan. 30, 1981, Ser. No. 229,832
Claims priority, application Japan, Jan. 26, 1979, 54-8580
Int. Cl.^{3} B65D *1/02*
U.S. Cl. 215—1 C **2 Claims**



1. A synthetic resin thin-walled bottle having a neck portion, a biaxially oriented body wall portion extending downwardly from the neck portion and a bottom wall portion connected to the lower extremity of said body wall portion through a body wall section which extends downwardly and inwardly to said bottom wall portion, the bottom wall portion of said bottle having an upwardly projecting rise having a conical lower portion and an annular basal portion connected to said section and said rise through a substantially planar annular non ground-contacting interconnect area, said section having spaced on the circumferential periphery thereof a plurality of rounded bulges projecting outwardly from said section, each of said bulges having an underside surface positioned more outwardly than said annular interconnect area, the underside surface of said bulges being annularly arranged and forming an outer ground-contacting surface for said bottle, said outer ground-contacting surface projecting downwardly from said interconnect area.

4,355,729
SINGLE SERVICE CHILDPROOF CLOSURE
Daniel J. Maguire, 323 W. Waverly Rd., Glenside, Pa. 19038
Filed Jan. 15, 1981, Ser. No. 225,306
Int. Cl.^{3} B65D *55/02*
U.S. Cl. 215—215 **7 Claims**



1. A single service childproof container closure of the type containing a nozzle comprising

a non-removable, resilient closure which is implanted into the nozzle of the container,

said closure comprising a cylindrical sleeve member of uniform diameter, the sleeve member having a peripheral flange which is adapted to seat within a corresponding peripheral groove formed in the nozzle,

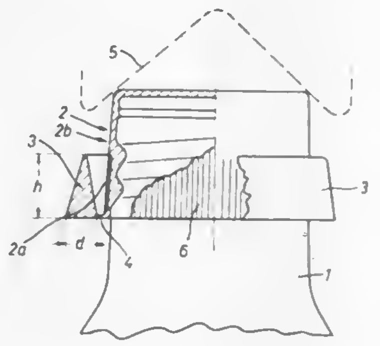
said closure comprising a non-replacable breakaway cap,

said cap being defined from the remainder of the closure by a weakened seam,

the dimensions of the closure flange being slightly greater than the dimensions of the nozzle groove whereby the closure is tightly secured within the nozzle in a non-removable manner,

the cap comprising means to pry the cap relative to the nozzle to remove the cap from the remainder of the closure by separating the cap along the said weakened seam.

4,355,730
SCREW CAP WITH A GUARANTEE RING FOR INDICATING THE FIRST OPENING OF A CONTAINER
Walter Wiedmer, Näfels, Switzerland, assignor to Ernest Wiedmer, Näfels, Switzerland
PCT No. PCT/CH80/00066, § 371 Date Feb. 27, 1981, § 102(e) Date Feb. 27, 1981, PCT Pub. No. WO81/00550, PCT Pub. Date Mar. 5, 1981
PCT Filed Jun. 2, 1980, Ser. No. 243,926
Claims priority, application Switzerland, Aug. 17, 1979, 7563/79
Int. Cl.^{3} B65D *41/34*
U.S. Cl. 215—253 **3 Claims**



1. In combination: a screw cap for a container, and a guarantee ring for indicating the first removal of the screw cap from the container, said guarantee ring surrounding said screw cap over the circumference thereof and over part of the surface area thereof, said guarantee ring being connected at a plurality of individual points to said cap, both the inside and outside of said ring being smooth, said guarantee ring having a height which at most corresponds to half the height of said screw cap and having a thickness which is greatest at the connecting points to said cap and which decreases away from said connecting points over the height of the screw cap.

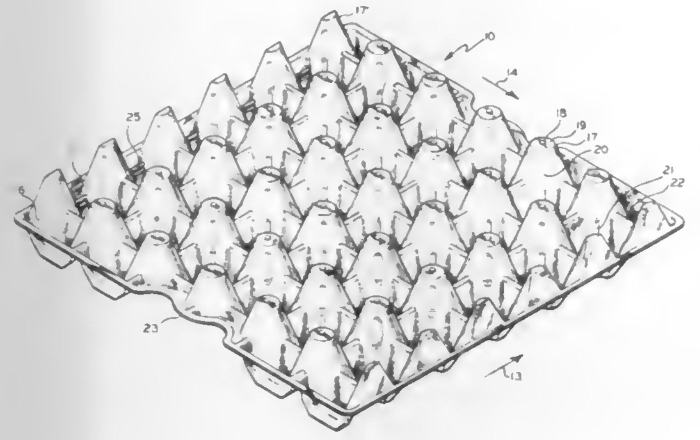
4,355,731
EGG SUPPORTING TRAY
James C. Carroll, Bartlesville, Okla., and Paul R. Lefebvre, Hopkinsville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 16, 1981, Ser. No. 243,680
Int. Cl.^{3} B65D *1/36, 85/32*
U.S. Cl. 217—26.5 **6 Claims**

1. An egg supporting tray comprising:

a plurality of equidistantly spaced hollow posts arranged in equidistantly spaced parallel rows and equidistantly spaced parallel columns transverse to said rows, wherein the apexes of said plurality of posts are in a first plane and the bases of said plurality of posts are in a second plane and wherein a plurality of egg pockets are formed by said plurality of posts;

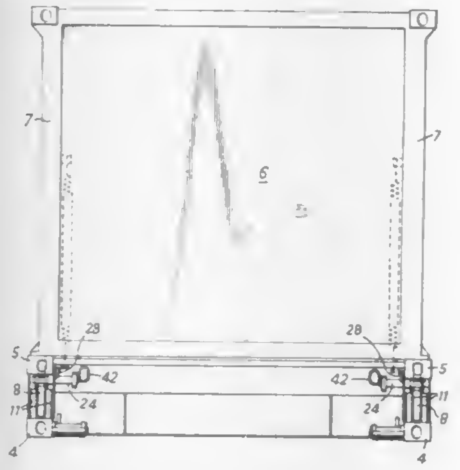
a concave surface, on each one of the surfaces of said plurality of posts which form a part of an egg pocket, extending from a point close to but below said first plane to a point close to but below a third plane which is parallel to the

first and second planes and which extends through a midportion of said plurality of posts, wherein the direction of concavity is towards the center of said posts and each concave surface has substantially the curvature of a side portion of an egg; and
an elongated ridge, on each one of the surfaces of said plurality of posts which form a part of an egg pocket, extending from the end of said concave surface which is below said third plane to a point above the said second plane, wherein each elongated ridge is substantially perpendicular to said third plane except for any slope in the surface of said posts with respect to said third plane and wherein each elongated ridge projects outwardly from the surface of said posts.



4,355,732
FOLDING CONTAINERS

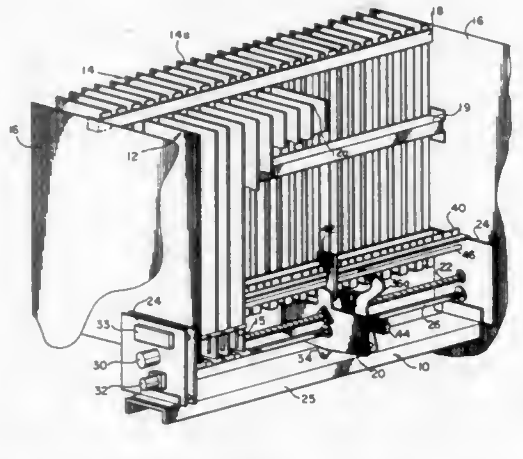
Stanley Nessfield, Driffield, England, assignor to Sea Containers Limited, London, England
Filed Nov. 25, 1980, Ser. No. 210,195
Claims priority, application United Kingdom, Nov. 27, 1979, 7940916
Int. Cl.^{3} B65J ***1/02;*** **B65D** ***7/26***
U.S. Cl. 220—1.5 **12 Claims**



1. A folding container, comprising: a generally rectangular container base on which goods may be loaded; corner posts articulated to each corner of the base for movement between a folded-down position, in which the corner posts lie substantially flat on the base, and an erect position, in which the corner posts extend substantially vertically upwards for supporting a superimposed container or stack of containers; each corner post having a projecting heel portion formed with a first locking abutment surface thereon; said base having a second locking abutment surface thereon which confronts, and is spaced by a gap from, said first locking abutment surface when said corner post is in said erect position; said first locking abutment surface, when said corner post is swingably moved away from its erect position toward said folded-down position, being moved initially towards said second locking abutment surface along an arcuate path so as to swing clear and move past said second locking abutment surface; and lock means positionable in the gap between the first and second locking abutment surfaces and being subject to compressive forces imposed thereon for blocking movement of the corner post away from its erect position toward said folded-down position, said lock means comprising a locking member which is slidable into said gap for substantially filling said gap when the corner post is in its erect position so that the locking member blocks movement of the corner post towards its folded-down position.

4,355,733
PACKAGE DISPENSER MECHANISM

Richard W. Schoenkopf, 238 E. State St., Doylestown, Pa. 18901, and Donald H. Ross, 910 Township Line Rd., Chalfont, Pa. 18914
Filed Sep. 22, 1980, Ser. No. 189,006
Int. Cl.^{3} G07F ***11/48;*** **B65G** ***59/00***
U.S. Cl. 221—123 **11 Claims**

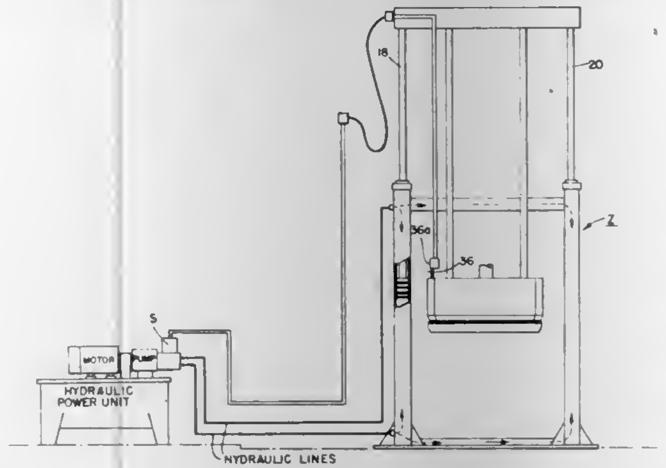


9. An apparatus for dispensing packages comprising:
a pair of opposed storage banks;
a plurality of package storage compartments located at predetermined positions within each of said banks;
a frame mounted between said banks;
a carriage movably mounted on said frame;
a lever rotatably connected to said carriage;
two arms, each having a portion adapted to engage a package, pivotally connected to said carriage in such manner that one of said arms independently pivots towards one of said banks upon counterclockwise rotation of said lever and the other of said arms independently pivots towards the other of said banks upon clockwise rotation of said lever;
means for moving said carriage along said frame;
means for rotating said lever in either a clockwise or counterclockwise direction;
means coupled to said carriage for producing a signal indicative of the position of said carriage with respect to said predetermined positions;
means coupled to said lever for producing a signal indicative of the direction and degree to which the lever has rotated; and
control means responsive to both said signals for causing said carriage to assume a selected one of said plurality of predetermined positions and for limiting the rotation of said lever to a predetermined degree in either direction of rotation.

4,355,734
SCRAPER AND SENSOR APPARATUS

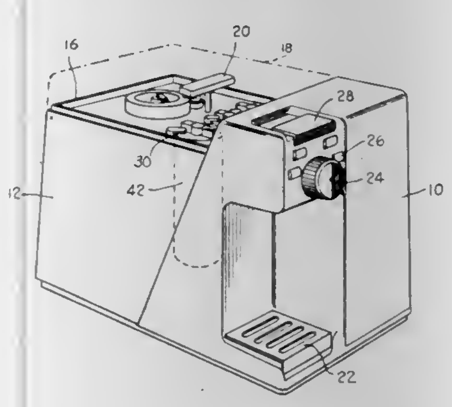
Leo M. Moore, Rte. 4, Box 103, Ashland, Va. 23005
Filed Nov. 25, 1980, Ser. No. 210,329
Int. Cl.^{3} B67D ***5/62***
U.S. Cl. 222—63 **22 Claims**

1. Apparatus for dispensing material from a container comprising:
a plate having a top surface and a bottom surface and having an aperture therethrough;
means coupled with said plate for causing said material to flow through said aperture in a direction extending from said bottom surface towards said top surface;
means coupled with said plate for causing said plate to move vertically relative to a container such that said plate may be caused to move into or out of a container as desired;
means spaced from and coupled with said plate for engagement with the inside walls of a container to scrape material from said walls as said plate moves vertically relative to a container, said space formed between said scraper means and said plate forming a cavity which communicates with said aperture and which includes a material entering opening; and,
means associated with said cavity for controlling the level of said material which might enter said cavity.



4,355,735
VALVING MECHANISM FOR BEVERAGE DISPENSING DEVICE

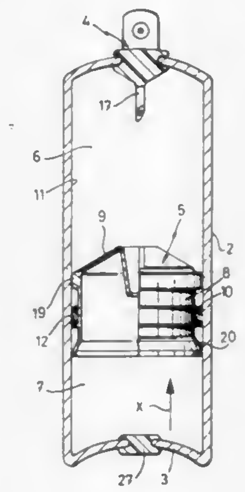
Robert B. Whorton, III, Spartanburg, S.C., and Samuel C. Crosby, Jr., Decatur, Ga., assignors to Tannetics, Inc., Erie, Pa.
Filed Jul. 14, 1980, Ser. No. 168,053
Int. Cl.^{3} B67D ***1/04, 5/54***
U.S. Cl. 222—80 **2 Claims**



1. A beverage dispensing device for dispensing carbonated drinks that are mixed from a solution of carbonated water and syrup, said device including a disposable syrup package, a source of carbonated water, a mixing head connected to said source of carbonated water and to said syrup package for mixing a measured amount of said carbonated water with said syrup producing a carbonated drink, said syrup package being carried in a receptacle, the improvement comprising:
a source of pressurized gas;
a piercing device impaling said syrup package and connecting said pressurized gas to the interior of said syrup package;
valve means interposed between said source of pressurized gas and said piercing device;
valve actuator means causing said valve to provide communication between said source of pressurized gas and said syrup package when in a first position and venting said syrup package back through said valve when in a second position;
said valve actuator means extending over a top of said package obstructing the removal of said piercing device from said syrup package and removal of said syrup package from said receptacle when in said first position for ensuring that said syrup package is vented back through said valve prior to removal of said piercing device from said package and prior to removal of said package from said receptacle in order to prevent syrup from being expelled from said package upon being removed from said piercing device.

4,355,736
DEVICE FOR DISPENSING A LIQUID OR A PASTE IN A FINELY DIVIDED MANNER

Henri J. J. Schumacker, and Terese F. Schumacker, both of 121A Ave. Van Becelaere, B-1170 Brussels, Belgium
Continuation of Ser. No. 11,583, Feb. 12, 1979, abandoned. This application Mar. 3, 1981, Ser. No. 239,925
Claims priority, application Belgium, Mar. 1, 1978, 185581
Int. Cl.^{3} B67D ***5/54***
U.S. Cl. 222—80 **2 Claims**



1. A device for dispensing a liquid or a paste in a finely divided form, comprising: a substantially tubular closed rigid container (**2**), valve means (**4**) mounted in one end of the container for ejecting liquid or paste therein through an outlet tube (**17**) connected to the valve means, the container having two superimposed chambers separated from each other by a piston (**5**) adapted to slide along the inner wall (**11**) of the container when the valve means is operated, a lower one (**7**) of said chambers containing a gas under pressure and an upper one (**6**) of said chambers containing a liquid or paste to be dispensed, the piston having the shape of an inverted deep cup open toward the gas containing chamber, and having a rigid bottom (**9**) facing the valve means and a flexible cylindrical thin side wall (**8**), a rigid annular scraper flange (**19**) integral with said side wall and extending from the peripheral edge of said bottom toward the free end of and around said side wall to render said side wall stiff around its portion connected to said bottom for removing bulges or dents in the inner wall of the container, a truncated guide cone (**20**) flaring outwardly toward said inner wall at the free end of the side wall, at least one intermediate, outwardly extending sealing projection (**10**) carried by said side wall in the space between said scraper flange and said truncated guide cone, said piston side wall being spaced from the container inner wall and contacting same only through the scraper flange, the sealing projection and the truncated guide cone, the rigid bottom of the piston having an upper surface directed toward the liquid or paste containing chamber and having the shape of a truncated cone (**14**) flaring outwardly toward the inner wall of the container, a central cavity (**16**) defined in the bottom of the piston and open towards the liquid or paste containing chamber, and a membrane (**15**) embodied in

the bottom of said cavity adapted to be pierced by the outlet tube when the piston has reached an upper limit of its travel in the container to vent any pressurized gas remaining in said lower chamber.

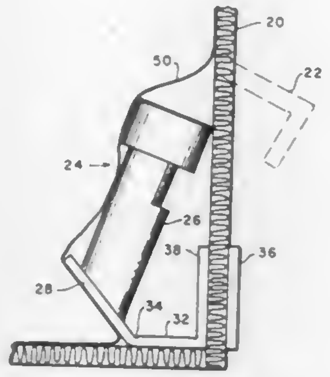
4,355,737
FLUID DISPENSER

Robert G. Pongrass, #2A Bulkara Rd., Bellevue Hill, New South Wales, Australia, and Christopher C. Rutter, 24174 Dover La., Hayward, Calif.

Filed Jan. 16, 1981, Ser. No. 225,788

Int. Cl.³ B67B ***7/24***

U.S. Cl. 222—81 **9 Claims**



1. In combination with a bulk fluid container comprising a flexible sealed fluid containing bag supported within a rigid outer container, a fluid dispenser including:

a tubular sleeve having a first end attached to the fluid containing bag at an oblique angle and a second end extendable from the outer surface of the rigid outer container, said second end having a first fluid dispensing aperture in the lower wall of said sleeve; and

a tubular valve member rotatably positioned within the bore of said tubular sleeve, the first end of said valve member being formed at an oblique angle and having a sharpened end portion, the second end of said valve member having a second fluid dispensing aperture in the wall and handle means for rotating said valve member within said sleeve between a first "off" position and a second "on" position;

in said first "off" position, said sharpened end portion of said valve member extending within said sleeve to, but not touching said fluid containing bag and said first and second fluid dispensing apertures being non-aligned; and in said second "on" position said sharpened end entering said fluid containing bag and said first and second fluid dispensing apertures being substantially aligned.

4,355,738
TREATY AGENT DISPENSING APPARATUS FOR A WASHING APPLIANCE

Le Roy J. Herbst, and John L. Preher, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 26, 1979, Ser. No. 107,217

Int. Cl.³ B67D ***5/08***

U.S. Cl. 222—129 **10 Claims**

1. Dispensing apparatus for sequentially dispensing treating agents into the wash chamber of an automatic washing appliance comprising:

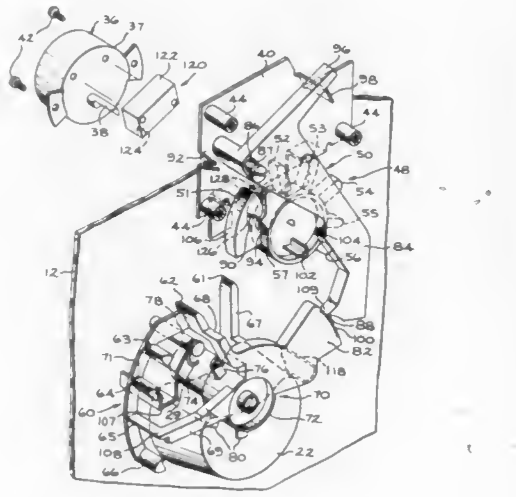
first dispensing means to store and dispense a first treating agent; said first dispensing means including a dispensing member adapted to move between a closed position storing the first treating agent and an open position enabling dispensing of the first treating agent;

second dispensing means to store and dispense a second treating agent; said second dispensing means being adapted to move between a filling position storing the second treating agent and an open position dispensing the second treating agent;

dispenser actuating means adapted for movement between a rest position, a first dispensing position and a second dispensing position; said dispensing actuating means being connected to said dispensing member of said first dispensing means for moving said dispensing member from its closed position to its open position as said dispenser actuating means moves from its rest position to its first dispensing position and said dispenser actuating means being connected to said second dispensing means for moving said second dispensing means from its filling position to its open position as said dispenser actuating means moves from its first dispensing position to its second dispensing position;

biasing means connected to said dispenser actuating means and urging said dispenser actuating means from its rest position to its first dispensing position and then to its second dispensing position;

a motor for controlling movement of said dispenser actuating means;



a drive shaft adapted for rotation by said motor;

linking means mechanically interconnecting said dispenser actuating means to said drive shaft for controlling the movement of said dispenser actuating means so that the rate of movement of said dispenser actuating means from its rest position to its first dispensing position is determined by the rate of rotation of said drive shaft;

retainer means initially engaging said dispenser actuating means to retain said dispenser actuating means in its rest position, said retainer means being operative to release said dispenser actuating means for movement to its first dispensing position and then re-engaging said dispenser actuating means to retain said dispenser actuating means in its first dispensing position during a subsequent period of rotational movement of said drive shaft; said retainer means thereupon being operable to release said dispenser means for movement from its first to its second dispensing position.

4,355,739
LIQUID STORAGE CONTAINER

Peter Vierkötter, Leverkusen, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

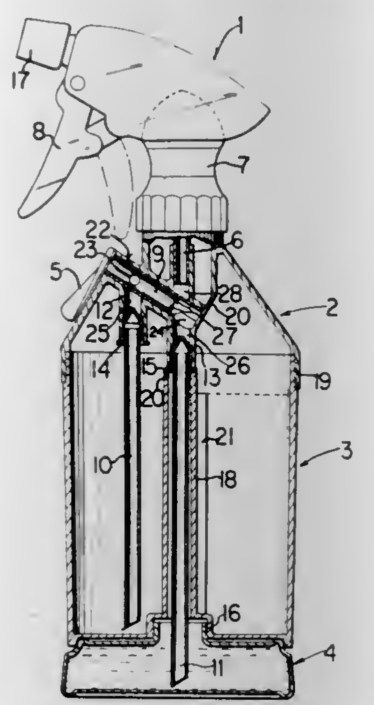
Filed Sep. 22, 1980, Ser. No. 189,605

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940564

Int. Cl.³ B67D ***5/52***

U.S. Cl. 222—134 **5 Claims**

1. A liquid storage container that can be connected or attached to a spray pump means which comprises two separate chambers to hold liquid components, each chamber having a one-way valved suction take-up tube which leads to a mixing chamber contained within a movable member attached to a movable external selector means, the member having openings therein, wherein, when the external selector means is moved, the movable member attached thereto moves in a manner such that the ratio of the quantities of liquid components sucked from the chambers varies, said mixing chamber being adapted to be connected or attached to a spray pump means.



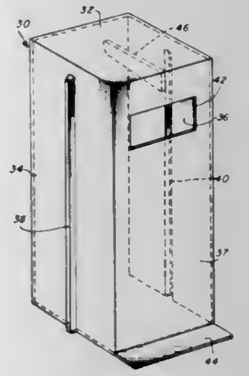
4,355,740
CONTAINER HOLDER AND ACTUATOR FOR AEROSOL CANS

David Wolf, Newton, Mass., assignor to Scott's Liquid Gold, Inc., Denver, Colo.

Filed Oct. 6, 1980, Ser. No. 194,375

Int. Cl.³ B65D ***83/14***

U.S. Cl. 222—180 **4 Claims**



1. A holder apparatus for retaining and engaging pressurized cans, said pressurized cans having a valve and nozzle located on the can, said holder apparatus adapted to be wall-mountable and comprising a holder body adapted to hold a pressurized can, a removable cover, extension means within the cover for engaging the valve of the pressurized can when said cover moves downward relative to said holder body, and means for slideably mounting the cover over the holder body, including at least one longitudinally extending rail and a longitudinally extending groove for receiving said rail with one of said rail and groove on the inside surface of said cover and the other on the outside surface of said holder body, so that when the cover is placed onto the holder body, the rail engages said groove to produce a slideable fit between the cover and the holder body.

4,355,741
SACK-FILLING MACHINE

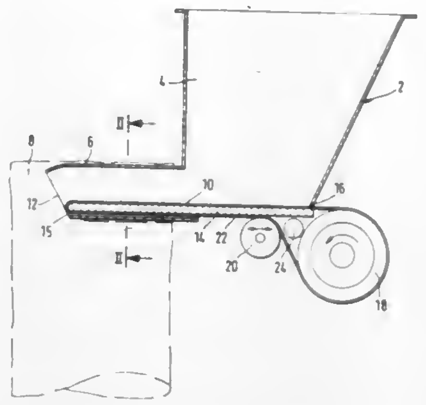
Manfred Kayss, Hubertusstr. 30, 3320 Salzgitter 51, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,985

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912604

Int. Cl.³ G01F ***11/20;*** **B65B** ***1/04***

U.S. Cl. 222—415 **17 Claims**



1. A sack filling machine comprising:

a. a filling tube having a downstream end which is receivable in a sack, said tube including at least one wall;

b. a guide plate which extends a distance through said tube along the inner surface of said wall from a point upstream of the downstream end of said tube to a point adjacent said downstream end, said guide plate terminating in a rounded downstream edge; and

c. a conveyor belt which extends along said plate in said tube to a point adjacent the downstream end of said tube and around said rounded edge, whereby when the downstream end of said tube is received in said sack said conveyor belt also extends a distance into said sack so that upon activation of said conveyor belt it is operable to transport material thereon through said tube to the downstream end thereof and into said sack.

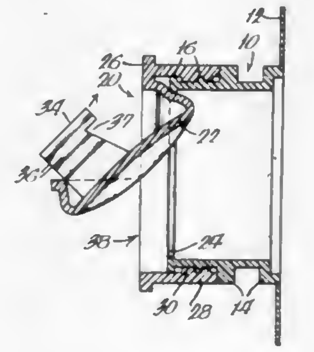
4,355,742
DISPENSER SPIGOT FOR VISCOUS MATERIAL

William R. Scholle, Corona del Mar, Calif., assignor to Scholle Corporation, Northlake, Ill.

Filed Feb. 5, 1979, Ser. No. 9,544

Int. Cl.³ B65D ***25/48***

U.S. Cl. 222—490 **10 Claims**



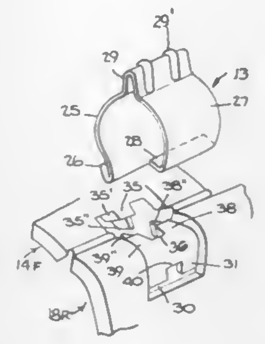
1. A dispensing spigot for a container having a spout, comprising an integral elastomeric member having transverse wall means adapted to be inserted into the spout in sealing engagement therewith, a flange at an outer end of said transverse wall means extending generally laterally therefrom, said flange having an elongate slit therein laterally outwardly of said transverse wall means extending over a major portion of the marginal extent of said flange, and manipulatable means on said transverse wall means for flexing the portions of said transverse wall means inwardly of said slit generally radially in-

wardly away from the spout and for flexing the portions of said flange inwardly of said slit both radially inwardly and generally longitudinally outwardly away from the spout to open up said portions of said transverse wall means and said flange and provide a large mouth dispensing opening through the flexed portions of said transverse wall means and said flange.

4,355,743
HEAVY AND LIGHT DUTY GARMENT CLAMPING HANGER

Marc Erthein, East Haddam, Conn., assignor to National Hanger Co., Inc., New York, N.Y.
Filed Jun. 6, 1980, Ser. No. 157,075
Int. Cl.^{3} A47D ***51/14***

U.S. Cl. 223—96 **11 Claims**



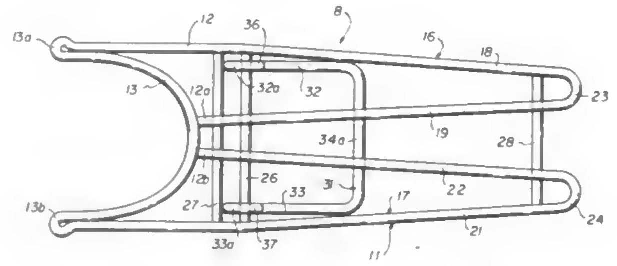
1. A garment hanger clamp comprising rear and front gripping members hinged at the top walls to form relatively stationary and movable parts respectively for movement between a closed and locked article gripping position and an open and unlocked article releasing position, a springable locking clip operable on the outer faces of said gripping members and intermediate the width thereof and adapted to have at least an initial position when the gripping members are open and a final position when the gripping members are closed and in article gripping position, pivotal anchoring means for the clip and between the rear end of said clip and the rear gripping member intermediate the height thereof and including stop means for rearwardly limited rotary movement of said clip, and whereby said clip in said initial position has the front end thereof releasably tensioned against the top wall of said rear gripping member, said clip in said initial position projecting behind and substantially below the top of the rear gripping member, said clip in said final position overlying the top walls and engaging at least portions of the outer faces of the gripping members, said clip attaining said final from initial position by forward rotary movement thereof and attaining initial from final position by rearward movement thereof, said top walls of the gripping members having openable bridge means for creating an opening therebetween for introduction and withdrawal of the said front end of the clip to effectuate said pivotal anchoring of the clip.

4,355,744
PORTABLE BOOTJACK

Robert A. Dudley, 385 Reagan Pl., Fallon, Nev. 89406
Filed Oct. 14, 1980, Ser. No. 196,340
Int. Cl.^{3} A47J ***51/02***

U.S. Cl. 223—114 **8 Claims**

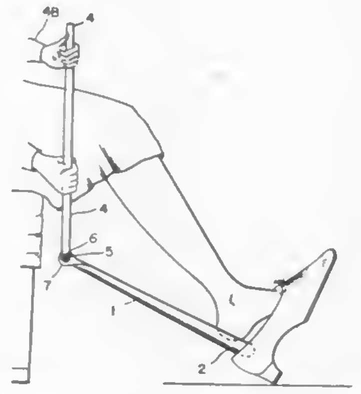
1. A portable bootjack comprising, in combination, a substantially planar body forward from a metal rod having free ends, said rod having a formed portion adjacent said free ends defining a forwardly opening, U-shaped configured yoke for receiving a boot heel and having longitudinally extending portions rearwardly said yoke and about and beyond said free ends disposed in side-by-side relationship and terminating with said free ends fixed to a bight portion of said yoke defining a platform for pressing engagement by the foot of a user, a plurality of longitudinally spaced, transversely extending cross members formed from a metal rod secured to said longitudinally extending rod portions, and a leg member formed from a metal rod pivotally mounted on a first one of said cross members for movement between an inoperative folded position in underlying, substantially parallel relationship with said body and a downwardly extending, operative position abutting against a second one of said cross members for supporting said body in an angularly disposed relationship with a supporting surface.



4,355,745
SHOE HORN FOR HANDICAPPED PERSONS

Marie A. Nelson, 600 E. 8 St. #416, Kansas City, Mo. 64106
Filed Jul. 25, 1980, Ser. No. 172,272
Int. Cl.^{3} A47J ***51/02***

U.S. Cl. 223—118 **1 Claim**

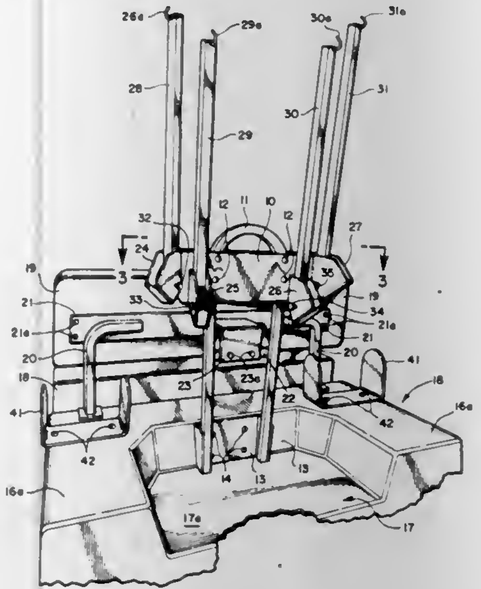


1. A method of manipulating a shoe horn device so as to enable a person, with little or no bending movement of the body at the waist, hips or knees, to put on (laced up or elastic top) shoes, wherein the shoe horn device comprises an elongated shoe horn of the order of 20 to 24 inches in length having a curved portion at one end for engaging the heel and an elongated handle device of the order of 20–25 inches in length pivoted at one end to the other end of the shoe horn, said method consisting of the following steps (1) slipping the foot into the shoe as far as it will go while the person is in a seated position (2) gripping the handle and holding it and the shoe horn in a vertical position (3) manipulating the handle so that the end of the shoe horn enters the shoe with the concave portion contacting the foot on the inner side of the foot, (4) letting the gripped handle slide downwardly to thereby cause the shoe horn to attain substantially a horizontal position while at the same time slightly moving the handle laterally to maneuver the shoe horn to bring its curved end toward and under the heel while the shoe horn end is still partially in the shoe (5) with the shoe horn end under the heel lifting the handle upwardly thus forcing the heel (and the foot) completely into the shoe and (6) withdrawing the shoe horn from the shoe.

4,355,746
GOLF BAG HOLDER FOR USE WITH GOLF CARS

Dale D. Casady, Salt Lake County, Utah, assignor to Bailey & Sons Company, Salt Lake City, Utah
Filed Aug. 20, 1981, Ser. No. 294,721
Int. Cl.^{3} A47F ***7/00***

U.S. Cl. 224—274 **6 Claims**

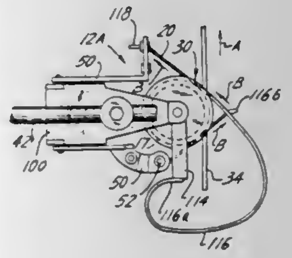


1. A golf bag holder for use with golf cars, comprising a frame; a plurality of arms pivotally mounted to said frame; means for attaching a golf bag to each arm so that the end of the bag from which the clubs extend is supported by an arm while the other end of the bag rests on the car; stop means to stop travel of each arm about its pivot in one direction at the preferred point for supporting the golf bag and in the other direction at a point at which the arm can rest out of the way in an unused positon; means to hold an arm in its unused positon when not holding a golf bag; and means for securing said frame to a golf car.

4,355,747
MULTI-PURPOSE YARN FEEDING DEVICE

Juan Vinas, Middle Village, N.Y., assignor to Textile Technology, Inc., White Plains, N.Y.
Filed May 12, 1980, Ser. No. 97,735
Int. Cl.^{3} B65H ***23/16***

U.S. Cl. 226—34 **18 Claims**

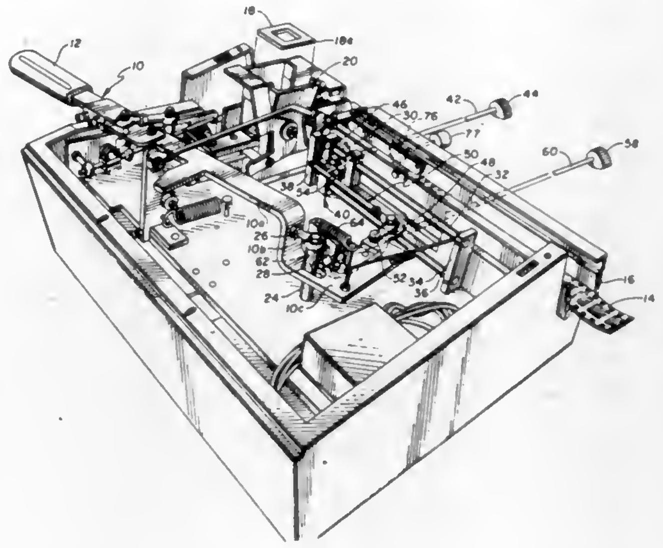


1. In a device for feeding of yarn to a yarn processing machine such as a knitting machine, at least one rotary member mounted for rotation at a feeding station of the knitting machine, said rotary member being provided about the circumferential periphery thereof with yarn gripping means for frictionally engaging yarn during contact therewith; first guide means for guiding at least one yarn to the feeding station and guiding the incoming yarn to said circumferential periphery of said rotary member; second guide means for guiding the outgoing yarn from said circumferential periphery and to the needles of the knitting machine, said first and second guide means being selectively arranged to cause the yarn to be in contact with a predetermined arcuate length of said circumferential periphery of said rotary member; drive means for rotating said rotary member; and dynamic adjustment means engaging the yarn between said first and second guide means for modifying the arcuate length of contact with said circumferential periphery as a function of the input and output tensions in the yarn, whereby the traction or frictional forces imparted to the yarn are modified as a function of the tensions in the yarn to thereby compensate for variations therein.

4,355,748
FILM ADVANCE BREAKAWAY MECHANISM FOR SLIDE MOUNTER

Armer J. Willenbring, Bloomington, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed Oct. 31, 1980, Ser. No. 202,600
Int. Cl.^{3} G03B ***1/22***

U.S. Cl. 226—67 **7 Claims**



1. A film advance mechanism for advancing a photographic film web along a film track, the film advance mechanism comprising:

a guide track essentially parallel to the film track;
carriage means movable on the guide track between a first and a second end;
drive means for advancing the carriage means toward the first end during a portion of an operating cycle of the film advance mechanism and returning the carriage means toward the second end during another portion of the operating cycle;
film advance pawl means connected to and movable with the carriage means for engaging sprocket holes of the film web to advance the web as the carriage means advances; and
means for disconnecting the carriage means and the drive means when resistance to advancement of the carriage means toward the first end exceeds a predetermined amount.

4,355,749
FEEDING APPARATUS FOR WET YARN

Karl-Heinz Wülfing, and Werner Engelhardt, both of Wuppertal, Fed. Rep. of Germany, assignors to Hacoba Textilmaschinen GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany
Filed Oct. 1, 1980, Ser. No. 192,822
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939873
Int. Cl.^{3} B65H ***51/00, 51/14***

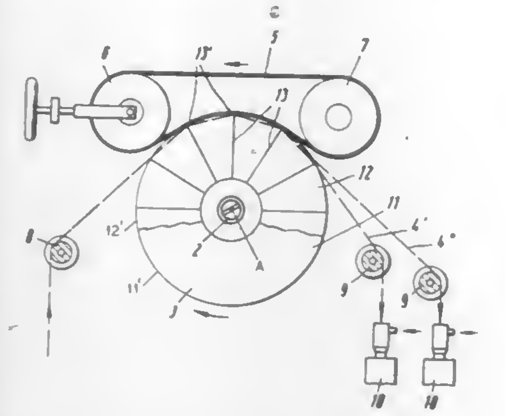
U.S. Cl. 226—171 **10 Claims**

1. A filament-feeding apparatus comprising:

a feed wheel centered on and rotatable about an axis and having a pair of side parts having generally circular peripheries lying in parallel spaced-apart planes perpendicular to said axis and a plurality of angularly spaced center parts axially bridging said side parts and having outer edges axially aligned with said peripheries, said wheel being open and free of structure in zones radially inward of said peripheries and radially outward of secants extending between said outer edges;

a flexible endless belt having a width equal at least to the axial spacing between said peripheries;

guide means including a plurality of pulleys carrying said belt for holding a portion of said belt in a circular arc radially against said peripheries, whereby said belt forms nips at the ends of said circular arc;



means for feeding a filament under tension and tangentially of said wheel to one of said nips between said side parts and for withdrawing said filament under tension and tangentially of said wheel from the other of said nips between said side parts, whereby said filament is stretched over said outer edges into a succession of straight-line secants along said arc and only engages said belt at said outer edges along said arc; and

drive means for rotating said wheel about said axis and thereby advancing said filament.

4,355,750
DOUBLE-CAPSTAN TAPE DRIVING DEVICE

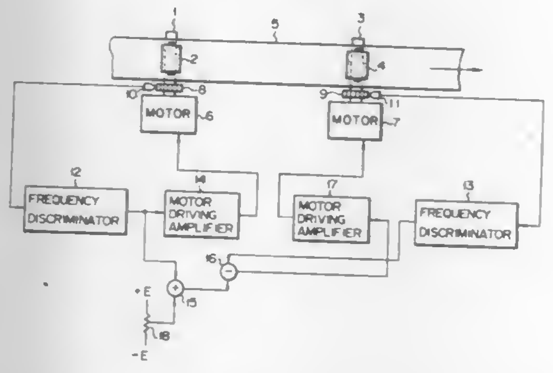
Sinichi Saitou, Hachioji; Toshikazu Kato, Hino; Kenji Kimura, Tachikawa; Ken Satoh, Akigawa; Tsutomu Shibata, Hachioji; Seizo Watanabe, Hachioji, and Ken Ohshima, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1980, Ser. No. 199,325

Claims priority, application Japan, Oct. 26, 1979, 54-148560[U]

Int. Cl.^{3} B65H *17/22*

U.S. Cl. 226—188 **8 Claims**



1. A double-capstan tape driving device having first and second capstans adapted to be in driving contact with the tape, comprising:

first and second servo loops coupled to the first and second capstans, respectively, for rotating said first and second capstans at respective speeds independently of each other; and

revolution speed control means coupled to at least one of said first and second servo loops for selectively supplying an offset voltage, which is generated externally of said first and second servo loops, to at least one of said first and second servo loops to selectively change a revolution speed of one of said first and second capstans independently of the revolution speed of the other of said first and second capstans to thereby selectively change the tension applied to the tape between the first and second capstans when said first and second capstans are in driving contact with the tape.

4,355,751
SURGICAL INSTRUMENT FOR SUTURING CUTANEOUS TISSUE

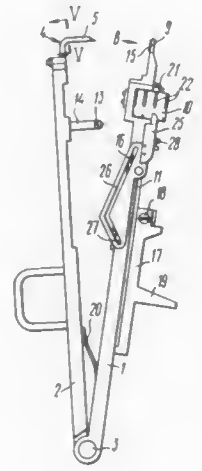
Nikolai N. Kapitanov, ulitsa Iriny Levchenko, 3, kv. 9; Natalya P. Petrova, 1 Novokuzminskaya ulitsa, 4, kv. 40; Vsevolod V. Judenich, Leninsky prospekt, 87, kv. 370; Vladimir P. Kharchenko, ulitsa Lesevskaya, 1, korpus 4, kv. 761; Boris A. Smirnov, ulitsa Borisa Galushkina, 17, kv. 26; Vladimir V. Ippolitov, ulitsa Lavochkina, 6, korpus 2, kv. 143, and Nadezhda M. Lankina, Shenkursky proezd, 12, kv. 123, all of, Moscow, U.S.S.R.

Filed Dec. 5, 1979, Ser. No. 100,543

Claims priority, application U.S.S.R., Dec. 8, 1978, 2719347

Int. Cl.^{3} B25C *5/02;* **A61B** *17/32*

U.S. Cl. 227—19 **2 Claims**



1. A surgical instrument for suturing cutaneous tissue using U-shaped staples, comprising a supporting body and a staple body, said bodies being pivotally connected so as to be movable together during suturing and movable apart after suturing, a replaceable magazine provided on the staple body and adapted to accommodate said U-shaped staples, a stitching unit to which said staples are fed from the magazine, said unit being adapted to pass the staples through the tissues being sutured and bend said staples to establish a suture, said stitching unit including a single needle-shaped die having an L-shaped needle fixed to the supporting body, and a slot provided at the end of the staple body which is positioned so as to be receivable of the needle of said needle-shaped die when said supporting and staple bodies are move together so that the needle of said needle-shaped die passes therethrough, said staple body having a longitudinal groove formed therein which communicates through one of its ends with the base of said slot in the stitching unit, and which communicates through its other end with a staple receiving opening formed in the magazine, a groove provided in the supporting body arranged such that, when said bodies are moved together, said groove communicates with said staple receiving opening formed in the magazine, said needle-shaped die having two recesses, one of said recesses communicating with said groove formed in the supporting body, while the other recess is arranged such that when the needle of said needle-shaped die enters said slot, said recess enters into communication with the groove formed in the staple body, and an ejector for driving the staples out of the magazine.

4,355,752
CONTROL DEVICE AND METHOD FOR AN AIR CONDITIONING INSTALLATION OF THE PASSENGER SPACE IN A MOTOR VEHICLE

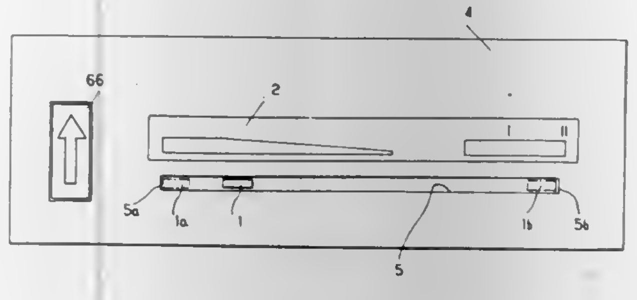
Jacquet M. Antoine, Maurepas, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jan. 18, 1980, Ser. No. 113,226

Claims priority, application France, Jan. 22, 1979, 79 01539

Int. Cl.^{3} B60H *1/02*

U.S. Cl. 237—12.3 B **6 Claims**



1. A single knob control device for air conditioning the passenger space of a motor vehicle comprising:

an actuating member mounted for one dimensional displacement in a control panel;

means for controlling the operation of a variable speed fan including the speed thereof for blowing air into the passenger space;

means for controlling the heating of air admitted into said passenger space;

means for selectively controlling the distribution of air admitted into said passenger space, including admission through at least one vent adjacent a windshield of the motor vehicle;

means for transmitting motion of said actuating member to said first, second and third controlling means, as said member is displaced, wherein said first, second and third control means and the motion transmitting means are arranged relative to one another for:

in a first position of said actuating member, blowing air at maximum temperature through said windshield vent by operating said fan at maximum speed;

as said actuating member is moved away from said first position, decreasing the temperature of the air admitted to said passenger space, and decreasing the operating speed of said fan;

in a second position of said actuating member admitting non-heated air blown by the fan operating at maximum speed through said windshield vent, and

as said actuating member is moved away from said second position, decreasing the operating speed of said fan, said motion transmitting means and said first, second and third controlling means also have a neutral position intermediate said first and second positions along a one dimensional path of displacement of said actuating member between said first and second positions so that said movements away from said first and second positions are towards said intermediate position, said fan and heating controlling means being in an "off" condition in said intermediate position, and said air distribution controlling means comprising a rotary fluid pressure distributor operatively connected for rotation about an axis in response to said motion transmitting means, said distributor having a plurality of fluid pressure outputs connected to respective pressure controlled flaps for selectively controlling the distribution of air into said passenger compartment.

4,355,753
AIR HEATING SYSTEM OF INTERNAL COMBUSTION ENGINE-MOUNTED MOTOR VEHICLE

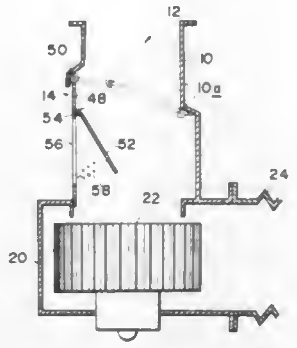
Takeaki Watanabe, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 20, 1980, Ser. No. 151,544

Claims priority, application Japan, May 31, 1979, 54-72446

Int. Cl.^{3} B60H *1/02*

U.S. Cl. 237—12.3 A **11 Claims**



1. An air heating system of an internal combustion engine-mounted motor vehicle for heating a passenger compartment, having an air passage means extending from an outdoor air intake to a selected portion of the passenger compartment; a heater core disposed in the air passage means for heating, by using engine cooling water as a heating medium, air which travels in said air passage means toward the passenger compartment; a fan disposed in said air passage means at a position upstream of the heater core for producing air flow directed toward the passenger compartment; an indoor air intake opening formed in said air passage means at a position upstream of said fan, said opening being open to said passenger compartment; and a damper door pivotally mounted in said air passage means and having first and second rest positions, said first position being a position to close said outdoor air intake while opening said indoor air intake opening, said second position being a position to close said indoor air intake opening while opening said outdoor air intake, wherein said damper door is formed with an opening and wherein an auxiliary door is pivotally connected to said damper door to selectively close and open said opening in the damper door, the connection of said auxiliary door to said damper door being such that when said damper door takes said second rest position and the pressure in the air passage means at the portion upstream of said fan is lower than that in the passenger compartment, said auxiliary door is forced to open to a certain extent permitting introduction of passenger compartment air into the air passage means through said opening in the damper door.

4,355,754
STRUCTURAL MEMBERS COMPRISED OF COMPOSITE WOOD MATERIAL AND HAVING ZONES OF DIVERSE DENSITY

Anders E. Lund, Houghton, and Gordon P. Krueger, Hancock, both of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed May 18, 1981, Ser. No. 264,222

Int. Cl.^{3} E01B *21/04;* **B32B** *9/04*

U.S. Cl. 238—83 **35 Claims**

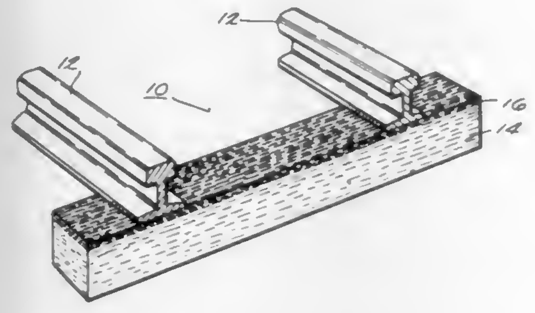
1. An elongated composite wood member having a longitudinal axis and being comprised of composite wood material, said composite wood material member comprising:

a first composite wood material portion including elongated planar wood flakes intermixed with a binder and compressed to form a densified product, said elongated wood flakes each having a longitudinal axis, the grain direction of said wood flakes being aligned parallel with said longitudinal axis of said wood flakes, said wood flakes being aligned with their longitudinal axis parallel to the longitudinal axis of the elongated member, and said planar wood flakes lying in parallel planes, and

a second composite wood material portion integrally joined to said first composite wood portion, said second composite wood material portion comprising elongated planar wood flakes intermixed with a binder and compressed to form a densified product, said densified product formed by said second composite wood material portion having a density other than the density of said first portion and having strength properties different from the strength properties of said first portion,

said first composite wood portion and said second composite wood portion being formed at the same time and by forming a loosely felted mat comprised of said elongated planar wood flakes intermixed with a binder, said mat including a first portion intended to form said first composite wood material portion and said mat including a second portion intended to form said second composite wood material portion, and by compressing said composite wood material mat in a press to form said first composite wood material portion and said second composite wood material portion.

27. A method for forming an elongated solid structural member including a first structural member portion having a first density and a second structural member portion integrally joined to the first structural member portion and wherein the second structural member portion has a density greater than that of the first structural member portion, the method comprising the steps of



providing elongated wood flakes having a grain direction extending generally parallel to the longitudinal axis thereof,

admixing a binder with the wood flakes,

forming a first mat of the resulting mixture with at least a majority of the wood flakes oriented such that the longitudinal axis thereof is parallel to the axis of the structural member to be formed from the mat,

forming a second mat portion by depositing additional quantities of said resulting mixture on at least portions of said first mat with at least a majority of the wood flakes in said additional quantity being oriented such that the longitudinal axis thereof is parallel to the axis of the structural member to be formed, and

compressing said first and second mat portions in a press applying sufficient pressure on the mat to bond the wood flakes together to form a densified integral compressed product.

4,355,755

FOOD TRAY

Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 2, 1980, Ser. No. 182,855

Int. Cl.^{3} B65D *1/34, 1/46*

U.S. Cl. 229—2.5 R **8 Claims**

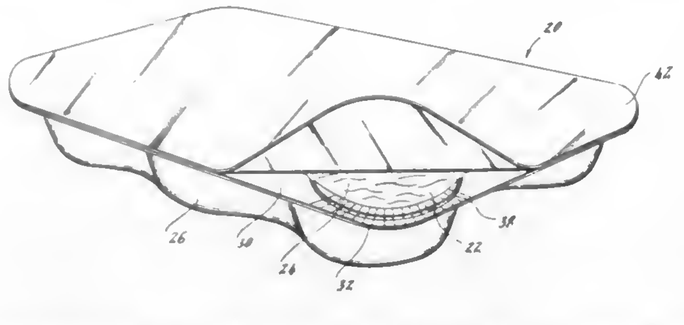
1. A one-piece deep drawn paperboard food tray comprising:

(a) a bottom wall;

(b) means forming a side wall integral with said bottom wall and extending upwardly therefrom to form sides for said tray surrounding said bottom wall;

(c) a flange integral with said side wall and extending outwardly from a top edge of said side wall to form an upper planar sealing surface about the upper periphery of said tray;

(d) said flange including corner portions having a plurality of pleats formed therein, said pleats being flattened so as to present a planar upper sealing surface which is coplanar with the remainder of said upper sealing surface of said flange; and



(e) recessed troughs formed in each of said corner portions of said flange, said troughs traversing said pleats with both sides of said troughs being bounded by said planar upper sealing surface formed by said flattened pleats.

4,355,756

CONTAINERS ADAPTED TO CONTAIN FOODSTUFFS

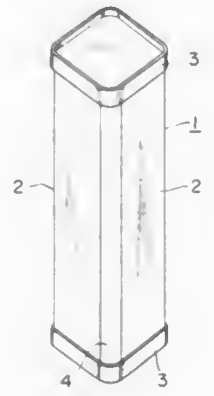
Hiroshi Furuya, Kawasaki; Munehisa Okada, Machida; Eiichiro Takemura, Tokorozawa, and Hideyo Sato, Yokohama, all of Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha and Zenkoku Nogyo Kyodo Kumiai Rengo Kai, both of Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 198,214

Claims priority, application Japan, Oct. 25, 1979, 54-137984; Nov. 6, 1979, 54-143602

Int. Cl.^{3} B65D *3/12, 3/28*

U.S. Cl. 229—4.5 **6 Claims**



1. A foodstuff container comprising a cylindrical body and lids closing opposite ends of said cylindrical body, said cylindrical body being formed with a laminated sheet made up of two outer layers made of a thermoplastic resin consisting essentially of a synthetic resin having a melting point of higher than 115° C., a paper layer and an aluminum foil, each lid being made up of an aluminum foil coated with a thermoplastic resin similar to that of said laminated sheet, opposite side edges of said laminated sheet being covered by separate tape shaped aluminum foils with both surfaces coated with a thermoplastic resin similar to that of said laminated sheet, one side of each said tape shaped aluminum foils being bent back upon itself so that its outer surface is in face to face contact with the inner surface of said container, said tape shaped aluminum foils and said opposite side edges of said laminated sheet being welded together such that said aluminum foils are disposed in a non-superimposed contiguous relation so that the unbent side of one tape faces the fold or bent portion of the other tape,

thereby avoiding impractical thickness of the weld to form said cylindrical body.

4,355,757

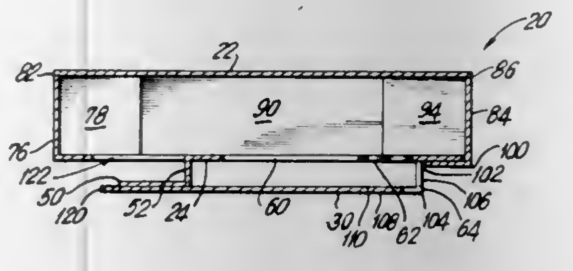
VENTING CARTON AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 5, 1981, Ser. No. 240,924

Int. Cl.^{3} B65D *5/22, 5/35, 5/36*

U.S. Cl. 229—33 **12 Claims**



1. A carton adapted for storing and heating a food product such as a pizza, said carton comprising:

opposed top and bottom walls disposed in spaced apart, parallel relationship; and

a tubular side wall extending between and hingedly connected to the side edges of said top and bottom walls to define an enclosed carton, said bottom wall being defined by a bottom panel and closure panel disposed in abutting relationship to said bottom panel and, said closure panel being located externally of said carton, said bottom panel including a rectangular vent panel disposed adjacent to and spaced from one side edge of said bottom panel and defined by a combination of a first fold line and an intermittent U-shaped cut line, said U-shaped cut line extending away from said one side edge, said rectangular vent panel including a second fold line disposed parallel to said first fold line and dividing said vent panel into a support panel and a first elevator panel, said bottom panel further including at least one venting aperture formed in the remaining area of said bottom panel and with said support panel of said bottom panel being adhesively connected to said closure panel adjacent one side edge thereof, and with said bottom panel being further adhesively connected to said closure panel along a line adjacent the other side edge of each of said panels respectively, and with said closure panel further including a pair of fold lines disposed parallel to and spaced from said other side edge of said closure panel and defining a second elevator panel whereby when said food product is to be heated within said carton, said intermittent score line defining a portion of said venting panel is broken such that said closure panel may be rotated downwardly away from, and laterally to said bottom panel, with said elevator panels extending therebetween thereby uncovering said one venting aperture and defining a base for supporting said bottom panel in spaced relationship therewith, and with said vent panel being rotated out of the plane of said bottom panel to define another venting aperture.

4,355,758

CARTON WITH WINDOW AND HANGING PANEL AND CARTON BLANK THEREFOR

John J. Lavery, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 9, 1981, Ser. No. 242,016

Int. Cl.^{3} B65D *5/10, 25/22*

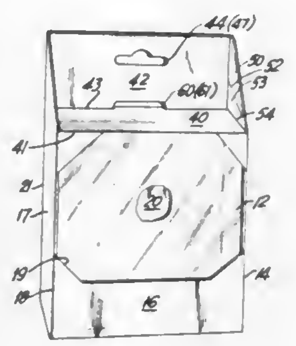
U.S. Cl. 229—39 R **4 Claims**

1. A paperboard windowed carton formed from a one-piece carton blank comprising:

a plurality of central panels joined along articulated fold lines and including a front panel, its opposite back panel having an opening therein for hanging the carton and having an upper portion thereof extending in height beyond the height of said front panel, and two opposite side panels, said front panel having a window therein adapted to show the front of the carton's contents;

a plurality of bottom panels joined to at least some of said center panels to form a bottom closure for the carton;

a plurality of top panels to form a top closure and a hanging panel, said top panels comprising a rectangular top flap articulatedly connected to said front panel and perpendicular thereto, a hanging panel articulatedly connected to said top flap and perpendicular thereto so that it lies flat against said upper portion of said back panel, said hanging panel having an opening therein aligned with said opening in the back panel, and two pairs of first and second triangular panels articulately connected together and both triangular panels of each pair being substantially coplanar and lying flat against a respective one of said side panels, with one of said triangular panels in each pair being articulately connected to said top flap and the other triangular panel of each pair being articulately connected to a respective one of said side panels.



4,355,759

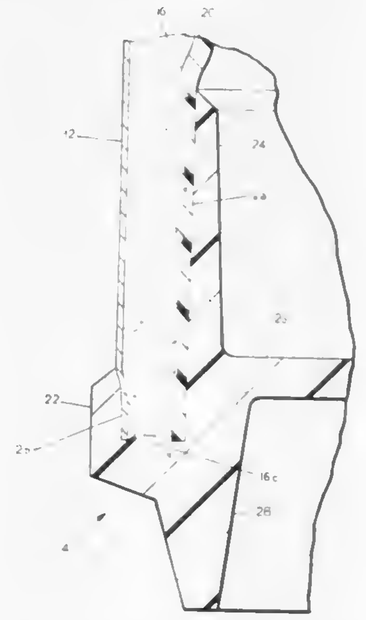
COMPOSITE CONTAINER AND METHOD

Ralph G. Amberg, Toledo, Ohio, assignor to Automated Container Corporation, Orlando, Fla.

Continuation-in-part of Ser. No. 896,251, Apr. 14, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,960

Int. Cl.^{3} B65D *3/10, 5/00, 13/00*

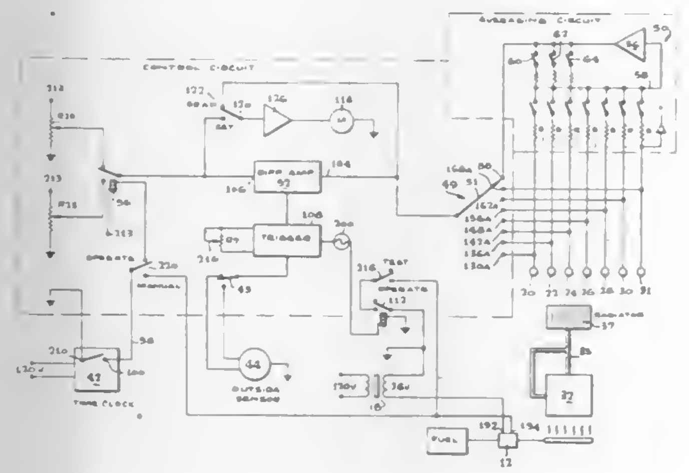
U.S. Cl. 229—5.5 **1 Claim**



1. An improved composite container comprising a cylindrical body defining a side wall of the container formed of plural laminated layers, the outer layer being aluminum foil covered by high gloss paper to form a label surface, the central layer comprising fibrous material, and the inner layer being comprised of a thermoplastic material, an integral end wall compression molded of the same thermoplastic material as said inner layer of the side wall and thermally bondable therewith, a peripheral flange on said end wall bonded under high pressure of compression molding to an axial end portion of said body side wall inner thermoplastic layer, said end portion of said body side wall being of reduced thickness and enhanced rigidity by the compression of the fibrous laminations during compression molding the end wall, the bonding pressure thereof impregnating the fibrous layer of the lamination by the inner layer of thermoplastic material, a second flange on said end wall parallel to said peripheral flange and compressively engaging the outer layer of said side wall providing a further reduction in thickness of the laminated side wall end portion, the axial height of said peripheral flange being on the order of four times the major thickness of the side wall of the laminated body, said second flange being of lesser axial height than the axial height of said peripheral flange, said second flange and said peripheral flange compressively engaging the reduced thickness end portion of said side wall, and the combined thickness of said peripheral and second flanges exceeding the major thickness of said laminated side wall of the container body.

4,355,760
CONTROL UNIT FOR A MULTI-UNIT BUILDING

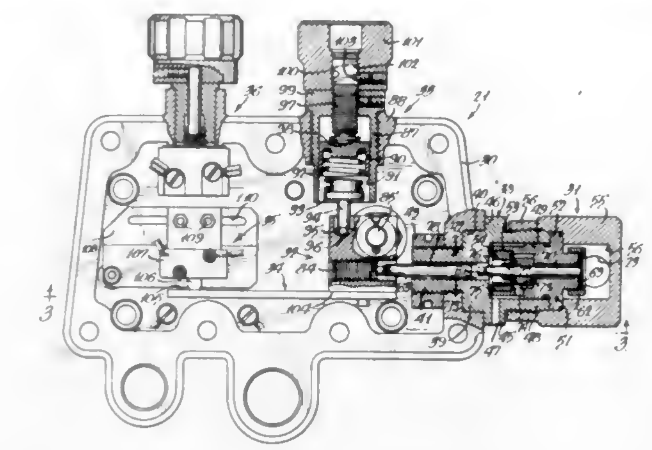
Ernest D. Ruby, 4335 N. Francisco, Chicago, Ill. 06018
Filed Aug. 28, 1978, Ser. No. 937,110
Int. Cl.^{3} F24F *3/00;* G05D *23/00*
U.S. Cl. 236—47 14 Claims



1. A heat control of the class described, comprising a plurality of temperature sensors, an averaging circuit, the electrical output of each temperature sensor connected to the input of the averaging circuit, the output of the averaging circuit being an electrical signal proportional to the average of the temperatures sensed by each temperature sensor, a comparator circuit, said comparator circuit including a reference electrical signal proportional to a reference temperature, the output of the averaging circuit and the reference electrical signal connected to the input of the comparator circuit, the output of the comparator circuit adapted to be connected to a heat producing device in such a way that the comparator circuit causes the heat producing device to turn on when the average of the temperature sensed by each temperature sensor is less than the reference temperature and turns the heat producing device off when the average of the temperatures is greater than the reference temperature and means connected to the output of each temperature sensor and the averaging circuit for providing an electrical signal at each sensor input to the averaging circuit to replace any signal lost by reason of a failure of a sensor or a line connected from a sensor to the averaging circuit, said electrical signal proportional to the lowest temperature likely to be encountered by a sensor in normal circumstances whereby the effect of said failure on the averaged output from the averaging circuit is minimized.

4,355,761
PRESSURE SENSOR AND REGULATOR FOR AIRLESS MATERIAL COATING SYSTEM

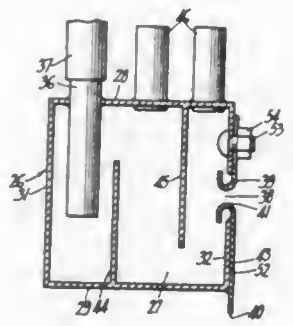
Thomas E. Bjorn, Northbrook, and Mark C. C. Kao, Elmhurst, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Mar. 17, 1980, Ser. No. 131,191
Int. Cl.^{3} F04B *49/08*
U.S. Cl. 239—126 17 Claims



1. In an airless material spraying system, comprising; a material spray dispenser, a source of material, pump means for conveying material under pressure from a reservoir to the material spray dispenser, valve means for controlling flow from the pump means, a pressure responsive control for the valve means including housing means, said housing means having a chamber formed therein, means communicating the material outlet flow from the pump means to the chamber, flexible diaphragm means in the chamber movable in response to increasing material pressure in the chamber, a precision bore in the housing means, a sensor rod reciprocable in said housing means precision bore and engaging said diaphragm means, spring means urging said rod against said diaphragm means, stop means on the sensor rod for limiting movement of said rod away from the chamber to reduce the amount of flexing of the diaphragm means, and switch means responsive to a predetermined movement of said rod for actuating said means for controlling flow from the pump means.

4,355,762
APPARATUS FOR ESTABLISHING A LIQUID CURTAIN

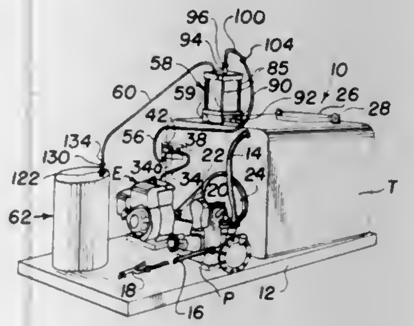
John D. Coleman, Surrey Hills, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia
Division of Ser. No. 709,068, Jul. 27, 1976, Pat. No. 4,093,016, which is a division of Ser. No. 477,380, Jun. 7, 1974, Pat. No. 3,993,252. This application May 9, 1978, Ser. No. 904,353
Claims priority, application Australia, Jun. 7, 1973, 3579/73
Int. Cl.^{3} B05B *1/36*
U.S. Cl. 239—193 4 Claims



1. Apparatus for establishing a steady, falling curtain of liquid comprising a hollow structure defining a liquid receiving chamber, liquid inlet means, means for forcing a liquid into the chamber, a horizontal slot outlet having a rounded upper edge for flow of liquid from the chamber and a wall portion of said structure which defines an external upright surface extending downwardly from the slot outlet and which terminates in a bottom blade edge disposed below said structure, whereby in use of the apparatus liquid is forced from the chamber through the slot outlet transversely of said surface then flows down said surface to establish a falling curtain of liquid which drops away from said surface at the blade edge.

4,355,763
PESTICIDE SPRAY SYSTEM

Michael W. Brandt, 1111 W. Mockingbird La., Dallas, Tex. 75247
Division of Ser. No. 623,648, Oct. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,364, Apr. 19, 1974, Ser. No. 532,446, Dec. 13, 1974, Pat. No. 3,970,121, and Ser. No. 573,490, May 1, 1975. This application Feb. 5, 1979, Ser. No. 9,123
Int. Cl.^{3} A62C *13/52*
U.S. Cl. 239—302 9 Claims



1. Apparatus to transfer a measured quantity of pesticide from a container into a tank having a pump and spray nozzle associated therewith for spraying liquid pesticide comprising: a metering chamber; means supporting the metering chamber at an elevation above the elevation of the container and above the elevation of the tank; a liquid transfer line; means connecting the liquid transfer line to the container such that a first end of the transfer line extends below the surface of pesticide in the container; means connecting a second end of the liquid transfer line in communication with the inside of the metering chamber; a vacuum line; a syphonator tube; means securing said vacuum line to said tube; a float valve; means securing said float valve to said syphonator tube; means movably securing said syphonator tube to said metering chamber such that the position of said float valve is adjustable vertically to control the level of the surface of liquid in the metering chamber; means to remove fluid from said vacuum line to reduce pressure in the metering chamber such that pressure in the metering chamber is sufficiently less than pressure in the container to sustain flow of liquid from said container through said liquid transfer line to said metering chamber; and valve means between said metering chamber and said tank, said valve means being movable between a first position wherein fluid communication between said metering chamber and said tank is blocked and a second position wherein said metering chamber is in fluid communication with said tank.

4,355,764
LOW CAPACITANCE AIRLESS SPRAY APPARATUS

Alvin A. Rood, Oberlin, and Donald R. Hastings, Elyria, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Jul. 17, 1980, Ser. No. 169,850
Int. Cl.^{3} B05B *5/02*
U.S. Cl. 239—708 19 Claims

1. An airless electrostatic spray apparatus comprising,

an elongated body of insulating material having two passages therethrough,

one of said passages being adapted to be connected with a supply of liquid coating material under sufficient pressure to effect airless atomization of said liquid coating,

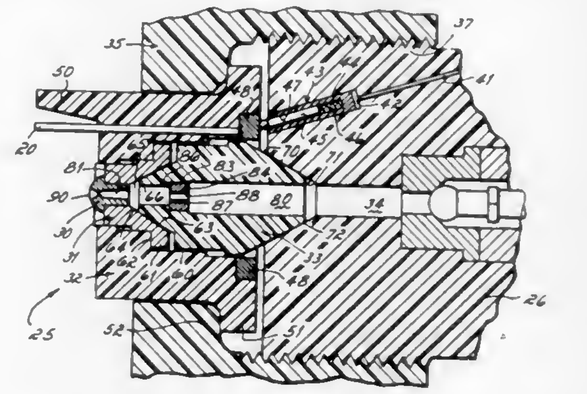
valve means for controlling flow of liquid coating material through said one passage,

electrical circuit means including electrical resistor means in the other of said passages, said circuit means being adapted to be connected to a source of electrical potential, and

a nozzle assembly comprising

a nozzle mounting ring of insulative material having an axial passage therethrough, said axial passage of said nozzle mounting ring being coaxially aligned with said one passage of said elongated body,

a nozzle support adapter, said adapter having an axial passage therethrough and being mounted within said axial passage of said mounting ring, said adapter being a single unitized piece of electrically conductive material,



an electrically conductive airless spray nozzle, said nozzle being fixedly mounted within said axial passage in said adapter,

electrically non-conductive sealing means operable between said adapter and said elongated body, and

an electrode mounted within said nozzle mounting ring, said electrode being electrically connected to said electrical circuit means but electrically insulated from said electrically conductive nozzle,

the mass of said electrically conductive nozzle and nozzle support adapter being sufficiently small and having a sufficiently low capacitance that there is no tendency for electrical current in said circuit means to arc between said electrode and said nozzle or nozzle support adapter and being sufficiently low in capacitance that any spark generated between said nozzle assembly and a grounded object is of a minimal safe energy level.

4,355,765
WEB GRANULATOR WITH NIP ROLLERS HAVING HOOKING MEMBERS

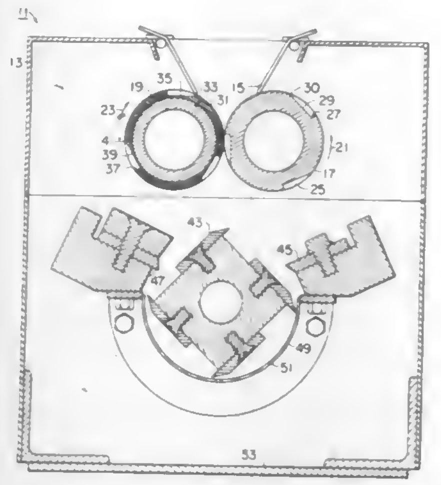
Frank Parker, and Leslie M. Parker, both of Old Brandon Rd., Hillsboro, Tex. 76645
Filed Apr. 23, 1980, Ser. No. 142,968
Int. Cl.^{3} B02C *18/22*
U.S. Cl. 241—152 A 9 Claims

1. In a granulator of the type having a cutter assembly for granulating objects into particles, an improved means for forcing scrap material into the cutter assembly, comprising in combination:

a pair of nip rollers mounted adjacent the cutter assembly and driven in opposite directions, the rollers having portions of cylindrical surfaces in rolling contact with each other for drawing scrap sheet material between the rollers and into the cutter assembly; and

grabbing means formed on one of the rollers for seizing a portion of a three dimensional scrap object and crushing it against the other roller to tear the object and feed it into the cutter assembly;

the grabbing means comprising a hook member formed on one of the rollers, the hook member having a surface facing the same direction as the direction of rotation for grabbing three dimensional objects; the hook member comprising:



a finger projecting outwardly from one of the rollers, and the other of the rollers having a circumferential slot for receiving the finger during rotation.

4,355,766

DEVICE FOR THE DESTRUCTION OF MICROFILM AND SIMILAR DATA CARRIERS

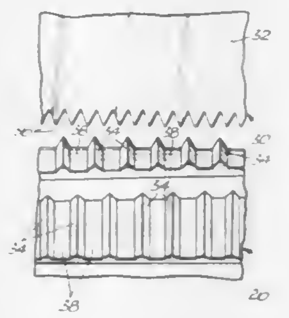
Gerhard Wigand, Enzstrasse 17, 7140 Ludwigsburg, Fed. Rep. of Germany

Continuation of Ser. No. 126,847, Mar. 3, 1980, abandoned, which is a continuation of Ser. No. 898,174, Apr. 20, 1978, abandoned. This application Oct. 17, 1980, Ser. No. 198,220

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717522; Apr. 30, 1978, 2815973

Int. Cl.³ B02C *18/18*

U.S. Cl. 241—222 7 Claims



1. In a shredding device adapted for the destruction of microfilm and related information carriers with microimage impressions, a shredding unit comprising in combination:

a stationary frame;

a shredding cutter which is rotatably supported on the frame and connected to a cutter drive, the cutter having the general configuration of a cylindrical milling cutter, with an even number of angularly spaced longitudinal cutting edges arranged on the cutter periphery; and

a stationary cutting member supported on the frame and forming a stationary cutting edge which is so positioned that it cooperates with the moving cutting edges of the rotating shredding cutter to produce a shearing action therewith; and wherein

the stationary cutting edge defines a stationary cutting profile of zigzag outline, similar to the profile outline of a regular screw thread, with triangular teeth and V-shaped grooves;

the moving cutting edges of the shredding cutter define first-position and second-position moving cutting profiles alternating with one another along the cutter circumference, both moving cutting profiles having triangular teeth spaced at twice the longitudinal pitch of the cooperating V-shaped grooves of the stationary cutting edge, so as to produce a shearing action with every other of said grooves; and

the first position moving cutting edges are longitudinally offset from the second-position moving cutting edges by the amount of said pitch; with the result that at every pass of a moving cutting edge at the stationary cutting edge against an advancing sheet of information carrier, a plurality of short, V-shaped slivers are sheared from the latter.

4,355,767

DEVICE IN GRINDING APPARATUS

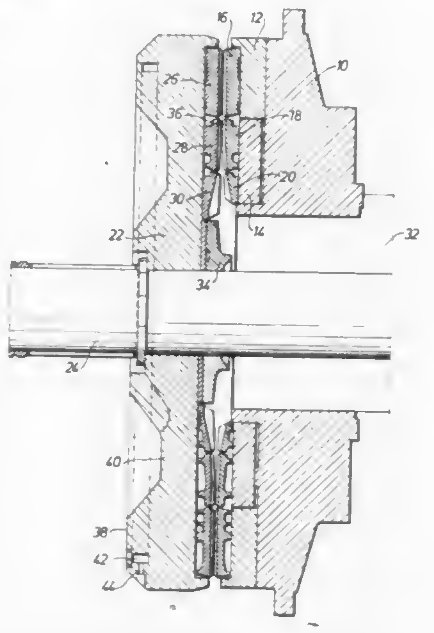
Inge J. G. Johansson, Taby, Sweden, and Rolf B. Reinhall, Bellevue, Wash., assignors to Defibrator Aktiebolag, Stockholm, Sweden

Filed Aug. 22, 1977, Ser. No. 826,537

Claims priority, application Sweden, Sep. 10, 1976, 76100627

Int. Cl.³ B02C *7/12*

U.S. Cl. 241—244 1 Claim



1. In a grinding apparatus in which lignocellulose-containing material is ground in a grinding space defined between a stationary disc and a rotating disc, the rotating disc on one face thereof having a plurality of grinding segments to be maintaind in close tolerance spacing relative to cooperating grinding segments on the stationary disc, and on the opposite face an annular bulging peripheral portion for counteracting the deflective centrifugal force on the rotating disc segments, the improvement comprising an annular channel in said bulging portion for receiving mercury in an amount calculated to generate during the rotation of the disc having the bulging peripheral portion a counter centrifugal force equal to the deflecting centrifugal force exerted on the rotating grinding segments to thereby maintain the close tolerance spacing between the cooperating grinding segments.

4,355,768

ROTARY GRINDING DISC FOR DEFIBRATING APPARATUS

Johan G. I. Johansson, Falkvägen, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Division of Ser. No. 16,320, Feb. 28, 1979, Pat. No. 4,274,602. This application Apr. 16, 1981, Ser. No. 254,650

Claims priority, application Sweden, Mar. 3, 1978, 7802471

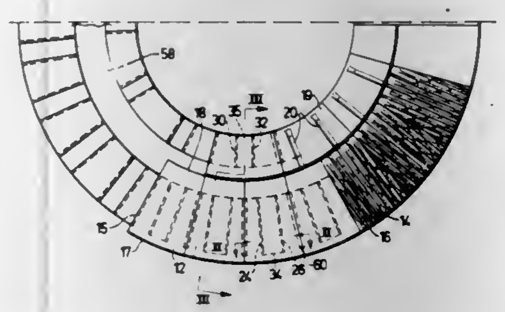
Int. Cl.³ B02C *7/04*

U.S. Cl. 241—261.3 2 Claims

1. In a defibrating apparatus in which fibrous pulp material, such as wood chips, is ground in an interspace defined between two opposed relatively rotating discs (**10**) having a central opening for introducing the material into a central feed-in zone and supporting a plurality of arcuate grinding plate segments defined between two outwardly diverging radial side walls (**48, 50**) and disposed annularly about the rotating disc, said grinding plate segments having a frontal grinding surface comprising ribs (**14**) and ridges (**16**), and a rear surface for engaging said discs, the improvement providing relatively thin and relatively light segment plates comprising:

(a) dovetail-shaped grooves (**22**) in said discs (**10**) defined between diverging side walls (**44,46**) and extending with progressively decreasing width from an inner radial portion of said discs toward a radially outer portion thereof;

(b) tongues (**34**) projecting from the rear surface of said



grinding plate segments for engaging said dovetail-shaped grooves (**22**);

(c) one of said diverging radial side walls (**48, 50**) each plate segment being parallel to one of said diverging side walls (**44, 46**) of said grooves, while the other one of said diverging radial side walls (**48, 50**) of each plate segment diverges in a radially outward direction relative to said grooves to permit insertion of said plate segments into said grooves from said central opening and thereby wedge said tongues (**34**) in dovetail fashion in said grooves during rotation of the disc.

4,355,769

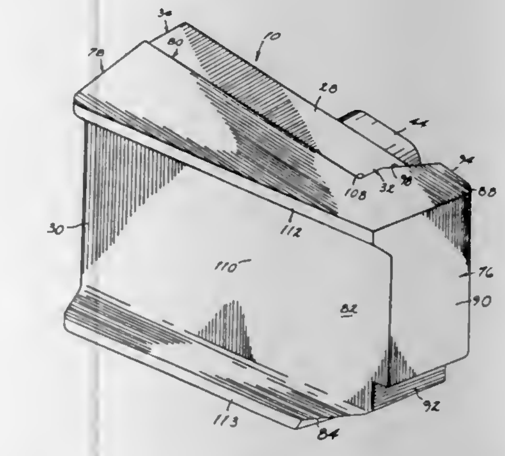
IMPELLER SHOE ASSEMBLY

Kenneth D. Warren, and Gregory G. Tenold, both of Spokane, Wash., assignors to Spokane Crusher Mfg. Co., Spokane, Wash.

Filed Jun. 16, 1980, Ser. No. 160,068

Int. Cl.³ B02C *19/06*

U.S. Cl. 241—300 4 Claims



1. An impeller shoe assembly for directing material radially outward from a central distribution disc on a horizontal turntable of a vertical shaft centrifugal impact crushing machine to impact the material against stationary anvils circumscribing the turntable, comprising:

an elongated supporting base member having a bottom face, a top face, a back face and a front face extending from an inner end to an outer end, with securing means projecting from the back face to releasably secure the base member to a turntable bracket with the back face engaging the bracket;

an inner end of the base member having a shoulder surface;

said front face of the base member having a longitudinal female dovetail groove formed therein extending from the inner end face towards the outer end face intermediate the bottom face and the top face;

an elongated wear resistant member having a bottom face, a top face, back face and a front face extending from an inner end to an outer end with the front face directing the material therealong radially outward from the central disc to impact against the stationary anvils;

said back face of the wear resistant member having a longitudinal male dovetail projection formed therealong extending from the outer end toward the inner end between the bottom and top faces for interfitting within the complementary dovetail groove to releasably secure the wear resistant member to the supporting base member; and

said back face of the wear resistant member having an abutment surface for engaging the shoulder surface to position the wear resistant element longitudinally relative to the supporting base member to minimize wear of the supporting base member.

4,355,770

COP SUPPLYING APPARATUS FOR AUTOMATIC WINDING MACHINE

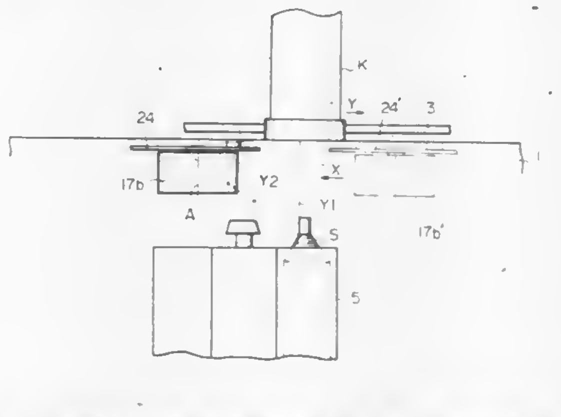
Buro Suganuma, Nagaokakyoshi; Noboru Sekitani, Hirakatashi; Yasuaki Hatanaka, and Yasuhiro Inoue, both of Nagaokakyoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Mar. 11, 1980, Ser. No. 129,364

Claims priority, application Japan, Mar. 13, 1979, 54-29653

Int. Cl.³ B65H *54/26, 67/02*

U.S. Cl. 242—35.5 A 5 Claims



1. In cop supplying apparatus for an automatic winding machine wherein a cop supplying truck runs along individual winding units of the automatic winding machine and cops are dropped into magazines of the winding units from the cop supplying truck, without the truck stopping at the individual winding units, through a long hole in a bottom plate of the cop supplying truck and wherein the cops on the cop supplying truck are driven over the long hole at substantially the speed of the cop supplying truck so that their speed at the individual winding units is substantially zero with respect to the winding units, means operable between the cop supplying truck and the magazines of the winding units for preventing spreading of yarn from cops dropped into one magazine from the cop supplying truck to an adjacent magazine.

4,355,771

TRANSFER MECHANISM IN THE WINDING OF STOCK MATERIAL

Joseph H. Hollier, Jr., Pearcy, Ark., assignor to Sutco, Inc., Hot Springs, Ark.

Filed Jun. 11, 1980, Ser. No. 158,514

Int. Cl.³ B65H *19/26*

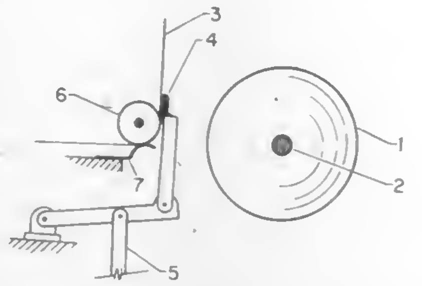
U.S. Cl. 242—56 R 3 Claims

1. In a device for winding a web of stock material on a spool on a cantilevered support to prepare a package, the improvement therein for: (a) facilitating removal of a finished package after severing of the web therefrom and (b) facilitating the positioning of the severed end of the web and the subsequent

attachment thereof to a new spool which has been placed on the support; the improvement comprising:

(1) a guide roll located upstream of the cantilevered support and in proximity thereto, over the surface of which guide roll the web passes on its way to the package;

(2) a resilient strap anchored in proximity to the guide roll and extending to engage the surface thereof, so that the web is urged by the resilient strap against the surface of the guide roll, over which surface the web passes on its way to the package; and



(3) lifting means for raising the severed end of the web away from the surface of the finished package and supporting the severed end of the web in a raised position until the finished package has been removed from the cantilevered support and a new spool has been placed thereon, whereupon the lifting means is lowered so that the severed end of the web is positioned in contact with the surface of the new spool for attachment thereto, and subsequent commencement of the winding operation.

4,355,772
FAST ACTING AUTOMATIC SEAT BELT RETRACTOR

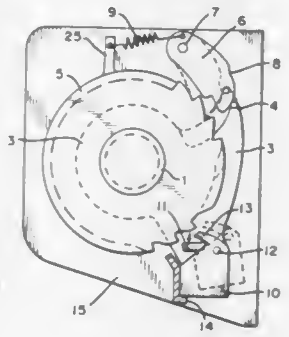
Heinz-Dieter Adomeit, Berlin, Fed. Rep. of Germany, assignor to N.V. Klippan S.A., Heverlee-Leuven, Belgium

PCT No. PCT/DE79/00060, § 371 Date Oct. 19, 1979, § 102(e) Date Oct. 19, 1979, PCT Pub. No. WO80/02823, PCT Pub. Date Dec. 24, 1980

PCT Filed Jun. 21, 1979, Ser. No. 253,768

Int. Cl.^{3} A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **10 Claims**



1. A rapid locking automatic seat belt retractor comprising a main housing, a shaft rotatably mounted in the housing with a seat belt wound thereon, a rewind spring for the shaft, a locking mechanism comprising a vehicle inertia sensor, a movably mounted locking element, a locking gear connected to said shaft for rotation therewith and a control member for engaging the locking element with the locking gear to lock the retractor, and a rotational shaft acceleration sensing means capable of actuating the locking element to engage the locking gear upon excessive belt acceleration characterized in that:

the control member comprises a pivotable plate **(3)** mounted about shaft **(1)**, the plate **(3)** having a portion **(4)** directly engageable with the locking element **(6)** to move the locking element **(6)** to engage the locking gear **(5)**;

a housing **(10)** for the inertia sensor, said housing being integral with said plate **(3)** and a pawl **(11)** provided on the housing **(10)**, and means rotatable with said shaft and engageable by said pawl, whereby when said pawl **(11)** is moved by said inertia sensor to engage said rotatable means further unwinding rotation of said shaft **(1)** pivots said pawl **(11)**, housing **(10)** and integral plate **(3)** to cause locking element **(6)** to engage locking gear **(5)** thereby locking the shaft;

and wherein the locking element **(6)** and locking gear **(5)** are mounted on the exterior of main housing **(15)**, the portion **(4)** of plate **(3)** acting to directly pivot locking element **(6)** upon pivoting of plate **(3)**; and

the rotational acceleration sensing means **(18,20)** actuates pivoting movement of plate **(3)** upon excessive belt acceleration to lock the retractor.

4,355,773
RETRACTABLE RUNNING GEAR FOR VEHICLE

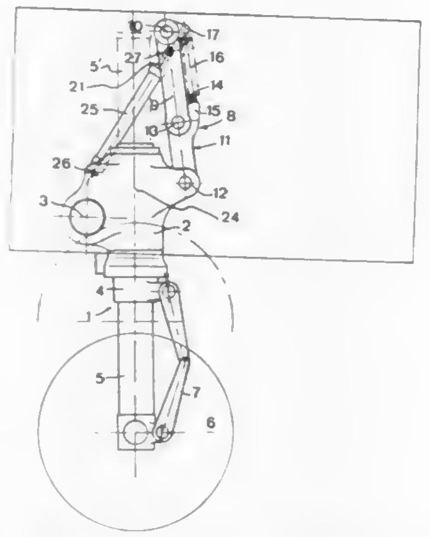
Jean Masclet, Paris, and Andre Turiot, Normandie-Niemen, both of France, assignors to Messier-Hispano-Bugatti (SA), Montrouge, France

Filed Aug. 8, 1980, Ser. No. 176,498

Claims priority, application France, Sep. 13, 1979, 79 22926; Jun. 27, 1980, 80 14312

Int. Cl.^{3} B64C *25/10, 25/26*

U.S. Cl. 244—102 R **9 Claims**



1. Retractable rolling apparatus for a vehicle, in particular, an airplane or a helicopter, comprising:

a leg member mounted at a first point of attachment on said vehicle around a first axis of rotation;

at least one wheel secured to said leg;

a strut including a rod adapted to be fixed on said vehicle at a second point of attachment thereon and having a second axis of rotation;

a lever pivotally mounted on said rod around a a third axis of rotation and on said leg around a fourth axis of rotation;

an actuating jack for simultaneously acting on said strut and said leg;

first connecting means between one end of said jack and said leg at a third point on said leg to provide rotational torque to said leg; and

second connecting means between the other end of said jack and a fourth point of attachment on said strut to provide rotational torque to said strut, said third and fourth points being spaced apart from said first and second points of attachment and substantially in the proximity respective of said first and second points of attachment.

4,355,774
PARACHUTE INFLATION ASSISTANCE DEVICE

Garland C. Koenig, 1845 Tara Dr., Prattville, Ala. 36067

Continuation-in-part of Ser. No. 19,627, Mar. 12, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,795

Int. Cl.^{3} B64D *17/02, 17/62*

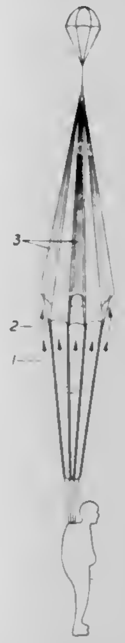
U.S. Cl. 244—145 **12 Claims**

1. In a parachute inflation assistance device for use on a

circular canopy having a skirt at the lower end thereof and a lateral band at the upper end thereof,

(a) external gores covering selected areas of said circular canopy with each said external gore having lateral edges which flare downwardly from said upper lateral band and terminate at an elevation ranging from approximately 4 to 14 inches above and in spaced relation to the skirt of said circular canopy,

(b) means joining said lateral edges of each said external gore to the adjacent surface of said circular canopy which it covers with the width of said external gore being greater than that of said surface which it covers to define a generally radially extending compartment therebetween having an upper closed end and an open lower end, each said compartment quickly filling with air upon parachute extraction so as to rapidly open said canopy at the skirt first thereby forcing the canopy to fill from the skirt upwards to the apex in a rapid filling sequence, and



(c) there being an anti-oscillation vent slot in the upper one-third portion of each said external gore for release of air from said compartment defined between said external gore and the surface of said circular canopy which it covers.

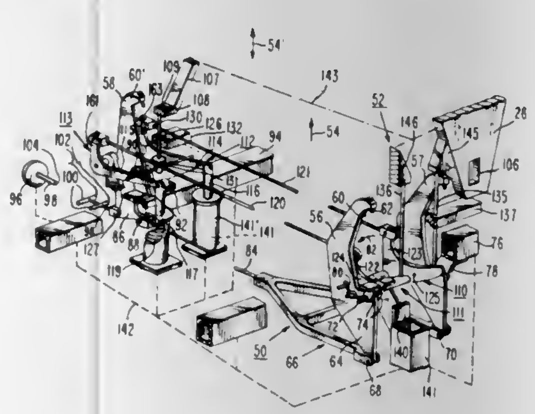
4,355,775
SPACECRAFT SEPARATION APPARATUS

Eugene R. Ganssle, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,796

Int. Cl.^{3} B64G *1/64*

U.S. Cl. 244—158 R **8 Claims**



1. A spacecraft separation apparatus comprising:

a support structure,

means for releasably securing said spacecraft to said structure, and

spacecraft separation and acceleration means secured to said structure comprising means for applying distributed separate forces in the same direction and during equal, simultaneous time intervals to said spacecraft at at least three spaced points in a direction away from said structure to accelerate said spacecraft in said direction, the lines joining said points forming a triangle, the area containing these lines extending in a direction parallel to the forces forming a triangular tube, the center of gravity of said spacecraft being located within said triangular tube, whereby upon release of said spacecraft by said means for securing, said spacecraft separates from said structure by translating in said direction without rotation.

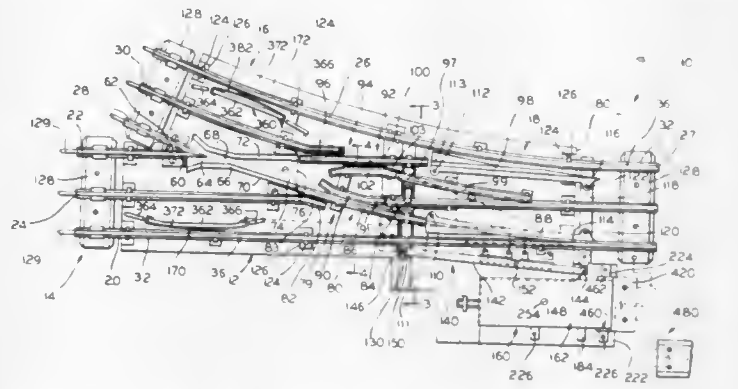
4,355,776
TOY RAILROAD TRACK SWITCH ARRANGEMENT

Carl N. Rydin, 4S556 River Rd., Naperville, Ill. 60540

Filed Oct. 2, 1980, Ser. No. 193,138

Int. Cl.^{3} B61L *5/06, 11/08;* **E01B** *7/00*

U.S. Cl. 246—415 A **14 Claims**



1. In a toy railroad track switch assembly for toy electric railroad trains of the type having a locomotive equipped with an electrical pick up power rail riding rollers, with the train locomotive and cars being equipped with rail engaging wheels for riding on the track, said switch assembly including a flat base, main and branch line track rails merging in track switch relation on the base including outside continuous main and branch line wheel bearing side rails, a wheel bearing frog having a heel and a toe, inside main and branch line wheel bearing side rails merging at the heel of the wheel bearing frog, a main line power rail centered between the main line side rails and interrupted adjacent the frog toe to define interruption end portions, a branch line power rail centered between the branch line side rails and having an end portion merging with the main line power rail, said branch line power rail being interrupted adjacent the frog toe to define interruption end portions, a pair of switch points pivotally mounted at like ends on the base to dispose their other ends in projecting relation from the branch line rails and within the outside rails, with the other ends of said switch points being mounted for movement into and out of switching relation with the respective outside rails, and rail sections secured to the base connecting the frog toe with the respective switch points said one ends through said power rail interruptions,

the improvement wherein:

said rail sections each comprise:

a main line center rail continuity rail structure interposed within the main line power rail interruption in overlapping relation with the respective main line power rail interruption end portions, and comprising a first transfer rail aligned with the branch line inside rail and extending between frog toe and said one end of the switch point on the main line outside rail side of the switch assembly, and a guard rail adjacent and electrically connected to said first transfer rail on the gauge side of same,

said main line center rail continuity rail structure being electrically insulated from said power rails, and being positioned for continuous electrical power pick up engagement therealong by the power rail riding roller as the train moves across said main line center rail continuity structure and the power rail riding roller rides the main line center rail continuity rail structure along and between the respective main line power rail interruption end portions,

a branch line center rail continuity rail structure interposed within the branch line power rail interruption in overlapping relation with the respective branch line power rail interruption end portions, and comprising a second transfer rail aligned with the main line inside rail and extending between the frog toe and said one end of the other switch point, and a guard rail adjacent an electrically connected to said second transfer rail on the gauge side of same,

said branch line center rail continuity rail structure being electrically insulated from said power rails and from said main line continuity rail structure, and being positioned for continuous electrical power pick up engagement therealong by the power rail riding roller as the train moves across said branch line center rail continuity rail structure and the power rail riding roller rides the branch line center rail continuity rail structure along and between the respective branch line power rail interruption end portions,

said improvement further comprising:

a first guard rail section in the main line on the gauge side of the main line outside rail adjacent the frog and having an electrical contact on the wheel engaging side of same,

a second guard rail section in the branch line on the gauge side of the branch line outside rail adjacent the frog and having an electrical contact on the wheel engaging side of same,

said guard rail sections being electrically insulated from the main and branch line rails,

a pair of spaced apart parallel throw bars mounted on said base, underlying the main line and extending transversely of same, for movement lengthwise of the respective throw bars,

one of said throw bars having said other ends of said switch points secured thereto for said mounting of same for effecting said switching relations with the respective outside rails, and the other of said throw bars being disposed under said continuity rail structures,

a cross lever extending between said throw bars adjacent to and outside of the main line outside rail and pivotally connected therebetween,

said cross lever being pivoted intermediate its ends to the base for pivotal movement about an axis extending normally of the base,

said other throw bar including a contact plate movable therewith and electrically connected to one of said power rails and being proportioned lengthwise of said other throw bar to electrically engage said branch line continuity rail structure, to the exclusion of said main line continuity rail structure, when said switch points are disposed for branch line travel, and to electrically engage said main line continuity rail structure, to the exclusion of said branch line continuity rail structure, when said switch points are disposed for main line travel,

means for power shifting one of said throw bars longitudinally thereof in opposite directions lengthwise thereof for power shifting both of same through said cross lever between their respective operating positions,

said power means comprising electrically operated oppositely acting thrust means including solenoid means for actuating same, with said solenoid means being electrically connected to one of the power rails,

each of said guard rails section contacts being electrically connected to said solenoid means by a trigger circuit for separately actuating said power means when a train moves through the switch assembly in a predetermined direction on the branch line to the main line, or in the same direction on the main line,

whereby, when a train moves through the main line of the switch assembly in the predetermined direction, the switch points have their said other ends disposed for main line passage of the train through the switch assembly and said main line continuity rail structure is energized for continuous electrical power pick up therealong by the power rail riding roller during such train main line passage through the switch assembly, and when a train moves through the switch assembly branch line to its main line, the switch points have their said other ends disposed for switching of the train to the main line and said branch line continuity rail structure is energized for continuous electrical power pick-up therealong by the power rail riding roller during such branch line to main line passage through the switch assembly.

4,355,777

VIBRATION ISOLATING SURFACE PROTECTOR WITH HIGH TRACTION PROPERTIES

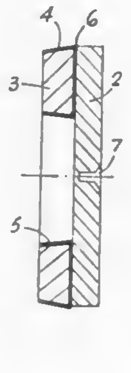
James G. Greenstreet, 270 Fairmont Ave., Ottawa, Ontario, Canada (K1Y 1Y2)

Continuation of Ser. No. 58,652, Jul. 19, 1979, abandoned. This application Oct. 21, 1981, Ser. No. 313,410

Claims priority, application Canada, Dec. 11, 1978, 317670

Int. Cl.^{3} A47B *91/00*

U.S. Cl. 248—346 **3 Claims**



1. A surface protection device comprising: a flat substantially rigid backing plate of predetermined contour having front and rear surfaces, said rear surface having a recess means for the location of a cooperating load-source device, said front surface having a compliant soft resilient matching slab cushion in retentive intimate contact therewith, said cushion having disposed on edges thereof integral surrounding outer and annular inner thin skin-like compliant membrane portions arranged in symmetrical relationship, said outer and inner membrane portions respectively converging and diverging progressively away from said front surface of said plate at an angle between 1° and 10° with respect to an axis normal to said front surface thereby forming a pressure sensitive hollow substantially conical frustrum by means of which said cushion and said membrane portions mutually cooperate to produce high frictional properties in conjunction with a working surface when light loads are applied in a direction approximately normal to said rear surface at said recess means.

4,355,778

ADJUSTING DEVICE FOR A SEAT

Peter Hess, Coburg; Hans Rampel, Ahorn, and Volkmar Schulz, Coburg, all of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

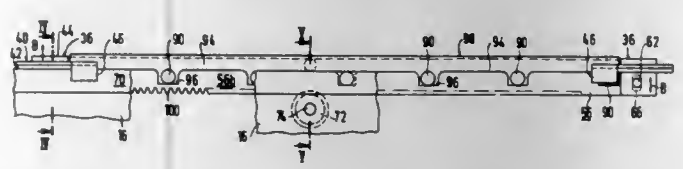
Filed Apr. 16, 1980, Ser. No. 140,748

Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918761

Int. Cl.^{3} F16M *13/00*

U.S. Cl. 248—429 **4 Claims**

1. Adjusting device for a seat, particularly a seat in a motor vehicle, for moving the seat along a generally horizontally extending given direction, comprising a sliding seat guide mechanism, said sliding seat guide mechanism comprising a first part arranged to mount the seat and a separate second part located below said first part, said first part including a tubular upper part arranged to be connected to the seat, an elongated rack extending in the given direction and connected to one of said first and second parts and a pinion connected to the other one of said first and second parts, said rack disposed in meshed engagement with said pinion for moving said first and second parts relative to one another, wherein the improvement comprises that said rack is supported so that it can be adjustably displaced in a generally vertically extending direction extending transversely of the given direction for providing a predetermined dimension between said rack and the axis of said pinion, and a guide member mounted on said second part and extending into contact with said rack for maintaining the predetermined distance between said rack and the axis of said pinion, said first part includes two pair of L-shaped stampings located one above the other, each said pair of stampings being located adjacent and in contact with the bottom surface of an opposite end of said tubular upper part, each of said stampings having a horizontally extending leg and a vertically extending leg depending downwardly from said horizontally extending leg, said horizontally extending legs disposed in contact with one another and said vertically extending legs disposed in laterally spaced and general parallel relation, said rack extending between said pairs of stampings with said rack located between and secured to said vertically extending legs, said rack has a set of teeth thereon facing downwardly, said rack having a vertically extending oblong hole therethrough, a rivet extending through said vertically extending legs and said oblong hole for connecting said rack to said pair of stampings, a support member connected to and extending upwardly from said second part, a guide rail supported on the upper end of said support member, said horizontally extending legs of said stampings slidably mounted on said guide rail, webs extending downwardly from said horizontally extending legs and disposed on opposite sides of and closely adjacent to said guide rail, a support stirrup secured to said support member intermediate said pairs of stampings and extending upwardly therefrom and located laterally outwardly from said rack, said support stirrup having a free end located upwardly from said rack, a drive shaft extending transversely of and supported in said support member and support stirrup, said pinion mounted on said drive shaft and located below and in meshed engagement with said teeth on said rack, and said guide member is secured to said support stirrup above said rack, the upper edge of said rack being smooth, and said guide member is maintained in contact with the smooth upper edge of said rack.



4,355,779

COLLAPSIBLE STAND FOR SHEET MUSIC AND THE LIKE

Simca Heled, 211 East 70th St., New York, N.Y. 10021

Filed Mar. 2, 1979, Ser. No. 16,881

Int. Cl.^{3} A47B *97/04*

U.S. Cl. 248—460 **8 Claims**

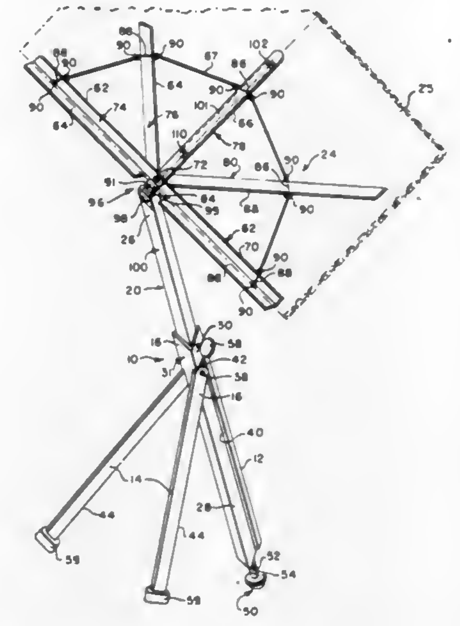
1. A stand for sheet music and the like comprising:

a first leg having a longitudinally extending non-circular bore open at one end;

a shaft having a cross section corresponding to said bore, said shaft being slidable within said bore through said open end;

a pair of additional legs pivotally secured to said first leg at a substantially common location for movement between a collapsed position wherein said additional legs are substantially aligned with said first leg and an open position wherein said additional legs extend outwardly from said first leg and said three legs collectively define a generally pyramidal base;

a support including a plurality of arms pivotally secured together at one end, said arms being movable between a collapsed position wherein said arms are substantially aligned and an open position wherein said arms are out of alignment for defining a supporting surface for said sheet music and the like; each of said arms having an aperture therein and further comprising a knotted flexible member secured to said support and extending through said apertures, said knots being larger than said apertures and spaced for holding said arms in said open position; and



means for securing said support to the free end of said shaft for movement between a collapsed position wherein said support is substantially aligned with said first leg when said arms are collapsed and said shaft is substantially fully received in said bore, and an open position wherein said support extends beyond the free end of said shaft and the weight of said support is distributed about an axis extending through said common location and perpendicular to the horizontal when said arms are in said open position.

4,355,780

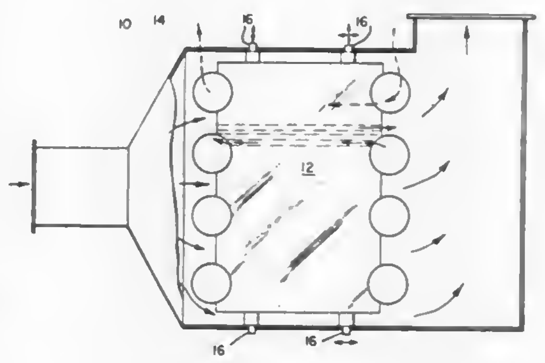
HEAT EXCHANGER MOUNTING DEVICE

David G. Bridgnell, Rolling Hills, and Frederick W. Jacobsen, Garden Grove, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 597,049, Jul. 18, 1975, Pat. No. 4,216,937, which is a division of Ser. No. 447,906, Mar. 4, 1974. This application Mar. 17, 1980, Ser. No. 130,674

Int. Cl.^{3} F16M *1/00;* F28F *7/00*

U.S. Cl. 248—675 **33 Claims**



1. A mount for supporting a heat exchanger core within a housing having inwardly extending post means, said mount comprising:

at least one layer of metallic hollow core structure means for floatably supporting said core within the housing;

support means cooperative with said structure means;

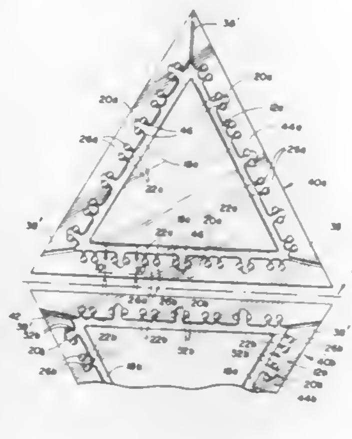
socket means having an opening within said mount for releasably attaching said mount to said post means;

means affixing an inner end of said metallic hollow core structure against the core;

wherein said metallic hollow core structure comprises radially disposed fins.

4,355,781
KIT FOR ASSEMBLING GEODESIC STRUCTURE

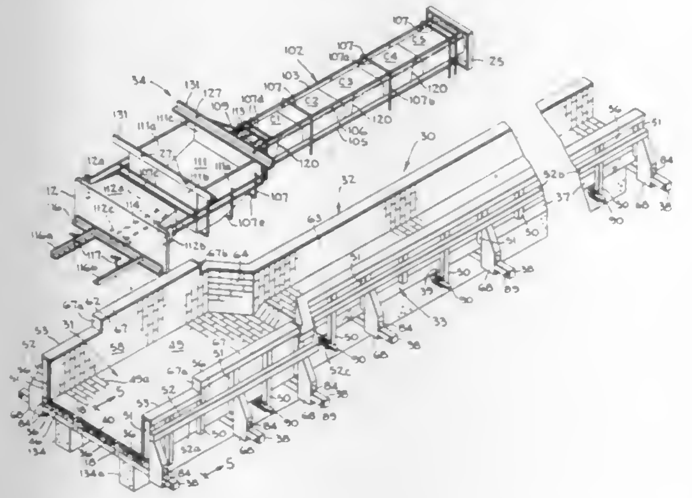
Roger M. Stolpin, 1629 Ohio Ave., Flint, Mich. 48055
Division of Ser. No. 101,398, Dec. 7, 1979, Pat. No. 4,309,852.
This application Oct. 30, 1981, Ser. No. 316,611
Int. Cl.³ B28B *7/16, 7/20, 7/28*
U.S. Cl. 249—64 **4 Claims**



1. A die for injection molding plastic polygonal panels having male and female connection lugs for connecting a plurality of such panels by a snap action assembly to provide an assembled structure, said die comprising: a pair of die sections; each die section including a cavity section such that the die sections cooperate to define a cavity within which the injection molding of the panel can be performed; inserts received within the cavity to provide depressed connection surfaces on one set of the connection lugs; and resilient mounts for resiliently positioning the inserts on one of the die sections while permitting movement thereof with respect thereto so that a molded panel can be conveniently removed from the die sections without a die lock situation that would prevent such removal.

4,355,782
MOLD FOR FORMING FIREPLACES

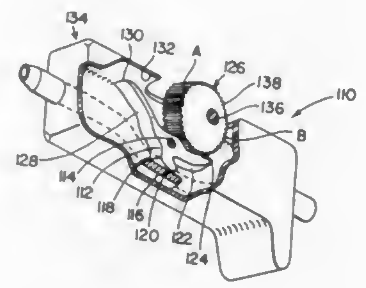
Ray J. Scholz, Los Altos; William C. Southern, Los Gatos, and Leslie R. Wieduwilt, Jr., Cupertino, all of Calif., assignors to Sierra Precast, Inc., San Jose, Calif.
Filed Jan. 26, 1981, Ser. No. 228,149
Int. Cl.³ B28B *7/22*
U.S. Cl. 249—93 **8 Claims**



1. In a mold, a first mold section having a concrete-engaging surface bounded by two spaced side edges, second and third sections, and means mounting said second and third sections on opposite sides of said first section for translatory movement into sealing contact with said side edges of said first section, said mounting means including a plurality of roller assemblies carried by each of said second and third sections, each assembly including a pair of plates mounted in spaced parallel relation on the associated mold section, each plate having a pair of aligned slots, each slot in one plate being in alignment transversely of the plates with a slot in the other plate, a pair of shafts, each shaft extending through a pair of transversely aligned slots, each shaft having a threaded hold adjacent each end, an internally-threaded member carried by each plate adjacent each slot, a screw threaded through one of said internally-threaded members and through a threaded hole in an adjacent shaft, and a roller disposed on each shaft.

4,355,783
FLOW CONTROL DEVICE

Marius J. Morin, Rancho Palos Verdes, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.
Division of Ser. No. 957,778, Nov. 6, 1978, Pat. No. 4,265,425.
This application Feb. 17, 1981, Ser. No. 235,357
Int. Cl.³ F16K *7/06*
U.S. Cl. 251—9 **3 Claims**



1. A hand-held flow control device for use with a length of flexible tubing wherein fluid flow through said tubing is controlled without contact between said device and said fluid, comprising:

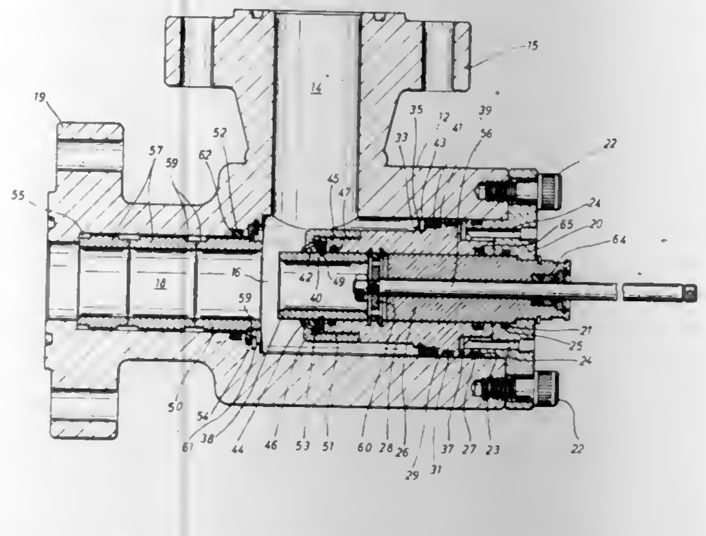
(a) a body member fixably mounted to a portion of said length of tubing and providing a clamping surface;

(b) a clamping member rotatably attached, at a central portion thereof, to the body member and having a first extension extending from the central portion for progressively clamping said tubing against said clamping surface as the clamping member is rotated, having a second extension extending from the central portion for engaging a force-inducing member to cause rotational movement, said first extension being shorter than the second extension and angled relative thereto to create a mechanical advantage in clamping said tubing and a third extension, integrally formed on the clamping member, projecting in a direction generally away from said first and second extensions to contact a portion of said body member when the force-inducing member is being urged against the second extension, said contact providing a spring-like bias to urge the clamping member away from said flexible tubing; and

(c) said force-inducing member being rotatably attached, at a point of rotatable attachment, to said body member in opposing relation to said second extension to provide a cammed peripheral surface so that rotation of the force-inducing member in one direction causes said outer surface to contact and pivot said clamping member to progressively clamp said tubing.

4,355,784
METHOD AND APPARATUS FOR CONTROLLING BACK PRESSURE

Lester L. Cain, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.
Filed Aug. 4, 1980, Ser. No. 174,826
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—63 **16 Claims**



1. A back pressure control choke comprising:

a housing having an inlet channel intersecting with an axial bore, with one end of the axial bore defining a discharge channel for fluid passing through the choke;

a choke seat member concentrically mounted within the axial bore between the inlet channel and the discharge channel, the choke seat member having a generally cylindrical internal surface;

a mandrel, fixed to the housing, coaxially extending into the axial bore in that portion of the axial bore opposite the discharge channel;

a shuttle, slideably mounted on the mandrel within the axial bore, the surface area of the forward axial end of the shuttle facing the discharge channel being substantially equal to the surface area of the rear axial end of the shuttle;

a first dynamic seal means between the shuttle and the axial bore of the housing;

a second dynamic seal means between the shuttle and the mandrel such that a closed chamber is formed within the axial bore by the rear of the shuttle, mandrel and housing;

a choke element mounted to the forward end of the shuttle, cylindrically shaped and concentric with the axial bore, the choke element having a predetermined size permitting insertion and withdrawal from the choke seat member; and

a means for applying fluid pressure to the closed chamber and the rear axial end of the shuttle, thereby controlling the movement of the shuttle and choke element relative to the choke seat member and the back pressure exerted on the fluid passing through the choke.

4,355,785
ELECTRICALLY DRIVEN SHEAVE

Lawrence P. Tosato, Millburn, and Clyde M. Mullis, Glen Rock, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 23, 1981, Ser. No. 237,017
Int. Cl.³ B66D *1/12, 3/20, 5/12*
U.S. Cl. 254—362 **13 Claims**

8. An electrical drive, comprising:

a drive motor having a stator, and a rotor within said stator,

said stator including a housing having first and second ends,

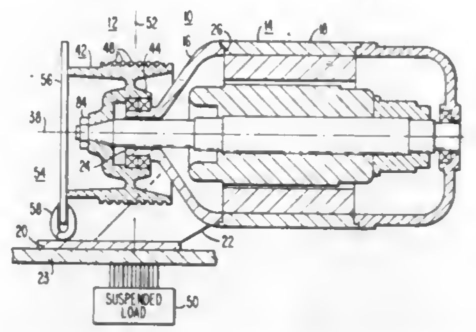
said housing including a tubular portion adjacent to its first end which has an interior surface defining a first opening, and an exterior surface,

first and second bearing means supported by said stator, with the first bearing means being mounted on the exterior surface of said tubular housing portion,

and a sheave, said sheave being mounted for rotation on said first bearing means,

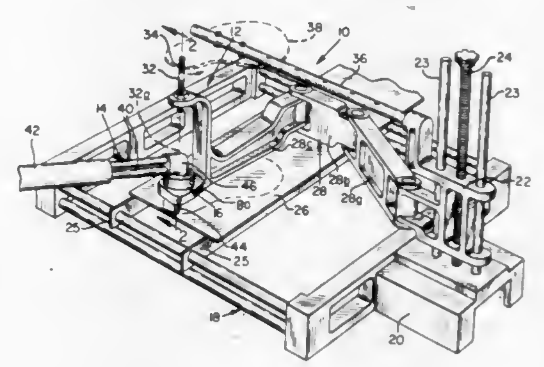
said rotor including a drive shaft having a first end which extends through said first opening into driving engagement with, and support by, said sheave, and a second end support by said second bearing means,

whereby a load applied to said sheave is supported by said first bearing means and said housing, enabling the drive shaft of said rotor to be sized only according to torque requirements.



4,355,786
TORCH MOUNTING APPARATUS IN A CUTTER MACHINE

Robert H. Hamilton, Jr., 2688 11th Ave., and Steven E. Adams, 3328 Columbine, both of Lebanon, Oreg. 97355
Filed Aug. 18, 1981, Ser. No. 293,927
Int. Cl.³ B23K *7/10*
U.S. Cl. 266—62 **3 Claims**



1. Apparatus adapting a guide device for use with a cutting torch, where the guide device includes an articulated arm having a distal end which is freely movable in a plane, and means adjacent said distal end adapted to engage a pattern template as the arm is guided by such a template in such plane, and where the torch includes a handle and an elongated nozzle disposed at an angle relative to the handle and having a flame-directed cutting axis, said apparatus comprising

a bushing adapted for releasable clamping onto such a nozzle, and

means formed adjacent said distal end for receiving said bushing freely for rotational movement with respect thereto about the nozzle's cutting axis, with such axis disposed substantially normal to said plane, and directed into said zone, enabling arm-guided movement of the torch by manipulation of the torch's handle.

4,355,787

METHOD OF CONTROLLING THE NOZZLE DAMPER OF A METALLURGICAL VESSEL

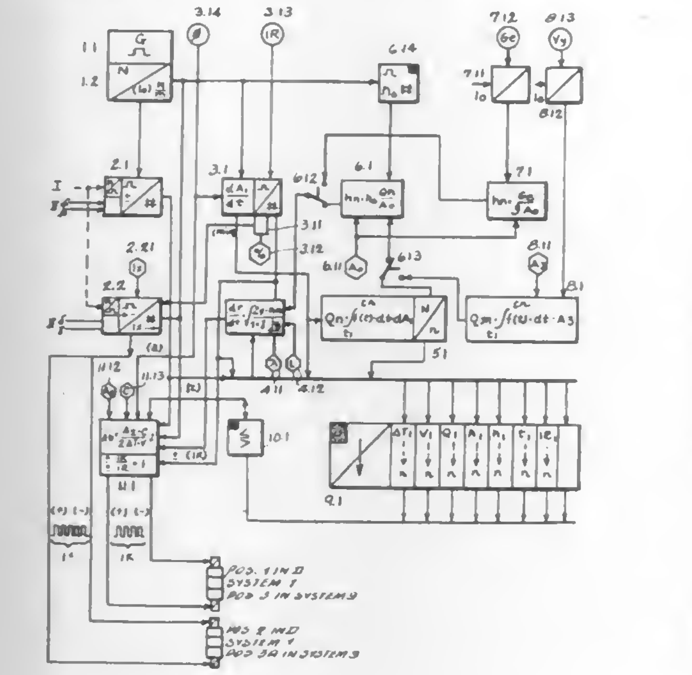
Heinz D. Hannes, Düren-Echtz; Josef Lothmann, Langerwehe, and Ludwig Walther, Düren-Niederau, all of Fed. Rep. of Germany, assignors to Zimmermann & Jansen GmbH, Düren, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 166,695

Claims priority, application Fed. Rep.. of Germany, Jul. 3, 1979, 2926863

Int. Cl.^{3} C21D *11/00*

U.S. Cl. 266—92 **13 Claims**



1. A method of controlling the nozzle damper of a vessel for metallurgical casting in response to a level variation in the volume of molten metal tapped from said vessel comprising the steps of:
   (a) monitoring the actual damper opening area from an initial time;
   (b) determining the volume of the molten metal discharged from said vessel from said initial time by integrating the previous actual opening areas monitored by said step (a);
   (c) determining the vertical level of molten metal above said nozzle damper in response to said step (b); and
   (d) stepwise adjusting the position of said nozzle damper in response to said step (c).

4,355,788

HOT METAL RUNNER SYSTEM WITH AIR POLLUTION CONTROLS

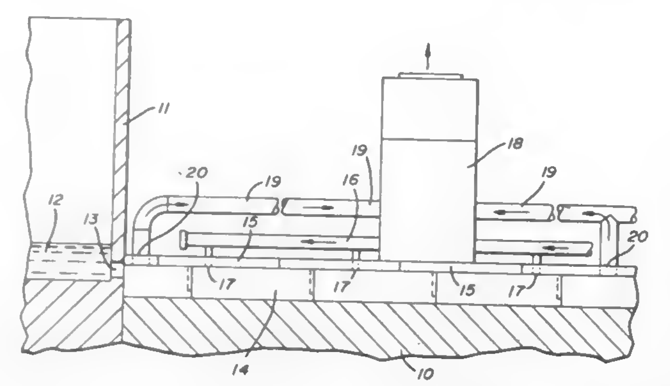
Micheal D. La Bate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 133,356, Mar. 24, 1980, Pat. No. 4,300,753, which is a continuation-in-part of Ser. No. 123,369, Feb. 21, 1980, Pat. No. 4,262,885. This application Jun. 12, 1981, Ser. No. 273,018

Int. Cl.^{3} F27D *3/14*

U.S. Cl. 266—157 **8 Claims**

1. An improvement in a closed ferrous metal runner system for a hot metal pouring floor, said system extending from a source of molten metal to a pouring point thereof, the improvement comprising means for preventing air pollution of the pouring floor environment, said runner system comprising the combination of a plurality of elongated trough-like body members arranged in end to end relation, each of the members having an integral base with spaced parallel upstanding side sections and a plurality of elongated slab-like covers positioned in end to end relation on said plurality of trough-like body members arranged to prevent fluid communication between said covered trough-like members and the environment surrounding the same, said air pollution preventing means including means in communication with at least one opening in one of said covers for injecting live steam therein, said means for injecting live steam comprising a source of steam and a pipe communicating with said source of steam and said first mentioned opening and secondary means in communication with at least one opening in at least one of said covers for withdrawing said steam and entrained smoke, gas, air and air pollutants therefrom, said means for withdrawing said steam and entrained smoke, gas, air and air pollutants comprising a vacuum machine and a pipe communicating with said vacuum machine and with said second mentioned opening, said air pollution preventing means further including pollutant removal means in communicating relation with said air withdrawing means for separating said air pollutants from said steam and air.



4,355,789

GAS PUMP FOR STIRRING MOLTEN METAL

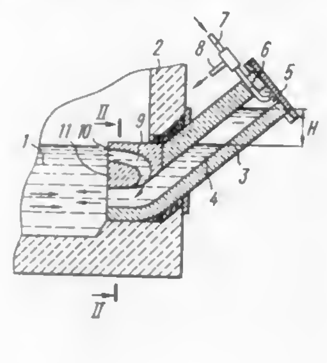
Boris S. Dolzhenkov, ulitsa Aerodromnaya, 87-2; Vladimir F. Andreev, ulitsa Volskaya, 21-6, both of Kuibyshev, and Vitalii A. Pimenov, ulitsa Timiryazeva, 65V-1, Kuibyshevskaya oblast, Syzran, all of U.S.S.R.

PCT No. PCT/SU79/00026, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 7, 1981, PCT Pub. No. WO80/02586, PCT Pub. Date Nov. 27, 1980

PCT Filed May 15, 1979, Ser. No. 229,579

Int. Cl.^{3} C22B *9/04;* F04F *7/00*

U.S. Cl. 266—207 **3 Claims**



1. A melting furnace including a melting chamber at least partially defined by a side wall and a gas pump for stirring molten metal situated within said melting chamber, said gas pump comprising a refractory-lined pipe with a removable cover formed with an opening adapted to communicate the pipe interior with a compressed gas supply system and with a vacuum system, said pipe extending through said melting chamber side wall in a generally downward direction from an upper portion located outside of said melting chamber to a lower portion located within said melting chamber, said pipe having an inner passage opening at an outlet portion into the interior of said melting chamber, said lower portion of said pipe having a thicker upper wall in which is formed at least one auxiliary duct opening into the interior of said melting chamber at a location above said outlet portion of said pipe inner passage and which communicates with said inner passage of the pipe through an inlet substantially tangential thereto and having its outlet portion directed along the flow of metal at the moment of its expulsion from the inner passage of the pipe.

4,355,790

HEAT-TREATMENT DEVICE FOR PROLONGING THE LIFE OF A PRESSURE VESSEL SUCH AS A REACTOR PRESSURE VESSEL ESPECIALLY

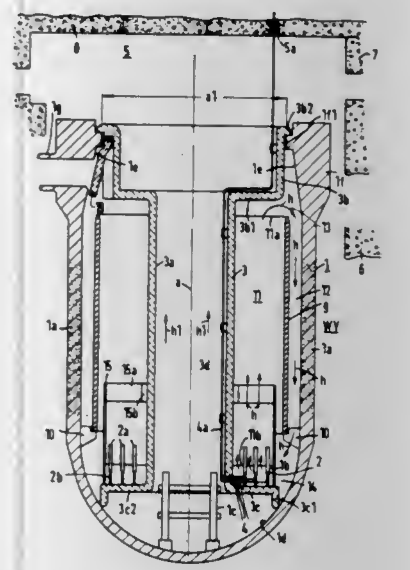
Peter Krauss, Erlangen; Ewald Müller, Neunkirchen; Horst Pörner, Erlangen, and Robert Weber, Uttenreuth, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim (Ruhr), Fed. Rep. of Germany

Filed Nov. 28, 1979, Ser. No. 97,977

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851925

Int. Cl.^{3} C21D *9/00*

U.S. Cl. 266—252 **6 Claims**



1. Heat-treating device for prolonging the life of a pressure vessel formed of thermally resistant material subject to time-dependent structural changes due to neutron fluence comprising an heating device positionable within a pressure vessel adjacent to a wall portion thereof which is to be heat-treated; a mounting support for said heating device including a substantially cylindrical, heat-insulating holding member insertable into and removable from the pressure vessel through an opening in the pressure vessel; supply lines for an energy carrier supplying the heat; insulating means for keeping the heat away from heat-sensitive parts of the pressure vessel which are not to be heat-treated and for reducing heat losses during the heat treatment; a hollow substantially cylindrical thermal shield disposed in the pressure vessel and, with the inner peripheral surface of the pressure vessel, defining an annular gap; and a reactor chamber wherein at least part of the pressure vessel is located, said reactor chamber being otherwise empty during the heat treatment and having ceiling slabs disposed thereon for shielding said reactor chamber from the outside, said holding member being receivable in the pressure vessel in a location whereat it defines, with the inner peripheral surface of said thermal shield, a convection space communicating at upper and lower ends thereof with said annular gap, said heating device comprising a heating source and being secured to said holding member so that, with the heating device received in the pressure vessel, a flow of heating gas is traversible from said heating source through said convection space to an upper deflection space and, from the latter, downwardly through said annular gap to a lower deflection space and, from the latter, back to said heating source, in a closed circuit, the pressure vessel being formed with an annular shoulder at the opening thereof and having a spherical bottom, and said holding member being formed as a hollow member having a first annular flange at an upper end thereof and a second annular flange at a lower end thereof, said annular flanges being sealingly engageable, respectively, with said annular shoulder and the inner peripheral surface of said spherical bottom, a plurality of convection shafts formed by a plurality of prismatic hollow conduction members being distributed about the outer periphery of said holding membei and extending parallel to the axis of the pressure vessel.

4,355,791

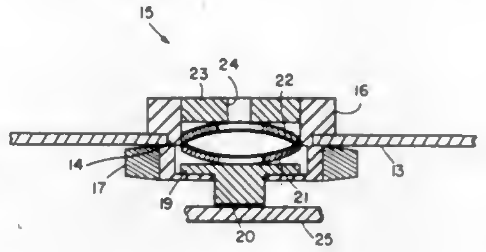
SNUBBER ASSEMBLY

Arthur R. Dean, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1980, Ser. No. 211,981

Int. Cl.^{3} F16F *7/00*

U.S. Cl. 267—136 **10 Claims**



1. An apparatus for snubbing a module fitted in the opening of a cabinet comprising:

means mounted in a wall of the cabinet in communication with the opening for providing a housing having a coaxial aperture therein;

means sized to be reciprocally carried in the housing providing means for extending through the coaxial aperture into the opening against the module;

means disposed adjacent the extending means for exerting a snubbing force on the module;

means abutting the exerting means and having a surface mechanically cooperating with the exerting means for selectively fixing the degree of extension of the extending means and magnitude of the snubbing force by the exerting means against the module; and

means interposed between the exerting means and the module for distributing the snubbing force thereon.

4,355,792

HOLLOW MARINE FENDER

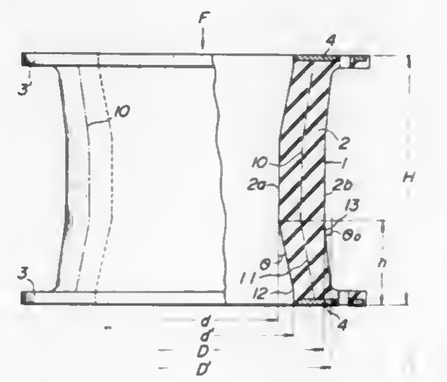
Yuji Fukuda, Yokohama, and Shinichi Kajigaya, Yokosuka, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,312

Claims priority, application Japan, Nov. 13, 1978, 53-139572

Int. Cl.^{3} F16F *1/36*

U.S. Cl. 267—153 **3 Claims**



1. In a hollow marine fender comprising a hollow cylindrical body formed of elastic rubber material and adapted to be fitted to a quay wall for the purpose of absorbing the dynamic energy of a ship arising during the berthing thereof by enlarging the diameter of the hollow cylindrical body due to a vertical load subjected to the axial direction of the hollow cylindrical body, at least one end provided with a flange-like mounting portion containing a reinforcing member embedded therein, for mounting said fender to a quay wall the improvement comprising; a portion of a center surface of said hollow cylindrical body which is located at the center part of said hollow cylinder body in its axial direction is made the minimum internal diame-

ter said center surface portion having the minimum internal diameter is deformed into a barrel-like bulging shape by enlargement of the diameter due to a berthing load, and having inner surfaces extending from said center surface portion to each end of the fender, said inner surfaces diverging from said portion of minimum internal diameter toward the end of the fender to form a horn-shaped portion.

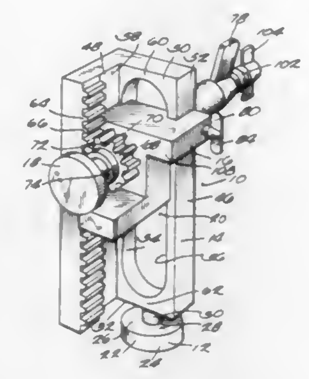
4,355,793

VERTICAL AND HORIZONTAL CLAMP FOR T-SLOT

Raymond L. Juneau, 8704 W. Lancaster Ave., Milwaukee, Wis. 53225

Filed Feb. 6, 1981, Ser. No. 232,077
Int. Cl.^{3} B23Q *3/02*

U.S. Cl. 269—93 7 Claims



1. A workpiece clamp assembly comprising:

a. a T-slot slide;
b. a vertically disposed track attached to said T-slot slide;
c. a clamp block slidably mounted on said track and having vertical clamping foot means at its lower extremity;
d. means to bias said clamp block toward said T-slot slide;
e. a horizontally disposed aperture extending through said clamp block;
f. a sleeve rotatably disposed within said aperture, said sleeve having first and second ends protruding from the respective ends of said aperture;
g. a rod having a central portion enclosed within said sleeve and first and second ends protruding from the respective ends of said sleeve;
h. a horizontal clamping foot attached to the first end of said rod; and
i. means to advance said rod in said sleeve to advance said horizontal clamping foot horizontally away from said clamp block.

4,355,794

SPREADING MACHINE CUTTER BOX ASSEMBLY

Conrad A. Costigan, Richmond Hill, N.Y., assignor to Spreading Machine Exchange, Inc., New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,254
Int. Cl.^{3} B65H *29/46*

U.S. Cl. 270—31 13 Claims

1. A sheet material spreading machine comprising

a carriage mounted for movement along a table surface and carrying a supply of continuous sheet material to be deposited in superimposed layers on said table surface, with a layer deposited in each operative run of said carriage along said table surface,

a cutter box assembly mounted on said carriage and adapted to cut off the layer of sheet material deposited on the table surface at the end of each operative run of said carriage,

and means for guiding and feeding said sheet material from said supply, through said cutter box assembly to the table surface,

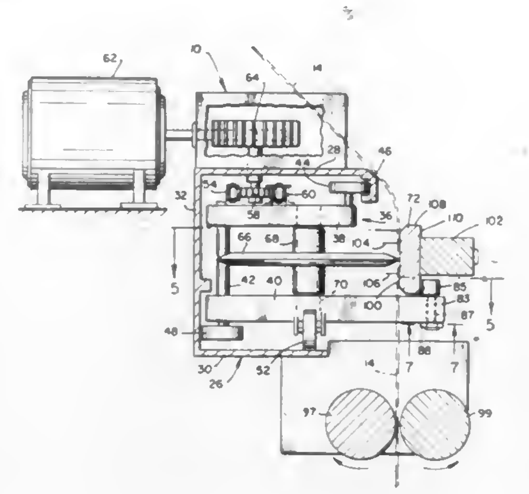
said cutter box assembly comprising an elongated support member mounted on said spreading machine carriage and extending transversely thereof,

a cutter frame movably mounted on said support member,

guide means on said support member for guiding movement of said cutter frame in opposite directions along said support member,

a circular cutter member rotatably mounted on said cutter frame in a horizontal position and having a peripheral cutting edge portion,

a pressure bar movably mounted on said cutter box housing and having a planar inner surface in engagement with the cutting edge portion of said cutter member, and a planar outer surface, said sheet material being fed between said cutter member and the planar inner surface of said pressure bar,



a retaining member mounted on said cutter frame and engaging the planar outer surface of said pressure bar for retaining said pressure bar against movement away from said cutter member, and

biasing means mounted on said cutter box support member and adapted to urge said pressure bar into firm engagement with said cutter member, thereby causing said cutter member to score sheet materials fed between said cutter member and said pressure bar under rolling action of said cutter member against said pressure bar as said cutter member is carried by said cutter frame and rolls along said support member.

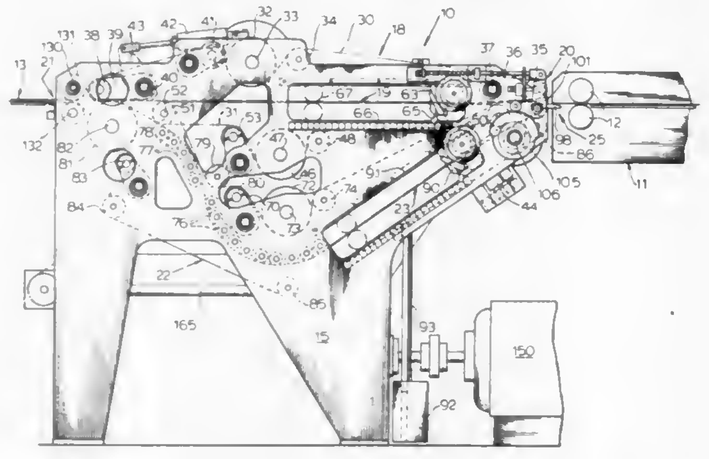
4,355,795

SHEET HANDLING DEVICE

Paul W. Bergland, Montville, N.J., assignor to Bobst Champlain, Inc., Roseland, N.J.

Filed Mar. 4, 1980, Ser. No. 127,142
Int. Cl.^{3} B65H *39/06*

U.S. Cl. 270—58 9 Claims



1. A sheet handling device for receiving a flow of sheets at a given speed of travel from a conveying means at a discharge end of a processing apparatus and discharging the sheets to an input end of a second apparatus, said device comprising a frame with a single input and a single exit; first means mounted in said frame for forming a first path extending between the input and exit; second means mounted in the frame for forming a separate second path extending between the input and exit, said second path having a curved portion and being longer than said first path by an amount approximately equal to one half of a spacing between leading edges of two successive sheets in said flow of sheets in said processing apparatus, each of said first and second means including a plurality of coacting pairs of continuous ribbon belts extending along substantially the entire length of the respective paths from the input to the exit and means for driving said belts at a new constant speed, which is slower than said given speed; means mounted on the frame at the input for selectively directing sheets into said first and second paths; said first means adjacent the input and the means for directing having means for imparting the new speed of travel to each sheet traveling in the first path; said second means adjacent the input and said means for directing having means for imparting the new speed of travel substantially the same as the speed of travel in said first path to each sheet traveling in the second path, each of said means for imparting including a pair of nip rollers and means for mounting each pair of nip rollers on the frame along the respective path to press the coacting pairs of belts onto the leading edge of a sheet in said path as a sheet is released from the conveying means of the processing apparatus; and each of said first and second paths being arranged to merge at a point adjacent the exit of the frame so that the sheets in each of said first and second paths has reached the new speed prior to being discharged from the path and a sheet in the second path is deposited on a following sheet of the flow traveling in the first path at the point of merging of said paths.

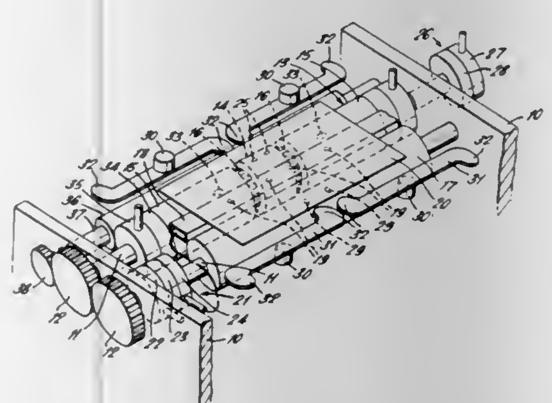
4,355,796

APPARATUS FOR SEPARATING SHEETS FROM A STACK

George W. Day, Dovercourt, England, assignor to Vacuumatic Limited, Harwich, England

Filed Jun. 20, 1980, Ser. No. 161,544
Claims priority, application United Kingdom, Jun. 21, 1979, 7921612
Int. Cl.^{3} B65H *3/30*

U.S. Cl. 271—20 17 Claims



1. An apparatus for separating sheets from a stack comprising a pair of parallel contra-rotatable cylindrical rollers for supporting a stack of sheets leaving edge portions on the sides of the stack un-supported, drive means for rotating the rollers in opposite directions such that the top surface of the rollers move away from each other as the rollers rotate, suction inlets located on the surfaces of the rollers adjacent the central regions thereof to act on the central regions of the edges of the lowermost sheet engaging the rollers to draw the central regions of said edge portions of the lowermost sheet downwardly as the suction inlets move outwardly under the lowermost sheet, separator means for penetrating the sides of the stack between the downwardly drawn central regions of the lowermost sheet and the stack above and for passing along the length of the edge portions to the ends of the stack to separate fully the edge portions from the stack above, and means to draw out the lowermost sheet from the bottom of the stack.

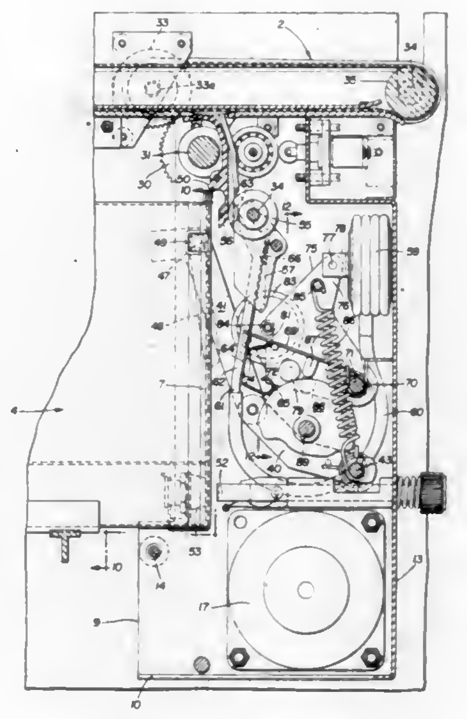
4,355,797

PICKER MECHANISM FOR AUTOMATIC BANKING MACHINES

Harry T. Graef, Dover; Scott A. Mercer, Hanoverton; Jeffrey A. Hill, and Kevin H. Newton, both of North Canton, all of Ohio, assignors to Diebold Incorporated, Canton, Ohio

Filed Oct. 6, 1980, Ser. No. 194,338
Int. Cl.^{3} B65H *3/08*

U.S. Cl. 271—20 5 Claims



1. Picker mechanism for an ATM note dispenser provided with a supply of notes in a sealed, tamper-indicating note container having an access opening exposing, when uncovered, the end note of the note supply stack of notes in the container, in which the access opening is rectangular in shape and has dimensions one of which is less than the length of the notes in the stack to be picked one at a time through the access opening; including a picker housing; a through picker member having an open cup; means mounting the picker member in the housing with the open cup adjacent said access opening; a bellows mounted in the housing; tube means connecting the bellows and picker member; a bellows plate pivotally mounted on a bellows plate pivot shaft in the housing and connected with the bellows; means movably mounting the picker member on the bellows plate pivot shaft; a cam rotatably mounted in the housing having an endless peripheral actuating surface engageable with each of bellows plate, picker member, and picker member mounting means cam followers; and drive means moving the cam through a picking operation cycle to move the cup multi-directionally into and out of the access opening and also back and forth across the access opening in directions parallel with the length of notes in the stack; said bellows being actuated by and during cam movement to supply suction to the cup; and the picker member mounting means pressing the picker member open cup against an end portion of the end note of the supply stack exposed through said access opening, to suction-and-pressure-engage the cup to said note end portion to peel and extract said end note lengthwise from the stack.

4,355,798

FILM FEED MAGAZINE FOR EQUIPPING A RADIOGRAPHIC FILM CHANGER AND A FILM-CHANGER EQUIPPED WITH SAID MAGAZINE

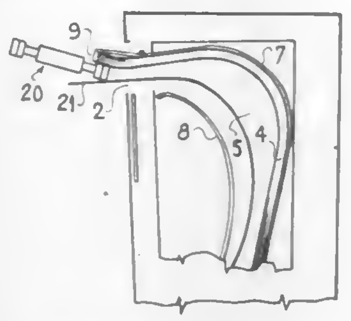
Francisco Villa, Monza, Italy, assignor to CGR Compania Generale de Radiologia, Monza, Italy

Filed Sep. 4, 1980, Ser. No. 184,056

Claims priority, application France, Sep. 4, 1979, 79 22078

Int. Cl.^{3} B65H *1/06*

U.S. Cl. 271—21 **4 Claims**



1. A film feed magazine for a radiographic film changer having means for individually gripping films comprising:

a light-tight outer casing having an elongated slot formed therein;

a receptacle for holding said films in packet form disposed within said outer casing, said receptacle having an inner wall and an outer wall, each defining an arcuate spout-shaped profile, said receptacle having an open end portion for receiving said films in packet form;

a movable shutter operatively associated with said casing for opening and closing said elongated slot such that said opening of said elongated slot provides access to said open end portion of said receptacle;

means operatively associated with said receptacle and said shutter for displacing said receptacle within said outer casing from a first position wherein said receptacle is remotely disposed within said casing with respect to said elongated slot and said movable shutter closes said elongated slot to a second position wherein said receptacle is proximately disposed within said casing with respect to said elongated slot and said movable shutter opens said elongated slot such that an end portion of said films in packet form passes through said elongated slot for access to said means for gripping said films.

4,355,799

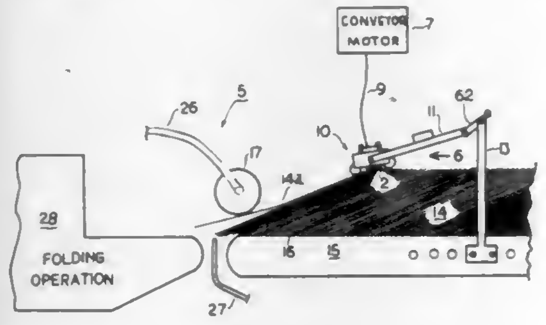
SHEET STREAM SENSING AND CONTROL DEVICE

John J. Bartizal, Jr., 1015 W. 61 St., Lisle, Ill. 60532

Filed May 5, 1980, Ser. No. 146,307

Int. Cl.^{3} B65H *1/22*

U.S. Cl. 271—151 **3 Claims**



3. A sheet stream sensing and control device adapted for use in a sheet feed system having a sheet transport for advancing a reclining sheet stream toward a sheet removal means, said sheet stream having a surface discontinuity peak defined where the foremost sheet upper edge joins the upper edges of the subsequent underlapped sheets, comprising:

detector means for detecting the movement of said discontinuity peak beyond a limit point;

first and second support means, resting respectively upon the foremost sheet surface and the upper edges of said subsequent underlapped sheets, for supporting said detector means above the sheet stream surface in such a manner that said detector means is operative to detect the movement of said discontinuity peak between said first and second support means when the peak moves beyond said limit point;

linkage means for constraining said detector means in the horizontal direction of sheet stream flow to thereby establish a sheet stream quiescent operating position with respect to said sheet removal means, said linkage means further including means for allowing said detector means complete freedom of vertical movement;

control means, responsive to said detector means, for controlling the movement of the sheet stream so as to maintain said quiescent operating position.

4,355,800

PAPER FEED CONTROL APPARATUS FOR USE IN SHEET PRINTING PRESSES

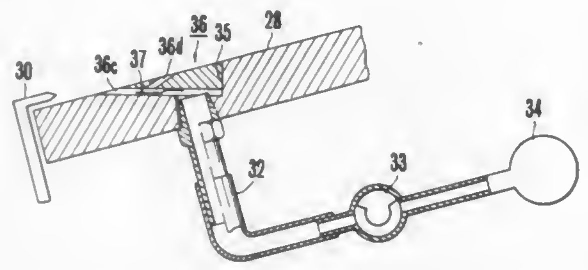
Hiroyuki Sugiyama, Toride, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 253,073

Claims priority, application Japan, Apr. 22, 1980, 55-52323

Int. Cl.^{3} B65H *9/14*

U.S. Cl. 271—229 **4 Claims**



1. A paper feed control apparatus for use in a sheet printing press comprising means for sequentially feeding paper sheets to said printing press along a predetermined paper feed path, a front stop finger provided at an end of said path and at a position close to said printing press, a feed plate positioned near said front stop finger, said feed plate being provided with an upwardly inclined air passage opened near said front stop finger, and an air suction passage extending between an intermediate point of said inclined air passage and an upper surface of said feed plate, a guide plate extending through said inclined air passage and spaced from an inner opening of said air suction passage, and means for supplying pressurized air to a lower end of said inclined air passage.

4,355,801

ADJUSTABLE WEIGHT LIFTING HOLDING DEVICE FOR LEG LIFTING EXERCISES

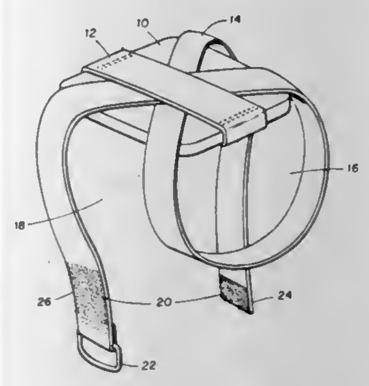
Timothy A. Thomsen, Iowa City, Iowa, assignor to University of Iowa Research Foundation, Iowa City, Iowa

Filed Dec. 9, 1980, Ser. No. 214,484

Int. Cl.^{3} A63B *21/12*

U.S. Cl. 272—119 **3 Claims**

1. An adjustable device for holding weights behind the user's ankle when performing leg lifting exercises, said device comprising a pad of sufficient flexibility to conform generally to the dorsum of the user's foot, means on said pad forming a fixed loop, a single continuous strap extending through said loop in one direction and back through said loop in the opposite direction to form an adjustable lower closed loop engageable with the user's foot, the free ends of said strap being closable to form an adjustable upper loop engageable with the user's ankle, fastening means providing for adjustably securing the free ends of said strap together to close the upper loop, and a ring affixed to one end of said strap to provide for fastening of a weight on the upper loop, said ring also forming a part of said fastening means for securing the free ends of said strap together.



4,355,802

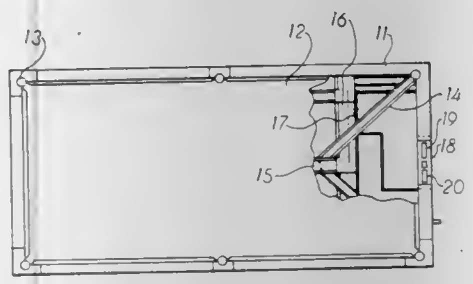
BILLIARD TABLE

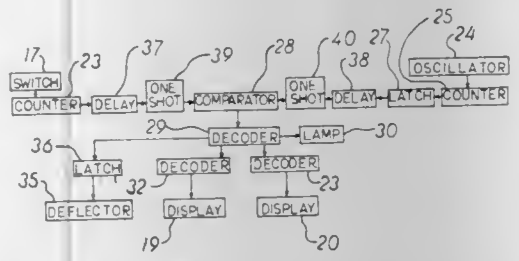
Alfred E. Sargent, Hardin, Mont., assignor to Montana Billiard Supply, Billings, Mont.

Continuation-in-part of Ser. No. 38,675, May 14, 1979, abandoned. This application Mar. 17, 1981, Ser. No. 244,768

Int. Cl.^{3} A63D *15/20*

U.S. Cl. 273—11 R **9 Claims**





1. A billiard table having a playing surface, a plurality of pockets associated with said playing surface, ball collecting means below said playing surface for transferring balls entering said pockets into a common channel, circuitry including an electrical power source, ball contacting switch means disposed along said common channel, first pulse counting means responsive to pulses from said switch, oscillating means, second pulse counting means responsive to pulses from said oscillating means, latching means associated with said second pulse counting means and responsive to pulses therefrom, digital comparing means receiving signals from said first pulse counting means and from said latching means of said second pulse counting means, decoding means transmitting a pulse from said comparing means and display means capable of receiving said pulses from said decoding means; whereby rapid periodic pulses transmitted from said oscillating means to said second pulse counting means cause signals to be sent therefrom to said latching means at the same rate, so that when a ball passes said switch means, a pulse is transmitted from said switch means to said latching means to lock the signal transmitted to said comparing means, and at the same time a pulse is transmitted from said switch means to said first pulse counting means causing a signal to be transmitted therefrom to said comparing means, and when said signal from said first pulse counting means matches said signal from said latching means, a pulse is transmitted from said comparing means through said decoding means to said display means.

4,355,803

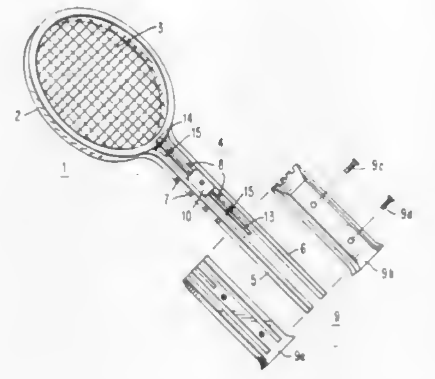
TENNIS RACQUET WITH VARIABLE CENTER OF GRAVITY AND BALANCE

Lord Rama, Rosendale, N.Y., assignor to Coin-Operated Exercise Equipment Co. Inc., Carmel, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,540

Int. Cl.^{3} A63B *49/00*

U.S. Cl. 273—73 J **3 Claims**



1. A tennis racquet comprised of (a) a head, a handle and a grip, with the handle comprised of two side frames, (b) a weighted mechanism slidably mounted between the two side frames, (c) ball and detent means comprised of a series of correspondingly placed detent holes in the side frames adjacent to the sides of the weighted mechanism and a ball positioned between each side frame and the adjacent side of the weighted mechanism, (d) means for readily maintaining the position of the weighted mechanism at intermediate positions between the head and grip comprised of cam means in which the cam is cross-shaped and is slidably located in a detent box, which in turn is slidably located within the weighted mechanism, said box having a detent hole on each side and said box being spring-loaded longitudinally against the ends of the weighted mechanism, said cross-shaped cam being attached at the intersection of the two arms of said cross to the gripper plates of the weighted mechanism, so that the cam moves in unison with the gripper plates when said weighted mechanism is moved in the direction of the head or grip of the racquet by manually gripping said gripper plates, but the detent box is delayed in moving in said direction, thereby allowing each ball, which at rest was maintained in a detent in the adjacent side frame by the transverse cross-arm of the cross-shaped cam, to recede further into the corresponding detent hole in the detent box as movement brings the longitudinal section of the cross-shaped cam opposite the detent hole of the detent box; and the spring-loading of the detent box bringing the transverse cross-arm of said cross-shaped cam adjacent to each ball thereby forcing each ball into the detent in the side frame adjacent to it and maintaining the weighted mechanism where it is located between head and grip when the manual movement is stopped.

4,355,804

CLUB AND CLUB HOLDER

D. Michael Bingham, 105 West 700 North, Bountiful, Utah 84010

Filed Jul. 13, 1981, Ser. No. 282,877

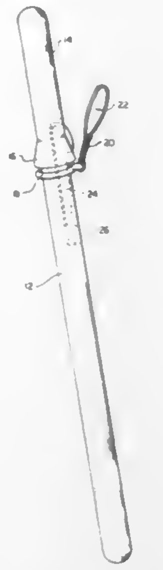
Int. Cl.^{3} F41B *15/02*

U.S. Cl. 273—84 R **19 Claims**

1. A club detachably secured to a carrier comprising:

an elongate stick having a shoulder member at the base of a hand grip portion thereof, said hand grip portion being located towards a first end of said stick;

a carrying ring through which said stick may be slidably inserted, said ring having a size and shape that prevents said shoulder member from passing therethrough, said ring being adapted to be flexibly secured to a desired carrier, such as the belt of a user of the stick, whereby said



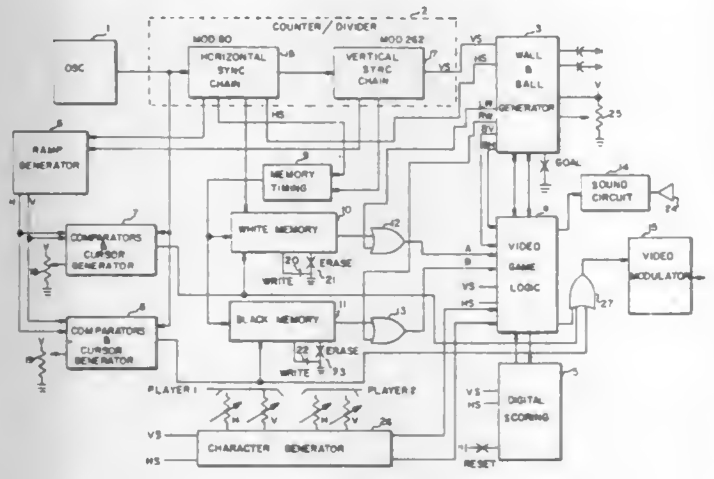
stick may be suspended from said carrier with said hand grip portion in a generally upright position by slidably inserting a second end of said stick through said ring until said shoulder member engages with said ring; and

locking means for selectively preventing said stick from being slidably removed from said ring.

4,355,805
MANUALLY PROGRAMMABLE VIDEO GAMING SYSTEM

Ralph H. Baer, Manchester, and Leonard D. Cope, Merrimack, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 30, 1977, Ser. No. 838,419
Int. Cl.^{3} A63F *9/22*
U.S. Cl. 273—85 G **14 Claims**



7. An interactive game system including game control circuits for generating signals representing location controllable symbols and game background for display on a raster scan type video display, wherein the improvement comprises:

means for displaying a first cursor on said video display that can be moved about to draw lines on said display;

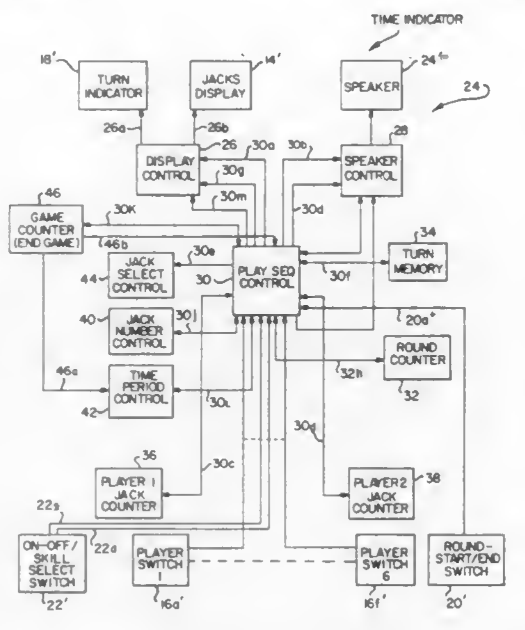
means connected to said cursor displaying means and manually operable to generate a first signal for causing said cursor to be moved about said video display to draw lines thereon, which represent interactive game elements when the drawn lines interact with said location controllable symbols so as to cause a change in what is displayed; and

means for combining said first signal with said symbol and game background signals to interact with said location controllable symbols to provide game characteristics.

4,355,806
ELECTRONIC JACKS GAME

Gordon H. Buck, Torrance; Paul W. Cayley, Jr., Rancho Palos Verdes; Martha K. Hardwick, Costa Mesa, and Daniel J. Shoff, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 28, 1980, Ser. No. 144,799
Int. Cl.^{3} A63F *9/00*
U.S. Cl. 273—85 G **10 Claims**



1. A multi-round hand-held electronic game for simulation of Jacks game play by two players comprising:

a set of illuminatable display elements;

a player turn indicator having first and second states;

a plurality of player switches, each player switch being located adjacent to a respective one of said display elements of said set;

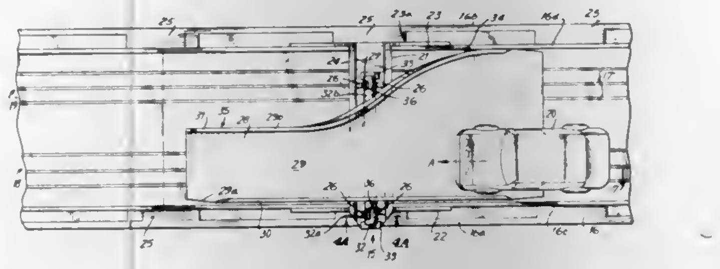
control means for imposing upon game play the rules of the game of Jacks by (i) maintaining a count of the number of rounds which have been successfully completed by each player, (ii) controlling the states of said player turn indicator to indicate each players turn, (iii) simulating ball bounce by establishing during each round a time period during which a player may effect simulated jacks pick-up by operation of said player switches, (iv) illuminating during each round a pseudo random sequence of selected ones of said display elements in said set, (v) extinguishing each illuminated display element responsive to operation of the player switch adjacent to that display element during said time period to simulate jack pick up, and (vi) changing the state of said player turn indicator responsive to continued illumination of any one of said selected display elements at the expiration of said time period to thereby end a player's turn when that player is unsuccessful in extinguishing all of the display elements that become illuminated during any round, whereby the winning player is the one to first successfully complete a predetermined number of rounds.

4,355,807
PIVOTABLE RAMP DEVICE FOR TRACK GAMES

Barry V. Prehodka, Ridgefield, Conn., assignor to Aurora Products Canada Limited, Mississauga, Canada

Filed Jan. 23, 1981, Ser. No. 227,865
Int. Cl.^{3} A63F *9/14;* A63H *18/16*
U.S. Cl. 273—86 R **16 Claims**

12. A pivotable ramp device for use in a track game having at least one toy vehicle and a track on which said toy vehicle can ride, comprising a base which is selectively coupleable to a position along said track, said base being formed to define an axis of pivoting extending transversely across said track and spaced above said track a sufficient height to permit the passage of said toy vehicle thereunder, ramp means pivotally coupled to said base at said axis of pivoting, said axis defining two sides of said ramp means, a first of said sides being an entrance side and second of said sides being an exit side, said ramp means being pivotally displaceable between a first position where the end of said entrance side essentially contacts

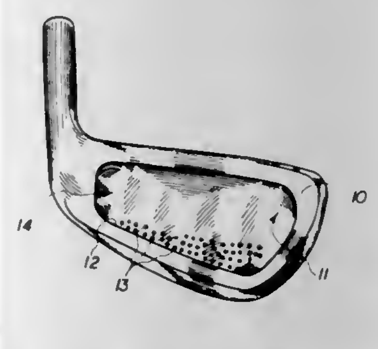


said track for permitting a toy vehicle to ride up said ramp means and a second position where the end of said exit side essentially contacts the track for permitting said toy vehicle to ride down said ramp means and onto said track, and holding means for releasably holding said ramp means in said second position whereby a vehicle riding in one of said lane passes under said axis and engages the underside of said ramp means to release said holding means to pivot said ramp means to said first position when said ramp means is in said second position.

4,355,808
WEIGHTED, INLAID GOLF IRON AND METHOD OF MAKING SAME

Doyle D. Jernigan, and Margaret Caskey, both of Temple, Tex., assignors to Golf Division, Wood-Arts Company, Inc., Temple, Tex.

Filed Mar. 27, 1981, Ser. No. 248,423
Int. Cl.^{3} A63B *53/04;* B29D *3/00*
U.S. Cl. 273—169 **6 Claims**



1. A method for preparing a decorative inlay in a golf iron comprising the steps of:

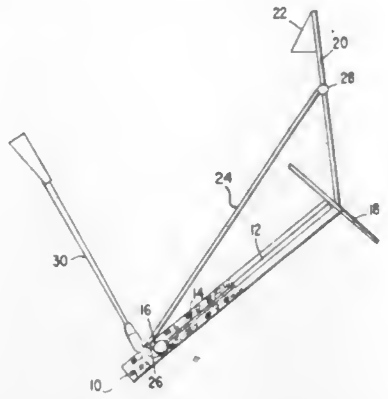
a. preparing a cavity in the rear of said iron;
b. positioning a preselected number of small weights only along the inner most bottom edge of the cavity;
c. placing a first epoxy layer in said cavity to substantially cover and secure said weights;
d. adding a decorative epoxy layer to said cavity after said first epoxy layer has set, said decorative epoxy layer substantially filling said cavity and covering said first epoxy layer; and
e. placing a protective coating over said decorative epoxy layer after said decorative layer has set.

5. A golf iron having an inlay prepared in accordance with claim 1, wherein said inlay is of a swirl pattern.

4,355,809
GOLF CLUB ALIGNER

H. Robert Swett, Jr., 7844 Kenskill Cir., Lantana, Fla. 33462

Filed Aug. 25, 1980, Ser. No. 180,974
Int. Cl.^{3} A63B *69/36*
U.S. Cl. 273—183 D **4 Claims**



1. A golf club aligner comprising in combination,

a base plate,

a slidable horizontal ball holder mounted on the base plate,

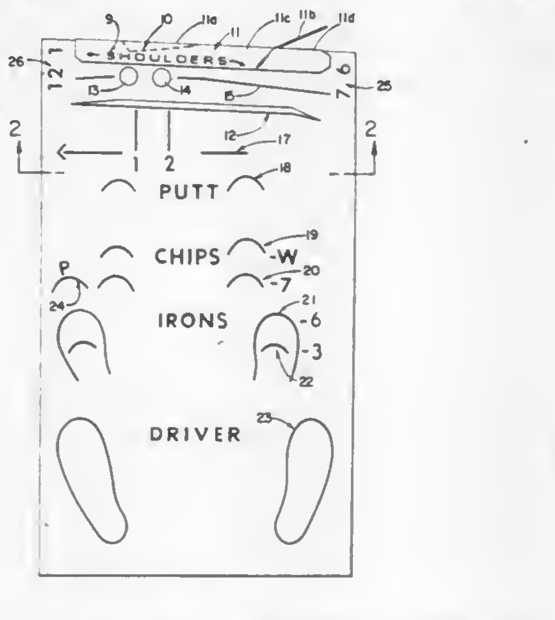
a vertical reference pole located near one end of the base plate,

a long rigid slender pointer including means for temporarily attaching one end thereof to the striking face of a golf club so that the other end of the pointer extends towards the vertical reference pole, golf club placement indicia on the base plate spaced to keep one end of the pointer when attached to a golf club being aligned in proximity to the vertical reference pole by compensating for the various angles of loft of different golf clubs.

4,355,810
GOLF CLUB SWING TRAINING DEVICE

Joseph P. Rydeck, 422 Arneill Rd., Camarillo, Calif. 93010

Continuation of Ser. No. 115,175, Jan. 25, 1980, abandoned, which is a continuation of Ser. No. 861,984, Dec. 19, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 219,295
Int. Cl.^{3} A63B *69/36*
U.S. Cl. 273—186 C **5 Claims**



1. A golf swing practice and training device comprising:

(a) a flat mat having a front edge and adapted to lie horizontally on a supporting surface;
(b) a guideway including an outer wall fixed to and extending upwardly from the mat adjacent the front edge thereof, the outer wall having a straight portion and indicia hereon directing the golfer to align his shoulders with the straight portion of the outer wall;
(c) the mat including a rear portion extending rearwardly of the guideway, the rear portion having indicia on the upper

surface thereof adjacent the outer wall representing the proper positioning of a golf ball, the rear portion of the mat further having indicia on the upper surface thereof in the form of a target line which points in the direction of the anticipated target, the axis of the target line and an axis through the straight portion of the outer wall forming an acute angle so that a ball following the direction of the straight portion of the outer wall would pass forwardly of the target, the rear portion of the mat further having on its upper surface indicia showing at least the toe positions for the feet of the user when practicing a golf swing, the toe positions being aligned parallel with the target line, whereby for a right hand golfer the toes will be on a line parallel to the target line and the left shoulder will be slightly forward of the right shoulder with respect to the target line when standing to address the ball and visa versa for a left hand golfer.

4,355,811

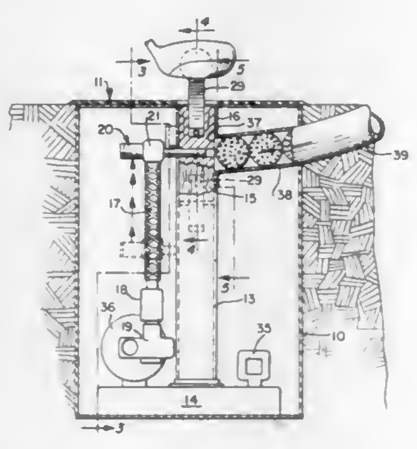
AUTOMATIC GOLF BALL TEEING APPARATUS

Louis E. Williams, Sr., P.O. Box 4216, Columbia, S.C. 29240

Filed Aug. 28, 1980, Ser. No. 182,092

Int. Cl.^{3} A63B *57/00*

U.S. Cl. 273—201 **1 Claim**



1. In an automatic golf ball teeing apparatus having a tee assembly, including a tee mounting block and a tee element for holding a golf ball, said tee element being pivotally mounted on said tee mounting block and having a curved lower end, a supporting piston for carrying said tee assembly between an elevated fully teed-up position and a lowered ball-receiving position, means for maintaining said tee assembly and its supporting piston in an upright condition and permitting the movement of these components between an elevated fully teed-up position and a lowered ball-receiving position, elevating means for lowering said tee assembly and its supporting piston to a ball-receiving position and then returning said tee assembly and its said supporting piston to a fully teed-up position after receiving a replenishment golf ball, a control system operatively associated with said elevating means and said tee assembly to cause said elevating means to automatically lower said tee assembly and its said supporting piston to a ball receiving position, when said tee element is displaced about its pivot pin when struck by a golf club, and to return said tee assembly and its said supporting piston to a fully teed-up position after receiving a replenishment golf ball, and ball supply means communicating a gravitationally-fed supply of golf balls to said tee element, the improvement wherein the said means for maintaining said tee assembly and its said supporting piston in an upright condition comprises:

- a ball guide which is hollow and vertically mounted, provided with
  - a long, narrow, vertical slot in one side to permit said elevating means to attach to said tee assembly and its said supporting piston and permit the vertical movement of said elevating means with said tee assembly and its said supporting piston as a unit, and
- an opening in one side, near its upper end, sufficient in size to permit said curved lower end of said tee element, pivotally mounted above said supporting piston, to protrude through the side of said ball guide when said tee element is displaced about its pivot pin when struck by a golf club.

4,355,812

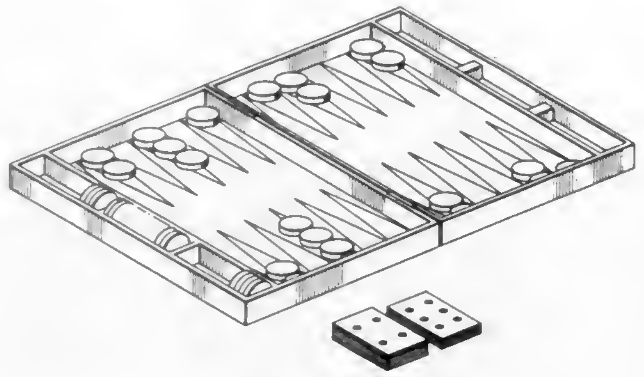
STACK OF CARDS REPRESENTING DICE AND BACKGAMMON GAME

Robert W. McCullough, 125 Burnett Dr., Spartanburg, S.C. 29303

Filed Oct. 20, 1980, Ser. No. 199,020

Int. Cl.^{3} A63F *3/00, 9/00*

U.S. Cl. 273—248 **7 Claims**



5. A duplicate backgammon game comprising:

- a playing board, movable playing pieces, and a chance means comprising a stack of cards containing a multiple of three cards for simulating the statistically random sequential occurrences of any and all possible combinations resulting from the roll of two dice, each card of said stack having two opposing faces, a first symbol on one face, a second symbol on the other face, said first symbol representing only one number chosen from the group consisting of the numbers 1 through 6, said second symbol representing only one number chosen from the group consisting of the numbers 1 through 6, each said number occurring the same number of times throughout said stack, said first and second symbols chosen so that the values represented by said first and second symbols have a random relationship, said random sequential occurrences being generated by sequential pairings of two of said symbols, said random relationship of first and second symbols and said equal number of occurrences of each number in said stack insuring that there is a statistical probability larger than zero associated with the event of any pair of numbers occurring more than two times during the simulation of said statistically random sequential occurrences.

4,355,813

PLAYING FIELD LAYOUT

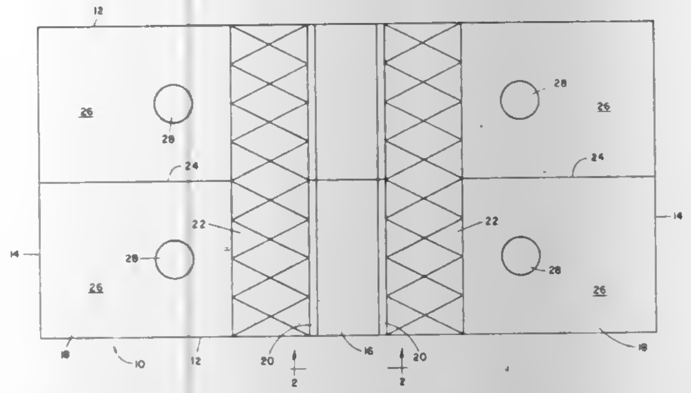
Daniel J. Rathjen, 5112 N. Fairmount St., Davenport, Iowa 52806

Filed Aug. 10, 1981, Ser. No. 291,707

Int. Cl.^{3} A63C *19/02*

U.S. Cl. 273—411 **3 Claims**

1. A playing field layout for use in playing a game involving the throwing back and forth by at least two players of a lightweight saucer-like object of the type commonly known as a "Frisbee", comprising a rectangular main court having opposite sides and opposite ends defining side and end boundaries, respectively, a relatively narrow skip court extending from one side of the main court to the other midway between the ends of the main court and dividing the main court into opposite serving and catching areas of equal area, each of said areas being greater than that of the skip court and each such area accommodating at least one player, said skip court having a flat top surface composed of hard material from which the object can skip when thrown by a player in one serving and catching area to a player in the other serving and catching area, said skip court further having opposite edge portions parallel to each other and to the ends of the main court, said portions being in the form of ramps leading uphill from the respective service and catching areas to the top surface of the skip court.



4,355,814

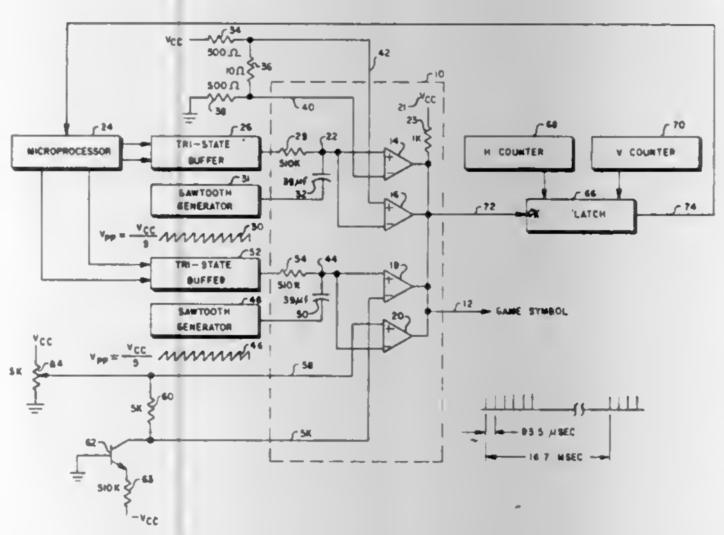
VIDEO GAME SYMBOL GENERATION AND CONTROL APPARATUS

Leonard D. Cope, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 22, 1977, Ser. No. 770,740

Int. Cl.^{3} A63F *9/22*

U.S. Cl. 273—85 G **16 Claims**



1. Apparatus for generating a symbol adaptable for display on the screen of a raster scan cathode ray tube display and controllable in at least one direction from multiple sources, comprising:

- a first control source providing a first variable control signal for said at least one direction;
- a second control source providing a second variable control signal for said at least one direction;
- means for providing sweep signals at the deflection rate in said one direction;
- means for superimposing said sweep signals on said first control signal;
- means for comparing the output of said superimposing means with said second variable control signal and for generating a signal indicative of the point in said one direction on the display screen where the symbol generation is to begin when the output of said superimposing means is greater than the second control signal; and
- means for generating the symbol.

4,355,815

PISTON RING

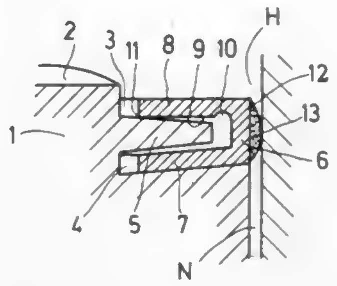
Gerhard Dück, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,851

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933702

Int. Cl.^{3} F16J *9/20*

U.S. Cl. 277—143 **4 Claims**



1. In a cross-sectionally U-shaped, radially inwardly open piston ring for a piston slidably received in a cylinder; the piston ring having an axis and including first and second radially inwardly projecting, circumferentially extending legs having outer circumferential ends; said piston ring further including an annular connecting portion joining said legs at said outer circumferential ends; the improvement wherein said legs are, in course and dimensions, symmetrical to one another relative to a central radial plane of the piston ring; said central radial plane extending perpendicularly to said axis of said piston ring; further comprising means defining a circumferential recess in a radially outer circumferential zone of said first leg near said annular connecting portion for rendering said first leg resiliently swingable in a direction parallel to the axis of the piston ring, so that when said piston ring is in place on said piston, with said legs received in respective grooves of the piston while straddling a radially outwardly projecting, circumferentially extending web forming part of the piston, said first leg is circumferentially pressable against said web by pressures prevailing at said high-pressure side.

4,355,816

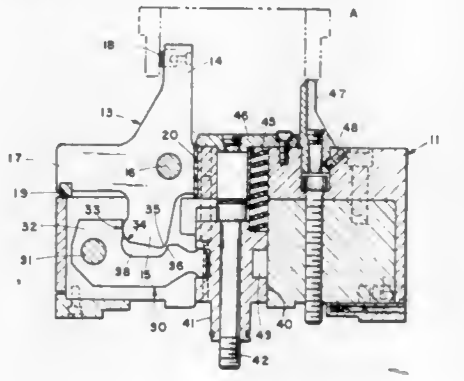
DOUBLE ACTING INTERNAL DIAMETER GRIPPING CHUCKS

Jay D. Beery, Traverse City, Mich., assignor to Sheffer Collet Company, Traverse City, Mich.

Filed Jun. 30, 1980, Ser. No. 164,784

Int. Cl.^{3} B23B *5/22, 5/34*

U.S. Cl. 279—2 R **1 Claim**

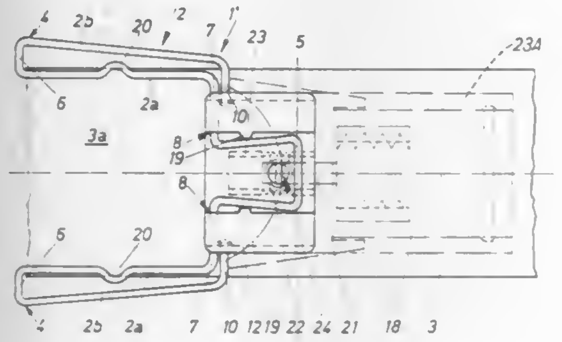


1. A chuck for internally gripping an annular workpiece, said chuck having a main body and a plurality of article gripping jaws arranged in a circle concentric with the axial center of said chuck; each of said jaws being elongated axially of the chuck and having a rearwardly extending arm; first means pivotally mounting each of said jaws intermediate its ends to said body; a plurality of generally radially extending levers, one for each jaw; each of said levers having a recess opening through its forward face; the rearward ends of said arms of said

jaws being received in said recesses; each of said levers at its radial outer end having a forwardly extending leg forming the radial outer ends of the recesses and engaging the radial outer faces of the rearward ends of said arms; second means pivotally mounting each of said levers at a point axially rearwardly and radially outwardly of said arms; actuator means slidably and concentrically seated in said body and engaging the radial inner ends of said levers, said actuator means being movable axially of said body for pivoting said levers and said jaws between workpiece gripping and release positions; the inner radial end of each of said recesses being formed by a forwardly extending wall, the radial spacing from said second pivot means of the forward ends of said walls being such that said forward ends are spaced from the rearward ends of said arms when said jaws are in workpiece gripping position and the arcs of movement of said forward ends intersect the radially inner faces of the rearward ends of said arms after initial pivotal movement of said levers toward workpiece release position has occurred for positively shifting said jaws to release position.

4,355,817
SKI BRAKE

Erwin Krob, Vienna, and Erwin Weigl, Brunn am Gebirge, both of Austria, assignors to TMC Corporation, Baar, Switzerland
Continuation of Ser. No. 786,376, Apr. 11, 1977, abandoned. This application Nov. 12, 1980, Ser. No. 206,102
Claims priority, application Austria, Apr. 16, 1976, 2853/76
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 2 Claims

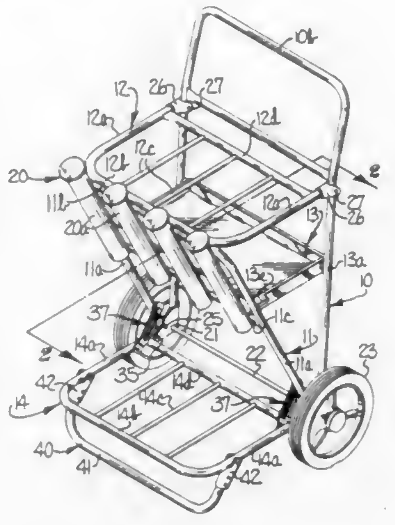


1. A ski brake for use on a ski to effect a braking of said ski following a release of a ski boot from engagement with a ski binding, said ski binding being supported for movement lengthwise of said ski, comprising:

a base plate mounted on said ski and having an elongated slot therein extending parallel to the longitudinal axis of said ski;
mounting means;
bearing means on said mounting means;
a brake member having axle means received in said bearing means for pivotally securing said brake member to said mounting means and for facilitating movement of said braking member between a retracted position and a braking position, said braking member having a pair of braking wings and a pedal member, said pedal member being located above the upper surface of said ski and said braking wings each being located on opposite lateral sides of said ski and said pedal member;
resilient means continually urging said brake member toward said braking position; and
connecting means for connecting said mounting means to said ski binding to facilitate a simultaneous movement of said mounting means and said ski binding relative to said ski, said connecting means including a connecting piece separate from said mounting means connected to said ski binding and extending parallel to the longitudinal axis of said ski and vertically spaced above and free of engagement with the upper surface of the ski, and a releasable locking member mounted on said connecting piece for connecting said connecting piece to said mounting means and for facilitating an operative connection of said connecting piece to said base plate, said elongated slot in said base plate receiving said releasable locking member therein, means on the walls of said slot operatively connected to said releasable locking member to fixedly maintain said connecting piece and the connected mounting means and ski binding in a selected position relative to said ski.

4,355,818
FISHERMAN'S CART

Ronald C. Watts, 4507 Rocky River Rd., Charlotte, N.C. 28205
Filed Jul. 9, 1980, Ser. No. 167,057
Int. Cl.³ B62B *1/26*
U.S. Cl. 280—654 12 Claims



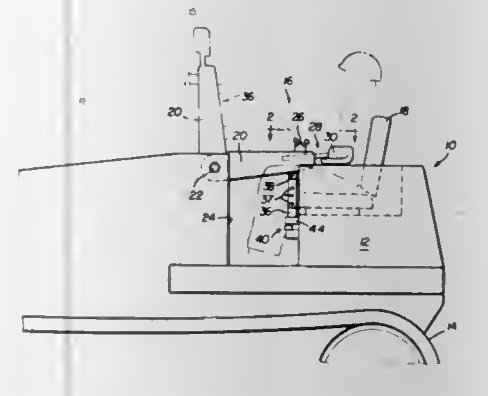
1. A cart for fisherman's gear comprising
a wheeled main frame adapted to normally occupy and be supported in a substantially upright position,
a plurality of vertically spaced, substantially horizontally positioned shelves carried by and extending forwardly from said main frame,
an auxiliary frame connected to a lower portion of said main frame and extending upwardly and forwardly at an angle from said main frame and supportingly engaging a frontal portion of at least one of said shelves,
means carried by said auxiliary frame for receivingly supporting handle portions of fishing rods for supporting the fishing rods during fishing, and
wherein another of said plurality of shelves is positioned below said means for receivingly supporting handle portions of fishing rods.

4,355,819
PASSIVE RESTRAINT SYSTEM

Claude M. Frisbee, Bettendorf, Iowa, assignor to J.I. Case Company, Racine, Wis.
Filed Dec. 18, 1980, Ser. No. 217,729
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—752 6 Claims

1. A passive restraint system for a tractor having a frame and an operator's seat mounted on said frame, said restraint system including:
a restraint arm having a padded end portion that is contoured to fit against the operator when he is in the operator's seat, said restraint arm connected to mounting means for adjustable movement to accommodate the particular size of the operator, said restraint arm and mounting means being pivotally connected to said frame;
said restraint arm being movable to a generally vertical position where it is out of the way when the operator is getting onto or out of the operator's seat and said restraint arm being movable to a generally horizontal position for engaging the operator to thereby secure him in the operator's seat;

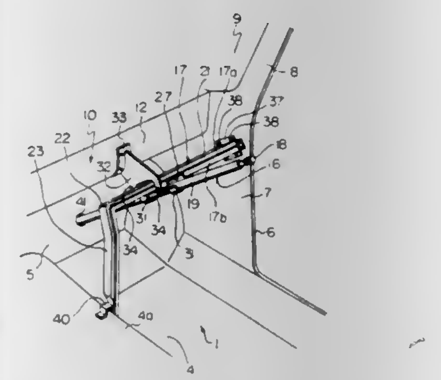
securing means for locking said restraint arm at a selected position for restraining the operator in the operator's seat, said securing means including an adjustable latch link pivotally connected to said mounting means and a latching mechanism mounted to said frame receiving said latch link for locking engagement to maintain the selected position for said restraint arm; and



means for making said tractor inoperable until the restraint arm is locked into position for securing the operator in the operator's seat.

4,355,820
STEERING ASSEMBLY SUPPORTING DEVICE OF A MOTOR VEHICLE

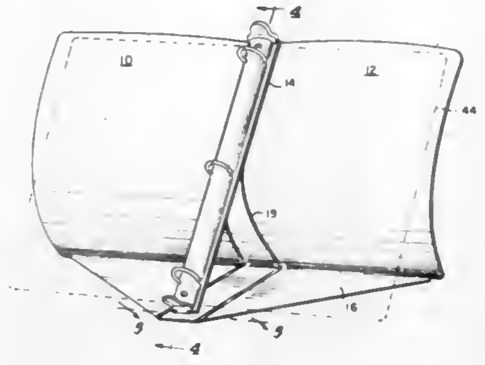
Naoto Kitagawa; Kunihiko Masaki, and Hiroyuki Watanabe, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Nov. 25, 1980, Ser. No. 210,307
Claims priority, application Japan, Jun. 12, 1980, 55/78329
Int. Cl.³ B62D *1/18*
U.S. Cl. 280—779 12 Claims



1. A steering assembly supporting device of a motor vehicle comprising a steering assembly, a floor, front door opening flanges, cowl side panels each extending forward from a front end of the corresponding front door opening flange, front pillars each forming a portion of the corresponding front door opening flange and having a root portion connected to the corresponding cowl side panel, a cowl inner panel spaced from the floor and transversely extending substantially in parallel to the floor at a position above the floor, and a dash panel arranged between the floor and the cowl inner panel, said device comprising:
a hollow tubular L-shaped steering assembly supporting body comprising a leg portion and an integrally formed base portion transversely extending substantially in parallel to the cowl inner panel, said base portion having an inner end, an intermediate portion and an outer end fixed onto the cowl side panel, said leg portion extending downwards from the inner end of said base portion and having a lower end fixed onto the floor midway between said cowl side panels, and;
a bracket extending backwards from the cowl inner panel and having a rear end and a front end fixed onto the cowl inner panel, said rear end being connected to the intermediate portion of said base portion, the steering assembly being supported by the intermediate portion of said base portion.

4,355,821
DISPLAY BINDER

Kenneth Z. Crawford, Crawfordsville, Ind., assignor to Crawford Industries, Inc., Crawfordsville, Ind.
Filed Jun. 16, 1980, Ser. No. 159,914
Int. Cl.³ B42D *3/18*
U.S. Cl. 281—33 14 Claims



1. A display binder, comprising
a cover sheet of sheet material forming front and back cover panels and a spine panel to which the front and back cover panels are hingedly interconnected along their inner edges, and bottom brace panel means hingedly interconnected to the bottom edges of the cover panels,
said cover sheet being of flexibly bendable material of substantially uniform bendability from top to bottom, so that rearward displacement of the bottom edge of the cover sheet with the cover panels in open position causes such sheet to bow rearward in a vertical arc,
a stiff spine bar having loose-leaf binding means for binding leaves thereto,
means connecting the upper portion of the spine bar to the upper portion of the spine panel, the lower portion of the cover sheet being free to be swung rearward away from the lower end of the spine bar to displace the bottom edge of such sheet rearward to form a rear display support for the binder,

the brace panel means being movable between a folded position flat against the inner face of said cover panels to allow opening and closing of the binder as a book and a brace position extending forward from such bottom edges of the cover panels to the spine bar, in which brace position it holds such bottom edges in predetermined outspread relation and in rearward spaced relation from said bar for supporting the open binder as an easel for display of its contents,

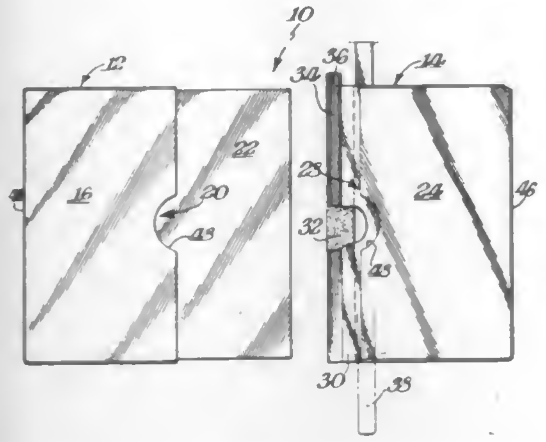
and means for connecting the front of the bottom brace panel means to the spine bar in such brace position.

4,355,822
PROTECTIVE BOOK COVER

Edward L. McHugh, 1406 Clive Cir., Wilmington, Del. 19803
Filed Aug. 19, 1980, Ser. No. 179,435
Int. Cl.³ B42D *3/04*
U.S. Cl. 281—34 10 Claims

1. A removable protective book cover in combination therewith, a book having a front cover and a back cover with the pages therebetween being connected to a binding to which said front and back covers are connected, said removable protective cover comprising a first pocket section and a second pocket section detachably connected to each other for telescopically receiving a respective one of said book covers therein, each of said pocket sections having an inner member and an outer member with their edges connected together along three sides thereof and having its fourth side completely open, each outer member extending outwardly beyond its open side to form a flap, each of said pocket sections being mounted

over its respective book cover with its said inner member juxtaposed said binding of said book, one of said flaps being tucked into the other of said pocket sections between the outer member of said other pocket section and its book cover, and adjustable attaching means on the other of said flaps securing said pocket sections together.



4,355,823
PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

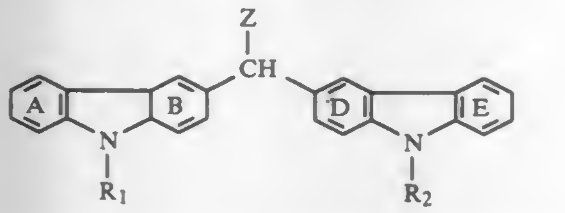
Continuation of Ser. No. 15,979, Feb. 28, 1979, abandoned, which is a continuation of Ser. No. 842,855, Oct. 17, 1977, abandoned. This application Jul. 24, 1980, Ser. No. 171,635

Claims priority, application Luxembourg, Oct. 26, 1976, 76073

Int. Cl.^{3} B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **13 Claims**

1. A pressure-sensitive or heat sensitive recording material comprising a carrier and a color forming system containing at least one carbazolylmethane compound of the formula



(1)

in which each of R_1 and R_2 independently represents hydrogen, alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or alkenyl of not more than 12 carbon atoms, acyl of 1 to 12 carbon atoms, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl, lower alkoxy or nitro, Z represents alkyl of 1 to 12 carbon atoms, alkenyl of not more than 12 carbon atoms, aryl, aralkyl or represents a unsubstituted or substituted heterocyclic radical selected from the group consisting of 3-carbazolyl, N-benzyl-3-carbazolyl, N-lower alkyl-3-carbazolyl, 2-furyl, 2-thienyl, 4-pyridyl, 2-N-methylpyrrolyl, 3-indolyl, 2-lower alkyl-3-indolyl, 2-phenyl-3-indolyl, 1-acetyl-3-indolyl, 1-lower alkyl-2-methyl-3-indolyl, 1-phenyl-3-methyl-5-pyrazolon-4-yl, 1-phenyl-3-methyl-5-amino-pyrazol-4-yl or 1-methyl-2,4-dioxo-quinolin-3-yl, and each of the rings A, B, D and E independently can be substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkylcarbonyl.

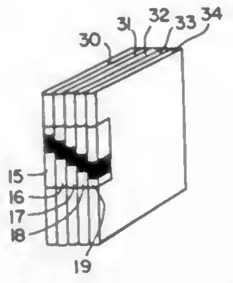
4,355,824
RECORD INDEXING SYSTEM

Joseph Weber, and Maria L. Weber, both of 1105 Massachusetts Ave., Cambridge, Mass. 02139

Filed Jul. 21, 1980, Ser. No. 170,619

Int. Cl.^{3} B42F *21/00*

U.S. Cl. 283—21 **3 Claims**



1. A record indexing system comprising a substrate sheet having a plurality of uniform size, removable labels adhered on one surface, each label extending along an associated longitudinal axis and including three zones on its top surface, wherein the first of said zones extends from one end of said label along said axis, the second of said zones extends from the other end of said label along said axis and the third of said zones has a predetermined length D along said axis, said first and second zones being characterized by a first optical absorption spectrum and said third zone being characterized by a second optical absorption spectrum,

wherein the third zones of said labels are offset from said one end of said labels by a different distance for each of said labels,

wherein the boundaries between said first and third zones and between said second and third zones are substantially perpendicular to said axes, and

wherein the mid-point of each third zone along said axis is offset from the mid-point of at least one other third zone by a distance greater than zero and less than D along said axis.

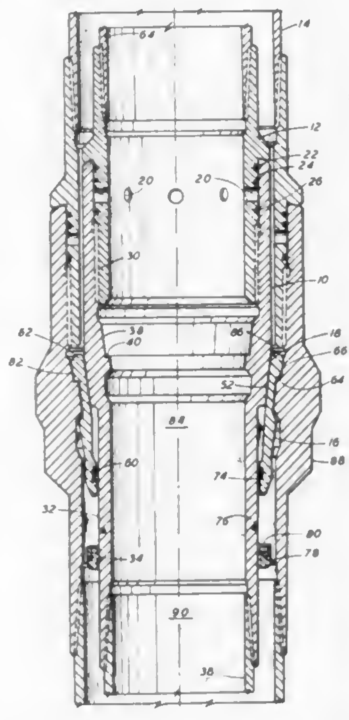
4,355,825
MUDLINE SUSPENSION SYSTEM

Frederick M. Leicht, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Oct. 15, 1980, Ser. No. 197,113

Int. Cl.^{3} E21B *19/10*

U.S. Cl. 285—3 **8 Claims**



1. A mudline well casing suspension system comprising

a wellhead member having an internal recess with an upwardly facing shoulder at the desired level for landing a casing hanger,

a hanger having an outer downwardly facing tapered landing surface, and

a hollow, generally frusto-conical metallic latching member having an upper end of larger diameter and a lower end of smaller diameter,

said latching member also having a gap permitting circumferential contraction of the latching member, an external, downwardly facing shoulder for engaging said wellhead member shoulder, first slots extending from said upper end to near said lower end, second slots between said first slots extending from said lower end to near said upper end and an internal tapered landing surface to receive and support said hanger landing surface when said shoulders are interengaged,

said hanger tapered landing surface engaging said tapered landing surface on said latching member to force said latching member shoulder into full engagement with said wellhead member shoulder and transmitting the weight on said hanger to said latching member, said hanger tapered landing surface in the assembled position being in full engagement with said tapered landing surface on said latching member both above and below said latching member shoulder.

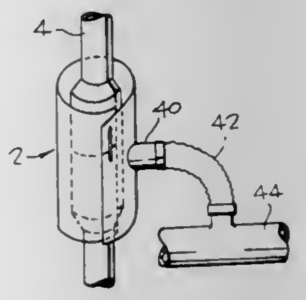
4,355,826
CONTAINMENT SKIRT FOR DRILLING FLUID

Daun W. Von Braun, P.O. Box 498, Spruce Grove, Alberta, Canada

Filed Aug. 6, 1980, Ser. No. 175,893

Int. Cl.^{3} F16L *55/00*

U.S. Cl. 285—45 **2 Claims**



1. A drilling fluid skirt for well drilling means, and which is wrapped around a drill pipe or well tool connection having upper and lower connecting parts prior to loosening of the connecting parts to contain pressured spray of drilling fluid, mud or water and minimize loss thereof,

the skirt comprising a flexible body portion of length greater than the circumference of the connection about which it is adapted to be wrapped to cover adjacent portions of the connecting parts, and including means for locking the skirt in wrapped contact around the connection,

the outer surface of the skirt adjacent one vertical edge having vertically extending grooves or ribs for mating contact with vertically extending ribs or grooves respectively provided on the inner surface of the skirt adjacent the other vertical edge,

the skirt having handles provided on the outer surface to facilitate positioning, the skirt having an inner surface with bottom portions of the inner surface of the skirt having sealing means for respective contact with the upper and lower connecting parts during wrapping to prevent passage of drilling fluid or mud or water therebetween,

and discharge means comprising a discharge opening with discharge nipple provided centrally in the skirt between the upper and lower sealing means for discharging drilling fluid or mud or water from within the skirt.

4,355,827
PIPE SWIVEL JOINT FOR AMBIENT AND CRYOGENIC TEMPERATURES

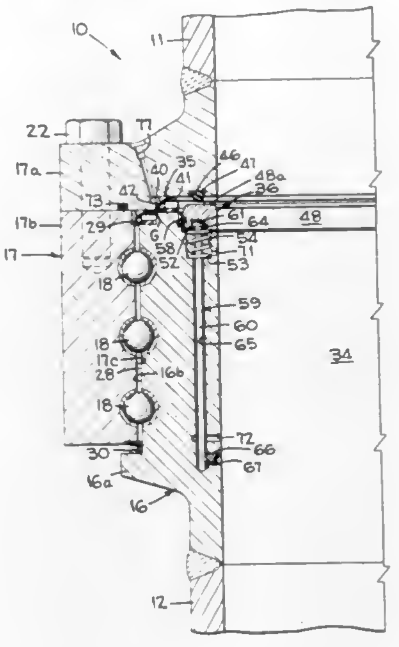
Thomas M. Ehret, Malay Le Grande, France, assignor to FMC Corporation, Chicago, Ill.

Filed Nov. 10, 1980, Ser. No. 205,124

Claims priority, application France, Nov. 27, 1979, 79 29183

Int. Cl.^{3} F16L *17/00*

U.S. Cl. 285—98 **12 Claims**



1. A pipe swivel joint for connecting together a pair of pipes and for transferring fluid between said pipes at ambient and at cryogenic temperatures, said joint comprising:

an annular inner element having an inner surface and an outer surface;

an annular outer element surrounding said inner element said outer element having an inner surface and an outer surface;

an annular bearing race chamber between said inner and outer elements;

bearing means mounted in said race chamber to retain said outer element in surrounding relationship with said inner element and to facilitate relative rotational movement of said elements;

an ambient sealing means in sealing engagement between said inner and outer elements to provide a seal between said elements at ambient temperatures;

means for repositioning said ambient sealing means out of said sealing engagement when the temperature at said junction decreases below a predetermined value; and

a cryogenic sealing means between said inner and said outer elements to provide a seal between said elements at cryogenic temperatures.

4,355,828
UNIVERSAL PLASTIC FLANGE FOR CONNECTING URINALS TO DRAIN PIPES

Raymond F. Taunton, 11541 Holton Rd., Jacksonville, Fla. 32219

Continuation of Ser. No. 726,132, Sep. 27, 1976. This application Jul. 18, 1979, Ser. No. 58,615

Int. Cl.^{3} F16L *17/00*

U.S. Cl. 285—342 **4 Claims**

1. An outlet joint structure for interconnecting an in-wall drain pipe having a horizontally disposed annular intake extension with a wall hung urinal having an annular outlet port in a wall adjacent surface thereof such that said intake extension and said outlet port are substantially coaxially disposed, and said urinal further including an outwardly bevelled annular boss extending horizontally outward on said wall adjacent surface thereof about the periphery of the mouth of said annu-

lar outlet port in the provision of a flared sealing surface, said joint structure comprising:

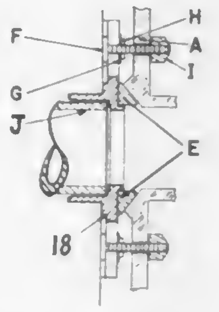
universal flange means interconnecting through said wall, said horizontally disposed intake extension and said outlet port of said urinal, and having an annular body portion defining a stepped bore therethrough;

said stepped bore comprising an enlarged diameter portion adjacent said intake extension and a reduced diameter portion adjacent said outlet port of said urinal in the provision of an internal annular boss in the innermost extent of said enlarged diameter portion;

said enlarged diameter portion of said stepped bore telescopically receiving said horizontal intake extension with the outermost end of the latter abutting said internal annular boss, and adhesive means holding said outermost end in said abutment with said boss;

a horizontally extending, annular shoulder on said annular body portion about the mouth of said reduced diameter bore portion and extending toward the said mouth of said outlet port of said urinal;

an annular sealing gasket mounted on said shoulder and having a bevelled annular seating surface thereon of a compatible taper, size, and orientation for engaging and sealing with the said flared sealing surface at the mouth of said annular outlet port of said urinal;



said universal flange means further comprising a pair of diametrically opposed mounting ears extending outboard of said annular body portion over the urinal adjacent plane of said wall on which the said urinal is hung;

each of said ears including radially extending slots in the provision of a bifurcated channel defining an elongated bolt head receiving recess between a said ear and the said urinal adjacent plane of said wall;

said urinal having diametrically disposed mounting ports external to said annular boss in said wall adjacent surface thereof;

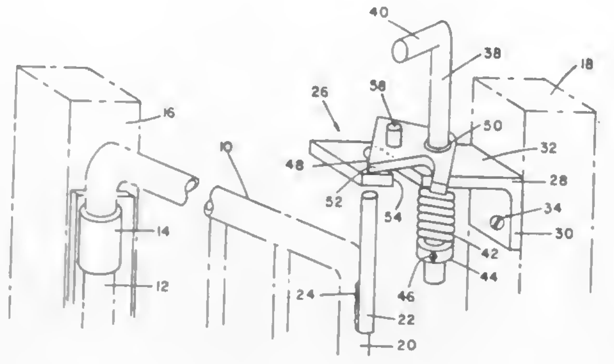
bolt means having heads slidably mounted in said bolt head receiving recesses of said mounting ears and thereby positioned in registry with and extending through said mounting ports in said urinal; and

means engaging said bolt means to draw said annular sealing gasket into a full sealing engagement with said flared sealing surface and said flange means.

4,355,829
GATE LATCH
James E. Gregory, R.R. #1, Box 130, Fort Madison, Iowa 52627
Filed Dec. 29, 1980, Ser. No. 220,861
Int. Cl.^{3} E05C *5/02*

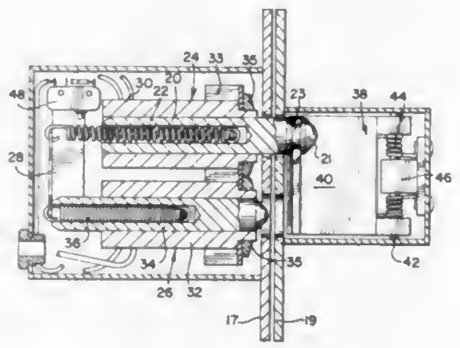
U.S. Cl. 292—68 **6 Claims**

1. A latch for releasably locking a vertically hinged gate in closed position relative to a fixed support toward and away from which the unhinged edge of the gate swings respectively between closed and open positions, comprising: a base member having means for the rigid affixation thereof to the support and including a horizontal ledge projecting from the support toward the unhinged edge of the gate when in its closed position, said ledge having a vertical opening therein, an upright pivot member carried by the ledge via said opening for both angular and vertical movement relative to the ledge about a vertical axis, means cooperative between the member and ledge for biasing the member normally downwardly, a horizontal plate overlying the ledge and affixed to the member for movement with the member between angularly spaced apart latching and unlatching positions, said plate having a slot leading in from one edge thereof, said slot, in the unlatching position of the plate, opening toward the path of swinging of the gate toward its closed position and, in the latching position of the plate lying crosswise of said path, pintle means on the unhinged edge of the gate for entering the plate slot during closing of the gate when the plate is in its unlatching position and for retention in the slot when the plate is turned by the force of the closing gate to its latching position, retainer means engageable between the plate and ledge when the plate is in its latching position and disengageable from the ledge when the plate is lifted against the force of the biasing means and turned to its unlatching position, and handle means on the pivot member for manually raising and turning the plate to its unlatching position whereby the plate slot may release the pintle means.



4,355,830
ELECTRICAL LOCKING MECHANISM
David M. Rau, III, Lincoln, Nebr., assignor to CNI Incorporated, Lincoln, Nebr.
Filed Feb. 25, 1980, Ser. No. 124,525
Int. Cl.^{3} E05C *1/14*

U.S. Cl. 292—144 **12 Claims**



1. An electrically actuated mechanism for loading a door or other passage-closing structure in the closed position relative to a stationary member, comprising:

a lock bolt reciprocally mounted on one of said passage-closing structure or said stationary member and movable between a retracted, non-locking position and an extended, locking position;

biasing means mounted on said one passage-closing structure or said stationary member for mechanically urging said lock bolt toward said retracted position;

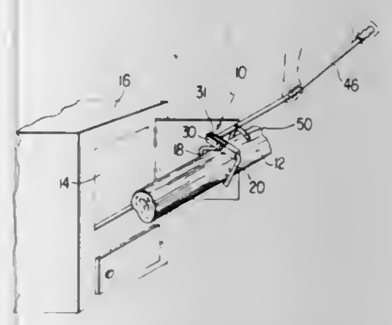
actuating means mounted on said one passage-closing structure or said stationary member and responsive to a momentary electrical signal for moving said lock bolt in opposition to said biasing means from said retracted position to said extended position;

mechanical latch means mounted on the other of said passage-closing structure or said stationary member for retaining said lock bolt in said extended position notwithstanding cessation of said momentary electrical signal to said actuating means; and

release means mounted on said one passage-closing structure or said stationary member and responsive to a momentary electrical signal for mechanically displacing said latch means and disengaging said latch means from said lock bolt to permit said biasing means to move said lock bolt from said extended position to said retracted position independently of any said electrical signals.

4,355,831
LOADING DEVICE FOR FIREWOOD
Jack B. Smith, Rte. 1, Box 297-A, Whitwell, Tenn. 37397
Filed Jan. 9, 1981, Ser. No. 223,825
Int. Cl.^{3} A47J *49/00*

U.S. Cl. 294—11 **5 Claims**



1. A loading device for logs and the like comprising:

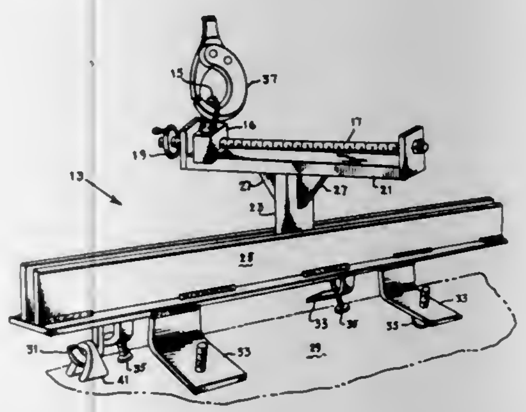
(a) a pair of opposed arms each having a vertical portion and a horizontal portion, said vertical portion having one or more inwardly extending dogs for gripping said logs and said horizontal portion of each arm being joined at a point for pivotal movement therebetween;

(b) a handle secured transverse to said horizontal portion of one of said arms a distance offset from said point of pivotal movement whereby rotation of said handle in one direction causes said dogs of said vertical portion to engage said log and rotation of said handle in the other direction causes said dogs of said vertical portion to release said log; and

(c) means on said handle for aligning said log relative to said opposed arms during transport.

4,355,832
LOAD BALANCER FOR MULTIPLE LOADS
Roger E. Andersen, Ft. Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 4, 1980, Ser. No. 212,955
Int. Cl.^{3} B66C *1/10*

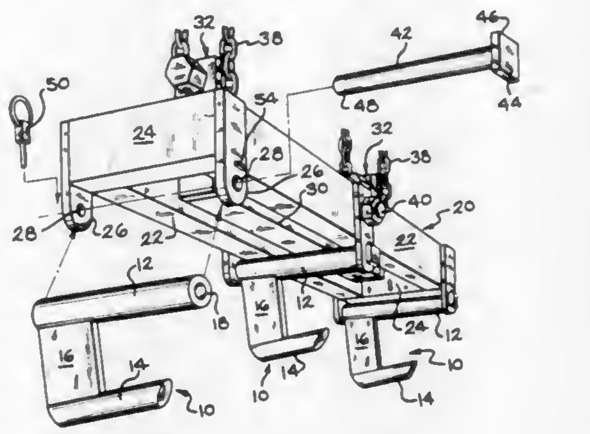
U.S. Cl. 294—81 R **2 Claims**



1. A load balancer for hoisting and conveying multiple loads comprising, an elongated rotatable horizontally oriented jack screw, said jack screw being fully threaded, a block laterally movable along the entire length of said jack screw in response to rotation thereof, a load rail for guiding the movement of said block along said jack screw, a lifting eye attached to the upper surface of said block for engagement with a hoisting hook, an elongated beam attached to and spaced below said load rail, said beam being oriented perpendicular to said load rail, and means on said beam for attaching a holding fixture thereto, said holding fixture capable of supporting said multiple loads, whereby any asymmetry of the load on the holding fixture can be balanced by laterally adjusting the position of said lifting eye on said jack screw.

4,355,833
LIFTING APPARATUS
Glenn G. Dunbar, 2608 Overbrook, Toledo, Ohio 43614
Filed Jun. 23, 1980, Ser. No. 162,148
Int. Cl.^{3} B66C *1/10*

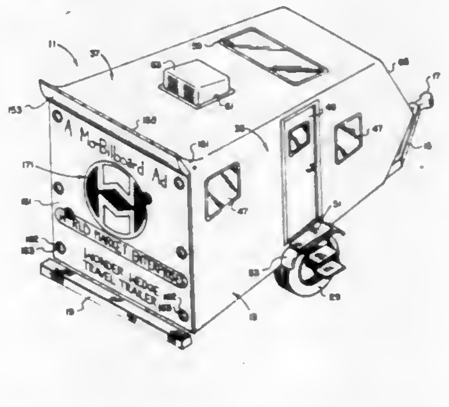
U.S. Cl. 294—87 R **7 Claims**



1. Apparatus for lifting a load comprising: a support frame having a pair of laterally disposed side members, said side members being spaced apart in opposed relationship and substantially parallel, said support frame further including at least two flanges extending from said frame, said flanges being in opposed relationship, at least one lifting hook pivotally attached to said support frame for engaging said load, each of said lifting hooks including a generally U-shaped member having a first leg and an opposed second leg, said second leg being fixed to said first leg by a spacing member, said first leg of said U-shaped member being pivotally positioned between said opposed flanges, a lifting bar pivotally connected to said support frame; and means for lifting said lifting apparatus, said lifting means being connected to said lifting bar whereby said lifting bar can pivot with respect to said frame to balance said load.

4,355,834
WEDGE-SHAPED CAMPING TRAVEL TRAILER
Thomas E. Alford, 801 Redwater Rd., Texarkana, Tex. 75501
Filed Aug. 11, 1980, Ser. No. 177,274
Int. Cl.^{3} B62D *37/02*

U.S. Cl. 296—15 **1 Claim**



1. A trailer comprising a wheeled frame having a front end and a back end, a body having a roof and sidewalls mounted on

the frame, said body and frame being wedge-shaped and said body having an increasing width and increasing height from the front end to the back end of said frame, and means at the front end of said frame for attaching the trailer hitch of a vehicle, said trailer including an awning mounted on a roller housed at the rear of the roof of the body and extendable therefrom to provide shelter over an area to the rear of the trailer, said body having an aerodynamic spoiler extending across the rear edge of the roof and having a hinged flap portion which can be opened to give access to a storage compartment, wherein said roller and awning are housed in said storage compartment.

4,355,835

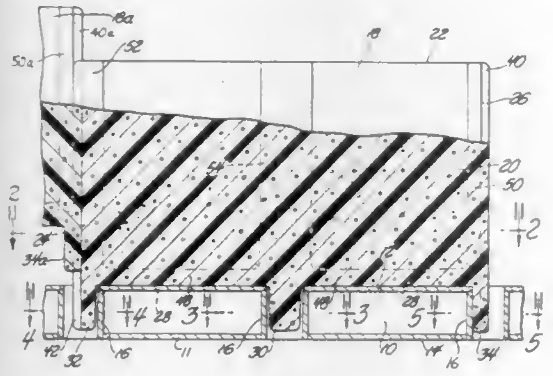
LIGHTWEIGHT ONE PIECE SIDE RACK WITH STAKES FOR FLATBED SEMITRAILERS

Earl M. Ash, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 6, 1980, Ser. No. 194,646

Int. Cl.^{3} B62D *27/06*

U.S. Cl. 296—36 **2 Claims**



1. A panel adapted for positionment in an upright attitude along the perimeter of a flatbed truck or trailer: said upright panel including a rectangular section defining an upper edge, lower edge, and two side edges; three legs projecting downwardly from the lower edge of the panel rectangular section for positionment in pockets located on the aforementioned flatbed; a first one of the legs being located on the vertical centerline of the panel, a second one of the legs being located at one of the panel side edges, and a third one of the legs being located at the other panel side edge; the first leg having a width in the plane of the panel approximately the same as the corresponding dimension of the mating pocket; each of the second and third legs having a width in the plane of the panel approximately one half the corresponding dimension of the mating pocket, whereby legs on adjacent panels cooperatively occupy selected ones of the pockets; the rectangular panel section and downwardly-projecting legs being integrally formed as a unitary high density plastic foam molded element; one of the panel side edges and associated leg having a vertical groove therealong for receiving an edge area of an adjacent panel when the panels are in place on the flatbed; the other panel side edge and associated leg having a rib therealong, said rib having a transverse thickness slightly less than the width of the aforementioned vertical groove whereby a rib on one panel extends into a groove on an adjacent panel when the panels are in place on the flatbed; the panel being outwardly embossed in selected areas to rigidify the panel against bending forces; said embossed areas including a first area extending along the panel lower edge, a second area extending along one of the panel vertical edges, a third area extending along the other panel vertical edge, and a fourth area extending along the panel vertical centerline; the embossed areas projecting outwardly from both major faces of the panel; the aforementioned legs being continguous to the embossed areas of the panel so that the legs and embossed areas have the same transverse thickness.

4,355,836

ASH TRAY ASSEMBLY FOR AN AUTOMOBILE

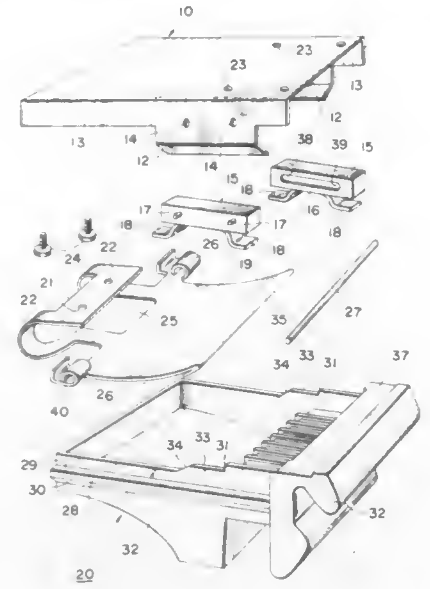
Mitsuru Iizuka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 1, 1980, Ser. No. 117,639

Claims priority, application Japan, Mar. 1, 1979, 54-24842[U]

Int. Cl.^{3} B60N *3/12*

U.S. Cl. 296—37.9 **3 Claims**



1. An ash tray assembly adapted for mounting on the instrument panel of an automotive vehicle, comprising:

(a) a cover plate having its one end portion secured on the upper edge of an opening formed in the instrument panel and extending inwardly of the instrument panel;

(b) a resilient protecting plate having an inner portion secured on the lower surface of the cover plate, an outer portion outwardly and upwardly extending through the instrument panel opening to cover the instrument panel, and a turned portion between the inner and outer portions, the protecting plate outer portion having a cam member extending therefrom; and

(c) an ash tray supported by the cover plate for sliding movement along the lower surface of the cover plate into and out of the instrument panel opening, the ash tray having a cam surface for engagement with the protecting plate cam member to push the protecting plate outer portion inwardly with inward movement of the ash tray.

4,355,837

GLOVE COMPARTMENT

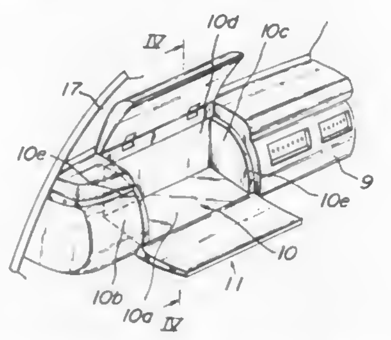
Kenzo Shimizu, Yokosuka; Yukio Fukunaga, and Hiroshi Tsuda, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 17, 1980, Ser. No. 197,910

Claims priority, application Japan, Oct. 24, 1979, 54-146223[U]

Int. Cl.^{3} B60R *7/06*

U.S. Cl. 296—37.12 **4 Claims**



1. A glove compartment in an instrument pannel of an automotive vehicle, comprising: a bottom plate having a front portion and a rear portion when looking forwardly, and lid means including a first lid pivotally connected to said compartment adjacent said rear portion, and a second lid pivotally connected to said compartment adjacent to but spaced upwardly above said front portion, said first lid having an essentially planar inner surface, said first and second lids each being pivotable into closed positions in which they close said compartment, and into open positions in which said first lid forms a flush, abutting extension of said bottom plate and said second lid provides access to said compartment from above.

4,355,838

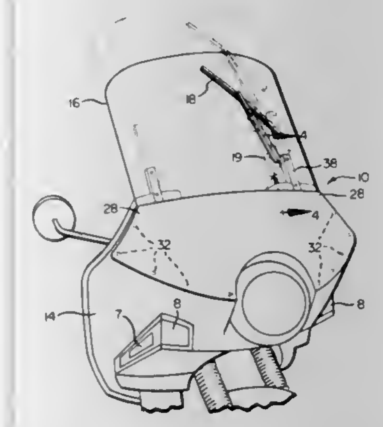
MOTORCYCLE FAIRING

John S. Hickman, 4149 N. Stowell Ave., Milwaukee, Wis. 53211

Filed May 9, 1980, Ser. No. 148,420

Int. Cl.^{3} B62J *17/04*

U.S. Cl. 296—78.1 **7 Claims**



1. A translatably adjustable windscreen assembly adapted for use with a motorcycle fairing, said windscreen assembly comprising:

a generally vertical, transparent member which is adapted to be adjacent to the fairing;

means for releasably fastening the windscreen and adjustably positioning the windscreen by translating the entire windscreen up and down relative to the fairing; and,

a windscreen wiper assembly, including an electrical wiper motor means, wiper arm and blade, and electrical connecting means between said wiper motor and the electrical system of a motor vehicle, said assembly being mounted directly on said adjustable windscreen and including means for allowing said motor assembly to be movable with said windscreen whereby said wiper motor assembly can be raised or lowered with the adjustable windscreen.

4,355,839

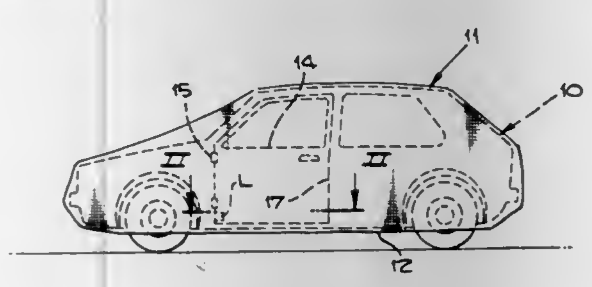
THEFT DETERENT DEVICE FOR CAR COVERS

Jack S. Rosen, Riverside, Calif., assignor to Reliable Auto Accessories, Inc., Riverside, Calif.

Filed Dec. 9, 1980, Ser. No. 214,518

Int. Cl.^{3} B60J *11/00*

U.S. Cl. 296—136 **1 Claim**



1. Deterent means for unwanted removal of a vehicle cover having cover material with an internal surface extending over the entire vehicle body and below vehicle closure members such as door, windows, hoods, of a vehicle, comprising, in combination:

an elongated thin band of high tensile strength material;

one end of said band being secured to the internal surface of the cover material at a location which will be adjacent to a joint line between a closure member and the vehicle body and immediately nondiscernible at the outer surface of the cover material;

the band having a length adapted to extend between thwe adjacent vehicle closure member and the vehicle body to position the other band end within the vehicle body;

and an enlarged object of rigid nondeformble material secured to said other band end to restrain unwanted separation of the localized areas of the cover material from the vehicle body.

4,355,840

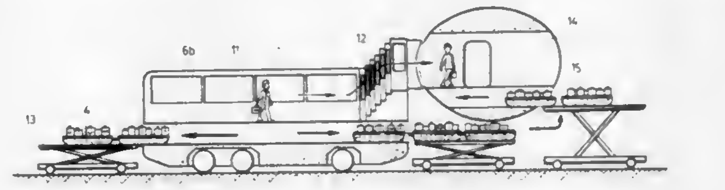
CLOSED VEHICLE AND A COMPLEX EQUIPMENT FOR MANAGING SERVICES AT AIRPORTS

Valer Szendrödi; Gyula Radics; Tivadar Varga; Tibor Vass, and Karoly Gyurics, all of Budapest, Hungary, assignors to Ikarus Karosszeria- es Jarmugyar, Budapest, Hungary

Filed Dec. 27, 1979, Ser. No. 107,660

Int. Cl.^{3} B64F *1/31*

U.S. Cl. 296—179 **8 Claims**



1. A system for processing passengers and luggage at an airport, comprising:

means defining a passenger and luggage processing chamber wherein passenger tickets of respective passengers can be examined and checked and luggage assigned to each passenger can be checked in;

a waiting room connected to said chamber and adapted to accommodate passengers processed in said chamber;

luggage-displacing means extending below said waiting room and connected with said chamber for advancing luggage from said chamber along a path substantially parallel to the path traveled by passengers from said chamber to said waiting room; and

an elongated bus-type vehicle alignable with said waiting room and formed with an elongated vehicle body having wheels and defining a passenger space above and separated from a luggage space, said passenger and luggage spaces both extending longitudinally along said vehicle, whereby passengers advancing onto said vehicle and into said passenger space are parallelled by movement of luggage from beneath said waiting room onto said vehicle and into said luggage space, said body being formed with an elevatable stairway at one end of said passenger space for communication with an aperture in an aircraft.

4,355,841

MOTOR VEHICLE BODY

Vittorio Ghidella, and Felice Cornacchia, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Dec. 31, 1979, Ser. No. 108,627

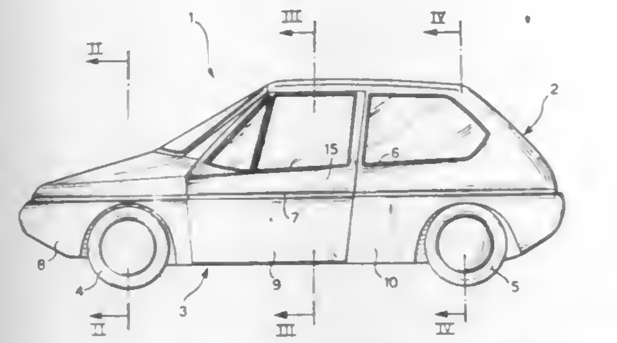
Claims priority, application Italy, Feb. 2, 1979, 67230 A/79

Int. Cl.^{3} B62D *27/00*

U.S. Cl. 296—185 **2 Claims**

1. A motor vehicle having front and rear wheels and a body including side walls each having windows and at least one door, the lower edges of said windows defining a substantially horizontal belt line, each of said side walls below said belt line being comprised of an internal sheet metal wall and an external wall spaced from each other, said body having horizontal line

defining means extending about said body on the external surface thereof immediately above said wheels and spaced below said belt line, the external wall of each side wall between said belt line and said line defining means being comprised of sheet metal and the external wall of each side wall below said line defining means being constructed solely from plastic material parts, wherein considered in a vertical plane containing the axes of the vehicle front wheels, each said first plastic material part has a cross-sectional profile which arches like a roof over the corresponding front wheel and comprises a horizontal central portion, a vertical flange extending upwards from said central portion and serving to facilitate the secural of said first plastic material part to said metal structure of said body, a downwardly-inclined, straight portion connected to the end of said central portion nearest the interior of said body, and a downwardly-inclined, curved portion connected to the end of said central portion nearest the exterior of said body, the concave face of said curved portion facing upwards and outwards and said curved portion constituting a part of the external lateral wall of the vehicle body.



4,355,842
KICKING PLATE MOUNTING STRUCTURE

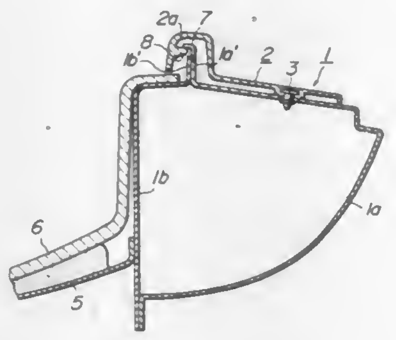
Kazumi Hira, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 24, 1980, Ser. No. 190,379

Claims priority, application Japan, Sep. 25, 1979, 54-132843[U]

Int. Cl.³ B60R *3/00*

U.S. Cl. 296—199 **6 Claims**



1. In a structure for mounting a kicking plate onto a vehicle body panel forming the side sill at the lower edge of a door opening, said vehicle body panel including outer and inner sill members which are welded to each other at upwardly projecting flanges, said kicking plate including an outer end portion which covers the substantially horizontal upper surface of the outer sill member and which is secured thereto by a first mounting means, and an inner end portion formed substantially as an inverted U-shaped cover which covers said flanges of the sill members and which is secured thereto by a second mounting means, the improvement wherein said second mounting means comprises a first projection formed integrally with at least one of the flanges and protruding generally horizontally toward the inner surface of the cover, and a second projection formed on the inner surface of the cover such that the second projection resiliently engages with the lower surface of the first projection.

4,355,843
PILLAR CONSTRUCTION FOR MOTOR VEHICLE

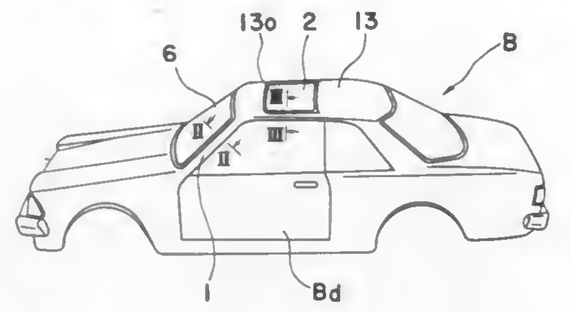
Tetsuro Murakami, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 6, 1980, Ser. No. 194,279

Claims priority, application Japan, Oct. 16, 1979, 54/143430[U]

Int. Cl.³ B60J *7/02*

U.S. Cl. 296—201 **5 Claims**



1. A roof and pillar structure for use in a motor vehicle which comprises: a roof having an opening therein adapted to be closed by a movable closure means and having a drain trough around the periphery of said opening; a pillar attached to a corner of said roof and having a pillar inner panel and a pillar outer panel rigidly connected to each other so as to define a closed cross section therebetween, said pillar inner panel being formed with a portion of arcuate cross section extending along the entire length of said pillar inner panel and protruding toward the interior of the motor vehicle; a reinforcing pipe member welded along the inner surface of said arcuate cross section portion for fixing said pipe member to the interior of said closed cross section defined by said pillar inner panel and pillar outer panel for reinforcement of said pillar; and a drain pipe extending through the interior of said pipe member and communicated with said drain trough.

4,355,844
SKELETAL LOAD-BEARING STRUCTURES FOR MOTOR VEHICLES

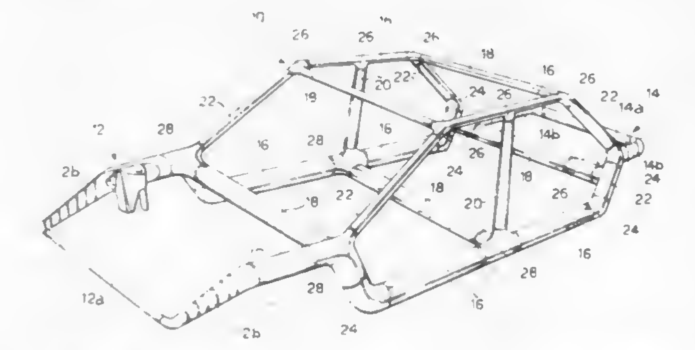
Marco Fantini Muzzarelli, Florence, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 28, 1980, Ser. No. 125,388

Claims priority, application Italy, May 25, 1979, 68124 A/79

Int. Cl.³ B62D *21/02*

U.S. Cl. 296—205 **8 Claims**



1. A skeletal load-bearing structure for a motor vehicle, said structure comprising:

a plurality of girders each of which is comprised of at least two shell elements of thin sheet metal provided with longitudinal flanges, said shell elements being joined together by their flange so as to form a tube having a substantially circular profile, and

a plurality of connectors joining the ends of at least two of said girders together into a unified structure, each said connector comprising at least two shell elements of thin sheet metal having a curved cross-sectional configuration and provided with respective flanges extending uninterruptedly along the longitudinal edges thereof, the said shell elements being connected together by the joining of the flanges along their extent and each said connector shell element having a plurality of arm portions which together with corresponding portions of the other shell elements of the same connector form a plurality of tubular connection stubs to which said ends of said girders are rigidly fixed; said arm portions of each connector shell element merging smoothly with each other across substantially their entire width with the ends of said connector shell elements being provided with rebated extensions coextensive only with the curved portions of said shell elements so as to permit the ends of said girder shell elements to be connected together by overlapping joints and the longitudinal flanges of the girders extending on the prolongation of the flanges of the connector shell elements forming the respective tubular connection stubs of said connectors.

4,355,845
ROOF FOR VEHICLES, ESPECIALLY MOTOR VEHICLES, FOR AGRICULTURAL PURPOSES

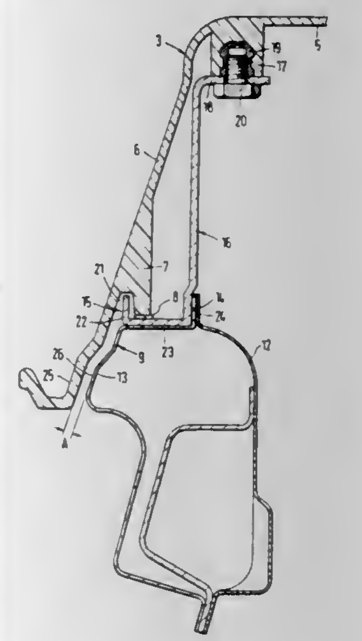
Hermann Ziegler, Renningen, and Eugen Kolb, Stuttgart, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,547

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916013

Int. Cl.³ B60J *7/00*

U.S. Cl. 296—210 **11 Claims**



1. Roof assembly for vehicles, especially motor vehicles for agricultural purposes, comprising an inverted trough-shaped roof, having an upper roof wall delimited by an upright roof segment, releasably secured on a vehicle, said upright roof segment having a thickened portion being supported on a roof frame with a sealing means interposed between the portion and roof frame, wherein a supporting part is provided which extends from the upper roof wall to the roof frame and wherein a holding device is provided between the thickened portion and the roof frame in a manner laterally aligning said roof.

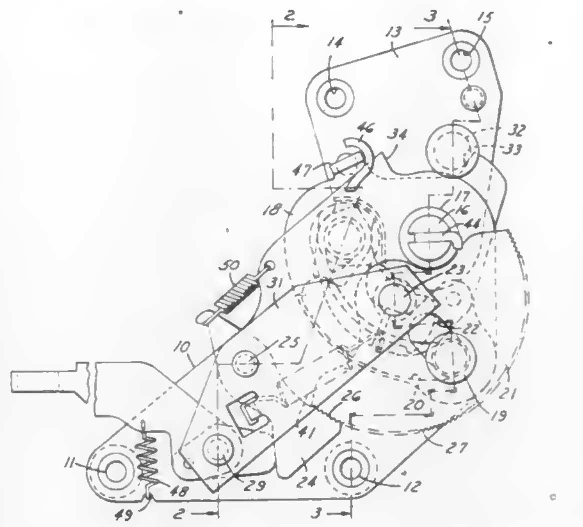
4,355,846
SEAT BACK ADJUSTER

Bernd A. Kluting, Radevormwald, Fed. Rep. of Germany, and Vikram H. Zaveri, Springfield, Mich., assignors to Keiper U.S.A., Inc., Battle Creek, Mich.

Filed Sep. 4, 1979, Ser. No. 72,013

Int. Cl.³ A47C *1/026*

U.S. Cl. 297—366 **16 Claims**



1. A fine increment seat back adjuster for vehicle seats having a tiltable backrest member comprising a first hinge member connectable to a seat rest member, a second hinge member connectable to a backrest member, a first pivot means connecting said hinge members for relative pivoting movement, an intermediate plate pivotally mounted on said first pivot means capable of relative pivotal movement to both said first and second hinge members, a ratchet plate having a circular arcuate toothed sector, a second pivot means spaced from said first pivot means connecting said ratchet plate and first hinge member, a differential translation drive connection between said intermediate and ratchet plates spaced relatively more from said first and relatively less from said second pivot means so as to provide an amplified angular displacement of said ratchet plate about said second pivot means for any corresponding angular displacement of said intermediate plate and second hinge member about said first pivot means, manually releasable toothed pawl means mounted on said first hinge member for engagement and retention of said toothed sector in any adjusted angular position of said ratchet plate relative to said first hinge member, means for limiting backward movement of said second hinge member relative to said intermediate plate reflecting the adjusted position of said ratchet plate, said last means accommodating forward tilting movement of said backrest member without pivotal movement of said ratchet and intermediate plates, stop means for limiting the extremities of movement of said ratchet plate relative to said pawl, and means for positively preventing overtravel of said ratchet plate to a position limited by said stop means where pawl engagement cannot produce full tooth engagement.

4,355,847
APPARATUS FOR HOLDING AND DISPLAYING BRUSH BODIES

Emil Schnekenburger, and Rudolf Schnekenburger, both of Zell, Fed. Rep. of Germany, assignors to Coronet Werke Heinrich Schlerf GmbH, Wald-Michelbach, Fed. Rep. of Germany

Continuation of Ser. No. 83,062, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 877,250, Feb. 13, 1978, abandoned.

This application Nov. 18, 1980, Ser. No. 207,869

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747855

Int. Cl.³ B25B *11/02;* **A46D** *3/00*

U.S. Cl. 300—11 **9 Claims**

1. A spatial positioning and index mechanism for brush body

holders in brush manufacturing machines which perform drilling and stuffing operations comprising, in combination:

a frame;

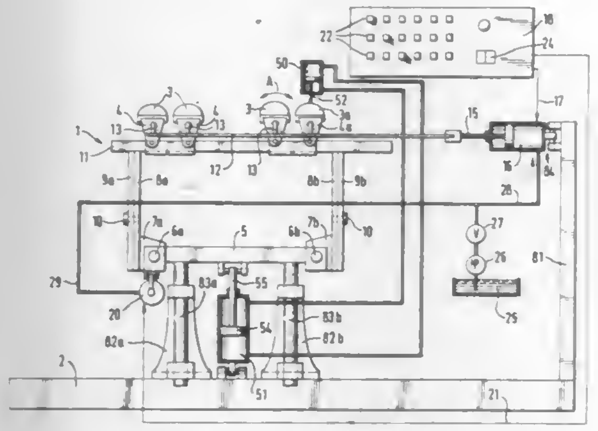
at least one brush body holder, which is movably disposed on said frame for displacement in various predetermined directions and distances;

at least first and second hydraulic linear force amplifiers for displacing said at least one brush body holder in two perpendicular directions and for hydraulically arresting the at least one brush body holder during drilling and stuffing operations, each hydraulic linear force amplifier including

a hydraulic piston-cylinder assembly connected directly directly to said at least one brush body holder and said frame for displacing said at least one brush body holder, said piston-cylinder assembly having a pressurized fluid chamber,

a hydraulic regulating valve,

means for connecting said pressurized fluid chamber of said piston-cylinder assembly with said hydraulic regulating valve, and



a controlling means having a coupling means connected to said hydraulic regulating valve, said controlling means being responsive to electrical control signals for determining the displacement of said piston in said piston-cylinder assembly,

said means for connecting said hydraulic control valve and said hydraulic piston-cylinder assembly being arranged in combination with said controlling means, said hydraulic regulating valve and said hydraulic piston-cylinder assembly to form a closed control loop in which displacement of said hydraulic linear force amplifier are determined by said controlling means; and

a programmable electronic logic control system having a non-mechanical memory for supplying to the controlling means of the at least two hydraulic linear force amplifiers respective electrical control signals corresponding to stored data in said memory representing predetermined brush body displacements.

4,355,848
WHEEL COVER FOR A VEHICLE

Takao Ookubo, Yokohama; Yuko Baba, Tokyo, and Kiyoshi Kamihama, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd. and Hashimoto Forming Kogyo Co., Ltd., both of Yokohama, Japan

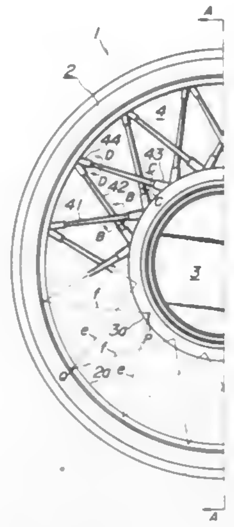
Filed Jun. 3, 1980, Ser. No. 155,924

Claims priority, application Japan, Jun. 4, 1979, 54/68842

Int. Cl.^{3} B60B *7/00*

U.S. Cl. 301—37 SS **2 Claims**

1. A wheel cover for a vehicle road wheel, comprising: an annular radially outer peripheral portion, a radially inner peripheral portion having a circular outer contour, a plurality of spoke portions located between and connected to the outer and inner peripheral portions, said outer and inner peripheral portions and said spoke portions being integrally formed into a one-piece structure, and means for attaching the one-piece structure cover to the road wheel, each spoke portion being formed by two spoke-resembling members which cross each other at a cross point between said outer and inner peripheral portions, with each member having a front section on an outer surface side and a rear section on an inner surface side, the width of the front section being greater than the width of the rear section, said two spoke-resembling members being staggered at the cross point in axial direction of the wheel cover, with the front section of the spoke-resembling member lying in front at said cross point being thicker that its rear section, and the rear section of the spoke-resembling member lying behind at said cross point being thinner than its rear section, boundary lines between said front and rear sections of the both spoke-resembling members being in a common plane.



4,355,849
HYDRAULICALLY OPERATED ANTI-SKID BRAKING SYSTEMS FOR VEHICLES

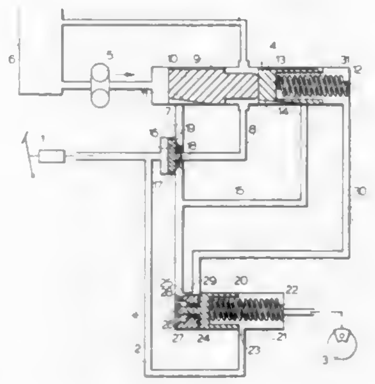
Alexander J. Wilson, Sutton Coldfield, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 119,190, Feb. 6, 1980, abandoned. This application Mar. 6, 1981, Ser. No. 241,233

Claims priority, application United Kingdom, Feb. 6, 1979, 7904114

Int. Cl.^{3} B60T *8/02*

U.S. Cl. 303—116 **9 Claims**



1. An hydraulically operated anti-skid braking system for a vehicle comprising brake applying means, a reservoir comprising a container for hydraulic fluid, an hydraulic pump rotatable with rotation of said wheel and having an input connected to said reservoir and an output connected to said brake applying means, a leakage path between the output of said pump and said reservoir, a first variable orifice in said leakage path, said brake applying means being responsive to the supply of hydraulic fluid from said pump and passing through said first variable orifice, means for automatically varying the size of said first orifice in response to wheel speed to prevent said wheel from locking upon operation of said brake applying means, second variable orifice means upstream of said brake

applying means, and means cooperating with said second variable orifice means to provide a pressure drop of substantially constant value across said second variable orifice means over the range of wheel speeds and consequently a more linear wheel speed analogue of the pressure supplied by said pump to said brake applying means.

4,355,850
BEARING OF A TURBOMACHINE

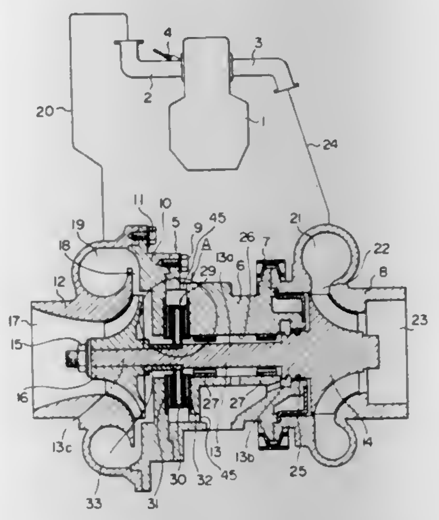
Hiroshi Okano, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 10, 1980, Ser. No. 168,380

Claims priority, application Japan, Apr. 2, 1980, 55-41995

Int. Cl.^{3} F16C *7/04;* **F04B** *17/00;* **F03B** *11/06*

U.S. Cl. 308—9 **6 Claims**



1. A turbomachine having a housing, a rotary shaft rotatably inserted into said housing, and a non-contact type thrust air bearing for axially supporting the rotary shaft, wherein said thrust air bearing comprises a disc shaped hollow runner fixed onto the rotary shaft, and a pair of stationary bearing plates fixed onto the housing on each side of said runner and arranged to be spaced from said runner by a slight distance, said runner comprising a pair of opposite thin side walls, a cylindrical thin radially inner wall and a cylindrical thin radially outer wall, which define an interior chamber in said runner, and wherein neither the runner nor the shaft contacts the housing or the bearing plates.

4,355,851
DRAWER INTERLOCK SYSTEM

Boyd C. Slusser, Overisel, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Nov. 28, 1980, Ser. No. 211,352

Int. Cl.^{3} E05B *65/46;* **E05C** *7/06*

U.S. Cl. 312—215 **14 Claims**

1. In a cabinet including a housing, at least two drawers, means slidably mounting said drawers to the housing and an interlock mechanism for preventing the simultaneous opening of two drawers, the improvement in said interlock mechanism comprising:

an elongate channel mounted to said housing adjacent said at least two drawers, said channel having a fixed length and depth and including a bottom wall;

at least one block slidable in said channel along the length thereof, said at least one block including at least one end surface at an acute angle relative to the bottom wall of the channel;

at least two wedge members slidable relatively into and out of said channel in a direction perpendicular to the length of the channel;

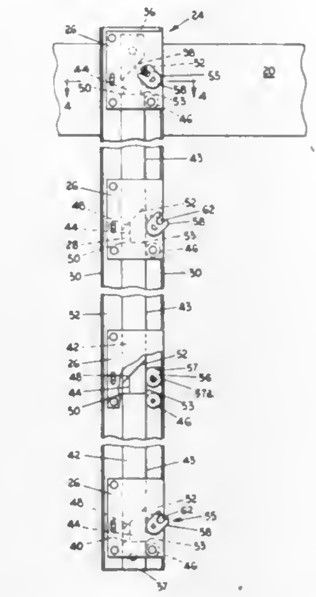
one of said wedge members disposed adjacent an end of said at least one block and a second of said at least two wedge members disposed adjacent another end of said at least one block;

each of said wedge members having a surface complementary to and in sliding contact with the end surfaces of said at least one block;

the fixed length of said channel being less than the combined length of said block and wedge members but at least as long as the combined length of said block and one of said wedge members;

cam means mounted on said housing adjacent said drawer and in contact with each of said wedge members for displacing one of said wedge members between a first position relatively in said channel and a second position relatively out of said channel;

actuator means cooperatively mounted between the drawers and the cam means for moving said cam means between said first and second positions upon opening of one drawer;



whereupon opening of one of said drawers said actuator means moves said cam means between said first and second positions so as to force one of said wedge members relatively into said channel so that the at least one block and the wedge members are displaced along the length of the channel to a position wherein the combined length of the block and wedge members is equal to the fixed length of the channel, thereby blocking any further movement of the wedge members in the channel to prevent the opening of a second drawer.

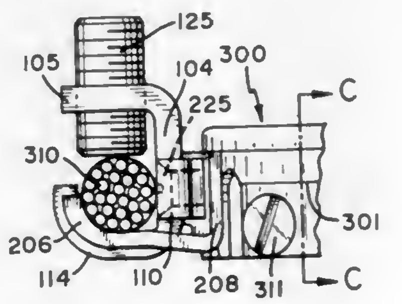
4,355,852
LAY-IN LUG WITH CONDUCTION PAD

Walter W. Bachle, Harwinton, Conn., assignor to General Signal Corporation, Stamford, Conn.

Filed Nov. 18, 1980, Ser. No. 207,847

Int. Cl.^{3} H01R *4/66*

U.S. Cl. 339—14 R **15 Claims**

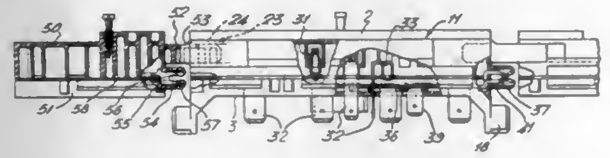


1. A lay-in grounding lug to be secured to a bushing, or the like, and comprising in combination:

(a) a body member fabricated of a high yield strength material and including a back portion from which top and

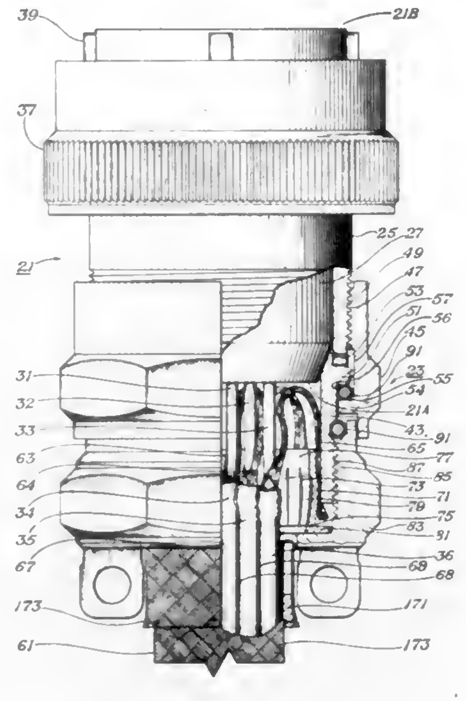
bottom portions extend forward and substantially normal to said back portion and at opposite ends thereof;
(b) said bottom portion including leg portions extending therefrom;
(c) said body member further including a wing portion extending from each side edge of said back portion with each said wing extending at an angle backwards with respect to said back portion;
(d) a conduction member fabricated of a material having a low yield strength and superior electrical conducting characteristics both as compared with said body member;
(e) said conduction member including a back section with a wing section extending from each side edge of said back section and at an angle backwards with respect to said back section;
(f) each of said wing sections including a leg section extending from an edge of their respective wing sections and projecting forward and substantially normal to the plane of said back section; and wherein
(g) said members, portions, sections, and angles are proportioned with respect to each other so that the forward side of said back section and the rearward side of said back portion can make mating contact when said body member and said conduction member are appropriately juxtaposed.

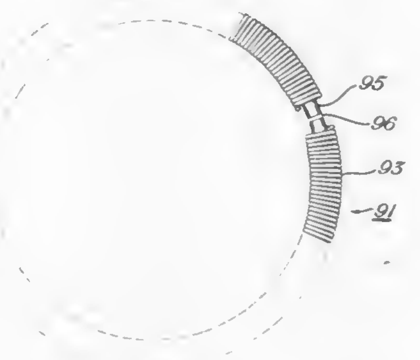
4,355,853
ELECTRICAL JUNCTION BOX
Friedrich J. A. Kourimsky, Bensheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 906,535, May 17, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 111,739
Claims priority, application United Kingdom, May 21, 1977, 21534/77
Int. Cl.³ H01R *13/46*
U.S. Cl. 339—17 LM 6 Claims



1. An automotive electrical junction box means comprising:
a main junction box comprising an insulating housing having a circuit board contained therein,
said housing having oppositely directed parallel main panel members, parallel oppositely directed sidewalls and parallel oppositely directed endwalls extending between said main panel members,
said circuit board extending parallel to, and being between, said main panel members, said circuit board having side edges which extend along said sidewalls and having end edges which extend along said endwalls,
a bus bar conductor in said housing extending between said end edges, circuit board terminal means on said circuit board, said circuit board terminal means comprising terminal tabs and terminal receptacles, said terminal tabs and said terminal receptacles extending normally of said circuit board towards said main panel members,
contact terminals on the ends of said bus bar, said contact terminals extending beyond said end edges of said circuit board and being mateable with complementary terminal means on auxiliary junction boxes and,
mechanical coupling means on said endwalls, said mechanical coupling means being cooperable with complementary coupling means on auxiliary junction boxes.

4,355,854
SELF-LOCKING MEANS
Robert A. Williams, 55 Bounty Rd. East, Fort Worth, Tex. 76116
Continuation-in-part of Ser. No. 959,695, Nov. 13, 1978, abandoned. This application Feb. 27, 1980, Ser. No. 125,161
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—89 R 55 Claims

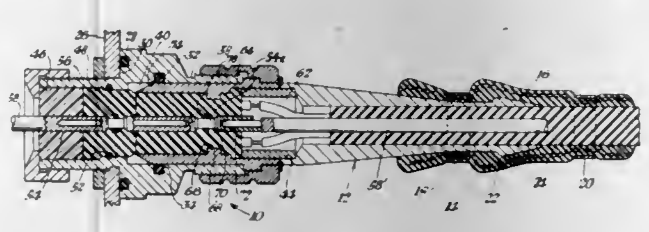




1. A vibration resistant anti-counter rotational apparatus comprising:
first means;
second means having a portion adapted to be rotatably located around a portion of said first means,
said second means and said first means comprising wall structure defining an annular space when said portion of said second means is located around said portion of said first means,
said second means having thread means adapted to be threaded to other thread means when rotated in a first direction relataive to said first means, and
coiled spring means located in said annular space formed when said portion of said second means is located around said portion of said first means,
said coiled spring means being characterized such that adjacent coils of said coiled spring means are in close proximity to each other,
said wall structure of said second means and said first means engaging said coils of said spring means and canting said coils of said spring means in said first direction when said thread means of said second means are threaded to said other thread means upon rotation of said second means in said first direction, relative to said first means, whereby increased resistance is provided to rotation of said second means, relative to said first means, in a direction opposite said first direction,

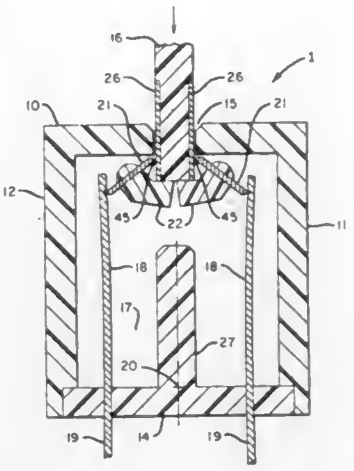
said wall structure of said second means and said first means which engage said coils of said coiled spring means comprising smooth annular surfaces.

4,355,855
DEEP WATER CONNECTOR
Dimitri Rebikoff, 3060 SW. 4th Ave., Fort Lauderdale, Fla. 33315
Continuation of Ser. No. 9,797, Feb. 7, 1979, abandoned. This application Sep. 12, 1980, Ser. No. 186,752
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—94 A 2 Claims



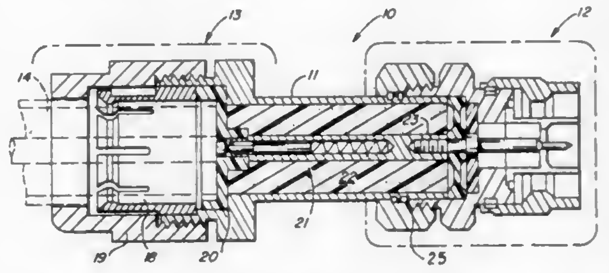
1. A watertight electrical connector for joining a first electrical cable and a second electrical cable separated by a boundary which segregates the environments in which the first and second electrical cables are placed, comprising:
a receptable means for mounting in said boundary, said receptable means including:
a generally cylindrical first body with a longitudinal through bore for defining an enclosed internal chamber, said first body having a first receptacle portion for connection of said first electrical cable on one side of said boundary and a second receptacle portion adjacent the other side of said boundary,
a first insert means having a first longitudinal hollow aperture therethrough carried by said first body in said longitudinal through bore,
a second insert means having a second longitudinal hollow aperture therethrough carried by said first body in said longitudinal through bore at the end of said first receptacle portion of said first body,
pin contact means for connecting said first electrical cable disposed in said longitudinal hollow aperture in said first and second insert means,
a first gasket means for compression between said boundary and said second receptacle portion such that a waterproof seal exists therebetween,
a second gasket means circumscribed about the longitudinal through bore of said first body for sealing said longitudinal through bore,
a plug means for engagement in said longitudinal through bore of said receptable means, said plug means including:
a generally cylindrical second body with a longitudinal through bore for defining an enclosed internal chamber, said second body having a first plug portion connectable in said longitudinal through bore of said receptacle means and a second plug portion which extends longitudinally beyond said receptacle means when said first plug portion is inserted therein;
reinforcing means for watertight connection of said second electrical cable to said second plug portion, such that any force which would tend to cause longitudinal movement of said second electrical cable relative to said second plug portion causes tightening of said reinforcing means proportional to said force, preventing movement of said second electrical cable.

4,355,856
LOW INSERTION FORCE CONNECTOR USING NON-NOBLE METAL CONTACT PLATING
Warren W. Porter, Escondido, Calif., assignor to NCR Corporation, Dayton, Ohio
Filed Oct. 6, 1980, Ser. No. 194,491
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—95 R 14 Claims



1. An electrical connector for connecting to an edge contact of a printed circuit board or the like comprising:
(a) a pin made of an electrically conductive resilient material; and
(b) interconnection means for operatively connecting said pin to said edge contact, said interconnection means positioned within said electrical connector and actuated by an insertion of the printed circuit board or the like, said interconnection means being configured to have two ends such that the first end of said interconnection means makes a first contact point with said edge contact when said interconnection means is actuated by the insertion of said printed circuit board or the like, said interconnection means continuing a rotation motion as said printed circuit board or the like is further inserted, and the second end of said interconnection means makes a second contact point with said pin, the second end of said interconnection means causing said pin to be deflected as a result of said rotation motion of said interconnection means, said deflection causing a force to be transmitted through said first and second contact points, thereby permitting a piercing action to occur at said first and second contact points.

4,355,857
COAX PUSH-ON TEST CONNECTOR
Robert D. Hayward, 6142 N. 18th Ave., Phoenix, Ariz. 85015
Filed Nov. 7, 1980, Ser. No. 204,853
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 R 10 Claims



1. Coaxial connector means providing push-on connection to the end of a coaxial cable comprising
slidable pressure contact means for slidably positioning said connector on the outer conductor of a coaxial cable and for maintaining contact therewith when so positioned so as to provide electrical continuity between itself and said outer conductor; and

resilient in-line pressure contact means for resiliently maintaining in-line contact with the center conductor of a coaxial cable on whose outer conductor said slidable pressure contact means has been slidably positioned so as to provide electrical contact between itself and said center conductor.

4,355,858

HOLOGRAM LENS

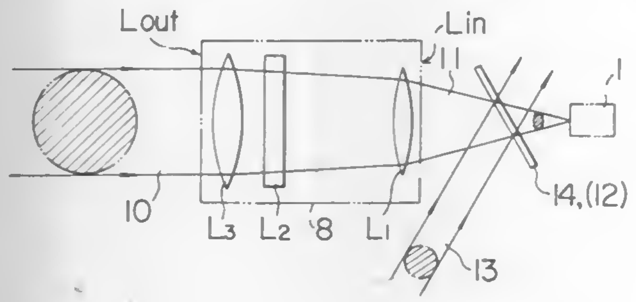
Hiroyoshi Funato, Chigasaki, and Yoshio Fukushima, Machida, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 24, 1979, Ser. No. 77,943

Claims priority, application Japan, Sep. 28, 1978, 53-119457

Int. Cl.^{3} G02B *5/32*

U.S. Cl. 350—3.72 2 Claims



1. A hologram lens for converting an output beam of light emitted from semiconductor lasers to a reconstruction light suitable for reconstructing holograms, said lens being prepared by:

forming an object beam of light resembling a beam of light emitted divergently from a semiconductor laser for reconstructing holograms but traveling in the direction opposite to that of a beam of light from a semiconductor laser,

forming an iostropic reference beam of light having a circular cross section, and

directing said object beam of light and said reference beam of light onto a photosensitive member to form an interference pattern thereon,

said object beam of light being obtained by using means including an optical system capable of converting an output beam from semiconductor lasers to an isotropic beam of light with a circular cross section when said output beam of light is caused to pass through said optical system from an input side thereof to an output side thereof, said object beam of light being obtained by causing an isotropic beam of light with circular cross section to pass through said optical system from said output side to said input side.

4,355,859

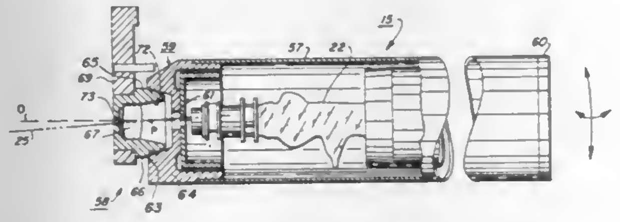
FIELD REPLACEABLE LASER APPARATUS FOR RASTER SCANNER

Robert P. Herloski, Rochester; James R. Norton, Walworth, and Ronald L. Antos, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,981

Int. Cl.^{3} G02B *27/17, 11/27*

U.S. Cl. 350—6.1 10 Claims



1. Apparatus for supporting the laser assembly of a raster type scanner in operating position while permitting realignment of the laser assembly in the event laser alignment is disturbed as when servicing or replacing the laser assembly, the laser assembly including a laser and an elongated housing for said laser, the beam output by said laser exiting from one end of said housing, the combination of:

(a) journalling means for rotatably supporting said laser in said scanner;

(b) said journalling means being fixedly located in said scanner such that the center of rotation of said journalling means is coincident with a point on the optical axis of said scanner and said laser beam intercepts said optical axis at said point;

(c) said journalling means permitting said laser assembly to pivot about said journalling means center of rotation in plural directions; and

(d) means engageable with said housing adjacent the opposite end of said housing for incrementingly moving said laser assembly and pivoting said laser assembly about said journalling means center of rotation whereby to align said laser beam with the optical axis of said scanner.

4,355,860

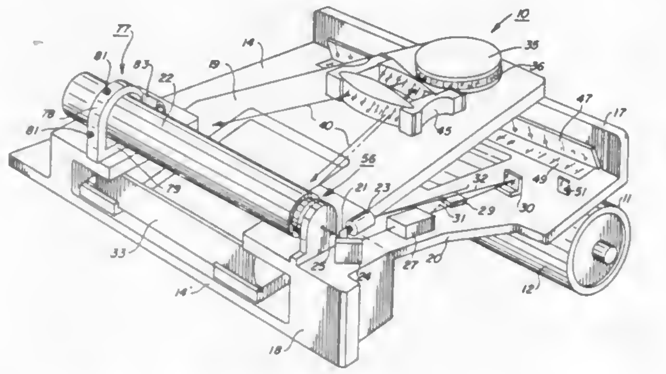
DOUBLE PASS SCANNING SYSTEM

Pierre A. Lavallee, Penfield; Sidney W. Marshall, and Ronald L. Antos, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,796

Int. Cl.^{3} G02B *27/17*

U.S. Cl. 350—6.8 6 Claims



1. A symmetrical optical system for a raster scanner which minimizes the need for cross scan corrections and avoids the use of a toroidal type lens, comprising:

a plurality of reflective surfaces cooperable to form an optical path for causing a beam of light to impinge on the object to be scanned,

said reflective surfaces including a rotatable deflector for scanning said beam through a preset scan arc, and

at least one mirror for guiding said beam to said deflector so that said beam strikes said deflector once,

said deflector reflecting said beam directly back to said mirror whereby to provide a dual pass optical path between said deflector and said mirror, said mirror reflecting the beam from said deflector toward the object to be scanned.

4,355,861

DEVICE FOR HEATING THE FRONT LENS OF A TELEVISION CAMERA

Richard Sebald, Wiesenttal, Fed. Rep. of Germany, assignor to Grundig E.M.V., Fuerth, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,930

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2921927

Int. Cl.^{3} G02B *11/04*

U.S. Cl. 350—61 16 Claims

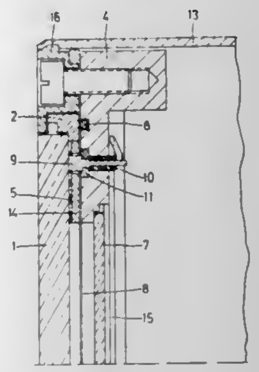
1. A device for heating the front lens of a camera comprising:

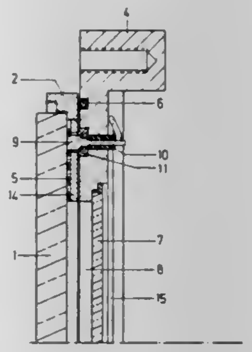
a support means;

a transparent front lens supported by said means;

a transparent rear lens supported by said means;

a chamber disposed between said front and rear lens; and





an electrical heating means located in said chamber and capable of heating the front lens so as to prevent interfering moisture which may come to be deposited thereon.

4,355,862

OPTICAL FIBRE TERMINATION

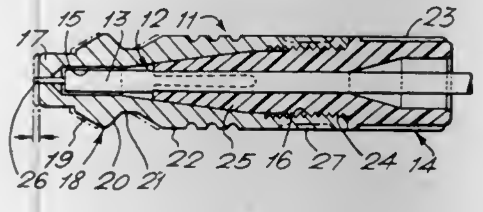
Konrad Kock, Rödermark, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 25, 1980, Ser. No. 181,306

Claims priority, application United Kingdom, Sep. 1, 1979, 7930369

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 350—96.2 3 Claims



1. A method of terminating a glass optical fibre by clamping the optical fibre in a passageway in a ferrule with an end portion of the optical fibre core received in a bore in the ferrule end and projecting beyond the ferrule end; severing the end portion to provide an optical face at a predetermined distance from the ferrule end; and, radially crimping the ferrule to advance the ferrule relative to the optical fibre core to locate the ferrule end flush with the optical face.

4,355,863

CLADDED OPTICAL FIBER HAVING A LONGITUDINAL SIDE COUPLING ZONE

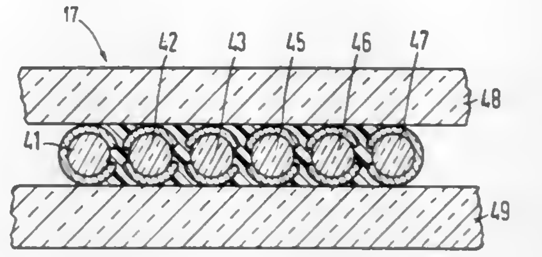
Hubert Aulich, and Franz Auracher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,366

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744129

Int. Cl.^{3} G02B *5/172*

U.S. Cl. 350—96.15 2 Claims



1. In a mixer composed of a plurality of optical fibers with each of the optical fibers having a core surrounded by a cladding layer of glass with an index of refraction lower than the index of refraction of the core so that a step occurs at the boundary of said cladding layer and core, the improvements comprising a plate, a plurality of fibers arranged beside one another in a row on said plate with said row having a pair of outermost fibers with the interior fibers being positioned therebetween, a second plate covering said row, and a light transmissive adhesive having an index of refraction exceeding the index of refraction of the cladding layer filling any interspaces between the fibers and said first and second plates, each of the fibers having at least one longitudinal opening in the cladding layer to expose a portion of the core to form a coupling zone facing a coupling zone of an adjacent interior fiber and each interior fiber having a pair of peripherally spaced coupling zones facing coupling zones of adjacent fibers.

4,355,864

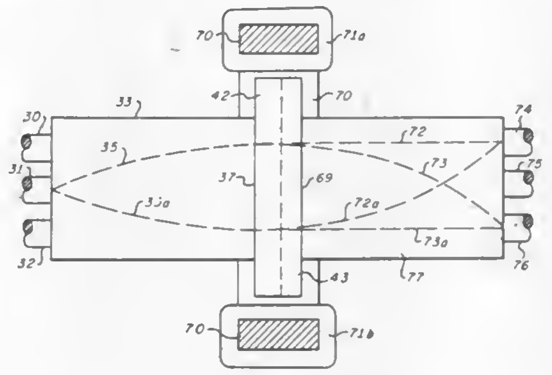
MAGNETOOPTIC SWITCHING DEVICES

Richard A. Soref, Newton Centre, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,048

Int. Cl.^{3} G02B *5/172;* G02F *1/01*

U.S. Cl. 350—96.18 22 Claims



11. An optical switching device comprising:

planar magnetizable film means having first and second substantially parallel surfaces for generating a plurality of stripe domains therewithin when a magnetic field having components within said magnetizable film means substantially parallel to said first and second surfaces is applied thereto,

first lens means positioned with a first surface thereof coupled to said first surface of said magnetizable film means for converting a diverging light beam incident to a second surface thereof to a substantially collimated light beam incident to said magnetizable film means, said first lens means having a circular cylindrical form with an axis substantially perpendicular to said first and second surfaces of said magnetizable film means,

second lens means coupled to said second surface of said magnetizable film means at a second surface thereof for focussing collimated light emerging from said magnetizable film means to preselected regions on a first surface thereof, said preselected regions being determined by said applied magnetic field, said second lens means having a circular cylindrical form with an axis substantially perpendicular to said first and second surfaces of said magnetizable film means,

a first optical waveguide coupled to said second surface of said first lens means with a cross-sectional center thereof substantially on said axis of said first lens means, and

a first plurality of optical waveguides coupled to said first surface of said second lens means at said preselected regions in diametrically positioned pairs.

4,355,865

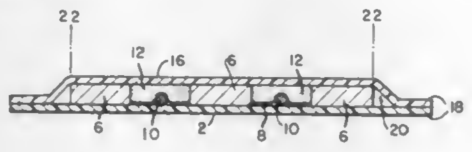
LAMINATED OPTICAL FIBER CABLE

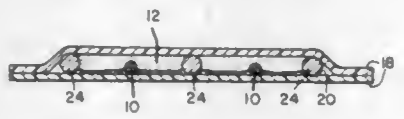
Lee R. Conrad, Lewisberry, and Edward C. Dowling, Sr., Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 21, 1980, Ser. No. 132,436

Int. Cl.^{3} G02B *5/16*

U.S. Cl. 350—96.23 **5 Claims**





1. A fiber optic ribbon cable comprising:

bottom sheath means;

a plurality of strength member means spaced from one another and extending along said bottom sheath means;

optic waveguide means disposed between the spaced strength member means and extending along said bottom sheath means;

means bonding said strength member means in fixed positions on said bottom sheath means;

means adhesively securing said optic waveguide means on said bottom sheath means between the spaced strength member means;

insulary material filler means covering said optic waveguide means between said strength member means; and

top sheath means extending along said strength member means and said insulary material filler means with edge portions of said sheath means bonded together.

4,355,866

STRIPE-COLOR FILTER

Eiichiro Tanaka, Kishiwada; Kousaku Yano, Higashiosaka; Yoshitaka Aoki, Kadoma, and Shinji Fujiwara, Minoo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 20, 1980, Ser. No. 179,875

Claims priority, application Japan, Aug. 21, 1979, 54-106947; Jun. 5, 1980, 55-76490

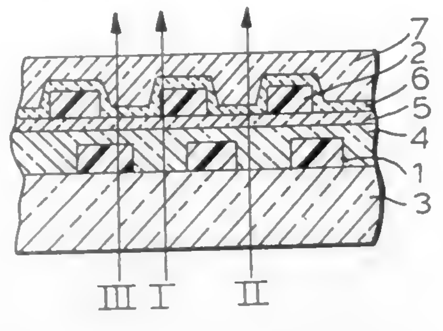
Int. Cl.^{3} G02B *5/22, 5/28*

U.S. Cl. 350—164 **6 Claims**

1. A stripe-color filter having a striped semiconductor filter-element-layer supported between a transparent substrate layer and a transparent dielectric covering layer, further comprising:

a first coating layer of a transparent thin film interposed between said transparent substrate layer and said semiconductor filter-element-layer; and

a second coating layer of a transparent thin film interposed between said semiconductor filter element layer and said transparent covering layer;



the refractive indexes of those layers being in the relationship: $n_F > n_{T1} > n_S$ and $n_F > n_{T2} > n_D$, wherein n_S represents the refractive index of substrate layer, n_{T1} the refractive index of said first coating layer, n_F the refractive index of said semiconductor filter element, n_D the refractive index of said covering layer, and n_{T2} the refractive index of said second coating layer.

4,355,867

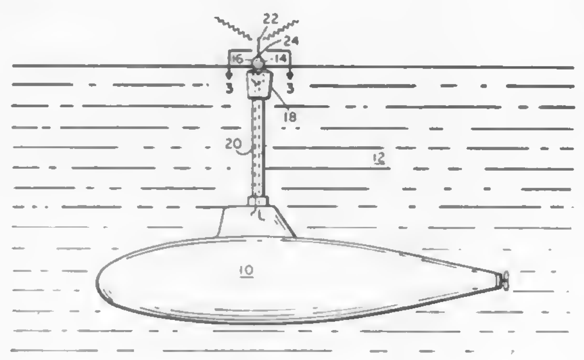
SPHERICAL SEGMENT INSERTION APPARATUS

Jerry D. Stachiw, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1981, Ser. No. 222,114

Int. Cl.^{3} G02B *7/02*

U.S. Cl. 350—319 **7 Claims**



1. An apparatus for enabling selected structure to be joined to a spherical lens, said lens formed of material which is transmissive to radiation of selected frequencies, said apparatus comprising:

a lens penetration component, said component being insertable into an aperture through said spherical lens, said aperture being circumscribed by a frustoconical bearing surface, and said lens penetration component being provided with a metallic frustoconical seating surface which matches said frustoconical bearing surface;

means for selectively retaining said lens penetration component in said aperture so that said bearing surface of said spherical lens and said seating surface of said lens penetration component are maintained in abuttable relationship while allowing said selected structure to be detached from said lens;

a frustoconical gasket which is positionable between said bearing surface and said seating surface for resisting wear between said bearing surface and said seating surface when said lens is subjected to substantial external pressure;

compliant means positioned between said lens penetration component and said spherical lens for sealing said spherical lens from external pressures when said retaining means maintains said abuttable relationship between said bearing surface and said seating surface;

a number of structure-adapted core components, each of said structure-adapted components comprising means joined to a particular structure for enabling said particular structure to be selectively joined to and detached from said lens penetration component;

means are provided for removably seating one of said structure-adapted core components in a seating recess which is provided in said lens penetration component; and

said supporting means includes means for sealing the joint between said lens penetration component and a structure-adapted core component seated in said recess against extreme external pressures.

4,355,868

TRANSFLECTOR DESIGNED AS A FOIL FOR USE WITH LIQUID CRYSTAL DISPLAYS

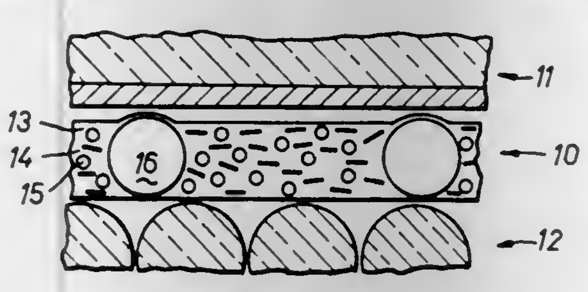
Alain Perregaux, Wettingen, and Toni Bunschi, Flüelen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed May 1, 1980, Ser. No. 145,819

Claims priority, application Switzerland, May 31, 1979, 5071/79

Int. Cl.^{3} G02F *1/133*

U.S. Cl. 350—338 **15 Claims**



15. A transflector designed as a foil provided with an optically transparent matrix material and at least a similarly transparent filling material, the refraction index of which is larger than that of the matrix material, said filling material comprising mica discs coated with titanium dioxide.

4,355,869

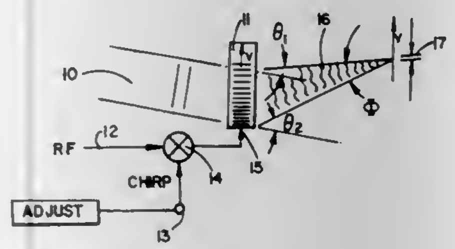
SELF SCANNED OPTICAL FOURIER TRANSFORM ARRANGEMENT

Shi-Kay Yao, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 29, 1980, Ser. No. 154,246

Int. Cl.^{3} G02F *1/11*

U.S. Cl. 350—358 **7 Claims**



1. An optical system comprising:

input means for providing an information-containing input signal having a frequency in the RF portion of the spectrum;

chirp means for providing a linear frequency modulated signal with substantially constant amplitude;

mixing means connected to said input means and said chirp means for producing a modulating signal;

a source for emitting a beam of radiation;

accoustical optical modulation means disposed in the path of said beam, and connected to said input means and driven by said modulating signal, said modulation means functioning to modulate said beam with information derived from said input signal to produce a modulated travelling beam; and

a single detector disposed in the path of said modulated beam for detecting the resulting optical intensity distribution at the focal point of said modulated beam, said resulting distribution representing a Fourier transform of said information containing input signal.

4,355,870

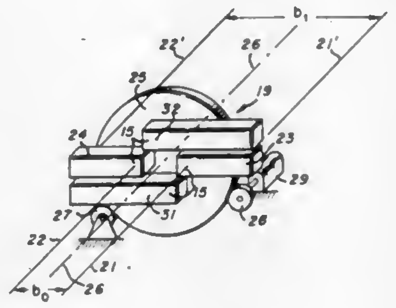
RHOMBOID PRISM PAIR FOR ROTATING THE PLANE OF PARALLEL LIGHT BEAMS

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Kenneth L. Orloff, and Haruo Yanagita, both of Cupertino, Calif.

Filed Dec. 24, 1980, Ser. No. 219,640

Int. Cl.^{3} G02B *7/18*

U.S. Cl. 350—486 **6 Claims**



2. In an optical system for rotating the plane defined by first and second parallel light beams; first and second pairs of rhomboid prism means, each prism means having an input face disposed generally normally to a respective one of the first and second light beams for receiving thereon and transmitting the beam therethrough into each of the respective prisms, each prism means having a first internal face inclined to the inputted light beam for internally reflecting the respective beam within the respective prism, each of said prism means having a second internal face generally parallel to said first internal face for internally reflecting the respective beam generally parallel to said respective inputted light beam, and each of said prism means having an output face generally perpendicular to the light beam incident thereon for directing the beam out of said prism means generally parallel to said respective input beam; said first pair of rhomboid prism means being disposed in a first position to receive on their respective input faces said first and second light beams, respectively; rotating means for rotating said first and second pairs of prism means about an axis of revolution which is disposed midway between the two parallel beams and which is parallel thereto; said second pair of prism means being disposed relative to said first pair of prism means so that when said first and second pairs of prism means are rotated to a second position said input faces of said second pair of prisms are brought into coincidence with said first and second light beams, whereby the plane defined by said first and second output light beams is rotated relative to the plane defined by said pair of input light beams.

4,355,871

KERATOMETER

Herbert J. Nevyas, Narberth, Pa., and Alan C. Traub, Framingham, Mass., assignors to Diversitronics, Inc., Broomall, Pa.

Filed Jul. 14, 1980, Ser. No. 168,813

Int. Cl.^{3} A61B *3/10*

U.S. Cl. 351—13 **34 Claims**

6. An optical device for measuring the sphericity of the corneal tissue in a vertebrate eye whereby an astigmatic condition can be detected and measured comprising:

a light source for illuminating a target which reflects image-forming light rays which travel over a primary optical path;

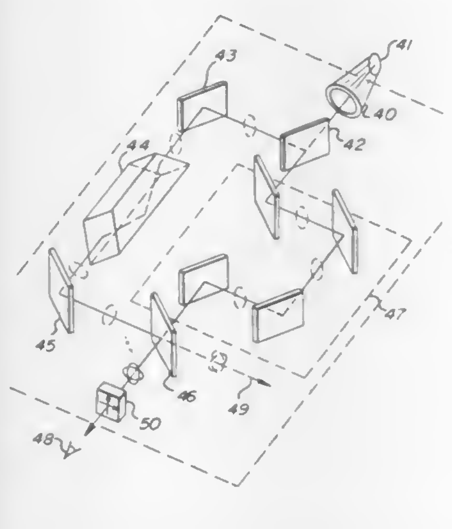
first beamsplitter means for deflecting a predetermined portion of the image-forming light rays emanating from the target through a predetermined angle away from the direction of the primary optical path and permitting the remainder of the imageforming light rays emanating from the target to pass through said first beamsplitter means uninterrupted, said remainder of the image-forming light rays forming a primary ray family and said predetermined portion of the image-forming light rays forming a secondary ray family;

first mirror means for deflecting the secondary ray family through a predetermined angle so that the primary ray family and the twice deflected secondary ray family are parallel and travelling in the same direction over separate optical paths;

image rotating means for rotating the secondary ray family through an angle of 90° about its propagation axis;

second mirror means for deflecting the secondary ray family through a predetermined angle toward the primary optical path;

path lengthener means for lengthening the primary optical path so that the total length of the optical paths travelled by the primary ray family and the secondary ray family are equal so as to provide a primary image and a secondary image in the same viewable plane, said primary image is the resulting image of the primary ray family and said secondary image is the resulting image of the secondary ray family;



second beamsplitter means for deflecting a predetermined portion of the secondary ray family through a predetermined angle into the direction of the primary optical path, permitting the remainder of the secondary ray family to pass through said second beamsplitter means uninterrupted, deflecting a predetermined portion of the primary ray family through a predetermined angle away from the direction of the primary optical path into the same direction as the remainder of the secondary ray family, permitting the remainder of the primary ray family to pass through said second beamsplitter means uninterrupted, thus combining the secondary ray family with the primary ray family so that they result in a superposed image of coincident image-forming light rays formed from said primary image and said secondary image rotated 90° with respect to said primary image;

whereby the recombined superposed image formed from said primary and said rotated secondary images are transmitted and magnified as they pass through an optical instrument having a means for visually comparing and measuring the superposed image in order to determine sphericity of the corneal tissue.

4,355,872

CAMERA EQUIPPED WITH ELECTRONIC SHUTTER HAVING AUTOMATIC FOCUS DETECTING DEVICE

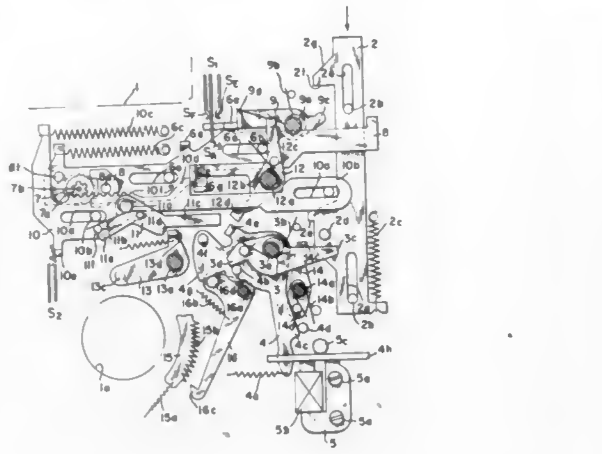
Kiyoshi Kitai; Tadashi Nakagawa, and Hiroaki Ishida, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Jan. 23, 1979, Ser. No. 5,778

Claims priority, application Japan, Jan. 24, 1978, 53-6409

Int. Cl.^{3} G03B *7/08, 7/00*

U.S. Cl. 354—25 **2 Claims**



1. A camera equipped with an electronic shutter having an automatic focus detecting device capable of automatic focusing of the photographing lens through detection of the distance between the object being photographed and the camera comprising: an electronic module for effecting automatic focus detection; an electronic module for effecting automatic exposure control; and means including an electromagnet successively connectable to both of said electronic modules as a function of the camera release operation such that said electromagnet is controlled by said electronic module for effecting automatic exposure control to adjust the exposure after said electronic module for effecting automatic focus detection has controlled said electromagnet to determine the focus position, said means including a control member movable successively from a first position to a second position and to a stop position and being prevented from undergoing movement when attracted by said electromagnet, and obstructing means for retaining said control member at said second position thereby obstructing further movement of said control member until the connection of said electromagnet to said electronic module for effecting automatic focus detection is changed-over to the connection of said electromagnet to said electronic module for effecting automatic exposure control.

4,355,873

PHOTOGRAPHIC CONTROL SYSTEM FOR VARYING BOTH FLASH FIRE APERTURE AND EXPOSURE TERMINATION IN CORRESPONDENCE WITH FILM SPEED

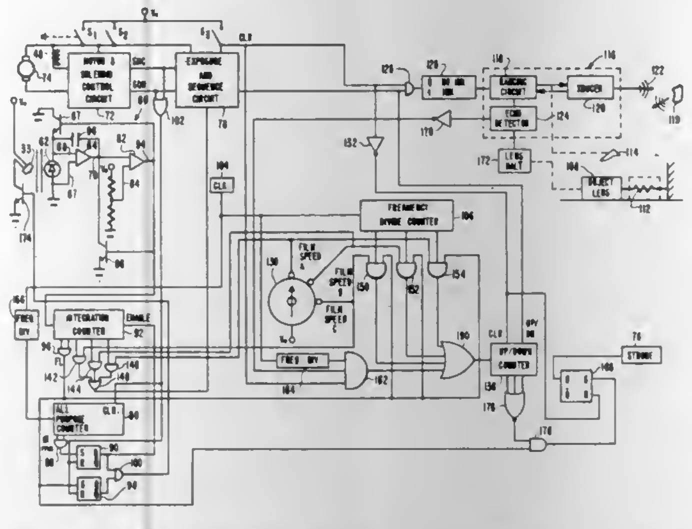
Peter P. Carcia, Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 8, 1981, Ser. No. 271,579

Int. Cl.^{3} G03B *7/097, 7/16*

U.S. Cl. 354—27 **9 Claims**

1. In a photographic exposure control system for use with a source of artificial illumination and for controlling the exposure of a photosensitive recording medium, the system having a shutter arrangement for at least initially providing progressively increasing aperture values at a predetermined rate during an exposure interval within which scene light is transmitted to the photosensitive medium following actuation of the shutter arrangement, and means for providing a flash fire signal to ignite the source of artificial illumination during the exposure interval at an appropriate follow focus aperture value corresponding to the subject distance, the improvement comprising selectively actuatable means for varying the follow focus aperture at which the flash fire signal is provided in correspondence with different ones of a select plurality of film speeds.



4,355,874

PROGRAM EE CAMERA

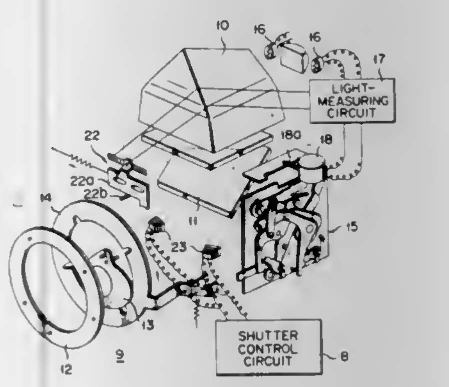
Yoshihisa Maitani, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 10, 1979, Ser. No. 65,608

Claims priority, application Japan, Aug. 22, 1978, 53-102186

Int. Cl.^{3} G03B *7/087, 7/12, 17/20*

U.S. Cl. 354—31 **5 Claims**



2. A program EE single lens reflex camera capable of utilizing various interchangeable lenses having different maximum opening aperture sizes comprising:

- a diaphragm;
- a ring for opening and closing said diaphragm;
- a lever connected to drive said ring;
- a first light measuring circuit including light sensing means for generating a signal proportional to the brightness of a subject;
- diaphragm control means for moving said lever to set the diaphragm opening to one of a few predetermined coarse settings corresponding to about maximum opening, about minimum opening and at least one opening therebetween depending upon the level of the signal generated by said first light measuring circuit;
- said diaphragm control means comprising a movable cam plate having a cam surface with a few steps and a member having a needle movable by a signal of said first light measuring circuit to be engageable with a predetermined portion of the cam surface such that said movable cam plate is stopped to a position corresponding to the brightness of the light from the subject, the moving position of the diaphragm lever being determined according to the position of said movable cam plate; and
- a second light measuring circuit independent of said first for continuously controlling shutter speed in accordance with brightness of the subject light, including at least one photosensitive means for receiving light from the subject reflected from at least one of a film surface and a shutter blind surface after the light passes through the diaphragm opening set by said control means.

4,355,875

AUTOMATIC DIAPHRAGM CONTROL DEVICE FOR CAMERAS

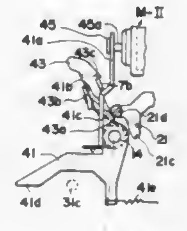
Keiji Yamazaki, and Toshio Kobori, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

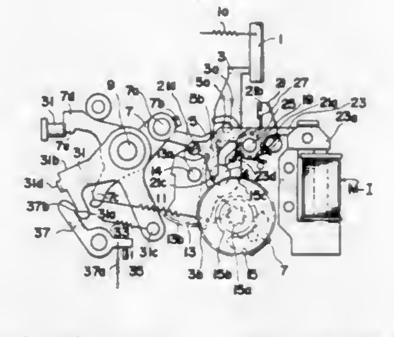
Filed Apr. 20, 1981, Ser. No. 255,493

Claims priority, application Japan, Apr. 24, 1980, 55-53548

Int. Cl.^{3} G03B *9/06*

U.S. Cl. 354—38 **13 Claims**





1. An automatic diaphragm control device for a camera which includes an exchangeable lens having an objective, a diaphragm and a diaphragm interlock member interlocked with said diaphragm to move therewith, said device comprising:

- a diaphragm operating mechanism interlocked with said diaphragm interlock member and movable from a reset position to an operating position for stopping-down said diaphragm through said diaphragm interlock member;
- diaphragm stop means movable from a reset position to an operating position and including a stop lever engaging said diaphragm operating mechanism to stop the latter mechanism with said diaphragm stop means being at the operating position and said stop lever being retracted from said diaphragm operating mechanism with said diaphragm stop means at the reset position;
- diaphragm determination electromagnetic means capable of restraining said diaphragm stop means at the reset position and releasing said diaphragm stop means upon actuation thereof;
- a light measuring circuit for measuring scene brightness through said objective and said diaphragm which is being stopped-down by said diaphragm operating mechanism through said diaphragm interlock member and generating a light measurement signal which varies with the stopping-down of said diaphragm;
- a reference signal generator for generating a reference signal to be compared with said light measurement signal;
- means for comparing said light measurement signal with said reference signal to generate a diaphragm stop signal for actuating said diaphragm determination electromagnetic means when said light measurement signal represents a given relationship with respect to said reference signal;
- release interlock means movable from a reset position for restraining both said diaphragm operating mechanism and said diaphragm stop means at the respective reset positions thereof to an operating position to release both said diaphragm operating mechanism and said diaphragm stop means to allow simultaneous movement thereof from said reset positions to said operating positions;
- release electromagnetic means capable of restraining said

release interlock means at the reset position and releasing said release interlock means upon actuation thereof; and circuit means for actuating said release electromagnetic means in response to a camera actuating operation.

4,355,876
CONTROL DEVICE HAVING AN INTERNAL ELECTRIC OR VOLTAGE SOURCE

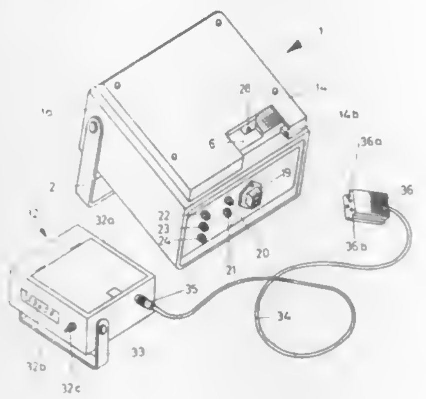
Franz Starp, Mittlere Steige 36, 7547 Wildbad 5, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,474

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010304

Int. Cl.^{3} G03B *17/00;* **H01R** *13/62*

U.S. Cl. 354—202 **10 Claims**



1. Device comprising a housing including at least one current user having an electrical power receiving plug coupling on the housing and operatively arranged for receiving electrical power for operating the current user upon connection with a power source plug member, an internal electrical power source in the housing and having a displaceable internal power plug member removably connectable to the current user plug coupling and operatively arranged for supplying electrical power from the internal power source upon connection of the internal plug member to the current user plug coupling, and guide means for guiding the internal plug member for displacement between a connected position with the plug coupling and a disconnected position sufficiently spaced therefrom to provide a reception region permitting a separate external electrical power source to be connected to the current user plug coupling thereat.

4,355,877
MECHANISM FOR COUNTING FILM FRAMES IN CAMERA WITH MULTIPLE EXPOSURE MODE

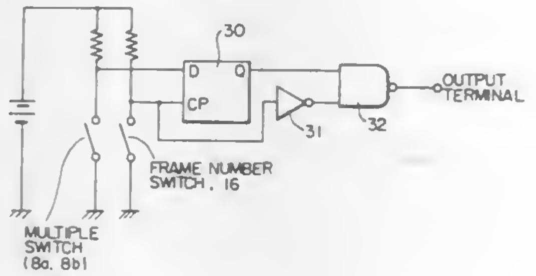
Tahei Morisawa, Matsudo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,233

Claims priority, application Japan, Feb. 20, 1980, 55-20312

Int. Cl.^{3} G03B *17/36*

U.S. Cl. 354—217 **11 Claims**



1. A camera mechanism for counting film frames in a camera having normal and multiple exposure modes, comprising: winding lever means; film winding means; shutter charging means, said shutter charging means being operatively coupled to be actuated by operation of said winding lever means; multiple exposure operating means; means for engaging said winding lever means with said film winding means for a first position of said multiple exposure operating means and disengaging said winding lever means from said film winding means for a second position of said multiple exposure operating means; a first switch operatively positioned to be actuated in response to movement of said winding lever means for counting pulses representing a number of wound film frames; and a second switch mechanically coupled to said multiple exposure operating means and electrically coupled to said counting means for inhibiting operation of said counting means for said second position of said multiple exposure operating means.

4,355,878
MAGNETIC DEVICE

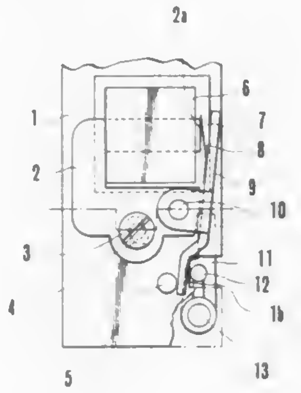
Takehiko Ohniwa, Chichibu; Michio Senuma, Tokyo; Fumio Shimada, Kawasaki; Syuichiro Saito, Kawasaki; Yoshihiro Shigeta, Tokyo, and Hiroshi Aizawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama, both of, Japan

Filed Jul. 1, 1981, Ser. No. 279,256

Claims priority, application Japan, Jul. 7, 1980, 55-95774[U]

Int. Cl.^{3} G03B *9/08;* **H01F** *7/14*

U.S. Cl. 354—234 **1 Claim**



1. A magnetic device for a camera including a shutter hold claw for holding a shutter screen at a certain predetermined position comprising

(a) a conductive member, said member being supplied with a current so as to form magnetic flux along a certain determined direction;

(b) a yoke consisting of a material with high magnetic permeability so as to direct the magnetic flux formed with said conductive member;

(c) a base plate with a rotation shaft, said yoke being supported rotatably on said base plate by said rotation shaft;

(d) an elastic member;

(e) a stopper on said base plate;

(f) an armature rotatably supported by said rotation shaft commonly with said yoke and having a pair of arms oppositely extending from said shaft, one arm being drawn by a part of said yoke, the other arm being positioned so as to strike said shutter hold claw and being normally biased to a certain distance from said shutter hold claw by said elastic member to contact said stopper on said base plate; and

(g) a yoke securing member capable of securing said yoke at a different position from that of the rotation shaft on said base plate after the yoke has been rotated around the rotation shaft by a certain determined amount.

4,355,879
PHOTOGRAPHIC DEVELOPING TANK

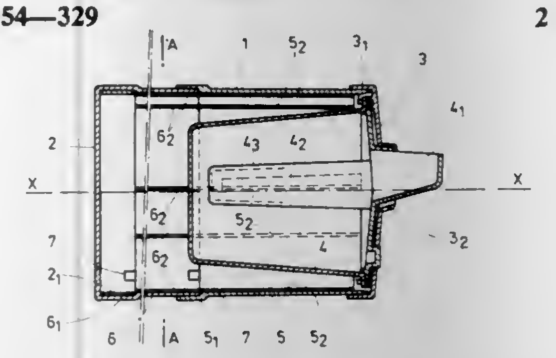
Guy Faubert, Creteil, France, assignor to Diaralux, Creteil, France

Filed Feb. 24, 1981, Ser. No. 237,663

Claims priority, application France, Aug. 14, 1980, 80 18004

Int. Cl.^{3} G03D *3/00, 13/04*

U.S. Cl. 354—329 **2 Claims**



1. A photographic developing tank comprising a cylindrical container of circular section (1) closed by end panels (2,3), one of said panels being provided with an orifice (3_2) for the introduction of a developing product for acting on sensitized paper disposed inside the tank, and one of said panels being movable from a first end of said cylindrical container, said container further having on its internal surface longitudinal ribs for the positioning of said sensitive paper, said tank further comprising a cylindrical sleeve (6) the internal diameter of which corresponds to that of the container and the internal surface of which is provided with longitudinal ribs (6_2) corresponding in position and dimension to those of the container, said sleeve being engageable between said first end of the container and said removeable end panel, alignment means being provided at said first end of said container and at the adjacent end of said sleeve for aligning said sleeve so that the ribs of the sleeve are aligned with the ribs of the container.

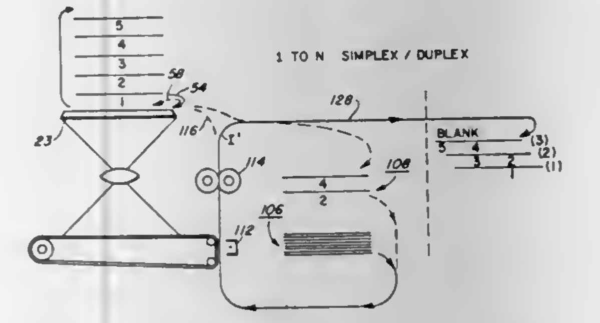
4,355,880
FORWARD ORDER DOCUMENT COPYING METHOD

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1980, Ser. No. 155,868

Int. Cl.^{3} G05G *15/00;* **B65H** *5/00*

U.S. Cl. 355—3 SH **7 Claims**



4. In a method of pre-collation copying of a set of plural (multi-page) simplex (one-image-side) document sheets in which the one image side of said simplex document sheets are presented to an imaging station of a copier seriatim and multiply recirculated between a stacked set of said document sheets and said imaging station, and copied only once on said one side per circulation at said imaging station, by feeding said document sheets seriatim from the bottom of said stack to one side of said imaging station and then returning the document sheets from the opposite side of said imaging station to the top of said same stack in a recirculatory loop path in each said circulation, the improvement comprising:

stacking said set of simplex document sheets in proper page order, but image face-down, with the first image page on the bottom of the stack, in a stacking position overlying said imaging station,

in only the first and last circulations of said document set, feeding said simplex document sheets through a first document path between the bottom of said stack and said one side of said imaging station, which first document path does not invert said simplex document sheets, and

in all other circulations of said document set other than said first and last circulations, feeding said simplex document sheets through a second document path with a single inversion from said stack to said one side of said imaging station, and

wherein for all of said circulations said simplex document sheets are fed from said imaging station back to said stack in a third document path with a single inversion, so that said document sheets are circulated in forward serial page order, and circulated in a uni-directional endless loop path in all but said first and last circulations,

so that during said first and last circulations said simplex document sheets are inverted a total of only once per circulation and returned to said stack inverted from their previous orientation,

and so that during all said circulations other than said first and last circulations said simplex document sheets are inverted a total of twice per circulation to maintain the same sheet orientation in said stack, so that in all said circulations except said last circulation the same one (image) sides of said simplex document sheets are presented for copying to said imaging station in forward serial page order.

4,355,881
RECORDING APPARATUS HAVING ROLLER TYPE FIXING DEVICE

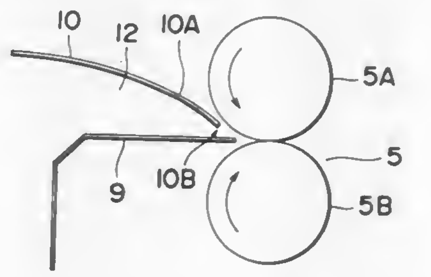
Noriyoshi Tarumi, Hachioji; Kiyoaki Kawamoto, Kunitachi; Kenji Ueno, Hachioji, and Hirofumi Sakaguchi, Akikawa, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 161,866

Claims priority, application Japan, Jun. 28, 1979, 54-80779

Int. Cl.^{3} G03G *15/20*

U.S. Cl. 355—3 FU **6 Claims**



1. A recording apparatus having a roller type fixing device made up of a first roller and a second roller for fixing the image to the transfer paper, comprising an upper guide plate placed over the transfer paper passage on the inlet side of the roller type fixing device, the upper guide plate being curved down gradually toward the front end of the fixing device in the direction of the paper feed and having a front edge extending near the lower portion of the first roller so that an angle α less than 80° is made by a line parallel to the direction of the paper feed and a line tangent to the outer circumferential surface of the first roller at a point where a line passing through the front edge of the upper guide plate intersects the circumferential surface of the first roller.

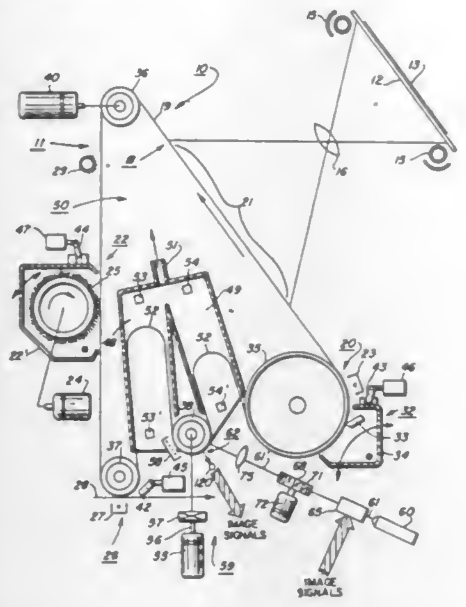
4,355,882
MULTIPLE FUNCTION REPRODUCTION APPARATUS

Christopher Snellling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1981, Ser. No. 238,509

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—3 BE **18 Claims**



1. In a multi-mode reproduction apparatus, the combination of:

(a) an overlong photoconductive belt;
(b) xerographic processing means in operative relation with a first portion of said belt;
(c) scanning means in operative relation with a second portion of said belt;
(d) first drive means for moving said first belt portion at a preset xerographic processing speed;
(e) second drive means for moving said second belt portion at a preset scanning speed; and
(f) belt takeup means between said first and second belt portions to accommodate any difference in speed or operating cycle between said xerographic processing means and said scanning means.

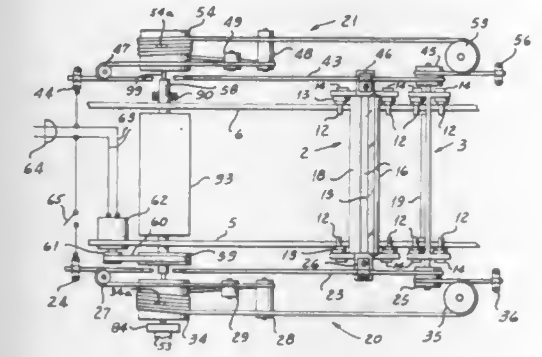
4,355,883
PHOTOCOPIER SCANNING APPARATUS

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Oct. 15, 1979, Ser. No. 85,109

Int. Cl.^{3} G03G *15/28*

U.S. Cl. 355—8 **16 Claims**



2. Photocopier apparatus for scanning along a certain length including in combination a full-rate scanning carriage, a half-rate scanning carriage, each carriage having a center of gravity, a pair of cables, means securing the cables to the full-rate carriage at widely spaced points on either side of its center of gravity, a pair of pulleys journaled on the half-rate carriage at widely spaced locations on either side of its center of gravity, each one of said cables engaging a corresponding one of said pulleys, a guide, means including a first pair of bearings having a first relatively small longitudinal spacing for supporting the full-rate carriage on the guide, means including a second pair of bearings having a second relatively small longitudinal spacing for supporting the half-rate carriage on the guide; and means for synchronously moving said cables to drive both scanning carriages in the same direction along the guide, each of said first and second spacings being appreciably less than half said scanning length.

4,355,884
ELECTROPHOTOGRAPHIC APPARATUS

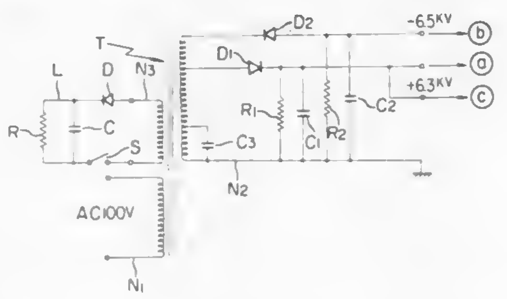
Haruhisa Honda; Tsutomu Toyono, both of Tokyo; Shunji Nakamura, Kawasaki; Kano Tanaka, Yokohama, and Yoshimasa Kimura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1980, Ser. No. 111,972

Claims priority, application Japan, Jan. 20, 1979, 54-5813; Jan. 20, 1979, 54-5814

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—14 CH **11 Claims**



1. A high voltage generating device which supplies electric voltage to corona dischargers in an electrophotographic apparatus, comprising:

(a) a primary winding, to which an input power source voltage is applied;
(b) a secondary winding having taps for providing voltage outputs to corona dischargers of a specific polarity and the opposite polarity;
(c) a tertiary winding; and
(d) switching means connected to said tertiary winding, for lowering the secondary output voltage of a specific polarity below a corona discharging limit voltage.

4,355,885
IMAGE FORMING APPARATUS PROVIDED WITH SURFACE POTENTIAL CONTROL DEVICE

Nao Nagashima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,676

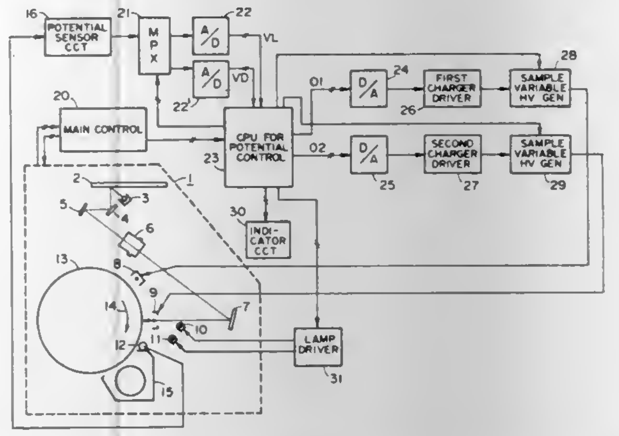
Claims priority, application Japan, May 29, 1979, 54-67162

Int. Cl.^{3} G03G *15/00*

U.S. Cl. 355—14 CH **12 Claims**

1. Image forming apparatus provided with a surface potential control device, comprising:

an image bearing member;
output means for use in forming a latent image on said image bearing member wherein said output means produces a variable output to control the surface potential of said image bearing member;
measuring means to measure the surface potential on said image bearing member; and
means to discriminate the magnitude of an output from said measuring means with respect to a reference value,
and for causing said reference value to vary by a predetermined value in accordance with a discriminated output, said predetermined value being gradually changed in accordance with the process of the discrimination operation, said discriminating means having an output coupled to said output means for controlling said variable output thereof.



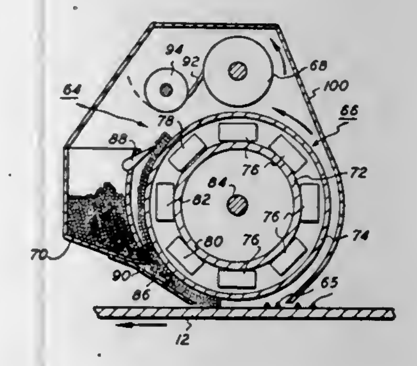
4,355,886
POLYVINYL ACETAL COATED CARRIER PARTICLES FOR MAGNETIC BRUSH CLEANING

Steven R. Perez, Pittsford, N.Y.; Philip G. Horton, Greenville, S.C., and Jan M. Wlochowski, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 13, 1980, Ser. No. 149,379

Int. Cl.^{3} G03G *21/00*

U.S. Cl. 355—15 **10 Claims**



1. An improved magnetic brush cleaning system for removing residual toner particles from an imaging surface in an electrostatographic copying device, the cleaning system containing a magnetic brush roller positioned adjacent to the area of the imaging surface to be cleaned, a plurality of magnets located therein, a plurality of magnetic carrier particles adhering to the magnetic brush roller, a toner reclaim roller positioned adjacent to the path of the magnetic brush roller, allowing the carrier particles to contact the toner particles thereon, means for electrically biasing the magnetic brush roller to a voltage of between about 50 volts and about 400 volts to assist in attracting the residual toner particles from the imaging surface and onto the carrier particles;

and means for electrically biasing the toner reclaim roll to a negative polarity of up to about 400 volts to assist in removing the toner particles from the carrier particles, the improvement residing in the utilization of electrically insulating carrier particles having a resistivity of more than 10^{10} ohm-cm, and a triboelectric charge of at least about -15 microcouloms per gram, said carrier particles being comprised of a core having an average diameter of from between about 30 microns and about 1,000 microns, said core having an outer coating comprising a polyvinyl acetal.

4,355,887
DOCUMENT HOLD-DOWN COVER ARRANGEMENT FOR A COPY MACHINE

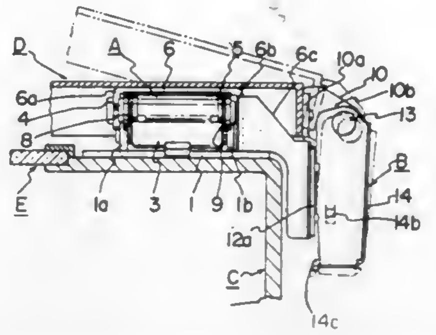
Akira Sorimachi, Yokohama, Japan, assignor to Katoh Electrical Machinery Co. Ltd., Yokohama, Japan

Filed Aug. 25, 1980, Ser. No. 181,050

Claims priority, application Japan, Aug. 31, 1979, 54-120127[U]

Int. Cl.^{3} G03B *27/32*

U.S. Cl. 355—25 **2 Claims**



1. A document hold-down cover for a copy machine, for holding material to be copied onto the transparent top of the copy machine, comprising in combination:

(a) a deck plate (C) on said copy machine having a horizontal support portion;
(b) lifting means (A) affixed to said deck plate (C) horizontal portion, said lifting means having a rectangular base plate (1) over said deck plate (C) with side wall plates (1*a*, 1*b*), a pair of first elevational arms (3) pivotally connected to said wall plates (1*a*, 1*b*), a pair of second elevational arms (5) pivotally connected to said first elevational arms so that said first and second elevational arms can telescope in the vertical plane;
(c) hinge means (B) comprising a hinge bracket (12) pivotally connected to said second elevational arms (5), a cover retainer (10) pivotally connected to said hinge bracket (12) by a hinge pin (11), a spring cover also pivotally connected to said cover retainer (10) by a rivetting pin (13), and a coiled compression spring (15) interposed between the spring cover (14) and said hinge bracket (12) with frictional resilient means coupled to the spring cover (14 and the cover retainer (10) to provide controlled smooth swing movement; and,
(d) a document hold down cover (D) fixedly attached to said cover retainer (10) of said hinge means (B);

whereby, when the hold-down cover (D) is opened in order to put material to be copied on the copy machine transparent top, the hold-down cover (D) rotates about the axis of the hinge pin (11) and opens smoothly because of the compression spring (15), when the hold-down cover (D) is closed, the hold-down cover progresses smoothly and slowly because of the resiliency of the coil spring and the lifting means (A) does not function, but when the material to be copied is thick, the lifting means (A) is provided leverage by the material to be copied so that the lifting means (A) raises the hinge means (B) the required heighth, bringing the hold-down cover in parallel with the transparent top (E).

4,355,888
MEANS AND A METHOD FOR COLOR SEPARATION AND FOR REPRODUCTION

Robert E. Pearson, 10745 33rd Northeast, Seattle, Wash. 98155

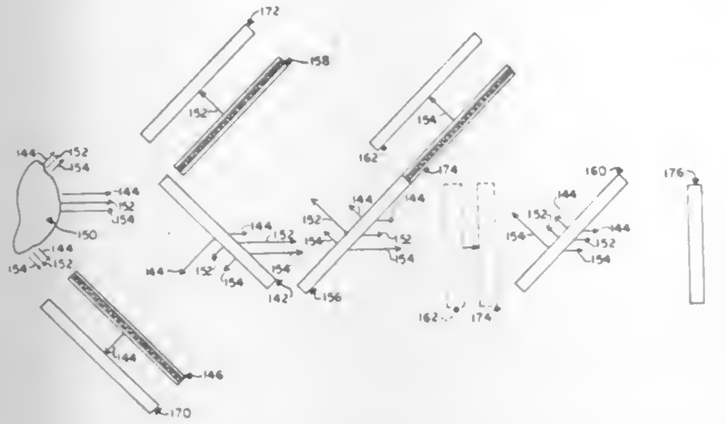
Filed Sep. 24, 1973, Ser. No. 399,805

Int. Cl.^{3} G03B *27/32, 27/52;* G02B *5/23;* G02F *1/01*

U.S. Cl. 355—32 **121 Claims**

1. An optical means for controlling, separating and extracting from polychromatic electromagnetic wave energy to realize desired wave length light waves and for reproducing a geometric image from said desired wave length light waves, the improvement being to encompass control and separation of

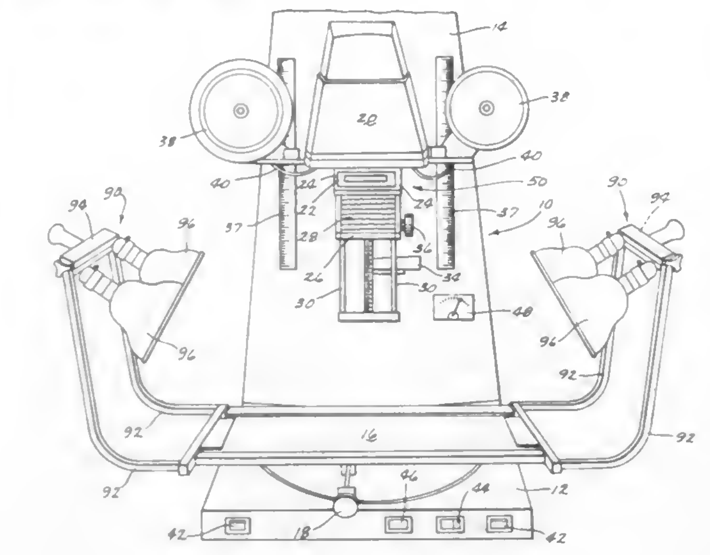
the visible and near visible electromagnetic spectrum, substantially, simultaneously, primarily, without absorption and energy loss therefrom, said means comprising:
- a. a control responsive to light waves;
- b. said control in response to said light waves, controlling the electromagnetic wave energy to realize said desired wave length light waves;
- c. said control comprising an optical electromagnetic reflective and transmittive means consisting of thin film coatings of high and low refractive index layers formulated to correspond to desired wave length light waves and positioned in the image plane of view and whose attenuation characteristics are functioned by structural design responsive to the desired wave length light waves wherein such desired wave length light waves are caused to be extracted by reflection from said optical electromagnetic reflective and transmittive means while all other incident radiation is transmitted through said optical electromagnetic reflective and transmittive means; and,

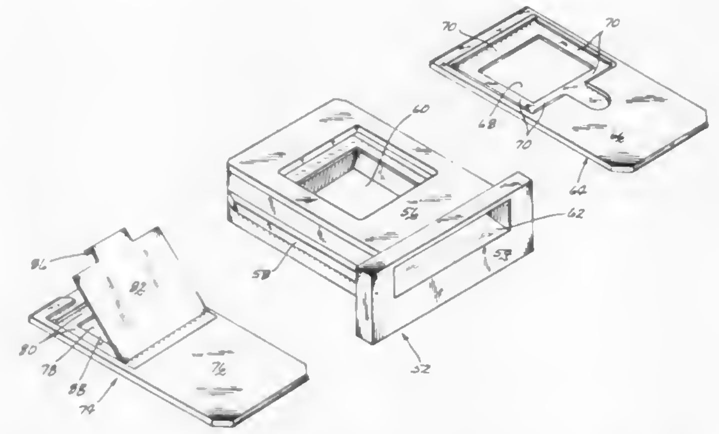


- d. said optical electromagnetic reflective and transmittive means having no appreciable absorption factors of said electromagnetic wave energy.

4,355,889
APPARATUS AND METHOD FOR RESIZING ARTWORK
Richard H. Nelson, Des Moines, Iowa, assignor to Forward Graphics, Inc., Des Moines, Iowa
Filed Jun. 23, 1981, Ser. No. 276,716
Int. Cl.^{3} G03B *27/32*
U.S. Cl. 355—39 **12 Claims**

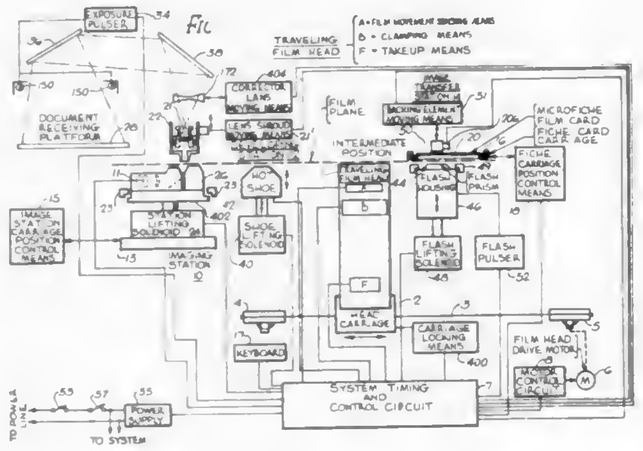
1. In combination with a headline setter device including a copy board, a top light source directed toward said copy board, and a lens mounted for adjustable movement between said copy board and said top light source the improvement comprising:
- an insert block mounted on said headline setter, and insert block including a first vertical opening disposed between said top light source and said lens, and a second horizontal opening in communication with said first vertical opening;
- a selectively movable holder including a vertical aperture and means for releasably holding a projectable image focus slide in said vertical aperture, said holder being slideably insertable within said second horizontal opening such that said focus slide is disposed within said first vertical opening between said top light source and said lens, whereby the image of the focus slide is projected on said copy board and focused by adjustment of said lens;
- said holder further including means for releasably holding an unexposed photographic film in said vertical aperture, and an opaque flap disposed to cover said unexposed film, said holder being slideably insertable within said second horizontal opening such that said unexposed film is disposed within said first vertical opening between said opaque flap and said lens; and





- a base light disposed to illuminate an art work image disposed on said copy board and to expose said unexposed film to said illuminated art work image.

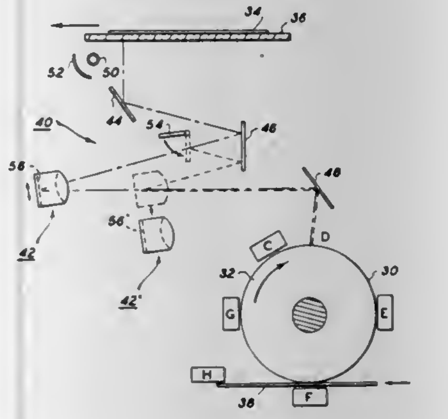
4,355,890
MICROFICHE RECORDING SYSTEM
Peter H. Klose, Troy, and Herbert C. Ovshinsky, Oak Park, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Filed Jan. 23, 1981, Ser. No. 227,959
Int. Cl.^{3} G03B *27/44, 27/62, 27/64*
U.S. Cl. 355—54 **16 Claims**



1. In a microfiche film recording system including moveable supporting means for supporting an intermediate film strip, film advancing means for advancing a selected area of said film strip into an imaging position thereon, carriage means for moving said supporting means between an imaging station including imaging light projecting means including an optical train for forming an image on a selected area of said film strip

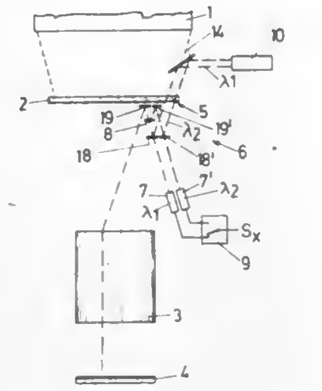
in a given imaging plane and an image transfer station including image transfer means for transferring the image on said selected area in a given transfer plane to a microfiche photographic film having a selected frame upon which said image is to be transferred, the improvement comprising a first pressure applying means at said imaging station which engages one side of the intermediate film strip at the imaging station and bows the same into said imaging plane against a backing member at said plane, a second pressure applying means at said image transfer station which engages the other side of the intermediate film strip thereat and bows the same in the opposite direction against said microfiche film backed by a backing member thereat, said backed microfiche film establishing said transfer plane, an illumination means moveable ~~opposte~~ said imaging station for projecting the image on a selected frame of said microfiche film backward through said optical train, said illumination means having a planar output window, additional means for moving said intermediate film strip supporting means and the strip carried thereby away from said imaging station and said illumination means opposite said imaging station, a common moving means for said first pressure applying means and said illumination means for moving the same toward and away from said imaging plane, said illumination means output window being disposed against the selected frame of said microfiche film when said additional means is operative to move said illumination means opposite said imaging station and said common moving means has moved said illumination means to a point closest to said imaging plane.

4,355,891
REDUCTION OF LAMP STROBING EFFECTS IN A REPRODUCING APPARATUS
David L. Cole, Fairport; Gregory B. Swistak, Webster; Randall C. Ryon, Fairport; William L. Lama, Webster, and Karl A. Northrup, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 127,685, Mar. 6, 1980. This application Jul. 2, 1980, Ser. No. 165,177
Int. Cl.^{3} G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 **17 Claims**



1. In an apparatus including an optical system for strip-wise viewing a document to be reproduced and for projecting an image thereof onto a recording surface, said optical system having a process speed V and including a light source having a fundamental frequency f_o which illuminates the document and at least one reflector element having an elongated illumination slit integral with said reflector, said reflector element located at a distance from said recording surface, such that the strobing effects of said light source on said recording surface are minimized.

4,355,892
METHOD FOR THE PROJECTION PRINTING
Herbert E. Mayer, and Ernst W. Loebach, both of Eschen, Liechtenstein, assignors to Censor Patent- Und Versuchs-Anstalt, Vaduz, Liechtenstein
Filed Dec. 18, 1980, Ser. No. 217,787
Int. Cl.^{3} G03B *27/32*
U.S. Cl. 355—77 **5 Claims**

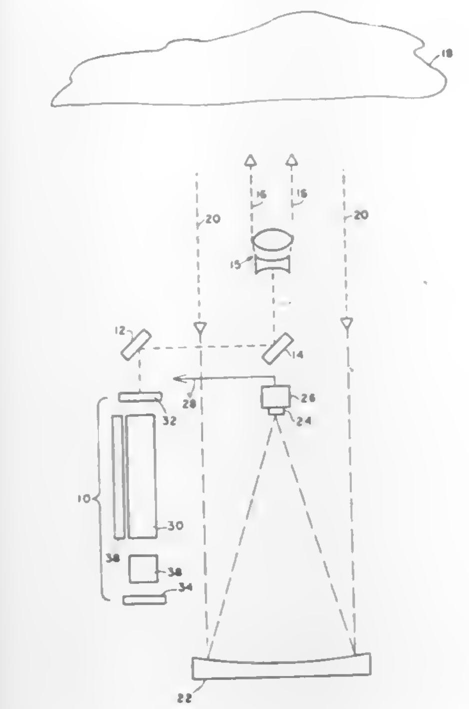


1. A method for the projection printing of masks onto a workpiece, particularly onto a wafer for the manufacture of integrated circuits, in which the pattern of said mask is imaged onto a photosensitive layer coating said workpiece by means of an exposure light directed through a projection lens, prior to said projection printing aligning relative to each other said mask and said workpiece, which has already been marked, by imaging into each other corresponding alignment marks of said mask and alignment patterns of said workpiece by means of alignment light reflected from said workpiece, said alignment light comprising at least two narrow wavelength ranges spaced from each other on the wavelength scale, in said ranges said photosensitive layer of said workpiece being non-sensitive or low-sensitive, determining the intensity of said alignment light reflected from said workpiece and generating an alignment signal from the wavelength range of said alignment light having highest intensity.

4,355,893
EYE-SAFE LASER CLOUD HEIGHT RANGEFINDER
Evan P. Chicklis, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Sep. 8, 1980, Ser. No. 184,850
Int. Cl.^{3} G01C *3/08;* H01S *3/00*
U.S. Cl. 356—4 **16 Claims**

8. A method of determining cloud height, comprising the steps of:
- providing a Er:LiYF$_4$ laser which outputs coherent radiation at 1.73 micrometers and prevents oscillations at 0.85 micrometers and 1.23 micrometers;
- transmitting said radiation toward clouds;

providing a detector which is responsive to said 1.73 micrometers radiation; and



receiving reflected radiation from said clouds at said detector.

4,355,894

METHOD AND APPARATUS FOR CORRECTING FOR METEOROLOGICAL ERROR IN DISTANCE MEASUREMENTS USING LIGHT WAVES

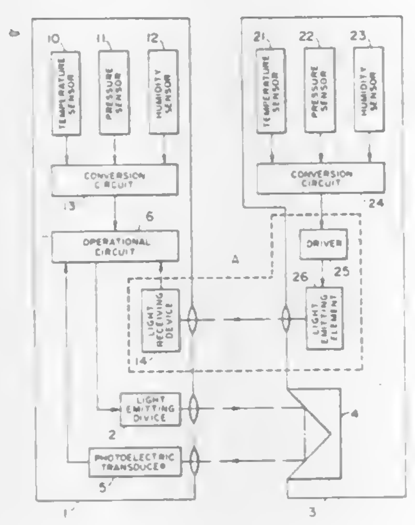
Masaru Maeda, Kawasaki, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,377

Claims priority, application Japan, Jul. 26, 1979, 54-94243

Int. Cl.^{3} G01C *3/08*

U.S. Cl. 356—5 **23 Claims**



1. In light wave distance measuring apparatus for measuring the distance between spaced locations and for providing an output indicating the result of the measurement, the improvement comprising:

means for automatically measuring the prevailing meteorological conditions at each of said spaced locations simultaneously with the measurement of said distance; and

means responsive to the measuring means for automatically correcting the distance measurement to eliminate error due to variations in said meteorological conditions from predetermined meteorological conditions.

4,355,895

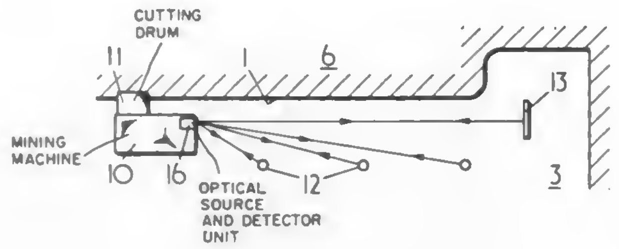
SURVEY SYSTEMS

Angus H. Cairns; Nicholas J. Houston, both of Camberley, and Noel W. F. Stephens, Yateley, all of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 61,101, Jul. 26, 1979, abandoned, which is a continuation of Ser. No. 885,221, Mar. 10, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 232,761

Int. Cl.^{3} G01B *11/26;* **E01B** *35/02*

U.S. Cl. 356—141 **13 Claims**



1. A survey system comprising a mobile optical receiver adapted to travel a fixed path, a series of optical sources positioned in a line generally along said path, the receiver having sensor array means for substantially simultaneously receiving light from a predetermined minimum group of sources within the series of sources, the sensor array means being responsive to light projected by the group of optical sources visible to the receiver to determine the angle of incidence of the light projected from each visible source of the group relative to an optical axis of the receiver, the system having means for periodically electronically scanning the sensor array means to detect light impinging upon the sensor array means for effecting such source angle determinations periodically, the period of said scanning means being such that a plurality of angle determinations are made on each group of sources visible to the receiver, the system further including processing circuitry adapted to correlate the angular measurements and to derive therefrom information identifying the shape of said fixed path.

4,355,896

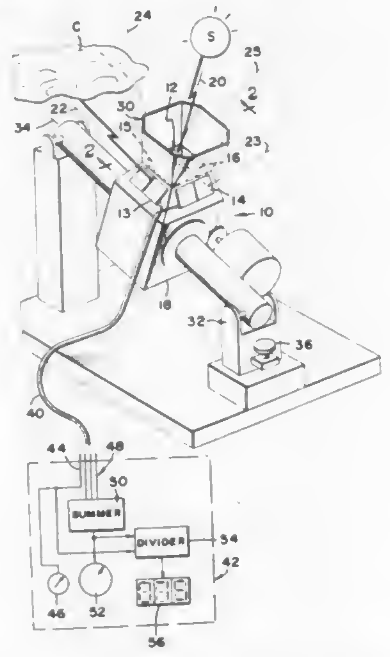
CLOUD COVER SENSOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Eric G. Laue, San Marino, Calif.

Filed Jun. 27, 1980, Ser. No. 163,837

Int. Cl.^{3} G01J *1/26, 1/42*

U.S. Cl. 356—222 **10 Claims**



1. Cloud cover detector apparatus comprising:

a frame which has a predetermined axis that can extend towards the sun;

a plurality of indirect sensors, which sensors generate outputs dependent upon the amount of sunlight incident thereon, mounted on said frame to face along lines which are angled by less than 90° from said axis and are also angled from one another so as to extend in different directions;

shield means mounted on said frame, for shielding each of said indirect sensors from direct sunlight when said frame is oriented so that said axis extends towards the sun; and

means responsive to the output of said indirect sensors for indicating the cloudiness of the sky.

4,355,897

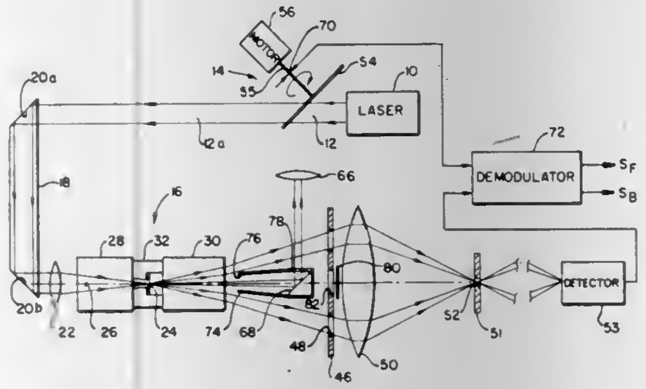
NEAR-SIMULTANEOUS MEASUREMENTS AT FORWARD AND BACK SCATTER ANGLES IN LIGHT SCATTERING PHOTOMETERS

Wilbur I. Kaye, Corona Del Mar, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 864,991, Dec. 27, 1977, abandoned. This application Jun. 9, 1980, Ser. No. 157,598

Int. Cl.^{3} G01N *21/01, 21/49, 21/85*

U.S. Cl. 356—338 **6 Claims**



1. A light scattering photometer comprising:

a source of light;

a sample zone having an optical axis along which light from the source passes to impinge upon and scatter from a sample in the sample zone;

a detector;

means for intercepting light scattered from the sample at a predetermined angle θ with respect to the optical axis and for passing same to the detector;

switching means for alternately directing light from the source into the sample zone in first and second opposite directions along the optical axis to illuminate a sample therein in alternate succession and in near-simultaneity from said opposite directions such that for light directed into the sample zone in said first direction the intercepting means intercepts forward scatter from the sample at said angle θ while for light directed into the sample zone in said second direction the intercepting means intercepts back scatter from the sample at an angle $180°-\theta$, the intercepting means passing said forward scatter and said back scatter in alternate succession and in near-simultaneity to the detector; and

demodulation means synchronized with the alternation of said switching means for demodulating the output of said detector to derive near-simultaneous forward and back scatter measurements from the sample.

4,355,898

OPTICAL DETECTING, MONITORING OR MEASURING ARRANGEMENTS

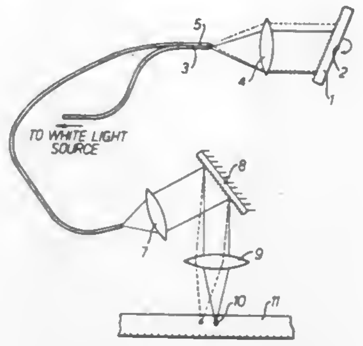
John P. Dakin, Southampton, England, assignor to Plessey Overseas Limited, Ilford, England

Filed May 23, 1980, Ser. No. 152,714

Claims priority, application United Kingdom, May 23, 1979, 7918056

Int. Cl.^{3} G01B *9/02*

U.S. Cl. 356—346 **3 Claims**



1. An optical detecting, monitoring or measuring arrangement comprising a movable diffraction grating arranged to have a beam of white light incident thereon and arranged for angular displacement by means responsive to changes in one or more parameters whereby the colour of light being reflected to a light receiving point from said grating changes and said light is then directed onto a fixed diffraction grating so that the direction of a light beam consequentially reflected from said fixed diffraction grating changes with change in colour, said change in direction being dependent upon and providing an indication of the change in said parameter or parameters.

4,355,899

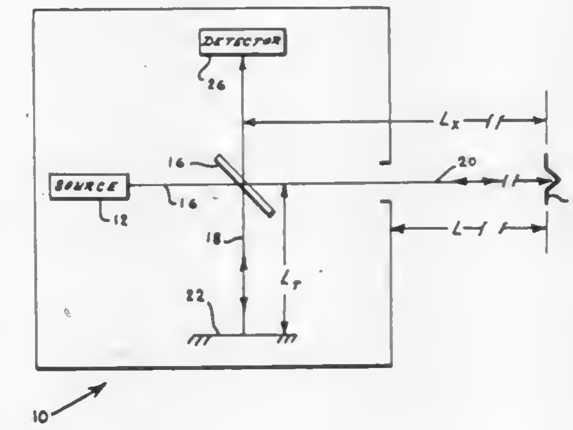
INTERFEROMETRIC DISTANCE MEASUREMENT METHOD

Thomas A. Nussmeier, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 22, 1980, Ser. No. 152,232

Int. Cl.^{3} G01B *9/02*

U.S. Cl. 356—349 **6 Claims**



6. A method for determining the distance between a first preselected point and a second point comprising the steps of:

(a) providing a first beam of electromagnetic radiation at a first optical wavelength;

(b) splitting said first beam at said first preselected point into a beam following a first path and a beam following a second path, said first path beam being focused onto a first reflective surface a known distance from said preselected point, said second path beam being focused onto a reflective surface at said second point an unknown distance from said preselected point;

(c) determining an optical phase difference of said first beam as said first beam traverses said first path said known distance from said preselected point and said second path said unknown distance from said preselected point;

(d) replacing said first beam with at least a second beam of electromagnetic radiation at a second optical wavelength, said second beam following the same optical path as said first beam such that said second beam is split into a beam following said first path and a beam following said second path, said first path beam of said second beam being focused onto said first reflective surface said known distance from said preselected point, said second path beam of said second beam being focused onto said reflective surface at said second point said unknown distance from said preselected point;

(e) selecting said second wavelength at a wavelength different than said first wavelength but closely spaced thereto such that a number of whole wavelengths in the path difference between said unknown distance and said known distance is the same for both said first and said second wavelengths;

(f) determining the optical phase difference of said second beam as said second beam traverses said first path said known distance from said preselected point and said second path said unknown distance from said preselected point;

(g) utilizing said optical phase difference of said first beam, said optical phase difference of said second beam, said first wavelength and said second wavelength to establish said number of whole wavelengths in said path difference between said unknown distance and said known distance;

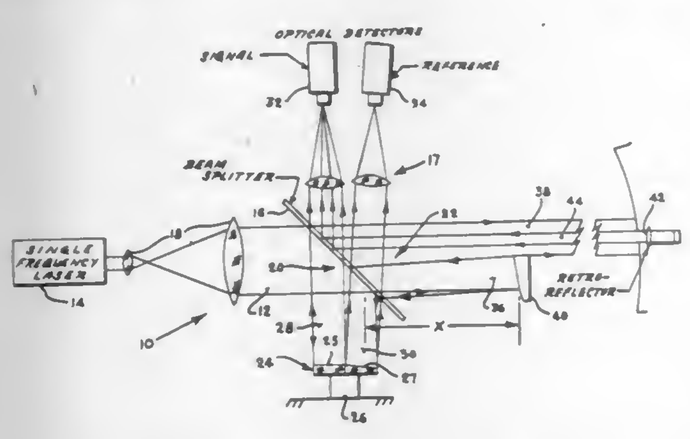
(h) combining said number of whole wavelengths with said optical phase difference of said first beam and said first wavelength in order to establish said path difference between said unknown distance and said known distance; and

(i) determining said unknown distance between said first preselected point and said second point by combining said known distance with said path difference between said unknown distance and said known distance.

4,355,900
SELF-CALIBRATING INTERFEROMETER

Thomas A. Nussmeier, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,435
Int. Cl.³ G01B *11/02*
U.S. Cl. 356—356 **10 Claims**

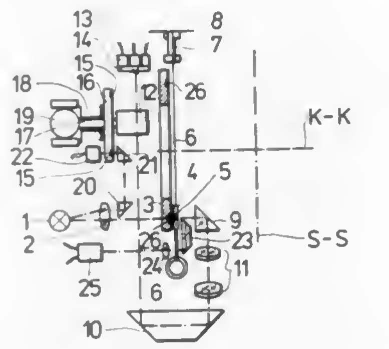


1. A self-calibrating interferometer comprising: means for providing a first beam of electromagnetic radiation, beam splitting means optically aligned with said electromagnetic beam for splitting said beam into a first path beam and a second path beam; first means optically aligned with the first path beam for dividing said first path beam into a first portion beam and a second portion beam and for reflecting said first portion beam and said second portion beam of said first path beam therefrom; distance altering means, operably connected to said first means, for altering the distance of said first means from said beamsplitting means; second means, located a preselected distance from said beamsplitting means and optically aligned in said second path beam, for dividing said second path beam into a first portion beam and a second portion beam and for reflecting said first portion beam of said second path beam therefrom; means located an unknown distance from said beamsplitting means and optically aligned in said second path beam for reflecting said second portion beam of said second path beam therefrom; first detecting means optically aligned with said reflected first portion beam of said first path beam and said second portion beam of said second path beam for detecting said first portion beam of said first path beam and said second portion beam of said second path beam and producing an output in accordance therewith; second detecting means optically aligned with said second portion beam of said first path beam and said first portion beam of said second path beam for detecting said second portion beam of said first path beam and said first portion beam of said second path beam and producing an output in accordance therewith; and comparing means operably connected to said first detecting means and said second detecting means for comparing said outputs received therefrom.

4,355,901
ARRANGEMENT FOR MEASURING THE POSITION OF AN INDEX

Wieland Feist, 6, Erfurter-Strasse, and Franz Kebschull, 8, Str. der Kosmonauten, both of Jena, District of Gera, German Democratic Rep.

Filed Sep. 30, 1980, Ser. No. 192,183
Claims priority, application German Democratic Rep., Oct. 10, 1979, 216146
Int. Cl.³ G01B *11/14;* G01C *1/02, 1/06;* G01D *5/36*
U.S. Cl. 356—373 **3 Claims**



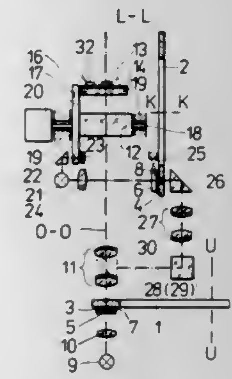
1. Arrangement for the repeated measuring of the position of an oscillating index comprising:
- a graduated circle seated for rotation,
- said index for determining the reading position of said graduated circle,
- a first imaging system,
- a plano-parallel plate,
- a first photodetector,
  - said reading position, said first imaging system,
  - said plano-parallel plate and said first photodetector being in optical alignment,
  - said reading position being substantially arranged in the object side focal plane of said first imaging system,
- a pendulum,
  - said index being secured to said pendulum,
- a servo-motor,
- an axle being secured to said servo-motor for rotating said plano-parallel plate mechanically connected to said axle,
- an interpolator being connected to said axle,
- a second imaging system,
- a second photodetector,
  - said index, said second imaging system and said second photodetector being in optical alignment,

  - said second imaging system being for imaging said index onto said second photodetector
  - the latter being for detecting the oscillation frequency of said index, and
- electronic means for control of said servo-motor rotation frequency,
  - said electronic means being arranged between said second photodetector and said servo-motor.

4,355,902
ARRANGEMENT FOR DETERMINING THE ERRORS THE VERTICAL AXIS OF A SURVEYING DEVICE

Wieland Feist, 6, Erfurter Strasse, Jena, District of Gera, German Democratic Rep.

Filed Sep. 30, 1980, Ser. No. 188,841
Claims priority, application German Democratic Rep., Oct. 1, 1979, 215908
Int. Cl.³ G01B *11/14;* G01C *1/02, 1/06;* G01D *3/04*
U.S. Cl. 356—375 **1 Claim**

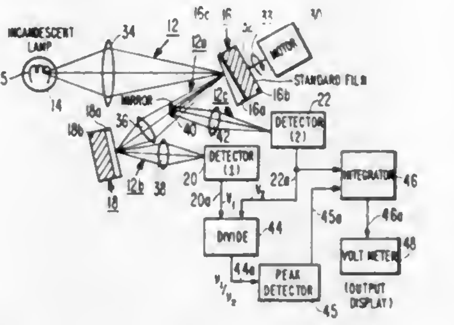


1. Arrangement for determining errors of the vertical axis of a surveying device
- comprising
- a horizontal circle,
- a vertical circle,
- a first index for defining a reading portion
- on said horizontal circle,
- a second index for defining a reading portion on said vertical circle,
- a first optical system,
- a second optical system,
- an optical plano-parallel plate seated for rotation,
- a servo-motor mechanically connected to said plano-parallel plate,
- a first photodetector for said reading portion on said horizontal circle,
- a second photodetector for said first index,
- a third photodetector for said reading portion on said vertical circle,
- a fourth photodetector for said second index,
  - said reading portion on said horizontal circle, said first index, said first optical system, said plano-parallel plate, said first and second photodetector being in optical alignment,
  - said first optical system being for imaging said reading portion on said horizontal circle and said first index into a plane defined by said first and said second photodetector,
  - said reading portion on said vertical circle, said second index, said second optical system, said plano-parallel plate, said third and fourth photodetector being in optical alignment,
  - said second optical system being for imaging said reading portion on said vertical circle and said second index into a plane defined by said third and fourth photodetector,
- an interpolation unit including a fifth photodetector,
- being connected to said plano-parallel plate,
  - said fifth photodetector being for producing an interpolation pulse sequence in dependence on the rotations of said plano-parallel plate,
- a gate circuit,
- a counter being connected to said fifth photodetector via said gate circuit,
  - said second and fourth photodetector being connected to said gate circuit and alternatingly producing ON-pulses and OFF-pulses for said gate circuit,
  - said counter being for counting the intepolation pulses between said ON and OFF pulses,
- a computer being connected to said counter and to said first and said third photodetector for computing a corrected reading, a display unit for displaying the corrected reading,
- said display unit being connected to said computer.

4,355,903
THIN FILM THICKNESS MONITOR

John R. Sandercock, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 119,968, Feb. 8, 1980, abandoned. This application Aug. 28, 1980, Ser. No. 181,990
Int. Cl.³ G01B *11/02*
U.S. Cl. 356—382 **11 Claims**

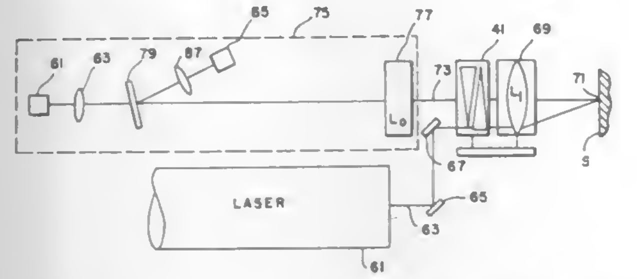


1. A thin film thickness monitor comprising:
- a source of light for a light having a plurality of wavelengths;
- a light detector for generating an output signal indicative of detected light;
- a reference thin film of varying thickness having a known optical thickness $n_f t_f$ that varies with the thickness of said film, where n_f is the refractive index of said film and t_f is the thickness at a particular portion of said film;
- a specimen thin film of unknown optical thickness $n_f t_f$ where n_f is the refractive index and t_f is the thickness;
- means for scanning light from said source in either successive order over the surface of said reference film, and reflecting said scanned light to the surface of said specimen film and thence to said detector, the output signal of said detector representing the intensity of said reflected light, a variation in the intensity of said reflected light being indicative of the optical thickness of said reference film and said specimen film being equal;
- said reference thin film comprising a semi-circular member supported on a circular disc, whereby a semi-circular surface portion of said disc adjacent said member is scanned by said light, the thickness of said member varying circumferentially linearly between a minimum thickness and a maximum thickness; and further including:
- means responsive to said output signal for determining the optical thickness of said film as a function of the scanning time or distance between either the minimum thickness or maximum thickness of the member and the thickness of the member at which the variation in the reflected light intensity occurs.

4,355,904

OPTICAL INSPECTION DEVICE FOR MEASURING DEPTHWISE VARIATIONS FROM A FOCAL PLANE

N. Balasubramanian, 20361 Chalet La., Saratoga, Calif. 95070
Continuation-in-part of Ser. No. 945,628, Sep. 25, 1978, Pat. No. 4,204,772. This application Apr. 14, 1980, Ser. No. 140,417
Int. Cl.^{3} G01C *3/00*
U.S. Cl. 356—376 **10 Claims**



1. An optical method for measuring fine depth variations of a test surface relative to a focal plane comprising,

(a) passing a forwardly directed, collimated light beam through a beam focusing lens having an optical axis and a focal plane generally coinciding with a test surface having depthwise variations to be measured, said light beam aimed at said test surface in a direction parallel to and displaced from the optical axis of the lens so that said collimated beam is focused to a spot on the test surface coinciding with the point of intersection of the optical axis of said lens with said focal plane,
(b) re-imaging retro scattered light from said test surface passing back along a path generally parallel to the optical axis and through the lens and through a partially reflective and transmissive filter having spatially variable reflectivity and transmissivity, said filter disposed transverse to the optical axis,
(c) measuring light intensity transmitted through and reflected from said filter and producing corresponding first and second electrical signals proportional to the measurements,
(d) computing a centroid value for the retro beam using said first and second electrical signals, and
(e) relating the computed centroid value to a depthwise deviation of the beam from said focal plane.

4,355,905

ADJUSTABLE PLUG SEAL MECHANISM FOR HEAT TRANSFER ZONE SEPARATION IN HOLLOW SCREWS FOR EXTRUSION MACHINES

Harold E. St. Louis, and Walter A. Trumbull, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 24, 1980, Ser. No. 133,087
Int. Cl.^{3} B01F *7/08;* **B28C** *1/16;* **B29B** *1/04*
U.S. Cl. 366—79 **12 Claims**

1. A cooperative assembly combination for ameliorated extrusion processing of resinous thermoplastic material comprising in a screw extruder apparatus:

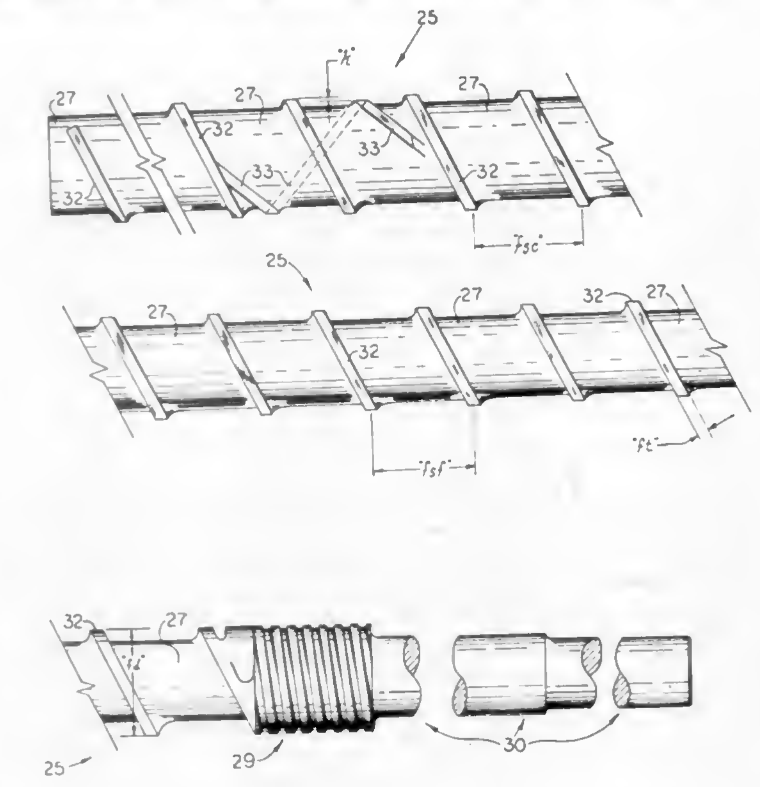
(i) a barrel;
(ii) said barrel (i) having a first rearward end (A) and a second forward end (B);
(iii) means to provide a feed supply of thermoplastic resinous material to be processed to said first end (A) of said barrel (i);
(iv) means to discharge heat plastified thermoplastic resinous material from said second end (B) of said barrel (i);
(v) a hollow screw disposed within said barrel (i) and adapted to forward heat-plastified thermoplastic resinous material from said first end (A) to said second end (B) of said barrel (i), said screw containing and defining
(vi) a longitudinally-extending internal cavity having a generally cylindrical configuration;
(vii) a plug within the internal cavity (vi) adapted to divide said cavity in confined, separated fashion into
(viii) at least one heat-exchanging zone; with

said heat-exchanging zone (viii) being disposed between said first end (A) and said second end (B) of said barrel (i) and having heat-exchanging fluid inlet and outlet conduits in operative connection with said heat-exchanging zone (viii) within said screw (E);

(ix) means for supplying and shutting off the supply of and venting a desired heat-exchanging fluid under pressure and at a selected wanted temperature into and out of said first heat-exchanging zone (h); plus

the combined cooperative improvement comprised of:

(x) an expansible plug seal mechanism adapted to be fit and moved within said cavity (vi) of said screw (v),



said plug seal (x) having therein included at least one incompletely-enclosed and at least relatively cup-like member (xi) that is of a form and configuration which is so constructed and arranged with a centrally-contained interior void space therein as to be characterized in being:

resiliently deformable and flarable laterally outwardly activated when subject to and spreadingly urged by heat-exchange fluid under pressure when same is present centrally within said cup-like member (xi); whereby the outer circumferential exterior surface(s) of each of said cup-like members (xi) are pressed against and in conforming sealing engagement with the internal wall surfaces of said cavity (vi) within the screw (v);

thus preventing substantial passage of heat-exchange fluid under pressure past or about the so-engaged and activated plug seal (x).

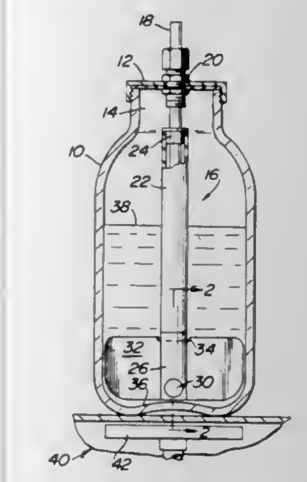
4,355,906

STIRRING APPARATUS FOR CELL CULTURE

K. Ray Ono, Bridgeton, N.J., assignor to Bellco Glass Inc., Vineland, N.J.
Filed Apr. 3, 1981, Ser. No. 250,773
Int. Cl.^{3} B01F *13/08*
U.S. Cl. 366—274 **8 Claims**

1. Apparatus for use in cell culture comprising a vessel of non-magnetic material, said vessel having an inlet opening whose diameter is less than the diameter of the vessel, a stirring assembly insertable into the vessel through said opening for stirring the contents of the vessel, said assembly including a stirring member for rotating the assembly in response to magnetic forces, said assembly including an elongated holder having a slot at its lower end, first and second blades in said slot, said blades having a combined length which is greater than the diameter of said opening, said stirring member extending

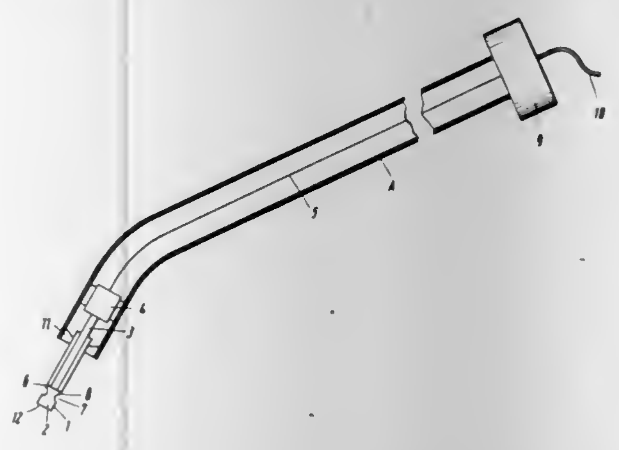
through a hole in said blades, said blades being mounted for pivotable movement downwardly about the longitudinal axis of said stirring member, said stirring member being generally perpendicular to said axis of said holder and being encapsulated in an inert sterilizable material.



4,355,907

APPARATUS FOR PICKING UP A MOLTEN TEST SAMPLE OF METAL OR METAL ALLOYS AND MEASURING THE COOLING CURVE OF SAID SAMPLE

Kurt Orths, Ratingen; Milan Lampic, Marburg; Peter Berger, Düsseldorf-Benrath; Jörg Müller, Düsseldorf-Wersten, and Herbert Löblich, Hilden, all of Fed. Rep. of Germany, assignors to Verein zur Förderung der Giesserei-Industrie, Düsseldorf, Fed. Rep. of Germany
Filed Jul. 10, 1980, Ser. No. 168,451
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929693
Int. Cl.^{3} G01J *5/08*
U.S. Cl. 374—26 **10 Claims**



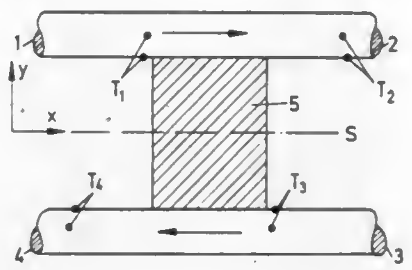
1. In apparatus for picking up a test sample of molten metal or metal alloys and measuring the cooling curve of said sample, comprising a sample receptor and a optical conductor leading from the receptor to a transducer, the improvement comprising:

(a) a lance;
(b) the receptor being a small, open ended refractory tube having a cavity for receiving the molten sample arranged at the free extremity of said lance;
(c) the optical conductor contained within said lance and terminating at said cavity in said receptor;
(d) a barrier disposed between said cavity and said optical conductor, said barrier consisting of a heat resistant, highly thermally conductive material of such quality as to cause the material of the melt sample which is picked up to adhere thereto.

4,355,908

DEVICE FOR MEASURING THE MASS FLOW AND THE HEAT FLOW AND METHOD FOR DETERMINING THE MASS FLOW

Günter Weisser; Bernd Starkloff, both of Bad Homburg von der Hohe, and Klaus Stoesser, Hofheim, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany
Filed Feb. 15, 1980, Ser. No. 122,066
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906186; Nov. 6, 1979, 2944707
Int. Cl.^{3} G01K *17/08*
U.S. Cl. 374—39 **24 Claims**



1. Device for measuring the mass flow and the heat flow of fluid in a fluid conveying system that is connected to means which consumes heat from or provides heat to such fluid flow, which consists essentially of (i) two fluid-carrying lines, one line being the fluid feed line and the other being the fluid return line, (ii) a heat-conducting section positioned between the two fluid-carrying lines, at least a cross-sectional portion of said heat-conducting section which is transverse to the heat flow path through said heat-conducting section consisting essentially of a material of low-thermal conductivity, fluid-solid interfaces being formed between the fluid in the feed line and the heat-conducting section and between the fluid in the return line and the heat-conducting section, such two interfaces forming two heat transfer zones, and the heat-conditioning section have heat transmission properties such that the heat-conducting section has a thermal impedance which is relatively higher than the thermal impedance of each of the two interfaces between the fluid and the heat-conducting section, and (iii) at least one temperature sensor located in each of the two fluid-carrying lines immediately at or close to an edge of an end of the heat-conducting section, one of the fluid carrying lines having two temperature sensors located therein, one of such two temperature sensors being located upstream and the other of such two temperature sensors being located downstream of the appropriate end of the heat-conducting section, the temperature differentials between at least two pairs of such temperature sensors providing a measurement of the mass flow and the heat flow of the fluid.

4,355,909

TEMPERATURE MEASUREMENT BY MEANS OF HEAT TUBES

Hans B. Knudsen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed May 19, 1980, Ser. No. 150,807
Claims priority, application United Kingdom, May 22, 1979, 7917694
Int. Cl.^{3} G01K *1/16*
U.S. Cl. 374—135 **16 Claims**

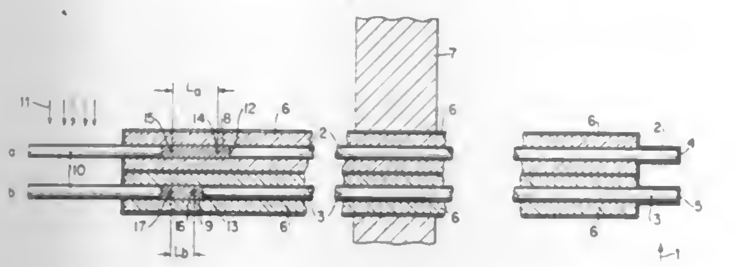
1. A method for measuring the temperature of hot fluids, particularly in environments involving thermal radiation, comprising:

(1) taking a temperature measuring device having at least two measuring bodies, each measuring body being capable of maintaining a substantially uniform temperature over its length;
(2) protecting said measuring bodies against heat transfer by radiation;

(3) positioning said measuring bodies in the hot fluid environment;

(4) maintaining said radiation-protected measuring bodies at substantially constant, differing temperatures, which temperatures are below the temperature of the hot fluid and are generally uniform over the lengths of said measuring bodies;

(5) calculating the temperature of the hot fluid by:



(a) dividing the heat emission to each radiation-protected measuring body by the product of (1) the heat transfer coefficient of the heat transfer between the hot fluid and said body and (2) the surface area of the respective measuring body, and then,

(b) adding to that value the temperature of the respective measuring body,

whereby it is unnecessary to heat said measuring body to the temperature of the hot fluid.

4,355,910

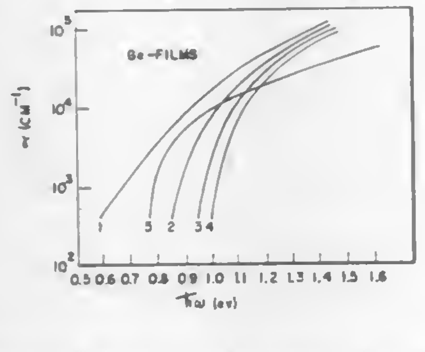
METHOD AND APPARATUS FOR AN OPTICAL SENSOR UTILIZING SEMICONDUCTOR FILTERS

William H. Quick, La Habra Heights; Kenneth A. James, Corona Del Mar, and Virgil H. Strahan, Orange, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 5,532, Jan. 22, 1979, abandoned. This application Apr. 7, 1980, Ser. No. 138,059

Int. Cl.³ G01L *7/00;* **G01K** *5/62*

U.S. Cl. 374—162 **10 Claims**



1. An apparatus for sensing the status of a physical parameter, said apparatus comprising:

means for positioning a light source in response to said physical parameter, and

a graded optical filter comprising a variable band gap semiconductor material and including a plurality of contiguous regions that are positioned to receive light transmitted from the source thereof,

each of said regions having respective absorption edge wavelength cutoff characteristics that vary as a function of the position of the light source relative to such regions through which light is transmitted and that differ from the absorption edge wavelength cutoff characteristics of regions to which it is contiguous,

whereby the light being transmitted through said regions is indicative of the physical parameter and the status thereof which is to be sensed.

4,355,911

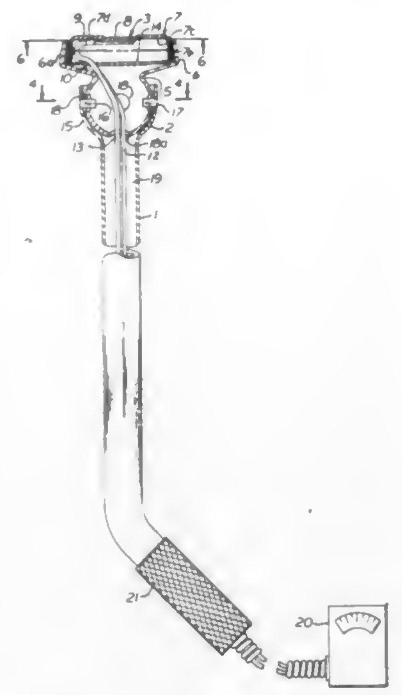
SURFACE TEMPERATURE SENSING DEVICE

John Tymkewicz, c/o Marlin Manufacturing Corp., 12404 Triskett Rd., Cleveland, Ohio 44111

Filed Sep. 9, 1980, Ser. No. 185,508

Int. Cl.³ G01K *1/16, 7/04*

U.S. Cl. 374—165 **8 Claims**



1. A temperature sensing probe device comprising an arm having a socket at one end, a probe head member including a ball-like element mounted in said socket for limited universal movement, a contact section having a portion insulated from the ball-like element connected to the ball-like element and comprising the extremity of the head member, said contact section being positioned for engagement with an area where temperature is to be sensed by movement of said arm, and thermocouple leads connected to the contact section and extending through the arm to indicating means, the ball-like element and contact section being formed of relatively thin material to minimize the mass thereof and facilitate rapid temperature change response transmittal from the head member to the indicating means.

4,355,912

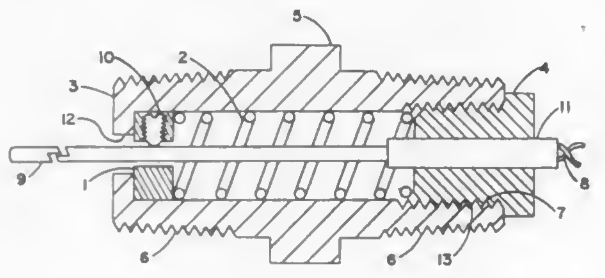
SPRING LOADED SENSOR FITTING

Raymond L. Haak, Rte. 3, Box 293, Alta Loma, Tex. 77510

Filed Sep. 12, 1980, Ser. No. 186,549

Int. Cl.³ G01K *1/14*

U.S. Cl. 374—208 **4 Claims**



1. An improved spring-loaded apparatus for use with a heat sensor and in combination with isolating or thermal wells comprising:

a double ended male threaded body for attaching to an internally threaded conduit member, said threaded body having an internally bored hole with female threads on one end;

a cylindrical member located within said internally bored hole in said threaded body, said cylindrical member having adjustable means for selectively rigidly attaching said cylindrical member to said heat sensor at different positions along the length of said sensor;

an internal compression spring having outside diameter less than the diameter of said internally bored hole in said threaded body, said spring positioned within said threaded body so as to exert a force on said cylindrical member;

a retaining threaded member having external threads on one end, said external threads mating with said female threads on said threaded body.

4,355,913

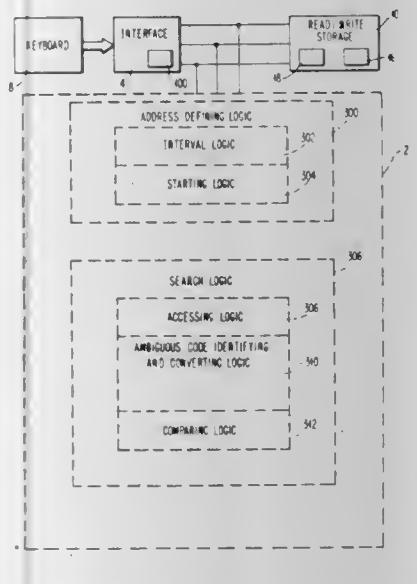
CONTENT-ADDRESSED TEXT SEARCH APPARATUS FOR TYPEWRITERS

Edward V. Rutkowski, Jr., Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1979, Ser. No. 79,414

Int. Cl.³ B41J *5/30*

U.S. Cl. 400—63 **10 Claims**



1. For use in a keyboard activated printing apparatus having a text storage for storing strings of text representative codes, said codes being related to actuations of a keyboard apparatus and including at least one set of plural codes that correspond to an apparently similar printing operation as regards a printed document, a text search system comprising:

operator actuatable means for indicating an interval when an address string of codes from said keyboard apparatus is to be recognized;

means, responsive to said indicating means, for storage, as an address code string, codes generated during said interval;

and search logic means for identifying an addressed location in said text storage, said search logic means including means for sequentially accessing codes from said text storage, means for comparing said text storage codes to said text address code string, said comparing means including means for identifying codes that are members of said set in said text string and in said address string and for converting said set codes, for comparison purposes, to a predefined common code for the set, whereby a location for stored text, that is apparently similar to the address text string from a document appearance standpoint, is indentified.

4,355,914

ACOUSTIC HOOD WITH GLARE SHIELD

James S. Alexander, Paris, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1980, Ser. No. 145,546

Int. Cl.³ B41J *29/08*

U.S. Cl. 400—690.1 **21 Claims**

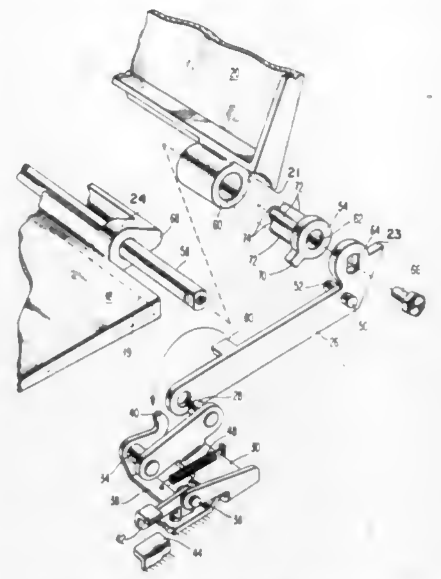
1. A sound hood for suppressing noise emanating from a typewriter of the type having an opening in the top thereof for access to the printing region of said typewriter, comprising:

a first elongate panel member with a surface substantially coextensive with said opening;

a second elongate panel member with an elongated dimension substantially coextensive with said first panel member positioned with one elongated edge of each of said panel members proximate each other;

means for mounting said first and second panel members with said first panel member proximate said opening;

pivot and friction means engageable with said first and second panel members proximate one another at said elongated edges and for pivotally mounting said panel members with respect to each other and for frictionally resisting relative movement between said panel members;



means operatively engageable with said pivot and friction means, responsive to movement of said first panel member to a position proximate said opening for raising said second panel member with respect to said first panel member to a position previously determined by said pivot and friction means, whereby said second panel member is raised to and maintained in a raised position with respect to said first panel member upon the closure of said first panel member over said opening.

4,355,915

BALL-POINT PEN TIP

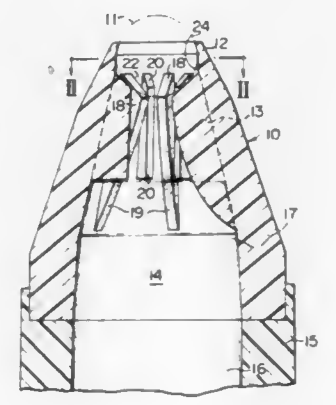
Shigeru Kaji, and Seiji Noguchi, both of Soka, Japan, assignors to Pentel Kabushiki Kaisha, Japan

Filed May 25, 1979, Ser. No. 42,574

Claims priority, application Japan, May 30, 1978, 53-63857

Int. Cl.³ B43K *7/10, 1/08*

U.S. Cl. 401—216 **9 Claims**

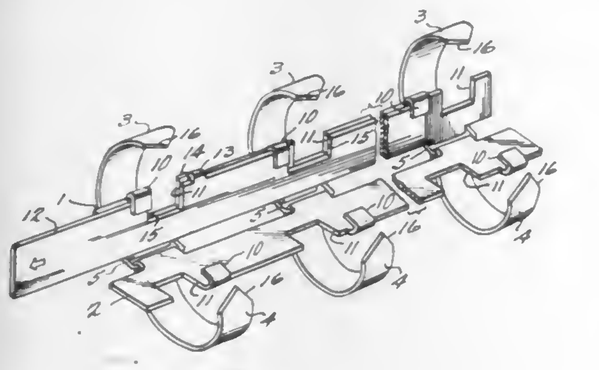


1. A ball-point pen for use with a water soluble ink comprising: a tip having a ball retainer at its axially front end which is formed with a cup-shaped recess; a ball rotatably disposed in said cup-shaped recess; an ink guide opening extending through the bottom of the recess and communicating with the rear end of the tip; and an axial sleeve having an ink chamber formed therein which communicates with the ink guide opening, the ink guide opening having a center opening and a plurality of axially and radially extending ribs projecting from the inner surface of the tip which defines the center opening,

the ribs comprising a plurality of larger ribs and a plurality of smaller ribs interleaved with the larger ribs, the smaller ribs having a radial length of projection which is less than that of the larger ribs, the larger and smaller ribs both having a substantially uniform width along their axial extent, the center opening having a diameter which gradually reduces in the direction from the ink chamber toward the recess, and the plurality of ribs being configured such that the distance between adjacent ribs gradually narrows in the radial inward direction from the inner surface which defines the center opening toward the center axis of the center opening.

4,355,916
LOOSE LEAF BINDER

Claudio B. Cardellini, Rua Manuel Maria Tourinho, 673, 01236 Sao Paulo SP, Brazil
Filed May 20, 1980, Ser. No, 151,887
Claims priority, application Brazil, May 22, 1979, 7903221
Int. Cl.^{3} B42F *3/04, 13/20*
U.S. Cl. 402—41 **6 Claims**

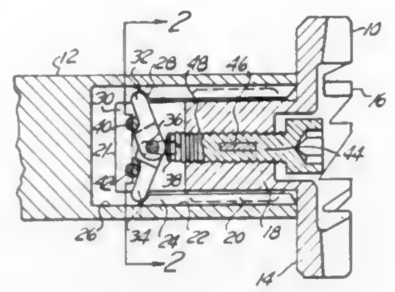


1. A loose leaf binder comprising:
- a pair of elongated strips each having a plurality of half rings at corresponding spaced locations along an edge thereof;
- means hingedly interconnecting said strips;
- means provided at the ends of said half rings to permit a half ring associated with one strip to cooperate with a half ring associated with the other strip to form a full ring when the half rings are positioned in juxtaposition;
- means provided on said first strip for retaining a third elongated strip while permitting relative longitudinal movement therebetween, said third strip being interposed between the first and second strips when the half rings are in juxtaposition;
- a plurality of folds provided along one longitudinal edge of said second strip, said folds being spaced to correspond with spacings of a plurality of slots provided along longitudinal edges of said first and third strip whereby when the half rings are in juxtaposition, said folds are received within the slots in said first strip and said third strip is movable between a first position wherein its longitudinal edge is received within said folds to retain the half rings in juxtaposition and a second position wherein the slots in the third strip are in alignment with the folds so as to permit the first and second strips to be pivoted about their hinged interconnection to move the half rings out of juxtaposition.

4,355,917
STARTER JAW COUPLING FASTENER

Dennen J. Bunger, Clinton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Sep. 29, 1980, Ser. No. 191,732
Int. Cl.^{3} F16D *1/06*
U.S. Cl. 403—24 **17 Claims**

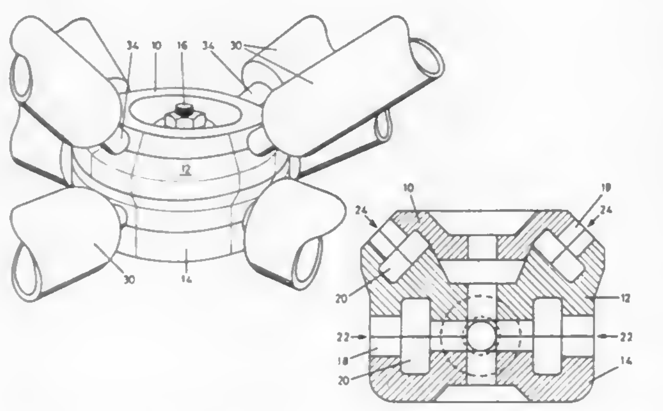
13. A fastener for connecting a rotary member to a shaft having an internally splined bore at one end, said internally splined bore having a relief at the bottom of the bore forming a shoulder at the end of each spline adjacent to the relief, comprising:
- a rotary member having an externally splined section mating with the internal splines of said bore and a cylindrical extention adapted to be received in said internally splined bore, said cylindrical extension having an arm slot disposed diametrically therethrough;
- a pair of arm members disposed in said arm slot, each of said arm members having one end pivotally connected to the other about a common axis transverse to the axis of said cylindrical extention; and



- means for rotating said arm members in opposite directions within said arm slot about said common axis to produce at the ends of said arm members, opposite said one ends, a radially extending forward arcuate motion, the ends of said arm members opposite said one ends, engaging the shoulders at the ends of at least two diametrically opposite internal splines of the shaft producing a force holding said rotary member in the internal bore of said shaft.

4,355,918
SPACE FRAME CONNECTORS

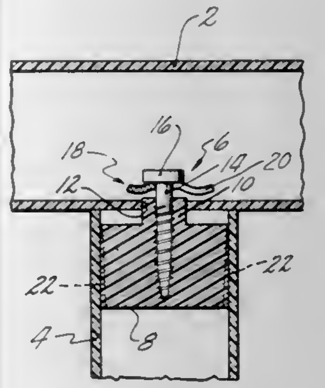
Marius Van Vliet, Johannesburg, South Africa, assignor to Design Research Marketing (Proprietary) Limited, Johannesburg, South Africa
Filed Nov. 25, 1980, Ser. No. 210,357
Claims priority, application South Africa, Nov. 26, 1979, 79/6383; Feb. 29, 1980, 80/1191
Int. Cl.^{3} F16D *1/00, 3/00;* **F16L** *41/00*
U.S. Cl. 403—170 **8 Claims**



1. A space frame connector including three elements which are stacked one on the other on a common axis with the face of each element which abuts that of another including recessed formations which between the opposite element faces define sockets for trapping the headed ends of space frame members, with the axes of the sockets between a first pair of element faces lying in a common plane and those between the second pair of faces being inclined relatively to and on the same side of the plane containing the axes of the sockets between the first pair of element faces and means for clamping the elements in the direction of their common axis.

4,355,919
PIPE CONNECTION

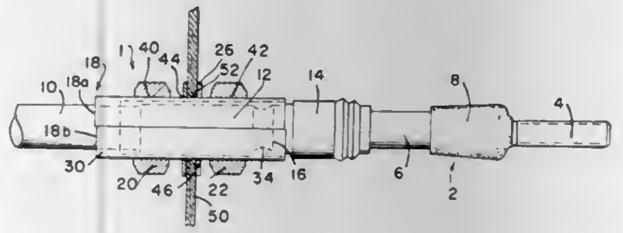
Kari J. Lievonen, 1110 Sixth Ave. South, Lake Worth, Fla. 33460
Filed Oct. 1, 1980, Ser. No. 193,339
Int. Cl.^{3} F16B *7/08;* **F16L** *41/00*
U.S. Cl. 403—191 **11 Claims**



1. A pipe connection comprising a first pipe having an opening through the side thereof, a second pipe having one end contoured and fitted against the side of said first pipe and over said opening, a locking plug fixed to the interior of said second pipe adjacent the contoured end, said locking plug having a smaller projection on one end projecting into the opening in said first pipe, said smaller projection having a stem projecting from its end into the interior of said first pipe, said stem having an enlarged head on its end which is also positioned within said first pipe and spaced from the inner wall thereof, a holding clip positioned between the underside of said enlarged head and the inner surface of said first pipe holding the contoured end of said second pipe against the side of said first pipe.

4,355,920
CLAMP-TO-BULKHEAD ADAPTERS FOR PUSH PULL CABLE END FITTINGS

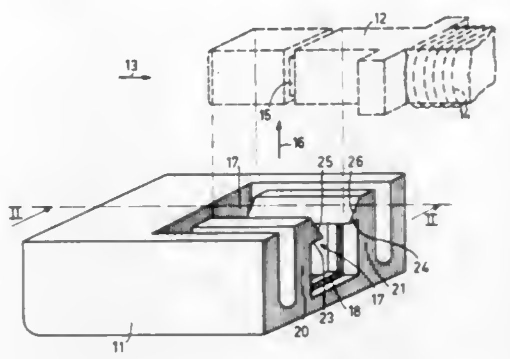
Dennis I. Graham, Hudson, Ohio, assignor to Incom International Inc., Pittsburgh, Pa.
Filed Oct. 23, 1980, Ser. No. 199,802
Int. Cl.^{3} F16B *9/00*
U.S. Cl. 403—195 **19 Claims**



1. A clamp-to-bulkhead adapter for mounting a clamp cable assembly on a bulkhead comprising
- a segmented cylindrical sleeve having an outer surface and an inner surface,
- fastener receiving means on the outer surface for detachably receiving fasteners.
- arcuate ridge on the inner surface for detachable registration in a pre-formed clamping groove on the clamp cable assembly, and
- fastener means detachably receivable by the fastener receiving means for securing the sleeve about the cable assembly with the ridge in registration with the clamping groove.

4,355,921
CONTROL DEVICE COMPRISING A SLIDABLE SHAFT WITH A KNOB

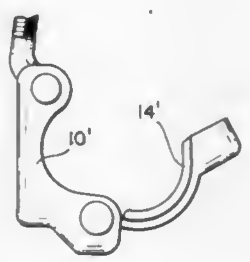
Jean-Pierre Rousseau, Rambouillet, France, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 5, 1980, Ser. No. 204,142
Claims priority, application France, Nov. 9, 1979, 79 27697
Int. Cl.^{3} F16D *1/06*
U.S. Cl. 403—316 **2 Claims**



1. A control device comprising a slidable shaft having a transversely extending detent groove provided near one end, and a knob having a transversely extending fixing ridge extending into a recess provided in the knob for receiving the end of the shaft, said fixing ridge engaging said detent groove when the knob is mounted on the shaft, said knob including at least one flexible wall extending parallel to the direction in which the knob is movable when it is mounted, the flexible wall including a hook for latching the shaft into the knob and thereby securely retaining the ridge in the groove, said flexible wall being formed by a partition which is disposed in the recess.

4,355,922
METAL CLAMP FOR SCAFFOLDING, TEMPORARY BUILDING AND THE LIKE

Masataro Sato, 2-28-26, Fukuoka-machi, Takamatsu-shi, Japan
Filed Jul. 27, 1979, Ser. No. 62,234
Claims priority, application Japan, Feb. 23, 1979, 54-020342
Int. Cl.^{3} F16B *1/00, 7/08;* **E04G** *7/16*
U.S. Cl. 403—385 **21 Claims**



1. A clamp for pipes and similarly acting fittings, the clamp comprising a pipe carrier movably supporting a bolt and a pipe holder having an embracer for receiving the bolt and hinged to the pipe carrier, the pipe holder and pipe carrier when closed together defining a generally circular opening in which a pipe is supported, said clamp being characterized in that
- said pipe holder is provided at its one end abutting said pipe carrier with a stopper means for sustaining said pipe holder at approximately a right angle to said pipe carrier to maintain the clamp open, and at its opposite end with said embracer for receiving and fixing the bolt, said embracer being directed in a radial direction of the circular opening, and said pipe carrier and the pipe hoider having pipe-support, curved surfaces of different radii of curvature, whereby the clamp can supportably receive pipes of differing diameters.

4,355,923
CONSTANT PRESSURE STORAGE INSTALLATION WITH WATER SUPPLY FOR GAS TURBINE POWER PLANTS

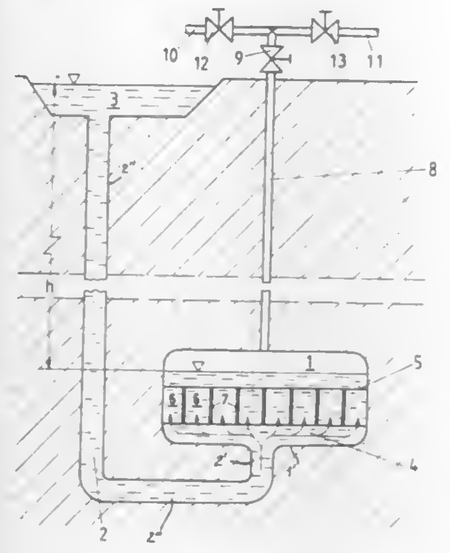
Alfred Schwarzenbach, Wettingen, Switzerland, assignor to BBC Brown, Boveri and Company Limited, Baden, Switzerland

Filed Oct. 2, 1980, Ser. No. 193,098

Claims priority, application Switzerland, Dec. 5, 1979, 10785/79

Int. Cl.³ B65G *5/00*

U.S. Cl. 405—59 **4 Claims**



1. A constant pressure air storage installation with water supply for gas turbine power plants, comprising:

a subterranean cavern for the storage of compressed air;

a compensation basin containing a water supply for compensating for the volume of air consumed from the cavern;

a riser tube for confining a water column therein and connecting the compensation basin with the cavern;

means provided for said cavern for the uniform distribution of the flow of water arising during charging and discharging of the cavern and for the compensation of the flow velocity of the water over the entire surface area of the cavern; and

said means for the distribution and rendering essentially uniform the flow of the water being structured to render as turbulent-free as possible to-and-fro movement of the water mass between the cavern and the riser tube, to thereby minimize the danger of blow-out of the cavern water through the riser tube.

4,355,924
TUNNEL-DRIVING APPARATUS

Heinz Hüsemann, Werne, and Klaus Linde, Lunen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

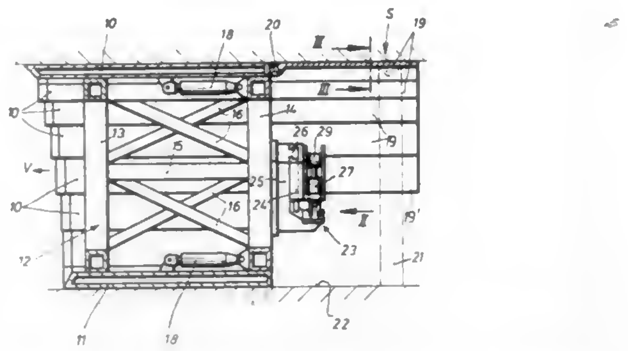
Filed Aug. 26, 1980, Ser. No. 181,505

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936067

Int. Cl.³ E01G *3/02*

U.S. Cl. 405—145 **13 Claims**

1. Apparatus for use in driving tunnels; said apparatus comprising a main forward shield composed of a plurality of elongate drive members (10, 11), frame means (12) supporting the drive members for individual longitudinal displacement, ram means (18) operable to alternately advance the drive members and the frame means to effect the driving operation, an arcuate upper rear shield (S) composed of a plurality of rear elongate extension members (19) associated with an upper group composed of some of the drive members and displaceable therewith, support means (23) mounted directly on the frame means and supportively engaging lowermost members of the rear shield, and adjustment means (27) for the support means enabling the rear shield as a whole to be raised and lowered bodily in relation to the main shield.



4,355,925
ADJUSTABLE SUPPORT FOR UNDERWATER PIPE DISTANT FROM THE SEA BED

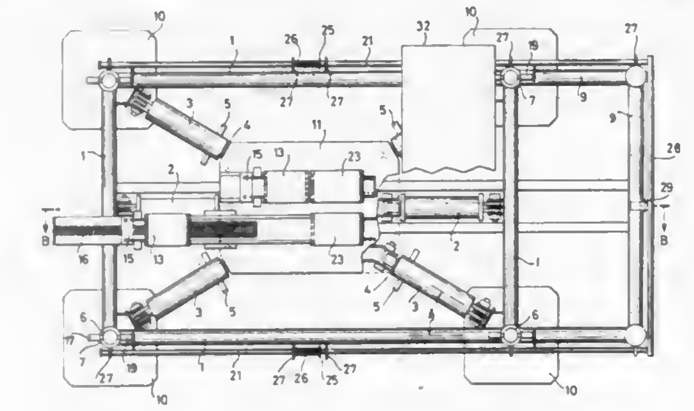
Antonio Rognoni, Pavia, Italy, assignor to Corak Limited, London, England

Filed Feb. 4, 1981, Ser. No. 231,037

Claims priority, application Italy, Feb. 19, 1980, 20005 A/80

Int. Cl.³ F16L *1/04, 3/00*

U.S. Cl. 405—172 **13 Claims**



1. In an adjustable support for underwater pipe located at a substantial distance from the sea bed, preferably greater than at least 80 cm, the improvement comprising:

(a) a frame having a base with parallel segments and intersecting portions, guide tubes at said intersecting portions, and vertical legs slidable in said tubes;

(b) support plate means attached to the lower ends of said vertical legs adaptable to the slope of the sea bed;

(c) a system connected to the frame which includes stops that engage and releasably lock said vertical legs against movement until the support is lowered to the sea bed, and release means connected to said stops that disengage them from and allow said legs to move downwardly to the sea bed;

(d) insertable means separate from said release system for engaging said vertical legs at a point spaced from said release system which allow said legs, when engaged by said insertable means, to slide only in a downward direction;

(e) a slab within the perimeter of said base frame adapted to be raised and lowered relative thereto;

(f) a pair of hydraulic jacks which are connected to their outer ends to opposing points of the parallel segments of said frame base and which extend inwardly and are connected to said slab at their inner ends, wherein said jacks are adapted to raise and lower said slab;

(g) a plurality of inclined telescopic legs for supporting said slab which are hinged at their lower ends to said corner portions of the frame and which are hinged at their upper ends to said slab, and wherein said legs move in a telescopic manner as said jacks raise and lower said slab;

(h) means for locking said legs in their extended position when said slab is raised by said jacks;

(i) a float releasably connected to the frame which provides a positive residual weight to the support as it is lowered to the sea bed, whereupon said float is adapted to be released from the frame; and

(j) a saddle system, including one-half of a saddle fixed on said slab which has a hook on its upper portion adapted to hook the pipe to be supported after the support is on the sea bed and positioned below the underwater pipe and said jacks have raised said slab toward the pipe so that said hook can releasably engage the pipe and said saddle system can support and lift the pipe to eliminate bending thereof, and another half of a saddle opposing said fixed one-half and adapted to slide on said slab under the pipe and engage and be clamped to said fixed one-half for supporting and lifting the pipe thereon.

4,355,926
ADJUSTABLE SUPPORT FOR UNDERWATER PIPE A SHORT DISTANCE FROM THE SEA BED

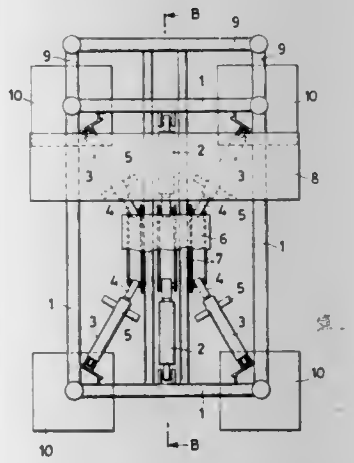
Antonio Rognoni, Pavia, Italy, assignor to Corak Limited, London, England

Filed Feb. 3, 1981, Ser. No. 231,112

Claims priority, application Italy, Feb. 19, 1980, 20004 A/80

Int. Cl.³ F16L *1/04, 3/00*

U.S. Cl. 405—172 **7 Claims**



1. In an adjustable support for underwater pipe located at a short distance from the sea bed, preferably at less than 80 cm, the improvement comprising:

(a) a frame having a base with parallel segments and intersecting portions resting on plate means adaptable to the slope of the sea bed;

(b) a saddle within the perimeter of said base of the frame for supporting the underwater pipe thereon when the adjustable support is on the sea bed and positioned below the underwater pipe;

(c) a pair of hydraulic jacks connected at opposing points to parallel segments of said base of the frame at their outer ends and extending inwardly and connected to said saddle at its other ends, wherein said jacks are adapted to raise and lower said saddle with said jacks raising said saddle to come into contact with the underwater pipe to support and lift it to eliminate bending thereof when the adjustable support is on the sea bed and positioned there below;

(d) a plurality of inclined telescopic legs for supporting said saddle which are hinged at their lower ends to said corner portions of the frame and which are hinged at their upper ends to said saddle, and wherein said legs move in a telescopic manner as said jacks raise and lower said saddle;

(e) means insertable in said telescopic legs for locking said legs in their extended position when said saddle has been raised by said jacks; and

(f) a float releasably connected to the frame which provides a positive residual weight to the support as it is lowered to the sea bed, whereupon said float is adapted to be released from the frame.

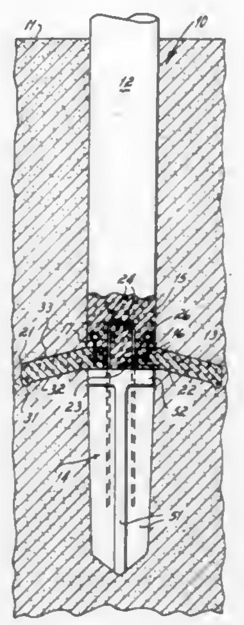
4,355,927
PILING STRUCTURE AND METHODS

Karl Stephan, 7151 Dearwester Dr., Cincinnati, Ohio 45236

Filed Jul. 28, 1980, Ser. No. 173,077

Int. Cl.³ E02D *5/50, 5/54*

U.S. Cl. 405—233 **21 Claims**



1. A composite piling for use in soils and sand, said piling comprising:

a pilot means;

a disk having an aperture extending therethrough, said disk disposed on said pilot means with said aperture positioned over an upper end of said pilot means;

a piling member having a lower end secured to with both said disk and said pilot means for support of said piling member said pilot means having a diameter and said disk having a diameter at least about twice as great as said pilot means diameter.

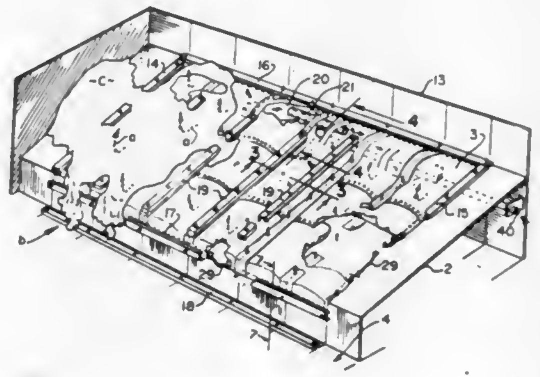
4,355,928
BACKLESS AERATION PAD FOR BULK CARGO CONVEYING BARGE OR THE LIKE

William A. Zans, St. Louis, Mo., and Edward F. Vander Meulen, Downers Grove, Ill., assignors to Missouri Portland Cement Co., St. Louis, Mo.

Filed May 22, 1980, Ser. No. 152,345

Int. Cl.³ B65G *53/22*

U.S. Cl. 406—90 **7 Claims**



1. A backless aeration pad structure for a bulk cargo conveying barge, railroad car, or similar transporter, and for use in transferring and unloading granular materials such as cement or the like, comprising, a structured floor provided within the barge and being inclined towards the location of a lower floor

trough, a singular layered aeration pad provided upon said floor and for furnishing substantial coverage thereon, air supplying means provided on said floor for delivering air under pressure intermediate to said floor and its aeration pad, said structured floor being substantially air impervious, the aeration pad formed to provide passage of the pressurized air therethrough for effecting air induced movement of the cementious or other material located thereon towards the flow trough, said aeration pad being formed of a cloth material having miniscule openings therethrough for allowing passage of the pressurized air from the spacing intermediate said pad and the structured floor, means provided around the perimeter of said pad for providing it substantially with a raised margin, perimeter channel means also provided around the margin of said pad and being fixed to said floor and straddling the pad raised portions to reasonably locate said pad fixedly in place to said floor, said pad in cooperation with the structured floor defining segmentally divided and elongated air chambers over a substantial portion of the pads height, said pad being additionally secured contiguously to the structured floor along intermediate and pad division lines that create narrow and interconnected air chambers over a substantial portion of the pads height, the area between adjacent air chambers providing lines of pad division, pad reinforcing means provided upon said lines of pad division, divisional channel means provided upon said pad reinforcing means and being fixed to said floor to secure and delineate the said aeration pad into the aforesaid integrally elongated air chambers, said division channel means sealing said aeration pad at its lines of division to the said structured floor, that portion of the pads height above the upper ends of the divisional channel means but below the upper disposed perimeter channel means remaining unattached to the structured floor therebeneath and capable of forming a space intermediate to the aeration pad and the structured floor for delivering air under pressure laterally across the approximate upper margin of the pad and for its eventual distribution downwardly into the air chambers formed between the located divisional channel means, said air supplying means comprising an air nozzle arranged approximately through the upper central portion of the structured floor and designed for. delivering air under pressure at this location between the aeration pad and its said proximate structured floor.

4,355,929
FLOW CONTROL DEVICE

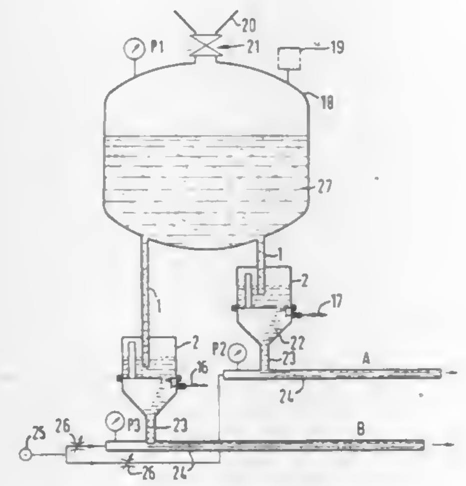
Brian Snowdon, 14, Airedale Ave., Tickhill, Doncaster, South Yorkshire, England

Filed Mar. 10, 1980, Ser. No. 129,136

Claims priority, application United Kingdom, Feb. 9, 1980, 8004413

Int. Cl.^{3} B65G ***53/40***

U.S. Cl. 406—125 **11 Claims**



2. Apparatus for conveying bulk material at a controlled rate comprising means for feeding bulk material to a pressure vessel, means for applying pressure within the pressure vessel, a container located downwardly of the pressure vessel and having a transverse partition including at least one orifice, a conduit extending downwardly from said pressure vessel into the container and terminating above the transverse partition, material receiving means located below the container, and pressure balance means for balancing the pressure at a position below the partition with a position selected to be above material located on the partition when the apparatus is in use.

4,355,930
CONTROL AND LOCKING OF PIVOTING NEEDLE FOR PNEUMATIC PIPE CARRIERS

Claude Carlier, 134, rue Saint Denis, 93100 Montreuil, France

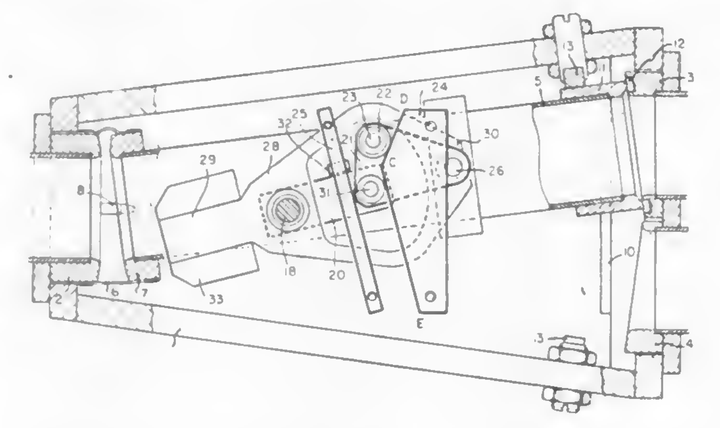
PCT No. PCT/FR79/00100, § 371 Date Jul. 2, 1980, § 102(e) Date Jul. 2, 1980, PCT Pub. No. WO80/00954, PCT Pub. Date May 15, 1980

PCT Filed Nov. 7, 1979, Ser. No. 206,539

Claims priority, application France, Nov. 8, 1978, 78 31521

Int. Cl.^{3} B65G ***51/24***

U.S. Cl. 406—182 **13 Claims**



1. Switch for pneumatic tube conveyor comprising, within a sealed housing, a pivoting switch joining one section of main line at the side of its axis of pivot to a second section of main line or to a section of shunt line at the opposite side, said switch being sealed against a second section of main line by a slight axial displacement of the switch in the direction of compression of an annular gasket disposed at an end of said second section, and the transmission of motion between a drive mechanism and a fulcrum integral with the pivoting switch being carried out by a pivoting control arm acting upon a substantially triangular return arm, one angle of which catches said fulcrum, the return arm **(21)** pivots about an axis **(31)** carried on the end of the control arm **(20)**, on which it turns along another of its angles and thus follows totally the pivoting motion of said control arm, and that it carries, in the area of its third angle, a guide wheel **(22)**, applied against at least one stationary cam **(24)** serving to orient said return arm during the pivoting of the control arm.

4,355,931
TAPPING DRILL

Roland Leuenberger, 15, Chemin de Bois de la Chappelle, 1213 Onex, Switzerland

Filed Sep. 17, 1980, Ser. No. 188,017

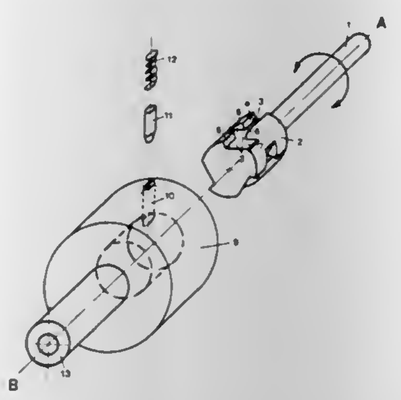
Claims priority, application France, Sep. 24, 1979, 79 24137

Int. Cl.^{3} B23B ***45/12;*** **A61B** ***17/16***

U.S. Cl. 408—123 **13 Claims**

1. A tapping drill comprising:
- (a) a drive shaft;
- (b) means for imparting oscillating movement to said shaft around its longitudinal axis;
- (c) a tool carrier; and
- (d) a ratchet mechanism connecting said tool carrier to said shaft, wherein said ratchet mechanism comprises:
  - (1) an interior drive member provided with a series of axially spaced successive lugs;

  - (2) an exterior drive member attached to said interior member, and
  - (3) means for selectively coupling said interior member with said exterior member through at least one of said lugs in order to transform the oscillating movement to a rotary movement by successive impulses in one direction or another at will.



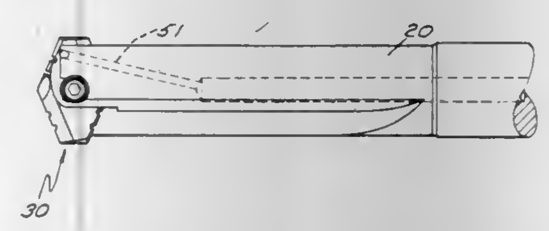
4,355,932
INDEXABLE SPADE DRILL BLADE

Eldo K. Koppelmann, Cumberland, and Wayne E. Blackmun, Barrington, both of R.I., assignors to Santrade Ltd., Lucerne, Switzerland

Filed Jan. 9, 1980, Ser. No. 110,765

Int. Cl.^{3} B23B ***27/16, 51/06;*** **E21B** ***10/52***

U.S. Cl. 408—188 **1 Claim**



1. An indexable spade drill having a boring bar with a clamping slot defining opposite surfaces, a pin rising from one surface into the slot, a blade having a substantially rhomboidal block formation with parallel top and bottom faces, said block having a first pair of adjacent sides defining a first cutting end the junction of which has a first pointed end, said block having a pair of opposite sides defining a second cutting end, the junction of which has a second pointed end, said blade having diametral cutting edges that join the first and second pairs of adjacent sides, the blade clamped in said clamping slot that supports the blade axially and laterally, one of the faces of the blade having a groove extending in the direction parallel to at least one side, a central bore extending between the two faces of said blade, said groove being located to intersect the bore, a clamping bolt extending across the slot to clamp the blade, said pin engaging a portion of said groove whereby when the blade is rotated a half a revolution in its plane to present an opposite pointed end the pin will engage another portion of said groove.

4,355,933
MOUNTING ELEMENT FOR SECURING AN OBJECT TO A SUPPORT STRUCTURE

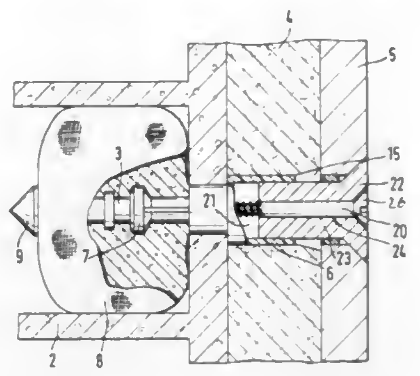
Artur Fischer, Weinhalde 34, 7244 Tumlingen, Waldachtal, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,058

Int. Cl.^{3} F16B ***13/06;*** **F04G** ***21/00***

U.S. Cl. 411—19 **13 Claims**

1. A mounting arrangement for mounting an object at a distance from a support structure having an anchoring recess, the arrangement comprising a mounting element including an anchoring part having an inserting end provided with a locking portion insertable in said recess and a rear end, a sleeve-shaped intermediate part and a sleeve-shaped trailing part engageable with an object to be fastened, said intermediate part being provided with an internal portion having a bore and being formed with a gap forming a passage for a cementing material to be injected into said recess for locking said locking portion, said bore having a seal; a fastening screw adapted to puncture said seal and to be received in said bore thereby; and a sleeve engageable with said object and insertable in said trailing part, said sleeve receiving said fastening screw and having an abutment for supporting the object to be fastened.



4,355,934
SELF-PLUGGING BLIND RIVET

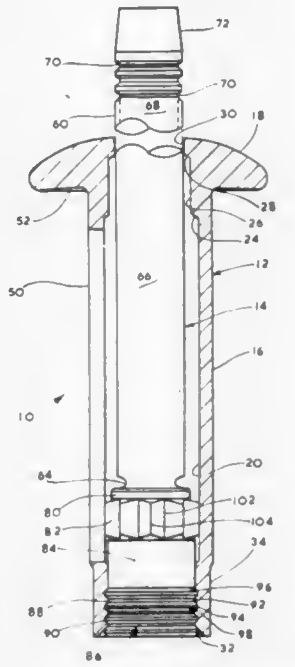
Keith Denham, Welwyn; Leslie R. Prickett, and Lawrence R. Pallister, both of Stevenage, all of England, assignors to Aerpat A.G., Zug, Switzerland

Filed Sep. 26, 1980, Ser. No. 190,969

Claims priority, application United Kingdom, Sep. 28, 1979, 7933837

Int. Cl.^{3} F16B ***13/06***

U.S. Cl. 411—38 **14 Claims**



1. A self-plugging blind rivet comprising:

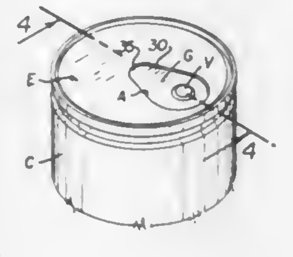
a tubular rivet body having a head at one end, an elongate shank which can be expanded radially to form a blind head, and a bore throughout the head and shank;

and a mandrel disposed in the bore of the body, the mandrel having an elongate stem which projects from the head end of the bore of the body, a plug, and a breakneck joining the stem and plug;

the plug having an end portion remote from the stem which is adapted to engage a tail-end portion of the shank remote from the head of the body in a manner such as to cause radial expansion of the shank to form a blind head when the mandrel is pulled to move the plug relatively towards the head end of the body, wherein the diameter of the bore of the body is reduced progressively towards the head to provide a locking region in the vicinity of the head, and the plug has axially-extending groove-forming means adjacent the breakneck having a maximum diameter greater than that of the locking region for forming one or more longitudinal grooves in the locking region of the body when the plug is moved longitudinally towards the head end of the body and swaging means spaced from the breakneck by the groove-forming means having a diameter greater than that of said locking region but less than the maximum diameter of the groove-forming means for swaging material of the body into one or more of the grooves formed by longitudinal passage of the groove-forming means along the locking region of the bore so as to close the groove or grooves behind the groove-forming means.

4,355,935
METHOD OF FORMING A CAN END HAVING A VENTED GATE WITHIN A PUSH-DOWN APERTURE

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Division of Ser. No. 63,792, Aug. 6, 1979, Pat. No. 4,244,489.
This application Jul. 8, 1980, Ser. No. 166,966
Int. Cl.^{3} B21D *51/44*
U.S. Cl. 413—17 **4 Claims**

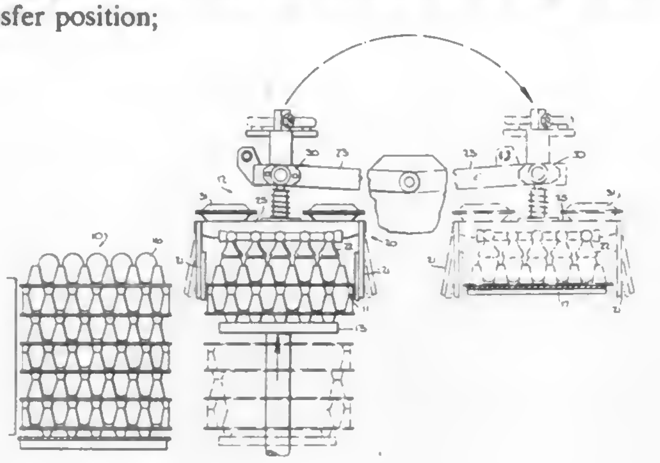


1. The method of forming a can end having a push-down multiple-fold primary aperture with a gate panel therebeneath for opening a can to which the end is affixed and having a push-down multiple-fold gated secondary venting aperture within said primary aperture for relieving pressure in a can before it is opened, said method including the steps of:
- (a) providing a metal sheet wherefrom metal end blanks are cut;
- (b) establishing the location of a circular end on the metal sheet;
- (c) establishing, within said location, selected positions for a primary aperture and for a secondary venting aperture within the primary aperture;
- (d) forming said multiple-fold primary aperture with a gate panel therebeneath in the metal sheet;
- (e) forming said multiple-fold gated secondary venting aperture within said primary aperture; and
- (f) thereafter cutting out the blank and finishing the end.

4,355,936
EGG TRANSFER APPARATUS

Leslie P. Thomas, Canton, and George N. Bliss, Franklin, both of Mich., assignors to Diamond International Corporation, New York, N.Y.
Filed Aug. 28, 1980, Ser. No. 182,134
Int. Cl.^{3} B65G *59/04*
U.S. Cl. 414—118 **16 Claims**

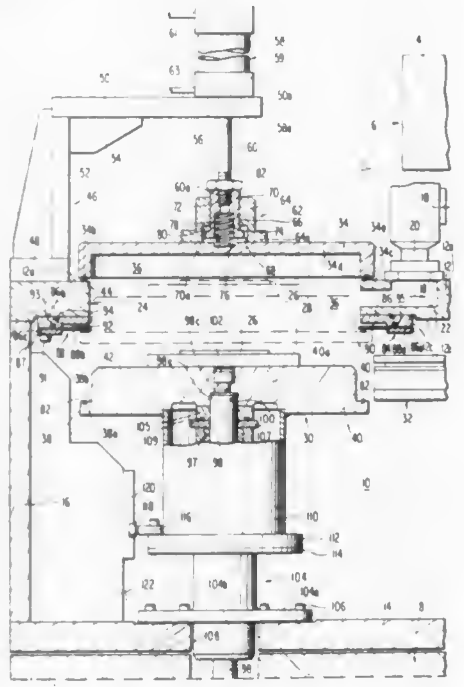
1. An apparatus for transferring egg trays from multiple stacks of trays disposed at a pick-up station to another station which comprises
- (a) a horizontal carrier means adapted to be moved from the pick-up station to another station including a plurality of apertures therein;
- (b) a rotatably driven member having one end thereof pivotally connected to said horizontal carrier means at the approximate center thereof;
- (c) a platform for supporting each of said multiple stack of egg trays and adapted for upwardly indexing the movement of each tray of eggs into a transfer position;
- (d) a plurality of lifting heads, one for each stack of trays, and including egg and tray engaging means thereof for engaging each individual egg and the tray of eggs in said transfer position;



- (e) a coupling member extending upwardly from each of said lifting heads and disposed in one of said carrier means apertures, said coupling member having the upper portion thereof extending through said carrier means aperture and being of a length sufficient to facilitate vertical movement of said lifting head with respect to said carrier means; and
- (f) a stop member mounted to said upper portion of each coupling member adapted to engage said carrier means so as to limit the downward movement of said lifting head with respect to said carrier means.

4,355,937
LOW SHOCK TRANSMISSIVE ANTECHAMBER SEAL MECHANISMS FOR VACUUM CHAMBER TYPE SEMI-CONDUCTOR WAFER ELECTRON BEAM WRITING APPARATUS

Alfred Mack, Poughkeepsie; Brian C. O'Neill, Millbrook, and Fred L. Penzetta, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1980, Ser. No. 219,657
Int. Cl.^{3} C23C *13/08*
U.S. Cl. 414—217 **9 Claims**



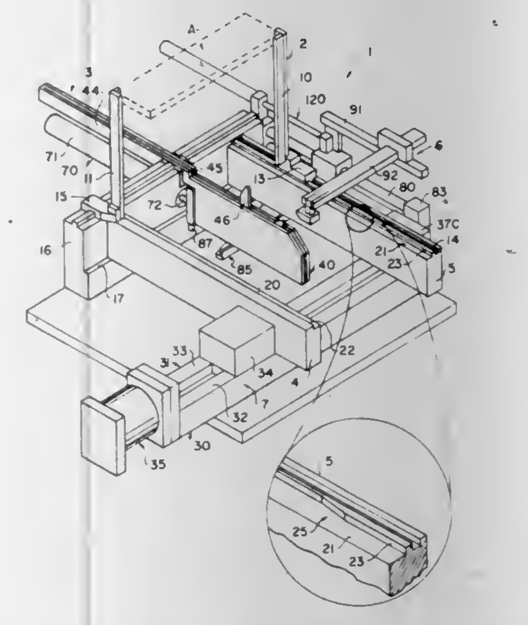
1. In an electron beam writing system for beam writing on work pieces, said system including:

- an electron beam vacuum chamber having internally a beam writing area,
- an access opening within said vacuum chamber to one side of the beam writing area,
- movable means mounted to said vacuum chamber for movement between a first position in sealing contact with said vacuum chamber about said access opening to define an antechamber with said opening and for closing and sealing said antechamber to said vacuum chamber and to the atmosphere and for movement away from said chamber to a second position remote therefrom to permit access to the interior of said antechamber and said electron beam vacuum chamber, and
- drive means for shifting said movable means between said first and said second positions,

the improvement comprising
- mechanical override means interposed between said drive means and said movable means for dampening impact during sealing contact between said movable means and said vacuum chamber and means for preventing vibration transfer, at the termination of movement of said movable means at said first and said second positions, to said vacuum chamber beam writing area to facilitate simultaneous beam writing on work at said beam writing area and loading and unloading of another workpiece through said access opening.

4,355,938
AUTOMATIC WORK PIECE CHANGER FOR A MILLING MACHINE AND THE LIKE

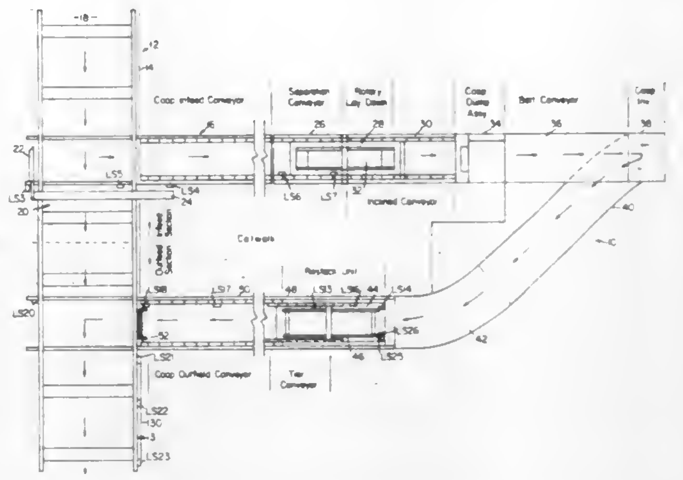
Jeffrey L. Page, 658 Cambridge Dr., Santa Clara, Calif. 95051
Filed Jun. 4, 1979, Ser. No. 45,339
Int. Cl.^{3} B65G *63/00*
U.S. Cl. 414—222 **32 Claims**



1. An automatic work piece changer having repetitive cycles of operation for use with a milling machine, drill press and the like comprising:
- a work piece hopper for storing a plurality of work pieces to be machined;
- means for moving each of said work pieces in succession from said hopper to a work station for machining;
- means for clamping each of said work pieces on their side at said work station so as to prevent horizontal and vertical movement during said machining thereof and to permit working all of the top surfce of the work piece; and
- means for ejecting machined work pieces from said changer.

4,355,939
PALLETIZED POULTRY COOP HANDLING SYSTEM

Harry J. Musgrave, P.O. Box 214, Nashville, Ark. 71852
Filed Dec. 27, 1979, Ser. No. 107,626
Int. Cl.^{3} B65B *21/02*
U.S. Cl. 414—413 **1 Claim**



1. Apparatus for automatically handling poultry coops containing live birds and arranged in tiers on a pallet to unload the birds from the coops, and to load tiers of empty coops onto an empty pallet, which comprises:
- means for unstacking a tier of poultry coops;
- means for dumping the birds from each unstacked coop to empty each of said coops;
- a coop infeed conveyor for advancing a tier of poultry coops toward said unstacking means;
- a coop outfeed conveyor adjacent said coop infeed conveyor and laterally spaced-apart therefrom, for advancing a tier of empty poultry coops along a defined path;
- a pallet conveyor extending transverse to said coop infeed conveyor and said coop outfeed conveyor, for receiving thereon a pallet carrying a tier of poultry coops containing live birds and moving the pallet to a position that places the tier of coops thereon in alignment with said coop infeed conveyor, and for advancing the pallet after the tier of coops is removed therefrom to a position in alignment with the end of said coop outfeed conveyor so as to be positioned to receive thereon a tier of empty coops;
- said pallet conveyor comprising an infeed pallet conveyor section and an outfeed pallet conveyor section, said infeed and outfeed pallet conveyor sections being independently operable; and
- a transfer conveyor extending transverse to the outfeed section of said pallet conveyor and disposed adjacent the end thereof, for receiving thereon a pallet transferred from said pallet conveyor;
- said outfeed section of said pallet conveyor comprising:
- first and second parallel, spaced-apart side frame members disposed transverse to said coop outfeed conveyor,
- a tiltable frame mounted for lateral tilting with respect to said side frame member,
- a plurality of rollers extending transversely to said side frame members and mounted to said tiltable frame, and means for tilting said tiltable frame to laterally transfer a pallet onto said transfer conveyor.

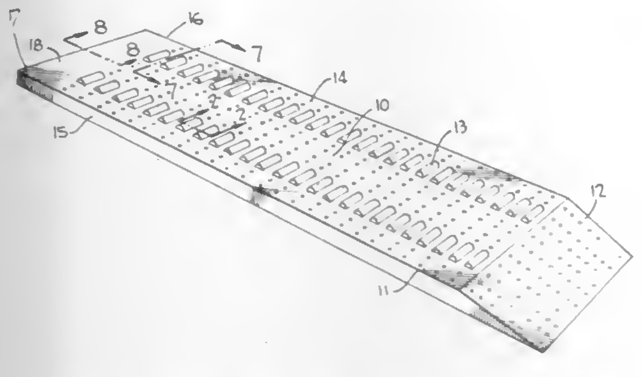
4,355,940
AUTOMATIC LOADING PLATFORM AND METHOD OF USING SAME

Edward E. Derickson, Mtd Rte., Alberta Dr., Aurora, Ind. 47025
Filed May 21, 1980, Ser. No. 151,872
Int. Cl.^{3} B65G *67/04*
U.S. Cl. 414—439 **19 Claims**

1. An automatic loading platform adapted for translational

movement and for loading and unloading a vehicle, said platform comprising:

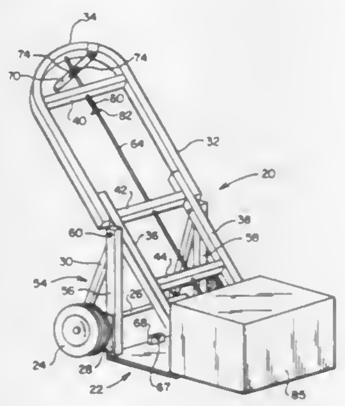
- (a) a frame having an upper surface;
- (b) first means on said frame movable in response to translational movement of said platform, said first means comprising at least one carrier roller and at least one rotatable wheel, each carrier roller comprising a drive shaft having a central air passageway and radially extending air passages connecting said central passageway to at least one air chamber defined by an expansible diaphragm and the periphery of said drive shaft; and
- (c) second means movable in response to movement of said first means, said second means adapted to support a load such that relative movement between said platform and said load occurs upon movement of said platform.



4,355,941
HAND TRUCK CONSTRUCTION

Clarence M. Lehman, 386 Schrock Rd., Worthington, Ohio 43085

Filed Jun. 2, 1980, Ser. No. 155,790
Int. Cl.³ B62B *1/02*
U.S. Cl. 414—490 **1 Claim**

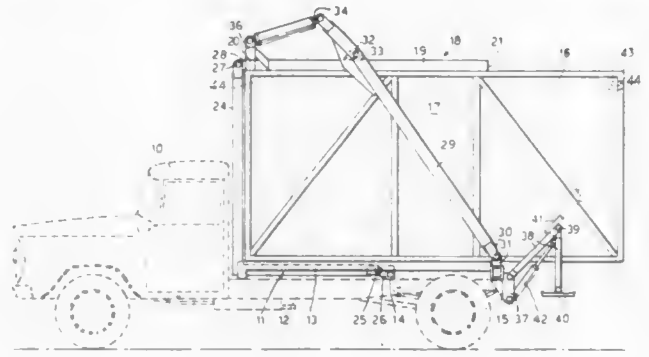


1. A portable load carrying hand truck comprising, in combination, a generally vertically disposed first frame portion pivotally connected at a position intermediate in ends to a second frame portion having an upper and lower end, said second frame portion normally disposed in parallel aligned relationship relative to said first frame portion, said first frame portion including an upper end forming an integral upper handle portion and a lower load engaging portion; said second frame portion having its upper end attached at said pivot connection and extending downwardly from said pivot connection with said first frame portion and including an axle means provided with wheel means and a platform fixed to and extending outwardly at approximately a right angle from the lowe end of said second frame portion; and means for releasably locking said first and second frame member in fixed paralle alignment with one another whereby said upper handle portion of said first frame portion is operable to manipulate said wheel means and platform into a load carrying position; and to independently pivot said lower load engaging portion of said first frame portion relative to said second frame portion upon release of said locking means; said locking means including an elongate rod member connected to said first frame portion for vertical slideable movement and disposed substantially along the vertical centerline of said first frame portion and includes a lower end portion extending downwardly towards said platform, a seat portion mounted on said platform adapted to receive said lower end portion to form a locked position; spring means mounted on said bar member to bias said bar member toward said seat and an actuating lever pivotally mounted at one end to said upper handle portion and to said rod member intermediate to the ends of said lever, the free end of said lever disposed closely adjacent to said upper handle portion for manipulation simultaneously with manipulation of said handle portion.

4,355,942
LOADING AND UNLOADING APPARATUS FOR VEHICLES

Keith O. Rolfe, 564 Zillmere Rd., Zillmere, Queensland, Australia (4034)

Filed Jul. 15, 1980, Ser. No. 169,028
Claims priority, application Australia, Jul. 23, 1979, PD9673; Jun. 3, 1980, PE3870
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—555 **8 Claims**



1. Loading and unloading apparatus for a vehicle having a chassis, comprising:

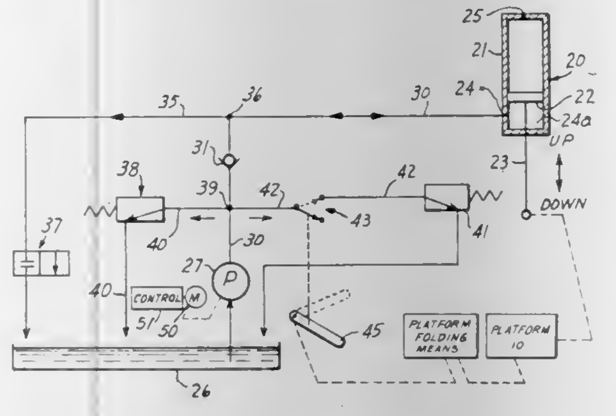
- (a) a lift assembly including a frame releasably connected to a load in the form of a cargo body holding material to be transported;
- (b) parallel motion links connecting said frame to said chassis of the vehicle, said links comprising a pair of L-shaped lifting links each having one end pivotally connected to the chassis of the vehicle, and a pair of stabilizing links of cranked form each having a main central section, a top arm extending substantially perpendicular from the top of said central section in one direction and pivotally connected to the frame, and a bottom arm extending substantially perpendicularly from the bottom of said central section in the opposite direction and pivotally connected to the chassis of the vehicle, and
- (c) means for moving said lifting and stabilizing links to move the cargo body, in parallelism, to either a carrying or loaded position supported on the vehicle, or to a loading or unloading position at or near ground level behind the vehicle.

4,355,943
VEHICLE GATE LIFT WITH PROTECTION AGAINST OPERATION WITH IMPROPER LOADS

Morris D. Robinson, 179 Via Los Miradores, Redondo Beach, Calif. 90277

Filed Sep. 17, 1980, Ser. No. 188,241
Int. Cl.³ B60P *1/48*
U.S. Cl. 414—557 **8 Claims**

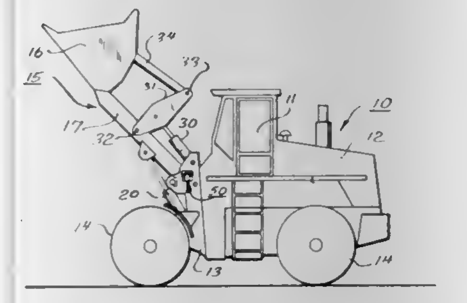
1. In combination with a vehicle tailgate lift of the type which includes a platform that is adapted to be raised and lowered in a lifting mode while substantially level, and which, at its upper limit is adapted to be tilted to open and close in a folding mode, both by actuation of a hydraulic actuator comprising a piston-cylinder combination having a power chamber at one side of said piston and a supply port providing access to said power chamber, a sump, and a source of hydraulic fluid under pressure, the improvement comprising: a supply and control circuit for said hydraulic actuator comprising a supply conduit connecting said source to said supply port; a return conduit connecting said supply port to said sump; a first open-closed selector valve in said return concuit adapted selectively to enable and to prevent flow of hydraulic fluid from said supply port to said sump; a first relief valve having a relief pressure setting to relieve pressure in said supply conduit at its relief pressure, and discharging when exposed to fluid at or above said relief pressure, discharging said fluid to said sump; a second open-closed selector valve connected between said supply conduit and said first relief valve; said second selector valve being adapted selectively to enable and to prevent flow from said supply conduit to said first relief valve; and a selector for setting platform folding means, which platform folding means prevents or causes a platform folding mechanism to fold said platform upon actuation of said actuator while said platform is near or at its uppermost position, said selector being connected to said second selector valve whereby to enable passage of fluid from said supply conduit to said first relief valve when said platform is to be folded, whereby the folding of the platform with a weight in excess of the weight of the platform itself is prevented by said first relief valve.



4,355,944
LOADER BOOM POSITION RETAINER

Donald D. Lorenc, Mundelein, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Dec. 27, 1977, Ser. No. 864,697
Int. Cl.³ E02F *9/24*
U.S. Cl. 414—685 **9 Claims**



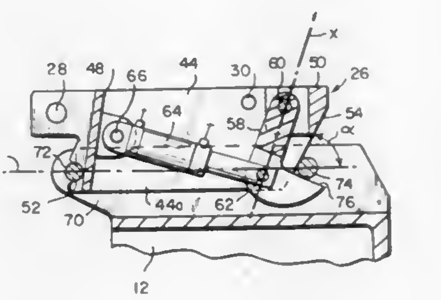
1. In a lifting apparatus having a lifting boom pivotally supported relative to a support frame and operable into a raised overhead position, a safety device for maintaining the lifting boom in the raised position comprising

- load bearing support means operatively connected to a support frame and positioned adjacent a movable lifting boom pivotally supported from the support frame for retaining the lifting boom in a raised position,
- said load bearing support means having an aperture formed therein located at a position beneath the movable lifting boom when the lifting boom is pivoted into the raised position, and
- lock pin means insertable through said aperture formed in said load bearing support means to prevent the lifting boom from pivotally moving downward from a raised position,
- bracket means carried by said load bearing support means and positioned adjacent said aperture formed therein, and
- retainer pin means operatively engageable with said bracket means to retain said lock pin means in said aperture.

4,355,945
TOOL MOUNTING APPARATUS

John S. Pilch, Ware, Mass., assignor to Ware Machine Service, Inc., Ware, Mass.

Filed Dec. 3, 1979, Ser. No. 99,518
Int. Cl.³ B66F *9/00;* E02F *3/74*
U.S. Cl. 414—686 **6 Claims**

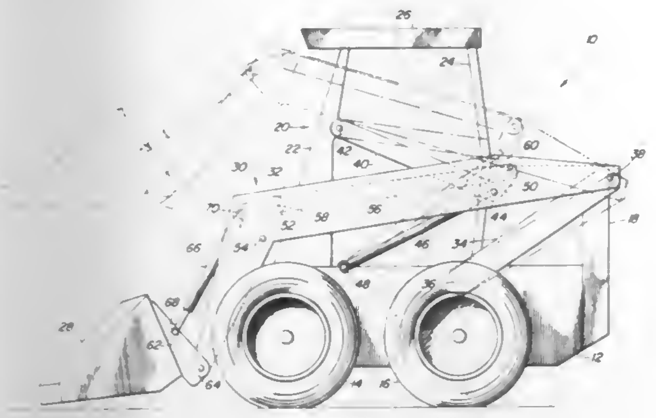


1. A tool mounting apparatus for detachably mounting a tool component to a carrier, said apparatus comprising:

- (a) a power hitch component mounted to said carrier, said power hitch component having a first contact surface with a leading end, an intermediate portion, and a trailing end;
- (b) first and second engagement members on said tool component;
- (c) notch means on said power hitch component, said first engagement member and said notch means configured to lockingly engage one another;
- (d) lock means mounted to said power hitch component for movement relative thereto, said lock means having a second contact surface with a leading end, an intermediate portion and a trailing end, said lock means being movable between an unlocked position and a locked position; and
- (e) means for moving said lock means between said unlocked and locked positions;
- (f) movement of said lock means from its unlocked position to its locked position causing relative movement between said second engagement member and said power hitch component from said intermediate portion toward said trailing end of said first contact surface and relative movement between said second engagement member and said lock means from said intermediate portion toward said trailing end of said second contact surface, said intermediate portion initially first contacting said second engagement member as said lock means moves from said unlocked position to said locked position;
- (g) movement of said lock means from its unlocked position to its locked position also causing relative movement between said power hitch component and said tool component for lockingly engaging said notch means and said first engagement member and clamping said tool component to said power hitch component.

4,355,946
LIFT ARM AND CONTROL LINKAGE STRUCTURE FOR LOADER BUCKETS

Lloyd A. Wykhuis, and Michael J. O'Neill, both of Mayville, Wis., assignors to Deere & Company, Moline, Ill.
Filed Sep. 29, 1980, Ser. No. 191,392
Int. Cl.^{3} B66F *9/00*
U.S. Cl. **414—707** **2 Claims**



1. In a loader vehicle including a longitudinal main frame, a pair of loader arms respectively located at opposite sides of the frame, a loader bucket vertically pivotally mounted to respective forward ends of the pair of loader arms; a pair of hydraulically extensible and retractable tilt actuators respectively connected between the pair of arms and the bucket, first and second pairs of guide links respectively located with one of each pair on each side of the frame and having opposite end portions pivotally connected to the frame and to the pair of arms, and a pair of hydraulically extensible and retractable lift actuators respectively coupled between opposite sides of the frame and the pair of arms, and the first and second pairs of guide links being so dimensioned and located relative to each other and the pair of loader arms that as the latter are lifted, through operation of the lift actuators, they follow respective paths which maintain the bucket at least as far forward in any raised position as it is in a fully lowered position, the improvement comprising: said first pair of guide links each being defined by two leg portions joined to be generally L-shaped and with the respective ends of one of the two leg portions of the pair of guide links being pivotally connected to the frame; and a self-levelling linkage means, formed in part by the pair of tilt actuators, connected between the bucket and another of the two leg portions of the first pair of guide links for maintaining the bucket in substantially the same attitude throughout the movement of the lift arms.

4,355,947
HOOK-TYPE CARRIAGE PLATE WITH FLOATING FORKS

Wayne T. Wiblin, Ashtabula, Ohio, assignor to Towmotor Corporation, Mentor, Ohio
Continuation-in-part of Ser. No. 648,442, Jan. 12, 1976, abandoned. This application Mar. 31, 1978, Ser. No. 892,055
Int. Cl.^{3} B66C *3/00*
U.S. Cl. **414—785** **1 Claim**

1. A carriage assembly for use on a lift truck, comprising:

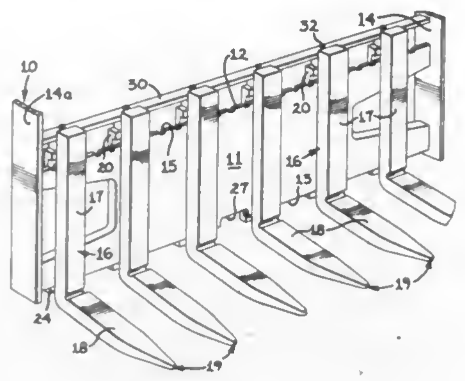
a hook-type carriage plate having upper and lower edges, a front, an upwardly facing horizontal track extending along the upper portion of said plate to form a horizontal guide member integral with said carriage plate, and a plurality of index notches along the upper edge of said plate,

a plurality of fork assemblies each having a vertical leg, a forwardly extending lower horizontal leg, and a rearwardly and downwardly extending upper hook secured to the upper end of said vertical leg, each fork assembly being mounted on said carriage plate for lateral sliding movement along said carriage plate, with said vertical leg being adjacent the front of said carriage plate and with said hook extending rearwardly across said upper edge of said carriage plate and down into sliding engagement with said track,

an elongated spacer bar separate from said carriage plate and removably positioned adjacent said fork assemblies in parallelism with said track,

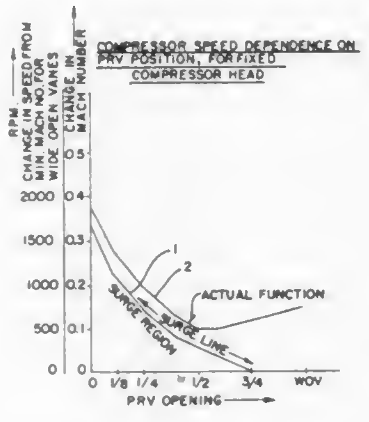
securing means for securing said spacer bar solely to said fork assemblies and for securing said fork assemblies to said spacer bar at predetermined points along the length of said spacer bar to position said fork assemblies along said track with the spacing between said fork assemblies in a direction along the length of said track being determined by the spacing between said predetermined points along the length of said spacer bar,

limit means for permitting said spacer bar to move lengthwise relative to said carriage plate and for preventing said spacer bar from moving lengthwise relative to said carriage plate more than a predetermined distance, said limit means comprising a stub secured to said spacer bar and extending into one of said index notches of said carriage plate, said stub being undersized relative to said notch.



4,355,948
ADJUSTABLE SURGE AND CAPACITY CONTROL SYSTEM

Kenneth J. Kountz, Hoffman Estates, Ill., and Dean K. Norbeck, York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 75,042, Sep. 12, 1979, Pat. No. 4,275,987. This application Feb. 17, 1981, Ser. No. 235,266
Int. Cl.^{3} F01D *17/02*
U.S. Cl. **415—1** **2 Claims**



1. A method of controlling surge and capacity of an inverter driven centrifugal compressor refrigeration system comprising the steps of:

deriving a signal indicating position of the adjustable inlet vanes of a centrifugal compressor of a refrigeration system,

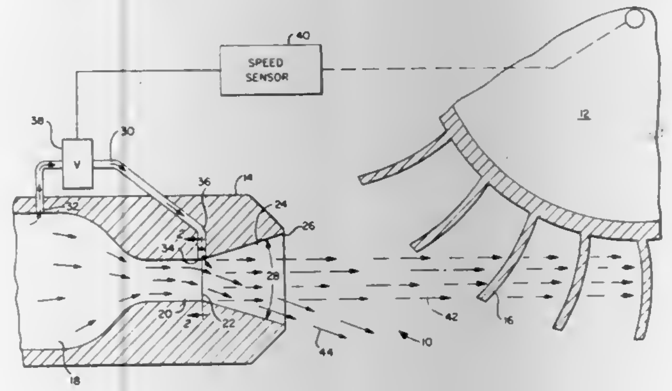
formulating a first output from said signal as a function of vane position,

formulating a second output from said signal as a function of speed deviation of the compressor from minimum Mach number based on said vane position, and

adjusting said first and second outputs to control the operation of a centrifugal compressor having unknown surging characteristics and avoid surge at all expected operating points.

4,355,949
CONTROL SYSTEM AND NOZZLE FOR IMPULSE TURBINES

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US80/00116, § 371 Date Feb. 4, 1980, § 102(e) Date Feb. 4, 1980
PCT Filed Feb. 4, 1980, Ser. No. 149,352
Int. Cl.^{3} F01D *17/06*
U.S. Cl. **415—35** **11 Claims**



1. A fluid impulse turbine system (**10**) comprising:

(a) a rotatably mounted turbine wheel means (**12**) rotated in response to a driving force from a jet driving fluid,

(b) speed sensing means (**40**) connected to sense the speed of said turbine wheel means (**12**),

(c) nozzle means (**14**) spaced from said turbine wheel means (**12**) and operative to selectively direct a jet of driving fluid from a nozzle opening (**26**) against said turbine wheel means (**12**), said nozzle means (**14**) including:

(1) a neck section (**20,46**)

(2) a diverging section (**24**) extending between said neck section (**20,46**) and said nozzle opening (**26**), said diverging section (**24**) tapering outwardly to said nozzle opening (**26**) from a juncture (**22,48**) with said neck section (**20,46**), and

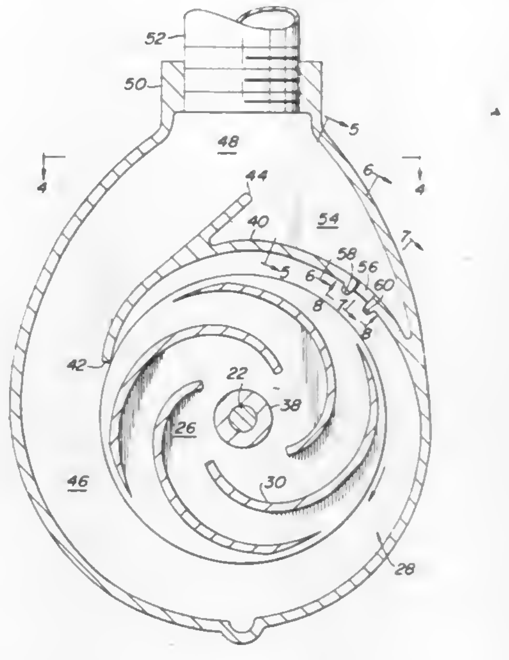
(d) fluid diverter means (**30, 38, 74**) mounted upon said nozzle means (**14**) and selectively operable to divert a flow of fluid from said neck section (**20,46**) outwardly at an angle to the common central axis of said neck section (**20,46**) and diverging section (**24**) to reduce the driving force applied by the jet of driving fluid from said nozzle opening (**26**) on the turbine wheel means (**12**), said fluid diverter means (**30, 38, 74**) acting to divert the flow of fluid from said neck section (**20,46**) at a location substantially aligned with the juncture (**22,48**) between said neck section (**20,46**) and said diverging section (**24**) by providing a flow of control fluid transverse to the flow of fluid from said neck section (**20,46**),

(e) said speed sensing means (**40**) operating to cause said fluid diverter means (**30, 38, 74**) to divert the flow of fluid from said neck section (**20, 46**) outwardly when the speed of said turbine wheel means (**12**) exceeds a desired speed.

4,355,950
SELF-PRIMING CENTRIFUGAL PUMP

Henry M. Pollak, 823 Brookside Rd., Pottstown, Pa. 19464
Filed May 27, 1980, Ser. No. 153,500
Int. Cl.^{3} F04D *9/02*
U.S. Cl. **415—53 R** **7 Claims**

1. A self-priming centrifugal pump comprising a casing having a pumping chamber, said casing having an inlet and an outlet communicating with said pumping chamber, said outlet being above the pumping chamber, a motor driven impeller in said pumping chamber for pumping a liquid from said inlet to said outlet, said casing having a priming chamber, said priming chamber being above the pumping chamber and communicating at one end with said outlet, a wall of said housing which separates said pumping chamber and priming chamber having a flow passage for recirculating a priming liquid from said priming chamber to the upper end portion of said pumping chamber at a location radially outwardly from said impeller, means for creating a discontinuity of flow in the pumping chamber at said passage so that priming liquid can be recirculated under the combined forces of gravity and suction acting to self-prime the pump, and said passage being sufficiently large so that it deaerates the priming liquid while supplying sufficient priming liquid to prevent a short circuit of gas from the outlet to the inlet during the priming of the pump.



4,355,951
FULL ADMISSION PITOT PUMP

Ronald D. Grose, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.
Continuation-in-part of Ser. No. 146,136, May 2, 1980, Pat. No. 4,304,104. This application Oct. 16, 1981, Ser. No. 311,975
Int. Cl.^{3} F04D *1/14*
U.S. Cl. **415—89** **9 Claims**

1. A full admission pitot pump comprising,

a rotatable outer housing means comprised of at least a first rotor housing member and at least a first stator housing member secured to said rotor housing member, said rotor housing member and said stator housing member having first and second ends,

said rotor housing member having a reduced diameter portion at its said first end and an enlarged diameter portion at its said second end,

said stator housing member having an enlarged diameter portion at its said first end and a reduced diameter portion at its said second end,

the second end of said first rotor housing member being secured to the first end of said first stator housing member,

a stator means positioned within said outer housing means,

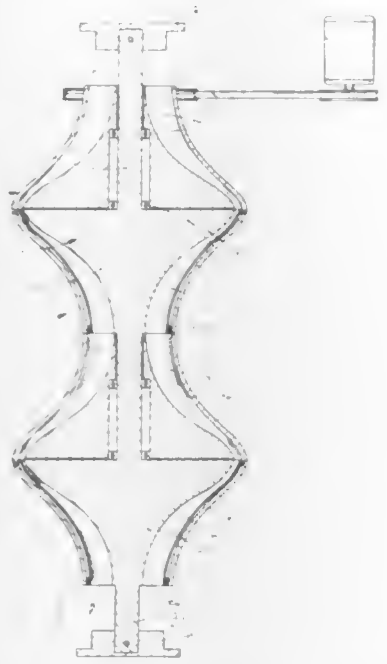
means for rotating said outer housing means relative to said stator means,

said stator means comprising a first stator portion positioned in said first rotor housing member and a second stator portion positioned within said first stator housing member,

said first rotor housing member including a first rotor portion which rotatably embraces said first stator portion,

said first rotor housing member and said first rotor portion

defining a plurality of spaced-apart passageways therebetween,
said second stator portion having a plurality of spaced-apart passageways formed therein,
said passageways in said rotor housing member and said second stator portion having inlet and discharge ends,
the discharge ends of said passageways in said first rotor housing member communicating with the inlet ends of said passageways in said second stator portion,
said passageways in said first rotor housing member extending outwardly from their said inlet ends to their said discharge ends,



said passageways in said second stator portion extending inwardly from their said inlet ends to their said discharge ends,
means for supplying fluid to the inlet ends of said passageways in said first rotor housing member,
the rotation of said outer housing means causing the fluid supplied to said inlet ends of said passageways in said first rotor housing member to be progressively increasingly compressed as it passes from the inlet ends of the passageways in said first rotor housing member to the discharge ends of the passageways in said second stator portion.

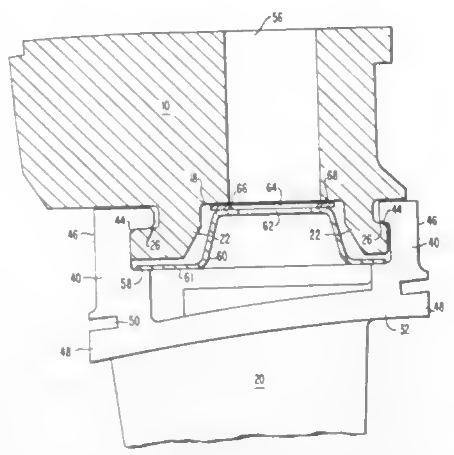
4,355,952

COMBUSTION TURBINE VANE ASSEMBLY

David L. Brown, Swarthmore, and Victor D. Miller, Jr., Parkside, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1979, Ser. No. 53,630
Int. Cl.^{3} F01D *5/18*
U.S. Cl. 415—115 **5 Claims**

1. A cooled vane and vane support assembly for a combustion turbine engine comprising:
an individual vane mounting block having inwardly projecting opposed spaced support means for generally axial sliding receipt of the vane and having an inwardly facing sealing surface defining an outlet from a cooling air aperture therethrough disposed between said spaced support means;
a vane having an outer shroud defining generally radially outwardly projecting opposed spaced support means each having an inwardly facing support surface in complementary engagement with an outwardly facing support surface of said support means on said mounting block;
a cooling air receiving chamber disposed between said opposed spaced vane support means and forming a part of said outer shroud and having an outwardly facing sealing surface defining entry to an opening therein generally coterminous with the aperture through said mounting block to provide for coolant air flow into said vane shroud;
means for directing leakage coolant air flow from said block aperture between said block and shroud sealing surfaces to said block and shroud support surfaces; and
said block and shroud support surfaces being related to each other such that a spacing with accurately predetermined tolerance exists between said block and shroud sealing surfaces to permit said leakage coolant flow in an amount which is sufficient to maintain pressure against turbine motive gas inflow without resulting in excessive coolant air loss.

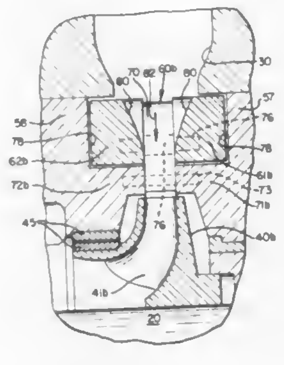


4,355,953

FLOW-ADJUSTED HYDRAULIC ROTARY MACHINE

Richard M. Nelson, Portland, Oreg., assignor to Guy F. Atkinson Company, Portland, Oreg.

Filed Apr. 7, 1980, Ser. No. 138,174
Int. Cl.^{3} F04D *29/56*
U.S. Cl. 415—164 **10 Claims**



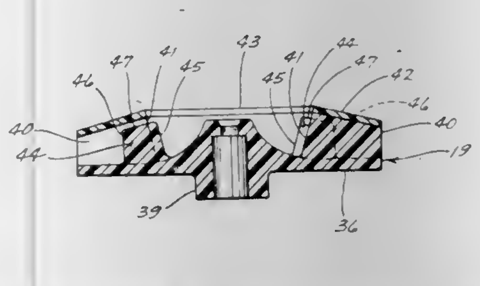
1. A hydraulic rotary machine comprising:
a case defining a stage in fluid communication between an inlet and a discharge;
a shaft rotatably disposed in the case and extending through the stage;
a bladed rotor secured to the shaft for rotation within the stage;
a pluraity of guide vanes uniformly spaced circumferentially about the rotor and generally tangentially oriented with respect to the periphery of the rotor;
a pair of stationary vane rings axially positioned on opposite sides of the guide vanes and surrounding the rotor;
pivot means for pivotally securing each guide vane to the stationary vane rings, each such pivot means having a pivot axis aligned parallel to the axis of the shaft;
a pair of rotatable vane rings axially positioned on opposite sides of the guide vanes radially outward from the pivot means, the rotatable vane rings and the stationary vane rings having opposed surfaces which cooperate with opposing surfaces of adjacent guide vanes to define flow passageways,
the opposed surfaces of the rotatable vane rings converging progressively toward one another and the opposing surfaces of the guide vanes converging progressively toward one another in a direction proceeding inwardly toward the bladed rotor such that the passageways maintain a streamlined shape and become progressively smaller in both radial and axial planes in such direction and in all positions of adjustment of the vanes; and
slide means for slidably securing each guide vane to the rotatable vane rings so that a rotation of the rotatable vane rings relative to the stationary vane rings changes the minimum cross-sectional areas of the passageways between guide vanes.

4,355,954

PUMP IMPELLER

James D. Wilson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Jul. 18, 1980, Ser. No. 170,111
Int. Cl.^{3} F04D *29/66, 1/04*
U.S. Cl. 415—213 B **13 Claims**



1. A centrifugal pump impeller rotatable in forward and reverse directions comprising: a base with a hub at the axis of rotation; a plurality of vanes fixed to said base and extending upwardly thereform, a first group of said vanes being spaced about said rotational axis with leading edges at a first radius spaced from said axis and with bodies extending outwardly toward the outer periphery of said base, a second group of said vanes being disposed between adjacent pairs of at least a portion of said first group of vanes with leading edges at a second radius closer to said rotational axis than the leading edges of said first group of vanes and with bodies extending outwardly and upwardly, said second group of vanes including vanes having at least a portion effectively reduced in axial height; and an impeller cover attached to at least a portion of one of said groups of vanes and axially spaced above the other group for defining a fluid passageway between the axial extremities of said other group of vanes and said impeller cover to reduce turbulent flow through said impeller when rotated in said reverse direction.

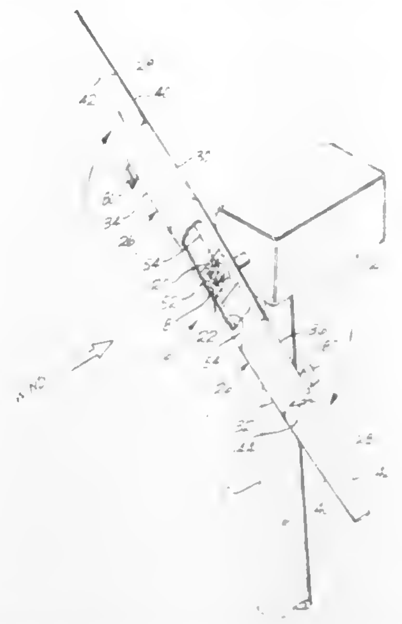
4,355,955

WIND TURBINE ROTOR SPEED CONTROL SYSTEM

Adrian V. Kisovec, Munich, Fed. Rep. of Germany, assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 6, 1981, Ser. No. 251,292
Int. Cl.^{3} F03D *7/04*
U.S. Cl. 416—23 **20 Claims**

1. A wind turbine rotor speed control system, comprising:
a fixed turbine blade adapted to be mounted on a shaft for rotation by the wind;
a pivotal blade tip mounted on each of the respective ends of the fixed blade, said blade tips being mounted on pitch axes substantially at right angles to the rotation axis of the fixed blade;
said fixed blade having trailing edges in opposite directions on opposite sides of the rotation axis;
a tab pivotally secured to and to trail from each of said respective trailing edges of said fixed blade;
each tab being adapted to be aligned with the relative wind on the fixed blade;
each tab being connected to a respective blade tip by linkage means;
each linkage means being adapted to pivot the respective blade tip in accordance with the action of the relative wind on the tab;
said pivoting of the blade tip effecting reduction of flapping and unloading of the tip blade, effecting unfeathering of the blade tip at the cut-in wind speed, effecting substantially constant blade R.P.M. from the cut-in to the rated wind velocity and at a gradually increasing shaft torque, and maintaining proper tip blade pitch schedule.

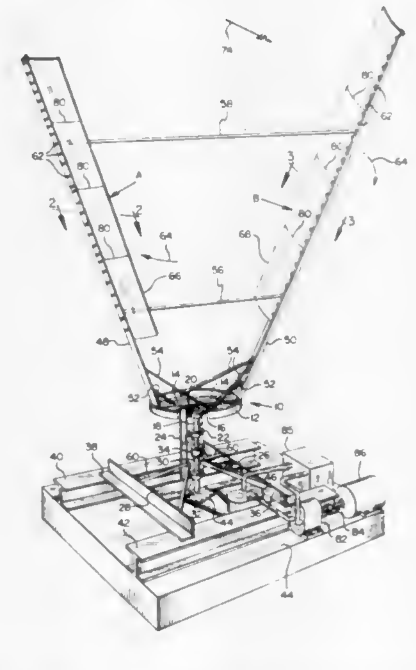


4,355,956

WIND TURBINE

James R. Ringrose, and Leonard G. Dahle, both of Portland, Oreg., assignors to Leland O. Lane, Newport, Oreg., by said James R. Ringrose

Filed Dec. 26, 1979, Ser. No. 106,919
Int. Cl.^{3} F03D *3/06*
U.S. Cl. 416—132 B **10 Claims**



1. A wind turbine for producing rotary motion in response to air currents, comprising:
a rotating frame having an axis of rotation and a first direction of rotation about said axis, and a base for rotatably supporting said frame, said frame having a plurality of rigid arms fixedly attached thereto, said arms extending angularly outwardly from said axis of rotation, each making an acute angle with said axis of rotation,
and a plurality of blades located radially outwardly from said axis of rotation of said frame, each being attached to a said rigid arm,
each said blade being supported by a said arm for movement

in said first direction of rotation about the axis of said frame, each said blade having a rigid connection with a said arm,

and each said blade having a trailing portion rearward of said rigid connection in respect to said direction of rotation which is formed of tough, flexible, resilient, plastic sheet material free to flex in response to air currents encountered by said blade, while having substantial restoring force to be substantially flat and having a lateral cross section in generally perpendicular relation to a radial direction between said axis and said blade when said blade portion is in an at-rest condition, wherein said blade portion flexes in one direction for part of a revolution of said frame when said air currents are in a relative direction toward said axis from said blade and flexes in the opposite direction when air currents are in a relative direction toward said blade from said axis for providing a component of force in said first direction of rotation.

4,355,957

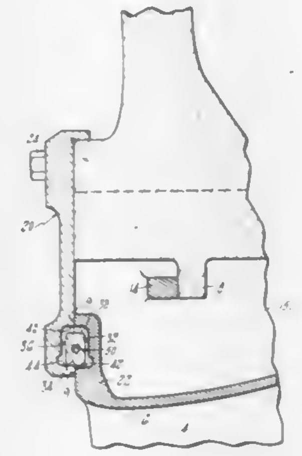
BLADE DAMPER

Perry P. Sifford, Jupiter, Fla., and Jerry H. Griffin, Pittsburgh, Pa., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 18, 1981, Ser. No. 274,897

Int. Cl.^{3} F01D *5/16*

U.S. Cl. 416—145 **5 Claims**



1. A rotor comprising a disc with blade connector means; blades being connected to said turbine disc around its periphery; each blade having an airfoil, platform, a root section, and a forwardly facing surface adjacent the platform; means for holding said blades in said disc against axial movement; said holding means including a cover plate fixed to said turbine disc and extending over all of the forwardly facing surfaces of adjacent blades; a plurality of said forwardly facing surfaces having a damper pocket located therein, each pocket having an inner and outer surface, said cover plate having an annular groove located therearound having an inner and outer cylindrical surface; each outer surface of each pocket being at an angle to and crossing the outer cylindrical surface of the annular groove; a stiff damper being positioned in each of a plurality of said pockets and extending into said annular groove; one end of said damper being supported by the outer surface of the annular groove in the cover plate and the other end of the damper being supported by the outer surface of the pocket when the dampers are thrown outwardly by centrifugal force.

4,355,958

ROTARY IMPELLER FOR FLUID DRIVEN MACHINE

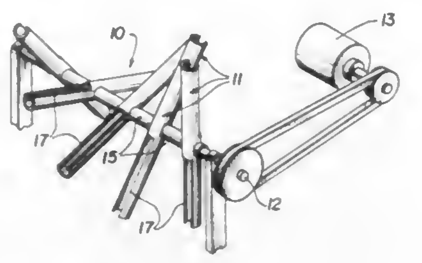
Roy C. Cornick, 2324 Ferry, Box 1447, Anderson, Calif. 96007

Filed Sep. 18, 1981, Ser. No. 303,591

Int. Cl.^{3} F03D *3/02*

U.S. Cl. 416—197 A **2 Claims**

1. An impeller for a fluid driven machine comprising an impeller shaft adapted for connection with a machine, a plurality of equal length equal diameter cylindrical cross section impeller blades fixed on said shaft substantially in equidistantly spaced relationship axially of the shaft, the impeller blades also being equidistantly spaced circumferentially of the shaft so as to define between adjacent blades equal acute angles around the circumference of the shaft, each impeller blade having a center full cylindrical hub portion provided with a through opening across the axis of the blade and coaxially of said shaft and receiving the shaft therethrough, and the opposite end portions of each impeller blade being cut away longitudinally of the blade on diametrically opposite sides of the blade from points defining the opposite ends of said hub to and through the opposite ends of the impeller blade, the opposite end portions of the impeller blade being straight and of equal length radially of said shaft and being cylindrically curved in cross section so as to define a pair of oppositely facing air scoops in relation to rotational movement of said shaft and the cylindrically curved wall of each scoop encompassing an arc greater than a half-cylinder around the longitudinal axis of each blade.



4,355,959

ROTATION SENSOR OF A SWASH-PLATE TYPE COMPRESSOR

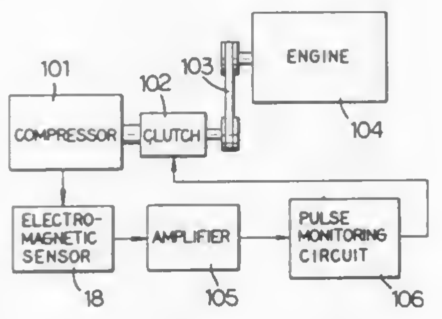
Hiroya Kono; Jun Hasegawa, both of Kariya; Mitsukane Inagaki, Anjo, and Hisao Kobayashi, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Oct. 8, 1980, Ser. No. 195,055

Claims priority, application Japan, Oct. 26, 1979, 54-138864; Aug. 26, 1980, 55-117572

Int. Cl.^{3} F04B *49/00*

U.S. Cl. 417—223 **14 Claims**



1. A rotation sensor for a swash-plate type compressor which includes a housing with at least one cylinder bore, a rotary shaft rotatably retained by said housing, a swash-plate secured thereto in a slant posture, and at least one piston engaged with said swash-plate for being reciprocated in said cylinder bore according to the rotation of said swash-plate, said rotation sensor comprising:

a part of the peripheral portion of said swash-plate as a portion-to-be-sensed; and

an electromagnetic sensor disposed at a position opposed to a part of a movement locus described by said portion-to-be-sensed according to the rotation of said swash-plate for generating an electric signal respondent to variation of magnetic flux density caused by every passing of said portion-to-be-sensed close thereto, said electromagnetic

sensor including a permanent magnet and a coil disposed in the vicinity thereof.

4,355,960

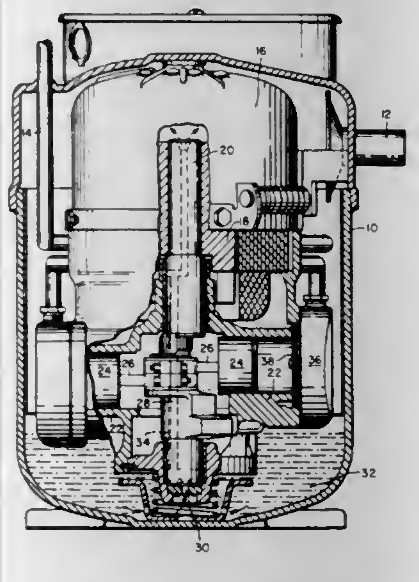
COMPRESSOR REFRIGERATION SYSTEM UTILIZING THERMALLY STABLE REFRIGERATION LUBRICANTS CONTAINING ALKYL POLYHALOPHENYL ETHERS

Gordon C. Gainer, Penn Hills, and Russell M. Luck, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

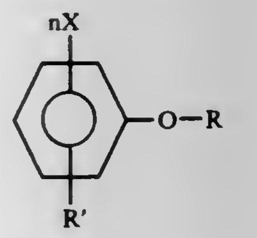
Filed Jun. 9, 1980, Ser. No. 157,995

Int. Cl.^{3} C10M *1/30;* F04D *17/00*

U.S. Cl. 417—419 **9 Claims**



1. A compressor refrigeration system employing a halocarbon refrigerant, having a lubricant composition in contact with the halocarbon refrigerant, the lubricant composition having lubricity and chemical and thermal stability in the presence of halocarbon refrigerant at temperatures of up to 130° C., the lubricant composition consisting essentially of a thermally stable oil containing a minor amount of a thermolubricity additive having the chemical formula:



where R=an alkyl group having from 4 to 18 carbon atoms, n=a number from 1 to 4, X=CL, F and their mixtures and R′ is a group selected from the group consisting of CL, F, H, alkyl having from 4 to 18 carbon atoms, phenyl, phenoxy, and mixtures thereof, said additive being substantially completely soluble in the oil over the expected temperature range of the refrigeration system, the additive providing for good lubricity and thermal stability in the lubricant composition at cold start-up, and at hot compressor operating temperatures while in vapor contact with hot halocarbon refrigerant, and the lubricant composition being highly resistant to chemical reaction with the halocarbon and/or the materials in the refrigeration system at the expected temperatures and operating conditions of the refrigeration system.

4,355,961

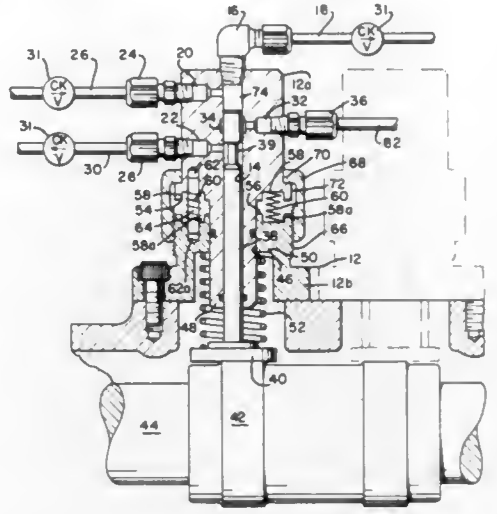
CONTROLLING MEANS FOR A FUEL VALVE

Thomas C. Riggs, Okmulgee, Okla., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 3, 1978, Ser. No. 892,699

Int. Cl.^{3} F04B *7/04*

U.S. Cl. 417—494 **8 Claims**



1. Means for controlling a hydraulically-operated fuel valve, comprising:

a housing;

said housing having a chamber-defining bore formed therein;

means for admitting hydraulic fluid into said bore-defined chamber;

means for expelling hydraulic fluid from said chamber, to operate a hydraulically-operated fuel valve; and

means for receiving hydraulic fluid which has been expelled by said expelling means and conducting the same through said bore, for venting thereof from said housing; wherein

said receiving and conducting means comprises a pair of spaced apart ports, each of said ports opening externally of said housing and internally onto said bore;

said expelling means comprises valving means movable within said bore for opening and closing said ports to and from communication with each other for given periods of time; and

said housing further has means selectively operative for altering movement of said valving means relative to said housing, correspondingly to alter said given periods of time.

4,355,962

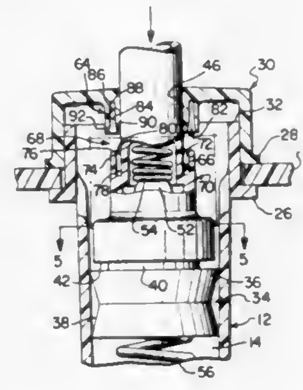
PUMP DISPENSER WITH SEALING PLUNGER

Wallace F. Magers, Leawood, Kans., assignor to Realex Corporation, Kansas City, Mo.

Filed Dec. 26, 1979, Ser. No. 106,924

Int. Cl.^{3} F04B *21/04, 39/10;* G01F *11/02*

U.S. Cl. 417—552 **3 Claims**



1. In a liquid dispensing pump having a piston that is oper-

ated within the hollow body of the pump by a plunger that reciprocates axially through an opening in a collar at one end of the pump body, the improvement comprising a direct seal between the collar and the plunger when the latter is at one end of a stroke for preventing leakage through said opening, said seal including:

an annular projection as one part of said seal; and

means defining an annular groove as the other part of said seal and disposed for matingly receiving said projection;

said parts comprising portions of the collar and the plunger respectively,

said sealing portion of the plunger being separate from said piston, spaced axially from the latter, and immobile relative to the remainder of the plunger,

said groove having an outermost annular mouth, an innermost annular root, and a pair of opposed sidewalls extending between said mouth and said root,

said projection having an outermost tip and a cross-sectional thickness dimensioned to cause the projection to wedge into sealing engagement with said sidewalls of the groove at said one end of a stroke before the tip engages said root, the point at which said wedging occurs thereby determining the length of the stroke.

4,355,963

HORIZONTAL ROTARY COMPRESSOR WITH OIL FORCED BY GAS DISCHARGE INTO CRANKSHAFT BORE

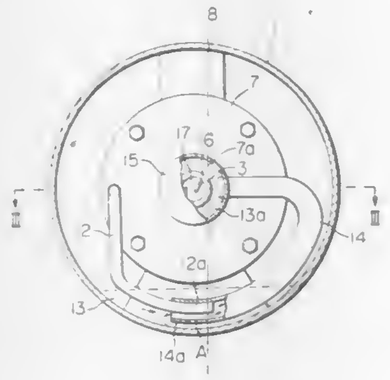
Hideharu Tanaka, Amagasaki; Koji Ishijima, and Toshihide Koda, both of Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1979, Ser. No. 99,727

Claims priority, application Japan, Dec. 28, 1978, 53-166076; Jan. 5, 1979, 54-512[U]

Int. Cl.^{3} F04C *18/00, 29/02;* **F16N** *7/30, 21/00*

U.S. Cl. 418—63 2 Claims



1. A horizontal rotary type compressor comprising:

a closed shell;

a rotary compression unit housed within said closed shell, said rotary compression unit having a cylinder, a cylinder head and a frame enclosing both ends of said cylinder, a piston eccentrically rotatable in said cylinder about an axis extending horizontally, a crankshaft fitted in said piston and having a central axial lubrication bore, and a vane dividing the space defined within said cylinder by said piston, cylinder head and frame into a suction and compression chamber;

said rotary compression unit further having a refrigerant discharge port;

a refrigerant gas discharge pipe connected at one end to said refrigerant gas discharge port and having the other end arcuately shaped and positioned below the surface level of lubricant oil accumulated in the bottom of said closed shell;

and

a lubricant oil-gas feed tube having one end arcuately shaped and disposed below the surface level of lubricant oil in the bottom of said closed shell and having the other end opening into said central lubrication bore in said crankshaft, said other end of said refrigerant gas discharge pipe extending into said one end of said lubricant oil-gas feed tube, the portions of said discharge pipe and oil-gas feed tube which are below the surface level of lubricant oil being of substantially uniform diameter, said lubricant oil-gas feed tube portion having a larger diameter than said refrigerant gas discharge pipe portion for leaving a lubricant oil induction gap between the inner periphery of said lubricant oil-gas feed tube and the outer periphery of said other end of said refrigerant gas discharge pipe within the one end of said lubricant oil-gas feed tube, whereby lubricant oil accumulated in the bottom of said closed shell is supplied to said lubrication bore in said crankshaft by the injection of refrigerant gas discharged from said compression chamber into said lubricant oil-gas feed tube through said refrigerant gas discharge pipe.

4,355,964

GEAR PUMP HAVING FLUID DEAERATION CAPABILITY

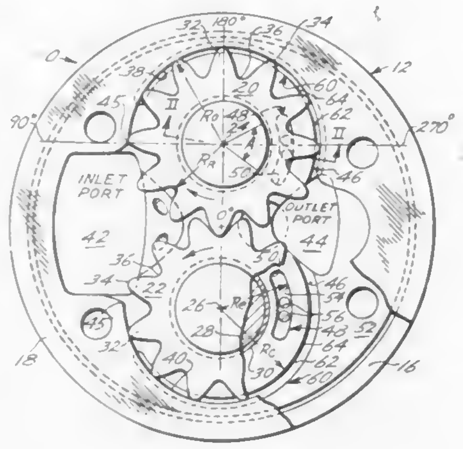
Scott A. Rodibaugh, and Delwin E. Cobb, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01087, § 371 Date Aug. 22, 1980, § 102(e) Date Aug. 22, 1980, PCT Pub. No. WO82/00689, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 22, 1980, Ser. No. 251,526

Int. Cl.^{3} F01C *1/18, 21/00;* **F04C** *2/18, 15/00*

U.S. Cl. 418—76 11 Claims



1. In a gear pump (10) having a housing (12) defining first and second intersecting cavities (38,40) and inlet and outlet ports (42,44), first and second intermeshing gears (20,22) having a plurality of teeth (32) and a plurality of teeth roots (36), each gear (20,22) being positioned respectively in one of the first and second cavities (38,40), the improvement comprising:

bleed port means (48) for communicating entrained air collected in the fluid at said gear teeth roots (36) as a result of centrifugal force away from said inlet and outlet ports (42,44), said bleed port means (48) including a bleed slot (50) defined in said housing (12) and communicating directly with said gear teeth roots (36) in a preselected angular region of each of said cavities (38,40); and

charging passage means (60) for communicating fluid under pressure at said outlet port (44) with said teeth (32) and encouraging the movement of entrained air radially inwardly toward said bleed slots (50), said charging passage means (60) including a charging slot (62) defined in said housing (12) and being located radially outwardly of each of said bleed slots (50), said charging slots (62) extending peripherally from said outlet port (44) back through the 180° point relative to a zero degree position of intermeshing contact of said gears (20,22).

4,355,965

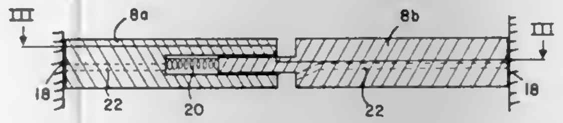
ROTARY SLIDING VANE DEVICE WITH RADIAL BIAS CONTROL

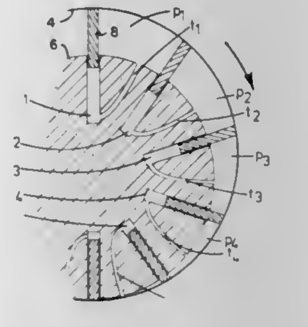
Frank E. Lowther, Buffalo, N.Y., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 4, 1980, Ser. No. 118,397

Int. Cl.^{3} F01C *19/08, 21/04;* **F04C** *18/00, 29/02*

U.S. Cl. 418—111 1 Claim





1. A rotary sliding vane fluid device comprising:

a casing having a chamber;

a rotor disposed for rotation within said chamber;

a vane slidably mounted in a slot within said rotor and extending outward toward the interior wall of said chamber and disposed for outward and inward movement relative to said rotor in response to rotation thereof, said vane having a longitudinal passage therethrough, said vane further comprising:

a pair of interlocking elements, each of said pair of interlocking elements is ported to permit fluid flow therethrough to the axial end portions thereof to supply a lubricating film of fluid at said ends of said vane;

means disposed between said interlocking elements to bias said interlocking elements apart and toward the side walls of said chamber; and

a port in said rotor extending from said the lower end of said slot to the surface of said rotor at a point forward of said vane to permit flow of fluid from said chamber to beneath the lower end of said vane whereby the pressure of said fluid within said chamber is applied to said vane to vary the bias of said vane against said chamber as said rotor rotates within said chamber and to supply fluid through said longitudinal passage in said vane to provide a lubricating film of fluid to the tip regions of said vane.

4,355,966

AUTOMATIC CONTROL OF BUBBLE SIZE IN BLOWN FILM

Edward E. Sweeney, Wenonah, and Paul N. Magowan, Moorestown, both of N.J., assignors to E. B. Westlake, Jr., Havertown, Pa., a part interest

Filed May 4, 1981, Ser. No. 260,006

Int. Cl.^{3} B29D *23/04*

U.S. Cl. 425—140 9 Claims

1. In apparatus for making blown film including a cooling tower, nip rolls at the top of the tower engaging the film, a die at the bottom of the tower through which the film is extruded, and means delivering air or gas under pressure to the film to blow it into a bubble; a means to automatically control the size of the bubble above its frost line so that it maintains a predetermined diameter comprising:

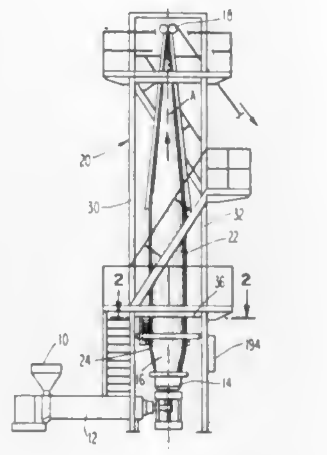
(a) guide and centering means mounted on said tower above and adjacent the die to maintain the bubble centered along an axis between the center of the die and the juncture of said nip rolls,

(a′) said guide and centering means including rotatable rolls engaging the front, back and sides of the bubble and means to adjustably move said rolls in unison,

(b) light sources mounted to move with said guide and centering means and at predetermined locations relative to the surface of the bubble,

(c) light sensors mounted in alignment with said source to move with said guide and centering means,

(d) normally closed valves operatively connected to said sensors, and



(e) a source of compressed air or gas operatively connected to the valves of two of said sensors

whereby when the diameter of the bubble is undersized the beam of one of said light sources will be spaced outwardly of the bubble and said one sensor aligned therewith will cause its valve to open and deliver air or gas to the undersized bubble until it is restored to its predetermined diameter, and when the diameter of the bubble is oversized the beam of another of said light sources will intersect the bubble and the sensor aligned with said other light source will cause its valve to open and vent air or gas from the oversized bubble until it is restored to its predetermined diameter.

4,355,967

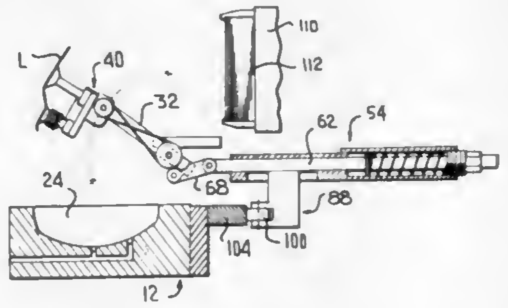
LABEL APPLYING DEVICE

Ernest W. Hellmer, Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Sep. 30, 1980, Ser. No. 192,393

Int. Cl.^{3} B29C *17/07;* **B65H** *3/08, 3/46*

U.S. Cl. 425—503 13 Claims



1. A transfer device for transferring a label and like sheet from a stack to a moving member, said transfer device comprising an arm mounted for pivoting about a fixed first pivot axis defined by a first pivot shaft for movement between a position adjacent a stack to a position adjacent a moving member and return, a transfer head having transfer means for picking up and discharging labels and like sheets, a second pivot shaft pivotally mounting said transfer head on said arm for movement with said arm and for pivoting relative to said arm about a second pivot axis movable with said arm wherein said

transfer head moves from a generally vertical position adjacent a stack to a generally horizontal position adjacent a moving member, and actuator means for effecting pivoting of said transfer head relative to said arm in response to pivoting of said arm; said actuator means including a first pulley fixed to said transfer head and movable about said second pivot axis, a second pulley mounted on said first pivot shaft and fixed against rotation about said first pivot axis, and belt means interconnecting said pulleys.

4,355,968
APPARATUS FOR PRODUCING HOLLOW PLASTIC BOTTLES BY THERMAL HEATING AND BLOW MOLD EXPANSION

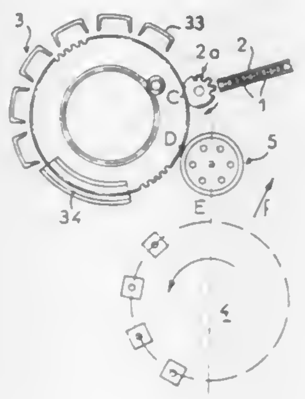
Serge Lagoutte, Buxy, and Alain G. Franchet, St. Etienne du Rouvray, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Mar. 19, 1981, Ser. No. 245,305

Claims priority, application France, Mar. 26, 1980, 80 06668

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 **11 Claims**



1. An installation for manufacturing hollow bodies, such as bottles, by thermally treating and then blow molding cylindrical blanks (1) made of a plastic material with one extremity closed and one extremity open forming a neck, said installation comprising:

(a) a thermal treatment station (3) including a turntable (9), a stationary table (32) surrounding said turntable, a plurality of heating devices (33) mounted around a peripheral portion of said stationary table, a plurality of blank support devices (15) mounted on the turntable and rotatable therewith in close proximity to said heating devices, and means for inverting said blank support devices when entering and leaving said peripheral portion of the stationary table mounting said heating devices such that blanks carried by said support devices have their neck openings directed upwardly outside said peripheral portion and downwardly inside said portion,
(b) a station (2, 2*a*) for individually supplying blanks to said support devices,
(c) a blow molding station (4), and
(d) a station (5) for transferring blanks from said support devices after leaving said peripheral portion to said blow molding station.

4,355,969
ELECTRICALLY CHARGED, EMULSIFIED CARRIER-FUEL PARTICLE COMBUSTION

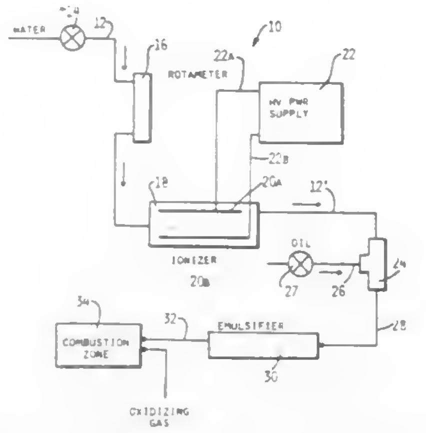
Kenneth L. Nelson, Traverse City, Mich., and David FitzGerald, North Hampton, Pa., assignors to FND Company, Traverse City, Mich.

Filed May 29, 1980, Ser. No. 154,390

Int. Cl.³ F23J *7/00;* **F02M** *7/00;* **F02G** *3/00;* **C10L** *1/32*

U.S. Cl. 431—4 **4 Claims**

1. A method of improving the combustion process between a fuel and an oxidizing gas in a combustion zone comprising the steps of creating negatively charged ions in water forming an emulsion of charged water and an oil fuel and introducing said emulsion as oil coated droplets, and an oxidizing gas into the combustion zone, heating the sroplets to cause said droplets to explode and burst the oil fuel into dispersed oil fuel particles, and combusting the dispjersed oil fuel particles.



4,355,970
PRESSURE RESPONSIVE SAFETY VALVE FOR GAS BURNER

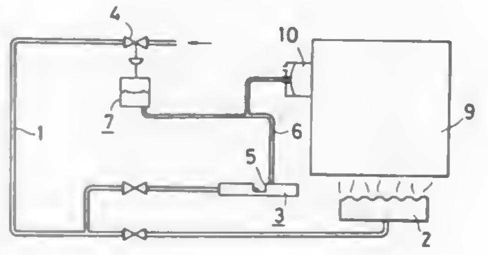
Kouichirou Kitagawa, Tokyo, and Eiichi Kanno, Yokohama, both of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1978, Ser. No. 880,665

Claims priority, application Japan, Feb. 23, 1977, 52/18860; May 2, 1977, 52/51070; Sep. 14, 1977, 52/110834; Dec. 9, 1977, 52/148584

Int. Cl.³ G05D *23/12*

U.S. Cl. 431—77 **6 Claims**



1. A safety device for a gas burner including an inflammable gas pipe and valve means disposed in said gas pipe, comprising: a first ignition means formed on an end portion of said gas pipe; an inflammable gas guide tube having one end facing first ignition means; a second ignition means formed on the other end of said guide tube; a branch pipe having one end connected to said gas pipe between said valve means and said first ignition means and the other end connected to burner means, said second ignition means facing said burner means; means for detecting the pressure in said guide tube comprising a pressure sensing device and a pressure sensing tube connected between a portion of said guide and said pressure sensing device, said pressure sensing tube being branched into two portions, one portion being connected to said pressure sensing device and the other portion being connected to an overheat-sensing valve on a vessel heated by said burner means; and means for controlling said valve means in response to a pressure variation in said guide tube.

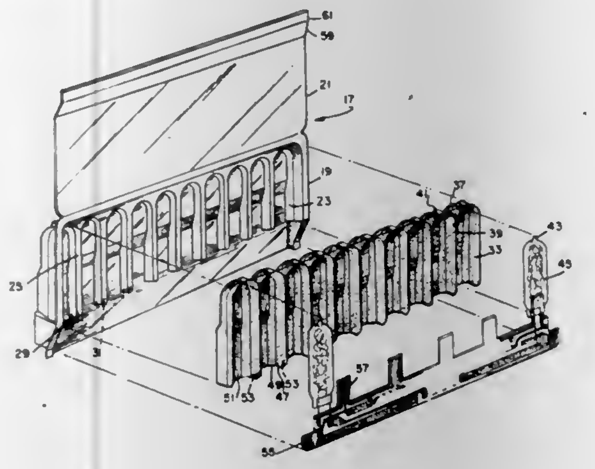
4,355,971
VENTED MULTI-LAMP PHOTOFLASH UNIT

David R. Broadt, Lewisburg, and John W. Shaffer, Williamsport, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 29, 1980, Ser. No. 221,132

Int. Cl.³ F21K *5/02*

U.S. Cl. 431—359 **11 Claims**



1. In a multi-lamp photoflash unit having a housing member with a back portion and a front portion, said back portion formed to provide a plurality of spaced cavities, each contoured to receive a flashlamp and said front portion having a light transmitting portion formed to fold over and enclose said flashlamps within said cavities, the improvement wherein a venting aperture is disposed intermediate at least one pair of said spaced cavities of said back portion of said housing.

4,355,972
TRAVELLING BAKING OVEN

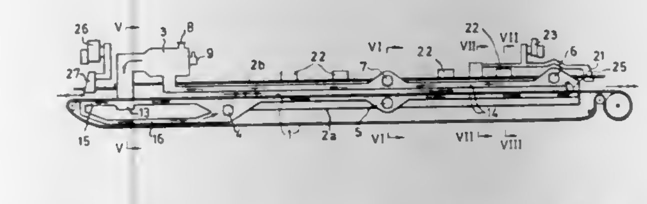
John R. Stamper, Stamford, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Feb. 17, 1981, Ser. No. 234,813

Claims priority, application United Kingdom, Feb. 19, 1980, 8005599

Int. Cl.³ F27B *5/04;* **A23L** *3/00;* **F27B** *3/22*

U.S. Cl. 432—148 **7 Claims**



1. A multi-zone, indirect-heated, travelling baking oven, comprising: means defining a tunnel-like baking chamber; means for conveying articles to be baked through the baking chamber along a path of travel from an input end thereof to a delivery end thereof; gas duct means defining a closed-circuit gas heating system and conducting the gas flow beneath at least the major part of said path to adjacent said delivery end and then back above at least the major part of said path; fan means for passing said gas flow around said gas duct means beneath said path generally in the same direction as said conveying means and above said path generally in the opposite direction to said conveying means; and at least two heaters associated with said duct means for heating the gas in said heating system and spaced apart in the direction of gas flow in said heating system, one said heater being adjacent said input end of the oven and of much larger capacity than the, or each, further said heater, whereby the temperature generally falls throughout said heating system for adjacent said input end below said path to adjacent said input end above said path and the maximum bottom heat is adjacent said input end and the maximum top heat is adjacent said delivery end, thereby providing a multi-zone, indirect-heated baking chamber.

4,355,973
RADIANT HEATING APPARATUS

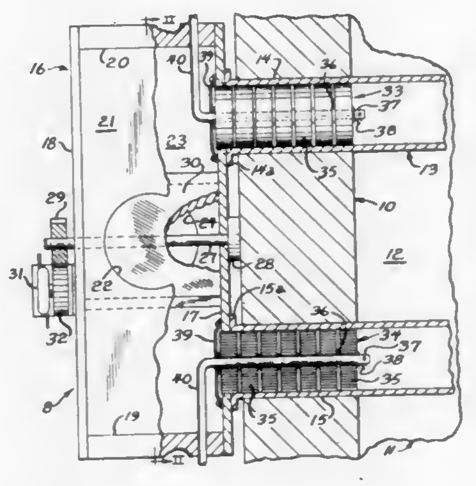
John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00210, § 371 Date Feb. 17, 1981, § 102(e) Date Feb. 17, 1981

PCT Filed Feb. 17, 1981, Ser. No. 277,747

Int. Cl.³ F27B *5/14;* **F24C** *3/00*

U.S. Cl. 432—209 **12 Claims**



1. In a radiant heating apparatus of the type which has wall means (10,11) of substantial thickness defining a chamber (12) to be heated, a tube (13) in the chamber with first and second end portions (14,15) extending through the wall means (10,11) fuel gas supply pipes (40,210) and air inlet means (16,121,221) through which a combustible air-fuel mixture is supplied to the tube to be burned therein, and combustion gas outlet means (24/25,124,224) through which combustion products from the tube pass, the improvement comprising:

first and second regenerator cores (33/34,233,234) in the respective first and second end portions (14,15) of the tube (13), each of said cores having an outer end and an inner end, having a large surface area over which gases may flow freely, and occupying substantially the entire portions of the tube that are within the thickness of the wall means;
fuel gas supply pipes (40,210) for supplying fuel gas to the tube (13) adjacent both end portions (14,15) thereof;
air inlet means (16,121,221) for supplying combustion air to both end portions (14,15) of the tube (13);
and cycling means (30/126/226,299) to control flow of fuel gas and air into the tube (13) to be burned therein, said cycling means causing combustion air to flow through the first regenerator core (33,233) and causing gas to flow to be mixed with said combustion air and burned inwardly of said first core (33,233), thereby producing hot combustion products which heat the second regenerator core (34,234) as they pass to the outlet means (24/25,124,224) and said cycling means then causing combustion air to be heated as it flows through the heated second regenerator core (34,234), to be combined with fuel gas and burned immediately inwardly of said second core (34,234), thereby producing hot combustion products which flow over and heat the first regenerator core (33,233) as they pass to the outlet means (24/25,124,224).

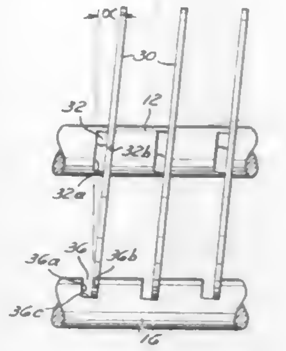
4,355,974
WAFER BOAT

Eui-Wan Lee, Eggertsville, N.Y., assignor to ASQ Boats, Inc., Torrance, Calif.

Filed Nov. 24, 1980, Ser. No. 209,905

Int. Cl.^{3} B05C *13/02*

U.S. Cl. 432—253 **10 Claims**



1. A carrier for supporting semiconductor wafers during processing of the wafers including means defining a plurality of closely spaced, parallel slots for receiving and supporting a plurality of wafers in a generally edgewise position, the improvement wherein the width of a slot is such that a wafer can be easily installed and removed from a slot and will at no time become wedged in the slot during the processing of the wafers or handling of the carrier, and said slots including side slots for engaging side edges of said wafers and which are formed by spaced, parallel walls which are oriented at a slight angle with respect to vertical and the wafers each lean in the same direction against a corresponding wall in each slot and thereby are supported in spaced parallel relation to each other at the same angle as the side slot wall angle.

4,355,975
ORTHODONTIC APPLIANCE

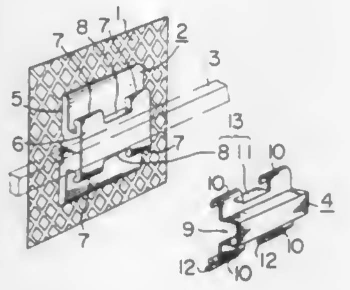
Kinya Fujita, No. 326, Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan

Filed Dec. 15, 1980, Ser. No. 216,736

Claims priority, application Japan, Feb. 8, 1980, 55-14414

Int. Cl.^{3} A61C *7/00*

U.S. Cl. 433—11 **9 Claims**



1. In an orthodontic appliance comprising an upright plate adapted to be fixed to a tooth, a bracket having a surface fixed to said plate and a bracket body extending laterally away from said plate, and an orthodontic arch wire attachable to said bracket body and effective for correcting improper positioning of the tooth, the improvement which comprises the combination: said bracket body has cap-retaining means which are accessible from a direction substantially perpendicular to the lengthwise extent of said orthodontic arch wire, said cap-retaining means being defined by a pair of lips respectively projecting upwardly and downwardly from said bracket body, said lips being undercut on the sides thereof that face said plate so that each lip has an enlarged protuberance at the outer end thereof; an elastically flexible cap removably attached to said bracket body, said cap having elastically flexible connection means releasably interlocked with said cap-retaining means, said elastically flexible connection means being defined by elastic wall portions at the upper and lower ends of said cap with the edges of said elastic wall portions being bent toward each other so that they releasably snugly embrace said enlarged protuberances of said lips, said cap being attachable to and removable from said bracket body by elastic bending of said elastically flexible connection means when said cap is moved in directions respectively toward and away from said cap-retaining means, said bracket body and said cap having cooperating means effective for preventing movement of said cap along said bracket body in a direction lengthwise of said orthodontic arch wire, said cap having removing means for detaching said cap from said bracket body by elastically bending said elastically flexible connection means; said bracket body and said cap having cooperating complementary elongated wall means defining a horizontally elongated groove which is closed at its lateral sides and is open at its longitudinal ends, said orthodontic arch wire extending lengthwise through said groove and being snugly confined therein by said wall means so that said orthodontic arch wire contacts said bracket body, the horizontal length of said groove being several times larger than the width and height of said groove so that the length of the zone of contact between said orthodontic arch wire and said bracket body is several times as large as the width of said orthodontic arch wire.

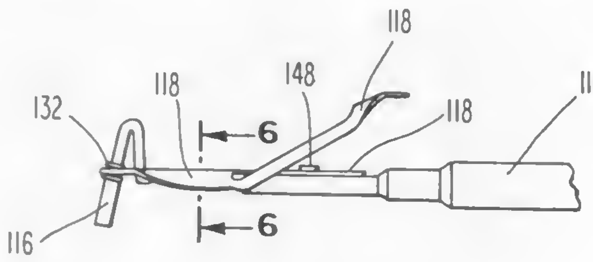
4,355,976
AMALGAM CARRIER WITH UNITARY SPRING LEVER MEMBER

Vincent A. Berner, Middleton, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 30, 1981, Ser. No. 306,993

Int. Cl.^{3} A61C *3/08*

U.S. Cl. 433—83 **8 Claims**



1. A dental amalgam carrier comprising

an open-ended barrel member for carrying said amalgam,

a cylindrical handle,

a plunger rod having one end extending axially rigidly from a first end of said handle, free end of said plunger rod slidable within said barrel member,

a spring lever adjustably mounted to said handle adjacent said first end thereof in longitudinal alignment therewith, said spring lever having an opening at a forward portion thereof for engaging said barrel while said barrel is carrying said free end of said plunger rod therein,

said spring lever comprising an unitary member devoid of separate spring means coacting therewith such that depression of said spring lever causes said free end of said plunger rod to transfer amalgam from said barrel member, and said spring lever returns to its undepressed position.

4,355,977
CORDLESS HANDPIECE FOR DENTAL TREATMENT

Sadayasu Ota, Kyoto, and Takeo Uchiya, Oomiya, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

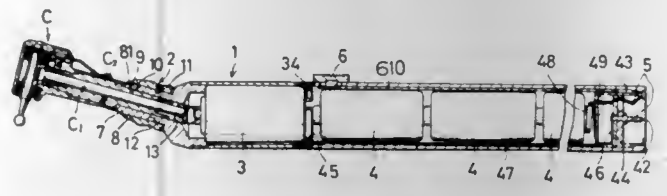
Filed Sep. 30, 1980, Ser. No. 192,606

Claims priority, application Japan, Oct. 8, 1979, 54-140098[U]

Int. Cl.^{3} A61C *1/06*

U.S. Cl. 433—131 **2 Claims**

1. A cordless handpiece for dental treatment with replacement contra angle and straight tools, comprising a joint mounted on the tip portion of a handpiece body so as to replaceably attach and detach a straight tool or a contra angle tool to and from the tip portion, a coreless motor housed in said handpiece body and connected directly to a driving shaft of said straight tool or to a driving shaft of said contra angle tool, storage battery housed in said handpiece body for driving said coreless motor, an electrode likewise housed in the distal end of said handpiece body for charging said batteries and a switch for controlling turning on and off said motor, wherein said motor, batteries and electrode are located on the same axis and said joint comprises a set sleeve fitted rotatably over a sleeve at the tip portion of said handpiece body, a ball groove provided at one end of said sleeve circumferentially of the sleeve passing through the thickness of said sleeve, a locking ball nesting in said groove and adapted to bring the lower end thereof into abutment against the housing of said straight tool for the housing of said contra angle tool, an eccentric groove corresponding to said locking ball and formed on the inner surface of said sleeve, and a set screw passing through the thickness of said sleeve and set in the thickness of said sleeve whereby said contra angle and straight tools are readily replaceable by loosening said set screw and rotating said set sleeve.



4,355,978
PATRIX FOR THE PRODUCTION OF A GOLD CORE FOR A PREPARED ROOT-FILLED TOOTH

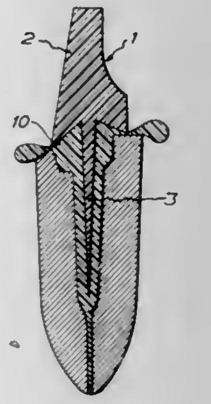
Dan W. Ericson, Ehrensvärdsgatan 6, S-212 13 Malmö, Sweden

Filed Oct. 16, 1980, Ser. No. 197,705

Claims priority, application Sweden, Oct. 16, 1979, 7908538

Int. Cl.^{3} A61C *5/08*

U.S. Cl. 433—220 **1 Claim**



1. A core patrix for the production of a gold core for a prepared root-filled tooth having a root canal, said core patrix comprising: a single piece made from a gasifiable material, said single piece having a core portion and a dowel portion, said core portion corresponding to and defining the shape of the upper part of the finished gold core, said dowel portion having a substantially smaller thickness than the root canal, said patrix, after the insertion of said dowel portion in a root canal filled with a gasifiable impression material and after setting of said impression material on said dowel portion, together with said impression material will form a core pattern from which the gold core is cast, said core portion including a recessed portion facing said dowel portion and the root canal, said recessed portion confining said impression material to said dowel portion.

4,355,979
LINGUAL DENTAL SPLINT DEVICE

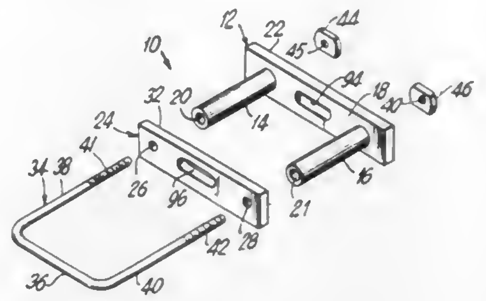
Bernard Weissman, New York, N.Y., assignor to Ipco Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 70,247, Aug. 27, 1979, Pat. No. 4,260,383. This application Sep. 18, 1980, Ser. No. 188,356

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.^{3} A61C *5/04*

U.S. Cl. 433—225 **8 Claims**



1. A dental splinting device comprising:

an elongated bar-like body member disposable in a side wall channel laterally extending between adjacent teeth;

retaining means extending outwardly from said body member for being disposed in bores provided transversely in the adjacent teeth through a base wall of the side wall channel, said retaining means positioning said body member against the adjacent teeth when said body member is in a final position in the channel;

said retaining means including two tubular members extending perpendicularly from said body member for being received in the bores of the adjacent teeth;

said tubular members including guide means for guiding a drill during formation of a pilot hole through each of the adjacent teeth when said body member is initially positioned in the channel with said tubular members extending outwardly from the base wall of the channel, the pilot holes functioning as lead holes for formation of the bores in the adjacent teeth;

said guide means including an axial opening extending through each of said tubular members and through said body member;

clamping means disposable in an opposing side wall channel laterally extending between the adjacent teeth, said clamping means passing through said axial openings of said tubular members and engaging said elongated body member for securing said elongated body member in the adjacent teeth;

said clamping means including a U-shaped wire having legs respectively extending from the opposing side wall of the teeth through said tubular member axial openings to the other side of said elongated body member, with a bight portion of said wire being disposable in the opposing side wall channel, said legs being provided with restraining means at distal end of each leg of said U-shaped wire for holding said body member firmly in place in the adjacent teeth.

4,355,980
METHOD OF FORMING DENTAL RESTORATIONS

Owen Dwight, 440 Calle Madrigal, Cathedral City, Calif. 92234

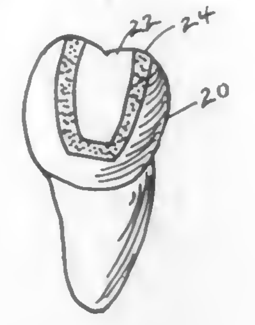
Filed Nov. 17, 1980, Ser. No. 207,410

Int. Cl.^{3} A61C *5/04*

U.S. Cl. 433—226 **3 Claims**

1. A method of forming dental restorations which comprises incorporating within a mold cavity conforming to the shape of the desired restoration finely divided particles of gold or relatively soft gold alloy only along an area corresponding to the exposed marginal area of the restoration contiguous to the tooth or gum, and thereafter casting within said cavity a rela-

tively harder dental alloy, said particles and said harder alloy becoming bonded together to form a composite structure in



which softer marginal areas are formed to permit improved adaptation of the restoration to the tooth and/or gum.

4,355,981

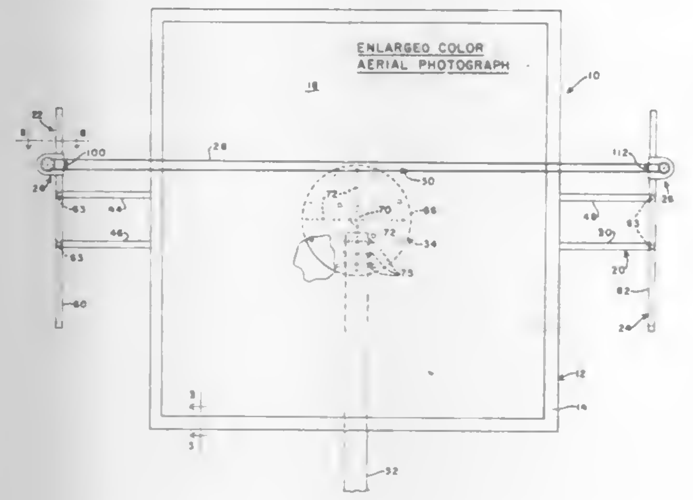
COLOR MOVING TARGET SIMULATION APPARATUS

Gilbert G. Kuperman, Dayton, and Reuben L. Hann, Fairborn, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 12, 1981, Ser. No. 272,835

Int. Cl.³ G09B *9/00*

U.S. Cl. 434—14 **5 Claims**



1. Color moving target simulation apparatus, comprising:
a. a substrate having generally planar front and rear sides;
b. an enlarged color aerial photograph mounted on said front side of said substrate;
c. an arm supported adjacent to said rear side of said substrate and having opposite ends which extend beyond the periphery of said substrate, said arm being mounted intermediate its opposite ends for rotatable adjustment to different positions in a plane generally parallel to said planar sides of said substrate;
d. a motorized assembly mounted at said opposite ends of said arm and including a wire extending therebetween for movement along a generally linear path across said front side of said substrate and said photograph mounted thereon; and
e. a target of a size proportioned to the scale of said aerial photograph and being attached to said wire for movement therewith across said front side of said substrate and said photograph mounted thereon.

4,355,982

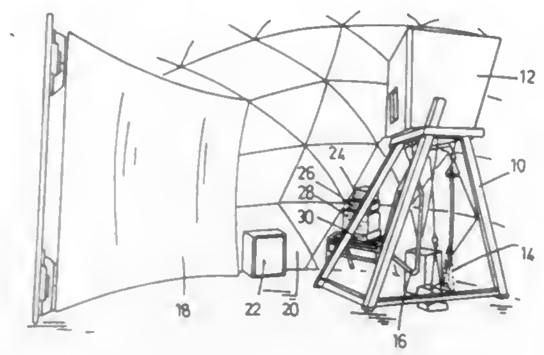
HANG GLIDER FLIGHT SIMULATOR

Christopher James, Sydney, Australia, assignor to Arthur Sydney Herbert, Plimmerton, New Zealand

Filed Nov. 24, 1980, Ser. No. 210,025

Int. Cl.³ G09B *9/02*

U.S. Cl. 434—30 **14 Claims**



1. A hang glider flight simulator comprising:
A. a pilot suspending means,
B. a control means,
C. means from which said pilot suspending means and control means are suspended,
D. means associated with said means from which said pilot suspending means and control means are suspended for maneuvering said pilot suspending means and said control means to simulate movements occuring during hang gliding,
E. visual display means positioned to be viewed by a pilot in said pilot suspending means, and
F. means for synchronizing said means for maneuvering with said visual display means so that in use movements simulated by said means for maneuvering correspond to images displayed by said visual display means.

4,355,983

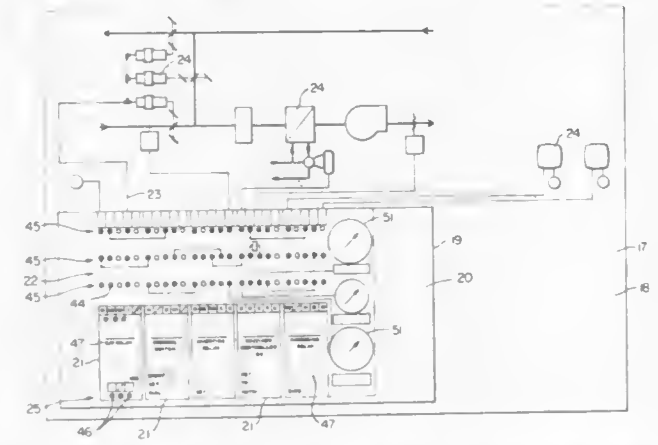
CONTROL PANEL LAYOUT SHEET AND METHOD OF MAKING THE SAME

Clarence M. Asbill, III, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 30, 1981, Ser. No. 248,720

Int. Cl.³ G09B *29/00*

U.S. Cl. 434—219 **40 Claims**



1. In a method of making a control panel layout sheet having on one side thereof first means indicating control devices that are to be mounted on a control panel to be made from said sheet, second means indicating the external pneumatic lines that are to be interconnected to said devices, and third means indicating the external electrical lines that are to be interconnected to said devices whereby said layout sheet is adapted to be utilized as a guide for constructing a control panel having said control devices and said external pneumatic and electrical lines thereon, the improvement comprising the step of disposing said means on said sheet in substantially the exact location thereon that the control devices and external pneumatic and electrical lines will take in the respective control panel to be made therefrom so that said layout sheet substantially simulates a completed control panel when facing the same.

4,355,984

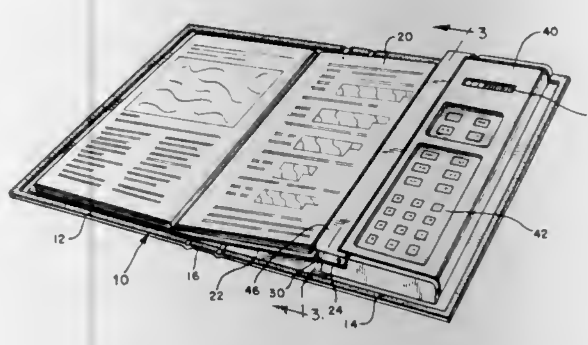
TEACHING DEVICE

William H. Slavik, Palos Hills; William P. Carlson, Chicago, and Michael J. McGowan, Downers Grove, all of Ill., assignors to Nuvatec, Inc., Lombard, Ill.

Filed Mar. 25, 1980, Ser. No. 133,850

Int. Cl.³ G09B *7/02, 7/06*

U.S. Cl. 434—335 **24 Claims**



1. A teaching device comprising:
means for automatically sensing an encoded text key and generating in response thereto a digital seed;
means, responsive to the seed, for automatically performing an arithmetic calculation on the seed to generate a unique set of digital answer key signals indicative of a sequence of correct answers, at least some of said correct answers corresponding to respective questions associated with said text key;
means for registering a manually generated answer signal indicative of a proposed answer to a selected one of said questions; and
means for automatically comparing the manually generated answer signal with the set of answer key signals to determine whether the proposed answer corresponds to the respective correct answer.

4,355,985

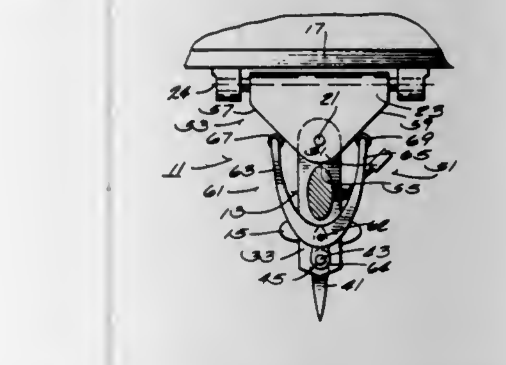
MARINE PROPULSION DEVICE WITH SELF-CENTERING STEERING MECHANISM

Gaylord M. Borst, and Frank J. Walsworth, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 8, 1980, Ser. No. 213,996

Int. Cl.³ B63H *25/42*

U.S. Cl. 440—51 **7 Claims**



1. A marine propulsion device comprising a lower unit, means on said lower unit adapted for connecting said lower unit to the transom of a boat for steering movement about a steering axis, means on said lower unit adapted for steerably displacing said lower unit about the steering axis relative to a fore and aft position, a trim tab, means mounting said trim tab on said lower unit rearwardly of the steering axis for pivotal movement relative to a position aligned fore and aft with said lower unit, and means connected to said trim tab and responsive to pivotal steering displacement of said lower unit for pivotally displacing said trim tab relative to said lower unit in the same pivotal direction as steering displacement of said lower unit.

4,355,986

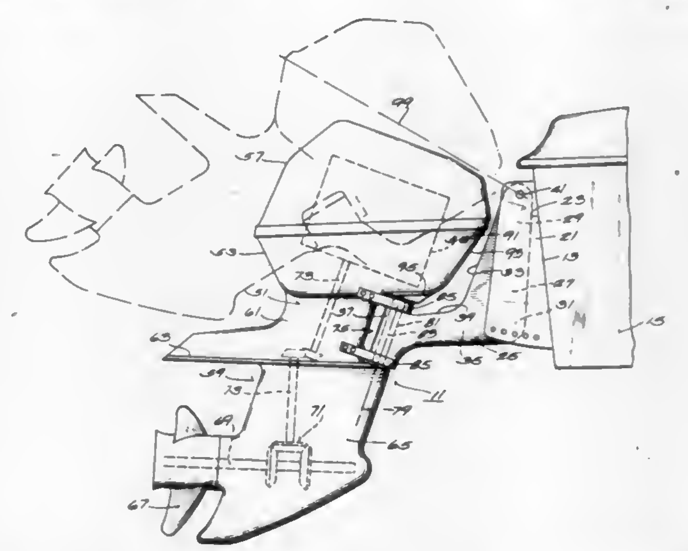
OUTBOARD MOTOR WITH ELEVATED HORIZONTAL PIVOT AXIS

Myron T. Stevens, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 16, 1980, Ser. No. 159,480

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—53 **40 Claims**



33. An outboard motor comprising a transom bracket adapted to be fixed to the transom of a boat, a unitary swivel bracket, a tilt pin directly pivotally connecting said swivel bracket and said transom bracket rearwardly of the transom for tilting movement of said swivel bracket relative to said transom bracket between a normal operating position and a raised tilt position and about a tilt axis which is generally horizontal when said transom bracket is fixed to the boat transom, a propulsion unit including a lower unit and a powerhead secured to said lower unit below the tilt axis, and means including a king pin located wholly below the tilt axis and connecting said propulsion unit and said swivel bracket for pivotal steering movement of said propulsion unit relative to said swivel bracket about an axis transverse to the tilt axis, and such that said propulsion unit only pivots about the transverse axis with respect to said swivel bracket.

4,355,987

LIFE RAFT INFLATION SYSTEM

David D. Miller, Bricktown, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 15, 1980, Ser. No. 196,730

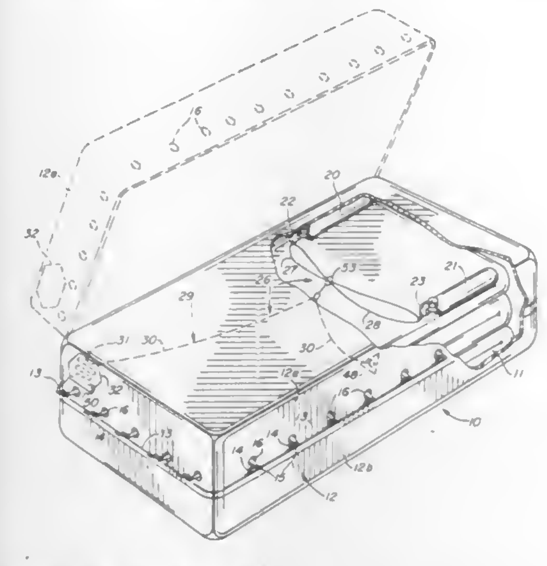
Int. Cl.³ B63C *9/24*

U.S. Cl. 441—41 **29 Claims**

1. An inflatable life raft apparatus comprising:
(a) a raft body having first and second inflatable sections;
(b) first inflation means mounted on said raft body for inflating said first section thereof;
(c) second inflation means mounted on said raft body for inflating said second section thereof, said first and second inflation means each including a tank and valve assembly; and
(d) pull means, interconnected between said first and second inflation means, for manually actuating either or both of said first and second inflation means, said pull means including means responsive to inflation of one of said raft body sections for automatically actuating the inflation means of the other section in the event that only the infla-

tion means of said one of said raft body sections is manually actuated by said pull means, said pull means further including:

(1) a pair of valve release cables operatively connected to the valves of said tank and valve assemblies and extending between said tank and valve assemblies, said inflation responsive means including one of said cables,
(2) means restraining movement of outer end portions of said cables relative to said raft body,



(3) an activating lanyard, and
(4) means connecting a portion of said lanyard to said cables for movement along their lengths, whereby the valves of said tank and valve assemblies may be opened in response to a pull stroke of said lanyard through a predetermined distance which is substantially independent of the direction of said pull stroke.

4,355,988
TRACK ROLLER FOR TRACK-LAYING VEHICLES

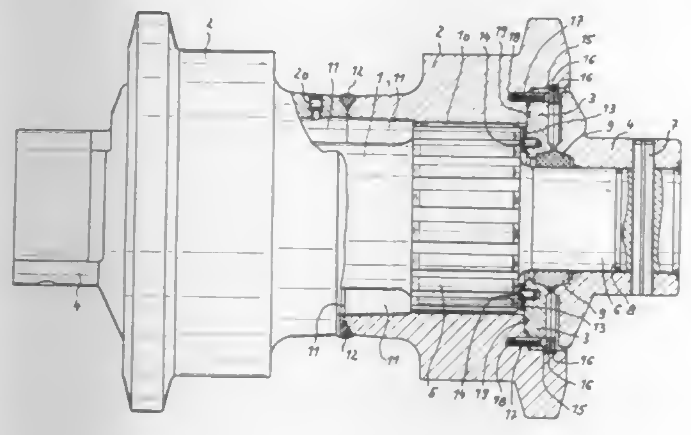
Helmuth Klaus, Hagen-Haspe; Heinz Lause, Recklinghausen, and Hansjoachim Brunn, Damme, all of Fed. Rep. of Germany, assignors to Firma Intertractor Viehmann GmbH & Co., Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,062

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927173

Int. Cl.^{3} B62D *55/00*

U.S. Cl. 474—91 **4 Claims**



1. Track roller for excavators and other track-laying vehicles, consisting of a shaft, a roller body rotatably supported thereon, caps limiting the axial relative movement of shaft and roller body and end pieces axially spaced from each other for the firm attachment of the track roller to the frame, the shaft in its center having a relatively large diameter laterally thereof, relatively wide cylindrical bearing surfaces of larger diameter and on its sides ends of reduced diameter, elastic packings disposed at suitable locations between the shaft ends and the end pieces, between the end pieces and the caps, and between the caps and the roller body, an antifriction metal washer provided between the shaft and the caps, respectively, the feeding of oil to those packings which must be lubricated taking place from an oil space which is arranged between the bearing surfaces of the shaft and which serves as an oil reservoir, the roller body having a shaft-receiving opening which extends approximately uniformly over its entire width and is substantially free of steps, plain bearings for the bearing surfaces of the shaft being arranged directly in the ends of the roller body.

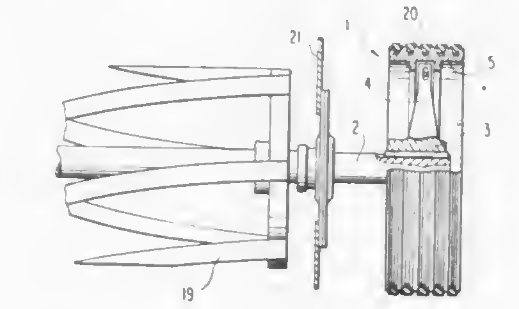
4,355,989
GEAR UNIT FOR POWER-SAVING DRIVE OF WORKING ELEMENTS OF ROTARY OR OSCILLATORY MOTION, ESPECIALLY OF AGRICULATURAL CUTTER DRUMS AND PEG DRUMS

Peter Szendro; Janos Benko, both of Gödöllo, and Imre Szabo, Budapest, all of Hungary, assignors to Godolloi Agrartudomanyi Egyetem, Gödöllo, Hungary

Filed Mar. 31, 1980, Ser. No. 135,269

Int. Cl.^{3} F16D *3/66;* **F16H** *55/36;* **A01D** *55/20*

U.S. Cl. 474—94 **2 Claims**



1. An agricultural cutter comprising a cutter drum, a shaft on which said cutter drum is mounted for rotation, a hub on the shaft, a V-belt pulley having a peripheral crown surrounding the hub, a plurality of spokes on the hub extending radially outwardly from the hub toward the crown, and spring means between the spokes and the crown for momentarily storing and then releasing energy during the cutting of an agricultural product.

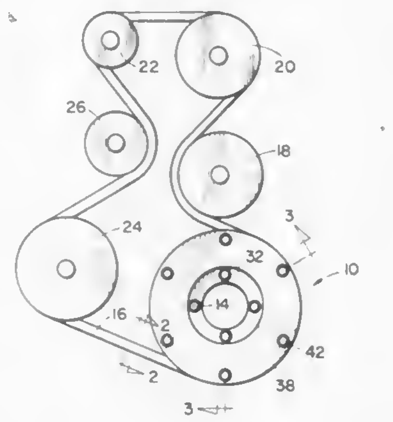
4,355,990
TORSIONALLY ELASTIC POWER TRANSMITTING DEVICE

Jock S. Duncan, Jr., Parker, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Sep. 22, 1980, Ser. No. 189,493

Int. Cl.^{3} F16H *55/14*

U.S. Cl. 474—94 **9 Claims**



5. A torsional vibration dampener comprising:
a cup-shaped hub member having at least two lugs;
elastomeric cushion members positioned adjacent the lugs and capable of dampingly transmitting power; and
an outer rim member having at least two radially inwardly extending ears adapted to matingly engage the lugs through said cushions interposed therebetween;
said rim and cup-shaped hub members having along their respective inner and outer peripheries radial bearing surfaces which in themselves tend to axially self-align the dampener in use.

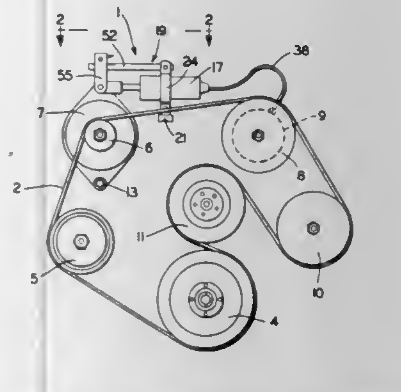
4,355,991
ARRANGEMENT FOR TENSIONING THE DRIVE BELT FOR VEHICLE ACCESSORIES

Derald H. Kraft, Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Aug. 3, 1979, Ser. No. 63,193

Int. Cl.^{3} F16H *7/14*

U.S. Cl. 474—110 **7 Claims**



1. An arrangement for tensioning an endless drive belt of a vehicle engine accessories drive system including:
(a) a vehicle accessory pivotally mounted with respect to the vehicle engine and operatively engaged with and driven by the endless drive belt;
(b) piston means operatively engaged with the said vehicle accessory for pivotally moving said accessory to a tensioning position and for applying a predetermined tensioning force on the drive belt engaged therewith;
(c) fluid supply means communicating with the piston means for hydraulically actuating said piston means to pivot the vehicle accessory to the belt tensioning position and to apply the predetermined tensioning force on the drive belt; and
(d) ratchet-pawl means operatively engageable with the said accessory, said ratchet-pawl means including:
    (i) a ratchet bar having a series of teeth formed thereon,
    (ii) a pivotally mounted pawl having a projection which operatively engages individual teeth of the ratchet bar, and
    (iii) a spring biasing the pawl projection toward engagement with the ratchet bar teeth to maintain the accessory in the belt tensioning position and to maintain the predetermined tensioning force on the belt during a decrease in hydraulic pressure on the piston means.

4,355,992
ROTATABLE MACHINE ASSEMBLY

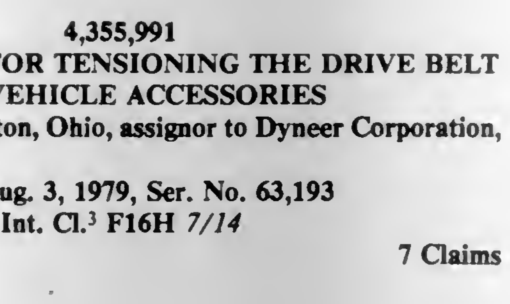
Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.

Filed Dec. 26, 1979, Ser. No. 106,592

Int. Cl.^{3} F16H *7/06*

U.S. Cl. 474—152 **11 Claims**

1. A rotatable machine assembly comprising; hub means having an axis, casing means extending radially of said axis of said hub means to a circular periphery, bearing means interconnecting said hub means and said casing means for allowing relative rotation between said casing means and said hub means about said axis, said casing means including annular axially spaced side walls with one of said side walls on one side of said bearing means, and the other of said side walls on the other side of said bearing means, said side walls each having a circular opening surrounding and in close spaced relationship to said hub means, a pair of annual seal means non-rotatably supported by said hub means on opposite sides of said bearing means, and annular support portion extending radially of said axis from said hub means and spaced axially inwardly from said interior surface of the adjacent side wall, said seal means including at least one annular lip extending at an acute angle from said



support portion toward the axis of said hub means, said lip being deflected radially inwardly by and in sliding engagement with said interior surface of said adjacent side wall, and said seal means including an annular pad portion in sealing engagement with the interior edge of said circular opening in the adjacent sidewall.

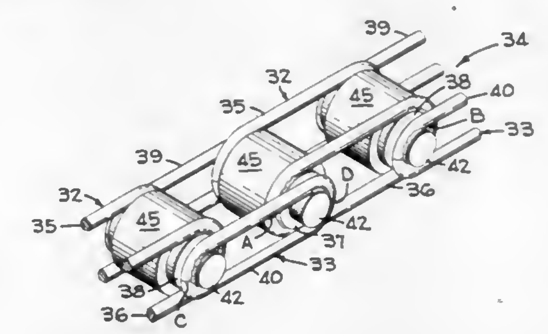
4,355,993
WELDED WIRE LINK ROLLER CHAIN

Ronald F. Homeier, Plainfield, Ind., assignor to PT Components, Inc., Indianapolis, Ind.

Filed Mar. 10, 1980, Ser. No. 129,062

Int. Cl.^{3} F16G *13/07*

U.S. Cl. 474—231 **11 Claims**



1. In a power transmission chain of the type in which alternate inner and outer link units are interconnected to form the chain, the improvement wherein at least one of said link units comprises a pair of spaced generally parallel side links formed from bent wire having its end portions welded to each other, and a pair of pins extending transversely between said side links near the opposite ends thereof and secured thereto by filler type welding.

4,355,994
COVERED V-BELT HAVING REDUCED COEFFICIENT OF FRICTION SIDES AND METHOD OF MAKING THE SAME

James K. Brew, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

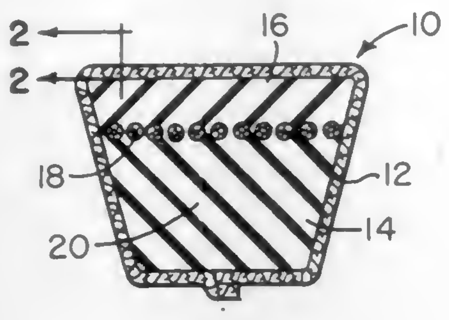
Filed May 6, 1980, Ser. No. 147,431

Int. Cl.^{3} F16G *5/16*

U.S. Cl. 474—270 **4 Claims**

1. In a wrapped, molded V-belt having outside surfaces and comprising a belt body made primarily of elastomeric material and having a cover which covers the entire peripheral outline of said belt body, said cover comprising an inner layer of elastomeric material, an outer layer of elastomeric material, and a fabric disposed between said layers, said inner layer being secured to said belt body at said entire peripheral outline thereof and said outer layer defining said outside surfaces of

said V-belt, the improvement wherein only said outer layer of said cover has a finely comminuted metallic material intimately mixed with said elastomeric material thereof to provide a reduced coefficient of friction for said outside surfaces of said V-belt and said inner layer of said cover is substantially free of said finely comminuted metallic material while being tenaciously bonded to said belt body.



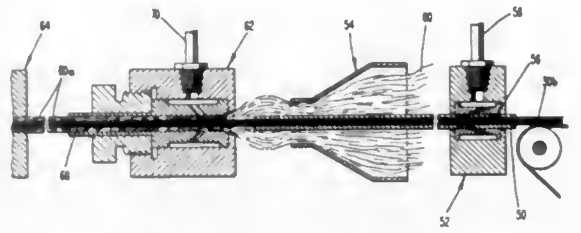
4,355,995
TOBACCO SMOKE FILTER PROVIDING TOBACCO FLAVOR ENRICHMENT, AND METHOD FOR PRODUCING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 24,251, Mar. 27, 1979, Pat. No. 4,291,711. This application Apr. 3, 1981, Ser. No. 250,839

Int. Cl.³ A24D *3/02, 3/06*

U.S. Cl. 493—43 **11 Claims**



1. A method of making a smoke filter means comprising the steps of:

(a) uniformly embossing a continuous web of coherent reconstituted tobacco sheet with a series of parallel longitudinally extending grooves;
(b) compacting the embossed web together into an axially elongated formation whose longitudinal axis extends parallel to said embossed grooves;
(c) passing the compacted embossed web through a heated confined area and introducing a heated gas into said compacted embossed web during its passage through said confined area, thereby bonding the compacted embossed web into a self-sustaining dimensionally stable axially elongated reconstituted tobacco body constituting at least a concentric portion of a filter rod; and
(d) transversely cutting said filter rod into segments of suitable length for use as filter elements.

4,355,996
AZO DYE REDUCTION IMPROVEMENT OF LIGNIN

Peter Dilling, Isle of Palms, and Gerald Prazak, Charleston, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 133,505, Mar. 24, 1980, which is a continuation-in-part of Ser. No. 126,294, Mar. 3, 1980, abandoned. This application Mar. 4, 1981, Ser. No. 240,279

Int. Cl.³ C09B *9/00, 67/30, 67/10, 67/40*

U.S. Cl. 8—561 **10 Claims**

1. In a process for making a dyestuff composition with improved fiber staining including the combining of a disperse or vat dye cake and a sulfonated lignin dispersant, the improvement comprising first modifying the sulfonated lignin dispersant by reacting an aqueous solution of a sulfonated lignin at a solids concentration of from 5% to 35% with from 0.01 to 0.5 mole, per 1,000 grams of lignin, of a compound selected from the group consisting of water soluble salts of the divalent metals Mg^{2+}, Ca^{2+}, Zn^{2+}, Cd^{2+}, Sr^{2+}, Ba^{2+}, Ni^{2+}, Cr^{2+} and Mn^{2+} and water soluble borate salts.

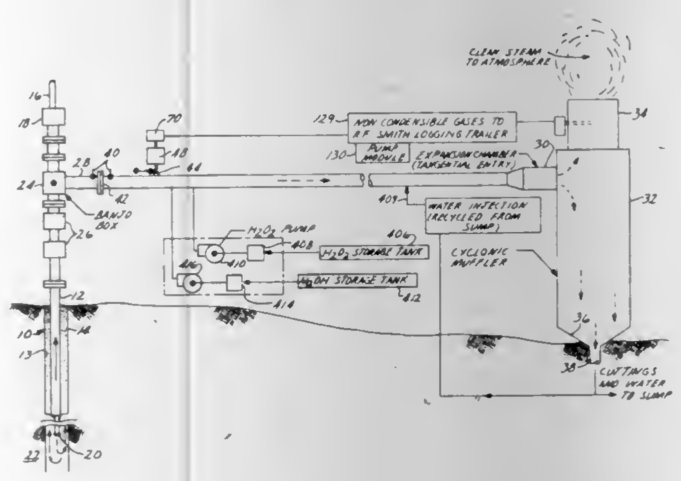
4,355,997
METHOD FOR MEASURING THE LEVEL OF HYDROGEN SULFIDE IN GEOTHERMAL STEAM

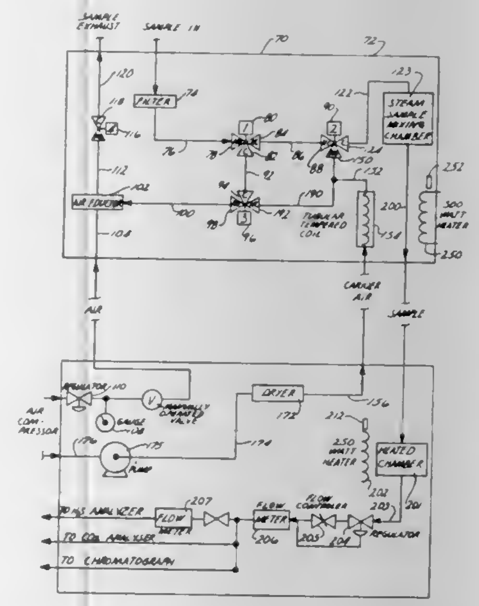
Robert F. Smith, Long Beach, and Dwight E. Walters, Cobb, both of Calif., assignors to R. F. Smith Corp., Lakewood, Calif.

Continuation-in-part of Ser. No. 80,684, Oct. 1, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 273,951

Int. Cl.³ G01N *33/24, 33/18*

U.S. Cl. 23—230 EP **8 Claims**





1. A method for continuously measuring the amount of hydrogen sulfide present in a continuous gaseous stream of steam containing hydrogen sulfide as a pollutant produced from a geothermal formation, the method comprising the steps of:

keeping the gaseous stream above its dew point;
mixing the gaseous stream of steam with a continuous stream of dilution gas in a fixed predetermined ratio by volume to lower the dew point of the gas mixture, the dilution gas being substantially free of said pollutant, keeping the temperature of the mixed gas stream at a temperature above the lowered dew point of the mixture but below the dew point of the gaseous stream from the geothermal formation, and continuously measuring the level of hydrogen sulfide in the mixed gas stream at the reduced temperature.

4,355,998
REAGENT FOR THE QUANTITATIVE DETERMINATION OF WATER AND ITS USE THEREFOR

Antonie E. Verbeek, Bathmen, and Jozef M. J. Matthelj, Deventer, both of Netherlands, assignors to J. T. Baker Chemicals B.V., Deventer, Netherlands

Filed Aug. 14, 1981, Ser. No. 292,880

Claims priority, application European Pat. Off., Sep. 2, 1980, 80105224.2

Int. Cl.³ G01N *33/18*

U.S. Cl. 23—230 R **17 Claims**

1. In a reagent for the quantitative determination of water, used together with an iodine-containing titrating solution, the reagent containing sulfur dioxide and anhydrous alkali metal carboxylic acid salt in an anhydrous lower monohydric aliphatic alcohol as solvent, the improvement wherein the lower monohydric aliphatic alcohol is 2-methoxy ethanol, methanol or a mixture of both compounds in a volume ratio of at least 10:90 and that the anhydrous alkali metal carboxylic acid salt is an alkali metal trimethyl acetate.

4,355,999
PROCESS FOR AGGLOMERATING COAL

George P. Masologites, Columbus, N.C., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 20, 1978, Ser. No. 971,157

Int. Cl.³ C10L *9/00, 5/10*

U.S. Cl. 44—1 SR **11 Claims**

1. A method for reducing the amount of oil required to form coal-oil agglomerates comprising the steps of:

(a) forming a slurry of water and coal particles;
(b) contacting the slurry with an amount of hydrocarbon oil to form coal-oil agglomerates;
(c) contacting said agglomerates with an additional amount of coal particles to form coal-oil agglomerates of a desired size consist; and
(d) recovering coal oil agglomerates of reduced oil content.

5. A process for beneficiating coal comprising the steps of:

(1) forming an aqueous slurry of coal particles containing ash and iron pyrite mineral matter, and hydrocarbon oil;
(2) agitating the slurry to form coal-oil agglomerates;
(3) recovering coal-oil agglomerates wherein the coal has reduced mineral content;
(4) forming a mixture of the recovered coal-oil agglomerates, water and an additional amount of coal particles containing ash and iron pyrite mineral matter;
(5) agitating the mixture to form coal-oil agglomerates reduced in mineral content; and
(6) recovering coal-oil agglomerates wherein the coal has reduced mineral content.

4,356,000

SOLID WASTE DERIVED FUEL

Christopher L. Chappell, Lichfield, Great Britain, assignor to Leigh Interests Limited, Birmingham, England

Continuation of Ser. No. 74,101, Sep. 10, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,171

Claims priority, application United Kingdom, Sep. 15, 1978, 36983/78

Int. Cl.^{3} C10L *5/12, 5/48*

U.S. Cl. 44—1 D 9 Claims

1. A method of manufacturing a solid storable pulverizable fuel with a substantially consistent calorific value, said method comprising the successive steps of:

(a) coating particles of a finely divided aluminum silicate based substance with a mobile waste of appreciable calorific value by mixing the waste, in the presence of water, with particles of the finely divided aluminum silicate based substance to provide a substantially homogenous mixture of finely divided particles coated with the waste, and thereafter

(b) solidifying the homogenous mixture of step (a) by the incorporation of a hydraulic cement in an amount sufficient to produce the solid storable pulverizable fuel.

8. A solid storable pulverizable fuel of substantially consistent calorific value produced by the process of claim **1**.

4,356,001

METHOD OF EXTENDING HYDROCARBON FUELS INCLUDING GASOLINES AND FUELS HEAVIER THAN GASOLINE

William M. Sweeney, Wappingers Falls, and Sheldon Herbstman, Spring Valley, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,351

Int. Cl.^{3} C10L *1/02*

U.S. Cl. 44—56 15 Claims

1. The method of extending a hydrocarbon fuel which comprises

mixing (i) a liquid hydrocarbon fuel and (ii) an ether-alcohol mixture formed by etherifying an oxo-alcohol mixture with a C-4 or C-5 iso-olefin, thereby forming a single phase extended liquid hydrocarbon fuel characterized by improved water tolerance; and

recovering said single phase extended liquid hydrocarbon fuel characterized by improved water tolerance.

4,356,002

ANTI-STATIC COMPOSITIONS

J. Irvine Knepper, Manchester, and Dennis C. Sallee, St. Louis, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 11, 1978, Ser. No. 968,327

Int. Cl.^{3} C10L *1/22*

U.S. Cl. 44—62 16 Claims

1. An antistatic composition comprising a surfactant and an antistatic agent selected from the group consisting of (1) t-dodecylamine amide-salt of tetradecene-1/maleic anhydride copolymer, (2) a mixture of olefin/sulfur dioxide copolymer and a polymeric polyamine derived from the reaction of an amine with epichlorohydrin, (3) 1-decene/sulfur dioxide copolymer, (4) polymeric ester/amide made from tetradecene-1/maleic anhydride copolymer, C_{18} alcohol, and N-cyclohexyl-2,4-diamino-2-methyl pentamine, and (5) a mixture of chromium alkylsalicylate, calcium didecyl sulfosuccinate, and a methacrylate/methyl vinyl pyridine copolymer.

4,356,003

COPOLYMERS

Herbert Brooks, Twyford, and Frederick A. Waite, Farnham Common, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 25, 1980, Ser. No. 124,251

Claims priority, application United Kingdom, Mar. 19, 1979, 7909483

Int. Cl.^{3} C10L *1/22*

U.S. Cl. 44—62 11 Claims

1. A copolymer of (i) at least 75% by weight of tertbutylstyrene, (ii) from 1% to 24% by weight of a monomer selected from the group consisting of the acrylic and methacrylic esters of aliphatic monohydric alcohols containg from 1 to 4 carbon atoms, 2-ethoxyethyl methacrylate, acrylonitrile, vinyl acetate, styrene and vinyl toluene, and (iii) from 1% to 10% by weight of methacrylic acid, the total amount of monomers (i), (ii) and (iii) being 100%, the copolymer having the following characteristics:

(A) solutions of the copolymer in AVTUR 50 aviation kerosene, at all concentrations in the range 0.05% to 1% by weight, are, notwithstanding that they may appear hazy or opalescent, nevertheless homogeneous in the sense that no gross separation from them of a swollen polymer phase occurs on standing at 20° C., AVTUR 50 being a liquid hydrocarbon fuel complying with U.K. Government Specification D.Eng.RD 2494 (NATO Code No. F-35);

(B) A 0.3% by weight solution of the copolymer in AVTUR 50 aviation kerosene has a relative viscosity in the range 1.3 to 2.1 and a differential orifice flow rate in the range 3 to 6 ccs. per 30 seconds, the said relative viscosity being the ratio of (a) the viscosity of the 0.3% by weight copolymer solution in AVTUR 50 when measured by the method of British Standard No. 188:1937 "The Determination of the Viscosity of Liquids in C.G.S. Units", Part 2, using a U-tube viscometer, Size A, at 25° C., to (b) the viscosity of AVTUR 50 when measured under those same conditions, and the said differential orifice flow rate being the difference between (c) the flow rate of a 0.3% by weight solution of the copolymer in AVTUR 50 through a passage of circular cross-section having a square-edged orifice, the passage having a length of 0.062 inches and a diameter of 0.025 inches, and (d) the flow rate through the same said passage of a Newtonian liquid having the same viscosity as that of the copolymer solution referred to in (c) when the said viscosities are measured by the method of British Standard No. 188:1937, the flow rates being expressed as the volume of liquid in ccs. which passes through the orifice during the second period of 30 seconds of flow.

4,356,004

PROCESS FOR FORMING CHARGING FUEL INTO AGGLOMERATES FOR THE PRESSURE GASIFICATION OF COAL

Artur Richter, Langensiepenstrasse 25, D-4330 Mulheim, Fed. Rep. of Germany

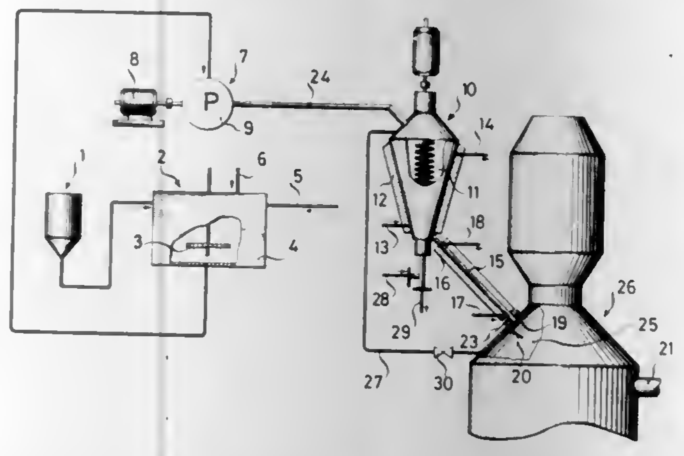
Continuation-in-part of Ser. No. 970,668, Dec. 18, 1978, abandoned. This application Jul. 7, 1980, Ser. No. 165,851

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2802954

Int. Cl.^{3} C10J *3/00*

U.S. Cl. 48—210 3 Claims

1. A process for forming charging fuel into agglomerates for the pressure gasification of coal, comprising the steps of: mixing fine, granular charging fuel of a particle size up to 30 millimeters, with a binder outside the pressure reactor, passing said mixture to a pump assembly, pumping said mixture through a first pipe, wherein the mixture forms a pressure-tight, heat-checking seal, and into a hollow worm heat exchanger, equalizing the pressure of the mixture when it is in the worm heat exchanger and the pressure prevailing in the reactor while cooling said mixture, feeding the mixture through a second pipe, wherein the mixture forms a pressure tight seal, to the fixed bed of the reactor from above, and gasifying the coal in the reactor; said mixture being made with a binder which hardens when heated and being kept below hardening temperature during subsequent subjection to pressure until fed to the reactor, the agglomerates being produced by hardening of the binder in the heat prevailing in the reactor above the fixed bed.



4,356,005

SEPARATION OF GASES

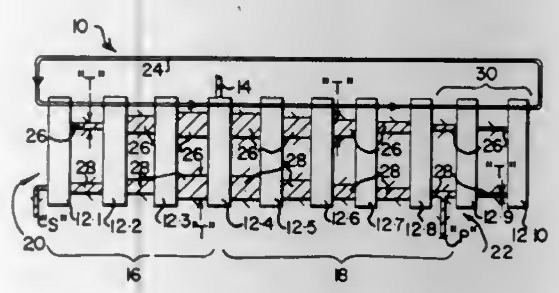
Werner A. Schumann, Pretoria, South Africa, assignor to Atomic Energy Board, Pretoria, South Africa

Filed Mar. 31, 1981, Ser. No. 249,553

Claims priority, application South Africa, Apr. 21, 1980, 80/2363

Int. Cl.^{3} B01D *59/20*

U.S. Cl. 55—17 20 Claims



1. In the operation of a cascade process for separating a process gas feed comprising several components into a product gas which is enriched relative to the process gas feed in respect of a desired component and a stripped gas which is depleted relative to the process gas feed in respect of the desired component, a carrier gas having a lower molecular weight than the process gas being circulated with the process gas along the cascade from the stripper end of the cascade to the product end of the cascade where it is separated from the process gas, and thence back to the stripper end of the cascade where it is reintroduced into the cascade, the process gas feed being introduced into the cascade at a position intermediate the stripper end and the product end, and the cascade comprising a plurality of modules each including one or more gas separation elements for separating a stream of process gas received from an external supply and/or from one or more other modules in the cascade into an enriched stream and a depleted stream which pass on to other modules in the cascade, the method whereby, for a plurality of the modules, the relative proportions of process gas leaving and entering each module are selected such that there is a substantially constant molar flow rate of gas in each direction along the cascade through said plurality of modules, the proportion of carrier gas relative to process gas increasing progressively in a direction from the feed to the product end of the cascade, and the proportion of carrier gas relative to process gas increasing progressively in a direction from the feed to the stripper end of the cascade, the mass flow rate of the gas decreasing progressively in a direction from the feed to the product end of the cascade, and in a direction from the feed to the stripper end of the cascade.

4,356,006

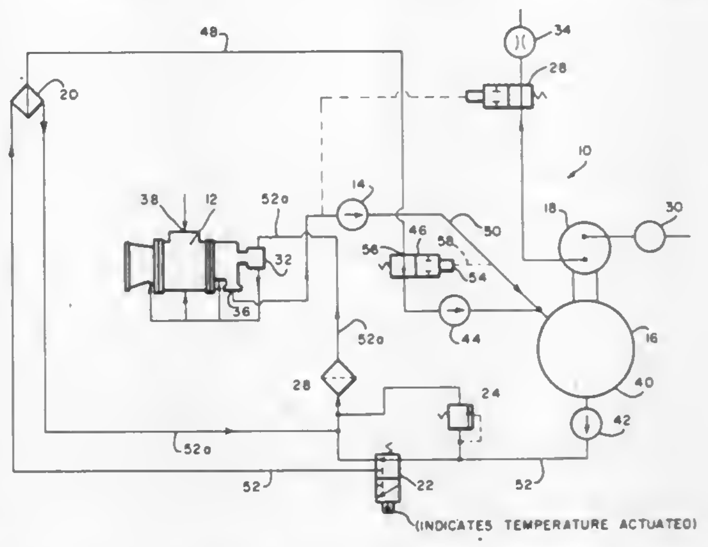
OIL SUPPLY SYSTEM, AND METHOD OF RETROFITTING, AND METHOD OF INHIBITING OIL FOAMING IN, AN OIL SUPPLY SYSTEM

Kenneth Y. Miller, Salisbury, and William R. Hutchinson, Winston-Salem, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 30, 1980, Ser. No. 164,609

Int. Cl.^{3} B01D *19/02;* **F04B** *49/02*

U.S. Cl. 55—55 9 Claims



8. A method of inhibiting oil foaming, in an oil supply system for an oil-using machine, such as a gas compressor, which machine discharges pressured gas and oil vapor, said system having first means comprising a separator which defines (1) an oil reservoir and (2) a chamber thereabove in which to confine pressured gas; second means comprising an oil supply line communicating at one end thereof with said reservoir for supplying oil from said reservoir to an oil-using and pressured gas and oil vapor discharging machine, via the other end of said supply line, and third means, comprising a conduit communicating at one end thereof with said chamber for conducting pressured gas and oil vapor, discharged from a machine such as aforesaid, to said chamber; said conduit having a second end, opposite said one end, defining means for receiving therein pressured gas and oil vapor from such an aforesaid machine; comprising the steps of:

prohibiting oil flow from said oil supply line to said reservoir;

providing a fluid by-pass conduit between an intermediate portion of said oil supply line and said chamber;

evacuating said chamber of superatmospheric-pressured gas; and

opening said conduit to fluid flow therethrough only when said chamber has been substantially evacuated of said pressured gas.

4,356,007

AUTOMATIC FILTER NETWORK PROTECTION, FAILURE DETECTION AND CORRECTION SYSTEM AND METHOD

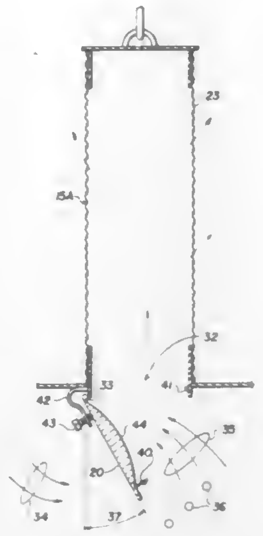
Harold L. Bowman, Rte. #4, Box 1177, Pell City, Ala. 35125

Filed Jul. 10, 1979, Ser. No. 56,206

Int. Cl.^{3} B01D *46/00*

U.S. Cl. 55—213 7 Claims

1. An automatic filtering network protection, failure detection and correction system comprising a plurality of fabric cell type filters in said network and means processing a fluid flow path through the plurality of filters in parallel, including individual filter tube valves operable responsive to any increased fluid flow through the corresponding filter cell caused by a hole in the fabric filter of that cell, wherein the valves are fitted to control flow of fluid through the individual cells in a normally open position and operate to choke off fluid to a corresponding tubular filter in response to said increased fluid flow caused by a fabric failure.



4,356,008
KNOCKING ARRANGEMENT FOR ELECTRIC PRECIPITATION

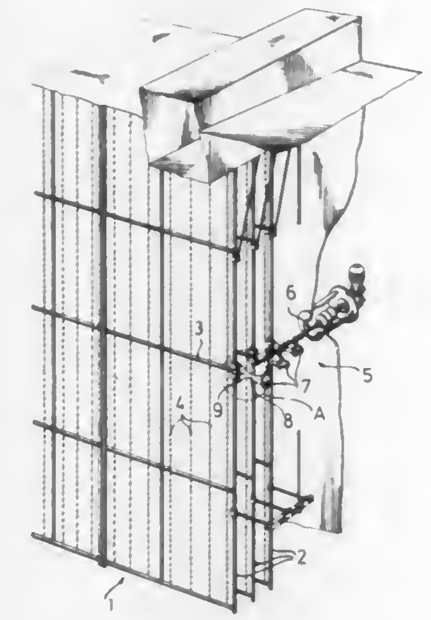
Rudolf Franzen, and Peter Klingberg, both of Cologne, Fed. Rep. of Germany, assignors to Buckau-Walther AG, Grevenbroich, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 323,910

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1980, 3044018

Int. Cl.^{3} B03C *3/76*

U.S. Cl. 55—112 **10 Claims**



1. A knocking arrangement for cleaning electrodes arranged on frame members of a frame of an electric precipitator, comprising hammer means including a rotary hammer shaft and a plurality of hammer members mounted thereon; anvil means including a plurality of anvils arranged so that said hammer members strike against said anvil members; and means for connecting said anvil members with the frame members, said connecting means including a V-shaped holding member having a closed end portion arranged to embrace one frame member of the frame of the precipitator and an open end portion provided with two projections, and a wedge member carrying a respective one of said anvil members and also received into said holding member between said projections and the one frame member.

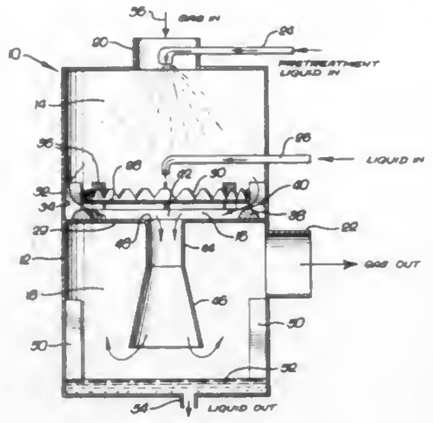
4,356,009
GAS SCRUBBER AND RELATED METHOD

Seymour Calvert, San Diego, Calif., assignor to Air Pollution Technology, Inc., San Diego, Calif.

Filed Jun. 24, 1981, Ser. No. 277,025

Int. Cl.^{3} B01D *47/02, 47/06, 47/12*

U.S. Cl. 55—90 **21 Claims**



1. A scrubber device for removing finely divided contaminants from a gas stream, comprising:
- a housing comprising a pretreatment section, an implosion section, and a diffusion section, all said sections in series flow communication with each other;
- an inlet conduit joined to said housing for directing a gas stream into said pretreatment section;
- a first plate disposed in said housing between said pretreatment section and said implosion section, wherein said first plate forms an annular flow passage for said gas stream from said pretreatment section into said implosion section and further wherein said first plate forms part of said implosion section;
- means disposed in said housing for supplying a liquid to said gas stream in said pretreatment section such that finely divided liquid particles are entrained in said gas stream;
- a second plate disposed in said housing adjacent said first plate, said first and second plates defining said implosion section and configured such that as said gas stream flows into said implosion section from said annular passage, it is directed radially inward and impacts upon itself in a defined area between said plates thereby encouraging said finely divided contaminants to be removed from said gas stream by intertial impaction;
- said diffusion section constructed and arranged to received said gas stream from said implosion section and including means for removing said finely divided liquid particles; and
- an outlet conduit joined to said housing for directing the now cleaned gas stream out of said diffusion section.

21. A method for removing finely divided contaminants from a gas stream comprising the steps of:
- (a) providing a housing having a pretreatment chamber having gas inlet means, a diffusion chamber having gas outlet means and an implosion chamber disposed therebetween and in flow communication therewith, said housing further having a flat plate disposed in said housing defining an annular flow passage from said pretreatment chamber to said implosion chamber;
- (b) directing a stream of gas containing contaminants through said pretreatment chamber such that it impinges on said plate;
- (c) providing said stream of gas with finely divided liquid drops such that said drops are entrained therein;
- (d) directing said gas stream and entrained liquid drops through said annular flow passage and then into said implosion chamber in a radially inward direction causing said gas stream and liquid drops to impact upon themselves whereby at least some of said contaminants are removed by inertial impaction and interception;

- (e) directing said gas stream into said diffusion chamber where the velocity of the gas stream is decreased;
- (f) removing additional liquid drops and contaminants from said gas stream; and
- (g) directing a substantially cleaned gas stream out of said housing.

4,356,010
FILTER APPARATUS HAVING FILTER ELEMENTS AND REVERSE-FLOW CLEANING MEANS

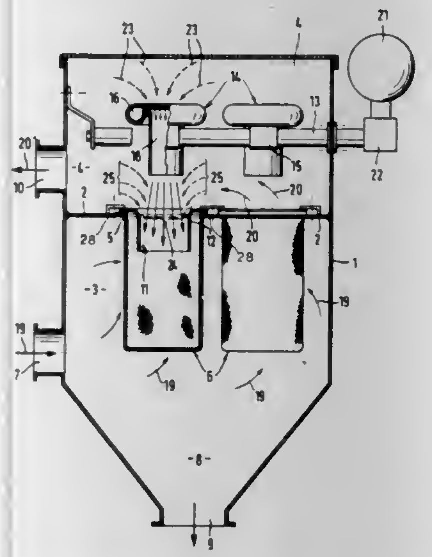
Heinz Meyer zu Riemsloh, Marl, Fed. Rep. of Germany, assignor to Intensiv-Filter GmbH & Co. KG, Velbert, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,736

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004453

Int. Cl.^{3} B01D *46/04*

U.S. Cl. 55—302 **10 Claims**



1. In a filter apparatus comprising a housing having a dust-laden gas inlet, a clean gas outlet, a dust-laden chamber, a purified gas chamber, and having therein a plurality of gas filter elements for cleaning gas flowing therethrough between the dust-laden gas chamber and the purified gas chamber and a cleaning device including reverse-flow means for purging the gas filter elements, the reverse-flow means, comprising a two-stage injector for the drawing in of secondary purified gas from the purified gas chamber in two stages, respectively, which is positioned and arranged with respect to each filter element for the cleaning of the latter by means of pulses of scavenging gas which are injected in counter-current into each filter element, the improvement in the reverse-flow means wherein
- the two-stage injector for each said filter element comprises
  - a pair of injectors for said each filter element comprising,
  - a first stage injector comprising an annular slot nozzle and positioned and arranged in the purified gas chamber to inject therethrough the scavenging gas and draw therein the secondary purified gas, and
  - a second stage injector comprising an inlet nozzle positioned and arranged with respect to said annular slot nozzle and each said filter element so as to communicate substantially exclusively with said annular slot nozzle and with said each filter element to inject therethrough the scavenging gas and the secondary purified gas from said annular slot nozzle as well as to draw therein additional amounts of the secondary purified gas.

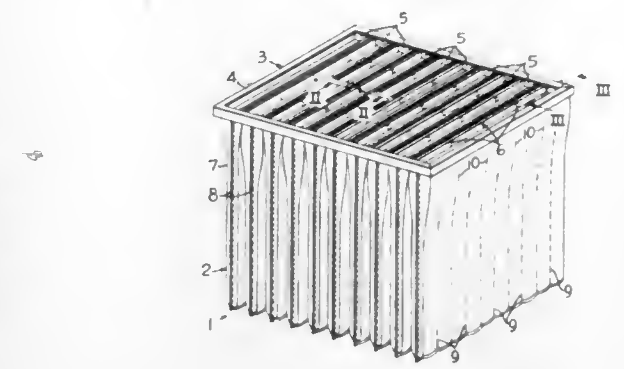
4,356,011
POCKET FILTER ASSEMBLY

Charles E. Day, Jeffersonville, Ind., and William A. Putman, Louisville, Ky., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 26, 1981, Ser. No. 267,024

Int. Cl.^{3} B01D *46/02*

U.S. Cl. 55—368 **8 Claims**



1. A gaseous fluid filter assembly for removing particulate solids from a dirty gas stream, comprising:
- a mounting frame adapted to be secured across the dirty gas stream;
- a plurality of sheath-like filter bags mounted within the frame in side-by-side relation, each of said bags including a pair of generally rectangular filter panels forming the sides of the bag and having an open upstream end and a closed downstream end;
- first and second stay means interconnecting the filter panels of each bag in spaced relation, said first and second stay means extending generally parallel to one another along the length of each bag and being alternately disposed across substantially its width to shape each bag into a plurality of adjacent tube-like sections which are each of an essentially uniform cross-section throughout the length of each bag and open into one another upon inflation of each bag by the gas stream; and
- said first stay means being of a lesser length extending between the filter panels of each bag than said second stay means, so as to alternately vary the thickness of each bag when it is inflated at the junctures of said tube-like sections to minimize interference between the adjacent filter bags while maximizing the surface area of each of the filter panels available to filter the dirty gas stream along substantially the entire length of the bags.

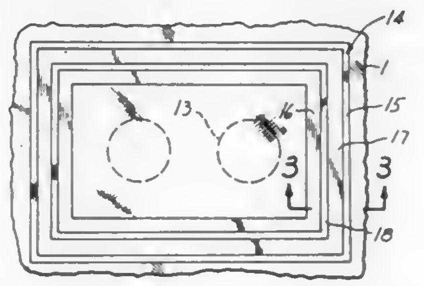
4,356,012
MEDICAL LIQUID CONTAINER WITH FILTER VENT

Jack H. Hofstetter, Anaheim, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 936,754, Aug. 25, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,194

Int. Cl.^{3} B01D *50/00*

U.S. Cl. 55—385 C **10 Claims**



1. A medical liquid container having a thermoplastic wall with a filter which comprises a material different than the wall material and which covers a vent opening in the wall, wherein the improvement comprises: a direct face to face contact zone

between the filter and wall about the vent opening wherein the two different materials of the wall and filter are in contact with each other; and a liquid-tight seal in the contact zone that includes a plurality of permanently fused anchor areas separated by a relief area, which anchor areas are at a common interface between the two different materials of the wall and filter within the contact zone.

4,356,013

SPLIT PRESSURE FEED FOR THE SELECTIVE PRODUCTION OF PURE OXYGEN FROM AIR

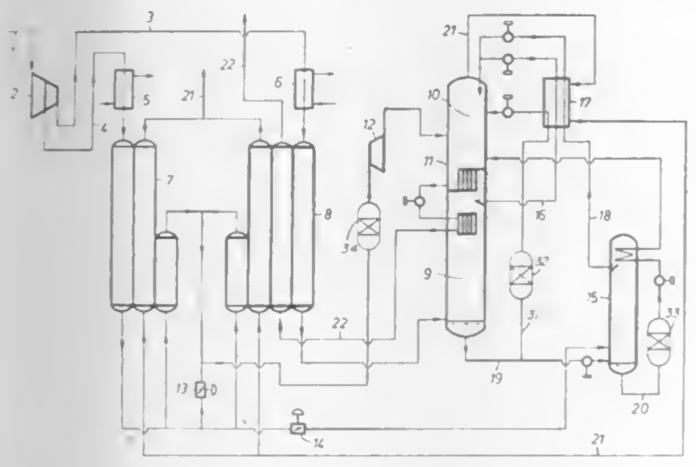
Gerhard Linde, and Guenter Rueckborn, both of Gruenwald, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,195

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2903089

Int. Cl.^{3} F25J *3/04*

U.S. Cl. 62—13 **19 Claims**



1. In a process for obtaining oxygen from air by low-temperature rectification in a double rectification column comprising a high-pressure column and a low-pressure column, said process comprising compressing the air to be fractionated into higher and lower pressure partial streams; cooling said partial streams in indirect heat exchange with a nitrogen-enriched gaseous stream from the rectification column; and introducing the partial stream of the air to be fractionated which has been compressed to the higher pressure into the lower part of the high pressure column,

the improvement which comprises passing at least a part of the partial stream of the air to be fractionated which has been compressed to the lower pressure to a supplemental fractionating column operating at between the pressure ambient in the high-pressure column and the pressure ambient in the low-pressure column, withdrawing from said supplemental column a nitrogen-enriched liquid, passing the latter as reflux to the low-pressure column, said supplemental fractionating column operating at 1–3 bars above the pressure of the low-pressure column, engine expanding at least one of (a) the remaining portion of the partial stream compressed to the lower pressure, and (b) a gaseous stream withdrawn from the supplemental fractionating column; and introducing resultant engine expanded fluid in a substantially gaseous phase into the low-pressure column.

4,356,014

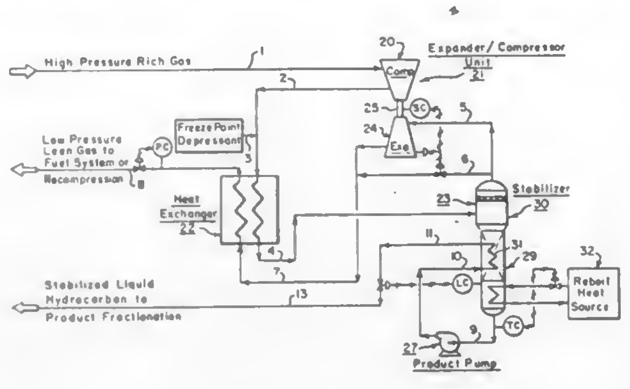
CRYOGENIC RECOVERY OF LIQUIDS FROM REFINERY OFF-GASES

Robert D. Higgins, Houston, Tex., assignor to Petrochem Consultants, Inc., Houston, Tex.

Division of Ser. No. 26,809, Apr. 4, 1979, Pat. No. 4,272,270. This application Apr. 17, 1981, Ser. No. 255,339

Int. Cl.^{3} F25J *3/02*

U.S. Cl. 62—28 **6 Claims**



1. A process for cryogenic recovery of liquid from refinery off-gas, comprising:

(a) feeding the off-gas to a compressor/expander having compressor means and expander means mounted and driven on a common shaft;

(b) compressing the off-gas feed in the compressor of the compressor/expander;

(c) cooling the compressed gas obtained from step (b) in a heat exchanger wherein the gas is partially condensed to form a two-phase fluid;

(d) transmitting the two-phase fluid obtained in step (c) to the separator portion of a stabilizer comprising said separator and an externally heated staged fractionation column situated beneath and in communication with the separator, wherein the liquid product phase is recovered from the vapor phase by gravity separation, the constituents of said vapor phase being fractionated from the net liquid product leaving the bottom of the tower, said vapor phase containing hydrogen and at least one hydrocarbon selected from the group consisting of C_1 to C_4 hydrocarbons;

(e) circulating the liquid product phase discharged from the bottom of the fractionation column of the stabilizer through a coil within the column whereby heat removed from the liquid product within the column furnishes supplemental side reboil heat for the stabilizer.

(f) transmitting the vapor phase separated in step (d) to the expander of the compressor/expander wherein the vapor is depressurized and cooled and partially condensed thereby, the enthalpy removed from the vapor by the expander supplying power to drive the compressor;

(g) transmitting the partially condensed depressurized vapor fraction obtained in step (f) to the heat exchanger for thermal contact with the compressed feed gas obtained in step (b) wherein the partially condensed depressurized vapor fraction is fully vaporized;

(h) withdrawing the fully vaporized fraction from the heat exchanger; and

(i) withdrawing the liquid product phase from the column.

4,356,015

DESALINIZATION PROCESS

Frank C. Oliver, 700 Delta Way, Watsonville, Calif. 95076

Filed Nov. 22, 1978, Ser. No. 962,965

Int. Cl.^{3} B01D *9/04*

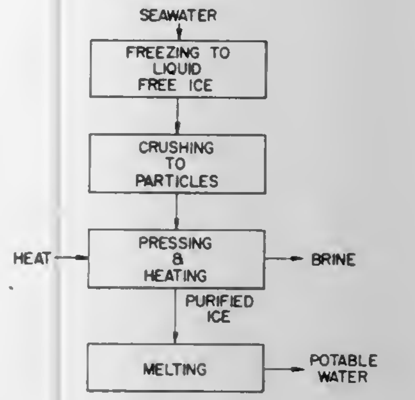
U.S. Cl. 62—543 **9 Claims**

1. A method for purifying salt water which comprises:

(a) freezing said salt water to a temperature sufficient to provide a liquid-free ice;

(b) crushing said liquid-free ice into ice particles having a mean diameter less than 1 cm;

(c) Compressing said crushed ice under a compressive force of about 5 to 1200 pounds per square inch and supplying external heat at a temperature from 80 to 150 degrees Centigrade for a period of tine sufficient to liquify at least 30 percent of said crushed ice, thereby forming a concentrated salt water solution and purified ice;



(d) removing said concentrated salt water solution from said purified ice; and

(e) recovering and melting said purified ice to recover purified water.

4,356,016

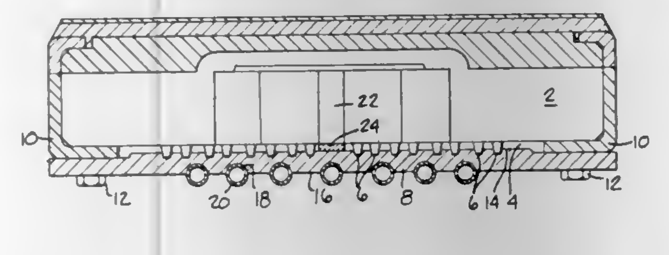
COOLING TUBE ALIGNMENT MEANS AND PROCESS THEREFOR

Eric J. Brosch, Grand Rapids, and William H. Sterrett, Toledo, both of Ohio, assignors to Manville Service Corporation, Denver, Colo.

Filed Jun. 18, 1981, Ser. No. 274,946

Int. Cl.^{3} C03B *37/025*

U.S. Cl. 65—1 **2 Claims**



1. In a fiberizing bushing wherein alignment members are secured to the framework of said bushing so that a space exists between the upper surface of each of said alignment members and the bottom of said bushing in which are located a plurality of rows of tips and wherein each of said alignment members has a plurality of notches in its bottom surface for receiving cooling tubes, the improvement comprising:

(a) filling only a small portion of said space with a refractory cement locating said refractory cement in the portion of said space above a central cooling tube and between two central rows of tips.

4,356,017

METHOD AND APPARATUS FOR CATCHING A PARTLY FIBRATED MINERAL BLOOM

Bill Ankersson, Skövde, Sweden, assignor to Rockwool Aktiebolaget, Sweden

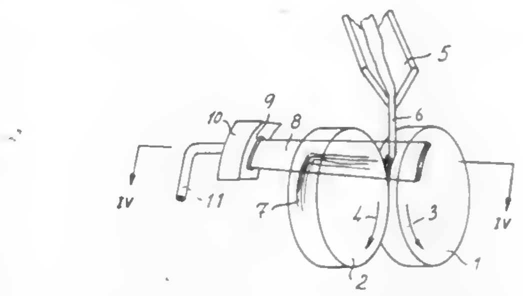
Filed Feb. 18, 1981, Ser. No. 235,606

Claims priority, application Sweden, Feb. 22, 1980, 8001395

Int. Cl.^{3} C03B *37/05*

U.S. Cl. 65—8 **15 Claims**

1. Method of catching a partially fibrated mineral bloom which is thrown out from rotating fibrating wheels (**1**, **2**) which are supplied with a mineral bloom (**6**), characterized in that the fibrated mineral is caught by means of jets or flows of a liquid medium, especially water, which is directed to the fibrous material at an angle to the out throw direction thereof from the fibrating wheel or wheels (**1**, **2**) whereby the fibre material is deflected from the out throw direction and is brought away by the liquid flow for further treatment.



4,356,018

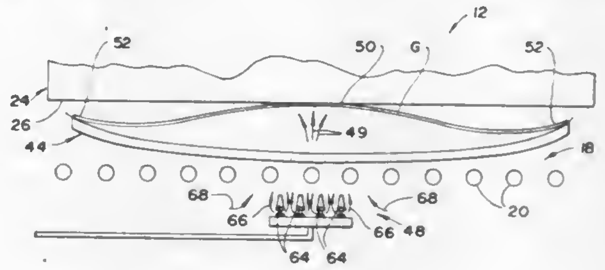
METHOD AND APPARATUS FOR DEEP BENDING GLASS SHEETS

Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469

Filed Sep. 4, 1981, Ser. No. 299,412

Int. Cl.^{3} C03B *23/02*

U.S. Cl. 65—104 **14 Claims**



1. A method for deep bending glass sheets comprising: supporting a heated glass sheet against a downwardly facing surfce above a curved bending mold having an upwardly concave shape; supplying an upward gas flow at a central portion of the supported glass sheet between opposite extremities thereof; releasing said opposite extremities of the glass sheet so as to drop downwardly onto the mold while the upward gas flow continues to support the central portion of the glass sheet against the downwardly facing surface; and thereafter terminating the upward gas flow such that the central portion of the glass sheet drops downwardly and bends on the mold.

8. Apparatus for deep bending glass sheets comprising: a holding having a downwardly facing surface for supporting and releasing a heated glass sheet; a bending mold having an upwardly facing concave shape for receiving a heated glass sheet from the holder surface; a gas supply unit for supplying an upward gas flow against a central portion of the heated glass sheet supported against the holder surface to maintain said central portion supported as opposite extremities of the glass sheet drop downwardly onto the mold; and a control for terminating the upward gas flow from the gas supply unit to release the central portion of the glass sheet from the holder surface for bending on the mold.

4,356,019

GLASS SPINNING VESSEL

Bernard Gleeson, 21, Clarence Grove Rd., Weston-super-Mare, Avon, England

Filed Nov. 18, 1980, Ser. No. 208,114

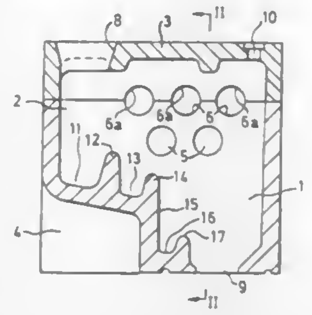
Claims priority, application United Kingdom, Nov. 23, 1979, 7940611; Nov. 23, 1979, 7940612

Int. Cl.^{3} C03B *5/16, 5/22*

U.S. Cl. 65—346 **9 Claims**

1. In a glass spinning vessel for receiving pre-manufactured

glass in solid form, remelting said glass and feeding the same from a main body of glass to a draw bar in the base of the vessel: the improvement comprising said vessel including a lateral extension defining a reception and melting zone laterally offset from and above the location of the draw bar, at least one glass inlet located above the reception and melting zone, said reception and melting zone comprising a first reception trough for receiving glass to be melted from the inlet, a first weir, a second reception trough separated from the first reception trough by the first weir, and a second weir separating the second reception trough from the main body of glass in the vessel, whereby the freshly melted glass is constrained to follow a sinuous path over the first weir, through the second reception trough and over the second weir before joining the main body of glass in the vessel.



4,356,020
FERTILIZER COMPOSITIONS CONTAINING ALKYLENE OXIDE ADDUCT ANTICAKING AGENTS

Margarete Grünert, Kaarst, and Holger Tesmann, Düsseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,439

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045131

Int. Cl.^{3} C05G *3/00*

U.S. Cl. 71—27 **6 Claims**

1. A method of decreasing the caking during storage in a hygroscopic salt or fertilizer which normally cakes on storage, which comprises uniformly admixing with said hygroscopic salt or fertilizer an effective anticaking amount of an anticaking agent consisting of one or more compounds selected from the group consisting of adducts of from 6 to 15 mols of ethylene oxide and/or propylene oxide onto 1 mol of a β-hydroxyalkyl-diethanolamine of the formula

wherein R^1 is an alkyl of from 1 to 18 carbon atoms and R^2 is hydrogen or alkyl of from 1 to 16 carbon atoms, the sum of the carbon atoms in R^1 and R^2 being from 8 to 18.

3. A composition in particulate, free-flowing form consisting essentially of a hygroscopic fertilizer or salt component which normally cakes on storage having a uniformly distributed, effective surface content as anticaking agent of from about 0.005 to 0.2% by weight, based upon the weight of the hygroscopic fertilizer or salt component, of one or more compounds selected from the group consisting of adducts of from 6 to 15 mols of ethylene oxide and/or propylene oxide onto 1 mol of β-hydroxyalkyl-diethanolamine of the formula

wherein R^1 is an alkyl of from 1 to 18 carbon atoms and R^2 is hydrogen or alkyl of from 1 to 16 carbon atoms, the sum of the carbon atoms in R^1 and R^2 being from 8 to 18.

4,356,021
LIQUID FERTILIZER SOLUTION CONTAINING ZINC

Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 30, 1980, Ser. No. 221,681

Int. Cl.^{3} C05G *1/06;* **C05C** *9/00*

U.S. Cl. 71—30 **19 Claims**

1. A method for preparing a liquid fertilizer concentrate comprising mixing, in an aqueous medium in the substantial absence of free ammonia, zinc oxide and ammonium thiosulfate, the mole ratio of ammonium thiosulfate to zinc oxide being at least about 2:1.

4,356,022
S-ALKYL AND ALKENYL-THIOPHENYLACETAMIDO THIOPHOSPHATES AND PHOSPHONATES AS PLANT GROWTH REGULANTS

Llewellyn W. Fancher, New Castle, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 133,066, Mar. 24, 1980, Pat. No. 4,283,395. This application Jan. 21, 1981, Ser. No. 227,018

Int. Cl.^{3} A01N *57/14;* **C07F** *9/165, 9/40*

U.S. Cl. 71—87 **2 Claims**

1. A method of regulating the growth of plants comprising applying to the plant an effective growth regulating amount of a compound selected from the group consisting of:

o-ethylmercapto-O,O-diethylphosphorodithioylacetanilide;
m-ethylmercapto-O,O-diethylphosphorodithioylacetanilide;
p-ethylmercapto-ethyl-O-isobutylphosphonodithioylacetanilide; and
p-(n-butylmercapto)-ethyl-O-ethylphosphonodithioylacetanilide.

4,356,023
CERTAIN HERBICIDAL TETRAHYDROFURANS

George B. Payne, and Samuel B. Soloway, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 30, 1980, Ser. No. 164,209

Int. Cl.^{3} A01N *43/08;* **C07D** *307/12*

U.S. Cl. 71—88 **3 Claims**

1. 5-Ethyltetrahydro-α,α-dimethyl-5-((phenylmethoxy)methyl)-2-furanmethanol.

4,356,024
PROCESS FOR THE PREPARATION OF 1-AMINO-1,3,5-TRIAZINE-2,4(1H, 3H)-DIONE COMPOUNDS

Karlfried Dickore', Leverkusen, and Engelbert Kühle, Berg.-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

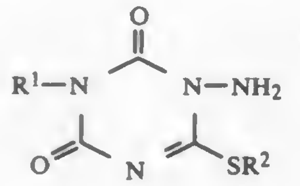
Filed Feb. 10, 1981, Ser. No. 233,250

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006263

Int. Cl.^{3} C07D *251/38;* **A01N** *43/64*

U.S. Cl. 71—93 **13 Claims**

1. Process for the preparation of a 1-amino-1,3,5-triazine-2,4(1H, 3H) dione compound of the formula:



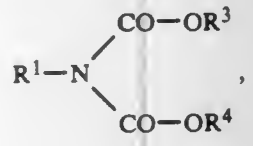
(I)

wherein:

R^1 represents a straight-chain or branched alkyl radical which has 1–10 carbon atoms and is optionally substituted by lower alkoxy, lower alkylmercapto, halogen, cyano or nitro; or an alkenyl radical with 3–8 carbon atoms, an alkynyl radical with 3–8 carbon atoms or a cycloaliphatic radical which has 5–8 ring carbon atoms, any of which is optionally substituted by lower alkyl or lower alkoxy; an araliphatic radical with 7–12 carbon atoms, the aromatic ring system of which being optionally substituted by halogen, nitro, trihalogeno-lower alkyl, cyano, lower alkyl, lower alkoxy or lower alkylmercapto; an aromatic radical which has 6–12 carbon atoms and is optionally substituted by halogen, nitro, trihalogeno-lower alkyl, cyano, lower alkyl, lower alkoxy or lower alkylmercapto; or a heterocyclic radical with 5–6 ring atoms, optionally containing 1–3 hetero-atoms selected from oxygen and/or sulphur and/or nitrogen, in the ring system, and

R^2 represents a straight-chain or branched alkyl radical which has 1–6 carbon atoms and is optionally substituted by lower alkoxy, lower alkylmercapto, lower alkoxycarbonyl, halogen, cyano or nitro; an alkenyl radical with 3–6 carbon atoms; an alkynyl radical with 3–6 carbon atoms; a cycloaliphatic radical which has 5–8 ring carbon atoms and is optionally substituted by lower alkyl or lower alkoxy; or an araliphatic radical with 7–12 carbon atoms, the aromatic ring system of which optionally carrying substituents selected from lower alkyl, lower alkoxy, lower alkylmercapto, lower alkoxycarbonyl, halogen, cyano and nitro,

which process comprises reacting an N-substituted imidodicarboxylic acid diaryl ester of the formula:



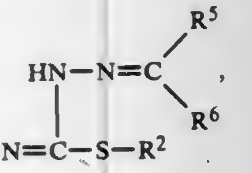
(II)

in which:

R^1 has the same meaning as above, and

R^3 and R^4, which may be identical or different, each represent a phenyl radical optionally carrying substituents selected from lower alkyl, lower alkoxy, halogen, halogeno-lower alkyl, cyano and nitro, or a naphthyl radical,

with an isothiosemicarbazone of the formula:



(III)

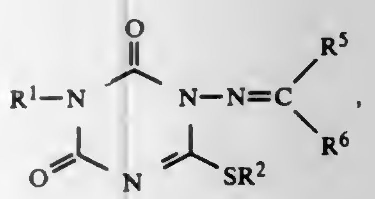
in which:

R^2 is identified as above,

R^5 represents hydrogen or alkyl with 1–3 carbon atoms, cycloalkyl with 5–7 carbon atoms, benzyl or an aryl radical with 6–10 carbon atoms each of these radicals being optionally substituted by halogen, cyano, nitro, lower alkyl, lower alkoxy or lower alkylmercapto, and

R^6 represents alkyl with 1–3 carbon atoms, cycloalkyl with 5–7 carbon atoms, benzyl or aryl with 6–10 carbon atoms each of these radicals being optionally substituted by halogen, cyano, nitro, lower alkyl, lower alkoxy or lower alkylmercapto, or

R^5 and R^6, together with the alkylidene carbon atom, represent a 5-membered to 7-membered carbocyclic ring, at a temperature between 50° and 150° C. and hydrolyzing, in acid medium, the 1-alkylideneamino-1,3,5-triazine-2,4(1H, 3H)-dione thereby formed of the formula:



(IV)

in which R^1, R^2, R^5 and R^6 are identified as above.

4,356,025
N-(BENZENESULFONYL) THIOCARBAMATES - HERBICIDAL ANTIDOTES

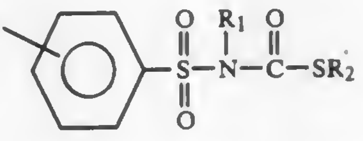
Edmund J. Gaughan, Berkeley, and Charles Kezerian, Orinda, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 108,890, Dec. 31, 1979, Pat. No. 4,297,295, which is a division of Ser. No. 723,251, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 619,115, Oct. 2, 1975, abandoned. This application Mar. 6, 1981, Ser. No. 241,278

Int. Cl.^{3} A01N *37/00*

U.S. Cl. 71—100 **42 Claims**

1. A herbicidal composition consisting essentially of an effective amount of a thiocarbamate herbicide and an antidotally effective amount of a compound corresponding to the formula



in which X is hydrogen, methyl, chloro, bromo, or methoxy; R_1 is hydrogen or methyl; and R_2 is alkyl having from 1 to 4 carbon atoms, inclusive, methylthio-p-chlorobenzene sulfonyl carbamate, benzyl or 4-chlorophenyl; provided that when X is hydrogen and R_1 is methyl, then R_2 is other than ethyl; said compound being antidotally active with said thiocarbamate herbicide.

4,356,026
SUBSTITUTED CYCLOPROPYLMETHOXY PHENYL UREAS AND THEIR USE AS HERBICIDES

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

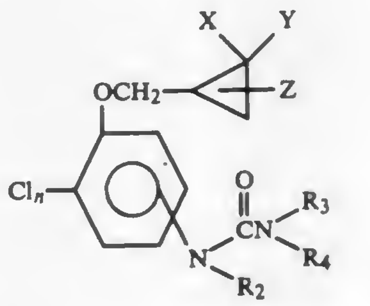
Continuation-in-part of Ser. No. 12,992, Feb. 21, 1979, abandoned, which is a division of Ser. No. 807,940, Jun. 21, 1977, Pat. No. 4,149,874. This application Jan. 23, 1980, Ser. No. 114,539

Int. Cl.^{3} A01N *47/30;* **C07C** *127/19, 83/10*

U.S. Cl. 71—120 **53 Claims**

53. An herbicidal composition of matter comprising:

(a) an herbicidal amount of a compound having the formula



in which R_2 is hydrogen, lower alkoxyalkyl or lower alkanoyl; R_3 and R_4 are independently hydrogen, lower alkyl or lower alkoxy; X and Y are independently chloro, fluoro or bromo; Z is hydrogen, methyl, di-methyl or one methyl and one chloro substituent; and n is 0 or 1, and

(b) an inert diluent or carrier.

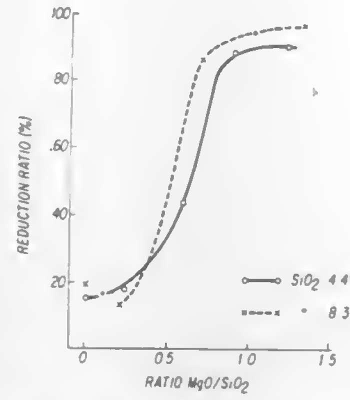
4,356,027

IRON ORE PELLETS CONTAINING MAGNESIUM OXIDE

Takeshi Sugiyama; Shoji Shirouchi, both of Kobe; Mamoru Onoda, Miki; Fumikazu Kawaguchi, and Isao Fujita, both of Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Aug. 29, 1980, Ser. No. 182,599
Claims priority, application Japan, Sep. 3, 1979, 54-112648
Int. Cl.^{3} C22B *1/14*

U.S. Cl. 75—0.5 R **4 Claims**



1. Iron ore pellets which are formed by admixing an iron ore containing 8.41% or less of SiO_2 with a sufficient amount of magnesia or MgO feeding source to provide a ratio of MgO to SiO_2 of at least about 0.5, such that the basicity, expressed as the ratio of calcium oxide to SiO_2, is less than the about 0.05.

4,356,028

IN SITU PHOSPHORUS ADDITION TO TANTALUM

Victor T. Bates, Kenosha, Wis., assignor to Fansteel Inc., North Chicago, Ill.

Filed Aug. 24, 1981, Ser. No. 295,250
Int. Cl.^{3} B22F *9/24*

U.S. Cl. 75—0.5 AB **12 Claims**

1. In the process for making tantalum powder wherein (1) a tantalum-containing material is digested in hydrofluoric acid to dissolve tantalum values and other materials in a hydrofluoric acid solution, (2) tantalum is separated from other materials by extraction of said solution with an organic solvent in a liquid-liquid solvent extraction process and a tantalum-rich solution is recovered therefrom, (3) said tantalum-rich solution is treated to precipitate a tantalum salt, (4) said tantalum salt is reduced to metallic tantalum by an alkali metal, and (5) metallic tantalum is recovered from said reduction step in the form of a powder, the improvement wherein a phosphorus-containing material is added to at least one of said steps (3) and (4) in an amount of at least 5 parts of elemental phosphorus per million parts of elemental tantalum at the step of said addition and an amount to provide from about 2 to about 400 parts of elemental phosphorus per million parts of elemental tantalum in the final powder.

4,356,029

TITANIUM PRODUCT COLLECTION IN A PLASMA REACTOR

Michael G. Down, Plum Boro; Joachim V. R. Heberlein, Forest Hills, and Thomas N. Meyer, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 23, 1981, Ser. No. 333,838
Int. Cl.^{3} B22F *9/20, 9/22*

U.S. Cl. 75—0.5 B **10 Claims**

1. A process for reducing a metal from a chloride salt; comprising the steps of:

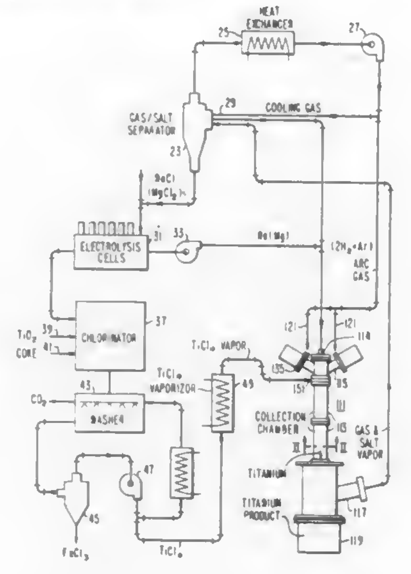
(a) striking an electric arc in an axial gap between the electrode of an arc heater;

(b) introducing a pressurized gas or gas mixture consisting of argon, helium and hydrogen through the gap and into the arc chamber to blow the electric arc from the gap and into the interior of the elongated arc chamber to form an elongated arc jet stream comprising the gas and projecting from the arc chamber into a reaction chamber;

(c) feeding into the arc jet stream a quantity of one element selected from the group consisting of an alkaline metal and an alkaline earth metal;

(d) feeding into the arc jet stream a quantity of a chloride of a metal;

(e) maintaining a temperature of the reaction chamber walls higher than the vapor point of the alkali metal chloride or alkaline earth metal chloride and lower than the melting point of the elemental metal;



(f) projecting the reaction products into a collection chamber to cause the elemental metal to separate from the gaseous salt and deposit on the interior wall of the collection chamber as a solid; and

(g) feeding the arc jet stream past the elemental metal deposited on the interior wall of the collection chamber thereby permitting the deposited elemental metal to become molten and subsequent to being blown by the arc jet stream, rapidly cooled in lower parts of the collection chamber, which are cooler than the uppermost parts thereby permitting the metal to be blown or fall gravitationally into an associated receptacle in the form of solidified globules, crystals, granules and large diameter powders.

4,356,030

SAFE DISPOSAL OF METAL VALUES IN SLAG

Peter T. Halpin, McLean, and George L. Zarur, Springfield, both of Va., assignors to World Resources Company, McLean, Va.

Filed Mar. 3, 1981, Ser. No. 240,057
Int. Cl.^{3} C22B *9/00*

U.S. Cl. 75—21 **10 Claims**

1. The method of safely disposing of sludge containing metal values capable of having toxic ecological properties, including the steps of,

(a) mixing a charge of metal bearing ore with a reducing agent, and roasting it to drive off some of the sulfur components;

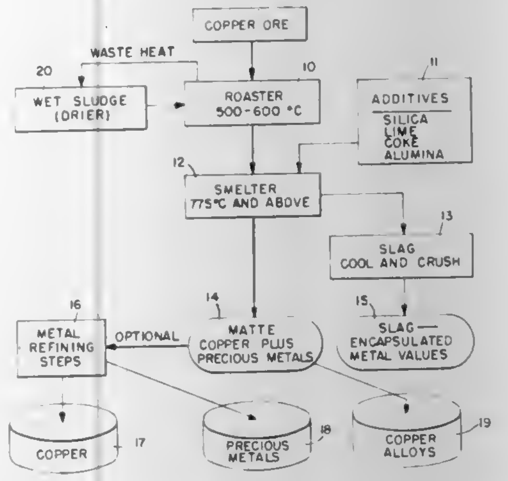
(b) drying a quantity of sludge using heat from the roasting step to produce an intermediate product containing said metal values;

(c) smelting the roasted charge of metal bearing ore in a furnace;

(d) mixing with the smelting charge as a reducing agent said intermediate product derived from the sludge and containing said metal values;

(e) maintaining the smelting temperature of the mixture above 775° C.;

(f) separating the mixture into a matte containing said metal and a slag containing said metal values; and



(g) cooling the slag with said metal values encapsulated therein.

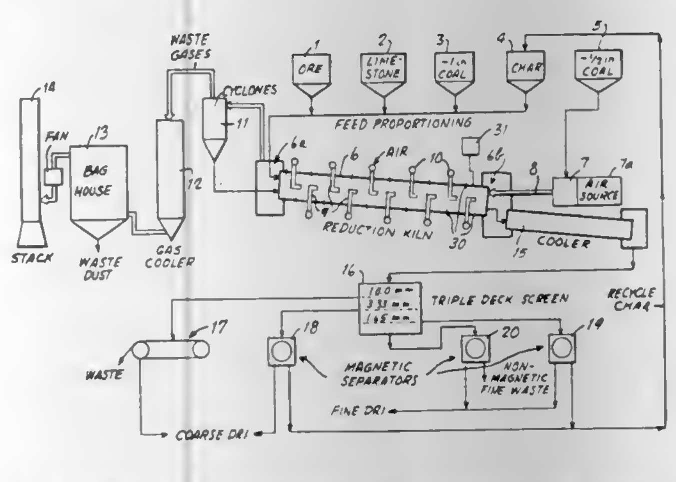
4,356,031

APPARATUS AND METHOD FOR CONTROLLING THE RECYCLE CHAR CIRCUIT IN A DIRECT REDUCTION PROCESS

Harry W. Hockin, deceased, late of Attadale, Australia (by Jane S. Hockin, executrix); Brian F. Bracanin, Busselton, Australia; Ronald J. Clements, Capel, Australia; Vitie P. Keran, Bunbury, Australia, and Alan C. Baker, Harriman, Tenn., assignors to The Direct Reduction Corporation, New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,154
Int. Cl.^{3} C21B *13/08*

U.S. Cl. 75—36 **10 Claims**



1. A method for controlling the process for the direct reduction of ore or other materials containing iron oxides using a solid carbonaceous reducing agent and oxygen-containing gas in a rotary kiln wherein part of the reducing agent is added from the discharge end of the kiln and the remainder of the reducing agent is added at the feed end, and the discharge materials include DRI, charred reducing agent suitable for reuse in said process, and fine waste, comprising the steps of:

(a) estimating, for the particular reducing agent, iron oxides and operating temperatures to be used in said process, the appropriate percentage of fixed carbon by weight to be contained in all the materials to be discharged from the discharge end of the kiln, and starting up the process using operating parameters in accordance therewith;

(b) weighing all of said kiln discharge materials;

(c) separating said charred reducing agent and fine waste from said DRI produced and from each other;

(d) determining the weight of fixed carbon in said DRI produced, charred reducing agent, and fine waste;

(e) determining the percentage of the fixed carbon by weight in the total discharge materials from the discharge end of the kiln to determine whether it is in the range of said estimated appropriate percentage;

(f) adjusting the process operating parameters to establish an actual percentage corresponding to optimum process operation;

(g) transporting said separated charred reducing agent to a bin from which it is fed at a preselected rate back to the kiln;

(h) establishing a level of charred reducing agent in said bin at which optimum process operation is achieved; and

(i) maintaining said charred reducing agent at said level in said bin to maintain the process at optimum operation.

4,356,032

METHOD OF DEPHOSPHORIZING MOLTEN PIG IRON

Hitoshi Morishita; Hajime Bada, and Fumio Sudo, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 23, 1981, Ser. No. 276,508
Claims priority, application Japan, Jun. 28, 1980, 55-88081
Int. Cl.^{3} C21C *7/02*

U.S. Cl. 75—52 **10 Claims**

1. A method of preliminarily dephosphorizing molten pig iron, wherein said molten pig iron is charged into a refining vessel provided at its bottom with tuyeres for blowing gas and at its top with a gas injecting member, and a powdery refining agent, consisting of a calcium oxide compound and acting to produce a dephosphorization reaction, together with said blowing gas is blown into said molten pig iron through said tuyeres, while a flux, adding together with said refining agent to said molten pig iron for reducing the viscosity and melting point of the resulting slag, is charged into said refining vessel to perform desiliconization and subsequent dephosphorization of said molten pig iron, which method comprises:

(a) charging a coolant together with said molten pig iron into said refining vessel to control the temperature of said molten pig iron during the blowing in a range of 1,250°-1,450° C.;

(b) blowing said powdery refining agent into said molten pig iron so as to adjust a value of slag basicity after the treatment to not less than 2.5; and

(c) blowing said blowing gas at a rate of not less than 0.5 Nm^3/min per ton of molten pig iron so that a net oxygen quantity is 8-15 Nm^3 per ton of molten pig iron.

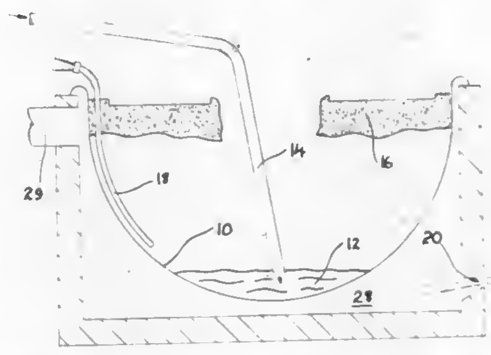
4,356,033

PROCESS FOR REFINING METALS BY DROSSING PROCEDURES

Thomas R. A. Davey, 5 Rhodes Dr., Glen Waverley, Victoria, Australia

Filed Jun. 10, 1980, Ser. No. 158,131
Int. Cl.^{3} C22B *13/06, 25/08*

U.S. Cl. 75—63 **14 Claims**



1. A process of removing an impurity from a bath of molten metal as a dross or crust, comprising cooling the surface of a body of a metal in a kettle by applying to said surface a cooling liquid and, simultaneously with said cooling, stirring the molten metal thereby to precipitate said impurity to form a solid crust in the form of a substantially unitary mass containing impurity precipitated by said cooling, said cooling liquid being applied to said surface such that an opening is present in said solid crust to permit insertion or withdrawal of a stirrer or pump into the molten metal below said solid crust.

4,356,034

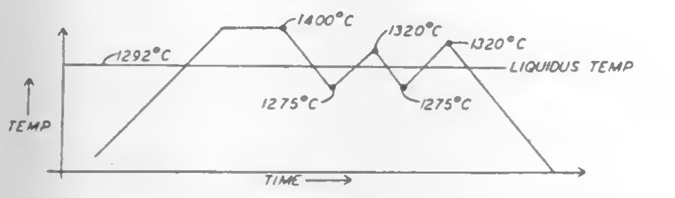
METHOD OF REDUCING DEFECTS IN POWDER METALLURGY TUNGSTEN CARBIDE ELEMENTS

Robert P. Badrak, Missouri City, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

Filed Sep. 10, 1980, Ser. No. 185,692

Int. Cl.^{3} B22F *3/12*

U.S. Cl. 75—203 **3 Claims**



1. A method of manufacturing a cemented carbide insert for use in a drill bit for underground drilling and substantially reducing the voids therein without HIPing, said method consisting of the steps of:

- mixing the desirable amount of binder or matrix metal and carbide fractions of powdered metal into a substantially homogeneous mixture;
- shaping the desired amount of said mixture to obtain the desired finished shape, size and density of insert,
- sintering the shaped insert at a temperature and time sufficient to densify the homogeneous powder mixture;
- lowering and raising the temperature of the sintered insert across the solidus temperature line of said insert at least one time, and then cooling the insert to room temperature.

4,356,035

STEELMAKING PROCESS

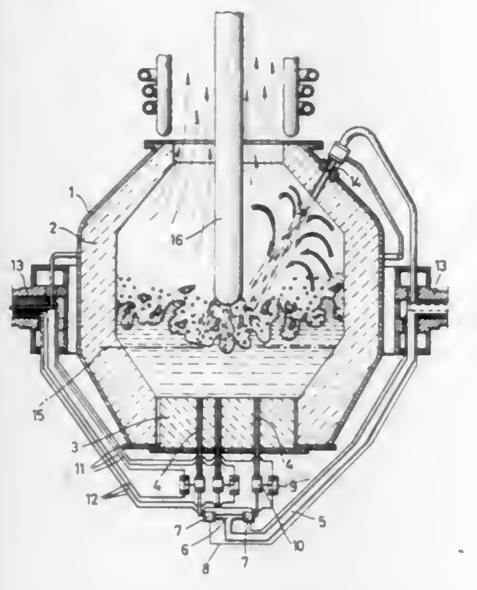
Karl Brotzmann, and Paul Mantey, both of Sulzbach-Rosenberg, Fed. Rep. of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshütte, Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,844

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2951156; Mar. 4, 1980, 3008145

Int. Cl.^{3} C21C *5/32, 5/34*

U.S. Cl. 75—52 **11 Claims**



1. A process for making steel in a convertor equipped with tuyeres located below the bath surface and with a water-cooled lance and with topblowing tuyeres located above the bath surface which comprises:

- introducing the oxygen feed onto the bath surface through said water-cooled lance and by at least one topblowing tuyere pointing at the bath surface, and at least intermittently introducing an oxygen-free gas, loaded at least in part with ground solids for the purpose of slag formation or for the purpose of heat supply or for both purposes, into the melt through the tuyeres located below the bath surface, the amount of oxygen which is introduced through the tuyeres located below the bath surface being less than 10 percent the total oxygen introduced.

4,356,036

ANTI-CORROSION COATING FOR METALS

Nicolas Kaliardos, 10725 Morang Ave., Detroit, Mich. 48224

Filed Jul. 2, 1981, Ser. No. 279,865

Int. Cl.^{3} C09D *5/10*

U.S. Cl. 106—1.12 **7 Claims**

1. An anti-corrosion coating composition comprising a mixture of aluminum paste or zinc paste containing aluminum or zinc flakes and a solvent, microcrystalline wax, aromatic hydrocarbon resin having a softening point, R and B, of 70° C.–140° C., chlorinated rubber having a combined chlorine content of at least 66%, neutral barium sulfonate, chlorinated solvent, aromatic hydrocarbon solvent and mineral spirits.

4,356,037

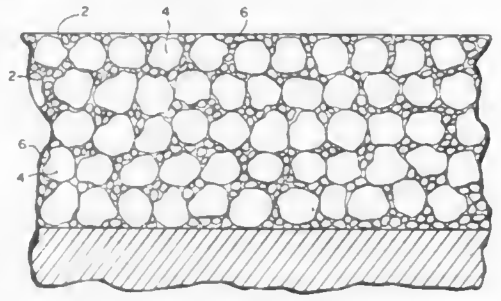
ABRASION RESISTANT COATING

Robert L. Novak, 7 Oxbow Rd., Medfield, Mass. 02052

Filed May 12, 1980, Ser. No. 149,138

Int. Cl.^{3} C08L *5/00;* **B32B** *5/16*

U.S. Cl. 106—209 **3 Claims**



1. An abrasion resistant coating comprising a binder having dispersed therein first abrasion-resistant generally spherical particles of substantially uniform size, said first particle size being no larger than Grit size 8 and no smaller than Grit size 1000, and second abrasion-resistant generally spherical particles of substantially uniform size, the second particles having diameters of less than 15.4% of the diameters of said first particles, the combined volume of said second particles and said binder being at least equal to the void volume of said first particles, the volume of said binder being at least equal to the combined void volume of said first and second particles when said first and second particles are interdispersed with one another.

4,356,038

STABILIZATION OF CHLORINATED ALIPHATIC HYDROCARBONS AND USE OF STABILIZED COMPOSITION IN CLEANING ARTICLES

David Bain, Sutton Leach; John E. Martin, Grappenhall; John H. Saul, Upton-by-Chester, and Neil Winterton, Tarvin, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 16, 1980, Ser. No. 170,835

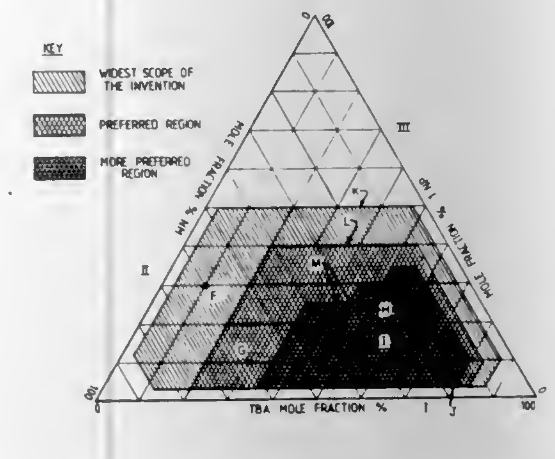
Claims priority, application United Kingdom, Jul. 25, 1979, 7925867; Apr. 25, 1980, 8013705

Int. Cl.^{3} C11D *7/50;* **C23G** *5/02;* **C09K** *15/16;* **C07C** *17/42*

U.S. Cl. 134—2 **13 Claims**

3. A solvent composition comprising 1,1,1-trichloroethane having a stabilising amount of a mixture of stabilising components dissolved therein, characterized in that the mixture of stabilizing components comprises (i) tertiary butanol, (ii) nitromethane and (iii) 1- or 2-nitropropane or nitroethane in which the mole fractions percent of the stabilizing components are within the ranges encompassed by Contour K in FIG. 1 of the accompanying drawings or by Contour A in FIG. 2 of the accompanying drawings.

13. A method of cleaning metal and other articles which comprises contacting the articles with a solvent composition or the vapour thereof, characterised in that the solvent composition is as claimed in claim 3.



4,356,039

METHOD FOR CLEANING DRAINS AND WATERWAYS

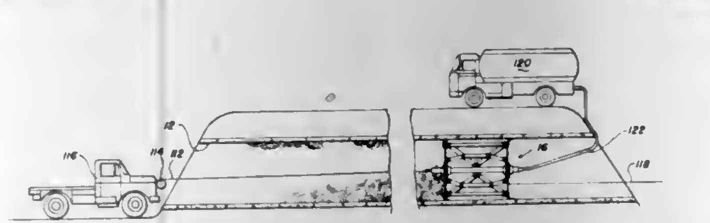
Jack R. Clifford, Alton, Ill., assignor to Paul L. Pratt and John T. Pierce, Jr., a part interest to each

Continuation-in-part of Ser. No. 42,548, May 25, 1979, Pat. No. 4,218,803, and a continuation-in-part of Ser. No. 26,806, Apr. 3, 1979, Pat. No. 4,216,561. This application Mar. 18, 1980, Ser. No. 131,420

The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.

Int. Cl.^{3} B08B *9/02*

U.S. Cl. 134—8 **6 Claims**



1. A method for cleaning storm sewers, sanitary sewers and other drains and waterways which comprises the steps of prewetting the debris in the waterway with water from a first water directing means, plowing the prewetted debris loose with a plowing means, further wetting the prewetted debris with water from a second water directing means, said first and second water directing means directing water simultaneously, and sweeping the debris forward with a plunging means, wherein said steps are accomplished by towing an implement comprising an elongated carriage assembly with plowing means at its forward end and plunging means at its rearward end in spaced relationship with said plowing means, said first water directing means spraying water in advance of said plowing means and said second water directing means spraying water behind the plowing means but in advance of the plunging means.

4,356,040

SEMICONDUCTOR DEVICE HAVING IMPROVED INTERLEVEL CONDUCTOR INSULATION

Horng-Sen Fu, Sunnyvale, Calif.; Al F. Tasch, Jr., Richardson, and Pallab K. Chatterjee, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

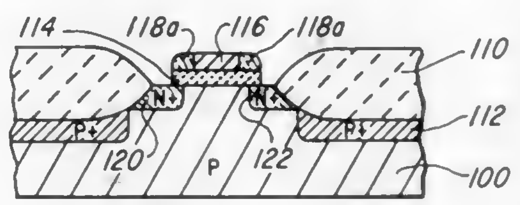
Filed May 2, 1980, Ser. No. 146,938

Int. Cl.^{3} H01L *21/70, 21/26*

U.S. Cl. 148—1.5 **7 Claims**

7. A method for manufacturing a semiconductor device comprising the steps of:

- forming a first relatively thin insulating layer on the surface of a semiconductor substrate;
- forming a conductive layer upon said first insulating layer;
- forming a second relatively thick insulating layer to overlie said conductive layer;
- patterning said second insulating layer and said first conductive layer to define a first gate electrode which is separated from said substrate by said first relatively thin insulating layer, the top surface of said first gate electrode being covered by said second insulating layer;
- forming a third conformant insulating layer to overlie said gate electrode and the portion of said second insulating layer remaining on its top surface;
- anisotropically removing said third insulating layer except from the side walls of said gate electrode and its overlying insulating layer;



- removing said first insulating layer from all portions of said substrate except that portion covered by said first gate electrode and said relatively thick insulating region formed on the side wall thereof;
- forming a second relatively thin insulating film on said substrate;
- forming a second conductive layer to overlie said second insulating layer and at least a portion of said first gate electrode, said first gate electrode and the second conductive layer being laterally separated by said relatively thick insulating layer remaining of the side wall of said first gate electrode.

4,356,041

METHOD OF FABRICATING A MIS-TYPE DEVICE BY USING A GATE ELECTRODE AND SELECTIVELY IMPLANTED NITRIDE LAYER

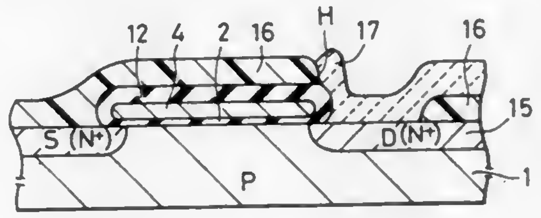
Yasunobu Kosa, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 1, 1980, Ser. No. 174,434

Claims priority, application Japan, Oct. 1, 1979, 54-125411

Int. Cl.^{3} H01L *21/22, 21/265*

U.S. Cl. 148—1.5 **16 Claims**



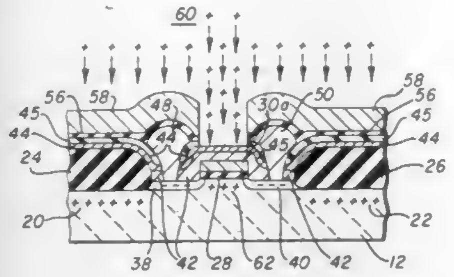
1. A method of fabricating a MIS-type device comprising the steps of:

- forming selectively a conductor layer for a control electrode of the MIS-type device on an insulating layer formed on a major surface of a semiconductor substrate;
- converting the surface of said semiconductor substrate, which is not covered with said conductor layer, into an oxygen impermeable layer; and
- oxidizing thereafter the surface of said conductor layer by using said oxygen impermeable layer as a mask to form an oxidation film on said conductor layer.

4,356,042

METHOD FOR FABRICATING A SEMICONDUCTOR READ ONLY MEMORY

Jerrell M. Gedaly, Dallas; Joseph P. Sadowski; David D. Kirkland, both of Coppell, and Frank J. Sigmund, Dallas, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.
PCT No. PCT/US80/01494, § 371 Date Nov. 7, 1980, § 102(e) Date Nov. 7, 1980
PCT Filed Nov. 7, 1980, Ser. No. 265,986
Int. Cl.³ H01L *21/265;* **B01J** *17/00*
U.S. Cl. 148—1.5 **4 Claims**



1. A method for producing a ROM semiconductor device having a selected bit pattern implanted therein, comprising the steps of:

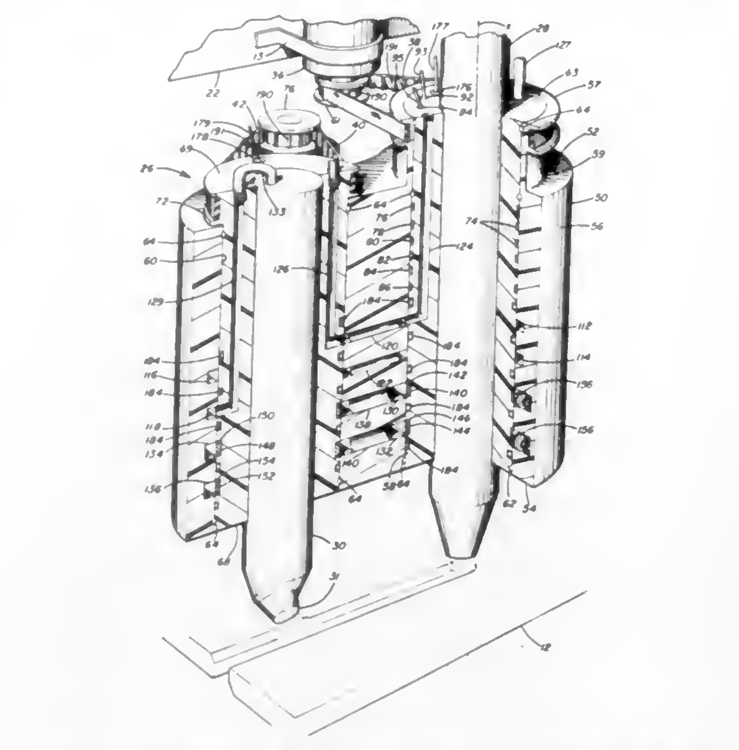
(a) fabricating a plurality of memory cells on a semiconductor substrate wherein the memory cells are separated by field oxide, each cell having doped source and drain regions in the substrate on each side of a non-implanted channel region, a gate oxide immediately above the channel region, a polysilicon gate immediately above the gate oxide, a first oxide layer above the polysilicon gate, a nitride layer above the oxide layer, a second oxide layer above the nitride layer and metal contacts extending through the first and second oxide layers and the nitride layer for contact with the respective source and drain regions;
(b) depositing a third oxide layer to cover the surface of said device;
(c) etching the second and third oxide layers to expose the nitride layer above the channel regions of selected ones of said memory cells in accordance with said selected bit patterns;
(d) after etching said second oxide layer, exposing the device to a stream of ions having sufficient energy to penetrate the exposed nitride layer, the first oxide layer, the polysilicon gate and underlying gate oxide to implant the corresponding channel regions of each of the selected memory cells thereby changing the voltage thresholds of the selected memory cells, the ions having insufficient energy to effectively penetrate to the regions of said substrate not below the etched regions of said second oxide layer; and
(e) covering the surface of said device with a passivation layer after implanting the channel regions of the selected memory cells.

4,356,043

CUTTING TOOL CARRIER AND METHOD OF CUTTING

Harry E. Anderson, Pittsburgh, and Raymond E. Heasley, McKees Rocks, both of Pa., assignors to Anderson Engineers, Inc., Carnegie, Pa.
Filed Aug. 28, 1981, Ser. No. 297,401
Int. Cl.³ B23K *7/10*
U.S. Cl. 148—9 R **33 Claims**

1. A carrier for cutting tools which require utilities to operate, said carrier comprising,
(a) a body,
(b) a plurality of tool holders pivotally mounted within the body and each adapted to receive a cutting tool,
(c) first pivot means enabling the body to be rotated about the axis of a first tool holder,
(d) second pivot means for rotating each of the remaining tool holders within the body,
(e) control means for transmitting control signals for the second pivot means through the first tool holder, said control means operative continuously regardless of any motion between the first tool holder and the body, and



(f) utility means for transmitting tool utilities first through the first tool holder, then through the body, and then through each of the remaining tool holders, said utility means operative continuously regardless of any motion between the tool holders and the body.

4,356,044

EMULSION EXPLOSIVES CONTAINING HIGH CONCENTRATIONS OF CALCIUM NITRATE

Harvey A. Jessop, Lehi, and Albert G. Funk, Salt Lake City, both of Utah, assignors to IRECO Chemicals, Salt Lake City, Utah
Filed Mar. 23, 1981, Ser. No. 246,763
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **10 Claims**

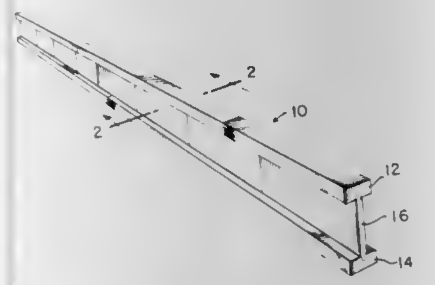
1. A water-in-oil emulsion blasting agent comprising a water-immiscible liquid organic fuel as a continuous phase; an emulsified aqueous inorganic oxidizer salt solution as a discontinuous phase, which salt solution contais calcium nitrate in the amount of from about 50% to about 70% by weight based on the total composition and has a calcium nitrate to ammonium nitrate weight ratio of 1.5 or greater; an emulsifier; and optionally a density reducing agent.

4,356,045

COMPLETE PRODUCTION LINE OF WOOD I-JOIST MANUFACTURING APPARATUS THE METHOD OF MANUFACTURE, AND THE I-JOIST PRODUCT, HAVING LUMBER CHORDS AND A PLYWOOD WEB

William J. Elford, Auburn; Donald E. Williams, and Keith H. Miller, both of Tacoma, all of Wash., assignors to St. Regis Paper Company, Tacoma, Wash.
Filed May 30, 1980, Ser. No. 154,916
Int. Cl.³ B27D *1/10;* **B32B** *31/18*
U.S. Cl. 156—64 **18 Claims**

1. A complete production line of a wood I-joist manufacturing apparatus using lumber from random length supplies for the chords and plywood from random length supplies for the web, to make I-joists of many specified lengths and depths, inclusive of their immediate glue joint curing and strength testing, comprising:
(a) a mechanism for grouping selected near alike random lengths of lumber of like cross-section, inclusive of a stop to abut one end of each, a saw to trim these abutted ends, a finger cutter to form these trim edges, a glue applicator to glue these formed ends, a pivotal support to swing the group of random lengths to prepare the opposite ends using again, the stop, the trim saw, the finger cutter and glue applicator;
(b) a mechanism for receiving and crowding the now alike lengths of lumber to complete their finger joining into an essentially continuous length of lumber for chords, inclusive of a glue joint curer;
(c) a mechanism to cut the continuous length of chord lumber into selectable, then being specified, lengths of chord lumber;
(d) a mechanism for cutting grooves in the lengths of chord lumber, alternatively forming grooves, each of which is a mirror image of the other, one length of chord lumber so grooved to become the bottom chord;
(e) a mechanism to receive random lengths of like thickness of pregrouped plywood, saws to trim these random lengths to a specified width, saws to cut inwardly of each trimmed width edge along one surface of the plywood, saws to cut inwardly of each trimmed width edge along the other surface of the plywood, and a crowder to create an endless web of these formed plywood pieces;

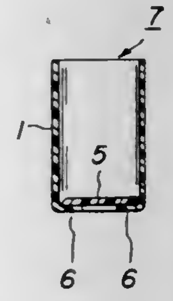


(f) a mechanism having conveyors for both the grooved chord lumber and the endless web plywood to converge the chord lumber into contact with web plywood, glue applicators to spread glue in the grooves and on the formed edges of the web plywood, just prior to their contact, and glue joint curers;
(g) a mechanism for continuing the conveying of the joined chord lumber and endless web, inclusive of a sensor, trigger, and actuator to locate a slight space between chord lengths, a traveling cut off saw moved across the web by the actuator to cut the web to match the chord lengths, thereby creating the I-joists; and
(h) a mechanism to immediately test the overall strength of each I-joist.

4,356,046

METHOD FOR THE MANUFACTURE OF A BATTERY SEPARATOR USING TUBING

Hiroaki Yamazaki, Sowa, and Takao Hasegawa, Kuki, both of Japan, assignors to Firma Carl Freudenberg, Weinheim an der Bergstrasse, Fed. Rep. of Germany
Filed Sep. 17, 1980, Ser. No. 187,998
Claims priority, application Japan, Sep. 17, 1979, 54-119622
Int. Cl.³ B29C *27/12;* **B32B** *31/26*
U.S. Cl. 156—86 **4 Claims**

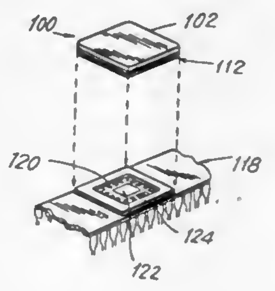


1. A method for the manufacture of a tubular battery separator with a closed end, comprising: forming a tubular body from a sheet of a separator material with a preponderant content of stretched thermoplastic fibers, such that in forming said tubular body overlapping edges of said sheet occur; welding the overlapping edges which occur together; inserting a disc fitted to the inside diameter from one end into said tubular body to a position near the other end leaving an overhanging edge; softening the overhanging edge by heating, causing it to shrink; and pressing said softened and shrunk edge against the disc so as to join the disc to the tubular body.

4,356,047

METHOD OF MAKING CERAMIC LID ASSEMBLY FOR HERMETIC SEALING OF A SEMICONDUCTOR CHIP

Richard Gordon, Scarsdale, and John G. Ciallella, White Plains, both of N.Y., assignors to Consolidated Refining Co., Inc., Mamaroneck, N.Y.
Division of Ser. No. 122,527, Feb. 19, 1980, Pat. No. 4,291,815. This application Feb. 17, 1981, Ser. No. 235,094
Int. Cl.³ B32B *31/26;* **C04B** *39/12*
U.S. Cl. 156—89 **4 Claims**

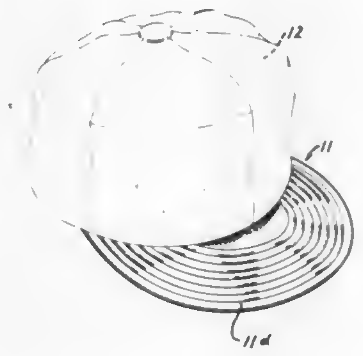


1. A method of fabricating a lid assembly for hermetic sealing of a package containing a semiconductor chip comprising the steps of depositing a metallized layer on the surface of said lid at the periphery thereof, depositing a printed heat fusible solderable layer over said metallized layer at the periphery of said lid, and preflowing said integral heat fusible solderable layer thereto.

4,356,048

CAP VISOR AND METHOD OF MANUFACTURE

James E. Price, New Albany, Ind., assignor to Adver-Togs, Inc., New Albany, Ind.
Continuation of Ser. No. 80,206, Oct. 1, 1979, abandoned, which is a division of Ser. No. 823,208, Dec. 5, 1977, Pat. No. 4,249,269. This application Mar. 9, 1981, Ser. No. 242,154
Int. Cl.³ B29C *27/04;* **B32B** *31/20, 31/22*
U.S. Cl. 156—220 **1 Claim**



1. The method of producing a cap having a watertight visor which comprises the steps of cutting a first vinyl plastic outer cap visor member, an insert board and a second vinyl plastic outer cap visor member into preselected dimensions, assembling said first vinyl plastic outer cap visor member, said insert board and said second vinyl plastic outer cap visor member so that said insert board is sandwiched between all of the edge

margins of said first vinyl plastic outer cap visor member and said second vinyl plastic outer cap visor member, heat sealing said edge margins of said first vinyl plastic outer cap visor member and said second vinyl plastic outer cap visor member so that said insert board is encapsulated therewithin around all edges in a fully sealed and watertight relationship, thereafter placing said heat sealed assembled first vinyl plastic outer cap visor member, said insert board and said second vinyl plastic outer cap visor member within a patterned mold, transmitting high frequency radio waves through said patterned mold to cause flow of said first vinyl plastic outer cap visor member into the pattern of said mold and to maintain all of said edges margins in said fully sealed and watertight relationship, and securing said heat sealed assembled first vinyl plastic outer cap visor member, said insert board and said second vinyl plastic outer cap visor member onto the cap.

4,356,049
METHOD OF MANUFACTURING AN ELECTRET DEVICE

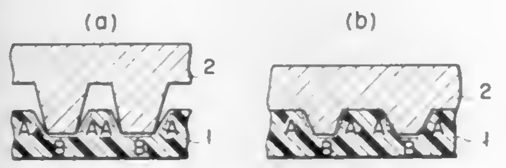
Sakae Tamura, Yokohama; Hiromi Yoshida, Akatsuka Shinmachi; Takehiko Kotoh, Sagamihara, and Masami Kobayashi, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 78,838, Sep. 25, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,166

Claims priority, application Japan, May 25, 1979, 54-64007

Int. Cl.^{3} B32B *3/30;* **H04R** *19/00*

U.S. Cl. 156—220 **6 Claims**



1. A method of manufacturing an electret device, which comprises the steps of:

laminating a conductive member with a dielectric polymer film; and later causing a pressure deformation jig whose surface is provided with plural projections defining numerous minute convex and concave regions to abut against the surface of said dielectric polymer film with a pressure of 100 to 750 kg/cm^2 to thereby plastically deform the dielectric film in forming minute stretched and compressed concave and convex regions, said projections having walls inclined at an angle a, wherein $95^\circ < a < 120^\circ$; and

removing said jig from the surface of the dielectric film.

4,356,050
METHOD OF ADHESIVE BONDING USING VISIBLE LIGHT CURED EPOXIES

James V. Crivello, Clifton Park, and Bruce A. Ashby, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 11, 1979, Ser. No. 102,337

Int. Cl.^{3} B29C *19/02, 27/30*

U.S. Cl. 156—273.3 **15 Claims**

1. A method of making a composite adhesively-bonded article which comprises:

(1) applying to at least a part of one substrate a visible light-polymerizable composition consisting essentially of:
  (i) an epoxidic prepolymer;
  (ii) an effective amount of a catalyst precursor therefor comprising an aromatic iodonium salt of a complex halogenide; and
  (iii) a small but effective amount of a catalyst activator comprising a dye;
(2) exposing said composition to a low intensity source of visible light for not substantially longer than required to initiate polymerization therein and discontinuing exposure to said source of light;
(3) simultaneously with discontinuing exposure or thereafter bringing the exposed surface of the composition-coated substrate into close contact with at least a part of the same or a different substrate to produce a temporary adhesive bond therebetween; and
(4) allowing sufficient time in the dark to elapse for the composition to substantially completely self-polymerize and produce a permanent adhesive bond.

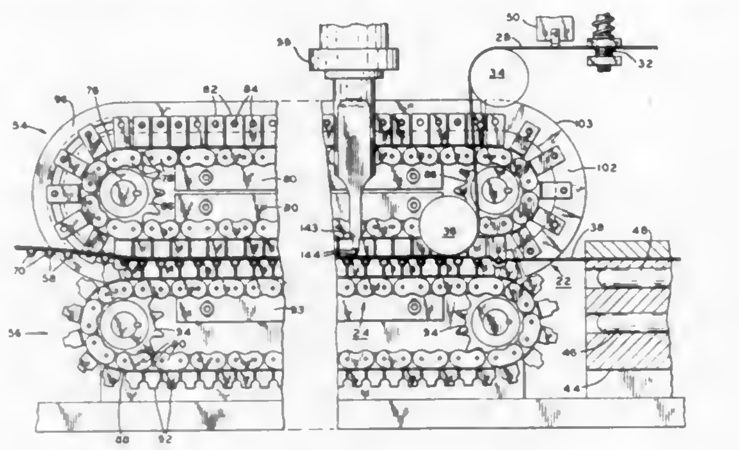
4,356,051
APPARATUS FOR MAKING CONNECTION INSULATORS

Eldon E. Moodie, and Richard D. Burns, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 871,681, Jan. 23, 1978, abandoned. This application May 29, 1981, Ser. No. 268,529

Int. Cl.^{3} B32B *31/08*

U.S. Cl. 156—459 **6 Claims**



1. An apparatus for fabricating a connection insulator having a base portion established by a piece of a first strip of electrical insulating material and a retaining portion established by a piece of a second strip of electrical insulating material deformed in a predetermined pattern for establishing a plurality of insulating pockets, said apparatus comprising: a first track assembly movable along a longitudinally extending path and having a plurality of arbors movable laterally and transversely relative to such path, said arbors having a laterally retracted position and a laterally extended position; a second track assembly having a plurality of anvils movable along the aforementioned path; means for moving the plurality of arbors laterally and transversely relative to the path; means for moving the first and second track assemblies with the plurality of arbors of the first track assembly moving across a first strip of electrical insulating material moving along the aforementioned path and into the path of a second strip of electrical insulating material; means for extending the plurality of arbors before they reach the path of the second strip of electrical insulating material; said plurality of arbors of the first track assembly being operative to intermesh with corresponding anvils of the second track assembly while the arbors are in the extended position for deforming the second strip of insulating material and thereby establishing pockets between the two strips of electrical insulating material; securing means comprising an ultrasonic welding device for securing together the first strip of insulating material and the second strip of insulating material with ultrasonic welds; and means for severing the first strip of insulating material and the second strip of insulating material for establishing a connection insulator having a plurality of insulating pockets.

4,356,052
METHOD AND APPARATUS FOR SELECTIVE LAMINATION OF THERMOPLASTIC LAYERS

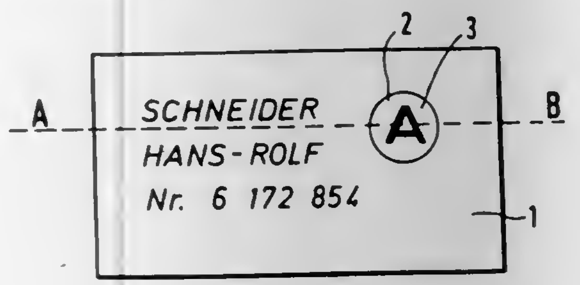
Roland Moraw, and Renate Schädlich, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 111,033, Jan. 10, 1980. This application Apr. 10, 1981, Ser. No. 253,019

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900978

Int. Cl.^{3} B30B *15/34*

U.S. Cl. 156—498 **10 Claims**



1. An apparatus for the selective lamination of thermoplastic layers by heating and pressurizing the internal surfaces of at least two thermoplastic layers, at least one of said layers including one window portion in which at least one insert is located, said lamination not occurring in said window portion, said apparatus comprising:

first and second lamination plates, each of said plates defining an opening corresponding to the window portion of said at least one layer;
a plug inserted in said opening of each plate;
means for thermally insulating said plugs from said plates;
means for discontinuously heating said first and second laminating plates, including resistance elements placed in said plates, said resistance elements having a greater packing density in the vicinity of the opening in each plate than in other areas of each plate; and
means for pressing said plates together with said at least two thermoplastic layers therebetween, whereby said discontinuous heating means heats external surfaces of said layers less at said window portion than at the remainder of said layers.

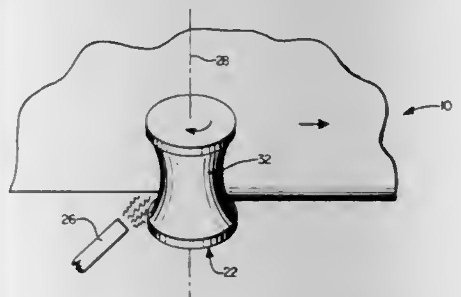
4,356,053
EDGE SEALING OF LAMINATE

Lewis C. LoMaglio, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 11, 1981, Ser. No. 262,598

Int. Cl.^{3} B32B *31/00;* **B31F** *1/00;* **B32B** *17/00;* **B29C** *17/02*

U.S. Cl. 156—499 **2 Claims**



1. An apparatus for encapsulating an exposed edge of an interior lamina or laminae of laminated sheet or film having separate outer thermoplastic laminae on each side of said interior lamina or laminae comprising means for heating the edge of said laminated sheet so that the edges of each of said separate outer thermoplastic laminae are in a molten state and means for forcing the edges of each of said separate outer laminae over the edge of said interior lamina or laminae to encapsulate the edge of said interior lamina or laminae, said means for forcing the edges of each of said outer laminae over the edge of said interior lamina or laminae comprising two roller means which contact said edges of each of said outer laminae and rotate about two axes which intersect, said roller means having concave surfaces which contact edges of each of said outer laminae and force edges of each of said outer lamina over the edge of said interior lamina or laminae to encapsulate the edge of said interior lamina or laminae.

4,356,054
DEVICE FOR FEEDING METAL-FOIL SECTIONS TO A LAMINATING STATION

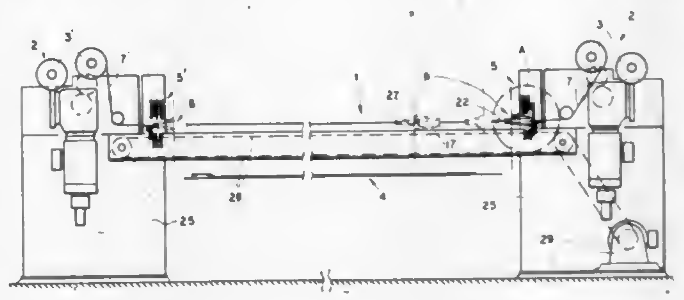
Wolfgang Götz, Krefeld-Fischeln, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Aug. 7, 1980, Ser. No. 175,944

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932698

Int. Cl.^{3} B32B *31/00*

U.S. Cl. 156—517 **8 Claims**



1. An apparatus for feeding sections of metal foil to a stacking station for subsequent lamination with respective base boards, said apparatus comprising:

a frame juxtaposed to said stacking station;
a source of metal foil on said frame;
first holding means on said frame downstream of said source relative to a path of foil transport for clamping at a first position a metal web drawn from said source;
second holding means on said frame downstream of said first holding means for clamping said web at a second position, thereby fixing a portion of said web between said positions;
slicing means on said frame between said first holding means and said second holding means for transversely cutting said web along a line extending perpendicularly to said path;
extracting means shiftably mounted on said frame for gripping a leading end of said web substantially in the region of said slicing means and pulling said web along said path from said source and past said first and said second holding means and said slicing means to move a leading section of said web into a predetermined position at said stacking station;
a substantially horizontal upwardly facing support surface on said frame extending downstream of said source to said first holding means and having a breadth substantially equal to the width of said web, said first holding means including a first vertically reciprocatable clamping bar disposed above said surface and extending in a direction perpendicular to said path, said second holding means including a second and a third vertically reciprocatable clamping bar spaced apart from said first clamping bar along said path and straddling same, said slicing means including a vertically reciprocatable blade, said extracting means being positioned to reach between said second and third bars.

4,356,055

PROCESS AND DEVICE FOR MONITORING THE PLASMA ETCHING OF THIN LAYER UTILIZING PRESSURE CHANGES IN THE PLASMA

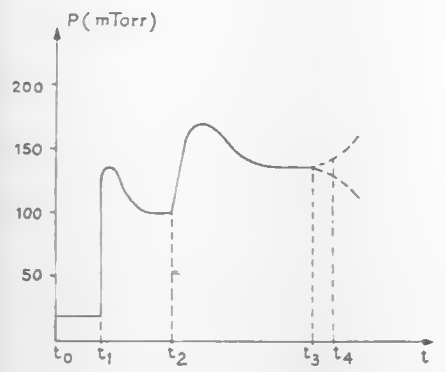
Michel Montier, Grenoble, France, assignor to Societe pour L'Etude et la Fabrication de Circuits Integres Speciaux EFCIS, Grenoble, France

Filed Jul. 22, 1981, Ser. No. 285,332

Claims priority, application France, Jul. 24, 1980, 80 16329

Int. Cl.^{3} H01L *21/306*

U.S. Cl. 156—626 3 Claims



1. A process for the plasma etching of a thin layer deposited on a substrate comprising the following steps:
   starting the etching, of the thin layer
   measuring the pressure in an enclosure in which the etching occurs, and
   stopping the etching after the pressure has reached a plateau then has deviated from a value corresponding to this plateau.

4,356,056

PROCESS FOR INSULATING THE INTERCONNECTIONS OF INTEGRATED CIRCUITS

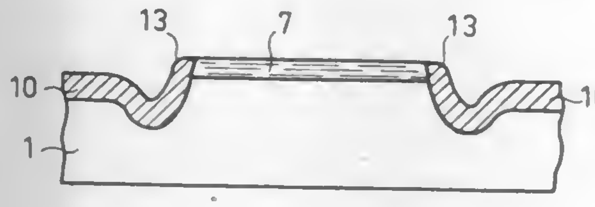
Andre Cornette, and Georges Rey, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 18, 1981, Ser. No. 235,707

Claims priority, application France, Feb. 22, 1980, 80 03974

Int. Cl.^{3} H01L *21/306, 21/312;* **C23F** *1/02*

U.S. Cl. 156—649 10 Claims



1. A process for insulating the interconnections of integrated circuits having components formed in an active layer raised on mesa-like islands on a substrate supporting the same comprising the following succession of steps:
   (a) applying to the substrate a semi-conducting layer of the desired component material;
   (b) depositing on said layer at least one metal to form a protective layer over the region of said component; said metal deposit being photo-lithographically defined;
   (c) undercutting said metal and semiconducting layers about the component to form a mesa;
   (d) chemically treating the substrate and the semiconducting layer under the metal layer to attack the periphery of the mesa, and underetch the metal layer;
   (e) depositing a dielectric layer, by low-temperature cathode spraying, over the metal layer and substrate but without spraying the lower periphery of the metal deposit underetched during the preceding step, thereby leaving the same exposed; and
   (f) chemically treating the dielectric layer and the metal layer which cover each component to eliminate the same by chemical attack of the metal, said attack beginning at the exposed lower periphery of the metal layer, the dielectric deposit on the substrate being unattacked, whereby to protect the sides of the mesa carrying the semiconducting layer.

4,356,057

PHOSPHATED ASBESTOS FIBERS

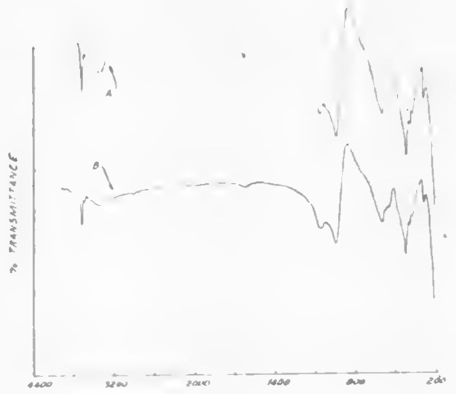
Jean M. Lalancette, and Jacques Dunnigan, both of Sherbrooke, Canada, assignors to Societe Nationale de l'Amiante, Quebec, Canada

Filed May 21, 1981, Ser. No. 266,135

Claims priority, application Canada, May 27, 1980, 352938; Apr. 29, 1981, 375388

Int. Cl.^{3} C03B *37/00*

U.S. Cl. 162—3 7 Claims



1. A process for preparing a modified chrysotile asbestos fiber containing from 0.5 to 5% by weight of phosphate groups, which comprises contacting chrysotile asbestos fibers under dry conditions and agitation with vapors of a phosphorous compound selected from the group consisting of phosphorous oxychloride and phosphorous pentachloride in an atmosphere inert to the phosphorous compound whereby a portion of the hydroxyl groups of the asbestos fiber are converted to phosphate groups, the amount of said phosphate groups being from 0.5 to 5% by weight of the fiber.

4,356,058

PROCESS FOR THE REPROCESSING OF PAPERS

Siegbert Fischer, and Lothar Pfalzer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 25,930

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816148

Int. Cl.^{3} D21C *5/02*

U.S. Cl. 162—5 6 Claims

1. In a method for the reprocessing of papers which contain components coated with dyes and/or other substances, particularly microencapsulated components, with the use of bleaching agents and by dissolving the paper in a pulper in the presence of collectors and/or dispersing agents and by flotation or washing, the improvement which comprises (a) dissolving the paper in the pulper at room temperature without addition of alkali and in a neutral pH range of from about 6.5 to 7.5 and a dwell time of about 10 to 20 minutes, whereupon the dissolved pulp is fed to the flotation or washing zone and subsequently treated with a bleaching agent.

4,356,059

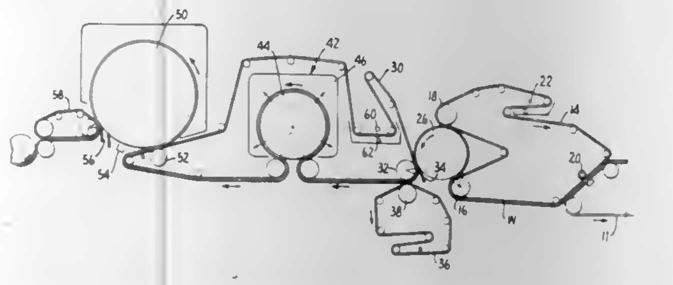
HIGH BULK PAPERMAKING SYSTEM

Ronald E. Hostetler, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Nov. 16, 1981, Ser. No. 322,109

Int. Cl.^{3} B21F *1/12*

U.S. Cl. 162—111 8 Claims



1. A method for manufacturing a bulky, soft and absorbent paper web comprising the steps of:
   forming an uncompacted web of principally lignocellulosic fibers on a forming surface;
   transferring said web to the surface of a first heated cylinder;
   compacting said web substantially overall while on said first heated cylinder surface to partially dewater said web;
   conveying said partially dewatered web to a wet embossing nip formed between a dewatering felt and an open mesh imprinting fabric formed of woven filaments having spaced compaction elements and defining voids between the filaments;
   while the web is in said wet embossing nip impressing said web against said fabric whereby from about 5% to about 50% of said web will be compacted by said compaction elements and from about 50% to about 95% of said web will be impressed into the voids;
   retaining the web on said imprinting fabric after the web passes through the wet embossing nip;
   removing the web from the imprinting fabric before final drying thereof by applying the web to a creping surface of a second heated cylinder; and
   creping the web from said second heated cylinder creping surface.

4,356,060

INSULATING AND FILLER MATERIAL COMPRISING CELLULOSE FIBERS AND CLAY, AND METHOD OF MAKING SAME FROM PAPER-MAKING WASTE

Edwin F. Neckermann, 3004 Duke, Kalamazoo, Mich. 49008, and Joseph F. Wooding, Rte. 1, Box 107-0, Grand Junction, Mich. 49056

Continuation-in-part of Ser. No. 74,718, Sep. 12, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 231,963

Int. Cl.^{3} D21F *1/66*

U.S. Cl. 162—181.6 9 Claims

1. A method of making a low density filler and insulating material from sludge comprising a mixture of cellulose fibers and clay obtained by partially removing water from the white water slurry of a paper-making machine which comprises heating and agitating said sludge mixture at a temperature of at least 300° F. but below the temperature at which the destruction of the cellulose fibers takes place, and for a time sufficient to convert the sludge mixture to granules that are substantially non dispersible and substantially non absorbable in water and milling said granules while forcing said granules through a −5/64 inch mesh screen.

4,356,061

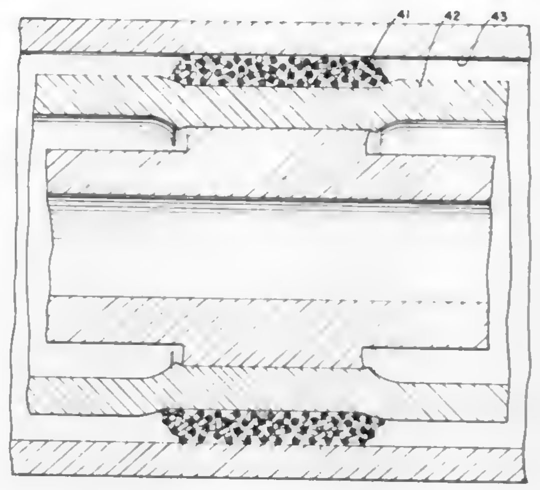
GAMMA THERMOMETER HAVING COMBINED THERMAL BRIDGE AND CENTERING MEANS

Robert D. Smith, Bethesda, Md., and Pierre Regazzoni, Boulogne-Billancourt, France, assignors to Scandpower, Inc., Bethesda, Md.

Filed Jun. 13, 1979, Ser. No. 48,033

Int. Cl.^{3} G21C *17/00*

U.S. Cl. 376—254 10 Claims



1. For use with a gamma sensor positioned within a tubular guide of a fuel assembly in a nuclear reactor, said sensor having an elongated gamma heated body having axially spaced reduced diameter portions and provided with relatively hot and cold regions said hot regions being located at said reduced diameter portions, said reduced diameter portion providing heat flow in substantially the axial direction, and an outer sheath in thermal contact with said body along the cold region thereof to establish axially symmetrical heat distribution therein in response to uniform external cooling of the outer sheath within an annular gap between said outer sheath and the tubular guide, the improvement residing in thermal bridge means engageable with the tubular guide within the annular gap for establishing thermal contact between the outer sheath and the tubular guide, and means mounting the thermal bridge means on the outer sheath in axially spaced adjacency to the hot region of the body for preventing disturbance of said symmetrical heat distribution by poor thermal contact in said gap between the outer sheath and the tubular guide.

4,356,062

RACK FOR STORING BUNDLES OF NUCLEAR FUEL ELEMENTS

Ernst Bosshard, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 11, 1980, Ser. No. 139,343

Claims priority, application Switzerland, Apr. 23, 1979, 3807/79; May 31, 1979, 5087/79

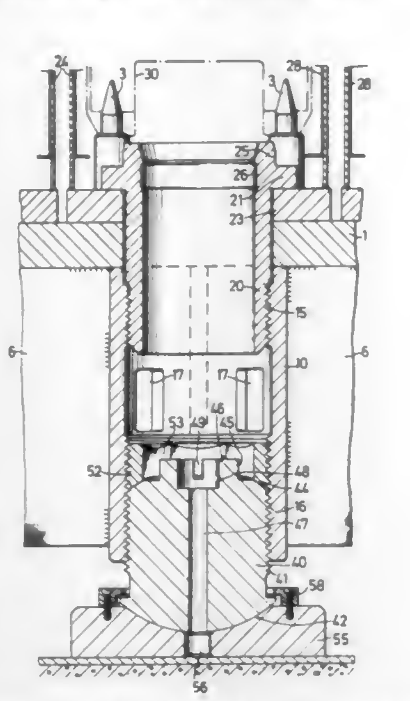
Int. Cl.^{3} G21C *19/20*

U.S. Cl. 376—272 21 Claims

1. A rack for storing bundles of nuclear fuel elements in a water tank, said rack comprising
   a base plate having a predetermined pattern of holes therein;
   a plurality of tube sections on an underside of said base plate, each said tube section being disposed coaxially with one of at least the four farthest apart holes of said pattern of

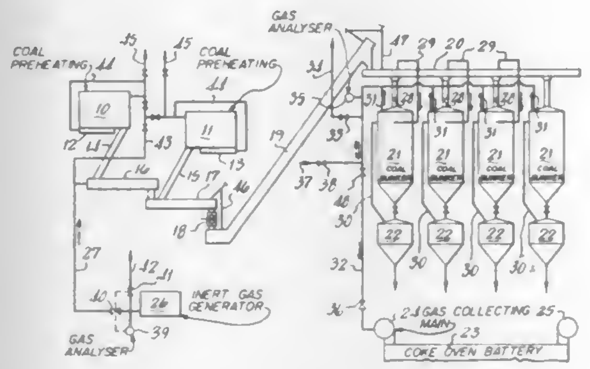
holes, each said tube section having a first screw-thread at an end remote from said base plate; and

a plurality of feet, each said foot being threaded into a screw-thread of a respective tube section for longitudinal adjustment therein through a respective hole.



4,356,063
PRE-HEATED COAL SUPPLY SYSTEM FOR A COKING OVEN BATTERY

David B. Corry, Blackpool, England, assignor to Otto-Simon Carves Limited, Stockport, England
Filed Oct. 2, 1980, Ser. No. 193,073
Claims priority, application United Kingdom, Oct. 12, 1979, 7935523
Int. Cl.^{3} C10B *5/00*
U.S. Cl. 201—41 9 Claims

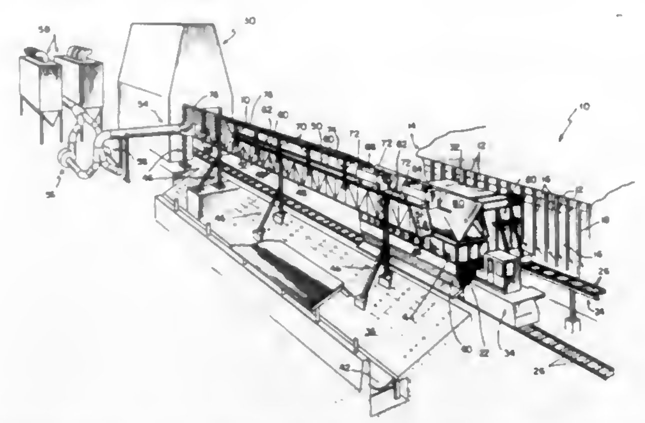


1. A method of operating a conveying and/or storage system for supplying pre-heated coal to a coking oven battery, comprising the steps of supplying inert gas to said conveying and/or storage system and discharging therefrom a mixture of inert and combustible gases, said discharged gas mixture being passed directly to a gas collecting main of the coking oven battery without passing through the coking oven battery to which the pre-heated coal is separately supplied substantially without the inert gas.

4,356,064
FUMES CONTROL SYSTEM DUCT AND CAR ARRANGEMENT

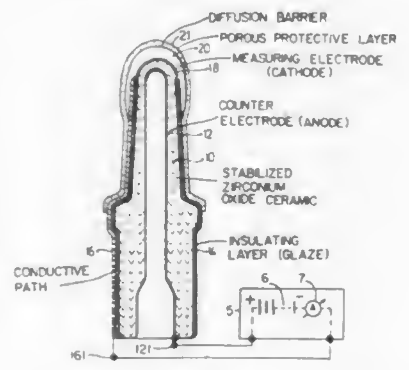
Pramodh Nijhawan, Indianapolis, and Joseph M. Duckworth, Zionsville, both of Ind., assignors to The Bahnson Company, Winston-Salem, N.C.
Filed Mar. 12, 1979, Ser. No. 19,650
Int. Cl.^{3} C10B *33/00*
U.S. Cl. 202—263 4 Claims

1. In a contaminant control system including suction means, a duct, means for coupling the suction means to the duct for evacuation thereby, the duct including a wall portion closed by a flexible web, the duct further including means for supporting the web against collapse into the duct under such evacuation, a first car disposed for movement along the duct to raise the web to couple the interior of the first car to the interior of the duct, means for guiding the first car along the duct, and means for connecting the interior of the first car to an area containing contaminants to be evacuated, a second car disposed for movement along the duct, and means for guiding the second car along the duct, the second car including means for raising the web to couple the interior of the second car to the interior of the duct, and a door in the second car for providing access to the interior of the second car for entry into the duct for inspection.



4,356,065
POLAROGRAPHIC OXYGEN CONCENTRATION SENSOR AND METHOD OF DETERMINING OXYGEN CONTENT IN THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Hermann Dietz, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 6,093, Jan. 4, 1979, abandoned, which is a continuation-in-part of Ser. No. 885,368, Mar. 13, 1978, abandoned. This application Dec. 4, 1980, Ser. No. 213,049
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711880
Int. Cl.^{3} G01N *27/58*
U.S. Cl. 204—1 T 8 Claims



1. Polarographic oxygen concentration sensor to sense concentration of oxygen in gas exhaust from a combustion engine having

a solid electrolyte body (**10, 10′**) shaped to provide two oppositely located surfaces;

a gas permeable first electrode (**18, 18′**) applied to one surface of the body, said first surface being adapted to be exposed to the gas in which the oxygen concentration is to be sensed;

a second gas permeable electrode (**12, 12′**) applied to the other surface of the body (**10, 10′**), said second surface being adapted to be exposed to a reference gas having a known concentration of oxygen,

whereby the body will be intermediate said electrodes (**18, 12**) and separate the test gas and the reference gas;

means (**6, 127, 161**) applying a voltage across said electrodes to cause a current to flow in dependence on the electrode reaction with oxygen in the gas reaching said first electrode in the range of between about $\frac{1}{2}$ to $1\frac{1}{2}$ volts;

means (**7**) obtaining a signal representative of said current flow;

and a cover (**20, 20′, 21**) over the first electrode (**18**) comprising a porous, solid material permitting flow, or diffusion of gases therethrough;

said cover, in accordance with the invention, comprising

a two-layer structure having an outer porous protective layer (**21**) and an inner layer (**20, 20′**) forming a gas flow barrier to permit migration of only a controlled quantity of oxygen molecules therethrough and thereby limit the quantity of oxygen molecules reaching said first electrode (**18, 18′**),

said inner layer of the cover being characterized by being of such porosity and thickness that the relationship of cross section of the pores and path length for oxygen molecules with respect to the diffusion limited current at the first electrode is defined by

$$I_{lim}=z\cdot F\cdot D\cdot(q/d)\cdot C$$

wherein I_{lim} is the limit current; z·F the charge conversion by the electrode reaction, z defining the charge conversion for oxygen and being equal to **4**; F is the Faraday constant; D the diffusion coefficient; q the diffusion cross section; d the diffusion length; and C the concentration of oxygen in the gas.

5. Method of obtaining an analog electrical output representative of oxygen in exhaust gas from a combustion engine having an electrochemical cell exposed to the sample gas,

said cell having

a solid electrolyte body (**10, 10′**) shaped to provide two oppositely located surfaces;

a gas permeable first electrode (**18**) applied to one surface of the body;

a second gas permeable electrode (**12**) applied to the opposite surface of the body (**10, 10′**),

whereby the body will be intermediate said electrodes (**8, 12**) comprising the steps of

supplying said gas, the oxygen concentration of which is to be sensed, to the first electrode;

providing an oxygen environment at said second electrode;

applying a voltage across said first and second electrodes at a level in the range of about $\frac{1}{2}$ to $1\frac{1}{2}$ volts;

controlling the magnitude of said voltage to establish said electrochemical cell in a diffusion limited current mode of operation, wherein variations in the oxygen partial pressure of the gas, the oxygen concentration of which is to be determined and to which the first electrode is exposed, produces changes in electrochemical cell current;

measuring said current as an indication of the oxygen partial pressure of said gas;

and including the further step of

limiting the quantity of oxygen molecules migrating to, and reaching said first electrode (**18, 18′**) to that value at which any oxygen molecule, within the gas reaching said first electrode, is immediately converted by electrode reaction,

by throttling access of said gas to said first electrode (**18**),

said throttling step comprising passing said gas through a flow or migration resistance path having a path-limiting current relationship defined by:

$$I_{lim}=z\cdot F\cdot D\cdot(q/d)\cdot C$$

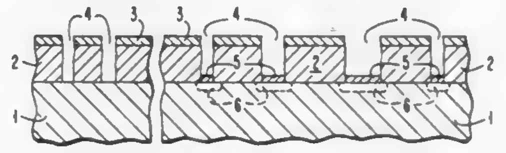
wherein I_{lim} is the limit current, z·F the charge conversion by the electrode reaction, z defining the charge conversion for oxygen and being equal to **4**; F is the Faraday constant; D the diffusion coefficient; q the diffusion cross section; d the diffusion length; and C the concentration of oygen in the gas;

to effect immediate conversion by electrode reaction of any oxygen molecules migrating to, and reaching said first electrode (**18, 18′**);

and protecting said flow or migration resistance path by passing the gas flow through a porous protective path layer (**21**) prior to said throttling step, the flow resistance of the gas flow through the protective path layer being less than the flow resistance upon passage of said gas in said throttling step.

4,356,066
PROCESS FOR FABRICATING A MULTI-LAYER MAGNETIC THIN FILM DISK

Helmut Kienle, Boeblingen; Gerhard E. Schmid, Stetten; Werner Steiner, Boeblingen, and Gerhard Trippel, Sindelfingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 30, 1981, Ser. No. 248,141
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014718
Int. Cl.^{3} G11B *5/66, 5/84;* **C25D** *11/04*
U.S. Cl. 204—38 A 5 Claims



1. A method for producing a multi-layer thin film magnetic disk on an aluminum-containing substrate comprising the steps of

depositing on said substrate a synthetic resin layer, said resin layer having a plurality of pin holes therein which expose said substrate;

passivating said aluminum in said substrate in the areas exposed by said pin holes to produce an aluminum oxide layer so that said substrate is no longer exposed through said substrate; and

depositing a metallic magnetic layer on said resin layer.

4,356,067
ALKALINE PLATING BATHS AND ELECTROPLATING PROCESS

Ewald H. McCoy, Brookfield, Wis., assignor to Electrochemical Products, Inc., New Berlin, Wis.
Continuation-in-part of Ser. No. 48,265, Jun. 13, 1979, abandoned. This application Jul. 17, 1980, Ser. No. 169,752
Int. Cl.^{3} C25D *3/56*
U.S. Cl. 204—43 Z 8 Claims

1. A cyanide-free plating bath for the electrodeposition of copper and zinc alloys consists of:

(a) an aqueous alkaline mixture of copper and zinc ions having a pH of about 10 to about 13.5; and

(b) a chelating agent selected from glucoheptonic acid and salts thereof, said agent being present in an amount which is about 10 grams to about 75 grams per liter.

7. The method of electrodepositing a copper and zinc alloy upon a conductive surface of an object which comprises connecting the conductive surface to the negative end of a source of electricity, placing the conducting surface in a plating bath of claim 1, placing into the same plating bath an anode which is of the same composition as the desired plate to be deposited and which is connected to a positive end of a source of electricity and then passing an electrical current through the plating bath so that the copper and zinc ions in the bath are deposited upon the conductive surface.

4,356,068
PERMIONIC MEMBRANE

William B. Darlington, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 15,521, Feb. 23, 1979, Pat. No. 4,272,337. This application Nov. 17, 1980, Ser. No. 207,593
Int. Cl.^{3} C25B *1/34, 13/02, 13/08*
U.S. Cl. 204—98 **12 Claims**

1. In a method of conducting electrolysis in an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, and an electrolyte impermeable, cation selective, permionic membrane therebetween, said cathode being in contact with the permionic membrane, which method comprises feeding alkali metal chloride brine to the anolyte compartment, passing an electrical current from the anode to the cathode, evolving chlorine at the anode and hydroxyl ion at the cathode, the improvement wherein the anodic surface of the permionic membrane is an imporous surface, the cathodic surface of the permionic membrane comprises microporous channels of permionic membrane material within the cation selective permionic membrane, and wherein said microporous channels are prepared by the process comprising:

a. hot pressing a leachable solid in and on the cathodic surface of the permionic membrane; and
b. leaching out the leachable solid.

4,356,069
STRIPPING COMPOSITION AND METHOD FOR PREPARING AND USING SAME

Ross Cunningham, 508 Ridge Ct. East, Old Hickory, Tenn. 37138
Filed Mar. 9, 1981, Ser. No. 241,889
Int. Cl.^{3} C25F *5/00*
U.S. Cl. 204—146 **3 Claims**

1. A method for stripping chromium or nickel from the surface of a chromium or nickel plated metal substrate selected from the group consisting of zinc, steel, aluminium, brass and copper, comprising:

(a) immersing said plated metal substrate in a bath containing an aqueous solution of chromic acid, peroxide, and sulfuric acid in sufficient concentrations to remove said chromium or nickel from said plated metal substrate in a reverse current stripping process,
(b) immersing a metal cathode in said bath,
(c) applying a positive potential to said plated metal substrate and a negative potential to said metal cathode with a direct current therebetween at a sufficient current density and for a sufficient period of time to strip said chromium or nickel from said plated metal substrate, and
(d) removing the stripped metal substrate from said bath.

4,356,070
METHOD FOR SYNTHESIZING POLY(CARBONYL FLUORIDE) OLIGOMERS

Keith B. Baucom, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jun. 17, 1981, Ser. No. 274,574
Int. Cl.^{3} B01J *19/12*
U.S. Cl. 204—158 R **4 Claims**

1. A method for preparing poly(carbonyl fluoride) oligomers comprising the steps of:

A. subjecting a mixture of F-3-methylbutene-1 and gaseous oxygen to a source of ultraviolet radiation for a period of time sufficient to effect a photolytic reaction between the components of said mixture; and
B. separating the resulting reaction products.

4,356,071
THERMALLY STABLE POLYOXYMETHYLENE CONTAINING POLYMERS

Jeff T. Fenton, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.
Filed Dec. 14, 1981, Ser. No. 330,530
Int. Cl.^{3} C08G *2/02*
U.S. Cl. 204—159.21 **7 Claims**

1. A method for producing thermally stable polyoxymethylene-containing polymers formed by the polymerization of formaldehyde and/or trioxane, the method comprising treating said formaldehyde and/or trioxane with microwave radiation prior to use in a polymerization reaction.

4,356,072
ISOELECTRIC POINT MARKER

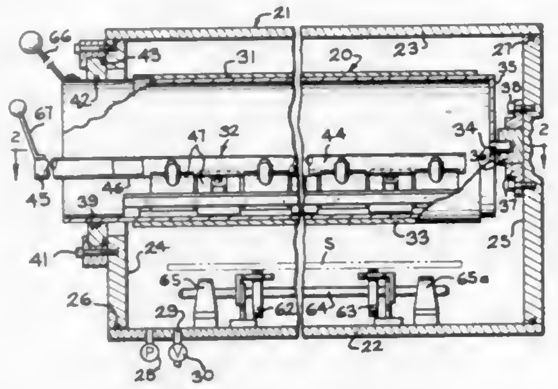
Hiraku Saito, Osaka; Isamu Takagahara, Kawanishi; Yasuo Suzuki, Suita; Tuyosi Fujita, Suita; Katsumi Fujii, Suita, and Takekazu Horio, Takatsuki, all of Japan, assignors to Oriental Yeast Company, Tokyo, Japan
Continuation-in-part of Ser. No. 41,190, May 21, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,917
Claims priority, application Japan, May 31, 1978, 53-64357
Int. Cl.^{3} B01D *57/02*
U.S. Cl. 204—180 G **8 Claims**

1. An isoelectric point marker, comprising a mixture of a predetermined number greater than 2 of separated and purified compounds comprised cytochrome c acetylated or succinylated by 1–18 acetyl or succinyl groups, wherein both groups may be present on the same compound, and wherein each compound of said mixture is a single purified compound having a known type and number of said acetyl or succinyl groups, and therefore a single known isoelectric point, and wherein each said compound in said mixture is present in a predetermined amount.

7. In the method of gel isoelectric separation comprising passing electricity through an isoelectric separation gel to produce a pH-gradient therein, the improvement comprising adding the isoelectric point marker in accordance with claim 1 to said gel prior to the step of passing electricity therethrough, whereby, after said step of passing the electricy therethrough, colored bands are formed in said gel at the isoelectric point of each of the compounds in said marker.

4,356,073
MAGNETRON CATHODE SPUTTERING APPARATUS

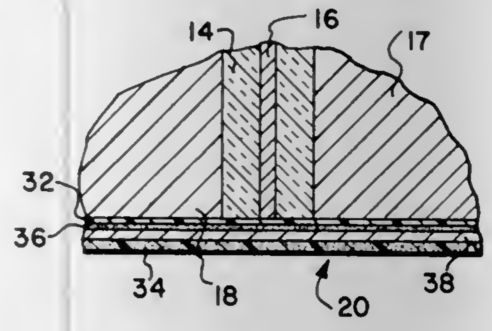
Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.
Filed Feb. 12, 1981, Ser. No. 233,974
Int. Cl.^{3} C23C *15/00*
U.S. Cl. 204—192 R **12 Claims**



1. A method of sputtering thin films of a selected coating material upon substantially planar substrates, in which there is provided an evacuated coating chamber enclosing an elongated, cylindrical tubular member having a layer of the coating material to be sputtered applied to the outer surface thereof, establishing within said tubular member a magnetic field to provide an erosion zone on the coating material extending substantially the entire length of the tubular member and circumferentially along a relatively narrow region thereof, rotating said tubular member about its longitudinal axis to bring different portions of the coating material into sputtering position opposite the magnetic field, and moving the substantially planar substrates horizontally beneath said erosion zone in a linear path to receive the sputtered material.

4,356,074
SUBSTRATE SPECIFIC GALACTOSE OXIDASE ENZYME ELECTRODES

Jay M. Johnson, Dayton, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio
Filed Aug. 25, 1980, Ser. No. 181,459
Int. Cl.^{3} G01N *27/54;* **C12Q** *1/00, 1/54*
U.S. Cl. 204—195 P **11 Claims**



1. A thin layer electrochemical cell capable of controlling the relative specificity of an enzyme for various substrates for use in rapid, direct analytical analysis of those substrates comprising:

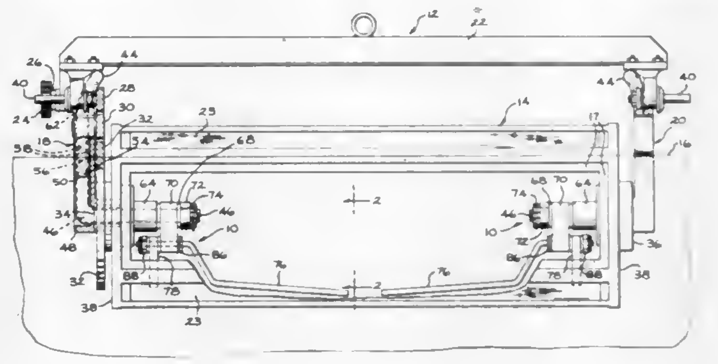
a first outer membrane layer adapted to be adjacent a substrate solution for allowing passage of low molecular weight materials into said cell but excluding high molecular weight materials contained in said substrate solution,
second inner membrane layer adapted to be adjacent to a polarographic cell for excluding passage of interfering low molecular weight materials and any mediator but permitting the passage of the electroactive reactant or product of the reaction between said substrate or substrates and an enzyme,
an enzyme preparation positioned between said first and second membrane layers, said enzyme being one which is subject to redox potential control, and
an electrically conductive layer between said first and second membrane layers and contacting said enzyme preparation, said electrically conductive layer connected to a potential control means capable of varying the electrical potential of said enzyme preparation,
said cell being thin and capable of use in rapid, direct analytical analysis of said substrates.

10. In a polarographic cell structure for use in polarographic analysis of a substrate in a substrate solution comprising a polarographic electrode means mounted with said polarographic cell structure, said polarographic electrode means including means defining an active exposed working face, the improvement comprising:

a thin layer electrochemical cell separating said polarographic electrode means from said substrate solution, said thin layer electrochemical cell having,
a first outer membrane layer adapted to be adjacent the substrate solution for allowing passage of low molecular weight materials into said cell but excluding high molecular weight materials contained in said substrate solution,
second inner membrane layer adapted to be adjacent to a polarographic cell for excluding passage of interfering low molecular weight materials but permitting the passage of the electroactive reactant or product of the reaction between said substrate(s) and an enzyme,
an enzyme preparation positioned between said first and second membrane layers, said enzyme being one which is subject to redox potential control, and
an electrically conductive layer between said first and second membrane layers and contacting said enzyme preparation, said electrically conductive layer connected to a potential control means capable of varying the electrical potential of said enzyme preparation,
said thin layer electrochemical cell rendering said polarographic cell structure capable of rapid, direct analytical analysis for said substrate.

4,356,075
RIGID DANGLER ASSEMBLY FOR ELECTROPLATING BARRELS

George A. Case, Lexington, Ky., assignor to Case Engineering Consulting Company, Lexington, Ky.
Filed Jun. 29, 1981, Ser. No. 278,165
Int. Cl.^{3} C25D *17/20, 17/10*
U.S. Cl. 204—213 **10 Claims**



1. In an electroplating system of the type which includes a rotatable, hollow barrel adapted for submersion in a liquid electrolyte solution, and a pair of hanger arms connected by means of rotatable collars disposed within hubs located on opposite end walls of said barrel, a pair of dangler assemblies disposed in said barrel, each of which assemblies comprises:

a rigid L-shaped electrically conductive rod having a vertically extending end portion disposed in a guideway on one of said hanger arms and a horizontally extending end portion projecting through one of said hubs and collars into the interior of said barrel,
first electrically conductive counter-balancing means slippably mounted on said rod and having a center of gravity below the level of said rod,
a rigid, elongated electrically conductive dangler arm having one end portion slippably connected to said counter-balancing means below the center of gravity thereof and an opposite end portion projecting along a lower portion of said barrel toward a vertical centerline thereof,
means for electrically connecting said rod to a remote source of d.c. potential, and
means for protecting a portion of said rod and electrically connecting means from exposure to said solution to inhibit the plating of said rod portion and electrically connecting means during successive electroplating operations employing said system.

4,356,076
APPARATUS FOR THE ANODIC OXIDATION OF ALUMINUM

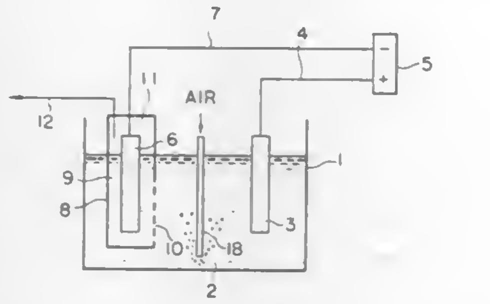
Shizuo Matsushita, and Yasuhito Togawa, both of Tokyo, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan
Filed Aug. 22, 1980, Ser. No. 180,455
Claims priority, application Japan, Aug. 22, 1979, 54-106969
Int. Cl.^{3} C25D *17/00, 21/10;* **C25B** *1/10, 9/00*
U.S. Cl. 204—261 **2 Claims**

1. In an apparatus for the anodic oxidation of an aluminum piece, including a cell for containing an electrolytic solution,

an anode member of the aluminum piece adapted to be electrically connected to the positive pole of a direct-current source and immersed in the electrolytic solution, and a cathode member adapted to be electrically connected to the negative pole of the direct-current source and immersed in the electrolytic solution so that the aluminum piece may be oxidized with the simultaneous formation of hydrogen gas at the cathode member when the aluminum piece and the cathode member are immersed in the electrolytic solution and a voltage is impressed therebetween, the improvement comprising:

an impervious tubular partition member surrounding and spaced from said cathode member to define a cathode chamber, said partition having an aperture at a lower portion;

a net member covering said aperture to provide a plurality of openings, each of said openings being of a size to permit entry of the electrolytic solution into said cathode chamber and to prevent escape from said cathode chamber of the hydrogen gas formed at the cathode member, each of said openings having a peripheral length in the range of 80μ to 1200μ;



means closing the upper end of said partition member to form an enclosed space above the surface of the electrolytic solution in said cathode chamber with the partition member immersed in the electrolytic solution, said hydrogen gas being collected within the enclosed space;

conduit means opening into said enclosed space for removing and recovering the hydrogen gas collected therewithin; and

means for introducing an air stream into the electrolytic solution to agitate the solution.

4,356,077

PYROLYSIS PROCESS

Stanley C. Che, Los Alamitos, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 31, 1980, Ser. No. 221,949

Int. Cl.^{3} C10G *1/00;* C10B *51/00*

U.S. Cl. 208—8 R **15 Claims**

1. A process for producing light aromatics, intermediate coal liquids, tar acids, and heavy hydrocarbons by the pyrolysis of coal comprising:

(a) pyrolyzing coal at a pyrolysis temperature by introducing said coal, a carbon containing particulate solid source of heat which has been heated to a temperature higher than said pyrolysis temperature, and a beneficially reactive gas into a pyrolysis zone under conditions of time and elevated temperature sufficient to produce therefrom a pyrolysis product comprising particulate solids and pyrolytic vapors, said particulate solids comprising said carbon containing particulate solid source of heat and a char product produced from said coal, said beneficially reactive gas being operative to reduce the polymerizing or cracking of said pyrolytic vapors by inhibiting the reactivity of said char product and said carbon containing particulate solid source of heat;

(b) separating said particulate solids from a gaseous mixture which comprises said pyrolytic vapors, said beneficially reactive gas, and any other gases which are mixed therewith to form a substantially solids-free gaseous mixture;

(c) contacting said substantially solids-free gaseous mixture, which comprises said pyrolytic vapors, in a quench zone with a quench liquid comprising a hydrogen donor solvent, under predetermined conditions of temperature, time and ratio of quench liquid to pyrolytic vapors operative to form a product gas and a first liquid mixture which comprises said hydrogen donor solvent and a pyrolytic condensate formed from said pyrolytic vapors by condensation thereof, said pyrolytic condensate comprising tar acids and a condensate remainder;

(d) separating said first liquid mixture from said product gas;

(e) separating said first liquid mixture by vacuum flashing in a vacuum flashing zone into at least a first vapor comprising at least a major part of said tar acids, and a second liquid mixture comprising at least a major part of said quench liquid and said hydrogen donor solvent and also comprising at least a major part of said condensate remainder;

(f) hydrogenating said condensate remainder in said second liquid mixture in a first hydrogenation zone with said hydrogen donor solvent in said second liquid mixture by heating and holding said second liquid mixture under predetermined conditions of elevated temperature and time operative to transfer hydrogen from said hydrogen donor solvent to said condensate remainder in said second liquid mixture thereby forming a third liquid mixture comprising a spent hydrogen donor solvent, unused hydrogen donor solvent and a hydrogenated condensate remainder;

(g) separating said third liquid mixture from step (f) in a first separation zone into at least a heavy hydrocarbon raffinate comprising at least a major part of heavy hydrocarbons contained in said hydrogenated condensate remainder and a fourth liquid mixture comprising at least a major part of said spent hydrogen donor solvent, said unused hydrogen donor solvent, and a residue of said hydrogenated condensate remainder;

(h) condensing and separating said first vapor, from said vacuum flashing zone of step (e), in a second separation zone, into a fifth liquid mixture comprising at least a major part of said tar acids, and a sixth liquid mixture which comprises a tar acid raffinate;

(i) introducing said fourth liquid mixture from said first separation zone of step (g), and said sixth liquid mixture from said second separation zone of step (h), into a third separation zone and separating said fourth and sixth liquid mixtures into, and forming, at least a seventh liquid mixture comprising at least a major part of light aromatics contained in said residue of said hydrogenated condensate remainder and said tar acid raffinate, an eighth liquid mixture comprising at least a major part of intermediate coal liquids contained in said residue of said hydrogenated condensate remainder and said tar acid raffinate, and a ninth liquid mixture comprising at least a major part of two- and three-ring aromatics contained in said residue of said hydrogenated condensate remainder and said tar acid raffinate, and at least the major part of said spent hydrogen donor solvent and unused hydrogen donor solvent contained in said fourth liquid mixture;

(j) hydrotreating said ninth liquid mixture from said third separation zone of step (i), in a second hydrogenation zone with a gas comprising gaseous hydrogen under conditions operative to produce a tenth liquid mixture comprising two- and three-ring hydroaromatics and a hydrogenated spent hydrogen donor solvent, both of which are operative for use in said quench zone as quench liquid and subsequently in said first hydrogenation zone as hydrogen donor solvent, and unused hydrogen donor solvent; and

(k) utilizing said tenth liquid mixture from said second hydrogenation zone of step (j) as at least a major part of said quench liquid, which comprises a hydrogen donor solvent, used in said quench zone of step (a).

4,356,078

PROCESS FOR BLENDING COAL WITH WATER IMMISCIBLE LIQUID

Leonard J. Heavin, Olympia; Edward E. King, Gig Harbor, and Dennis L. Milliron, Lacey, all of Wash., assignors to The Pittsburg & Midway Coal Mining Co., Englewood, Colo.

Filed Sep. 8, 1980, Ser. No. 184,762

Int. Cl.^{3} C10G *1/00*

U.S. Cl. 208—8 LE **26 Claims**

1. A continuous process for blending pulverized coal with a water immiscible liquid to form a pumpable slurry, which comprises

continuously feeding pulverized raw feed coal and a water immiscible liquid to a blending zone in which coal particles and liquid are intimately admixed and advanced in substantially plug flow such that the resulting slurry passes through said blending zone without substantial backmixing to form a first slurry;

withdrawing said first slurry from said blending zone and passing it to a separate feed mixing zone where said first slurry is mixed with a hot, second slurry to form a pumpable third slurry of generally uniform consistency; and

withdrawing said pumpable third slurry from said feed mixing zone and continuously recycling a first portion of said pumpable third slurry directly to said blending zone to provide at least a portion of the said water immiscible liquid and passing a second portion of said pumpable third slurry to a preheating zone of a coal liquefaction process.

4,356,079

DENITRIFICATION OF HYDROCARBON FEEDSTOCK

Ralph M. Desaau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 4, 1980, Ser. No. 156,283

Int. Cl.^{3} C10G *17/00, 23/02*

U.S. Cl. 208—10 **17 Claims**

1. A process for denitrification of a heavy hydrocarbon feedstock having a boiling range above about 400° F. which comprises hydrofining the feedstock at a temperature between about 500° F. and 850° F. in the presence of between about 0.1 and 5 weight percent of water, based on the weight of feedstock, and in contact with an acidic zeolite catalyst having a metallic hydrogenation component incorporated therein.

4,356,080

SOLVENT DEOILING APPARATUS AND PROCESS

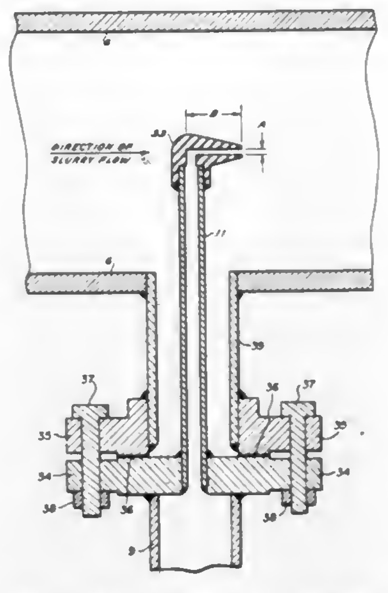
Edward A. Pullen, Fullerton, and Thomas Hallis, Jr., Brea, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 848,746, Nov. 4, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,133

Int. Cl.^{3} C10G *73/06*

U.S. Cl. 208—31 **34 Claims**

1. In a solvent deoiling process wherein an oil-containing wax feedstock is passed through a series of scraped chillers to produce a product slurry containing crystallized wax that is subsequently separated from said oil to produce a fully refined petroleum wax, and wherein the solvent is added incrementally into conduits carrying wax slurry from one chiller to the next, the improvement comprising injecting incrementally added solvent directly into a plurality of said conduits at linear velocities producing within each conduit of said plurality a turbulent mixing zone, said turbulent mixing zones being of sufficiently high agitation such that substantially uniform and instantaneous mixing of said solvent and the wax slurry into which it is injected is effected.



4,356,081

CATALYTIC REFORMING WITH RHENIUM-PLATINUM CATALYST CONTAINING MORE RHENIUM THAN PLATINUM

James P. Gallagher, 325 Indiana Ave., Park Forest, Ill. 60466, and Robert M. Yarrington, 320 Wychwood Rd., Westfield, N.J. 07090

Continuation of Ser. No. 894,890, Apr. 10, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,137

Int. Cl.^{3} C10G *35/06*

U.S. Cl. 208—139 **10 Claims**

1. A process for reforming a naphtha fraction, which process comprises subjecting a naphtha having a sulfur content of less than about 0.5 ppm by weight of sulfur, to contact at reforming conditions and in the presence of gaseous hydrogen with a catalytic composite consisting essentially of an alumina support; a minor catalytically effective amount of rhenium component; 0.1 to 0.4 weight percent platinum component; and a minor catalytically effective amount of at least one halogen component, the weight ratio of rhenium to platinum being in the range of from not less than 2 to about 5, whereby the relative cycle length of said catalytic composite is greater than if the rhenium to platinum ratio is outside said range.

4,356,082

HEAT BALANCE IN FCC PROCESS

Benjamin Gross, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

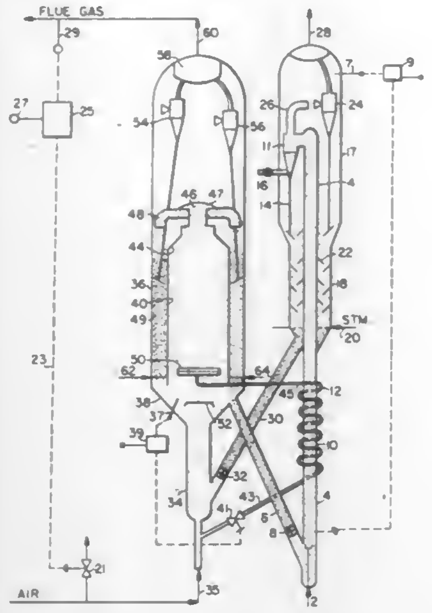
Filed Dec. 18, 1980, Ser. No. 217,879

Int. Cl.^{3} F27B *15/10, 15/14, 15/16*

U.S. Cl. 208—164 **40 Claims**

1. In a fluid catalytic cracking process comprising admixing a hydrocarbonaceous feed with a regenerated catalyst in the upstream section of a reactor riser, passing the hydrocarbonaceous feed and the catalyst admixed therewith through the downstream section of the riser, thereby effecting cracking of the hydrocarbonaceous feed at the process temperature under endothermic process conditions and deactivating the catalyst by deposition of carbonaceous deposits thereon, separating the deactivated catalyst from the cracked hydrocarbonaceous feed, passing the deactivated catalyst to a regenerator vessel wherein the carbonaceous deposits are removed from the deactivated catalyst under exothermic process conditions by means of a regenerating medium introduced into the regenerator vessel by a regenerating medium distribution means, thereby regenerating and heating the catalyst, and passing the

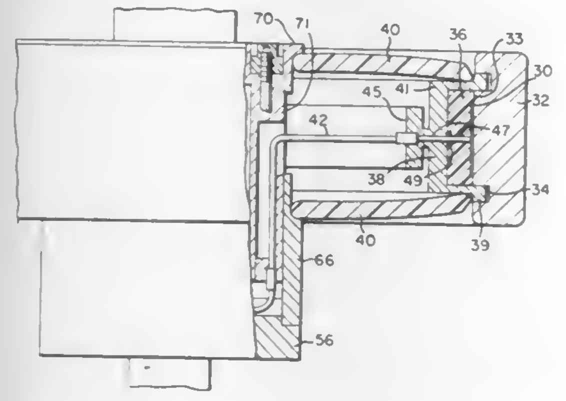
regenerated hot catalyst to the upstream section of the reactor riser, the improvement wherein at least a portion of the thermal energy is transferred by heat exchanging means from the riser to the regenerator vessel.



4,356,083
UNBALANCED ROTOR FOR FIELD FLOW FRACTIONATION CHANNEL

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1981, Ser. No. 249,962
Int. Cl.³ B03B *5/62;* **B04B** *9/14*
U.S. Cl. 209—155 4 Claims



1. In an apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, and radially inner and outer walls defining the radial thickness of said channel, means including a hub assembly for rotating said channel about a spin axis generally parallel to said cylinder axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein

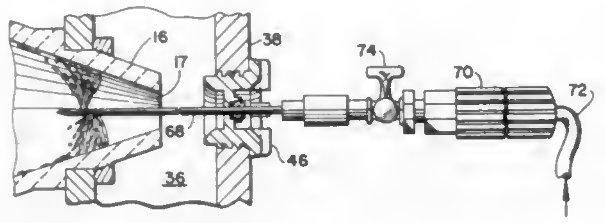
said apparatus has at least a pair of predetermined mass regions located at different points along said cylinder axis and other than at said channel,

a portion of the mass in each of said predetermined regions being adjusted so that said cylinder axis approaches said spin axis above critical speeds of rotation of said channel.

4,356,084
SELF-SEALING VALVE ASSEMBLY TO FACILITATE UNPLUGGING OF A CENTRIFUGAL CLEANER

Derald R. Hatton, and David E. Chupka, both of Middletown, Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Filed Apr. 6, 1979, Ser. No. 27,577
Int. Cl.³ B04C *5/18, 5/23*
U.S. Cl. 209—211 10 Claims



1. A cyclone cleaning apparatus for separating a suspension of solid particles into light and heavy fractions, comprising

a columnar cyclone member of frustoconical cross section having an inlet end and an apex end,

means for introducing said suspension at said inlet end of said cyclone member to produce a high velocity, helical outer vortex of material traveling toward said apex end thereof and an inner vortex of material traveling in the opposite direction,

means defining an outlet port for the heavy particle fraction extending axially through said apex end of said cyclone member,

housing means defining an outlet chamber enclosing said apex end of said cyclone member to receive said heavy particle fraction directly from said port therein,

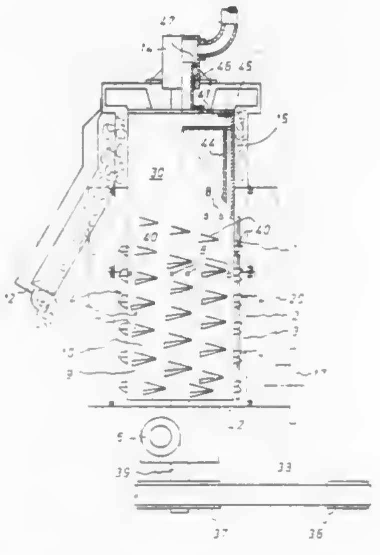
said housing means including an outer wall having therein an opening generally aligned with said outlet port, and

pierceable resilient means sealing said opening and positioned to receive a probe in removable piercing relation therethrough for releasing a blockage in said port.

4,356,085
ROTARY SCREENING MACHINE FOR PULP SUSPENSIONS

Werner Schön, and Albrecht Meinecke, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,626
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006482
Int. Cl.³ D21D *5/02;* **B07B** *1/20*
U.S. Cl. 209—273 62 Claims



1. A rotary screening machine for removing impurities from a pulp suspension of fibers, comprising:

an annular drum rotatable about an axis and having a annular periphery;

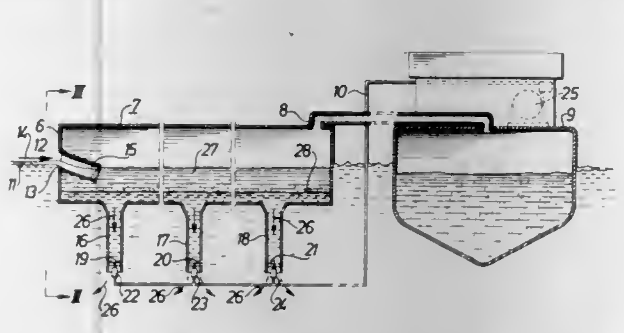
a screen basket annularly around the periphery of the drum and radially spaced therefrom for defining an annular screening slot between the drum and the screen basket;

a plurality of vanes supported on the annular periphery of the annular drum; each vane having a leading end and a trailing end with respect to the direction of rotation of the drum around the axis; each vane tapering gradually wider, measured along the axis of the drum, from the leading to the trailing end thereof.

4,356,086
APPARATUS FOR RECOVERING OIL OR THE LIKE FLOATING ON A LIQUID SURFACE SUCH AS WATER

Per O. Öberg, Nordmaling, Sweden, assignor to Sanera Projecting Aktiebolag, Nordmaling, Sweden

Filed Sep. 4, 1980, Ser. No. 183,893
Claims priority, application Sweden, Sep. 11, 1979, 7907544
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—115 10 Claims



1. In an apparatus for recovering oil, or the like, floating on the surface of a liquid, e.g. water, comprising a hollow body having an inlet opening open to flow of oil and water therethrough into said body, pump means for evacuating water which has flowed into the body in order to concentrate the oil in the body, closure means for preventing liquid flow out through said inlet opening upon forcing of water into said body for raising of the interior liquid level and therewith forcing of oil towards the upper portion of the body, and means effecting communication of said upper portion of said body with an oil receiving container for transferring oil thereto in response to said raising of said interior liquid level, the improvement comprised in that said body is adapted to float partly immersed in said liquid with said inlet opening adjacent said liquid surface for said flow of oil and water into said body, said pump means being reversible for alternately carrying out said evacuating of water from said body and forcing of water into said body, at least one pipe downwardly directed from said body into and communicating with the surrounding water, said body and pipe comprising a hollow body-pipe unit, said reversible pump means being arranged inside said body-pipe unit below said inlet opening in communication with said pipe for pumping water through said pipe from the lower portion of said body to said surrounding water and vice versa, said closure means being a member arranged for closing the inlet opening against overflow from said body in cooperation with said reverse operation of said pump.

4,356,087
RODENT BARRIER DEVICE

Robert A. Miles, Barrett, Minn.

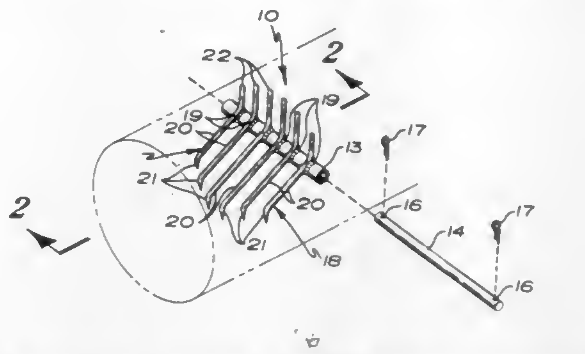
Filed Aug. 24, 1981, Ser. No. 295,840
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—131 4 Claims

1. A barrier device for use in preventing animals, such as rodents, from entering drain tile of the type used to drain water from fields, said device comprising:

a pivot rod adapted to be positioned in a generally horizontally disposed drain tile transversely thereof so that the opposite ends of the pivot rod project through opposed registering openings in drain tile, said pivot rod having means at opposite ends thereof for retaining the pivot rod in mounted relation interiorly of the drain tile;

an elongate sleeve mounted on said pivot rod for limited pivotal movement relative thereto,

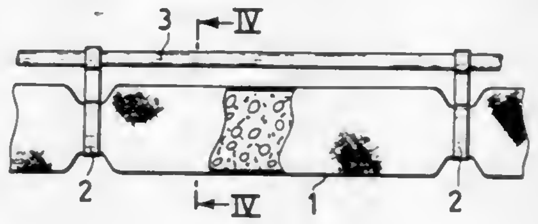
a plurality of transversely spaced apart elongate barrier elements affixed to said sleeve intermediate the respective ends of said elements for pivotal movement with the sleeve between opened and closed positions, each of said barrier elements including an upper portion extended upwardly from said sleeve and a lower portion extending forwardly and downwardly from said sleeve, the lower end of said lower portion of each barrier element being angularly bent and pointed, the lower portion of each barrier element having a length dimension substantially greater than the length dimension of the corresponding upper portion whereby the barrier elements normally swing downwardly and rearwardly by action of gravity to the closed position and engage the lower inner surface of the tile but may swing forwardly and upwardly in response to debris carried by water to permit said debris to pass beyond the barrier device and outwardly of the drain tile.



4,356,088
ACTIVATED DEPOLLUTION BOOM

Rolando Matteelli, and Brunello Ciuti, both of San Donato Milanese, Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Sep. 18, 1980, Ser. No. 188,553
Claims priority, application Italy, Oct. 12, 1979, 26444 A/79
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—198.1 7 Claims



1. A boom which floats in water for depolluting water surfaces of crude petroleum and its derivatives, and of other oily substances, comprising:

an outer mesh fabric sheath filled with an active substance and an expanded substance, wherein the sheath has removable means thereon which close the openings in the mesh fabric of the sheath until it is in water at which time said means are removable in water so that the active substance is contained within said sheath prior to use and will migrate through the openings in the mesh fabric of said sheath to depollute the water surfaces when the boom is floating in polluted waters, wherein the active substance essentially consists of 10 to 90% by weight of a low specific gravity support, 9 to 80% of a surface active agent, and 1 to 10% by weight of a wetting agent, and wherein the expanded substance essentially consists of 5 to 80% by weight relative to the active substance of granules or flocks and keeps the boom afloat, a cable spaced apart and alonside said filled mesh fabric sheat for supporting said sheath, and

a plurality of bands spaced apart along the length of said sheath which encircle and throttle said sheath for uniform distribution of the substances therein and which are connected to said cable for support thereof.

4,356,089
RECOVERY OF OIL

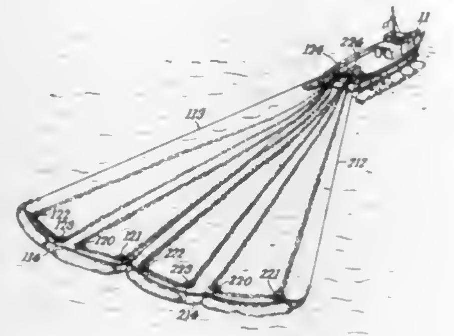
Ronald T. Challener, Christchurch, and George H. Rolls, Fordingbridge, both of England, assignors to Oil Mop (U.K.) Limited, Dorset, England

Filed Nov. 3, 1980, Ser. No. 203,487

Claims priority, application Ireland, Nov. 6, 1979, 2128/79

Int. Cl.^{3} C02F *1/40*

U.S. Cl. 210—242.4 **14 Claims**



1. An apparatus for use in removing oil from the surface of a body of water contaminated with oil comprising:

a. a barrier comprising a boom with a front face, a rear face and a buoyant upper edge region, a spreader bar extending along the front face of the boom and serving to support opposed ends of the boom, and a water-pervious skirt having opposed upper and lower edges, the said upper edge being secured to said buoyant upper edge region and the said lower edge being secured to said spreader bar;

b. oil removal apparatus secured to the spreader bar for removing oil from the surface of the water body in which the barrier is buoyant, in the region of the spreader bar; and

c. means for securing a movement of the barrier relative to the body of water in which the barrier is buoyant, thereby causing oil to accumulate ahead of the barrier for removal from the water body by the oil removal apparatus.

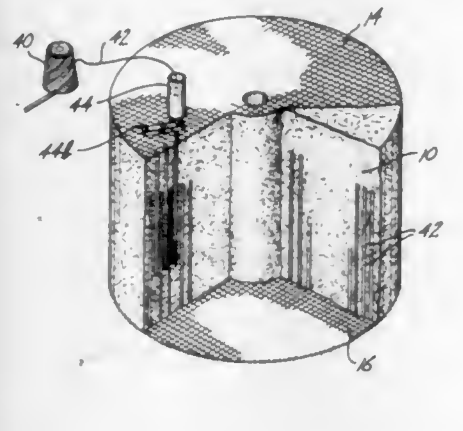
4,356,090
FLOW-THROUGH OIL/WATER SEPARATION FILTER

Nhan V. Tran, Bellevue, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Sep. 28, 1981, Ser. No. 305,994

Int. Cl.^{3} B01D *29/02*

U.S. Cl. 210—350 **5 Claims**



1. Repeatedly compressible and reexpandable flow-through filter means comprising a filter body of transversely monolithic retriculated synthetic foam material subject to compressive deformation under the forces of liquid flow, and holder means for positioning said filter body in a liquid flow path and for reinforcing said body against such compressive deformation, said holder means including flow-traversable, fixed upstream support means and fixed downstream support means respectively overlying and adjacent to the upstream and downstream faces of said body, a plurality of individual separate lengths of flexible cords fastened to said upstream support means at respective locations distributed in spaced relationship across said path and penetrating said filter body to a depth at least partly through the body substantially in the direction of liquid flow through said body, each of said elongated cord lengths being adhesively bonded to strands and nodes of said body contacted thereby substantially along the full length depth of penetration of said cord lengths in said body, thereby to reinforce said body against compressive deformation against said downstream support means under the forces of liquid flow acting on said body.

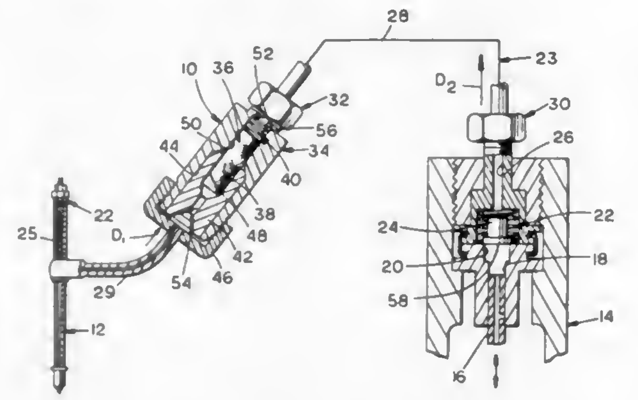
4,356,091
FILTERING AND DAMPENING APPARATUS

Albert B. Niles, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 6, 1980, Ser. No. 261,093

Int. Cl.^{3} B01D *35/02*

U.S. Cl: 210—354 **6 Claims**



1. Apparatus (10) for filtering fluid and dempening pressure of said fluid, comprising:

first and second fluid lines (**28,29**);

a housing (**34**) having a bore (**50**) and an opening (**44**) communicating with said bore (**50**), said bore (**50**) being in fluid communication with said first fluid line (**28**) at one end of said bore (**50**);

a retainer (**42**) having a bore (**48**) and being removably positioned in said opening (**44**), said bore (**48**) being positioned in fluid communication with said second fluid line (**29**) and with said bore (**50**) of said housing (**34**);

a connector element (**46**) adjustably positioned on said housing (**34**) to maintain said retainer (**42**) in position; and

a filtering element (**36**) having a preselected filtering porosity and being positioned in said bores (**50,48**) of said housing (**34**) and retainer (**42**) to filter the fluid passing through said first fluid line (**28**) to said second fluid line (**29**) and controllably movable in said bores (**50,48**) in response to a pressure wave in the fluid traveling in said second fluid line (**29**) toward said first fluid line (**28**) striking said filtering element (**36**) to dampen said pressure wave.

4,356,092
METHOD FOR TREATING WASTE WATER

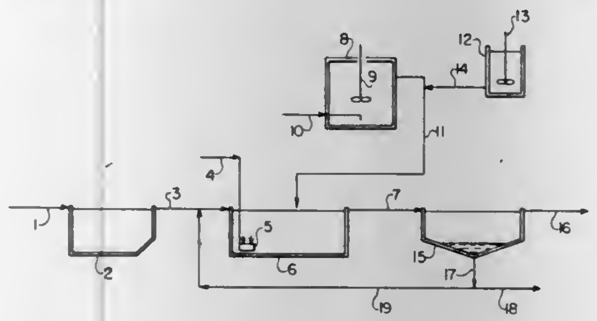
Norio Shimizu; Yoji Odawara, both of Hitachi, and Yasunori Masaki, Yamaguchi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 46,236, Jun. 7, 1979, abandoned. This application Aug. 31, 1981, Ser. No. 298,263

Claims priority, application Japan, Sep. 22, 1978, 53/115813

Int. Cl.^{3} C02F *3/34*

U.S. Cl. 210—611 **9 Claims**



1. A process of treating waste water containing activated sludge and organic material comprising: culturing *Alcaligenes faecalis* HRL-1 (ATCC 31529) to produce cultured cells of *Alcaligenes faecalis* (HRL-1), adding the cultured cells to the waste water containing activated sludge and organic material, and subjecting the organic material in the waste water to the oxidizing and decomposing action of the cultured cells of *Alcaligenes faecalis* HRL-1 and the activated sludge, thereby treating the waste water.

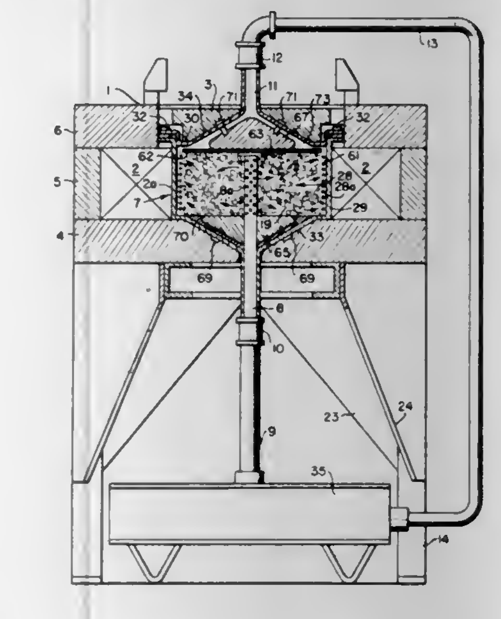
4,356,093
METHOD OF INCREASING THE EFFECTIVENESS OF OR THE EFFECTIVE PRODUCTION RATE OF A PROCESS BY INTEGRATED FEED

William F. Abercrombie, Jr., Macon; Joey G. Colwell, Jr., Thomson, and Charles R. Price, Macon, all of Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Jan. 30, 1981, Ser. No. 230,153

Int. Cl.^{3} B01D *35/06*

U.S. Cl. 210—695 **4 Claims**



4. In a method for increasing the production or brightness of a product produced by magnetic separation in a process wherein a fluid is passed over or through a column containing a matrix, or array of elements to remove magnetically susceptible minute particles from the fluid, wherein the efficiency decreases as the matrix or elements become saturated or degenerate is effectiveness with time and/or the passage of fluid over or through said matrix or array of elements; the improvement comprising operating the method using an integrated feed cycle and comprising the following steps:

(a) passing said fluid into said column at an initial flow rate Q_1 until said column is full;

(b) reducing the flow rate to an initial feed rate Q_2 at T_1;

(c) decreasing said flow rate over a time period of from T_1 to T_2 to a final feed rate Q_3 and maintaining the feed rate Q_3 to the end of the feed cycle time at T_3;

wherein Q_1 is the initial flow rate, Q_2 is the initial feed rate, and Q_3 is the final feed rate, T_1 is the time until the initial feed rate begins, T_2 is the time until the feed rate decreases, and T_3 is the time at the end of the feed cycle; and wherein Q_1 is not more than three times Q_3, and Q_3 is lower than Q_2, and wherein the process is conducted over a period of time such that the integration of the flow rate with respect to time yields a volume of product greater than or equal to the volume which would be produced at a constant flow rate for such product.

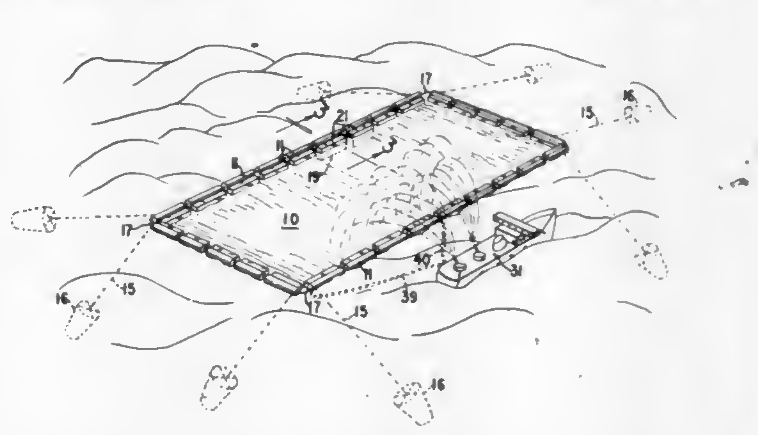
4,356,094
METHOD AND APPARATUS FOR CONTROLLING WATER SURFACE ACTIVITY

Sigmund L. Ross, Brooklyn, N.Y., assignor to David K. Shuffman, New York, N.Y.

Continuation of Ser. No. 849,201, Nov. 9, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,564

Int. Cl.^{3} B01D *17/00;* E02B *3/00*

U.S. Cl. 210—774 **12 Claims**



1. A method of reducing the surface activity of a body of water which comprises at least partially surrounding a body of water by a succession of booms so that the surface of said body of water is substantially isolated by the presence of said booms in relation to the surface of water peripherally external with respect to said booms and cascading ice particles onto said body of water in sufficient quantity to substantially reduce the surface activity of said body of water.

12. Apparatus for influencing the surface activity of a body of water responsive to contacting said surface water a material at a cryothermal temperature which comprises a succession of elongated buoyant booms which are endwise interconnected and each of which presents a surface for contact with the water surface and has elongated passage means comprised therein disposed for maintaining said surface of said boom in thermally conductive relation with fluid within said passage, means for providing fluid at a cryothermal temperature, means for directing said fluid at a cryothermal temperature from said last mentioned means to said passage in one of said booms, and a flexible hose means for directing said fluid at a cryothermal temperature from said last mentioned passage to the elongated passage comprised in an adjoining boom.

4,356,095

WATER-SOLUBLE POLYMERS AND UTILIZATION THEREOF

Richard I. Leavitt, Baton Rouge, La., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 861,818, Dec. 19, 1977, abandoned, which is a division of Ser. No. 696,091, Jun. 14, 1976, Pat. No. 4,072,606, which is a division of Ser. No. 418,489, Nov. 23, 1973, Pat. No. 3,989,592. This application Jan. 8, 1981, Ser. No. 223,463

Int. Cl.^{3} E21B *43/22*

U.S. Cl. 252—8.55 D **5 Claims**

1. In a process for recovering oil from oil wells which comprises injecting a slug of polymer solution into a subterranean oil-bearing formation to displace oil from said formation, the improvement comprising: injecting a slug of aqueous solution having a pH greater than about 9, containing as a viscosity increasing agent up to about 2% concentration of water-soluble polymers, said polymers being produced by contacting under conversion conditions, water-dispersible proteins with enzymes elaborated by the microorganism *Pseudomonas fabricans* No. 492 (A.T.C.C. No. 21984), which polymers are characterized in that solutions thereof reversibly increase in viscosity on raising the pH to a value greater than about 9.

4,356,096

METHOD OF ENHANCING THE EFFECT OF LIQUID ORGANIC LUBRICANTS IN DRILLING FLUIDS

Jack C. Cowan, Lafayette, La.; Tommy Thrash, Littlefield, Tex., and Jerry R. Rayborn, New Orleans, La., assignors to Venture Chemicals, Inc., Lafayette, La.

Filed Jun. 1, 1981, Ser. No. 269,430

Int. Cl.^{3} C09K *7/02*

U.S. Cl. 252—8.5 C **7 Claims**

1. A method of increasing the effectiveness of a liquid organic lubricant in a water base well drilling fluid which comprises adding to the drilling fluid containing the lubricant a hydrophobic, organophilic, water wettable sorbent to sorb the lubricant and concentrate the lubricant on the sides of the borehole in which the drilling fluid is circulated, said lubricant being selected from the group consisting of petroleum oils and fractions thereof, vegetable oils, animal fats, fatty acids, fatty acid esters, fatty amides, fatty alcohols, sulfurized vegetable oils, sulfated vegetable oils, sulfurized animal fats, sulfated animal fats, sulfurized fatty acids, sulfated fatty acids, sulfurized fatty amides, sulfated fatty amides, sulfurized fatty acid esters, sulfated fatty acid esters, sulfurized fatty alcohols, sulfated fatty alcohols, fatty phosphate esters, sulfonated asphalts and asphaltenes, and mixtures thereof, and said sorbent being selected from the group consisting of cellulose fibers which have been surface treated to be hydrophobic and organophilic, peat, bagasse, and mixtures thereof, said sorbent having a particle size such that at least 95% by weight thereof present in a water suspension will pass through a 100 mesh screen.

4,356,097

ALKYLPHOSPHONATE LUBRICATING OIL

Andrew G. Papay, Manchester, Mo., assignor to Edwin Cooper, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 891,591, Mar. 30, 1978, Pat. No. 4,158,633. This application Feb. 12, 1979, Ser. No. 11,141

The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.

Int. Cl.^{3} C10M *1/48, 3/42*

U.S. Cl. 252—33.4 **6 Claims**

1. In a motor oil composition formulated for use as a crankcase lubricant for internal combustion engines, said formulated oil containing an ashless dispersant, the improvement comprising including in said composition an amount sufficient to reduce fuel consumption of said engine of a di-ethyl $C_{12\text{-}30}$ alkylphosphonate, said improvement functioning to reduce fuel consumption of an internal combustion engine when said motor oil composition is used as the crankcase lubricating oil in said engine.

4,356,098

STABLE FERROFLUID COMPOSITIONS AND METHOD OF MAKING SAME

Mark S. Chagnon, Lowell, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

Continuation-in-part of Ser. No. 92,322, Nov. 8, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,317

Int. Cl.^{3} C09D *5/23;* C10M *3/44*

U.S. Cl. 252—62.51 **23 Claims**

1. A stable ferrofluid composition which comprises a colloidal dispersion of finely-divided magnetic particles in a liquid silicone-oil carrier and a dispersing amount of a surfactant, which surfactant comprises a silicone-oil surfactant containing a functional group which forms a chemical bond with the surface of the magnetic particles and a tail group which is soluble in the silicone-oil carrier, to provide a stable ferrofluid composition.

4,356,099

FABRIC TREATMENT PRODUCTS

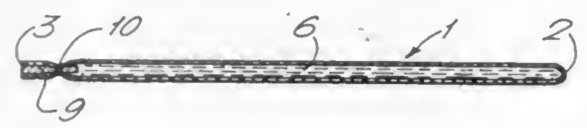
James F. Davies, Wirral, and John B. Tune, Higher Bebington, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 12, 1981, Ser. No. 262,845

Claims priority, application United Kingdom, May 16, 1980, 8016243

Int. Cl.^{3} D06M *13/00, 13/16;* B65D *33/16;* C11D *17/00*

U.S. Cl. 252—90 **3 Claims**



1. In a fabric treatment product for washing machine use in the form of a bag containing a fabric treatment composition, the improvement which comprises a bag formed of water-insoluble water-impermeable synthetic thermoplastic sheet material, said bag containing a fabric treatment composition comprising a liquid, said bag being closed by at least one weak heat seal formed by two opposed bag walls heat-sealed to a separator sheet inter-positioned between them, said separator sheet being of porous material which is not thermoplastic at the heat-sealing temperature used, whereby said weak heat seal will self-open when in use and agitated in a washing machine.

4,356,100

SOFT CONTACT LENS COLD DISINFECTANT SOLUTION

Guy J. Sherman, Metairie, La., assignor to Sherman Laboratories, Inc., Abita Springs, La.

Filed May 10, 1979, Ser. No. 37,645

Int. Cl.^{3} C11D *1/825, 3/48*

U.S. Cl. 252—106 **8 Claims**

1. A sterile, aqueous composition consisting essentially of water, from about 0.1% to about 8.6% by weight of said total aqueous composition of a polyoxypropylene-polyoxyethylene block copolymer having a molecular weight of about 1,100 to about 14,000, a water solubility in excess of about 10 grams per 100 milliliters, a cloud point in 1% aqueous solution above about 32° C. and a foam height in excess of about 32 millimeters, from about 0.05% to about 0.45% by weight of said total aqueous composition of an alkylphenoxy polyethoxy ethanol octylphenol that is a physiologically acceptable non-ionic surface acting agent having a water solubility in excess of about 1 milliliter per 100 milliliters, a cloud point in 1% aqueous solution of from about 65° C. to about 100° C. and a foam

height in excess of about 25 millimeters, from about 0.1% to about 10% ascorbic acid by weight of the total aqueous composition, from about 0.001% to about 0.006% Thimerosal by weight of the total aqueous composition, from about 0.2% to about 2.5% propylene glycol by weight of the total aqueous composition, a salt of ethylenediaminetetraacetic acid suitable for use as a preservative and buffer and present in an amount to maintain the pH of the aqueous composition in a range of between about 4.0 and 7.0, which composition disinfects soft and semi-hard contact lenses within four hours, is compatible with soft and semi-hard lenses to allow storage therein and is suitable for cleaning soft and semi-hard contact lenses.

4,356,101

IRON ACTIVE ELECTRODE AND METHOD OF MAKING SAME

John F. Jackovitz, Monroeville; Joseph Seidel, Pittsburgh, and Earl A. Pantier, Verona, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 16, 1981, Ser. No. 254,708

Int. Cl.^{3} H01M *4/52, 4/08*

U.S. Cl. 252—182.1 **26 Claims**

1. A method of preparing an electrode active material comprising calcining iron sulfate in an oxidizing atmosphere at a temperature in the range of from about 600° C. to about 850° C. for a time sufficient to produce an iron oxide with a trace amount of sulfate, and heating the iron oxide with the trace amount of sulfate in a reducing atmosphere at an elevated temperature to produce activated iron having a trace amount of sulfide.

4,356,102

DICHROIC LIQUID CRYSTAL COMPOSITIONS CONTAINING ANTHRAQUINONE-BASED DYES

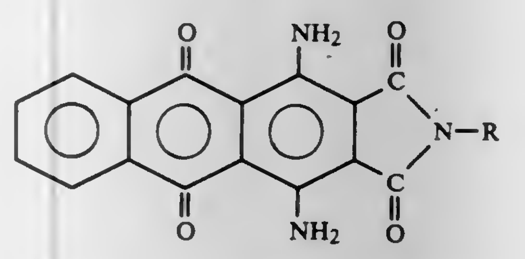
Sigfried Aftergut, Schenectady, and Herbert S. Cole, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 22, 1980, Ser. No. 199,589

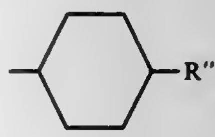
Int. Cl.^{3} C02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.1 **7 Claims**

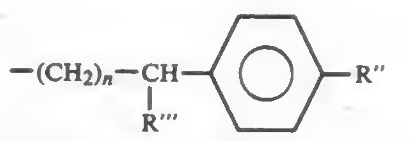
1. A liquid crystal composition comprising:
a host liquid crystal material; and
at least one guest anthraquinone dye dissolved in said host liquid crystal material, said anthraquinone dye having the general formula:



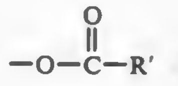
wherein R is selected from the group consisting of:
a cyclohexyl radical;
a phenyl radical;
a benzyl radical;
a substituted phenyl radical having the formula:



a substituted benzyl radical having the formula:

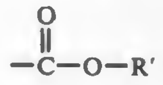


where R'' is in the para-position and is selected from the group consisting of halogen, cyano, nitro, alkoxy, hydroxyl, amino, alkylamino, dialkylamino, alkyl wherein the alkyl is from about 1 to about 10 carbon atoms, arylamino and esters having the formula:



$$-O-\overset{\overset{O}{\|}}{C}-R'$$

and



$$-\overset{\overset{O}{\|}}{C}-O-R'$$

wherein R' is selected from the group consisting of alkyl, substituted alkyl, aryl and substituted aryl; R''' is hydrogen or alkyl having from about 1 to about 3 carbon atoms; and n is an integer from 0 to 5.

4,356,103

LIQUID CRYSTALS FOR ELECTRO-OPTICAL DEVICES

Herrmann Schubert, Nehlitz; Gerhard Pelzl, Halle; Horst Zaschke, Halle; Dietrich Demus, Halle; Hans-Ulrich Nothni, Hoyerswerda, and Frank Kuschel, Halle, all of German Democratic Rep., assignors to Veb Werk für Fernsehelektronik, Berlin-Oberschöneweide, German Democratic Rep.

Continuation of Ser. No. 9,042, Feb. 2, 1979, abandoned. This application May 5, 1980, Ser. No. 147,254

Claims priority, application German Democratic Rep., Feb. 6, 1978, 203563

Int. Cl.^{3} G02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.1 **7 Claims**

1. In an electro-optic display employing a smectic liquid crystal composition for modulation of transmitted or reflected light and rendering numerals, symbols, and images in color, the improvement wherein said liquid crystal composition comprises a compound selected from the group consisting of 3,6-bis-(4-n-alkylphenyl)-1,2,4,5-tetrazine, 4-n-alkyl-4'-n-alkoxy-3,6-diphenyl-1,2,4,5-tetrazine, 6-n-alkyl-3-(4-n-alkoxyphenyl)-1,2,4,5-tetrazine, and mixtures thereof, having from one to 12 carbon atoms in the alkyl and alkoxy chains, said composition employed as a planarly oriented, smectic C phase of positive dielectric anisotropy and possessing the properties of a dichroitic dyestuff.

4,356,104

4-SUBSTITUTED PHENYL 4-(5N-ALKYL-1,3-DIOXAN-2-YL)BENZOATES

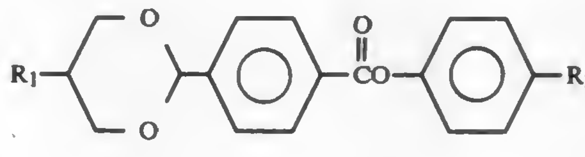
Ying Y. Hsu, Los Altos, Calif., assignor to Timex Corporation, Waterbury, Conn.

Division of Ser. No. 212,303, Dec. 3, 1980, Pat. No. 4,313,878. This application Jun. 29, 1981, Ser. No. 277,796

Int. Cl.^{3} G02F *1/13;* C09K *3/34*

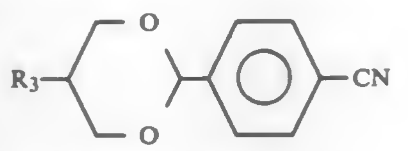
U.S. Cl. 252—299.61 **8 Claims**

1. A nematic liquid crystal admixture for an electrooptic display wherein said mixture comprises:
(a) at least one compound selected from the group having the formula:



wherein R_1 is an alkyl group and R_2 is an alkyl, alkoxy, CN or NO_2; and

(b) at least one compound having the formula:



wherein R_3 is an alkyl or alkoxy group.

4,356,105
LOW VISCOSITY SLURRY AND METHOD OF PREPARING SAME

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 6, 1978, Ser. No. 894,068

Int. Cl.^{3} B01J *13/00*

U.S. Cl. 252—308 **15 Claims**

1. A method of preparing a relatively low viscosity slurry comprising:

(a) providing a material which forms a relatively high viscosity slurry of thin, flexible, plate-shaped individual crystals when a dilute aqueous solution thereof is mixed with a dispersant in which said material is insoluble and to which said material is inert and the water is at least partially evaporated therefrom;

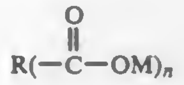
(b) forming a dilute aqueous solution of said material;

(c) at least partially evaporating the water from said dilute aqueous solution to form granular shaped aggregates of plate-shaped crystals of said material;

(d) recovering said granular shaped aggregates of plate-shaped crystals; and

(e) mixing directly with said dispersant said granular shaped aggregates of plate-shaped crystals of said material so that the thus produced slurry has a lower viscosity than a slurry comprising said dispersant and an equal weight percent of said material wherein said material is essentially in the form of individual plate-shaped crystals of about the same size as said aggregates.

9. A slurry having a relatively low viscosity comprising granular shaped aggregates of plate-shaped crystals, said aggregates having a water content of less than 30% by weight and being mixed with a dispersant in which said aggregates are insoluble and to which said aggregates are inert to produce said slurry, the material from which said aggregates are formed being represented by the formula



$$R(-\overset{\overset{\displaystyle O}{\|}}{C}-OM)_n$$

wherein R is an aromatic hydrocarbon radical having 6 to about 35 carbon atoms, M is selected from the group consisting of an alkali and an alkaline earth metal, and n is an integer selected from the group consisting of 1, 2, 3 and 4, wherein at least 90 weight percent of said material is in the form of said granular aggregates of plate-shaped crystals.

4,356,106
CERIUM COMPOUNDS

James L. Woodhead, Didcot, and Graham Raw, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 20, 1981, Ser. No. 255,818

Claims priority, application United Kingdom, May 9, 1980, 8015395

Int. Cl.^{3} B01J *13/00*

U.S. Cl. 252—313 R **14 Claims**

1. A process for the preparation of a dispersible cerium compound which comprises heating a substantially dry cerium (IV) oxide hydrate in the presence of a deaggregating agent to cause deaggregation of aggregated crystallites in the cerium (IV) oxide hydrate and produce a dry dispersible cerium compound.

7. A process as claimed in claim 1 further comprising the step of dispersing the dry dispersible cerium compound in an aqueous medium to give a colloidal dispersion of the cerium compound.

9. A process as claimed in claim 1 further comprising the steps of mixing the dispersible cerium compound with water at such a concentration that the dispersible cerium compound coagulates to form a slurry and separating the coagulated cerium compound from liquor of the slurry.

12. A dry dispersible cerium compound prepared by a process as claimed in claim 1.

4,356,107
PROCESS FOR PREPARING SILICA SOLS

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 97,510, Nov. 26, 1979, abandoned. This application Jul. 18, 1980, Ser. No. 170,030

Int. Cl.^{3} B01J *13/00;* **C01B** *33/14*

U.S. Cl. 252—313 S **9 Claims**

1. A process of preparing larger particle sized silica sols with narrow particle distribution and enhanced surface density as compared to the surface density of silica sol particles in a silica sol starting material which consists essentially in heating a broad distribution aqueous silica sol containing larger silica particles of which at least 50% in number have a particle size of at least 40 millimicrons, the remainder of the silica particles being smaller and of different sizes, under superatmospheric pressure, at a temperature of 138° C. to 240° C. and a starting alkaline pH within the range of 8–10.5 sufficient to permit growth of particle size without completely dissolving the silica particles for a period of time sufficient to increase the number and size of the larger sized particles and to increase the surface density of the resultant larger sized particles while reducing the number of smaller sized particles, the temperature, pH and time of heating being sufficient to produce an aqueous silica sol in which the number of larger silica particles having a particle size of at least 40 millimicrons is at least as great as in the starting sol, the weight average of said larger silica particles is greater than that of the larger silica particles in the starting sol, the number of smaller particles is less than the number of smaller particles in the starting sol, and the resultant sol contains fewer particles of different sizes than the starting sol.

4,356,108
ENCAPSULATION PROCESS

Gerhart Schwab, and Gerald T. Davis, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 20, 1979, Ser. No. 105,445

Int. Cl.^{3} B01J *13/02*

U.S. Cl. 252—316 **11 Claims**

1. A process for the preparation of oil-containing microcapsules by interfacial condensation of wall-forming materials, said microcapsules having utility in the manufacture of carbonless copy paper, comprising steps of:

(a) forming a hydrophilic phase comprising water, a water soluble emulsifying agent and a water soluble polyfunctional amine salt, said polyfunctional amine salt being the reaction product of a polyfunctional amine and an acid;

(b) forming a hydrophobic phase comprising an oil and an oil soluble polyfunctional wall-forming material, said oil containing a chromogenic material;

(c) mixing together said hydrophobic and said hydrophilic phases with agitation, thus forming an emulsion of droplets of said hydrophobic phase in said hydrophilic phase, said droplets being from 3 to 10 microns in diameter;

(d) adding an inorganic base to said emulsion, said inorganic base being addd in an amount sufficient to convert said polyfunctional amine salt to a polyfunctional amine, and to neutralize acids formed during subsequent condensation reactions, said polyfunctional amine being coreactive with said oil soluble polyfunctional wall-forming material, the pH of said resulting emulsion being slightly alkaline;

(e) stirring the resulting emulsion for a period of time sufficient to allow said polyfunctional amine and said oil soluble polyfunctional wall-forming material to react to form microcapsule walls around said droplets of hydrophobic phase, said microcapsule walls being substantially impermeable to said hydrophilic and said hydrophobic phases.

4,356,109
METHOD FOR PREPARING MICROCAPSULES

Keiso Saeki; Hiroharu Matsukawa, and Masato Satomura, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 926,369, Jul. 20, 1978, Pat. No. 4,251,386. This application Feb. 7, 1980, Ser. No. 119,599

Claims priority, application Japan, Jul. 27, 1977, 52-90148

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.^{3} B01J *13/02*

U.S. Cl. 252—316 **15 Claims**

1. A method for preparing microcapsules comprising polymerizing urea and formaldehyde in an aqueous solution in the presence of an anionic polyelectrolyte and an ammonium salt of an acid and forming a wall membrane of a urea/formaldehyde resin around droplets of a hydrophobic oily liquid, wherein the amount of polyelectrolyte is about 0.5 to 15% by weight based on the weight of the aqueous solution and the ammonium salt is used in an amount of about 1 to 200% by weight, based on the weight of the urea.

4,356,110
SECONDARY STABILIZER

Bengt A. L. Sallmen; Carl-Axel E. Sjögreen, both of Perstorp; Mans O. Mansson, Helsingborg, and Keith F. R. Ogemark, Perstorp, all of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Oct. 30, 1978, Ser. No. 955,585

Claims priority, application Sweden, Nov. 29, 1977, 77134682

Int. Cl.^{3} C09K *15/06*

U.S. Cl. 252—407 **5 Claims**

1. A secondary stabilizer for vinyl chloride polymers comprising particles of a mixture of pentaerythritol and a second organic compound having at least two hydroxyl groups dispersed in a liquid carrier in which the said mixture has been ground, said particles having been prepared by melting together the pentaerythritol and said second organic compound having at least two hydroxyl groups, solidifying the resulting molten mixture, and grinding the resulting solid white mixed with said liquid carrier to form a dispersion of solid particles in the liquid carrier.

4,356,111
HIGH EFFICIENCY CATALYST CONTAINING TITANIUM AND ZIRCONIUM FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, and Kirby Lowery, Jr., Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 20, 1980, Ser. No. 198,681

Int. Cl.^{3} C08F *4/64*

U.S. Cl. 252—429 B **14 Claims**

1. A catalytic reaction product of

(A) a trivalent or tetravalent titanium compound represented by the empirical formulas (i) $TiX_n(OR)_{4-n}$ wherein X is a halogen, R is a hydrocarbyl group having from 1 to about 20 carbon atoms and n has a value of zero to 4; (ii) α- and/or γ-$TiCl_3$; and (iii) $TiZ_3(L)_x$ wherein Z is a halogen and L is an electron donating compound selected from water, ketones, ethers, amines or olefins and x is a whole number from 1 to 6;

(B) a zirconium compound represented by the empirical formula $Zr(OR)_xX_y$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; each X is independently a halogen atom and each x and y independently have values from zero to 4 with the value of x plus y being 4;

(C) an organomagnesium component selected from
  (1) an organomagnesium compound or
  (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium compound in a hydrocarbon solvent; said organomagnesium component being represented by the empircal formula $MgR''_2.xMR''_y$ wherein M is aluminum, zinc, boron, silicon, tin or phosphorus; each R″ is independently hydrocarbyl or hydrocarbyloxy having from 1 to about 20 carbon atoms; x has a value from zero to about 10 and y has a value corresponding to the valence of M;

(D) a halide source selected from
  (1) an active non-metalic halide, said non-metallic halide corresponding to the empirical formula R′X wherein R′ is hydrogen or an organic group at least as active as sec-butyl and X is halogen; or
  (2) a metallic halide corresponding to the empirical formula $MR_{y-a}X_a$ wherein M is a metal of Group IIIA or IVA of Mendeleev's Periodic Table of the Elements, R is a hydrocarbyl or hydrocarbyloxy group, X is halogen, y is a number corresponding to valence of M and a is a number from 1 to y;

provided that the proportions of the foregoing components of said catalytic reaction product are such that the atomic ratio of Mg:Zr is from about 1:1 to about 100:1; the atomic ratio of Al:Zr is from about 0.1:1 to about 100:1; the atomic ratio of Zr:Ti is from about 0.5:1 to about 50:1; the atomic ratio of excess X:Al is from about 0.0005:1 to about 10:1; and further provided that when the organomagnesium component and/or the halide source provides insufficient quantities of aluminum, there is also present

(E) an aluminum compound represented by the empirical formula $AlR_{y'}X_{y''}$ wherein R and X are as defined above and y′ and y″ each have a value of from zero to three with the total value of y′ plus y″ being three;

and wherein the components are added in an order selected from the group consisting of:

(a) (i) component (C), (ii) component (D), (iii) component (E), if employed, followed by (iv) components (A) and (B) in any order or as a mixture;

(b) (i) component (D) if it contains aluminum, (ii) component (C), (iii) components (A) and (B) in any order or as a mixture; and

(c) (i) component (D) if aluminum is present, (ii) components (A) and (B) in any order or as a mixture and (iii) component (C).

4,356,112
CATALYST FOR PRODUCTION OF PHTHALIC ANHYDRIDE

Yoshiyuki Nakanishi; Yoji Akazawa; Noriaki Ikeda, all of Himeji, and Takehiko Suzuki, Ohtsu, all of Japan, assignors to Nippon Shukubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Nov. 26, 1980, Ser. No. 210,689

Claims priority, application Japan, Dec. 3, 1979, 54-155608

Int. Cl.^{3} B01J *27/14*

U.S. Cl. 252—435 **5 Claims**

1. A catalyst for the production of phthalic anhydride by the catalytic vapor-phase oxidation of o-xylene or naphthalene with molecular oxygen, said catalyst comprising a catalytically active material composed of 1 to 20 parts by weight as V_2O_5 of vanadium oxide and 99 to 80 parts by weight as TiO_2 of anatase-type titanium oxide being porous and having a particle diameter substantially of 0.4 to 0.7 micron and a specific sur-

face area of 10 to 60 m^2/g, and per 100 parts by weight of the sum of these two components, 0.01 to 1 part by weight as Nb_2O_5 of niobium, 0.05 to 1.2 parts by weight as oxide of potassium, cesium, rubidium or thallium, 0.2 to 1.2 parts by weight as P_2O_5 of phosphorus and 0.5 to 10 parts by weight as Sb_2O_3 of antimony, said catalytically active material being supported on a porous carrier in an amount of 3 to 200 g/100 cc of carrier.

4,356,113

SUBSTRATES WITH CALIBRATED PORE SIZE AND CATALYSTS EMPLOYING THE SAME

John Lim, Anaheim; Michael Brady, Studio City, and Kirk Novak, Fullerton, all of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Nov. 17, 1980, Ser. No. 207,142

Int. Cl.^{3} B01J *29/06, 35/00*

U.S. Cl. 252—455 Z **8 Claims**

1. In the process of increasing the pore volume of an alumina-containing calcined catalyst support by incorporating combustible solid particles in the support prior to calcination and calcining the support containing the combustible particles, the improvement which comprises determining the average pore-size distribution and the pore volume of an alumina-containing particulate support prior to incorporating combustible particles, preparing an acidified, aqueous dispersion of carbon black particles, the particles having a preselected particle-size distribution, as determined by measuring the average particle diameter of the carbon black, in order to amplify only those pores of the alumina-containing support which have smaller diameters than those of the carbon black particles, admixing the aqueous dispersion with the particulate support, drying the mixture and calcining the dried mixture at a temperature sufficient to combust the carbon black particles and recovering a support having increased pore volume in the preselected pore-size range.

4. The process of claim **1**, wherein the support is a mixture of a zeolite, pseudoboehmitic alumina and clay.

7. The process of claim **1** wherein the aqueous dispersion of the carbon black particles is acidified with an acid selected from nitric and formic acids.

4,356,114

PROCESS FOR PRODUCING COMPOSITE OXIDE CATALYSTS

Koju Kadowaki; Kohei Sarumaru, and Yoshiaki Tanaka, all of Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed May 11, 1981, Ser. No. 262,137

Claims priority, application Japan, May 19, 1980, 55/66295

Int. Cl.^{3} B01J *23/20, 23/22, 23/28*

U.S. Cl. 252—467 **4 Claims**

1. In a process for producing a composite oxide catalyst comprising at least molybdenum together with vanadium and/or niobium, which process includes a step of thermal decomposition of a catalyst precursor comprising a mixture of compounds and/or a complex compound of the source of constituent elements, the improvement in which the thermal decomposition step is carried out under the conditions that:

(1) the catalyst precursor is heated in a vessel of a heat-exchanger structure wherein a first space accommodating the catalyst precursor and a second space through which a fluid for heating flows are partitioned from each other by a partitioning structure and thereby separated, and, moreover, heating of the catalyst precursor is accomplished through the partitioning structure;

(2) the thermal decomposition step is carried out as an atmosphere gas in which oxygen concentration has been adjusted to a value within a range of 0.05 to 5 percent is caused to flow through said first space; and

(3) the maximum temperature reached in the thermal decomposition step is in a range of 300° to 550° C.

4,356,115

FRAGRANT SYNTHETIC RESIN PRODUCT AND METHOD OF PRODUCING THE SAME

Ichiro Shibanai; Kouki Horikoshi, both of Tokyo, and Nobuyuki Nakamura, Kunitachi, all of Japan

Filed Apr. 27, 1981, Ser. No. 267,969

Int. Cl.^{3} A61K *7/46*

U.S. Cl. 252—522 A **4 Claims**

1. A fragrant synthetic resin product comprising a cyclodextrin and a perfume material which are physically mixed to form a dry-pulverized cyclodextrin inclusion compound containing said perfume material, and a thermoplastic synthetic resin material which is physically mixed with said dry-pulverized cyclodextrin inclusion compound to form a molding mixture, said molding mixture being molded to form said product.

4,356,116

DEVOLATILIZED ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Melvin D. Beers, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,800

Int. Cl.^{3} C08L *33/06;* **C08G** *77/34*

U.S. Cl. 524—837 **47 Claims**

1. A devolatilized room temperature vulcanizable silicone rubber composition wherein the volatiles content does not exceed 0.003 gm/c.c. of silica comprising (A) 100 parts by weight of devolatilized diorganosilanol chainstopped linear diorganopolysiloxane base polymer having a viscosity varying from 100 to 1,000,000 centipoise at 25° C. where the organo group is a monovalent hydrocarbon radical and wherein the base polymer is devolatilized by heating at temperatures above 220° C. under vacuum for at least 2 minutes; (B) from 3 to 30 parts by weight of a devolatilized plasticizing fluid having from 3 to 60 mole percent of monoorganosiloxy units of the formula,

$$RSiO_{1.5}$$

34 to 96 mole percent of diorganosiloxy units of the formula,

$$R_2SiO$$

and 1 to 6 mole percent of triorganosiloxy units of the formula,

$$R_3SiO_{0.5}$$

which fluid contains from 0.1 to 2.0% by weight of hydroxyl group and where R is a monovalent hydrocarbon radical wherein the plasticizing fluid is devolatilized by heating the fluid at a temperature of at least 260° C. under vacuum for at least 5 minutes; (C) from 0.1 to 15 parts by weight of a cross-linking agent; and (D) from 0.01 to 10 parts by weight of a catalytic promoter.

4,356,117

CHEMICAL MODIFICATIONS OF PROTEINS WHICH INDUCE NEW RECEPTOR SPECIFICITIES AND THEREFORE ELICIT NEW EFFECTS IN CELLS

David M. Neville, Jr., Bethesda; Richard J. Youle, Kensington, and Gary J. Murray, Bethesda, all of Md., assignors to U.S. Govt., Dept. of Health & Human Services, Washington, D.C.

Filed Oct. 23, 1980, Ser. No. 199,781

Int. Cl.^{3} C07G *7/00*

U.S. Cl. 260—112 R **1 Claim**

1. A cell type specific cytotoxic reagent composition consisting of mannose-6-phosphate-Modeccin, a hybrid prepared from Modeccin.

4,356,118

TRYPTOPHAN DERIVATIVES

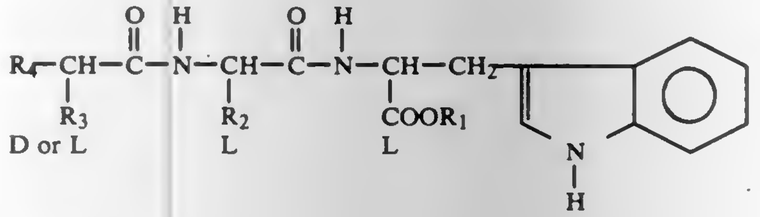
William H. Owens, Arlington Heights, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 2, 1981, Ser. No. 269,202

Int. Cl.^{3} C07C *103/52*

U.S. Cl. 260—112.5 R **14 Claims**

1. A compound according to formula I:



wherein R_1 is:
  (a) hydrogen;
wherein R_2 is:
  (a) hydrogen;
  (b) iso-propyl; or
  (c) tert-butyl;
wherein R_3 is:
  (a) methyl; or
  (b) —NHR_5;
whereing R_5 is:
  (a) hydrogen or
  (b) aroyl;
wherein R_4 is:
  (a) CH_2SP;
  (b) iso-propyl;
  (c) iso-butyl;
  (d) imidazolmethyl;
  (e) phenylmethyl; or
  (f) methylthioethyl;

4,356,119

THERAPEUTICALLY ACTIVE POLYPEPTIDES OR ACID ADDITION SALTS AND A PROCESS FOR PRODUCING SUCH COMPOUNDS

Hans Kofod, Lyngby, Denmark, assignor to Nordisk Insulinlaboratorium, Gentofte, Denmark

Filed Sep. 24, 1979, Ser. No. 78,424

Claims priority, application Denmark, Sep. 28, 1978, 4304/78

Int. Cl.^{3} C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **2 Claims**

1. A polypeptide derivative of the general formula:

a—x—b—arg—c

wherein x represents glu or asp,

a represents hydrogen or a small protective group for the α-amino group in x,

b represents leu, a di- or tripeptide selected from the group consisting of leu-ser, ser-ala, his-phe, and gly-gly-gly, or when x is glu, b may also represent a bond or a secretin fragment selected from the group consisting of leu-ser-arg-leu and leu-ser-arg-leu-arg-asp-ser-ala, or when x is asp, b may also represent the secretin fragment ser-ala-arg-leu-gln, c represents —NR^1R^2, wherein R^1 and R^2 are selected from the group consisting of hydrogen and C_1–C_6 alkyl or c represents —OR^3, wherein R^3 is selected from the group consisting of hydrogen and C_1–C_6 alkyl, except that when x is asp and b is ser-ala R^3 is not hydrogen, or acid addition salts of such peptides with acids acceptable to the organism.

4,356,120

3-(1-HYDROXYETHYL)-4-(BUT-2-ENE)-AZETIDIN-2-ONE AND DERIVATIVES

Burton G. Christensen, Scotch Plains; Ronald W. Ratcliffe, Matawan, and Thomas N. Salzmann, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

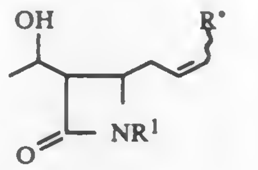
Continuation of Ser. No. 59,843, Jul. 23, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,805

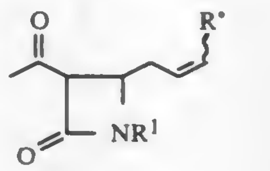
The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.^{3} C07D *205/08, 487/04*

U.S. Cl. 260—239 A **1 Claim**

1. A compound selected from the group consisting of:





wherein R^1 is hydrogen or a readily removable protecting group selected from: t-butyldimethylsilyl, t-butyldiphenylsilyl, triphenylsilyl, isopropyldimethylsilyl, and 3,4-dimethoxybenzyl; and R° is alkyl having 1–6 carbon atoms, cycloalkyl having 3–6 carbon atoms, cycloalkylalkyl having 4–12 carbon atoms, and phenylalkyl having 7–12 carbon atoms.

4,356,121

PROCESS FOR THE PRODUCTION OF N-CYANOLACTAMS

Dieter Trachsler, Kaiseraugst, and Friedrich Lohse, Oberwill, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

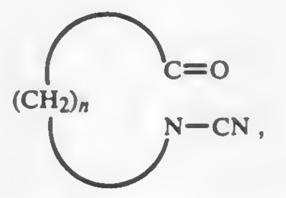
Filed Sep. 25, 1981, Ser. No. 305,662

Claims priority, application Switzerland, Oct. 7, 1980, 7480/80

Int. Cl.^{3} C07D *223/10*

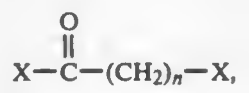
U.S. Cl. 260—239.3 R **7 Claims**

1. A process for the production of a N-cyanolactam of the formula



(I)

wherein n is an integer from 3 to 5 and the methylene carbon atoms are unsubstituted or substituted by one or two methyl or ethyl groups, or two adjacent methylene carbon atoms form part of a C_5–C_8 cycloaliphatic ring or a benzene ring, which process comprises reacting a compound of the formula II



$$X-\overset{\overset{O}{\|}}{C}-(CH_2)_n-X, \qquad (II)$$

wherein n is an integer from 3 to 5, the methylene carbon atoms are unsubstituted or substituted by one or two methyl or ethyl groups, or two adjacent methylene carbon atoms form part of a C_5–C_8 cycloaliphatic ring or a benzene ring, and each of the symbols X independently is a halogen atom, in the presence of an inorganic hydrogen halide acceptor, with cyanamide or a salt thereof.

2. A process according to claim **1**, wherein there is used a compound of the formula II which contains no substituents or rings.

4,356,122
6-PERHALOALKYLSULFONYLOXY-PENICILLANIC ACIDS AND DERIVATIVES THEREOF

John E. G. Kemp, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

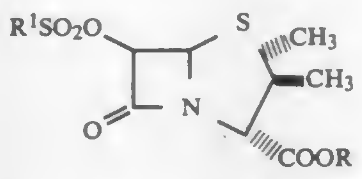
Continuation-in-part of Ser. No. 147,438, May 7, 1980, abandoned. This application Dec. 10, 1980, Ser. No. 214,846

Claims priority, application United Kingdom, May 19, 1979, 7917505

Int. Cl.^{3} C07D *499/00*

U.S. Cl. 260—245.2 R **6 Claims**

1. A compound having the formula



wherein R is H, a conventional penicillin carboxy protecting group or an ester forming residue readily hydrolyzable in vivo, and R^1 is a perfluoroalkyl or perchloroalkyl group having from 1 to 4 carbon atoms.

4,356,123
SPARINGLY SOLUBLE ISOINODOLINE COLORANTS

Wolfgang Lotsch, Beindersheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

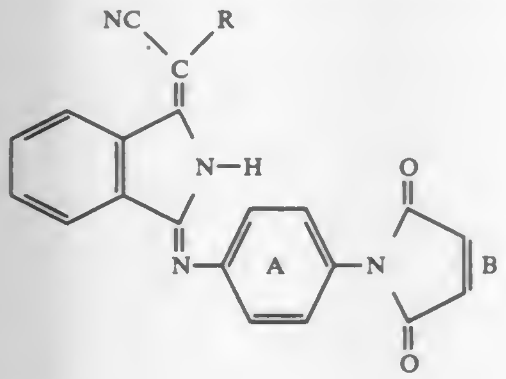
Filed Mar. 7, 1980, Ser. No. 128,153

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909645

Int. Cl.^{3} C07D *403/12;* **C09B** *57/04;* **C07D** *209/44;* **C08K** *5/34*

U.S. Cl. 260—326 N **9 Claims**

1. A sparingly soluble isoindoline colorant of the formula:



wherein
- R is carbamyl, N-C_1–C_4-alkylcarbamyl or N-phenylcarbamyl;
- B is a 1,2-phenylene, 1,2-naphthylene or 2,3-naphthylene; and
- A, B and the phenyl radical in R independently of one another are unsubstituted or substituted by groups which do not confer solubility to the isoindoline colorant and are selected from the group consisting of halogen, C_1–C_6-alkyl, C_1–C_6 alkoxy, nitro, trifluoromethyl, carbamyl, ureido, sulfamyl, cyano, C_1–C_5 alkoxycarbonyl, C_1–C_5 alkanoyl, C_1–C_5 alkylcarbamyl, C_1–C_5 alkylureido, C_1–C_5 alkanoylamino, C_1–C_6 alkylsulfonyl, C_1–C_6 alkylsulfamyl, aryloxycarbonyl, aroyl, aroylamino, arylsulfonyl, arylcarbamyl, arylsulfamyl, aryl, arylureido and arylazo.

4,356,124
PROCESS FOR THE PRODUCTION OF PYRROLIDONES

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Oct. 5, 1979, Ser. No. 82,192

Int. Cl.^{3} C07D *207/38, 207/40*

U.S. Cl. 260—326.5 FN **17 Claims**

1. A process for producing a five-membered saturated action comprising the step of contracting hydrogen, an amine and a five-membered oxygen-containing heterocyclic anhydride or the corresponding acid in the presence of an oxide complex catalyst represented by the formula:

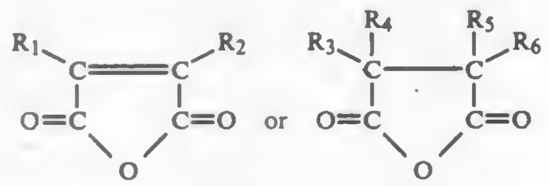
$$A_aD_bFe_cRu_dO_x$$

wherein
- A is cobalt, nickel, or mixtures thereof; and
- D is selected from the group consisting of Rh, Pd, Os, Ir, Pt, and Zn; and

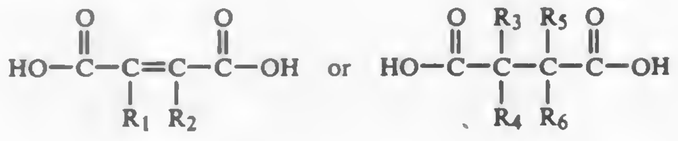
wherein
- a, b and c are each independently 0 to 1; with the proviso that a and c are not both equal to 0;
- d is 0.01 to 1; and
- x represents the number of oxygens required to satisfy the valence requirements of the other elements present in the catalyst;

wherein the heterocyclic anhydride or corresponding acid is represented by the formulas:

Anhydrides

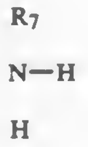


Corresponding Acids



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are each independently selected from the group consisting of:
(1) hydrogen;
(2) C_{1-4} alkyls

and wherein ammonia or amine is represented by the following formula:



$$\begin{matrix} R_7 \\ N{-}H \\ H \end{matrix}$$

wherein R_7 is selected from the group consisting of:
(1) hydrogen;
(2) C_{1-4} alkyl;
(3) aryl; and
(4) —$(CH_2)_q$—OH, wherein q is 1 to 4.

4,356,125
PREPARATION OF 2-HYDROXYTETRAHYDROFURAN

Nicolaas A. de Munck, Delft, and Joseph J. F. Scholten, Sittard, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 22, 1981, Ser. No. 256,671

Claims priority, application Netherlands, Apr. 23, 1980, 8002342

Int. Cl.^{3} C07C *45/50;* **C07D** *307/20*

U.S. Cl. 549—475 **8 Claims**

1. An improved process for the conversion of allyl alcohol with hydrogen and carbon monoxide in the presence of a catalytically active metallo-organic complex to form a reaction mixture containing hydroformylation product selected from the group consisting of 2-hydroxytetrahydrofuran and 4-hydroxybutyraldehyde, the improvement comprising bringing said allyl alcohol, hydrogen, and carbon monoxide, in a gaseous phase and at a temperature of between about 90° C. and 150° C., into contact with a catalyst comprised of a solid porous carrier material containing within its pores a solution of a catalytically active metallo-organic complex in at least one ligand-forming compound, said solution having a vapor pressure of less than 1.3 mbar under the reaction conditions applied.

4,356,126
CARBONYLATION OF ALKANOLS AND/OR ALIPHATIC ETHERS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 17, 1981, Ser. No. 274,616

Claims priority, application United Kingdom, Jun. 19, 1980, 8020045

Int. Cl.^{3} C07C *51/12, 67/36, 67/37;* **C07D** *307/60*

U.S. Cl. 260—410.9 R **20 Claims**

1. A process for the carbonylation of alkanols and/or aliphatic ethers at a temperature of about 100° C.–225° C. and a pressure of about 20–100 bar in the presence of a Group VIII metal compound and pentachlorobenzenethiol and/or salts thereof, which comprises reacting the alkanols or aliphatic ethers with carbon monoxide using a pentachlorobenzenethiol compound: Group VIII metal compound molar ratio of not more than about 10.

4,356,127
PREPARATION OF 3-(2,2-DICHLORO-VINYL)-2,2-DIMETHYL-CYCLOPROPANE-1-CARBOXYLIC ACID DERIVATIVES

Hellmut Hoffmann, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

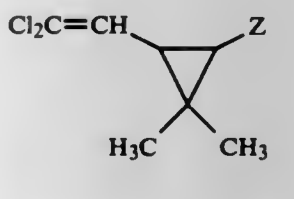
Filed Jul. 2, 1980, Ser. No. 165,928

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929670

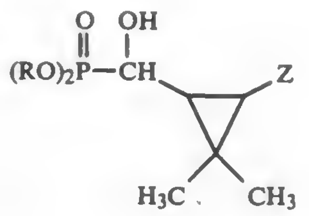
Int. Cl.^{3} C07C *120/00, 121/48, 69/743, 69/747*

U.S. Cl. 260—464 **6 Claims**

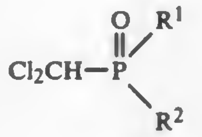
1. A process for the preparation of a 3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane-1-carboxylic acid derivative of the formula



in which
- Z is acetyl, cyano, carbamoyl or C_{1-4}-alkoxycarbonyl, comprising reacting an α-hydroxy-phosphonic acid ester of the formula



in which
- R each independently is C_{1-4}-alkyl or phenyl, or the two radicals R together are 2,2-dimethyl-propane-1,3-diyl, with a dichloromethane derivative of the formula



in which
- R^1 and R^2 each independently is C_{1-4}-alkyl, phenyl, C_{1-4}-alkoxy or phenoxy, or together are C_{2-5}-alkane-dioxy, at a temperature between about −100° and +100° C. in a reaction phase consisting essentially of an inert aprotic organic liquid and in the presence of a base selected from the group consisting of an alkali metal hydroxide, an alkali metal alcoholate, an alkali metal hydride, an alkali metal amide, an alkyl-lithium compound or an amine.

4,356,128
FATTY POLYHYDRIC ALCOHOLS HAVING A POLAR FUNCTIONAL GROUP

Edgar Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Apr. 27, 1981, Ser. No. 257,674

Int. Cl.^{3} C07C *121/34*

U.S. Cl. 260—465.6 **9 Claims**

1. Polyhydroxymethyl compounds containing a polar group which have the formula:

$$CH_3(CH_2)_m[C(CH_2OH)X]_n(CH_2)_p[C(CH_2OH)X]_q(CH_2)_r[C(CH_2OH)X]_s(CH_2)_tCH_2M$$

and mixtures thereof wherein X is either hydrogen or hydroxymethyl but not mixtures thereof provided that there are at least two hydroxymethyl groups per molecule; n plus q plus s are integers the sum of which is from 1 to 3; n, q and s are 0 or 1; m through t are integers the sum of which is from 11 to 19; and M is CN.

4,356,129
PROCESS FOR THE PREPARATION OF NEUTRAL PHOSPHOROUS ACID ARYL ESTERS

Uwe Hucks, Alpen; Erhard Tresper, and Claus Wulff, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

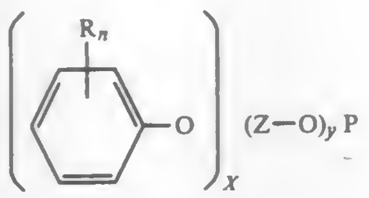
Filed Dec. 4, 1980, Ser. No. 213,136

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950694

Int. Cl.^{3} C07F *9/141*

U.S. Cl. 260—973 **10 Claims**

1. In a process for the preparation of a neutral phosphorous acid aryl ester of the general formula



(I)

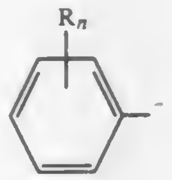
in which

each R independently represents hydrogen, halogen, a nitrile group, an alkyl, alkoxy or phenoxy radical or an optionally fused phenyl radical, or a fused aromatic ring system which is interrupted by hetero-atoms,

n denotes an integer from 1 to 5, and the radicals R can be identical or different,

X represents an integer from 1 to 3,

Z represents an alkyl radical or a radical of the formula



wherein

R and n have the above meaning, and

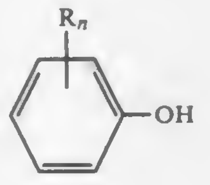
y represents 1 if x represents 2, or 2 if x represents 1, or 0 if x represents 3, by contacting a phosphorus trihalide, phosphorous acid monoester dihalide or phosphorous acid diester halide of the formula (II), (III), or (IV)

$PHal_3$ (II)	$ZOPHal_2$ (III)	$(ZO)_2PHal$ (IV)

in which

Z has the meaning already given in the case of formula (I) and

Hal represents fluorine, chlorine and/or bromine, with a hydroxyaryl compound of the general formula



(V)

in which

R and n have the meanings already given in the case of formula (I), the improvement wherein an excess of (stoichiometric) of hydroxyaryl compound and an excess (stoichiometric) of aqueous alkali metal hydroxide solution or suspension and/or alkaline earth metal hydroxide solution or suspension are employed, relative to the phosphorus halide compound, an inert organic water-immiscible solvent and/or diluent being present in an amount such that 5 to 50% strength by weight solution of the neutral phosphorous acid aryl ester is formed, and, after the reaction, the organic phase is separated off and the phosphorous acid aryl ester formed is isolated by removing the solvent and/or diluent.

4,356,130

TREATING THE RESIDUE FROM THE PRODUCTION OF PHOSPHOROCHLORIDOTHIONATES

Mark S. Carron, Spring Valley; Ronald S. La Barbera, New City; Lester P. Van Brocklin, Thiells, all of N.Y., and Pawan K. Jain, Norwood, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 2, 1980, Ser. No. 193,247

Int. Cl.^{3} C07F *9/20*

U.S. Cl. 260—989 **12 Claims**

1. A method for treating the distillation residue from the production of dialkyl and diaryl phosphorochloridothionates comprising:

(a) mixing the hot residue with a sufficient amount of a separating solution having a specific gravity to cause a three phase mixture to form comprised of an organic phase, a separating solution phase and a sulfur phase; and

(b) recovering an organic phase which is of a lower specific gravity than the separating solution phase.

4,356,131

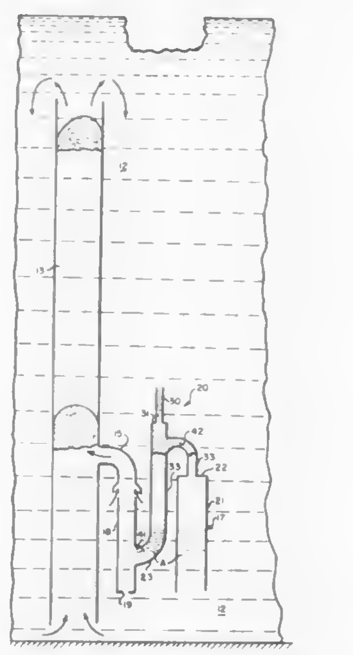
CIRCULATING DEVICE FOR LIQUIDS CONTAINING LONG-CHAIN MOLECULES

Peter Lipert, Dollard Des Ormeaux, Canada, assignor to Atara Corporation, Dorval, Canada

Filed Jan. 29, 1981, Ser. No. 229,679

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 261—77 **9 Claims**



1. In a device for creating circulation within a body of liquid, the liquid including long-chain molecules, the device comprising a substantially vertically extending stackpipe means designed to be wholly submerged within the liquid, the stackpipe having an upper discharge opening and a lower inlet opening; a large bubble generator means, also designed to be wholly submerged within the liquid, and for delivering bubbles to said stackpipe, the generator means comprising a gas accumulating chamber having an opening in the lower part thereof, and curved piping, defining a siphon, connecting the gas accumulator chamber to the stackpipe, and means for delivering gas under pressure into the accumulator chamber; the improvement comprising:

the presence of a sharp-edged baffle plate at a bend in the pipe between the gas accumulator chamber and the stackpipe, the sharp-edged baffle plate extending from the inner portion of the curve in the bent pipe towards the centerline of the pipe, so as to block at least about 10% of the cross-sectional flow area of the pipe.

4,356,132

MASS-TRANSFER APPARATUS

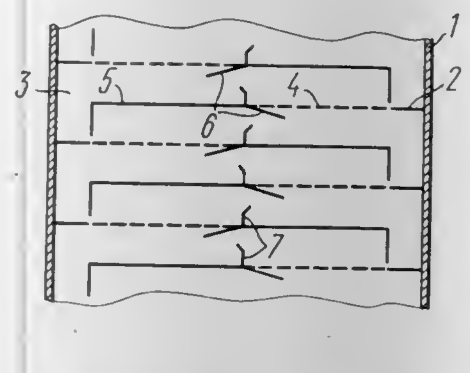
Viktor P. Belyakov, prospekt Lenina, 5/1, kv. 62; Alexandr S. Bronshtein, ulitsa Bykovskogo, 10, kv. 19, and Viktor S. Kortikov, ulitsa Bykovskogo, 2, kv. 63, all of Balashikha, U.S.S.R.

Filed Jun. 15, 1981, Ser. No. 273,776

Claims priority, application U.S.S.R., Dec. 26, 1977, 2558917

Int. Cl.^{3} B01F *3/04*

U.S. Cl. 261—114 TC **5 Claims**



1. Mass-transfer apparatus, comprising:

a substantially vertically extending housing;

contact trays accommodated within said housing in vertical overlying relationship with each other, each of said trays including at least one perforated sector and at least one non-perforated sector, said sectors defining a borderline region therebetween, and wherein in a pair of vertically adjacent trays a perforated sector of the upper tray overlies a non-perforated sector of the lower tray and vice versa;

an overflow passageway provided at a non-perforated sector of each contact tray;

baffle means extending downwardly from the borderline region between perforated and non-perforated sectors of a tray and inclined towards a perforated sector of that tray; and

overflow deflector means extending upwardly from the borderline region between perforated and non-perforated sectors of a tray, said overflow deflector means being situated on each tray substantially below a downwardly extending inclined baffle means of the next overlying contact tray.

4,356,133

CHEMICAL PROCESS IN A MEDIUM CONNECTED TO A ROTATING BODY

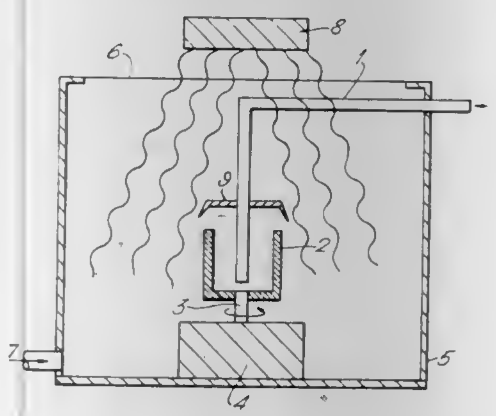
Geoffrey Cowen; Philip Norton-Berry, and Margaret L. Steel, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 21, 1979, Ser. No. 14,233

Claims priority, application United Kingdom, Feb. 21, 1978, 6810/78

Int. Cl.^{3} B29C *6/00*

U.S. Cl. 264—8 **6 Claims**



1. A chemical process comprising mixing reactants to form a reactant medium, moving the medium as a film across a surface of rotation on a rotating body by centrifugal force substantially without chemical reaction taking place between the reactants, discharging the reactant medium from the periphery of the rotating surface as a film or filaments which for an initial period after discharge from said surface remain continuous with the film still moving across said surface, and chemically reacting said reactants during said initial period.

4,356,134

PROCESS FOR THE PRODUCTION OF HYDROPHILIC FIBRES AND FILAMENTS OF SYNTHETIC POLYMERS

Ulrich Reinehr, Dormagen; Peter Hoffmann, Leverkusen, and Peter Kleinschmidt, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 776,966

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1976, 2611193

Int. Cl.^{3} B29H *7/20*

U.S. Cl. 264—49 **4 Claims**

1. A process for the production of hydrophilic polyacrylonitrile filaments and fibers having a sheath-core structure and a microporous core which comprises spinning a fiber forming wet or dry spinnable polyacrylonitrile as a composition containing, in addition to the spinning solvent

(A) from 5 to 50% by weight, based on the spinning solvent and polymer solids content, of non-solvent for the polymer to be spun, which non-solvent

(a) has a higher melting or boiling point under normal conditions than the spinning solvent,

(b) is miscible with the spinning solvent and with a liquid suitable for use as a washing liquid; and washing said non-solvent from said filaments or fibers; the improvement comprising including in said composition

(B) from 0.05 to 5% by weight, based on polyacrylonitrile solids content of at least one surface-active compound; and thereafter removing said solvent and said non-solvent.

4,356,135

PROCESS FOR THE PRODUCTION OF A CERAMIC MEMBER HAVING INCLUSIONS OF ELECTRICALLY CONDUCTIVE MATERIAL FLUSH WITH ITS SURFACE

Bernard Francois, Montbonnot, and Jean-Claude Viguie, Eybens, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 24,269, Mar. 27, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,141

Claims priority, application France, Mar. 30, 1978, 78 09253

Int. Cl.^{3} C04B *37/00, 39/00*

U.S. Cl. 264—61 **15 Claims**

1. A process for the production of a cathode-solid electrolyte assembly consisting of a ceramic member having only on its surface inclusions of electrically conductive nickel joined together so as to form on said surface an electrically conductive network, which comprises:

depositing on the bottom of a mold a first layer of particles of said conductive nickel, said particles having a size between 3 and 30μ, providing a surface density of said particles in the first layer of about 10 mg/cm^2 whereby they form after fritting an electrically conductive cathodic network,

placing above said layer of particles a second layer of the ceramic powder,

compressing together the two layers, and

fritting said compressed layers at a temperature below the melting temperature of the conductive nickel.

4,356,136

METHOD OF DENSIFYING AN ARTICLE FORMED OF REACTION BONDED SILICON NITRIDE

John A. Mangels, Flat Rock, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 29, 1980, Ser. No. 182,351

Int. Cl.^{3} C04B *35/58*

U.S. Cl. 264—65 **15 Claims**

1. A method of densifying an article formed of reaction bonded silicon nitride, which method comprises the steps of:

packing the reaction bonded silicon nitride article in a packing mixture consisting of silicon nitride powder and a densification aid;

subjecting the reaction bonded silicon nitride article and packing powder to a positive, low pressure nitrogen gas treatment at a pressure up to about 100 psi nitrogen pressure, while heating the reaction bonded silicon nitride article, packing powder and nitrogen gas to a treatment temperature and for a treatment time to cause any open porosity originally found in the reaction bonded silicon nitride article to be substantially closed; and thereafter

subjecting the reaction bonded silicon nitride article and packing powder to a positive, high pressure nitrogen gas treatment at a pressure in the range from about 300 psi to about 1500 psi, while heating the reaction bonded silicon nitride article, packing powder and nitrogen gas to a treatment temperature and for a treatment time to cause a sintering of the reaction bonded silicon nitride article whereby the strength of the reaction bonded silicon nitride article is increased.

4,356,137

PROCESS FOR PREPARING FRICTION CLUTCH FACING

Raymond L. Guzy, Tulsa, Okla., and Robert V. Wargin, Darien, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 10, 1980, Ser. No. 214,841

Int. Cl.^{3} B32B *5/02*

U.S. Cl. 264—137 **2 Claims**

1. In a process for preparing a friction clutch facing including the steps of providing at least one continuous strand impregnated with a friction resin composition, winding said continuous strand to form an annular disc preform, and thermally curing said preform under pressure, the improvement wherein said continuous strand is impregnated by the process of extrusion coating said strand with substantially solvent-free friction resin composition comprising a rubber-modified thermosetting resin and a fiber selected from the group consisting of chopped glass fiber, chopped aramid fiber, aramid fiber pulp and mixtures thereof.

4,356,138

PRODUCTION OF HIGH STRENGTH POLYETHYLENE FILAMENTS

Sheldon Kavesh, Whippany; Dusan C. Prevorsek, Morristown, and Donald G. Wang, Morris Plains, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

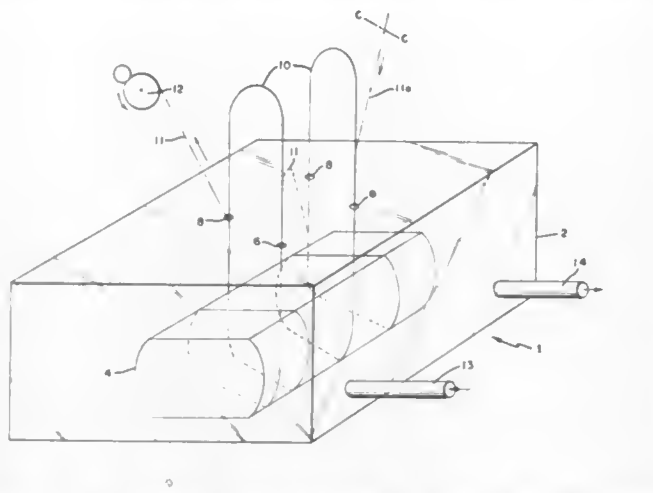
Filed Jan. 15, 1981, Ser. No. 225,288

Int. Cl.^{3} B29C *17/02*

U.S. Cl. 264—164 **7 Claims**

1. In a process for production of polyethylene filaments having a tenacity of at least 30 grams per denier from a hot, supersaturated polyethylene solution, said polyethylene having intrinsic viscosity in decalin at 135° C. of at least 11 dl per gram and said solution being at a temperature in the range of about 102°–120° C. and concentration in the range of 0.1–2 weight percent, said process comprising contacting fibrous seed crystals of such polyethylene with a generally arcuate surface which is at least partially immersed in said polyethylene solution whereby crystal growth is initiated by said seed crystals, and withdrawing a resulting filament:

The improvement which comprises utilizing to provide polyethylene seed, a length of filament of polyethylene as aforesaid, in contact simultaneously with said arcuate surface and said solution; maintaining said arcuate surface essentially stationary; and withdrawing the filament from said solution around said stationary arcuate surface at a rate reaching at least 80 cm per minute thereby producing tension in said filament and inducing growth of fibrous polyethylene crystals from the solution onto said filament with resulting increase in tension on the filament being withdrawn, up to a steady state tension of at least 70 grams.



4,356,139

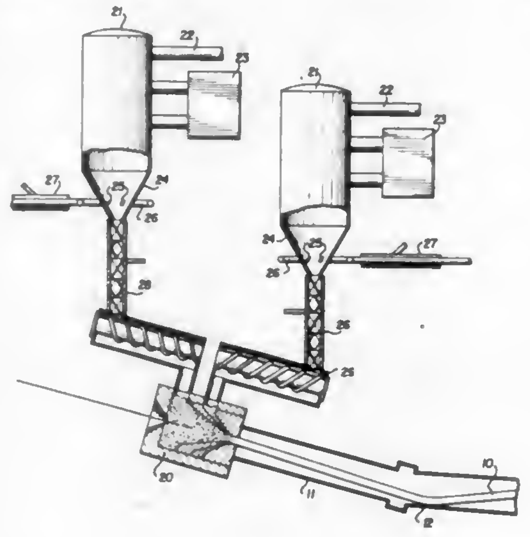
METHOD FOR LUBRICATING CABLE IN A DRY CURING SYSTEM

Bobby A. Rowland; Stanley L. Tate, both of Carrollton, and Michael C. Smith, Newnan, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Dec. 12, 1980, Ser. No. 215,910

Int. Cl.^{3} B29D *3/00;* **B29G** *2/00*

U.S. Cl. 264—174 **17 Claims**



1. A method of continuously fabricating finished electrical conductor comprising the steps of:

(a) providing an insulation compound and an insulation shield compound provided that particles of at least one of said compounds has absorbed thereon uniformly dispersed incompatible lubricant;

(b) immediately extruding said lubricant, said insulation compound and said insulation shield compound onto an advancing elongated electrical conductor; and

(c) immediately passing said insulated and insulation shielded electrical conductor through a dry curing apparatus for vulcanization thereof provided that said incompatible lubricant migrates to the outer surface of said insulated and insulation shielded electrical conductor to reduce the coefficient of friction between the outer surface of said conductor and the inner surface of said dry curing apparatus at points where said surfaces meet said insulated and insulation shielded conductor hanging in a catenary so that said insulated and insulation shielded conductor drags against the vulcanization apparatus.

4,356,140

EXTRUSION METHOD WITH SHORT CYCLE MULTICHANNEL WAVE SCREW

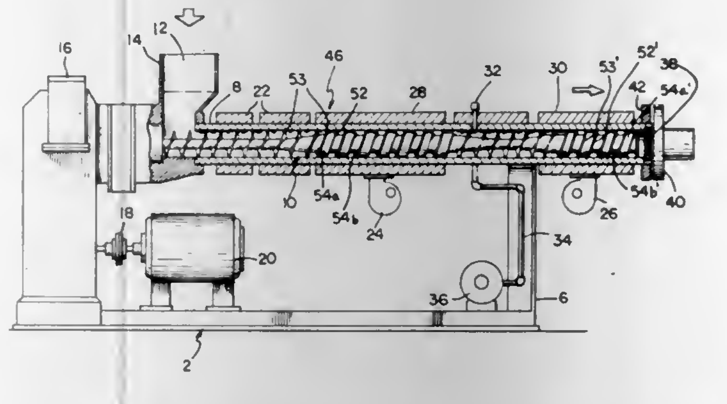
George A. Kruder, Marion, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Division of Ser. No. 27,468, Apr. 5, 1979, Pat. No. 4,277,182, which is a continuation-in-part of Ser. No. 917,204, Jun. 20, 1978, Pat. No. 4,173,417, which is a continuation-in-part of Ser. No. 788,028, Apr. 15, 1977, abandoned. This application Feb. 4, 1981, Ser. No. 231,309

Claims priority, application United Kingdom, May 31, 1978, 26000/78

Int. Cl.^{3} B28B *3/20*

U.S. Cl. 264—176 R **2 Claims**



1. A method of extruding synthetic resinous material at high but steady throughput rate, without overheating and with good melt quality, comprising processing resinous material in a first zone to melt most of the material and advance it to a mixing zone, dividing the flow through said mixing zone into two parallel channels each of which has restricted cross-sectional areas at a plurality of locations along its length and with the restricted areas in one channel being longitudinally offset from the restricted areas in the other channel and with the cross-sectional area of each channel varying cyclically over at least four substantially identical cycles, the restricted cross-sectional areas being areas of decreasing channel depth terminating at the respective channel depth crests, forcing incompletely melted resinous material in each of the channels to pass through the restricted areas in that channel to receive extra energy input for melting the same throughly, and filtering a portion of the completely molten resinous material form one channel to the other across a narrow helical barrier flight with a minimum energy input just in advance of each of the restricted areas to avoid the extra energy input associated with passage through the restricted areas and thereby to avoid overheating of the melted material, the cycles reinforcing one another and collectively providing a steady material flow rate and pressure at the output end of the mixing zone, the improvement wherein channel depth crests occur with a frequency along the respective channel greater than once per pitch length of the screw and molten material is filtered across the barrier flight separating the two channels more than twice per pitch length of the screw.

4,356,141

METHOD OF CASTING SILICON INTO THIN SHEETS

Angel Sanjurjo, San Jose; David J. Rowcliffe, Los Altos, both of Calif., and Robert W. Bartlett, Tucson, Ariz., assignors to SRI International, Menlo Park, Calif.

Filed Mar. 5, 1981, Ser. No. 240,918

Int. Cl.^{3} C04B *35/60*

U.S. Cl. 264—332 **4 Claims**

1. The method of casting silicon into thin, flat shapes which comprises melting silicon in a graphite crucible along with one or more salts of the type having a melting point below that of silicon thereby forming a melt wherein the liquid Si takes the form of a spherical pool which sinks into the molten salt, pressing downwardly against the upper surface of the melt using a graphite tool thereby squeezing liquid salt out of the crucible while simultaneously flattening the Si pool to distribute the same into a thin flat shape, cooling the resulting liquid system to a temperature below 1410° C. to solidify the silicon component thereof and removing the resulting thin, flat silicon shape.

4,356,142

INJECTION BLOW MOLDING PET PRODUCTS

Louis Germanio, Beesley's Point, N.J., assignor to Wheaton Industries, Millville, N.J.

Filed Aug. 27, 1980, Ser. No. 181,787

Int. Cl.^{3} B29C *17/07*

U.S. Cl. 264—537 **3 Claims**

1. A method for injection blow molding transparent hollow objects from a polyethylene terephthalate melt comprising:

(a) cooling a parison mold and a core rod each to a preselected temperature in the range of 75°–150° F., injection molding from said melt at 530°–575° F. a parison in a mold shape formed by said core rod disposed centrally in a cavity of said parison mold, said parison having a wall thickness of 0.075–0.200 inches;

(b) quickly and uniformly cooling said parison in a manner to avoid crystallization by holding said parison in said parison mold for 1–4 seconds while continuing to cool said injection mold to said preselected mold temperature, then removing said core rod and said parison from said parison mold with the outer surface of said parison at 185°–245° F.;

(c) immediately transferring said core rod and parison to a blow mold at 40°–60° F. and introducing blow air at 100–200 psi through said core into the interior of said parison for a time period sufficient to blow said parison into the shape of said blow mold and quickly cool the blown shape also in a manner to avoid crystallization thereof.

4,356,143

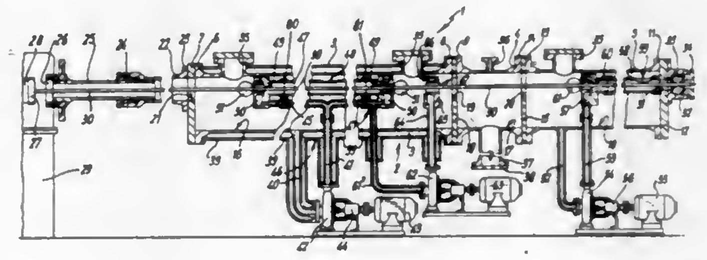
APPARATUS FOR AND A METHOD OF CURING A CONTINUOUS LENGTH OF CURABLE MATERIAL

Alan H. Hill, Bury, and Alan Lord, Bacup, both of England, assignors to General Engineering Radcliffe 1979 Limited, Manchester, England

Filed Mar. 9, 1981, Ser. No. 241,884

Int. Cl.^{3} B29F *3/08*

U.S. Cl. 264—557 **24 Claims**



1. Apparatus for curing a continuous length of curable mate-

rial comprising a first tubular body which defines a chamber for a heat exchange liquid, a second tubular body disposed inside the first tubular body and defining a curing chamber, inlet means leading into the tubular bodies, and outlet means leading from the tubular bodies arranged to permit a length of material to be cured to pass through the tubular bodies, first and second sealing means placed upstream and downstream respectively of the inlet and outlet means and operative to sealingly cooperate with a length of material, at least one tubular injector for injecting a heat exchange liquid into said second tubular body, a nozzle disposed downstream of the or each injector and adjacent the exit from and coaxial with the curing chamber operative to direct heat exchange liquid fed to it against the length of curable material as it leaves the curing chamber in order to strike heat exchange liquid clinging to the material from its passage through the curing chamber from the material, heat exchange liquid supply means for the supply of heat exchange liquid to the or each tubular injector and the nozzle, means for heating at least a part of the first tubular body, means for feeding a pressurised fluid to the first tubular body and means for cooling the continuous cured length of curable material emerging in operation from the second tubular body.

20. A method of curing a continuous length of curable material including the steps of supplying a heat exchange liquid to a first tubular body, pressurising the first tubular body, heating the heat exchange liquid in the first tubular body, feeding the heat exchange liquid from the first tubular body to an injector, injecting the liquid so fed into a second tubular body disposed within the first tubular body, simultaneously passing the continuous length of material through the second tubular body disposed within the first tubular body so that the heat exchange liquid passes over it, allowing the heat exchange liquid to drain back from the second tubular body to the first tubular body, feeding heat exchange liquid to a nozzle disposed at the exit end of the curing chamber and downstream thereof and directing it therefrom at the length of material leaving the chamber in order to strike heat exchange liquid clinging thereto from its passage through the curing chamber from the material, and subsequently cooling the continuous length of material.

4,356,144

CLOSURE HOLD-DOWN SYSTEM FOR A REACTOR VESSEL

Ki C. Cheung, La Jolla; Truman F. Unkle, San Diego; Arnold A. Schwartz, Solana Beach, and Raymond J. Hsieh, San Diego, all of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Jun. 25, 1979, Ser. No. 52,066

Int. Cl.^{3} G21C *13/06*

U.S. Cl. 376—203 **11 Claims**

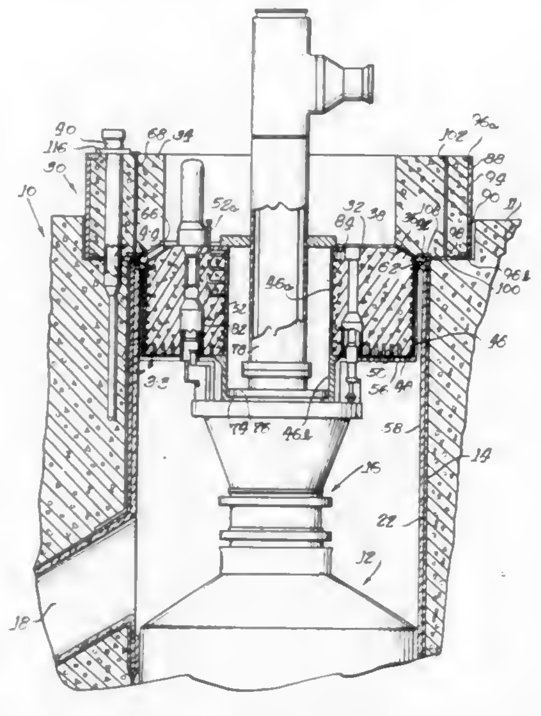
1. A closure system for use with a concrete reactor vessel having a cavity in which substantial pressure may be built up internally of the cavity, said reactor vessel defining an open end communicating with said cavity and having a support surface thereon concentric with said open end, an annular liner secured internally of said cavity and defining the outer periphery of said cavity and a substantially annular support flange adjacent said open end of said cavity, said closure comprising, in combination,

a concrete closure plug adapted to be received within said open end of said pressure vessel internally of said liner and defining an annular shoulder sized for supporting engagement with said annular support flange, said closure plug spanning said open end of said cavity and having an outer cylindrical surface spaced radially inwardly from said liner so as to define an annular space therebetween having communication with said cavity, and defining an annular load transfer surface thereon facing outwardly from said cavity when said closure plug is supported on said support flange, said closure plug having at least one penetration extending longitudinally therethrough and being adapted to support auxiliary equipment internally of said cavity,

an annular prestressed concrete retaining ring defining a first support surface thereon adapted for substantial engagement with said support surface on said reactor vessel in supporting relation therewith, said retaining ring defining an annular retaining surface adapted for substantially direct engagement with said load transfer surface of said closure plug so that pressure forces acting on said closure plug tending to separate said plug from said annular support flange are transmitted directly to said retaining ring through said load transfer surface,

a plurality of axially prestressed tendons anchored to said reactor vessel and having direct attaching relation with said retaining ring so as to retain said retaining ring against said support surface of said pressure vessel and establish force equilibrium between said retaining ring and said closure plug from pressures created internally of said cavity,

and seal means interposed between said closure plug and said liner so as to prevent outward leakage of fluid pressure therebetween from said cavity but located to enable fluid pressure within said cavity to act radially on said outer cylindrical surface of said closure plug to effect radial compressive forces thereon.



4,356,145

PROCESS FOR LOADING THE REACTOR CAVITY OF A NUCLEAR REACTOR

Siegfried Brandes, Ladenburg; Henri-Emile Pesch, and Uwe Gutsch, both of Mannheim, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 9, 1980, Ser. No. 157,383

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1979, 2923639

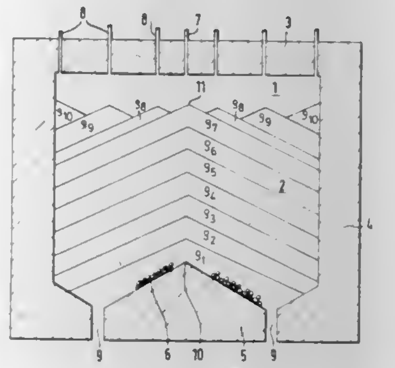
Int. Cl.^{3} G21C *19/00*

U.S. Cl. 376—265 **7 Claims**

1. A process for reloading the contaminated empty reactor cavity of a nuclear reactor with spherical operating elements forming the core of a high temperature reactor comprising:

supplying said operating elements to said reactor cavity first through a central loading tube in the roof reflector of said nuclear reactor to a predetermined load level, said loading tube being extended at the onset of the loading process toward the floor reflector and being adjusted upwardly during continued loading with the rising load level, and after reaching said predetermined load level,

supplying further operating elements through a plurality of auxiliary loading tubes in the roof reflector of said nuclear reactor in concentric circles about said central loading tube with the loading sequence proceeding circle after circle beginning with the circle closest to said central loading tube.



4,356,146

INCOMING AND OUTGOING AIR CONVEYANCE FOR DRY STORAGE WITH SELF HEATING RADIOACTIVE MATERIALS

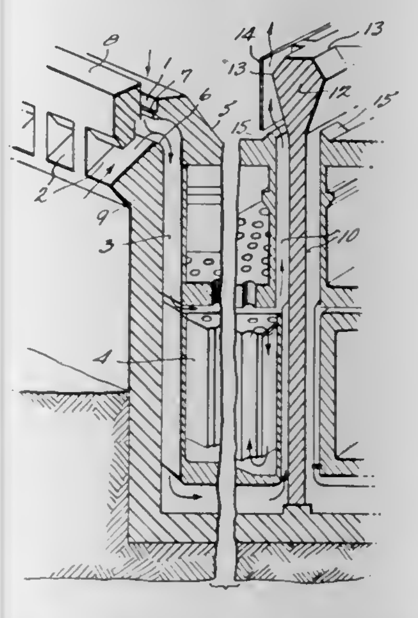
Ortwin Knappe, Grunaustrasse 19, 6450 Hanau 9, and Walter Hame, Johannes-Brahms-Strasse 16, 7520 Bruchsal, both of Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 137,293

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913540

Int. Cl.^{3} G21C *15/26*

U.S. Cl. 376—272 **17 Claims**



1. Incoming and outgoing air conveying means for a dry storehouse for self heating radioactive materials, and incoming and outgoing air conveying means comprising:

(a) incoming air openings and shafts and outgoing air openings and shafts wherein the incoming air openings are arranged both above and laterally on at least one incoming air shaft, the incoming air openings being provided with deflection projections or deflection edges, deflection plates situated between the upper incoming air openings and the lateral incoming air openings, said lateral incoming air openings having wall projections thereon;

(b) said incoming and outgoing air shafts being without substantial curvature up to the stored material and

(c) chimney tops having drop edges and deflection plates thereon provided on the upwardly projecting outgoing air openings and protective sills between the outgoing air shafts and said deflection plates.

4,356,147

FLUID TIGHT AND THERMALLY INSULATED COUPLING ASSEMBLY

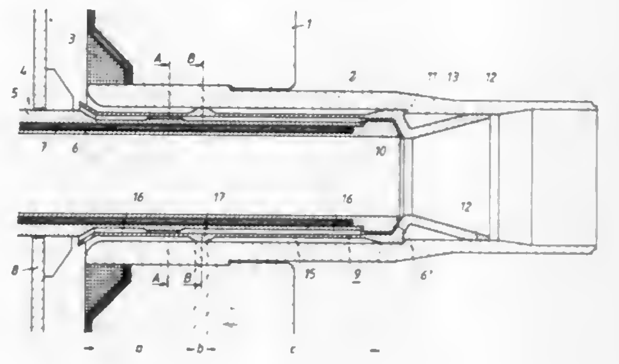
Bo Borrman, and Knud Engedal, both of Vasteras, Sweden, assignors to AB Asea-Atom, Vasteras, Sweden

Filed Mar. 5, 1979, Ser. No. 17,767

Claims priority, application Sweden, Mar. 8, 1978, 7802627

Int. Cl.^{3} G21C *19/32*

U.S. Cl. 376—291 **16 Claims**



1. In combination with a nuclear reactor pressure vessel containing a quantity of reactor water relatively warm as compared as compared to ambient temperature, a coupling assembly for providing an insulated, fluid-tight, passageway through an inlet in a wall in said pressure vessel, said wall having an inner and outer surface, said coupling assembly comprising:

a hollow inlet nozzle extending completely through and fixedly attached to the wall of said pressure vessel by means of a weld joint located near the inner surface of the wall, said pressure vessel containing a quantity of reactor water relatively warm as compared to ambient temperature;

a separate hollow protective sleeve extending through said inlet nozzle and shrunk fit into engagement with a portion of said inlet nozzle, said protective sleeve including a longitudinally extending outer surface portion radially spaced from a longitudinally extending inner surface portion of said inlet nozzle for defining a substantially cylindrically-shaped chamber therebetween, said chamber substantially spanning said inlet and including an end portion in fluid communication with an interior portion of said pressure vessel, allowing said reactor water to flow into said chamber at a temperature level above ambient temperature via direct communication with said relatively warm reactor water present within said pressure vessel, whereby said above ambient reactor water present within said chamber functions to thermally insulate the surrounding inlet nozzle from a relatively cool inlet fluid entering said pressure vessel through said protective sleeve;

a hollow conduit assembly positioned within said hollow protective sleeve and including two opposite end portions, one of said end portions positioned within said pressure vessel, the remaining end portion having a configuration substantially similar to a confronting inner surface portion of said protective sleeve, said conduit assembly also including separate, coaxial conduit portions radially spaced from one another,

spring biasing means positioned within said pressure vessel and contacting said hollow conduit assembly for biasing the remaining end portion of said hollow conduit assembly into direct, fluid-tight contact with said confronting inner surface portion of said protective sleeve to prevent fluid from flowing therebetween.

4,356,148

METHOD FOR PREVENTING CORROSION AND HYDROGEN EMBRITTLEMENT OF TANTALUM-MADE EQUIPMENT HANDLING HOT CONCENTRATED SULPHURIC ACID THEREIN

Naohiko Kagawa; Katsumi Yamamoto, both of Yokohama; Rin Sasano, Tokyo; Takao Kusakabe, Kawasaki, and Yasuhiro Moriya, Yokohama, all of Japan, assignors to JGC Corporation, Tokyo, Japan

Filed Mar. 13, 1981, Ser. No. 243,399
Claims priority, application Japan, Mar. 24, 1980, 55-36218
Int. Cl.^{3} C23F *11/04, 11/18*
U.S. Cl. 422—9 **2 Claims**

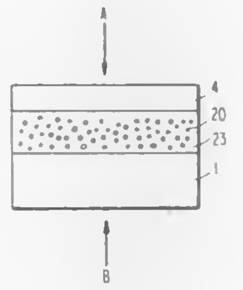
1. A method for preventing the corrosion and hydrogen embrittlement of equipment made of tantalum handling therein hot concentrated sulphuric acid at 200° C. or higher, comprising incorporating in said hot concentrated sulphuric acid in contact with said tantalum at least one oxidizer selected from the group consisting of nitric acid, nitrogen oxides, ferric ion, cupric ion, stannic ion and plumbic ion.

4,356,149

MULTI-LAYER CHEMICAL ANALYTICAL MATERIALS

Masao Kitajima; Fuminori Arai, and Asaji Kondo, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 165,444
Claims priority, application Japan, Jul. 2, 1979, 54-83608
Int. Cl.^{3} G01N *21/78, 33/62*
U.S. Cl. 422—56 **12 Claims**



1. A multi-layer chemical analytical material comprising
a light-transmitting and water-impermeable support,
a reagent layer on the support and
an aqueous liquid sample-spreading layer on the reagent layer,
wherein the reagent layer is composed of a hydrophilic binder having hydrophobic fine particles dispersed therein, said particles being water impermeable containing a reagent capable of directly or indirectly reacting with a component to be determined to provide a color change and wherein there is substantially no exposure of the reagent on the surface of said hydrophobic fine particles.

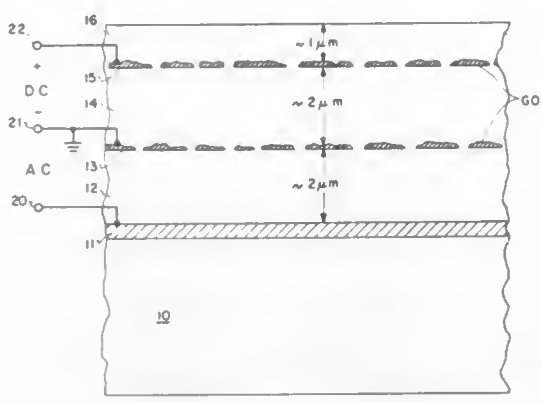
4,356,150

HUMIDITY SENSOR WITH ELECTRICAL REJECTION OF CONTAMINANTS

Robert G. Johnson, Minnetonka, and Thomas E. Hendrickson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 15, 1981, Ser. No. 263,945
Int. Cl.^{3} G01R *27/02;* **H01L** *7/00*
U.S. Cl. 422—98 **22 Claims**

1. A thin film humidity sensor on a substrate comprising:
a first humidity sensing section including;
a metallic conductive thin film deposited on a substrate;
a first thin film porous layer, selected from a group consisting of oxides and a nitride, deposited over said metallic film;
a first thin film porous conductive layer over said porous layer, said metallic film and said first conductive layer being adapted to be connected to an AC source for energizing said humidity sensing section;
a second contaminant capture section overlaying said first sensing section including;
a second thin film porous layer like said first thin film porous layer;
a second thin film porous conductive layer over said second porous layer;



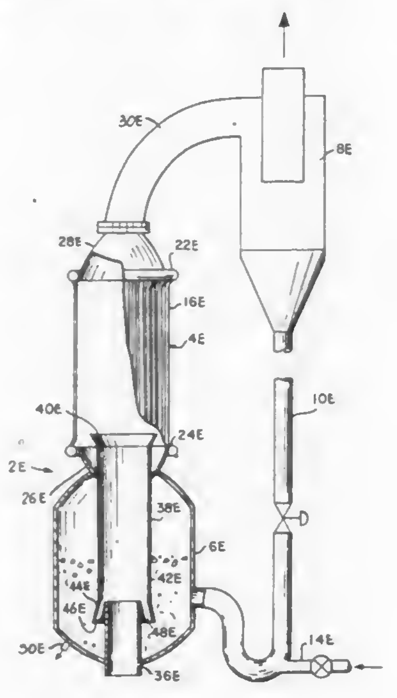
and for mechanical protection, a third thin film porous layer over said second conductive layer, the humidity thus having to diffuse through the porous layers of said contaminant capture section to enter said humidity sensing section, and said second conductive layer being adapted to be connected to a DC source to electrically bias said contaminant capture section so that specific ionic contaminants are prevented from diffusing across to the sensing region.

4,356,151

SOLIDS QUENCH BOILER

Herman N. Woebcke, Stamford, Conn.; Arju H. Bhojwani, Lawrenceville, N.J., and Robert J. Gartside, Auburndale, Mass., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Continuation-in-part of Ser. No. 82,162, Oct. 5, 1979. This application Jul. 3, 1980, Ser. No. 165,784
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.
Int. Cl.^{3} F27B *15/16;* **B01J** *8/28, 8/30, 8/24*
U.S. Cl. 422—145 **6 Claims**



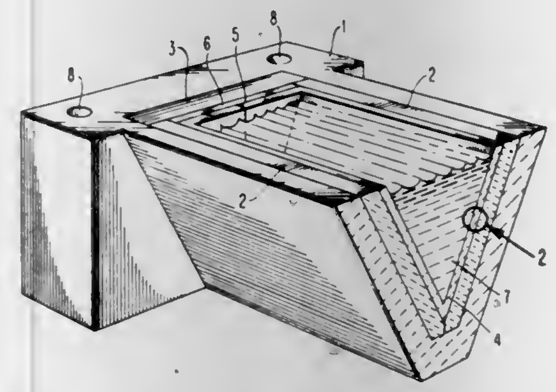
1. In a TRC apparatus having a reaction cracking chamber and means for quenching the cracked effluent and wherein the temperature in the cracking zone is between 1300° and 2500° F. and wherein the hydrocarbon feed or the hydrosulfurization residual oil along with the entrained inert solids and the diluent gas are passed through the cracking zone for a residence time of 0.05 to 2 seconds, and then quench cooled, the improvement wherein said means for quenching the effluent comprises:
a. a quench chamber containing a fluidized bed of particulate solids;
b. a reactor effluent outlet tube extending from said reaction cracking chamber and extending into the fluidized bed;
c. a riser tube having an inside diameter larger than the outside diameter of the reactor outlet tube aligned with the reactor outlet tube, which riser tube surrounds the reactor outer tube and depends into the fluidized bed below the top of the reactor outlet tube;
d. an opening defined by the outside of the reactor outlet tube and the inside of the riser tube which opening provides communication between the fluidized bed and the interior of the riser tube; and
e. an indirect heat exchanger, wherein the riser tube terminates at the entry of the hot side of the indirect heat exchanger.

4,356,152

SILICON MELTING CRUCIBLE

Samuel Berkman, Florham Park; Michael T. Duffy, Princeton Jct., and Harold E. Temple, Trenton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,441
Int. Cl.^{3} B01D *9/00;* **C30B** *29/06, 35/00*
U.S. Cl. 422—248 **11 Claims**



1. In a crucible for forming a silicon melt, the improvement comprising providing on all internal surfaces of said crucible which might contact the molten silicon a protective lining comprising one or more thin, flexible sheets of graphite each of which has on at least the surface facing the molten silicon a layer of silicon nitride or silicon oxynitride and at least one of which has said layer on both surfaces.

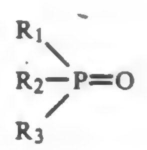
4,356,153

URANIUM RECOVERY PROCESS

Andre Bathellier, Sceaux, and Claude Ginisty, Villeneuve le Roi, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 16, 1979, Ser. No. 94,890
Claims priority, application France, Nov. 28, 1978, 78 33543; Jun. 15, 1979, 79 15397
Int. Cl.^{3} C01G *43/00*
U.S. Cl. 423—10 **12 Claims**

1. A process for the recovery of the uranium (VI) present in a phosphoric acid solution by bringing the said solution into contact with an organic solvent suitable for extracting the uranium, wherein the organic solvent comprises a system of extractants constituted by an acid organophosphorus compound, selected from the group consisting of organophosphoric acids and organophosphoric acids, and by a neutral phosphine oxide of the formula:



$$R_1R_2R_3P{=}O \qquad (I)$$

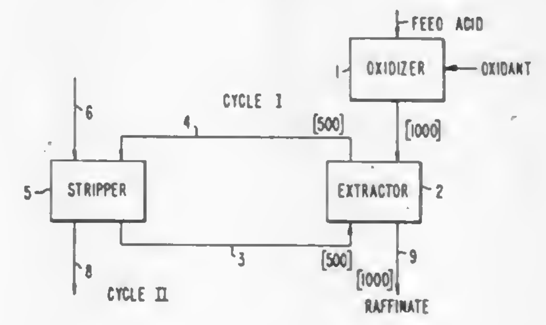
in which the radicals R_1, R_2 and R_3 are identical or different alkyl, aryl or alkoxy methyl radicals, at least one of the radicals R_1, R_2 and R_3 being an alkoxy methyl radical.

4,356,154

URANIUM EXTRACTION COEFFICIENT CONTROL IN THE PROCESS OF URANIUM EXTRACTION FROM PHOSPHORIC ACID

Jose G. Lopez, Lakeland, and Kenneth W. Gould, Winter Haven, both of Fla., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Jan. 23, 1980, Ser. No. 114,465
Int. Cl.^{3} C01G *43/00*
U.S. Cl. 423—10 **7 Claims**



1. In the method of recovering uranium from wet process phosphoric acid containing uranium and iron ions, wherein wet process phosphoric acid feed solution is oxidized, passed through an extraction means to provide a uranium rich solvent stream and a raffinate acid stream containing iron ions, and wherein the uranium rich solvent stream is passed through a reductive stripping means, the improvement comprising measuring the oxidation potential of the raffinate acid stream after wet process acid feed extraction and maintaining the oxidation potential of the raffinate acid stream if it deviates from a value between 350 mV. and about 700 mV. by changing the amount of oxidation of the acid feed solution.

4,356,155

SULFUR PROCESS

George C. Blytas, and Zaida Diaz, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 26, 1981, Ser. No. 267,197
Int. Cl.^{3} B01D *53/34*
U.S. Cl. 423—226 **14 Claims**

1. A process for the removal of H_2S from a sour gaseous stream comprising:
(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the mixture comprising an effective amount of the ferric chelate of nitrilotriacetic acid and a modifying amount of a modifier selected from compounds having the formula $C_nH_{2n-1}OH$, wherein n is a whole number from 4 to 22, and mixtures thereof, to produce a sweet gas stream and an aqueous admixture containing crystalline sulfur and a reduced reactant;
(b) removing at least a portion of the crystalline sulfur from the aqueous admixture;
(c) regenerating the aqueous admixture in a regenerating zone with oxygen to produce a regenerated reactant; and
(d) returning aqueous admixture from the regeneration zone to the contacting zone.

4,356,156
ZEOLITES BEARING FLUORIDE ANIONS

Alan Dyer, Manchester, and Abraham Araya, London, both of England, assignors to Laporte Industries Limited, London, England

Filed Jun. 10, 1980, Ser. No. 158,127

Claims priority, application United Kingdom, Jul. 3, 1979, 7923144

Int. Cl.^{3} C01B *33/28;* **B01J** *27/06, 29/06*

U.S. Cl. 423—328 **11 Claims**

3. A process for the production of a zeolite bearing fluoride anions and cations other than hydrogen, aluminium and silicon in which the number of equivalents of fluoride anions exceeds the sum of the numbers of equivalents of all cations present in the zeolite except for hydrogen, aluminium and silicon cations comprising treating the zeolite with an aqueous solution of at least 50% by weight KF.

4,356,157
SYNTHESIS OF DAWSONITES

Robert L. Altman, Berkeley, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 14, 1980, Ser. No. 178,192

Int. Cl.^{3} A62D *1/00;* **C01B** *31/24;* **A61K** *33/10*

U.S. Cl. 423—419 P **4 Claims**

1. A process for the preparation of dawsonites, which comprises (a) intimately mixing approximately equimolar quantities of finely divided aluminum hydroxide ($Al(OH)_3$) and a finely divided salt selected from the class consisting of hydrogencarbonates and carbonates of sodium, potassium and ammonia; and (b) heating the mixture in an atmosphere of carbon dioxide under pressure and at a temperature and for a period of time sufficient to form dawsonite.

4,356,158
PROCESS FOR PRODUCING CARBON FIBERS

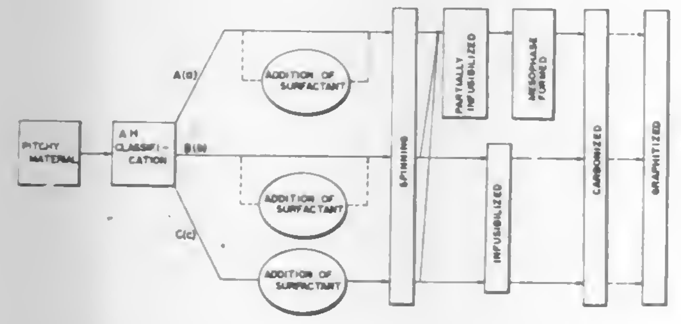
Toshikatsu Ishikawa, Tokyo; Haruo Teranishi, Machida; Akira Yokoyama, Yokohama; Tetsuo Yanagi, Yokohama, and Hirofumi Harada, Yokohama, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,575

Claims priority, application Japan, Jul. 4, 1981, 56-103911

Int. Cl.^{3} D01F *9/14*

U.S. Cl. 423—447.4 **5 Claims**



1. A process for producing carbon fibers from pitches comprising the steps of:

(1) measuring pitches for their individual calorific values, ΔHs, to classify into (a) a pitch having $\Delta H < 10$ cal/g, (b) a pitch having $\Delta H = 10$ to 150 cal/g and (c) a pitch having $\Delta H > 150$ cal/g,

(2) melt spinning the pitch (a) to obtain pitch fibers, partially infusibilizing the thus obtained pitch fibers at ambient temperature to 280° C. in an oxidizing atmosphere to oxidize the peripheral portion of the fibers to an extent that the thickness of the resulting oxidized peripheral portion in the form of an oxide film amounts to not larger than 5% of the radius of the original pitch fibers and then heat treating the partially infusibilized pitch fibers at 360°–450° C. in an inert atmosphere to allow the pitch fiber inner portion surrounded with said oxide film to take an optically anisotropic mesophase form thereby obtaining fixed fibers,

melt spinning the pitch (b) to obtain pitch fibers, either infusibilizing the thus obtained pitch fibers at 220°–280° C. in an oxidizing atmosphere to obtain fixed fibers or partially infusibilizing the pitch fibers at ambient temperature to 280° C. in an oxidizing atmosphere to oxidize the peripheral portion of the fibers to an extent that the thickness of the resulting oxidized peripheral portion in the form of an oxide film amounts to not larger than 5% of the radius of the original pitch fibers and then heat treating the partially infusibilized pitch fibers at 360°–450° C. in an inert atmosphere to allow the pitch fiber inner portion surrounded with said oxide film to take an optically anisotropic mesophase form thereby obtaining fixed fibers,

melting the pitch (c), adding a fluorine-containing surfactant to the melted pitch (c) in an amount by weight of 0.1–10% thereof and agitating the resulting mixture, melt spinning the mixture to obtain pitch fibers, either infusibilizing the thus obtained pitch fibers at 220°–280° C. in an oxidizing atmosphere to obtain fixed fibers or partially infusibilizing the pitch fibers at ambient temperature to 280° C. in an oxidizing atmosphere to oxidize the peripheral portion of the fibers to an extent that the thickness of the resulting oxidized peripheral portion in the form of an oxide film amounts to not larger than 5% of the radius of the original pitch fibers and then heat treating the partially infusibilized pitch fibers at 360°–450° C. in an inert atmosphere to allow the pitch fiber inner portion surrounded with said oxide film thereby to take an optically anisotropic mesophase form thereby obtaining fixed fibers, and

(3) heat treating the fixed fibers obtained respectively from said pitches (a), (b) and (c), at 750°–1500° C. in a non-oxidizing atmosphere to obtain carbon fibers.

4,356,159
METHOD OF RECOVERING BROMINE FROM METHYL BROMIDE

Stephen V. Norval, Guisborough, and Peter J. V. Jones, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 28, 1980, Ser. No. 210,753

Claims priority, application United Kingdom, Dec. 13, 1979, 7942974

Int. Cl.^{3} C01B *7/12*

U.S. Cl. 423—481 **10 Claims**

10. A process for recovering the bromine content of methyl bromide which is present in an effluent gas stream from a process of oxidizing a substituted aromatic compound to a carboxylic acid in the presence of a catalyst containing a source of bromine whereby methyl bromide is formed which comprises contacting the methyl bromide with oxygen at a temperature in the range of 200° to 800° C. and at a pressure of up to 100 bar in the presence of a platinum catalyst and a source of hydrogen and recovering the hydrogen bromide so produced by dissolving it in water.

4,356,160
PROCESS FOR PRODUCING TITANIUM TRIHALIDES BY REDUCING TITANIUM TETRAHALIDES

Kenya Makino, Kuwana; Hieo Sakurai; Masaru Watanabe, both of Yokkaichi, and Toshiyuki Nishimura, Kameyama, all of Japan, assignors to Japan EP Rubber Co., Ltd., Mie, Japan

Filed Apr. 16, 1981, Ser. No. 254,667

Claims priority, application Japan, Apr. 24, 1980, 55-53555

Int. Cl.^{3} C01G *23/02*

U.S. Cl. 423—492 **9 Claims**

1. In a process for producing a titanium trihalide by reducing a titanium tetrahalide with hydrogen, the improvement wherein the reduction is carried out in an organic solvent in the presence of an ether and at least one reducing catalyst selected from the group consisting of copper, zinc, titanium, cobalt, nickel, platinum, palladium and compounds of these metals.

4,356,161
PROCESS FOR REDUCING THE TOTAL SULFUR CONTENT OF A HIGH CO_2-CONTENT FEED GAS

Harold J. McNamara, Houston, and Joan A. Schilk, Tomball, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 24, 1981, Ser. No. 295,439

Int. Cl.^{3} C01B *17/04;* **B01D** *53/34*

U.S. Cl. 423—573 R **7 Claims**

1. A process for reducing the total sulfur content of a high CO_2-content feed gas to environmentally acceptable levels comprising:

(a) passing a feed gas stream comprising 40 to 95% volume CO_2, 0.03 to 20% volume H_2S, and 0.02 to 2% volume COS to a first absorption step where said feed gas stream is contacted with a liquid and regenerable polyalkanolamine absorbent selective for hydrogen sulfide, therein producing an unabsorbed portion and a hydrogen sulfide-enriched polyalkanolamine absorbent;

(b) passing said unabsorbed portion of the feed gas stream from step (a) together with a hydrogen- and/or carbon monoxide-containing gas, the off gases from the associated Claus process step (e), and a certain amount of steam over a sulfided Group VI and/or Group VIII metal catalyst supported on an inorganic oxidic carrier in a reduction step wherein the amount of steam is adjusted to reduce the COS concentration in the resulting treated gas to a level below about 0.05% volume;

(c) passing the gas stream thus treated in said reduction step (b) to a second absorption step in which said treated gas stream is contacted with a liquid and regenerable polyalkanolamine absorbent under such conditions that the unabsorbed portion of said treated gas stream has below about 0.05% volume total sulfur compounds, discharging the unabsorbed portion of said treated gas stream, optionally after incineration, into the atmosphere, and producing a hydrogen sulfide-enriched polyalkanolamine absorbent;

(d) regenerating the hydrogen sulfide-enriched absorbents from absorption steps (a) and (c) by heating and/or stripping and using them again for further absorption of hydrogen sulfide;

(e) passing the hydrogen sulfide liberated in the regeneration step (d) to a Claus process step; and

(f) passing the off-gases produced in said Claus process step (e) to said reduction step (b).

4,356,162
METHOD OF OBTAINING ALKALI ALUMINATES FROM AQUEOUS SOLUTIONS

Peter Lumbeck, and Hans Exner, both of Niederkassel, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 34,718, Apr. 30, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,829

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819004

Int. Cl.^{3} C01F *7/04*

U.S. Cl. 423—600 **15 Claims**

1. In a process for obtaining a solid alkali metal aluminate from an aqueous alkali metal aluminate solution by dehydrating the solution by a drying process, the improvement which comprises employing as the alkali metal aluminate solution a solution having an alkali metal oxide concentration of 1 to 6 mols per liter which solution has a mol ratio of alkali metal oxide to Al_2O_3 of greater than 1 and contains an organic polyhydroxyl compound in an amount of 0.1 to 5% by weight based upon the weight of the alkali aluminate solution and subjecting said solution to a spray drying process by contacting said solution with heat carrying gases or vapors at a temperature of 230° to 600° C. whereby the residual moisture content of the resultant solid alkali metal aluminate is 5 weight percent or less.

4,356,163
PROCESS FOR THE PRODUCTION OF HYDROGEN

James G. Davidson, Paducah, Ky., assignor to Davidson Research Ltd., Grand Rapids, Mich.

Filed Dec. 28, 1981, Ser. No. 334,879

Int. Cl.^{3} C01B *1/02*

U.S. Cl. 423—657 **7 Claims**

1. A process for the production of hydrogen comprising in sequence:

combining H_2O and alkali metal in a first reaction zone to produce hydrogen and alkali metal hydroxide;

removing and collecting hydrogen from said first reaction zone and transferring said alkali metal hydroxide to a second reaction zone and combining it with alkali metal to produce hydrogen and alkali metal monoxide;

removing and collecting hydrogen from said second reaction zone and transferring said alkali metal monoxide to a third reaction zone and combining it with oxygen to produce alkali metal peroxide;

transferring said alkali metal peroxide to a fourth reaction zone and combining it with carbon to produce alkali metal carbonate and alkali metal;

removing alkali metal from said fourth reaction zone and returning it to said first or said second reaction zone and transferring said alkali metal carbonate to a fifth reaction zone and heating it to produce alkali metal, oxygen and carbon dioxide; and,

removing said alkali metal from said fifth reaction zone and returning it to said first or said second reaction zone.

4,356,164
DETECTION OF NON-A, NON-B HEPATITIS ASSOCIATED ANTIGEN

Edward Tabor, Rockville, and Robert J. Gerety, Potomac, both of Md., assignors to Govt. of the U.S., as represented by the Secretary, Dept. of Health & Human Services, Washington, D.C.

Filed May 21, 1979, Ser. No. 40,921

Int. Cl.^{3} G01N *33/56, 33/58*

U.S. Cl. 424—1 **9 Claims**

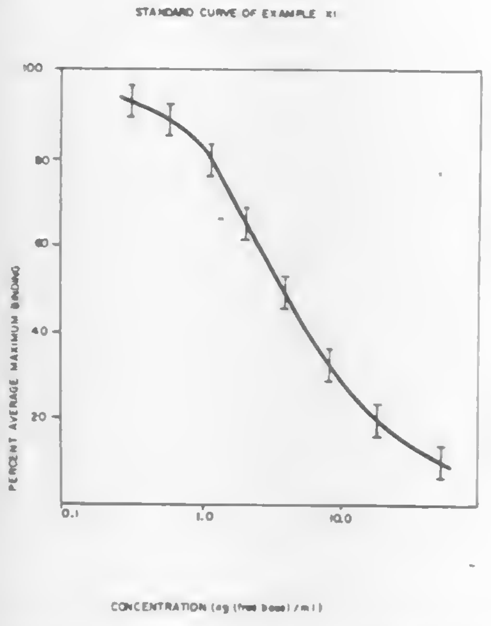
1. A method of assaying for the amount of non-A, non-B hepatitis antigen present in a sample comprising a first step of reacting antigen in the sample with the antibody, a second step of separating reactive phase from non-reactive phase by precipitating antibody from serum and purifying said antibody,

and a third step of measuring the extent of the reaction as a measurement of the amount of non-A, non-B hepatitis antigen present in the sample.

4,356,165
BUPROPION RADIOIMMUNOASSAY, AND KIT

John W. A. Findlay, Chapel Hill; Robert F. Butz, Durham, and Richard M. Welch, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Apr. 14, 1980, Ser. No. 140,158
Int. Cl.^{3} G01N *33/56, 33/60;* **B65D** *71/00*
U.S. Cl. 424—1 **33 Claims**



1. The methed of determining the concentration of bupropion and any active metabolites thereof in a body fluid containing same comprising (a) mixing together antisera comprising buproprion-specific antibodies, a labeled competitor of buproprion. capable of competing with bupropion for binding to said antisera and body fluid, and (b) mixing together a concentration of a standard amount of bupropion, antisera and a labeled competitor of bupropion, and (c) measuring the portion of labeled competitor either bound or unbound to the antibodies in each of step (a) and step (b) and comparing the results for step (a) with the results for step (b).

4,356,166
TIME-RELEASE CHEMICAL DELIVERY SYSTEM

Robert V. Peterson, Murray, Utah; James M. Anderson, Cleveland Heights, Ohio; Donald E. Gregonis; Sunj-Wan Kim, both of Salt Lake City, Utah, and Jan Feijen, Hengelo, Netherlands, assignors to University of Utah, Salt Lake City, Utah

Filed Dec. 8, 1978, Ser. No. 967,605
Int. Cl.^{2} A61J *3/00, 3/10;* **A61K** *9/54*
U.S. Cl. 424—19 **10 Claims**

1. A time release chemical delivery system for implantation in animal host comprising:

a polymeric, water-insoluble, biodegradable polymer which biodegrades into fragments tolerable by the host; and

a bioactive compound chemically attached to said carrier by a hydrolyzable bond, said bioactive compound containing a group which reacts with a group on the biodegradable polymer to form a hydrolyzable bond and being effective in small dosages to produce a biological effect within said host upon release into the host by hydrolysis of the hydrolyzable bond.

4,356,167
LIPOSOME DRUG DELIVERY SYSTEMS

Lawrence A. Kelly, Morris Plains, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 234,484, Feb. 17, 1981, abandoned, which is a continuation of Ser. No. 2,962, Jan. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 872,835, Jan. 27, 1978, abandoned. This application Jun. 22, 1981, Ser. No. 276,034
Int. Cl.^{3} A61K *9/50, 37/02, 37/22;* **B01J** *13/02*
U.S. Cl. 424—38 **21 Claims**

1. A liposome medicament delivery system comprising a medicament encapsulated in a liposome comprising an aliphatic lipid-sterol-water lamellae, wherein the aliphatic lipid is a sodium or potassium salt of a fatty acid having from 4 to 18 carbon atoms, in a lipid concentration which forms micelles above the critical micelle concentration, and wherein the sterol is present in an amount capable of being penetrated by the micelles of the aliphatic lipid.

4,356,168
OPACIFIED DENTAL CREAM CONTAINING A BINARY FLUORINE-PROVIDING SYSTEM

Kenneth Harvey, Wilmslow; Stephen T. Connors, Sale, both of England, and Eric Baines, New South Wales, Australia, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,013
Int. Cl.^{3} A61K *7/16, 7/18*
U.S. Cl. 424—52 **5 Claims**

1. An opaque dental cream comprising 2–7% by weight water, 50–80% by weight of humectant, about 0.1–5% by weight of gelling agent, about 7–8% by weight of silica filler supplementing said gelling agent, about 1–5% by weight of surface active agent, 0.5–2% by weight of an opacifying agent selected from the group consisting of titanium dioxide and zinc oxide and mixtures thereof, a binary fluorine-providing system which provides about 750–1225 ppm fluoride from sodium monofluorophosphate and 50–1000 ppm fluorine from sodium fluoride and 15–20% by weight of a polishing agent consisting essentially of a sodium aluminosilicate synthetic precipitated silica containing about 1% of alumina interbonded therewith.

4,356,169
METHOD OF PREPARING AN IMMUNOGENIC MEMBRANE PROTEIN AGGREGATE OF INFLUENZA AND PARAINFLUENZA VIRUSES AND RHABDOVIRUSES

Kai Simons, and Ari Helenius, both of Heidelberg, Fed. Rep. of Germany, assignors to Europaisches Laboratorium Fur, Heidelberg, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,785
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014189
Int. Cl.^{3} A61K *39/12, 39/205, 39/155, 39/145*
U.S. Cl. 424—89 **8 Claims**

1. Process of preparing immunogenically active, lipid- and detergent-free soluble aggregates of amphiphilic membrane proteins of parainfluenza-, influenza- or rhabdo-viruses by extraction of the membrane with surface active agents, which process comprises mixing the virus with a nonionic bile acid detergent, layering the mixture in buffered aqueous salt solution above a detergent-free sugar gradient which in turn is over-layered with a detergent-containing sugar solution, centrifuging the resulting mixture at a centrifugal force of at least 150,000 g, isolating the protein-containing fraction, dialyzing same against the buffered solution, and then lyophilizing the obtained protein micelle solution.

4,356,170
IMMUNOGENIC POLYSACCHARIDE-PROTEIN CONJUGATES

Harold J. Jennings, Ottawa, Canada, and Czeslaw Lugowski, Wroclaw, Poland, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed May 27, 1981, Ser. No. 267,440
Int. Cl.^{3} A61K *39/385*
U.S. Cl. 424—92 **26 Claims**

1. A method of preparing antigenic polysaccharide: protein conjugates, comprising:

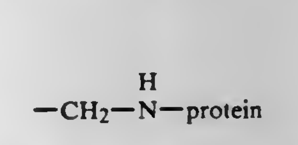
(a) providing an antigenic polysaccharide which has reactive vicinal hydroxyl groups in a terminal portion of the molecule and has a MW above about 2000;

(b) subjecting said vicinal hydroxyl groups at a terminal location to controlled oxidation only sufficient to generate a terminal reactive aldehyde group therefrom on the polysaccharide;

(c) selecting a physiologically-tolerated protein having a free amino group and reacting said amino group with said aldehyde group by reductive amination, to covalently link said polysaccharide and protein; and

(d) recovering a substantially non-crosslinked, soluble, antigenic polysaccharide:protein conjugate.

11. An antigenic-polysaccharide:protein conjugate wherein the polysaccharide and protein are covalently linked through a



$$-CH_2-\overset{H}{N}-\text{protein}$$

linkage to a terminal portion of the polysaccharide without significant cross-linking, said antigenic polysaccharide having a MW above about 2000.

4,356,171
NOVEL GLYCOPROTEINS

Rene Zalisz, Saint-Ouen l'Aumone, and Marie-France Salles, Paris, both of France, assignors to Roussel Uclaf, Paris, France

Filed Sep. 10, 1981, Ser. No. 300,928
Int. Cl.^{3} A61K *37/02, 39/108, 39/40*
U.S. Cl. 424—92 **14 Claims**

1. Water-immunostimulating glycoproteins extracted from *Klebsiella Pneumoniae* containing 20 to 35% by weight of proteins, 50 to 70% by weight of neutral saccharides, 3 to 8% by weight of glucuronic acid, 1.5 to 3% by weight of osamines and having a molecular weight greater than 100,000 daltons.

4,356,172
ERYTHROCYTE PRESERVATIVE AND BLOOD PRODUCTS FOR LONG-TERM STORAGE

Makoto Nakao; Toshiko Nakao; Fumiko Nagai; Masako Dogen, all of Tokyo, and Yoshitomi Tabata, Kamakura, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 15, 1980, Ser. No. 178,438
Claims priority, application Japan, Mar. 31, 1980, 55-42623
Int. Cl.^{3} A61K *35/14*
U.S. Cl. 424—101 **4 Claims**

1. A blood product for long-term storage which comprises erythrocytes and an erythrocyte preservative containing effective amounts of a disaccharide as an erythrocyte membrane strengthening agent, adenine, inosine, and a anti-coagulant.

4,356,173
IGM DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Shuzi Miura, Hino; Tsunemasa Yoshida, Hachioji; Shoji Ono, Kodaira; Yasuhiko Masuho, and Shuzo Sawada, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 17, 1981, Ser. No. 255,087
Claims priority, application Japan, Apr. 18, 1980, 55-50259
Int. Cl.^{3} A61K *35/14, 37/00;* **C07G** *7/00*
U.S. Cl. 424—101 **10 Claims**

1. IgM derivatives into which acyl groups expressed by the following formula (I) are introduced to make their anticomplement activity weak by acylating the free amino groups existing in IgM up to 1–30% (acylation percentage)

$$-COR \qquad (I)$$

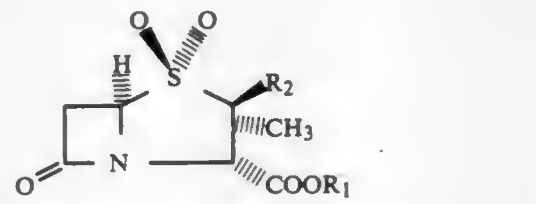
where R indicates an alkyl group having 1 to 4 carbon atoms, or a carboxylated alkyl group expressed by $-(CH_2)mCOOH$ (m is 2 or 3) or $-CH{=}CHCOOH$.

4,356,174
BETA-LACTAMASE INHIBITING 2-BETA-SUBSTITUTED-2-ALPHA-METHYL-(5R)PENAM-3-ALPHA-CARBOXYLIC ACID 1,1-DIOXIDES AND INTERMEDIATES THEREFOR

Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,995
Int. Cl.^{3} A61K *31/43, 31/425;* **C07D** *499/68, 513/04*
U.S. Cl. 424—114 **14 Claims**

1. A compound having the formula

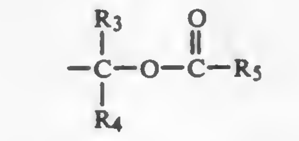


wherein R_1 is selected from the group consisting of

(a) hydrogen;

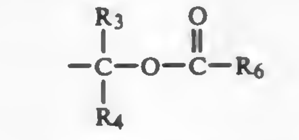
(b) ester forming residues readily hydrolyzable in vivo selected from the group consisting of

(1) 3-phthalidyl, 4-crotonolactonyl and gamma-butyrolacton-4-yl;



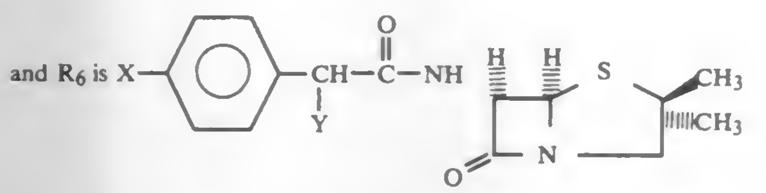
$$-\overset{R_3}{\underset{R_4}{C}}-O-\overset{O}{\overset{\|}{C}}-R_5 \qquad (2)$$

wherein each of R_3 and R_4 is selected from the group consisting of hydrogen and methyl; and R_5 is selected from the group consisting of alkyl having from 1 to 5 carbon atoms and alkoxy having from 1 to 5 carbon atoms; and



$$-\overset{R_3}{\underset{R_4}{C}}-O-\overset{O}{\overset{\|}{C}}-R_6 \qquad (3)$$

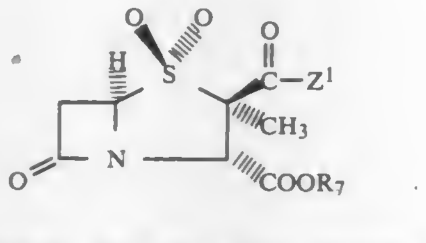
wherein each of R_3 and R_4 is selected from the group consisting of hydrogen and methyl;



wherein X is selected from the group consisting of hydrogen and hydroxy; and Y is selected from the group consisting of azido and amino;

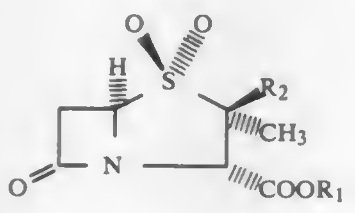
(c) carboxy protecting group selected from the group consisting of benzyl and 4-nitrobenzyl; R_2 is selected from the group consisting of CN and CO-Z; Z is selected from the group consisting of alkoxy having from 1 to 4 carbon atoms; omega-hydroxyalkoxy having from 2 to 4 carbon atoms; carboalkoxymethoxy having from 3 to 6 carbon atoms; dialkylamino wherein each alkyl group has from 1 to 4 carbon atoms; omega-acetamidoalkoxy having from 2 to 4 carbon atoms in the alkoxy group, and methyl; or a pharmaceutically-acceptable base salt of those compounds wherein R_1 is hydrogen; or a pharmaceutically-acceptable acid addition salt of those compounds wherein Y is amino.

8. A compound having the formula



wherein Z^1 is selected from the group consisting of amino, chloro, hydroxy and OM wherein M is selected from the group consisting of sodium, potassium, ammonium and n-tetrabutylammonium; and R_7 is selected from the group consisting of benzyl and 4-nitrobenzyl.

9. A beta-lactam antibiotic effectiveness enhancing composition which comprises a pharmaceutically-acceptable carrier and a compound of the formula

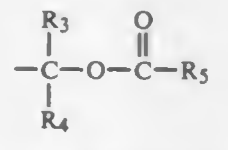


wherein R_1 is selected from the group consisting of

(a) hydrogen;

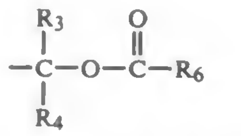
(b) ester forming residues readily hydrolyzable in vivo selected from the group consisting of

(1) 3-phthalidyl, 4-crotonolactonyl and gamma-butyrolacton-4-yl;



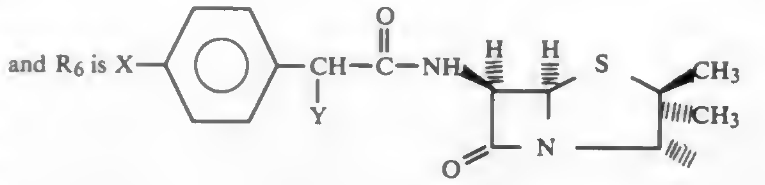
$$-\overset{R_3}{\underset{R_4}{\mathrm{C}}}-\mathrm{O}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-R_5 \qquad (2)$$

wherein each of R_3 and R_4 is selected from the group consisting of hydrogen and methyl; and R_5 is selected from the group consisting of alkyl having from 1 to 5 carbon atoms and alkoxy having from 1 to 5 carbon atoms; and



$$-\overset{R_3}{\underset{R_4}{\mathrm{C}}}-\mathrm{O}-\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}-R_6 \qquad (3)$$

wherein each of R_3 and R_4 is selected from the group consisting of hydrogen and methyl;



wherein X is selected from the group consisting of hydrogen and hydroxy; and Y is selected from the group consisting of azido and amino; R_2 is selected from the group consisting of CN and CO-Z; Z is selected from the group consisting of alkoxy having from 1 to 4 carbon atoms; omega-hydroxyalkoxy having from 2 to 4 carbon atoms; carboalkoxymethoxy having from 3 to 6 carbon atoms; dialkylamino wherein each alkyl group has from 1 to 4 carbon atoms; omega-acetamidoalkoxy having from 2 to 4 carbon atoms in the alkoxy group, and methyl; or a pharmaceutically-acceptable base salt of those compounds wherein R_1 is hydrogen; or a pharmaceutically-acceptable acid addition salt of those compounds wherein Y is amino.

4,356,175

17β-HYDROXY-17α-METHYL-5α-ANDROSTANO-[3,2-C]PYRAZOLE 17-METHYL ETHER

Donald J. Tindall, and Anthony R. Means, both of Houston, Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 10, 1978, Ser. No. 949,798

Int. Cl.^{3} A61K *31/58*

U.S. Cl. 424—241 **8 Claims**

1. 17β-Hydroxy-17α-methyl-5α-androstano[3,2-c]pyrazole 17-methyl ether.

2. A pharmaceutical composition for oral administration which comprises a contraceptively effective amount of 17β-hydroxy-17α-methyl-5α-androstano[3,2-c]pyrazole 17-methyl ether and appropriate pharmaceutically acceptable carriers.

4,356,176

DIBENZ[c,e]AZEPINES

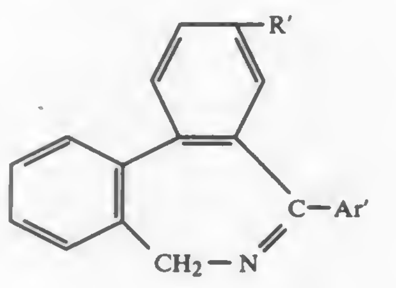
Heinz W. Gschwend, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 106,645, Dec. 26, 1979, Pat. No. 4,315,926. This application Nov. 14, 1980, Ser. No. 206,938

Int. Cl.^{3} A61K *31/435;* **C07D** *401/04*

U.S. Cl. 424—244 **5 Claims**

1. A compound having the formula



wherein Ar' is pyridyl and R' is fluoro, chloro, bromo or trifluoromethyl; or a pharmaceutically acceptable acid addition salt thereof.

4. An anxiolytic, pharmaceutical composition comprising a

correspondingly effective amount of a compound as claimed in claim **1**, together with a pharmaceutical excipient.

5. A method of treating anxiety which comprises administering to said mammals enterally or parenterally an effective dosage of a composition as claimed in claim **4**.

4,356,177

MYOCARDIUM-PROTECTING PYRIDINE DERIVATIVES HAVING AN ANTI-ARRHYTHMIC ACTIVITY AND AN ACTIVITY AS BLOOD-PLATELETS ANTIAGGREGANTS

Henri Demarne, Montpellier; Claude Bernhart, Saint Gely du Fesc, and Jacqueline Lansen, Montpellier, all of France, assignors to C.M. Industries, Paris, France

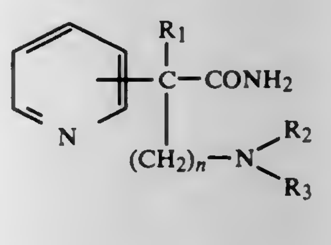
Filed Oct. 7, 1980, Ser. No. 194,829

Claims priority, application France, Oct. 11, 1979, 79 25370

Int. Cl.^{3} A61K *31/535;* **C07D** *413/06*

U.S. Cl. 424—248.54 **23 Claims**

1. A compound of the formula:



wherein:

the floating moiety is substituted in the 2-, 3- or 4-position of the ring;

R_1 is alkyl, or alicyclic or 1 to 10 carbon atoms;

R_2 and R_3 are alkyl or alicyclic of 1 to 6 carbon atoms, or R_2 and R_3, together with the nitrogen to which they are bonded, form a piperidine or morpholine unsubstituted or substituted by methyl; and

n is 2, 3 or 4.

16. A method of treating arrhythmia in a patient suffering therefrom which comprises administering to the patient an effective antiarrhythmic amount of the compound of claim **1**.

4,356,178

3,4-(BIS-SUBSTITUTED)-1,2,5-OXDIAZOLE 2-OXIDES, THEIR USE AND PHARMACEUTICAL FORMULATIONS CONTAINING THEM

Karl Schönafinger; Rudi Beyerle; Anton Mogilev, all of Frankfurt am Main; Helmut Bohn; Melitta Just, both of Schöneck; Piero A. Martorana, Bad Homburg, and Rolf-Eberhard Nitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

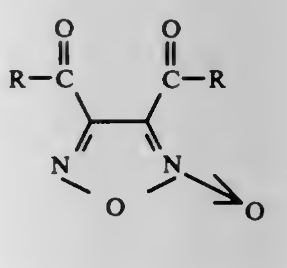
Filed Dec. 18, 1981, Ser. No. 332,234

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047730

Int. Cl.^{3} A61K *31/535, 31/42;* **C07D** *413/14*

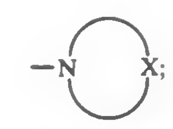
U.S. Cl. 424—248.54 **16 Claims**

1. A 3,4-(bis-substituted)-1,2,5-oxdiazole 2-oxide of the formula



wherein

R is $-NHR^1$, $-NR^2R^3$, $-NHR^4OR^2$, $-NHR^5COR^6$ or



R^1 is alkyl having from 1 to 6 carbon atoms or cycloalkyl having from 4 to 7 ring carbon atoms;

each of

R^2 and R^3 is, independently, alkyl having from 1 to 4 carbon atoms;

R^4 is alkylene of the formula $-C_nH_{2n}-$;

R^5 is alkylene of the formula $-C_mH_{2m}-$;

R^6 is $-OR^2$, $-NHR^1$, $-NR^2R^3$ or $-NH_2$;

X is $-(CH_2)_p-$, $-(CH_2)_2-O-(CH_2)_2-$ or $-(CH_2)_2-N(R^2)-(CH_2)_2-$;

m is 1, 2 or 3;

n is 2, 3 or 4; and

p is 4, 5 or 6;

or a pharmacologically-acceptable acid-addition salt thereof.

14. A method for treating or for prophylaxis of human cardiovascular-system disease which comprises administering an effective amount of a compound according to one of claims **1** and **10** to **13** to a human afflicted with or prone to such disease.

4,356,179

FORMALDEHYDE PRODUCTS AS AGRICULTURAL FUNGICIDES

Alfredo Petteruti, Via Garibaldi 35, Sessa Aurunca (Caserta), Italy

Filed Nov. 20, 1979, Ser. No. 96,185

Claims priority, application Italy, Nov. 22, 1978, 6405 A/78; May 29, 1979, 40431 A/79

Int. Cl.^{3} A01N *31/14, 35/02, 43/64, 47/28*

U.S. Cl. 424—249 **9 Claims**

1. A method of preventing or treating the diseases of bark cancer in chestnut trees and of gummosis in peach, apricot, plum, black cherry and cherry trees caused by fungi or bacteria, which method comprises applying to the bark or leaves of the trees by spraying or painting, an aqueous solution containing an amount effective against said fungi or bacteria of a formaldehyde reaction product selected from the group consisting of monomethyleneurea, dimethylene urea, monomethylolurea, dimethylolurea, dimethylol urea dimethyl ether, trimethylolmelamine trimethyl ether and hexamethylolmelamine hexamethyl ether.

4,356,180

INSECT REPELLANTS

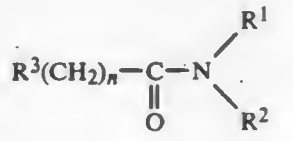
Terrence P. McGovern, Bowie, Md., and Carl E. Schreck, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 40,253, May 18, 1979, Pat. No. 4,298,612, which is a division of Ser. No. 8,814, Feb. 2, 1979, Pat. No. 4,291,041. This application Mar. 19, 1981, Ser. No. 245,463

Int. Cl.^{3} A01N *43/36, 43/40, 43/48*

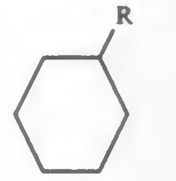
U.S. Cl. 424—250 **15 Claims**

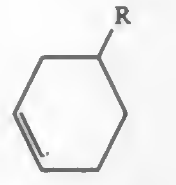
1. A method of repelling insects comprising applying to the skin or to clothing an effective insect repellent amount of a compound of the formula

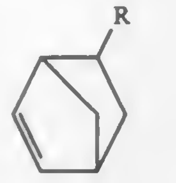


$$R^3(CH_2)_n-\underset{\mathrm{O}}{\underset{\|}{\mathrm{C}}}-N\begin{matrix}R^1\\R^2\end{matrix}$$

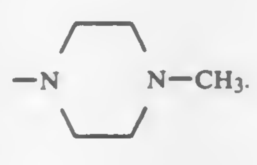
wherein R^3 is one of the groups A, B, or C


(A)


(B)


(C)

R is hydrogen or lower alkyl, n is zero or the positive integer one, two, or three, R^1 and R^2 taken together with the N is



4,356,181
ANTI-ALLERGIC MONO SALT OF 6-METHYLAMINO-4-OXO-10-PROPYL-4H-PYRANO[3,2-g]-QUINOLINE-2,8-DICARBOXYLIC ACID

David W. Payling, and John L. Suschitzky, both of Loughborough, England, assignors to Fisons Limited, London, England

Filed Mar. 26, 1981, Ser. No. 247,896

Claims priority, application United Kingdom, Apr. 2, 1980, 8011039

Int. Cl.³ A61K *31/47;* **C07D** *491/052*

U.S. Cl. 424—258 **12 Claims**

1. A mono salt of 6-methylamino-4-oxo-10-propyl-4H-pyrano[3,2-g]-quinoline-2,8-dicarboxylic acid with a strongly basic pharmaceutically acceptable cation.

11. A method of treatment of reversible airway obstruction or of prevention of the excretion of excess mucous which comprises administering an effective amount of a salt according to claim 1 to an individual suffering or liable to suffer from such a condition.

4,356,182
MERCAPTOACYL DERIVATIVES OF 4-DISUBSTITUTED PROLINES

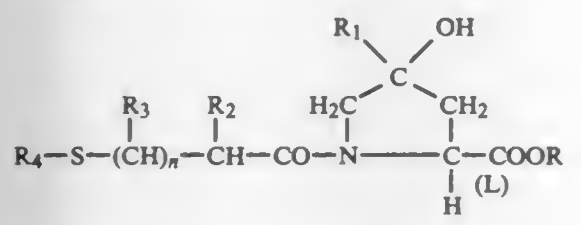
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 86,905, Oct. 22, 1979, Pat. No. 4,291,040. This application Feb. 2, 1981, Ser. No. 230,206

Int. Cl.³ A61K *31/44, 31/40;* **C07D** *207/16, 401/04*

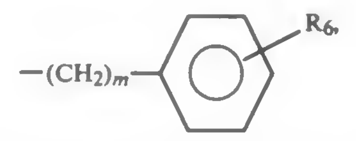
U.S. Cl. 424—263 **24 Claims**

1. A compound of the formula

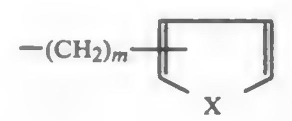


wherein R is hydrogen or lower alkyl;

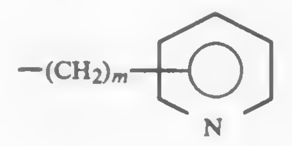
R_1 is lower alkyl, lower alkenyl, lower alkynyl,



$-(CH_2)_m$-cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbons, α-naphthyl, β-naphthyl,



wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom, or

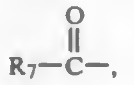


wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom;

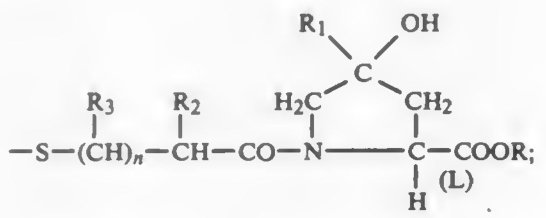
R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, and halo substituted lower alkyl;

n is zero, one or two;

R_4 is hydrogen,


$R_7-\overset{O}{\overset{\|}{C}}-$,

p-methoxybenzyl, t-butoxycarbonyl, p-methoxybenzyloxycarbonyl, or

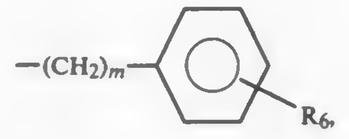


R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, bromo, trifluoromethyl, or hydroxy;

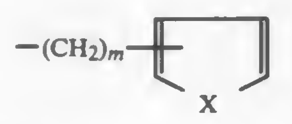
m is zero, one, two or three;

X is O or S; and

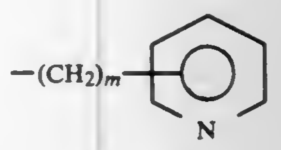
R_7 is lower alkyl of 1 to 6 carbons, lower alkyl substituted with one or more chloro, bromo, or fluoro groups,



$-(CH_2)_m$—cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbons,

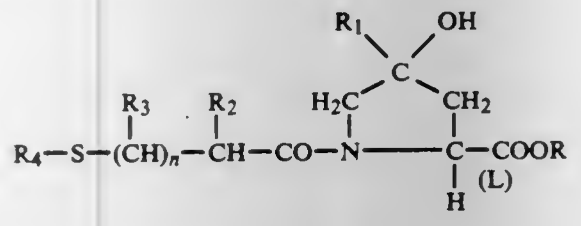


wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom, or



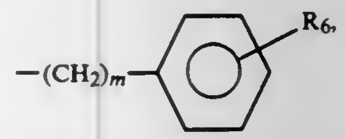
wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom.

23. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and one or more hypotensive agents of the formula

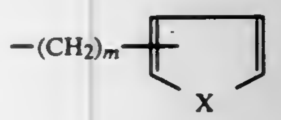


wherein R is hydrogen or lower alkyl;

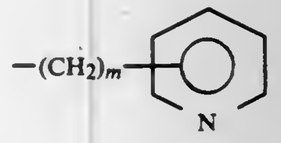
R_1 is lower alkyl, lower alkenyl, lower alkynyl,



$-(CH_2)_m$—cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbon atoms, α-naphthyl, β-naphthyl,



wherein said $-(CH_2)_m-$ bridge is attached to an available carbon, or

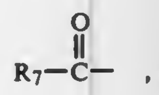


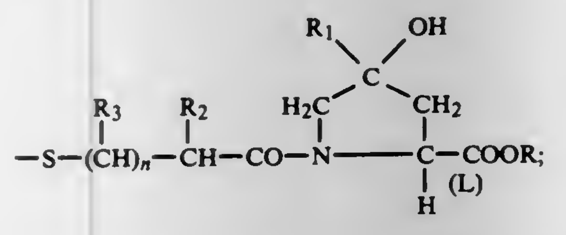
wherein said $-(CH_2)_m-$ bridge is attached to an available carbon;

R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, and halo substituted lower alkyl;

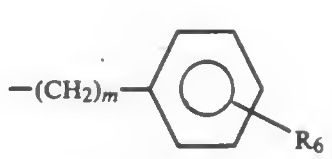
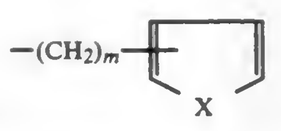
n is zero, one or two;

R_4 is hydrogen,

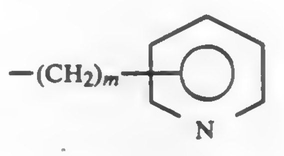

$R_7-\overset{O}{\overset{\|}{C}}-$, or



R_7 is lower alkyl of 1 to 6 carbons, lower alkyl substituted with one or more chloro, bromo or fluoro groups, $-(CH_2)_m$—cycloalkyl wherein said cycloalkyl ring is of 3 to 7 carbons,


,


wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom, or



wherein said $-(CH_2)_m-$ bridge is attached to an available carbon atom;

R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, bromo, trifluoromethyl, or hydroxy;

m is zero, one, two or three; and

X is O or S.

4,356,183
ANTIHYPERTENSIVE 4-THIAZOLIDINECARBOXYLIC ACIDS (PYRIDYL DERIVATIVES)

Junichi Iwao, Takarazuka; Masayuki Oya, Osaka; Toshio Baba, Suita; Tadashi Iso, Tondabayashi, and Takehisa Chiba, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

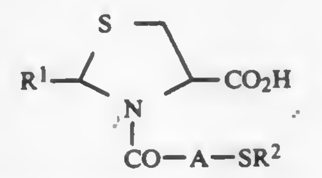
Division of Ser. No. 23,397, Mar. 23, 1979. This application Mar. 2, 1981, Ser. No. 239,602

Claims priority, application Japan, Apr. 8, 1978, 53-41632; Apr. 25, 1978, 53-49657; Jul. 3, 1978, 53-81116

Int. Cl.³ C07D *417/04;* **A61K** *31/44*

U.S. Cl. 424—263 **22 Claims**

1. A compound of the formula


(I)

wherein R^1 is selected from the group consisting of pyridyl and pyridyl substituted by lower alkyl;

R^2 is hydrogen or benzoyl;

A is straight or branched alkylene of 1 to 3 carbon atoms; and pharmaceutically acceptable salts thereof; wherein the terms lower alkyl, lower alkoxy, lower alkylene and lower alkanoyl refer to groups having 1 to 6 carbon atoms.

21. A method for reducing blood pressure which comprises orally or parenternally administering an effective amount of a compound of any one of claims **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **11**, **12**, **13**, **14**, **15**, or **17** sufficient to reduce blood pressure, and at least one pharmaceutically acceptable excipient.

4,356,184
ANTI-ALLERGIC OR ANTIHYPERTENSIVE 1-PIPERIDINYLMETHYL BENZENAMINES

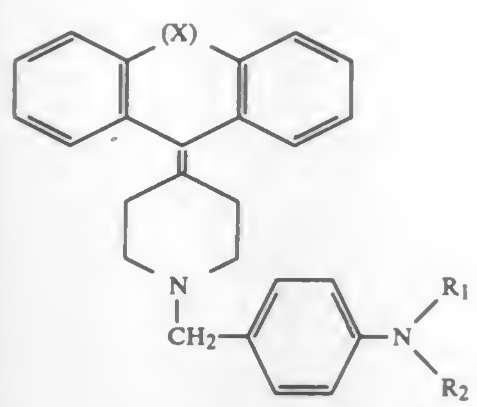
James R. Deason, Wilmette, and Richard A. Partis, Evanston, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 156,248, Jun. 4, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 247,568

Int. Cl.³ A61K *31/445;* **C07D** *409/04, 211/14*

U.S. Cl. 424—267 **8 Claims**

1. A 1-piperidinylmethyl benzenamine represented by the formula:



wherein: X is —S— or —CH_2—CH_2—; and R_1 and R_2 are the same or different members of the group consisting of hydrogen or loweralkyl; or a the pharmaceutically acceptable salt thereof.

6. An anti-allergic or antihypertensive pharmaceutical composition comprising a therapeutically effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier or diluent.

4,356,185
THIAZOLES

John F. Cavalla, Isleworth, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

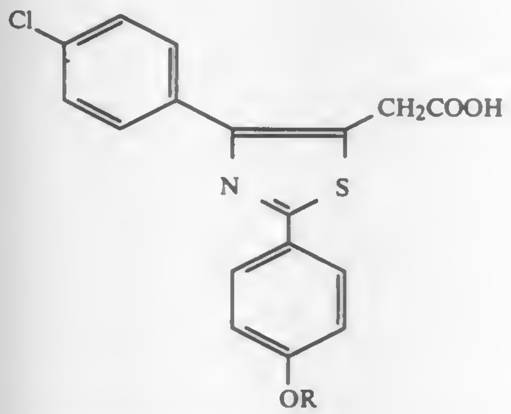
Filed Mar. 25, 1981, Ser. No. 247,461

Claims priority, application United Kingdom, Apr. 3, 1980, 8011251; Apr. 26, 1980, 8013860

Int. Cl.^{3} C07D *233/54;* **A61K** *31/425*

U.S. Cl. 424—270 **5 Claims**

1. A compound of formula



(I)

or a pharmaceutically acceptable salt thereof, wherein R is alkanoyl of 2 to 7 carbon atoms.

4,356,186
ACETIC ACID DERIVATIVES AND COMPOSITION CONTAINING THE SAME

Hitoshi Uno, Takatsuki; Mikio Kurokawa, Kobe, and Hideo Nakamura, Tenri, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Japan

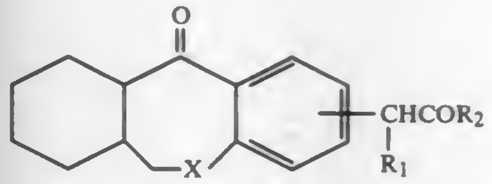
Filed Mar. 20, 1981, Ser. No. 246,114

Claims priority, application Japan, Mar. 31, 1980, 55/42167

Int. Cl.^{3} A61K *31/335, 31/38;* **C07D** *313/12, 337/12*

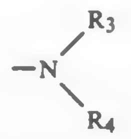
U.S. Cl. 424—275 **22 Claims**

1. A compound of the formula



(I)

wherein X is oxygen or sulfur; R_1 is hydrogen or a lower alkyl; R_2 is hydroxy, an alkoxy, an alkenyloxy, a cycloalkyloxy, an aryloxy, a substituted aryloxy, an aryl-lower alkoxy, a substituted aryl-lower alkoxy, an aryl-lower alkenyloxy, a substituted aryl-lower alkenyloxy, an ω-disubstituted amino-lower alkoxy, a lower alkoxy-carbonyl-lower alkoxy, a lower alkoxy-lower alkoxy, a hydroxy-lower alkoxy-lower alkoxy, an acyl-lower alkoxy, or a group



wherein R_3 is hydrogen, hydroxy, a lower alkyl, an aryl-lower alkyl, a hydroxy-lower alkyl, or a carboxy-lower alkyl, R_4 is hydrogen, a lower alkyl, or a hydroxy-lower alkyl, or the R_3 and R_4 may combine together with the nitrogen atom to which they are joined to form a 5- or 6-membered heterocyclic group which may contain one additional hetero-atom selected from the group consisting of nitrogen, oxygen and sulfur, said heterocyclic group being optionally substituted with a lower alkyl or a hydroxy-lower alkyl, and in the foregoing definition the substituent in the substituted aryl is a halogen, a lower alkyl or a lower alkoxy and the disubstituent in the w-disubstituted amino is two alkyl or a 5- or 6-membered cyclic amino; and the group —CH(R_1)COR_2 is joined to the carbon atom at the 2- or 3-position, or a pharmaceutically acceptable salt thereof.

16. A pharmaceutical composition comprising an effective amount of a compound of the formula (I) as set forth in claim **1**, or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

4,356,187
NOVEL ESTERS OF 2-METHYL-3-ALLYL-4-SUBSTITUTED-CYCLOPENT-2-ENE-1-YL

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Andre Teche, Nanterre, all of France, assignors to Roussel Uclaf, Paris, France

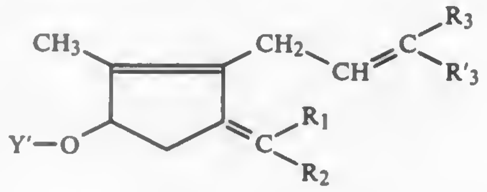
Filed Apr. 17, 1980, Ser. No. 141,201

Claims priority, application France, Apr. 26, 1979, 79 10651

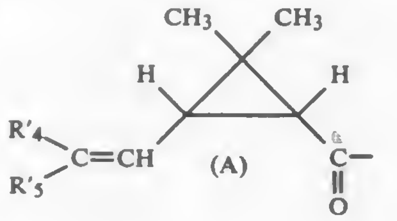
Int. Cl.^{3} C07C *121/48, 121/66, 69/743;* **A01N** *37/08*

U.S. Cl. 424—304 **28 Claims**

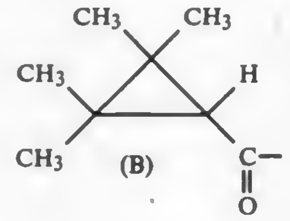
1. An ester of the formula



wherein R_1 and R_2 are individually selected from the group consisting of hydrogen, halogen, alkyl of 1 to 6 carbon atoms, phenyl, naphthyl, alkoxy-carbonyl of 2 to 5 carbon atoms and —CN, R_3 and R_3' are individually selected from the group consisting of hydrogen, halogen, alkenyl of 2 to 3 carbon atoms and alkyl of 1 to 3 carbon atoms, Y′ is selected from the group consisting of

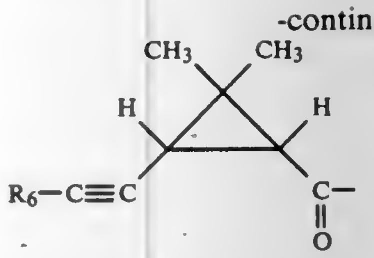


(A)

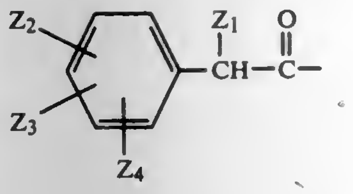


(B)

-continued

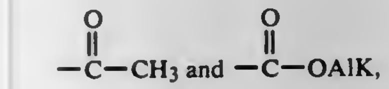


(C)



(D)

R_4' and R_5' are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, fluorine, bromine, chlorine or R_4' and R_5' together with the carbon atom to which they are attached form a hydrocarbon ring of 3 to 7 chain members or R_4' is cyano and R_5' is phenyl or R_4' is hydrogen and R_5' is selected from the group consisting of cyano,



$$-\overset{O}{\overset{\|}{C}}-CH_3 \text{ and } -\overset{O}{\overset{\|}{C}}-OAlK,$$

AlK is alkyl of 1 to 4 carbon atoms, the double bond in the 1-position of the vinyl side chain of formula (A) having (E) or (Z) configuration, R_6 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and alkoxycarbonyl of 2 to 5 carbon atoms, the substituents on the cyclopropane ring of formula (A) and (C) have the cis or trans, racemic or optically active configuration, Z_1 is alkyl of 1 to 4 carbon atoms, Z_2, Z_3 and Z_4 are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms and halogen and the asymetric carbon of formula (D) may be (S) or (R) configuration or a racemic mixture thereof and the carbon atom in the 1-position of the alcohol moiety may have (R), (S) or racemic configuration.

16. Animal feed containing an acaricidally effective amount of at least one compound of claim **1**.

17. A method of killing insects comprising contacting insects with an insecticidally effective amount of at least one compound of claim **1**.

24. A method of combatting acariens comprising contacting acariens with an acaricidally effective amount of at least one compound of claim **1**.

26. A method of combatting nematodes comprising contacting nematodes with nematocidally effective amount of at least one compound of claim **1**.

4,356,188
1-NAPHTHYL-ACETIC ACID DERIVATIVES AND THEIR THERAPEUTIC APPLICATIONS

Henri Pacheco, Lyons; Marie-Ange Descours-Saint-Martino, Villeurbanne; Demetre Yavordios, Chatillon, Chalaronne, and Jean Koeberle, Villars les Dombes, all of France, assignors to Institut de Recherche Scientifique "I.R.S.", Chatillon sur Chalaronne, France

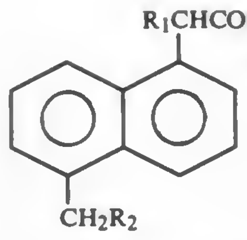
Continuation-in-part of Ser. No. 6,511, Jan. 25, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 173,171

Claims priority, application France, Feb. 2, 1978, 78 02932

Int. Cl.^{3} A61K *31/19, 31/215;* **C07C** *57/40, 69/616*

U.S. Cl. 424—317 **6 Claims**

1. A compound selected from the group consisting of 1-naphthyl-acetic acid derivatives of the formula:



(I)

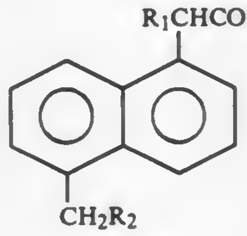
in which:

R_1 is selected from the group consisting of hydrogen and straight- and branched-chain C_{1-6} alkyl groups,

R_2 is selected from the group consisting of straight- and branched-chain alkyl groups having 3–12 carbon atoms,

R_3 is selected from the group consisting of hydroxy, C_{1-6} straight- and branched-chain alkoxy radicals and the pharmaceutically acceptable salt of acids of the formula (I).

4. A method for treating a host with a therapeutic composition having anti-inflammatory, anti-pyretic, analgesic and non-ulcerogenic activities, comprising administering to said host an effective amount of a compound selected from the group consisting of 1-naphthyl-acetic acid derivatives of the formula:



(I)

in which:

R_1 is selected from the group consisting of hydrogen and straight- and branched chain C_{1-6} alkyl groups,

R_2 is selected from the group consisting of straight- and branched-chain alkyl groups having 1–12 carbon atoms,

R_3 is selected from the group consisting of hydroxy, C_{1-6} straight- and branched-chain alkoxy groups, and the pharmaceutically acceptable salt of acids of the formula (I).

5. A therapeutic composition having anti-inflammatory, anti-pyretic, analgesic and non-ulcerogenic activities, comprising an effective amount of a compound selected from the group consisting of [5-isobutyl-1-naphthyl]acetic acid and its pharmaceutically acceptable salts, together with a pharmaceutically acceptable excipient.

4,356,189
CHEMICAL CASTRATION

Charles M. Stagg, St. Joseph, and Ronald L. Tribble, Savannah, both of Mo., assignors to Philips, Roxane, Inc., St. Joseph, Mo.

Continuation of Ser. No. 29,637, Apr. 13, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,326

Int. Cl.^{3} A61K *31/19*

U.S. Cl. 424—317 **10 Claims**

1. A method of chemically castrating male mammals of the feline, canine, equine, bovine, ovine and porcine species of mammals comprising injecting into both testes or into both spermatic cords of said mammals a castratingly effective amount of lactic acid.

4,356,190

INHIBITING PRODUCTION OF UNDESIRABLE PRODUCTS ON BODY SURFACES AND ENVIRONS EMPLOYING AMINOPOLYCARBOXYLIC COMPOUNDS

Kenneth S. Kraskin, East Brunswick, N.J., assignor to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 803,706, Jun. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 574,488, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 478,622, Jun. 2, 1974, Pat. No. 3,920,020. This application Oct. 16, 1978, Ser. No. 351,919

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **29 Claims**

1. A method of inhibiting the formation of fatty acids having from 4 to 18 carbon atoms per molecule from the degradation of skin secretions by Corynebacterium comprising applying to the skin, in an amount effective to inhibit the formation of said fatty acids, a composition comprising a carrier suitable for topical application and, as the sole essential ingredient, an aminopolycarboxylic compound selected from the group consisting of ethylenediaminetetraacetic acid, diethylenetriaminepentaacetic acid, N-hydroxyethylethylenediaminetriaacetic acid, triethylenetetraaminehexaacetic acid, 1,2-diaminocyclohexane-N,N′-tetraacetic acid, N,N-dihydroxyethylethylenediaminediacetic acid, iminodiacetic acid, hydroxyethyliminodiacetic acid, nitrilotriacetic acid and their water soluble salts; said aminopolycarboxylic compound being present in a concentration of 0.5 to 10 weight percent in said composition, based on the weight of the free acid, said composition maintaining the viability of said Corynebacterium.

4,356,191

ANIMAL FEED AND PROCESS

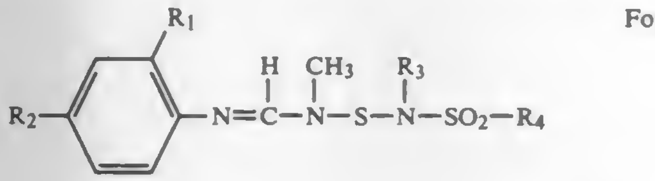
Melvin J. DeGeeter, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 3, 1981, Ser. No. 270,075

Int. Cl.³ A61K *31/18, 31/275*

U.S. Cl. 424—321 **4 Claims**

1. A process for obtaining increased meat, milk, egg, or wool production in healthy animals comprising the daily feeding of an effective amount of a compound of the formula



Formula I

or a pharmacologically acceptable acid addition salt thereof wherein R_1 is chloro, bromo, or alkyl of 1 through 4 carbon atoms; R_2 is hydrogen, chloro, bromo, or alkyl of 1 through 4 carbon atoms; R_3 is (1) alkyl of 1 through 8 carbon atoms, (2) cycloalkyl of 5 through 8 carbon atoms, (3) phenalky wherein alkyl is 1 or 2 methylene units in length, or (4) phenyl when the phenyl is unsubstituted or substituted with 1 through 3 substituents selected from the group consisting of methyl, chloro, bromo, nitro, trifluoromethyl, alkoxy of 1 or 2 carbon atoms, and cyano, and R_4 is (1) alkyl of 1 through 4 carbon atoms, (2) phenalkyl wherein alkyl is 1 or 2 methylene units in length and where the phenyl is unsubstituted or substituted with 1 through 3 substituents selected from the group consisting of methyl, chloro, bromo, nito, trifluoromethyl, alkoxy of 1 or 2 carbon atoms, and cyano, or (3) phenyl where the phenyl is unsubstituted or substituted with a substituent selected from the group consisting of methyl, chloro, and bromo in association with the animal's feed, water, salt ration, or pharmacologically acceptable carrier.

4,356,192

ANIMAL FEED AND PROCESS

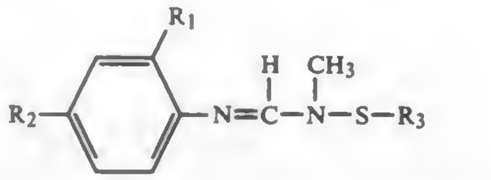
Melvin J. DeGeeter, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 3, 1981, Ser. No. 270,070

Int. Cl.³ A61K *31/155*

U.S. Cl. 424—326 **4 Claims**

1. A process for obtaining increased meat, milk, egg or wool production in healthy animals comprising the daily feeding of an effective amount of a compound of the formula:



Formula I

or a pharmacologically acceptable acid addition salt thereof wherein R_1 is lower alkyl of from 1 to 4 carbon atoms, inclusive, R_2 is selected from hydrogen, halogen and lower alkyl of from 1 to 4 carbon atoms, inclusive, and R_3 is selected from lower alkyl of from 1 to 4 carbon atoms, inclusive, phenyl, halogen-substituted phenyl, lower alkyl of from 1 to 4 carbon atoms, inclusive, -substituted phenyl, lower alkoxy of from 1 to 4 carbon atoms, -substituted phenyl and halogen-substituted lower alkyl of from 1 to 4 carbon atoms, inclusive, in association with the animal's feed, water, salt ration, or pharmacologically acceptable carrier.

4,356,193

ANIMAL FEED AND PROCESS

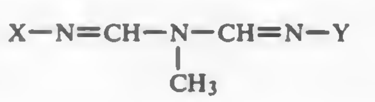
Melvin J. DeGeeter, Kalamazzo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 3, 1981, Ser. No. 270,071

Int. Cl.³ A61K *31/155, 31/135*

U.S. Cl. 424—326 **4 Claims**

1. A process for obtaining increased meat, milk, egg, or wool production in healthy animals comprising the daily feeding of an effective amount of a compound of the formula



$$X{-}N{=}CH{-}\underset{\displaystyle CH_3}{\underset{|}{N}}{-}CH{=}N{-}Y$$

Formula I

wherein X and Y, which may be identical or different, are 2,3-dimethylphenyl, 2,4-dimethylphenyl, 2,6-dimethylphenyl, 2,4,6-trimethylphenyl, 2,4,5-trimethylphenyl, 2,3,4-trimethylphenyl, 2-methyl-4-halophenyl, 2-ethyl-4-halophenyl, 2-halo-4-methylphenyl, 2-halo-4,6-dimethylphenyl, 2,4-dihalo-6-methylphenyl, 2-methyl-4-methoxyphenyl, phenyl or methylphenyl, provided that (a) when X and Y are identical, they are not phenyl or methylphenyl and (b) when X and Y are different, at least one of them is 2,3-dimethylphenyl, 2,4-dimethylphenyl, 2,4,6-trimethylphenyl, 2,3,4-trimethylphenyl, 2-methyl-4-halophenyl or 2-halo-4-methylphenyl or pharmacologically acceptable acid addition salt thereof in association with the animal's feed, water, salt ration, or pharmacologically acceptable carrier.

4,356,194

ANIMAL FEED AND PROCESS

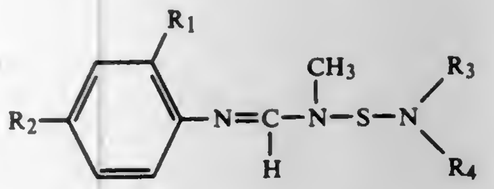
Melvin J. DeGeeter, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 3, 1981, Ser. No. 270,069

Int. Cl.³ A61K *31/155, 27/00, 31/445, 31/495*

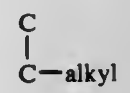
U.S. Cl. 424—326 **4 Claims**

1. A process for obtaining increased meat, milk, egg, or wool production in healthy animals comprising the daily feeding of an effective amount of a compound of the formula



Formula I

or a pharmacologically acceptable acid addition salt thereof, wherein R_1 is lower alkyl of from 1 to 4 carbon atoms; R_2 is hydrogen, halogen, or lower alkyl of from 1 to 4 carbon atoms; R_3 and R_4 are the same or different and are hydrogen, alkyl of 1 to 8 carbon atoms, inclusive; haloalkyl, arylalkyl and



$$\overset{\displaystyle C}{\overset{|}{C}}{-}\text{alkyl}$$

wherein alkyl is from 1 to 4 carbon atoms, cycloalkyl of from 3 to 6 carbon atoms, or aryl, and R_3 and R_4 taken together with —N= are a member selected from the group piperidine, morpholine, pyrazole, tribromopyrazole, N-methylpiperazine, pyrrole, pyrrolidine, pyrrolidone in association with the animal's feed, water, salt ration, or pharmacologically acceptable carrier.

4,356,195

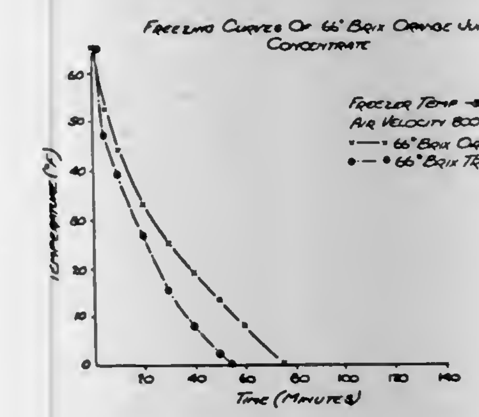
FRUIT JUICES HAVING A DEPRESSED FREEZING POINT

Marvin L. Kahn, Williamsville, and John S. O'Mahony, Amherst, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,903

Int. Cl.³ A23L *2/00, 2/02;* **C12P** *19/02, 19/24*

U.S. Cl. 426—51 **20 Claims**



1. A process for making an improved fruit juice comprising the step of contacting said juice with an enzyme capable of converting a portion of the sucrose contained in said juice into fructose and glucose, said contacting being carried out under conditions suitable to effect said conversion, wherein said improved fruit juice has a water content of about 35% to about 65%, sugar in a ratio to water of about 0.8–2.0:1 and a water activity of below about 0.90.

4,356,196

PROCESS FOR TREATING ALFALFA AND OTHER CELLULOSIC AGRICULTURAL CROPS

Joe H. Hultquist, 616 Dockside Cove, Hastings, Nebr. 68901

Filed Oct. 20, 1980, Ser. No. 198,712

Int. Cl.³ A23K *1/22*

U.S. Cl. 426—69 **4 Claims**

1. A process for enhancing the cellulose digestibility and true protein availability of alfalfa to enhance the alfalfa as a feed for both ruminants and monogastric animals, said process comprising applying ammonia to the alfalfa for a time period less than about one hour at a treatment pressure in the range of about two atmospheres to about forty atmospheres and at a treatment temperature in the range of about 10° C. to about 85° C. to effect alternation of the cellulose-lignin configuration in said alfalfa, thereby increasing the digestibility of the cellulose in the alfalfa and increasing the availability of true protein from the fibers and from within the cell walls of the alfalfa to both ruminants and monogastric animals.

4,356,197

EDIBLE OIL

Michael T. Devitt, Brentwood, and John B. Rossell, Loughton, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 19,067, Mar. 9, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,799

Claims priority, application United Kingdom, Mar. 14, 1978, 10096/78

Int. Cl.³ A23B *7/16*

U.S. Cl. 426—89 **4 Claims**

1. A method of preserving foodstuffs by applying an inert coating thereto said coating consisting essentially of a hydrogenated jojoba oil product applied in the form of a liquid at temperatures below 25° C. wherein said product comprises jojoba oil hydrogenated with a fresh nickel catalyst at a hydrogenation temperature below 125° C. to an iodine value of at least 60 and a trans content below 20; which exhibits an oxidative stability providing from 1 to 20 mm Hg pressure drop by an Accelerated Induction Period Test in 20 hours at 100° C. measured at about 1 atmosphere pressure; and which is a liquid remaining clear for at least 24 hours at 20° C.

4,356,198

METHOD OF PREPARING A BINDER FOR TABLETED GASIFIED CANDY

Maya Parada, Brooklyn, N.Y., and Marvin J. Rudolph, Bethel, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 88,481, Oct. 26, 1979, Pat. No. 4,263,328. This application Aug. 7, 1980, Ser. No. 176,055

Int. Cl.³ A23G *3/00*

U.S. Cl. 426—96 **3 Claims**

1. A method of preparing an excipient binder, which binder consists of dextrose and starch, for use in tableting finely divided gasified candy, which method comprises the steps of:

(a) heating an aqueous solution of starch at an elevated temperature and for a sufficient period of time to hydrolyze said starch;

(b) coating finely divided dextrose with a film of the starch solution of step (a), so that the starch-coated dextrose is about 2.0–4.0% starch, by weight; and

(c) drying the starch-coated dextrose to a moisture level of less than about 3.0 wt%.

4,356,199

TUBULAR PACKAGING MATERIAL AND METHOD FOR ITS MANUFACTURE

Klaus-Dieter Hammer, Mainz; Wolfgang Heinrich, Salach; Guenter Gerigk, Oberursel, and Max Bytzek, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 290,059

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030035

Int. Cl.³ F16L *11/00;* **B65D** *81/34;* **B05D** *3/12;* **A23G** *1/00*

U.S. Cl. 426—105 **18 Claims**

1. A water-permeable tubular packaging material, consisting essentially of a carrier tubing comprised of cellulose hydrate and containing in its wall from about 5 to 12% by weight of water and from about 18 to 28% by weight of a plasticizer for cellulose hydrate, in each instance relative to the total weight of the carrier tubing; and

a coating on the inside and on the outside of said carrier tubing of a water-insoluble, heat-cured synthetic condensation product comprised of urea/formaldehyde, formaldehyde/melamine, epichlorohydrin/polyamine or epichlorohydrin/polyamine/polyamide, wherein the carrier tubing is characterized by a swelling value in the range from about 80 to 120%, and the tubular packaging, after soaking in water at a temperature between about 40° to 50° C. for a period of about 30 minutes and subsequent cooling to about room temperature, is characterized by dimensions in the wet state which are 2 to 6% greater than those before said soaking in water.

4,356,200
TUBULAR PACKAGING MATERIAL AND METHOD FOR ITS MANUFACTURE

Klaus-Dieter Hammer, Mainz; Wolfgang Heinrich, Salach; Guenter Gerigk, Oberursel, and Max Bytzek, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 290,054

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030036

Int. Cl.³ F16L *11/00;* **B65D** *81/34;* **B05D** *3/12;* **A23G** *1/00*

U.S. Cl. 426—105 **21 Claims**

1. A tubular packaging material, comprising:

a carrier tubing comprised of cellulose hydrate and containing in its wall from about 5 to 12% by weight of water and from about 18 to 28% by weight of a plasticizer for cellulose hydrate, in each instance relative to the total weight of the carrier tubing;

an anchoring layer on the outside of said carrier tubing of a water-insoluble heat-cured synthetic condensation product;

a film coating on the outside of said carrier tubing which is substantially impermeable to water and water vapor and which comprises a copolymer of vinylidene chloride; and

a water-permeable adhesion-promoting layer on the inside surface of said carrier tubing, comprising a water-insoluble, heat-cured condensation product, wherein the carrier tubing is characterized by a swelling value in the range from about 80 to 120%, and the tubular packaging, after soaking in water at a temperature between about 40° to 50° C. for a period of about 30 minutes and subsequent cooling to about room temperature, is characterized by dimensions in the wet state which are about 2 to 6% greater than those before said soaking in water, and wherein the tubular packaging, after simmering or boiling at a temperature of about 85° C. for about 30 minutes and then cooling to room temperature, is characterized by dimensions in the wet state which are about 1 to 3% smaller than the wet state dimensions of the tubular packaging material which has only been subjected to said soaking in water.

18. A sausage casing comprising the tubular packaging material defined by claim **1.**

19. A sausage casing as defined in claim **18,** further comprising a sausage filling contained inside of said casing.

4,356,201
EDIBLE WREATH-SHAPED FOOD CASINGS, ESPECIALLY SAUSAGE CASINGS

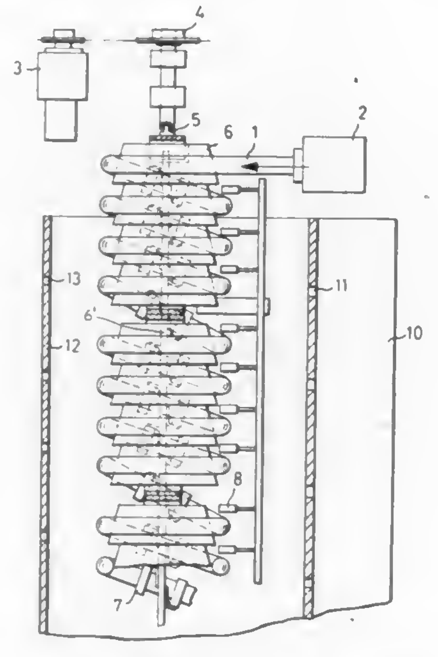
Bruno Winkler, Weinheim-Oberflockenbach, Fed. Rep. of Germany, assignor to Naturin-Werk Becker & Co., Weinheim, Fed. Rep. of Germany

Continuation of Ser. No. 828,487, Aug. 29, 1977, abandoned, which is a division of Ser. No. 647,977, Jan. 9, 1976, Pat. No. 4,081,562, which is a continuation-in-part of Ser. No. 452,333, Mar. 18, 1974, abandoned. This application Sep. 5, 1980, Ser. No. 184,191

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1973, 2314767

Int. Cl.³ A22C *13/00*

U.S. Cl. 426—138 **6 Claims**



1. An artificial edible wreath-shaped food casing having a wall thickness in the range of from 8μ to 40μ.

4,356,202
WRAP FOOD COATING MIX AND METHOD OF USING

John M. Todd, Toronto, Canada, assignor to General Foods Inc., Canada

Filed Oct. 19, 1981, Ser. No. 313,071

Int. Cl.³ A21D *13/00*

U.S. Cl. 426—138 **17 Claims**

12. A method of baking a foodstuff to impart thereto a fried appearance, taste and texture comprising:

enveloping said foodstuff in an edible coating and wrapping composition in a pliable sheet form said composition comprising an intimate admixture of a fat, water and particulate materials suspended in said pliable sheet form by a gelatin matrix said composition comprising from 0.5 to 40% gelatin by weight of the composition, said gelatin having a bloom strength of 50 or greater, from 25 to 75% farinaceous material by weight of the composition, from 2 to 30% fat by weight of the composition, and from 10 to 70% water by weight of the composition;

and

baking said enveloped foodstuff for a time sufficient to cook said foodstuff and melt said gelatin and fat and impart to said foodstuff a fat-fried taste, texture and appearance.

4,356,203
PROCESS FOR PRODUCING CURED MEAT PRODUCTS HAVING ANTIBOTULINAL ACTIVITY

Ryuzo Ueno, Nishinomiya; Toshio Matsuda, Itami; Tatsuo Kanayama, Takarazuka; Kunihiko Tomiyasu; Yatsuka Fujita, both of Nishinomiya, and Kiyoshi Nagata, Takarazuka, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyako Oyo Kenkyujo, Osaka, Japan

Continuation of Ser. No. 144,877, Apr. 29, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,817

Int. Cl.³ A23B *4/02, 4/12*

U.S. Cl. 426—266 **5 Claims**

1. A process for producing cured meat products having antibotulinal activity comprising curing meat with a pickling composition comprising curing agents consisting essentially of sodium chloride, from 20 to 120 ppm, based on the weight of the meat, of a nitrite salt, and a polyphosphate salt curing agent, and an additive for reducing formation of N-nitrosopyrrolidine consisting essentially of from 300 to 600 ppm of at least one of ascorbic acid or its salt and erythorbic acid or its salt, wherein said pickling composition is divided into a first preparation containing all of the nitrite salt and a second preparation containing all of said additive, said first and second preparations being separately added to the meat under conditions such that the nitrite salt reacts with protein or myoglobin in the meat but does not react with the additive, whereby decomposition of the additive, due to reaction with the nitrite salt, and formation of mutagenic substances, are prevented.

4,356,204
COMPOUND AND METHOD FOR INHIBITING GROWTH OF SPOILAGE ORGANISMS

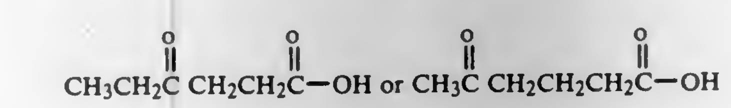
Michael C. Robach, St. Peters, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 3, 1981, Ser. No. 289,570

Int. Cl.³ A23L *3/34*

U.S. Cl. 426—321 **14 Claims**

1. Method of inhibiting growth of food poisoning and spoilage microorganisms in food which comprises contacting food containing said mircroorganisms with an effective growth inhibiting amount of a ketohexanoic acid having the formula



$$CH_3CH_2\overset{O}{\overset{\|}{C}}\,CH_2CH_2\overset{O}{\overset{\|}{C}}{-}OH \text{ or } CH_3\overset{O}{\overset{\|}{C}}\,CH_2CH_2CH_2\overset{O}{\overset{\|}{C}}{-}OH$$

wherein one or more hydrogen atoms may be replaced by a substituted or unsubstituted alkyl group having up to 10 carbon atoms and salts thereof.

4,356,205
METHOD AND APPARATUS FOR CUTTING CONTROLLED-VOLUME MEAT PORTIONS FROM A SEGMENT OF FRESH WHOLE-MUSCLE MEAT

Louis R. Richards, Mokena, Ill., assignor to Formax, Inc., Mokena, Ill.

Filed Oct. 24, 1980, Ser. No. 200,604

Int. Cl.³ A22C *7/00;* **B29C** *15/00;* **B29D** *7/18*

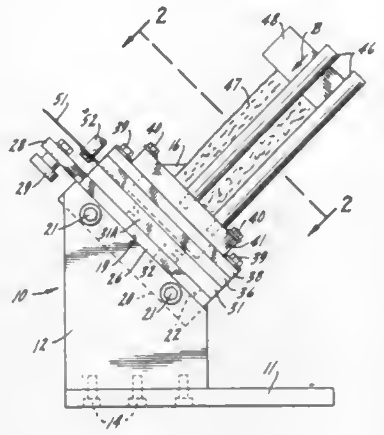
U.S. Cl. 426—518 **10 Claims**

1. The method of cutting successive controlled-volume meat portions from the face of a segment of fresh whole-muscle meat, comprising the following steps:

A. advancing a fresh whole-muscle meat segment along a given meat advancement path transverse to the face of the meat segment, into firm engagement with a stop plate, without appreciable constraint on the cross-sectional configuration of the meat segment;

B. constraining only the face part of the meat segment, immediately adjacent the stop plate in a direction parallel to the face of the meat segment, in a shaping clamp of given thickness and of a given cross-sectional shape generally corresponding to the natural cross-sectional shape of the meat segment, thereby constraining a predetermined volume of the meat in the shaping clamp, without constraint of the remainder of the meat segment;

C. cutting off the face part of the meat segment, immediately behind the shaping clamp, while still under constraint, to form a controlled-volume meat portion in the shaping clamp;



D. removing the controlled-volume meat portion from the shaping clamp; and

repeating steps A through D to form additional controlled-volume meat portions, cut from the same meat segment.

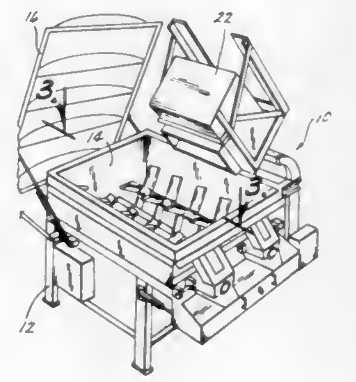
4,356,206
METHOD OF MASSAGING MEAT PRODUCTS

Wesley H. Boldt, 230 Thornton Ave., Des Moines, Iowa 50321

Filed Feb. 4, 1981, Ser. No. 231,387

Int. Cl.³ A23P *1/00*

U.S. Cl. 426—519 **1 Claim**



1. The method of massaging meat products, comprising,

placing meat products in a chamber having at least a pair of horizontal shafts therein with a plurality of paddle elements thereon, said paddle elements being helically disposed in a longitudinal direction on said shafts and being substantially flat with generally smooth and arcuate perimeter edges,

rotating said shafts in opposite directions at a speed of 9 to 18 revolutions per minute to move the paddles dwelling in a position between said shafts in an upward direction and to massage said meat products with said paddles,

and subjecting said chamber to vacuum conditions continuously while said shafts are rotating for a period of time sufficient to cause the muscles of the meat to expand which along with the massaging of the meat causes protein contained therein to extrude to the surface of the meat whereby the meat products subsequently adhered to each other.

4,356,207

SWEETENING WITH 5-(DIHYDROXYPHENOXY) TETRAZOLES

William L. Garbrecht, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 123,859, Feb. 22, 1980, Pat. No. 4,309,446. This application Jul. 6, 1981, Ser. No. 280,661

Int. Cl.³ A23L *1/236*

U.S. Cl. 426—548 **15 Claims**

4. A composition comprising

a. a flavoring agent and

b. 5-(2,3-dihydroxyphenoxy)-1H-tetrazole, or a mixture of 5-(2,3-dihydroxyphenoxy)-1H-tetrazole and 5-(2,6-dihydroxyphenoxy)-1H-tetrazole, or a non-toxic, physiologically acceptable salt thereof, said compound, mixture, or salt being present in an amount sufficient to impart a desired degree of sweetness to the composition.

15. A composition comprising

a. an orally acceptable substance, and

b. 5-(2,3-dihydroxyphenoxy)-1H-tetrazole, or a mixture of 5-(2,3-dihydroxyphenoxy)-1H-tetrazole and 5-(2,6-dihydroxyphenoxy)-1H-tetrazole, or a non-toxic, physiologically acceptable salt thereof, said compound, mixture, or salt being in an amount sufficient to impart a desired degree of sweetness to the composition.

4,356,208

METHOD AND APPARATUS FOR RIDDLING BOTTLED WINES IN CASES

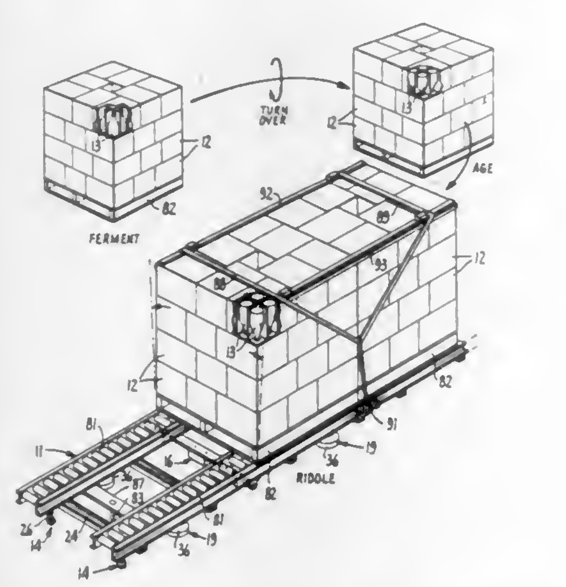
David W. Williams, Bakersfield; James L. Jordan, Guerneville, and James E. Huntsinger, Windsor, all of Calif., assignors to F. Korbel and Bros., Guerneville, Calif.

Continuation of Ser. No. 890,305, Mar. 27, 1978, Pat. No. 4,235,940. This application May 19, 1980, Ser. No. 151,129

The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.

Int. Cl.³ C12G *2/00*

U.S. Cl. 426—592 **40 Claims**



1. The method of riddling bottled wine, comprising

placing a bottle of wine in a compartment having walls spaced apart slightly farther than the diameter of said bottle,

inverting said bottle whereby it rests on its mouth end,

and causing the upper end of said bottle to shift rapidly from one side of said compartment to the other so as to impart an impact to said bottle sufficient to dislodge solids in the wine adherent to said bottle.

31. In an apparatus for riddling bottled wine having a supporting member formed for shifting rapidly with a lateral component of motion,

a bottle of wine having solids in the wine,

walls defining a rectangular compartment carried on said supporting member for movement therewith and having a height slightly exceeding the height of the bottle of wine to be riddled and lateral dimensions slightly exceeding the major diameter of said bottles,

said compartment also being defined by a floor adapted to receive and support the capped mouth end of said bottle whereby the upper end of said bottle is free to shift rapidly from one wall of said compartment to the opposite wall in response to rapid movement of the compartment with a lateral component of motion.

4,356,209

FOOD COLORING AND FLAVORING AGENT FROM DEFATTED WHEAT GERM

Hugh D. Bryan, Savoy; Judy A. Carter, Champaign, and Donald B. Trimble, Monticello, all of Ill., assignors to A. H. Robins Company, Inc., Richmond, Va.

Filed Oct. 16, 1978, Ser. No. 952,508

Int. Cl.³ A23G *1/00*

U.S. Cl. 426—627 **1 Claim**

1. An extended cocoa powder comprising cocoa and a defatted wheat germ having up to about 2% by weight of fat content having been toasted to a medium to dark color and having a corresponding mild to strong cocoa taste.

4,356,210

METHOD FOR FORMING A PROTECTING FILM ON SIDE WALLS OF A SEMICONDUCTOR DEVICE

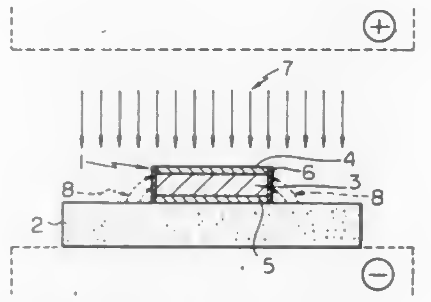
Hajime Imai, Tokyo; Masahiro Morimoto, Yokohama, and Takao Fujiwara, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 62,415, Jul. 30, 1979, abandoned. This application Jan. 7, 1981, Ser. No. 223,152

Claims priority, application Japan, Jul. 29, 1978, 53-92777; Dec. 1, 1978, 53-148838

Int. Cl.³ B05D *3/06;* **C23C** *17/00*

U.S. Cl. 427—38 **21 Claims**



1. A method for forming a protecting film on the side walls of a plurality of semiconductor devices, said protecting film comprising at least one protecting layer formed on one of said side walls and a plural pre-determined number of protecting layers on the opposite side wall, said method comprising the steps of:

forming a plurality of belt-shaped electrodes on at least one surface of a semiconductor substrate aligned in parallel with a cleavage direction of said semiconductor substrate;

cleaving said substrate along said cleavage direction into a plurality of two-bar portions, each said two-bar portion having at least two of said belt-shaped electrodes which are not located oppositely to each other on the opposite surfaces of said semiconductor substrate,

placing said two-bar portions on the surface of a first substrate target made of a first protecting layer material so that that the side walls of said substrate portions are oriented essentially perpendicularly to said substrate target;

placing said first substrate target with said two-bar portions in an atmosphere including energetic particles; and

impinging said energetic particles against said first substrate target, so that particles of said first protecting layer material are sputtered from said first substrate target and deposited on the exposed side walls of each said two-bar portion to form a first protecting layer;

re-cleaving in the same direction each of said two-bar portions into two bars each of which has at least one of said belt-shaped electrodes on a respective surface of said cleaved semiconductor substrate;

placing said bars on a second substrate target made of a second protecting layer material, and placing said second substrate target in an atmosphere including energetic particles;

impinging energetic particles against said second substrate target and said bars, so that particles of said second protecting layer material are emitted from said second substrate target and deposited on said first protecting film and on the newly exposed side walls of said bars to form a second protecting layer; and

dividing in a direction perpendicular to said cleavage direction each of said bars into a plurality of said semiconductor devices.

4,356,211

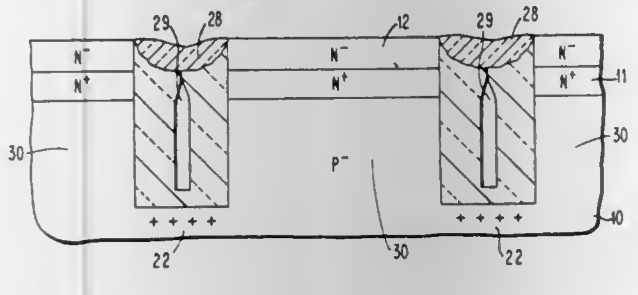
FORMING AIR-DIELECTRIC ISOLATION REGIONS IN A MONOCRYSTALLINE SILICON SUBSTRATE BY DIFFERENTIAL OXIDATION OF POLYSILICON

Jacob Riseman, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,155

Int. Cl.³ H01L *21/265, 21/308*

U.S. Cl. 427—85 **13 Claims**



1. A method for forming dielectric isolation regions in a monocrystalline silicon substrate including:

forming a layered structure of silicon dioxide and silicon nitride over a surface of the substrate;

forming trenches having substantially vertical walls in the layered structure and the substrate where it is desired to form the isolation regions in the substrate;

forming a channel stopper at the bottom of each of the trenches;

forming a layer of silicon dioxide on each of the walls of each of the trenches in the substrate;

forming polycrystalline silicon on each of the substantially vertical walls of each of the trenches in the layered structure and the substrate so that the upper portion of the polycrystalline silicon on each of the substantially vertical walls of the trenches will oxidize at a rate substantially faster than the lower portion of the polycrystalline silicon on each of the substantially vertical walls of the trenches;

and thermally oxidizing the polycrystalline silicon until the polycrystalline silicon oxidizes to close the upper end of each of the trenches while leaving an air space therebeneath to form the dielectric isolation region.

2. The method according to claim 1 including selectively doping the polycrystalline silicon so that the polycrystalline silicon on the portion of each of the substantially vertical walls of the trenches in the layered structure is doped heavier than the polycrystalline silicon on the portion of each of the substantially vertical walls of the trenches in the substrate so that the polycrystalline silicon on the portion of each of the substantially vertical walls of the trenches in the layered structure oxidizes at least twice as fast as the polycrystalline silicon on the portions of each of the substantially vertical walls of the trenches in the substrate.

4,356,212

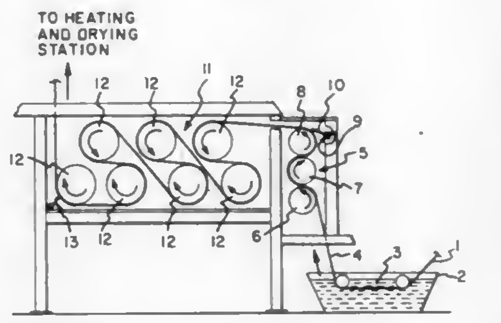
METHOD AND APPARATUS FOR TREATING TEXTILE CORD

Willie M. Stafford, Hartselle, Ala., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 20, 1981, Ser. No. 255,961

Int. Cl.³ B05D *3/12;* **B05C** *3/152, 11/10*

U.S. Cl. 427—175 **2 Claims**



1. In an apparatus for treating a plurality of individual cords of textile material as they move, under tension, in spaced apart relationship along a predetermined path which comprises, sequentially along said path, (A) a means for applying an aqueous solution, or mixture, of adhesive to said cords, (B) a squeeze roll station composed of at least two rotating cylindrical rolls with horizontal axes positioned in a substantially vertical plane relative to each other around which said cords pass in a substantially serpentine path on a single pass basis and in the same direction as the rotation of the roll around which they are passing, where at least two adjacent rolls rotate in opposite directions and are positioned so that they press cords between them to remove a substantial amount of said aqueous solution or mixture from the cords, (C) a pull roll station composed of at least two spaced apart rotating cylindrical pull rolls, where at least two adjacent pull rolls rotate in opposite directions, around which said cords pass in a substantially serpentine path on a single pass basis in the same direction as the rotation of the roll about which they are passing and (D) a station for heating and drying said cord; the improvement in which a first rigidly contained elastomeric rubber squeege bar is loosely positioned to lightly contact the breadth of the cords on the ascending surface of at least one of said squeeze rolls to affect a degree of liquid removal from the cords and a second rigidly contained elastomeric rubber squeege is loosely positioned to lightly contact the breadth of the cords on the ascending surface of at least one of said pull rolls to affect a degree of removal of foamed liquid or material which may have formed on the cord in the pull roll station.

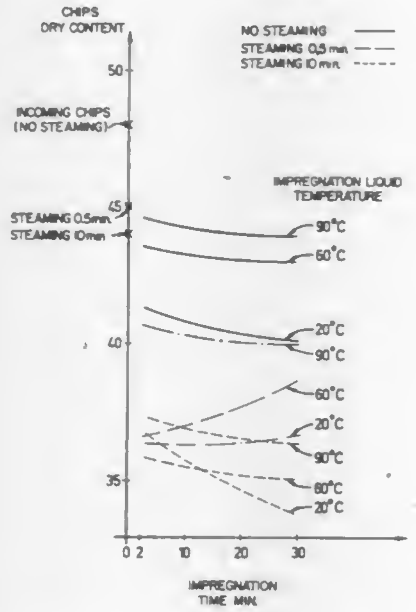
2. In a method of treating a plurality of individual cords of textile material as they move, under tension, in spaced apart relationship along a predetermined path which comprises sequentially along said path, (A) applying an aqueous solution or mixture of adhesive to said cords, (B) treating said cords in a in a squeeze roll station composed of at least two rotating cylindrical rolls having horizontal axes positioned in a substantially vertical plane relative to each other around which said cords pass in a substantially serpentine path on a single pass basis and in the same direction as the rotation of the roll around which they are passing, where at least two adjacent rolls rotate in opposite directions and are positioned so that they press cords between them to remove a substantial amount of said aqueous solution or mixture from the cords, (C) then treating the cords in a pull roll station composed of at least two spaced apart rotating cylindrical pull rolls, where at least two adjacent pull rolls rotate in opposite directions, around which said cords pass in a substantially serpentine path on a single pass basis in the same direction as the rotation of the roll about which they are passing and (D) drying the cord by heating; the improvement in which liquid is additionally removed from the cord in

the squeeze roll station by a first rigidly contained elastomeric rubber squeege which is loosely positioned to lightly contact the breadth of the cords on the ascending surface of the upper half of at least one squeeze roll and in which foamed liquid or material which may have formed on the cord in the pull roll station is removed in said pull roll station by a second rigidly contained elastomeric rubber squeege loosely positioned to lightly contact the breadth of the cords on the ascending surface of the upper half of at least one pull roll.

4,356,213
CHIP TREATMENT

Hans E. Höglund, Matfors, and Per V. Peterson, Sundsvall, both of Sweden, assignors to SCA Development Aktiebolag, Sweden

Filed Feb. 23, 1981, Ser. No. 236,788
Claims priority, application Sweden, Mar. 14, 1980, 8002015
Int. Cl.^{3} B05D *1/18, 3/04*
U.S. Cl. 427—212 **8 Claims**



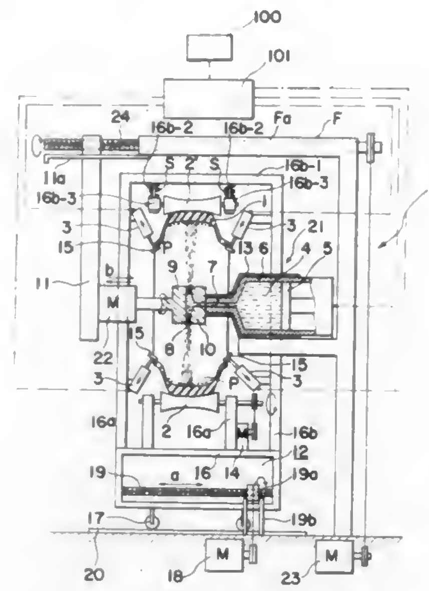
1. A method of treating wood chips in the manufacture of pulp therefrom, comprising the steps of, impregnating said wood chips with an impregnation liquid to cause the cavities within said wood chips to fill with said impregnation liquid, said impregnation liquid including a compound selected from the group consisting of sodium sulphite, sodium hydroxide and sodium hydrogen sulphite, draining said impregnated wood chips, and washing said wood chips with a wash solution whereby said wood chips are prevented from absorbing said wash solution by the presence of a portion of said impregnation liquid remaining within the caviites of said wood chips.

4,356,214
METHOD OF FORMING PUNCTURE PREVENTING LAYER FOR TIRE AND APPARATUS EMPLOYED THEREFOR

Kozi Soeda, Nishinomiya; Katuyuki Hoshikawa, Nyogo, and Akitaka Kimura, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Japan

Continuation of Ser. No. 81,458, Oct. 3, 1979, Pat. No. 4,262,624, which is a division of Ser. No. 865,133, Dec. 28, 1977, abandoned. This application Dec. 31, 1980, Ser. No. 221,775
Claims priority, application Japan, Dec. 30, 1976, 51/158497
Int. Cl.^{3} B05D *1/02*
U.S. Cl. 427—233 **8 Claims**

1. A process for coating the inner surface of a pneumatic tire having a radial inner open side with a puncture sealing material having a high viscosity which comprises extruding a stream of said sealing material while at said high viscosity against a flat face of a first disk disposed facing a second disk spaced upstream therefrom, rotating said first disk relative to the second disk while the space between spaced peripheral edges of the disks is disposed opposite said open side of the tire until said stream of high viscosity material is cast by the flat face as a spray through the open side of the tire and is spread over said inner surface of the tire to form a puncture sealing coating.



4,356,215
METHOD OF MANUFACTURING SUPPORTS FOR POROUS FILTERS

Alain Auriol, and Paul Tritten, both of Tarbes, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 15, 1974, Ser. No. 497,953
Claims priority, application France, Sep. 28, 1973, 73 34827
Int. Cl.^{3} B05D *5/00*
U.S. Cl. 427—244 **3 Claims**

1. A method of manufacturing filter supports, wherein rigid macroporous supports having pore diameters of approximately 15 to 20 microns are placed in contact with a first slip coating liquid containing in suspension a powder of refractory oxides comprising agglomerates between 10 and 30 microns in diameter, the resulting deposited layer is dried by heating it to approximately 100° C., the layer is brushed so as to remove particles of powder which have not penetrated inside the pores, the resulting supports are placed in contact with a second slip coating liquid containing in suspension a powder of refractory oxides having a particle diameter between 1 and 8 microns, and the products obtained are heat-treated at approximately 1500° C.

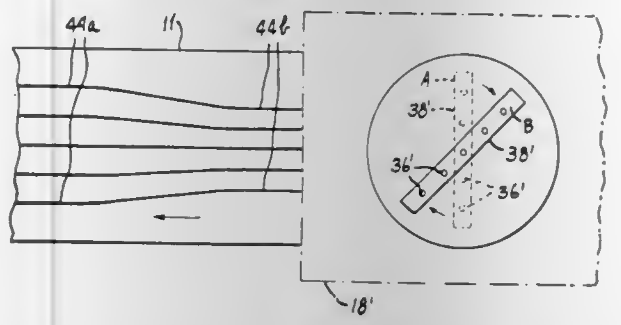
4,356,216
PROCESS FOR PRODUCING STRIPED SURFACE COATINGS

J. Lynn Gailey, Newton Falls, and Carl A. Wollam, Cortland, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jan. 21, 1981, Ser. No. 226,705
Int. Cl.^{3} B05D *5/00*
U.S. Cl. 427—286 **13 Claims**

1. In a process for applying a coating to a major surface of a strip article, including the steps of

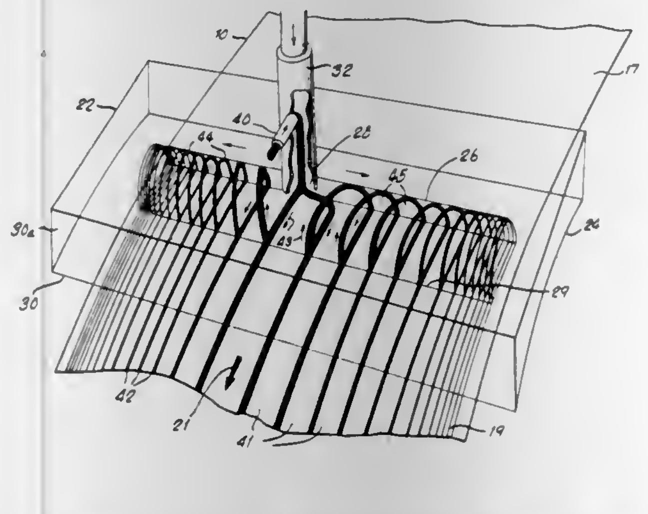
(a) continuously advancing the article longitudinally past a dam extending transversely of said major surface in adjacent spaced relation thereto while
(b) maintaining a body of a first liquid coating material in contact with said major surface immediately ahead of said dam for establishing a continuous wet coating layer on said major surface, and
(c) immediately beyond said dam, advancing the article longitudinally past a wall of extended length in the direction of article advance and facing said major surface while restraining the article against movement of said major surface away from said wall beyond a predetermined distance equal to a desired thickness of said wet coating layer, such that said major surface and said wall mutually define a gap entirely filled by said wet coating layer across the width of said layer, the improvement which comprises
(d) through at least one aperture in said wall, spaced from said dam in the direction of article advance, delivering at least a second liquid coating material to said gap under pressure sufficient to displace locally the first liquid coating material in the wet coating layer, thereby to establish a stripe of the second liquid coating material in said coating layer.



4,356,217
PROCESS FOR PRODUCING STRIATED SURFACE COATINGS

Carl A. Wollam, Cortland; J. Lynn Gailey, Newton Falls, and Alexander A. Chalmers, Warren, all of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jan. 21, 1981, Ser. No. 226,706
Int. Cl.^{3} B05D *5/00*
U.S. Cl. 427—286 **13 Claims**



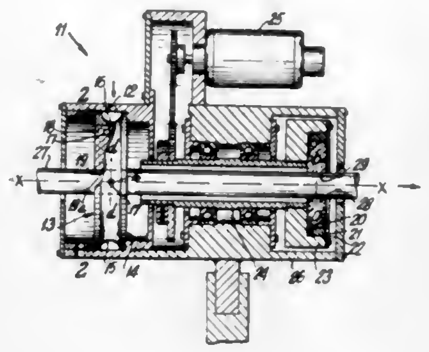
1. A process for producing a longitudinally striated coating on a major surface of an elongated strip article, comprising

(a) continuously advancing the article lengthwise past an open long side of an otherwise enclosed elongated trench extending transversely of the article with said major article surface disposed in facing proximate relation to said open trench side to constitute a moving wall closing said open side, while
(b) continuously delivering at least two liquid coating materials to the trench under pressure for providing concurrent laminar flows of the two materials in contact with each other along a common path, at least at one locality in a long side of the trench, such that both materials flow within the trench from said one locality in at least one common direction lengthwise of the trench, and for maintaining the trench continuously entirely filled with the liquid coating materials, thereby to deposit a continuous coating layer on said major surface through said open side, said two liquid coating materials being circulated within the trench by motion of said major surface so as to be distributed in said coating layer in alternating longitudinal striations.

4,356,218
LIQUID COATING METHOD AND APPARATUS

Herman S. Chiu, Chicago, and Keith A. Watts, Western Springs, both of Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 7, 1981, Ser. No. 261,457
Int. Cl.^{3} A21D *13/00;* A23L *1/27;* B05D *3/12;* C12C *5/04*
U.S. Cl. 427—355 **29 Claims**



21. A method for coating the exterior wall of a longitudinally moving inflated flexible tubing with liquid comprising the steps of:

(a) continuously moving the inflated flexible tubing in the longitudinal direction along a straight line;
(b) providing first flexible and resilient means with an inner circular opening of slightly smaller diameter than the diameter of the inflated tubing exterior wall;
(c) supplying liquid to said inner circular opening of the first means;
(d) moving said inflated tubing through said inner circular opening of said first means and maintaining rubbing contact with the opening edge so as to displace said opening edge and simultaneously apply said liquid to, and distribute the applied liquid around, the inflated tubing exterior wall;
(e) providing second flexible and resilient means with an inner circular opening of slightly smaller diameter than the diameter of the inflated tubing exterior wall;
(f) rotating said second means around its centerline axis; and
(g) moving said inflated tubing with said liquid applied on its exterior wall through the rotating second means inner circular opening and maintaining rubbing contact with the opening edge so as to displace said opening edge while simultaneously smoothing the liquid coating as a continuous film of substantially uniform thickness on the tubing exterior wall.

4,356,219
TREATED YARN, METHOD OF PREPARATION AND RUBBER/CORD COMPOSITE

Wyndham H. Boon, North Canton, Ohio, and Abdel-Hadi Sid-Ahmed, Alpharetta, Ga., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 3, 1980, Ser. No. 212,302
Int. Cl.^{3} B05D *3/02;* D02G *3/02, 3/36*
U.S. Cl. 427—386 **7 Claims**

1. A method of preparing a drawn, coated polyester yarn which comprises (A) applying aqueous emulsion(s) of epoxy resin and spin finish fiber treatment oil to spun or drawn yarn as (i) the same emulsion or (ii) separate emulsions in either order or simultaneously so that the emulsions are at least partially intermixed on the surface of the yarn and either (B-1) drying the yarn if it has been previously drawn or (B-2) drawing the yarn if the emulsion(s) were applied to a spun (or undrawn) yarn, where said yarn is optionally in the form of a multiple of twisted or cabled drawn yarns to form a cord

thereof, and where said applied and dried coating thereon is comprised of, based on the yarn, the product of the mixture of (A) about 0.5 to about 1.5 weight percent of said spin-finish fiber treatment oil comprised of a mixture of (1) pentaerythritol tetraester (C_{12}–C_{14}) fatty acid, (2) polyoxy ethylene nonyl phenol and (3) oleyl diethyl imidazoleimium sulfate and (B) about 0.4 to about 1.5 weight percent of said epoxy resin having a melting point below about 75° C. and containing about 3 to about 9 weight percent 2-(β-dimethylamino ethoxy)-4-methyl-1,3,2-dioxaborinane based on said epoxy resin.

4,356,220
ARTIFICIAL TURF-LIKE PRODUCT OF THERMOPLASTIC POLYMERS

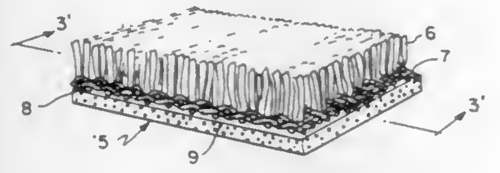
Joseph C. Benedyk, Highland Park, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 33,483, Apr. 26, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,363

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.^{3} A41G *1/00*

U.S. Cl. 428—17 **18 Claims**



1. An artificial grass product, comprising: a pile fabric with yarn comprised of a plurality of fibers made of a polymeric material selected from the group consisting of copolymers of ethylene-vinyl acetate, ethylene-ethyl acrylate, ethylene-butylene, ethylene-propylene; polyvinyl chloride; chlorinated polyolefins; low density polyethylene; and mixtures thereof and having an elastic modulus of from 25,000 p.s.i. to 100,000 p.s.i. and a moment of inertia of from 1.06×10^{-10} in.^{4} to 8.33×10^{-9} in.^{4}, the fibers extending from and substantially perpendicular to a backing to which the fibers are secured, wherein the yarn is twisted at the point of emergence from the backing.

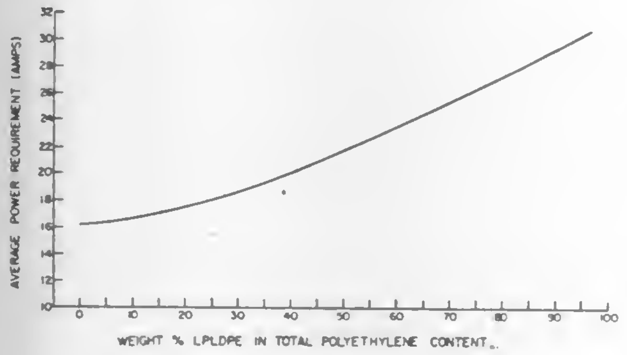
4,356,221
MELT-EXTRUDED MULTILAYER POLYETHYLENE BAG FILM

John Anthony, Downers Grove; Frank J. Velisek, Westmont, both of Ill., and Paul D. Capponi, Wayne, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 15, 1981, Ser. No. 264,101

Int. Cl.^{3} B65D *31/00;* **B32B** *27/08*

U.S. Cl. 428—35 **18 Claims**



1. A melt-extruded multilayer polyethylene film consisting essentially of a first outer layer containing at least about 75 percent by weight, based on the weight of said first outer layer, of high pressure, low density polyethylene, and at least a second outer layer comprising a mixture of high pressure, low density polyethylene and low pressure, low density polyethylene, said high pressure, low density polyethylene and said low pressure, low density polyethylene having a density below about 0.93 grams per cubic centimeter.

17. A bag comprising a melt-extruded multilayer polyethylene film wherein said film consists essentially of a first outer layer containing at least about 75 percent by weight, based on the weight of said first outer layer, of high pressure, low density polyethylene, and at least a second outer layer comprising a mixture of high pressure, low density polyethylene and low pressure, low density polyethylene, said high pressure, low density polyethylene and said low pressure, low density polyethylene having a density below about 0.93 grams per cubic centimeter.

4,356,222
FUSION-BONDABLE SHEET

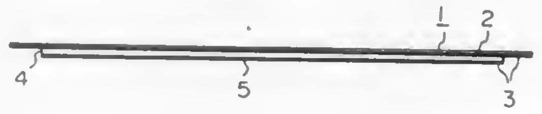
Hiroshi Harakawa; Youtaro Fujiwara; Masaaki Matsushita, and Seiko Tsutsui, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Chiba, Japan

Filed Oct. 2, 1981, Ser. No. 308,089

Claims priority, application Japan, Oct. 7, 1980, 55-142274[U]

Int. Cl.^{3} B32B *3/14*

U.S. Cl. 428—78 **13 Claims**



1. A fusion-bondable sheet comprising a crosslinked polyolefin sheet, a fusion-bondable layer formed on one surface of the crosslinked polyolefin sheet, which layer is composed of a composition comprising as the main components a polyolefin having a melting point of 80° to 200° C., a polyolefin having a melting point of 30° to 75° C. and a tackifier, and a flame-retardant sheet bonded to the other surface of the crosslinked polyolefin sheet through a layer of a binder or adhesive.

4,356,223
SEMICONDUCTOR DEVICE HAVING A REGISTRATION MARK FOR USE IN AN EXPOSURE TECHNIQUE FOR MICRO-FINE WORKING

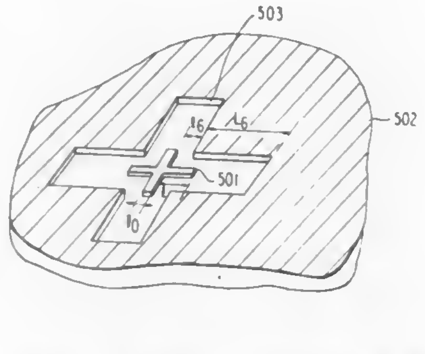
Yasuo Iida; Katumi Suzuki, and Nobuhiro Endo, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 237,049

Claims priority, application Japan, Feb. 28, 1980, 55-24830; May 29, 1980, 55-71758

Int. Cl.^{3} B32B *3/00;* **G01B** *11/00*

U.S. Cl. 428—156 **19 Claims**



1. A semiconductor device comprising a semiconductor substrate, a device region formed along a major surface of said semiconductor substrate, and a chip registration mark formed along said major surface and positioned in a peripheral portion adjacent to said device region, said chip registration mark including a first registration pattern having a recess shape and a second registration pattern having a protrusion shape disposed within said first registration pattern, said first and second registration patterns having straight edge lines, respectively, and said first and second registration patterns jointly forming a composite registration mark.

3. A registration mark for use in an exposure technique for micro-fine working, comprising two kinds of larger and smaller registration patterns on a substrate and superposed on each other, said larger pattern being a recess formed on the surface of said substrate and said smaller pattern being a protrusion formed at a partial region within said recess.

4,356,224
WRAPPING MATERIAL FOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

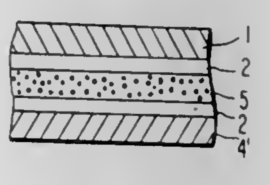
Mutsuo Akao, and Tadashi Kawata, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1980, Ser. No. 155,290

Claims priority, application Japan, Jun. 1, 1979, 54-68379

Int. Cl.^{3} B32B *7/02, 5/16*

U.S. Cl. 428—220 **12 Claims**



1. In a wrapping material for photographic light-sensitive materials, the improvement which comprises said wrapping material including a light-shielding resin layer, said layer being produced by extruding pellets of a mixture of (1) on aluminum paste or aluminum powder and (2) a thermoplastic resin, where said pellets contain about 0.5% by weight or less of white spirit.

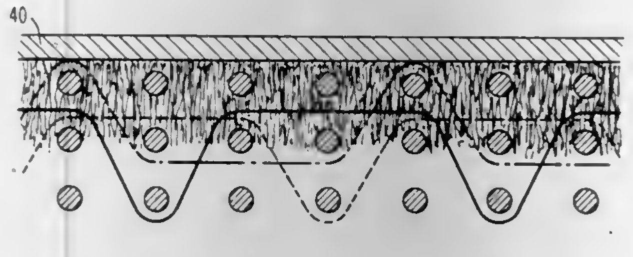
4,356,225
PAPERMARKERS INTERWOVEN WET PRESS FELT

Marcel Dufour, Sryrieix, France, assignor to Ascoe Felts, Inc., Clinton, S.C.

Filed May 18, 1981, Ser. No. 264,334

Int. Cl.^{3} B32B *5/06*

U.S. Cl. 428—234 **13 Claims**



1. A multi-layer papermaker's wet felt comprising:

(a) at least three layers of machine direction yarns, said layers having their respective machine direction yarns aligned vertically; and

(b) a plurality of cross machine direction yarns for interweaving said three machine direction layers, each of said cross machine direction yarns weaving in a repeat pattern having interlacings with machine direction yarns in at least two of said machine direction layers, said repeat pattern having floats which extend for at least two machine direction yarns thereby maintaining said machine direction layers in vertical alignment.

4,356,226
LAMINATED STRUCTURE FOR FURNISHING, COMPRISING AT LEAST ONE DECORATIVE LAYER COMBINED WITH A SUPPORT

Pierre Georlette, Hamme-Mille, and Rene Bouteille, Braine-l'Alleud, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed May 8, 1979, Ser. No. 37,049

Claims priority, application France, May 8, 1978, 78 13803; Jul. 17, 1978, 78 21349

Int. Cl.^{3} B32B *23/08, 27/06, 27/10*

U.S. Cl. 428—246 **22 Claims**

1. A laminated structure comprising at least one decorative layer, of organic nature, which layer is selected from the group consisting of plastic films and sheets, textiles, papers and sheets of veneer, and which layer is combined, by hot pressing, with a support comprising a polyolefine sheet, wherein the polyolefine sheet comprises from 10 to 90% by weight of cellulose fibres and from 90 to 10% by weight of a polyolefine which is modified by polar monomeric units derived from at least one monomer selected from the group consisting of unsaturated carboxylic acids, the corresponding anhydrides and derivatives thereof.

17. A laminated structure according to claim 1, wherein the decorative layer consists of a textile containing polyolefine fibres, which textile is covered on its visible face with a layer of a plastic selected from the group consisting of vinyl resins and polyurethane resins.

4,356,227
FIBER MATERIALS PREIMPREGNATED WITH DUROMERIC POLYIMIDE RESINS AND PROCESS FOR THEIR PREPARATION

Horst Stenzenberger, Schriesheim, Fed. Rep. of Germany, assignor to Technochemie GmbH, Dossenheim, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,655

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943964

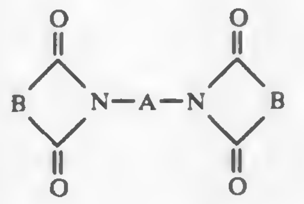
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.^{3} C08G *73/12;* **B05D** *3/02;* **B32B** *7/00, 27/34*

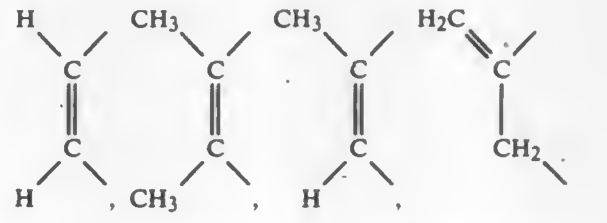
U.S. Cl. 428—265 **7 Claims**

1. A preimpregnated fibrous structural material from a duromeric polyimide resin comprising

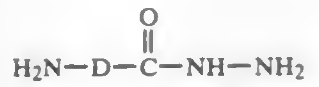
(a) a heat curable imide resin produced by reaction between an N,N'-bisimide of an unsaturated dicarboxylic acid of the general formula I


(I)

wherein A is a divalent organic group having at least two carbon atoms and B is a divalent organic group selected from the group consisting of



and a hydrazide of an amino acid of the general formula II



$$H_2N-D-\overset{\overset{\displaystyle O}{\|}}{C}-NH-NH_2 \qquad (II)$$

wherein D is a divalent organic group in a molar ratio of moles of N,N'-bisimide (I) to moles of aminobenzoic acid hydrazide (II) of between 1:1 and 10 and,

(b) fibrous materials selected from the group consisting of carbon fibers, glass fibers and aromatic polyamide fibers in the form of unidirectional mat or fabric, said fibrous materials impregnated with said imide resin.

4,356,228

FIBER-REINFORCED MOLDABLE SHEET AND PROCESS FOR PREPARATION THEREOF

Hirokazu Kobayashi, and Minoru Kitanaka, both of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,619

Claims priority, application Japan, May 23, 1980, 55/67739

Int. Cl.^{3} B32B *5/16*

U.S. Cl. 428—283 **14 Claims**

1. A fiber-reinforced moldable sheet comprising a thermoplastic resin and at least two reinforcing agents differing in the length/diameter ratio, which are incorporated with said thermoplastic resin in a mixed state, wherein one reinforcing agent (A) contained in said composite sheet is a carbon fiber having a length/diameter ratio of 200 to 30,000 and the other reinforcing agent (B) is a fibrous reinforcing agent having a length-/diameter ratio of less than 50, and the contents of the reinforcing agents (A) and (B) in said moldable sheet are 5 to 30% by volume and at least 5% by volume, respectively, the sum of the contents of the reinforcing agent (A) and (B) being in the range of from 20 to 50% by volume.

4,356,229

BONDED NONWOVEN FABRICS SUITABLE FOR DIAPER COVERSTOCK

John G. Brodnyan, Langhorne; Walter G. De Witt, III, Southampton; Robert A. Gill, Abington, and Gary D. Stelling, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 966,422, Dec. 4, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,426

Int. Cl.^{3} D04H *1/58*

U.S. Cl. 428—288 **24 Claims**

1. A nonwoven fabric consisting essentially of fibers and a binder,

(A) at least 50%, by weight, of the fibers being hydrophobic fibers having a moisture regain less than 2.5% of the fiber weight at 70° F. and 65% RH,

(B) the binder being free of formaldehyde condensates and comprising a water-insoluble, hydrophobic, emulsion copolymer of ethylenically unsaturated monomers comprising

(a) 1 to 8%, by weight, of a monoethylenically unsaturated carboxylic acid or a mixture thereof.

(b) 50 to 75%, by weight, of a C_4 to C_8 alkyl acrylate or a mixture thereof, and

(c) 20 to 49%, by weight, of one or more hard monomers, and

(C) the fabric having a water-wet tensile strength, determined on a 2.5 cm wide specimen having a dry weight between 23 and 26 g/m^2, of at least 1.5 kg.

4,356,230

MOLDED PLASTIC PRODUCT HAVING A PLASTIC SUBSTRATE CONTAINING A FILLER AND AN IN-MOLD PLASTIC COATING FIRMLY BONDED THEREON AND A PROCESS FOR ITS MANUFACTURE

Peter R. Emanuel, Troy; Syed Salman, Sterling Heights, and Gulam Mohiuddin, Brighton, all of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 167,250

Int. Cl.^{3} B29D *3/02;* **B32B** *9/04*

U.S. Cl. 428—290 **16 Claims**

1. A molded part containing a plastic substrate and a firmly adherent coating thereon, the plastic substrate containing a continuous fibrous reinforcement material therein present at least in part in proximity to the surface of the substrate, said coating having been transferred from the mold surface to the substrate during the molding operation, said molded part having a smooth surface as molded and without any subsequent finishing thereof.

9. A process of producing a molded part containing a plastic substrate and a firmly adherent coating thereon, the plastic substrate containing a continuous fibrous reinforcement material therein present at least in part in proximity to the surface of the substrate, said process comprising

coating the surface of a mold, prior to molding said part, with a coating composition containing a reaction promoter for a reactive plastic molding material but not for said coating,

introducing the reactive plastic molding material and the filler into the mold, said molding material and filler together comprising said plastic substrate,

said reaction promoter in said coating being selected from the group consisting of a catalyst, a crosslinking promoter and a crosslinking initiator for said reactive plastic molding material and being present in an amount sufficient to transfer said coating composition from said mold surface to said substrate and bond it thereto,

molding said part and

removing said part from the mold, said molded part upon removal from the mold having a smooth surface thereon as molded and without any subsequent surface treatment thereof.

4,356,231

POROUS OXIDE DIAPHRAGM FOR ALKALINE ELECTROLYSES, AND MANUFACTURE THEREOF

Jiri Divisek; Heinrich Schmitz, both of Jülich, and Renke Hesse, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,690

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3031064

Int. Cl.^{3} B32B *15/02*

U.S. Cl. 428—304.4 **12 Claims**

1. Porous oxide diaphragm for alkaline electrolysis, particularly water electrolysis; including a permeable framework-forming support; and a matrix of an oxidized thereon layer formed by oxidized on metal powder particles united and fixed by mutually penetrating oxide layers formed through oxidation in situ.

9. Diaphragm as claimed in claim 1, said oxidized on layer having a thickness of about 10 to 500 μm.

4,356,232

METHOD FOR PRODUCING MAGNETIC RECORDING MEDIUM

Eiichi Tadokoro; Haruo Masuda; Nobutaka Yamaguchi, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1981, Ser. No. 252,746

Claims priority, application Japan, Apr. 10, 1980, 55-47178

Int. Cl.^{3} G11B *5/70*

U.S. Cl. 428—325 **6 Claims**

4. A magnetic recording medium comprising a non-magnetic support having coated thereon a magnetic recording layer comprising a ferromagnetic powder, a binder and non-alkali glass beads containing alkali elements at a level not more than 0.1% by weight wherein said beads are present in an amount less than about 0.1 weight % based on the amount said ferromagnetic powder.

4,356,233

PRIMED INORGANIC SUBSTRATES OVERCOATED WITH CURABLE PROTECTIVE COMPOSITIONS

Roger W. Lange, Maplewood, and Alek P. Szecsy, Inver Grove Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 20, 1981, Ser. No. 265,467

Int. Cl.^{3} B32B *27/38;* **C08L** *83/00*

U.S. Cl. 428—336 **20 Claims**

1. A layered structure comprising

a. an inorganic substrate selected from metals, metal oxides, and ceramics,

b. a primer composition having a thickness in the range of 0.02 to 0.5 microns, coated upon said substrate, said priming composition comprising:

(1) one part by weight of a non-amino- or non-amido-containing silane of the formula:

$$[R^1]_m—Si—[R^2]_n \qquad (1)$$

in which R^1 is an alkyl or cycloalkyl group that can be unsubstituted or substituted by an ethenyl, methethenyl, acryloxy, methacryloxy, epoxy, mercapto, or an isocyanato group, said substituted group having a total of two to ten carbon atoms and said unsubstituted group having a total of one to eight carbon atoms; R^2 is a hydrolyzable group selected from alkoxy groups having one to eight carbon atoms, and acyloxy groups having two to eight carbon atoms; m is an integer from 1 to 3; n is an integer from 1 to 3, with the proviso that $m+n=4$;

(2) 1 to 50 parts by weight of metal ester of the formula:

$$M[OR^3]_x \qquad (2)$$

in which M is a metal selected from the group comprising titanium, tantalum, zirconium, aluminum, and antimony; R^3 is an alkyl group having from one to eight carbon atoms; and x is equal to the number of valence bonds of M, and

(3) 0:1 to 10:1 moles by weight of an inorganic acidic material, or 0:1 to 20:1 moles by weight of an organic acidic material, compared to the total moles by weight of metal ester plus silane,

(4) 50 to 99 weight percent of solvent consisting essentially of organic solvent compared to the total composition weight, and

c. at least one layer of an overcoating composition polymerized in situ and comprising at least one organic monomer selected from epoxy and vinyl monomers.

4,356,234

THERMOPLASTIC SYNTHETIC FILAMENTS AND PROCESS FOR PRODUCING THE SAME

Shiro Kumakawa, Ibaraki, and Toshimasa Kuroda, Takatsuki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 5, 1981, Ser. No. 240,834

Claims priority, application Japan, Mar. 12, 1980, 55-30259; Mar. 19, 1980, 55-33947; Mar. 19, 1980, 55-33948

Int. Cl.^{3} D02G *3/00*

U.S. Cl. 428—372 **13 Claims**

1. Thermoplastic synthetic filaments comprising 85 to 99% by weight of a thermoplastic matrix polymer and 1 to 15% by weight of a dispersed polymer comprising at least one polysulfone which is incompatible with said matrix polymer and dispersed in the form of fine particles in said matrix polymer, which filaments are characterized by numerous fine protuberances consisting of said dispersed polymer and formed in the number of at least 5 per 10 square microns on the peripheral surface of each individual filament.

4,356,235

THALLOUS AND CESIUM HALIDE MATERIALS FOR USE IN CRYOGENIC APPLICATIONS

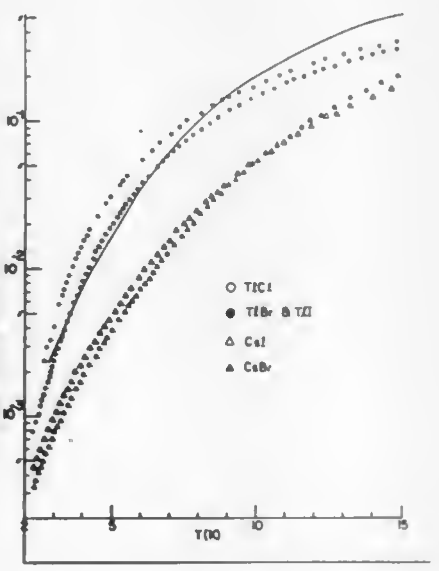
William N. Lawless, c/o Lake Shore Ceramics, Inc., 64 E. Walnut St., Westerville, Ohio 43081

Continuation-in-part of Ser. No. 41,039, May 21, 1979, Pat. No. 4,296,147. This application Aug. 3, 1981, Ser. No. 289,555

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.^{3} B32B *15/00*

U.S. Cl. 428—379 **5 Claims**



1. In combination, a superconducting metal wire having an electrically insulating coating thereon, said electrically insulating coating comprising a mixture of components X and Y,

where X is selected from the group consisting of thallous chloride, thallous bromide, thallous iodide, cesium bromide, and cesium iodide, and

where Y is selected from the group consisting of thallous chloride; thallous bromide; thallous iodide; cesium bromide; cesium iodide; and epoxy resin; AB_2O_4, where A is a Group IIB metal ion with or without other divalent metal ions and B is chromium ion with or without other trivalent metal ions; AB_2O_6, where A is manganese or nickel ion or both, with or without other divalent metal ions and B is niobium, tantalum, or both; and A_2BCO_6, where A is lead ion with or without other divalent metal ions, B is gadolinium or manganese with or without other trivalent metal ions, and C is niobium, tantalum or both.

4,356,236

SPHERICALLY SHAPED MATERIAL COMPRISING ACYLATED PRODUCT OF DE-N-ACETYLATED CHITIN

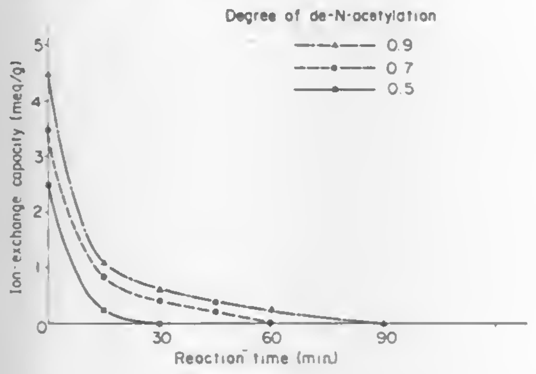
Junichi Koshugi, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1980, Ser. No. 156,476

Claims priority, application Japan, Jun. 15, 1979, 54-75401

Int. Cl.^{3} B32B *1/00;* C08B *37/08*

U.S. Cl. 428—403 **19 Claims**



1. A spherically shaped material at least the surface layer of which comprising an acylated product of de-N-acetylated chitin or a salt thereof.

8. A process for producing a spherically shaped material of an acylated product of de-N-acetylated chitin, comprising dispersing an aqueous solution of a de-N-acetylated chitin or a salt thereof dropwise as minute droplets into an anhydride of an organic acid having the same acyl group as in said acylated product and containing a suspending agent, thereby acylating said minute droplets of said aqueous solution of the de-N-acetylated chitin to obtain a spherically shaped material.

4,356,237

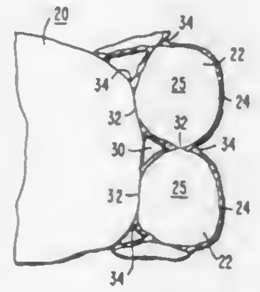
POROUS ENCAPSULATING COMPOSITION FOR ELECTRICAL APPARATUS

Gerhard R. Sprengling, Derry Township, Westmoreland County, and Louis A. Cargnel, Unity Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 24,341, Mar. 7, 1979, Pat. No. 4,243,623, which is a division of Ser. No. 870,896, Jan. 19, 1978, Pat. No. 4,164,619. This application May 13, 1980, Ser. No. 149,357

Int. Cl.^{3} B32B *5/16*

U.S. Cl. 428—404 **7 Claims**



1. A composition comprising:

a particulate filler material, the adjacent particles of which are in direct particle-to-particle contact;

said particulate filler material including shell molding sand having shell molding resin on each particle, and gravel, with the average particle size of said gravel being substantially larger than the average particle size of said shell molding sand,

said shell molding sand being evenly dispersed throughout the larger particles of said gravel,

said shell molding resin being distributed such that the adjacent particles of said shell molding sand, and the adjacent particles of said shell molding sand and gravel, are in direct particle-to-particle contact devoid of intervening shell molding resin, with said shell molding resin further being distributed to coat the remaining portions of the shell molding sand, and to function as a binder material which is in a hardened solid state, including beads of said shell molding resin distributed to surround the direct particle-to-particle contact points between contiguous particles of said filler material, to cohesively join together said contiguous particles and provide a structure having a compressive strength of about 13000 psi, and a thermal conductivity of about 0.051 W/in.° C.,

said shell molding resin being selected such that it has the characteristics of being dryable on the shell molding sand, subsequently liquifiable to a viscosity which permits sufficient flow thereof to achieve said direct particle-to-particle contact points between contiguous particles of said filler material, and subsequently solidifiable to provide said beads of resin around said contact points.

4,356,238

COATED ARTICLES BEARING A COATING OF A BLEND OF AN IONOMER RESIN AND AN ALKENYL SUCCINIC ANHYDRIDE

Pallavoor R. Lakshmanan, Houston, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 209,812, Nov. 24, 1980, Pat. No. 4,324,872. This application Oct. 22, 1981, Ser. No. 313,556

Int. Cl.^{3} B32B *11/00*

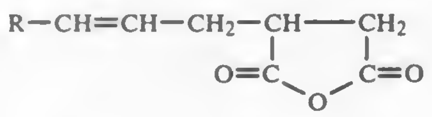
U.S. Cl. 428—461 **2 Claims**

1. A sheet of paper, aluminum foil, ethylene polymer or isotactic propylene polymer bearing a coating of a composition consisting essentially of an intimate fusion blend of;

(a) 100 parts by weight of an ionomer resin, and

(b) about 5 to 900 parts by weight of an alkenyl succinic anhydride;

said ionomer resin being a metal salt of an ethylene-acid copolymer which is a copolymer of ethylene and acrylic or methacrylic acid having an acid content of about 1–10 mol % and having a high load melt index of at least about 1.0 and a normal load melt index of up to about 50; and said alkenyl succinic anhydride having the structure;



where R is an alkyl group containing about 13 to 49 carbon atoms.

4,356,239

OPEN AND SHORT CIRCUIT TEST APPARATUS

Jimmy L. Stewart, Clinton, Ind., assignor to General Battery Corporation, Reading, Pa.

Division of Ser. No. 108,470, Dec. 31, 1979, Pat. No. 4,282,292. This application Jan. 19, 1981, Ser. No. 226,060

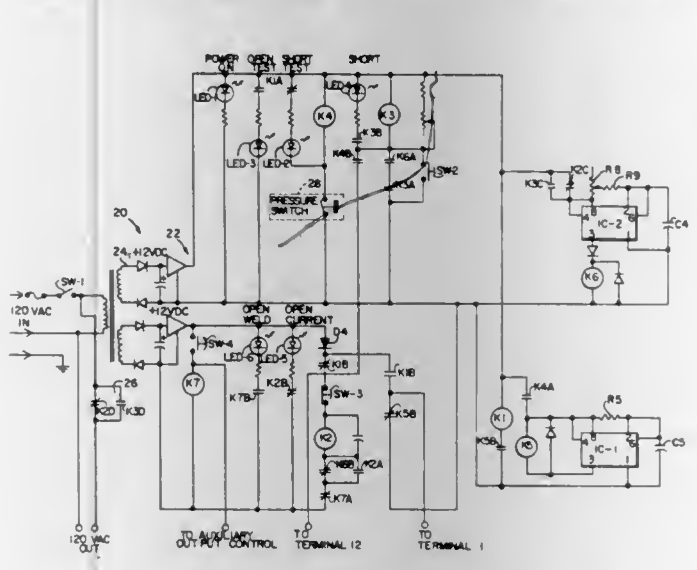
Int. Cl.^{3} H01M *14/00*

U.S. Cl. 429—7 **7 Claims**

1. For a multicelled storage battery, wherein each cell is comprised of a plurality of interleaved positive and negative plates, said plates having upstanding lugs arranged so that each positive lug is along one side of said cell and each negative lug is along an opposite side of said cell, wherein all of said positive lugs are connected by a first conductive strap having a connector lug associated therewith and all of said negative lugs are connected by a second conductive strap having a connector lug associated therewith, said cells being alternately arranged within said battery so that the first conductive strap lug of one cell is adjacent to the second conductive strap lug of an adjoining cell, said cells being connected in series by welding together the first strap lug in one cell to the second strap lug in the adjoining cell, and further said battery comprising an external terminal at each end of said series, an apparatus for testing said batteries for short circuits between plates of opposite polarity within a cell and for electrical continuity between the cells of said battery comprising:

a. power means,

b. terminal means adapted for placement on said battery and including circuit means forming a series electrical connection with the power means, the positive and negative strap lugs along one side of the battery, and the positive and negative strap lugs along the other side of said battery;



c. control means associated with the circuit means of said terminal means so that the lugs along one side of the battery are electrically separated from the lugs along the other side of said battery, and further adapted to allow the passage of current through said series electrical connection substantially in only one direction; and

d. switch means associated with said power means and adapted to first apply a positive voltage across the circuit means so that the flow of current is opposed by said control means, thus preventing current from flowing through said series electrical connection, unless there is a short circuit between one or more parallel plates of opposing polarity within a cell, and secondly to reverse polarity of the applied voltage so that a current will be permitted to flow through said control means and said series electrical connection if there is continuity in the intercell welds of said battery.

4,356,240

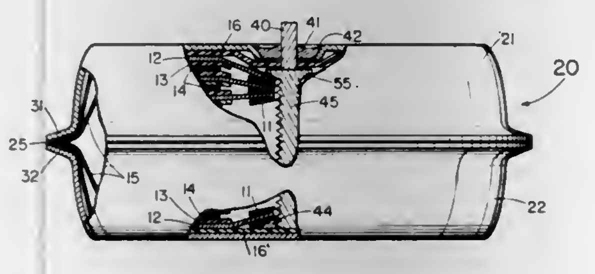
EXTREMELY HIGH RATE FLAT CELL

Arabinda N. Dey, Needham, and Noble E. Hamilton, Middleton, both of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Oct. 27, 1980, Ser. No. 200,819

Int. Cl.^{3} H01M *4/36*

U.S. Cl. 429—101 **7 Claims**



1. An electrochemical cell comprising multiple layers of anode and cathode electrode materials contained in a cell container wherein all of the layers of one of said anode and cathode electrode materials embody conductive projections therefrom which are positioned between elements of said cell container which are hermetically sealed to seal said cell, with said conductive projections being electrically interconnected with said elements and which conductive projections form part of the seal of said cell.

4,356,241

SODIUM SULPHUR CELLS

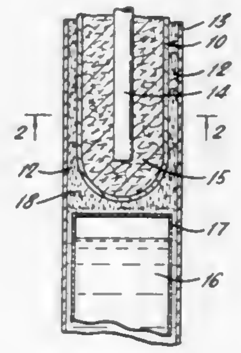
Michael L. Wright, Allestree, and Michael D. Hames, Spondon, both of England, assignors to Chloride Silent Power Limited, London, England

Filed Jul. 7, 1981, Ser. No. 280,957

Claims priority, application United Kingdom, Jul. 21, 1980, 8023739

Int. Cl.^{3} H01M *4/36*

U.S. Cl. 429—104 **11 Claims**



1. A sodium sulphur cell having a beta-alumina solid electrolyte element separating an anodic region containing sodium from a cathodic region containing sulphur/sodium polysulphides, said beta-alumina solid electrolyte element has had at least part of its surface, to be exposed to the sodium, pretreated with a first metal which will form an alloy of sodium, wherein there is provided, in the anodic region adjacent the electrolyte element, a second metal which will react with sodium oxide (Na_2O) to form a sodium oxide compound with the second metal or an oxide thereof.

4,356,242

ELECTRODE CONSTRUCTION FOR LIQUID ELECTROLYTE ELECTROCHEMICAL GENERATORS

Denis Doniat, 14 rue des Marronniers, 75016 Paris, France

Continuation of Ser. No. 164,839, Jun. 30, 1980. This application Jan. 11, 1982, Ser. No. 338,322

Claims priority, application France, Jul. 6, 1979, 79 17540

Int. Cl.^{3} H01M *4/72*

U.S. Cl. 429—234 **24 Claims**

1. Electrode construction for a liquid electrolyte electrochemical generator, said electrode being formed from a substrate constituted of a non-conducting microporous film, having a porosity at least equal to 50% and a thickness at most equal to about 500 microns, whose pores have a diameter between 3 and 30 microns, all the surfaces of the pores being metallized by at least a first layer, thus forming a charge collector, a thin deposit of active electrode material being deposited on said at least first layer, the total thickness of said at least first layer and of said deposit being such as to avoid clogging of the pores.

4,356,243
ELECTROPHOTOGRAPHIC MEDIA WITH BENZOXAZOLE GROUP CONTAINING DIS-AZO COMPOUND

Shozo Ishikawa; Kazuharu Katagiri; Katsunori Watanabe; Shigeto Ohta, and Makoto Kitahara, all of Tokyo, Japan, assignors to Copyer Co., Ltd., Tokyo, Japan

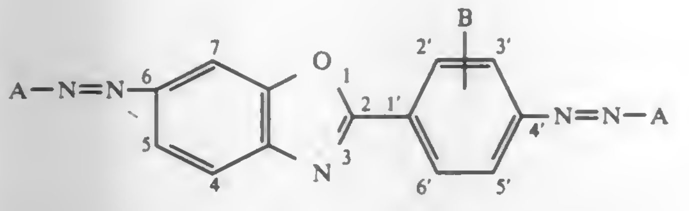
Filed Feb. 19, 1981, Ser. No. 235,793

Claims priority, application Japan, Feb. 19, 1980, 55-18574

Int. Cl.^{3} G03G *5/06*

U.S. Cl. 430—58 **16 Claims**

1. An electrophotographic light-sensitive medium comprising a light-sensitive layer containing a dis-azo compound represented by the Formula (1)



(1)

wherein A is an aromatic coupler containing therein a phenolic hydroxy group, and B is selected from the group consisting of hydrogen, a halogen, a lower alkyl group having 1 to 4 carbon atoms, and a lower alkoxy group having 1 to 4 carbon atoms.

9. An electrophotographic light-sensitive medium as in claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, or **8**, wherein the light-sensitive medium comprises an electrically conductive layer, a light-sensitive charge generation layer containing the dis-azo compound, and a charge transport layer.

4,356,244
QUINOXALINE CYANINE DYE SENSITIZED ORGANIC ELECTRON DONOR COMPOUNDS

Louis M. Leichter, Woodbury; Terry J. Sonnonstine, White Bear Lake; John J. Stofko, Jr., St. Paul, all of Minn., and Paolo Beretta, Ferrania, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 23, 1981, Ser. No. 236,653

Int. Cl.^{3} G03G *5/06*

U.S. Cl. 430—82 **16 Claims**

1. A photosensitive layer comprising an organic electronically active electron donor compound sensitized with a sensitizing amount of an imidazo-[4,5-b]quinoxaline cyanine dye having at least one phenylsulfonyl or benzoyl substituent on an imidazo-[4,5-b]quinoxaline nucleus.

2. The layer of claim **1** wherein said phenylsulfonyl or benzoyl substituent is on the 6- or 7-position of the imidazo-[4,5-b]quinoxaline nucleus.

4,356,245
METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHIC, IMAGE DEVELOPMENT WITH MAGNETIC TONER

Nagao Hosono, Shizuoka; Koichi Kinoshita, Narashino, and Toru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 938,101, Aug. 30, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 141,919

Claims priority, application Japan, Sep. 10, 1977, 52-109237; Sep. 10, 1977, 52-109238; Sep. 10, 1977, 52-109239

Int. Cl.^{3} G03G *13/09*

U.S. Cl. 430—122 **20 Claims**

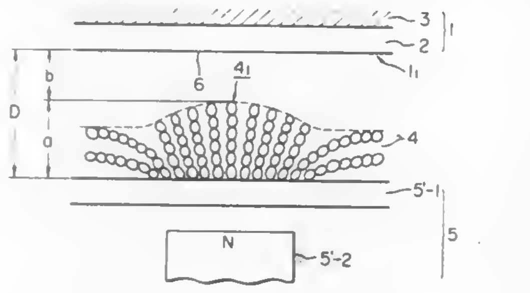
1. A development method for developing an electrostatic image held on an electrostatic image holding member which can be used repeatedly for electrostatic latent image formation, said method comprising the steps of:

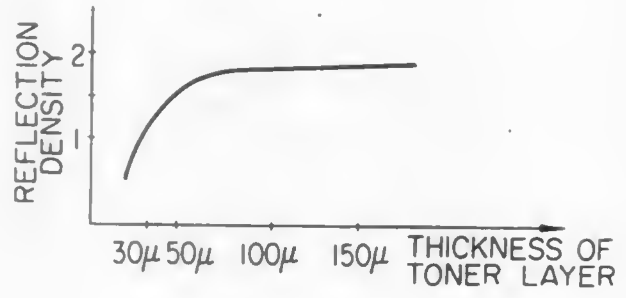
forming a layer of magnetic toner particles on a surface of a toner carrying member, said toner carrying member being made of a non-magnetic material and having a stationary magnetic pole at a developing zone on the opposite side of said toner particle layer forming surface thereof to establish a stationary magnetic field directed toward the surface of the electrostatic image holding member;

bringing said toner carrying member provided with the magnetic toner particle layer on the surface thereof adjacent to the electrostatic image holding member provided with an electrostatic image on its surface; and

maintaining said toner carrying member and the electrostatic image holding member in a spacing range at the developing zone to form a space gap between the electrostatic image holding member and the surface of the layer of toner particles where the stationary magnetic field at the developing zone is effective to orient the magnetic toner particles in the direction of the magnetic field to assist in the deposition of toner particles on the image region of the electrostatic image holding member due to the attraction of the electrostatic field generating therefrom, the stationary magnetic field alone being insufficient to transfer the magnetic toner particles to the non-image background region of the electrostatic image holding member which has no substantial electrostatic field such that in the absence of an electrostatic image on the image holding member, no toner particles contact the image holding member.

8. A development device for developing an electrostatic image held on an electrostatic image holding member which can be used repeatedly for electrostatic latent image formation, said device comprising in combination:





toner carrying means having a surface to hold a toner particle layer thereon, said toner carrying means being made of a non-magnetic material;

magnet means for generating a stationary magnetic field at a developing zone through said non-magnetic toner carrying means toward the surface of the electrostatic image holding member;

means for forming a layer of magnetic toner particles of substantially uniform thickness on said surface of said toner carrying means;

means for moving the magnetic toner layer from said toner layer forming means to a developing zone; and

means for maintaining a space between said toner carrying means and the electrostatic image holding member at the developing zone within a predetermined range to form a space gap between the electrostatic image holding member and the surface of the layer of toner particles, wherein the stationary magnetic field at the developing zone is directed toward the electrostatic image holding member to thereby assist in depositing toner particles on the image region of the electrostatic image holding member due to the attraction of the electrostatic field generating therefrom, the stationary magnetic field being insufficient to transfer the magnetic toner particles to the non-image background region of the electrostatic image holding member such that in the absence of an electrostatic image no toner particles contact with the image holding member, whereby background development is prevented.

4,356,246
METHOD OF MAKING α-SILICON POWDER, AND ELECTROPHOTOGRAPHIC MATERIALS INCORPORATING SAID POWDER

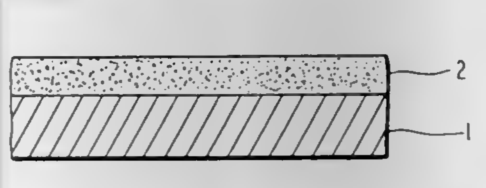
Masatoshi Tabei; Keiji Takeda; Kazuhiro Kawaziri, and Akio Higashi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1980, Ser. No. 159,566

Claims priority, application Japan, Jun. 15, 1979, 54-74553

Int. Cl.^{3} G03G *5/082*

U.S. Cl. 430—136 **4 Claims**



1. A process of producing noncrystalline silicon powder comprising silicon and hydrogen, having a primary particle size of from 0.01 μm to 1 μm, exhibiting an infrared absorption spectrum characterized by an absorbance peak centered at about 2000 cm^{-1}, wherein the height of said absorbance peak is at least one-tenth the height of the absorbance peak centered at about 630 cm^{-1}, and exhibiting a spin density of not more than 10^{18} cm^{-3} in the electron spin resonance spectrum thereof, the color of said powder being red, brown, black or a combination thereof, said process comprising submitting silane or a derivative thereof to glow discharge decomposition and to further heating before, during or after such decomposition at a temperature up to about 650° C. to directly form said powder without grinding.

4,356,247
LIGHT-SENSITIVE COMPOSITIONS

Yoshimasa Aotani; Teruo Kojima, both of Minami-ashigara, and Eiji Nakakita, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

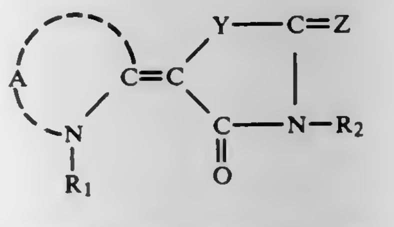
Filed Oct. 27, 1980, Ser. No. 200,653

Claims priority, application Japan, Oct. 29, 1979, 54-139474

Int. Cl.^{3} G03C *1/71*

U.S. Cl. 430—195 **9 Claims**

1. A light-sensitive composition consisting essentially of a mixture of a sensitizer and a photo-crosslinkable polymer selected from polymers having a polymerization unit having bonded thereto an R—CH═CH—CO— group, wherein R is an aryl group or a heterocyclic group, or polyesters having a —CH═CH—CO— group in their main polymer chain, or a mixture of a sensitizer, a compound including a light-sensitive azido group and a polymer reactive with a decomposition product of azido groups to be formed upon exposure to light, said sensitizer comprising the compound represented by the formula (I)



(I)

wherein A represents a non-metallic group necessary for forming a heterocyclic ring containing nitrogen; R_1 represents an alkyl group or a substituted alkyl group; R_2 represents hydrogen, an alkyl group, a substituted alkyl group, an aryl group or a substituted aryl group; and Y and Z each represents an oxygen atom or a sulfur atom.

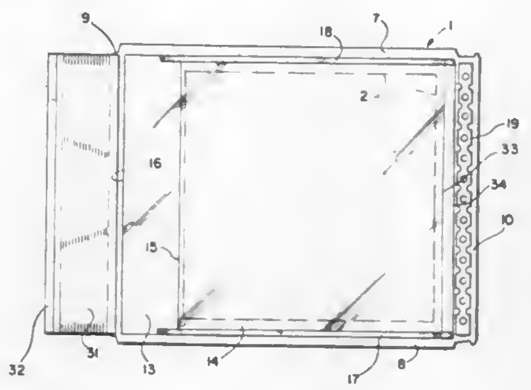
4,356,248
PHOTOGRAPHIC PRODUCT

Thomas P. McCole, South Natick, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 26, 1981, Ser. No. 267,013

Int. Cl.^{3} G03C *1/48*

U.S. Cl. 430—209 **7 Claims**



1. A photographic film unit, comprising first and second generally rectangular superposed sheets of equal widths and unequal lengths, at least one of said sheets comprising photosensitive constituents, a rupturable pod of fluid processing composition disposed on a leading edge of the longer of said sheets confronting a leading edge of the shorter sheet, said longer sheet terminating in a trailing edge protruding beyond a corresponding trailing edge of the shorter sheet, a panel of flexible liquid impermeable material having a first edge adhered to the trailing edge of said longer sheet and extending over to an opposite second edge adherent to said shorter sheet in spaced regions leaving a plurality of nonadhering regions forming gas vents, a perforated spacer element located in a trap region between the trailing edges of said sheets and confined by said flexible panel, said spacer element being secured to said panel only along one edge confronting said second edge of said panel and being free of other attachment to said panel and said sheets, whereby a major portion of said panel between said first and second edges of said panel is free to flex in compliance with pressures exerted by gases and fluid processing composition emerging from between the trailing edges of said sheets to accommodate the free flow of said gases and processing composition around said spacer element and through the perforations thereof in parallel paths to said nonadhering regions of said second edge of said panel.

4,356,249
TIMING LAYERS AND AUXILIARY NEUTRALIZING LAYER FOR COLOR TRANSFER ASSEMBLAGES CONTAINING POSITIVE-WORKING REDOX DYE-RELEASERS

Edward P. Abel, Webster, and Edward Weissberger, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,630

Int. Cl.^{3} G03C *1/40, 1/10, 7/00, 5/24*

U.S. Cl. 430—215 **38 Claims**

1. In a photographic assemblage comprising:

(a) a photographic element comprising a support having thereon at least one negative-working, photosensitive silver halide emulsion layer having associated therewith a positive-working, redox dye releaser;

(b) a dye image-receiving layer;

(c) a neutralizing layer for neutralizing an alkaline processing composition;

(d) a first timing layer located between said neutralizing layer and said silver halide emulsion layer; and
(e) a second timing layer located between said first timing layer and said neutralizing layer;

said first and second timing layers being so located that said processing composition must first permeate said timing layers before contacting said neutralizing layer, said neutralizing layer being located on the side of said second timing layer which is farthest from said dye image-receiving layer, the improvement wherein:

(i) said first timing layer has a negative temperature coefficient;
(ii) said second timing layer has a penetration time by said alkaline processing composition that is greater than the penetration time of said first timing layer, so that said neutralizing layer will be permeated by said alkaline processing composition only after development of said silver halide emulsion has been substantially completed; and
(iii) an auxiliary neutralizing layer is present and is located between said first and second timing layers, the concentration of available acid supplied by said auxiliary neutralizing layer being approximately 3 to 20 percent of the available acid supplied by said neutralizing layer.

4. In the assemblage of claim 1, the further improvement wherein said first timing layer is an N-substituted acrylamide polymer or copolymer.

4,356,250
USE OF ZINC SALTS TO INCREASE DYE STABILITY

Nayyir F. Irani, and Thomas O. Maier, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1981, Ser. No. 224,415

Int. Cl.^{3} G03C *5/54*

U.S. Cl. 430—216 **32 Claims**

1. In a photosensitive element comprising a support having thereon at least one silver halide emulsion layer having associated therewith a redox dye-releasing material, the improvement wherein said element contains a soluble zinc salt in such a location and concentration that (a) it will be diffusible in said element during processing, and (b) the dye which is released from said redox dye-releasing material during said processing will have an increased stability to light exposure, said zinc salt being present in a concentration of at least about 10 mg/m^2 of element.

4,356,251
MULTILAYER PHOTOSENSITIVE ELEMENT WITH SOLVENT-SOLUBLE LAYER

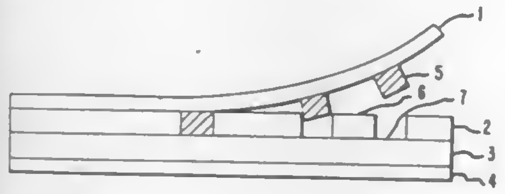
Abraham B. Cohen, Springfield, and Roxy Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 747,024, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,455, Jun. 3, 1975, abandoned. This application Aug. 4, 1980, Ser. No. 174,919

The portion of the term of this patent subsequent to Jul. 25, 1997, has been disclaimed.

Int. Cl.^{3} G03C *1/78*

U.S. Cl. 430—253 **18 Claims**



1. A peel apart photosensitive element comprising in order from top to bottom, (1) a strippable cover sheet, (2) a sole dry photoadherent layer comprising a material with ethylenically unsaturated or benzophenone type groups, (3) a solvent-soluble, nontonable, polymeric, nonphotosensitive contiguous layer, and (4) a sheet support, the exposed areas of said photoadherent layer, after imagewise exposure of said element through the cover sheet (1) to actinic radiation, having greater adhesion to said contiguous layer than to said cover sheet and are not removable with said cover sheet and the unexposed areas of said photoadherent layer having greater adhesion to said cover sheet than to said contiguous layer and are removable with said cover sheet whereby after stripping the cover sheet (1) leaving an unhardened positive image on the cover sheet and an image of uncovered contiguous layer on the element, said exposed areas of the photoadherent layer being insoluble under a condition under which said contiguous layer is solvent-soluble.

4,356,252
PHOTOSENSITIVE NEGATIVE-WORKING TONABLE ELEMENT

Ross A. Lee, Webster, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

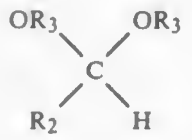
Division of Ser. No. 106,401, Dec. 26, 1979, Pat. No. 4,294,909. This application May 4, 1981, Ser. No. 259,956

Int. Cl.^{3} G03C *5/04*

U.S. Cl. 430—270 **6 Claims**

1. A photosensitive element comprising a support bearing a layer of a negative-working tonable photoimaging composition which consists essentially of

(a) at least one organic polymeric binder taken from the group consisting of polyvinylformal, polyvinylpyrrolidone, polyacrylate, cellulose acetate, polymethacrylate, and polyvinyl acetate;
(b) a photosensitizer which upon absorption of actinic radiation is capable of generating an acid; and (c) at least one acetal compound of the formula



wherein R$_2$ is alkyl of 1 to 18 carbon atoms, furyl, substituted furyl, phenyl, substituted phenyl, naphthyl, and substituted naphthyl, R$_3$ is alkyl of 1 to 18 carbon atoms, and OR$_3$ when taken together form a 5, 6 or 7 membered ring,
(d) a plasticizer in an amount of up to 20% by weight based on the total dry weight of the photoimaging composition; and
(e) a polymeric anhydride in an amount up to 10% by weight based on the total weight of solids

the polymeric binder (a) being plasticized by the decomposition product of the acetal compound.

4,356,253
PHOTOIMAGING PROCESS FOR FORMING MULTICOLOR IMAGES

John G. Buzzell, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1980, Ser. No. 215,699

Int. Cl.^{3} G03C *1/90*

U.S. Cl. 430—291 **9 Claims**

1. In a process for forming a multicolor image by photopolymerizing comprising:

1. laminating to a receptor surface a photopolymerizable element comprising a support that transmits actinic radiation and a photopolymerizable layer so as to form a laminated structure having the photopolymerizable layer contiguous to the receptor surface, the receptor surface having greater adhesion to the photopolymerizable layer in both its polymerized and unpolymerized states than does the support;
2. exposing the layer imagewise through the support to actinic radiation to selectively raise the stick temperature of those areas receiving the radiation;
3. removing the support without transfer thereto of either exposed or underexposed areas of the photopolymerizable layer;
4. applying colorant material to the surface of the layer;
5. distributing the colorant material over the image surface whereby the distributed colorant material becomes embedded solely in the underexposed areas;
6. physically removing colorant material from the exposed image areas which are left substantially free of the colorant material; and
7. repeating said steps of laminating, exposing, removing, applying, distributing and removing one or more times, each succeeding photopolymerizable element having its photopolymerizable layer contiguous to the exposed and colored surface of the last previously laminated photopolymerizable layer; the improvement wherein the photopolymerizable element comprises a polyethylene terephthalate support which is surface treated by electrical discharge at the rate of 1.0 to 6.0 joules/inch^2, the treated surface bearing the photopolymerizable layer which comprises a free radical initiated, chain propagating, addition polymerizable compound taken from the group consisting of trimethylolpropanetrimethacrylate, polyoxyethylatedtrimethylolpropanetriacrylate, and a mixture of polyoxyethylatedtrimethylolpropanetriacrylate and one of the addition polymerizable compounds taken from the group consisting of trimethylolpropanetrimethacrylate, trimethylolpropanetriacrylate, pentaerythritoltriacrylate, tetraethyleneglycoldiacrylate and tetraethyleneglycoldimethacrylate, at least one compatible organic polymeric acrylate ester binder and optionally a polyvinyl acetate binder which may be present in a weight ratio of less than 4 to 3 with respect to the acrylate ester binder component, and an addition polymerization initiator or initiator system activatable by actinic radiation.

4,356,254
IMAGE-FORMING METHOD USING O-QUINONE DIAZIDE AND BASIC CARBONIUM DYE

Yohnosuke Takahashi; Hiromichi Tachikawa; Fumiaki Shinozaki, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 7, 1980, Ser. No. 166,517

Claims priority, application Japan, Jul. 5, 1979, 54-85395

Int. Cl.^{3} G03F *7/08;* **G03C** *5/00*

U.S. Cl. 430—296 **23 Claims**

1. An image-forming method which comprises imagewise exposing a light-sensitive material comprising a support and a light-sensitive composition layer provided on the support, said light-sensitive composition layer consisting of an o-quinonediazide compound as a first component and a basic carbonium dye as a second component, to light to which the o-quinonediazide compound is sensitive, whereby said compound becomes alkali soluble, overall heating the light-sensitive material simultaneously with imagewise exposure or after imagewise exposure to insolubilize the exposed areas, overall exposing the thus-processed material to light to solubilize unexposed areas and then developing with an alkaline developer to provide a negative image by removing alkaline soluble areas of said layer.

11. An image-forming method which comprises imagewise exposing a light-sensitive material comprising a support and a light-sensitive composition layer provided on the support, said light-sensitive composition layer consisting of a binder, an o-quinonediazide compound as a first component and a basic carbonium dye as a second component, to light to which the o-quinonediazide compound is sensitive, whereby said compound becomes alkali soluble, overall heating the light-sensitive material simultaneously with imagewise exposure or after imagewise exposure to insolubilize the exposed areas, overall exposing the thus-processed material to light to solubilize unexposed areas and then developing with an alkaline developer to provide a negative image by removing alkaline soluble areas of said layer.

12. An image-forming method which comprises overall exposing a light-sensitive material comprising a support and a light-sensitive composition layer provided on the support, said light-sensitive composition layer containing an o-quinonediazide compound as a first component and a basic carbonium dye as a second component, to light to which the o-quinonediazide compound is sensitive, imagewise irradiating the light-sensitive materials with a high intensity energy beam after the overall exposure, and then dissolving the light-sensitive composition layer at areas not irradiated by the high intensity energy beam by use of an alkaline developer.

4,356,255
PHOTOSENSITIVE MEMBERS AND A PROCESS FOR FORMING PATTERNS USING THE SAME

Hiromichi Tachikawa; Yohnosuke Takahashi; Fumiaki Shinozaki, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 30, 1980, Ser. No. 164,399

Claims priority, application Japan, Jun. 28, 1979, 54-81659

Int. Cl.^{3} G03C *5/00, 7/08, 1/495, 1/60, 5/18*

U.S. Cl. 430—325 **1 Claim**

1. An image forming method comprising image-wise exposing with actinic radiation a positive-working and negative-working photosensitive member comprising a photosensitive layer and a support, said photosensitive layer containing an o-benzo- or o-naptho-quinonediazide sulfonic acid ester of a hydroxy compound as a photosensitive agent and an additive selected from a quinone or an aromatic ketone compound, heating said member at about 70° to 300° C. concurrent with or subsequent to exposure to insolubilize the exposed areas, post-exposing said member to actinic radiation to render unexposed areas removable upon development and developing said member with a common alkaline developer to remove unexposed areas, and wherein said quinone compound is selected from the group consisting of anthraquinone, 1-methylanthraquinone, 2-methylanthraquinone, 2-t-butylanthraquinone, 1-acetylamino-4-nitroanthraquinone, 1,2-benzanthraquinone, 2,3-triazoylanthraquinone, phenanthraquinone, 1-methylphenanthraquinone, and benzphenanthraquinone, and wherein said aromatic ketone compound is selected from the group consisting of perinaphthenone, xanthone, thioxanthone, benzanthrone, 3-chlorobenzanthrone, naphthofuranone, 4-phenylnaphthofuranone, indenone, 2,3-diphenylindenone, benzophenone, and benzalacetophenone.

4,356,256
PHOTOGRAPHIC COMPOSITIONS, ELEMENTS AND PROCESSES USING LIGHT-ACTIVATABLE ENZYMES

David F. O'Brien, Rochester, and Patricia N. Tyminski, West Henrietta, both of N.Y., assignors to Eastman Kodak Co., Rochester, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,444

Int. Cl.^{3} G03C *5/24, 1/52*

U.S. Cl. 430—332 **46 Claims**

1. A photographic element comprising a support having thereon at least one layer comprising:

(1) a plurality of vesicles comprising lipid membranes containing rhodopsin;
(2) a mixture of enzymes comprising phosphodiesterase and GTPase;
(3) a first triphosphate nucleotide capable of interacting with GTPase to form a cofactor necessary for the activation of phosphodiesterase;
(4) at least one metal cation selected from the group consisting of Mg^{+2} and Mn^{+2}; and
(5) a second cyclic-monophosphate nucleotide capable of being hydrolyzed to produce a proton, said hydrolysis reaction being catalyzed by activated phosphodiesterase, said phosphodiesterase also being activated by rhodopsin exposed by light in the presence of said cofactor and said metal cation; said element comprising a means for detecting said hydrolysis reaction.

4,356,257

PHOTOSENSITIVE SILVER HALIDE ELEMENT AND METHOD OF PREPARING SAME

Arthur M. Gerber, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,640

Int. Cl.^{3} G03C *1/02*

U.S. Cl. 430—496 **36 Claims**

1. A method for forming a photosensitive element comprising a plurality of single effective silver halide grains in a predetermined spaced array which comprises coalescing fine-grain silver halide in a polymeric binder material in a plurality of predetermined spaced depressions in a surface.

34. A photosensitive element comprising a predetermined spaced array of coalesced single effective silver halide grains in a plurality of predetermined spaced depressions in a surface.

4,356,258

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING YELLOW COUPLER

Tugumoto Usui; Katsunori Kato, both of Hachioji, and Tamotsu Kojima, all of Kokubunji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Nov. 21, 1980, Ser. No. 209,030

Claims priority, application Japan, Nov. 21, 1979, 54/151482

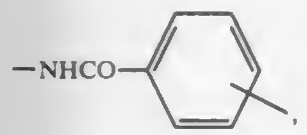
Int. Cl.^{3} G03C *1/40*

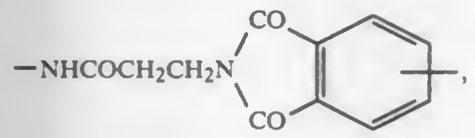
U.S. Cl. 430—557 **1 Claim**

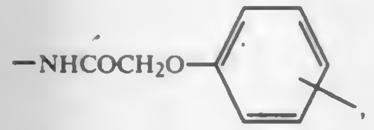
1. A color photographic material having a silver halide emulsion layer coated on a support in which the silver halide emulsion layer contains an acylacetanilide yellow coupler having at the acyl or anilide portion thereof a moiety represented by the following formula I:

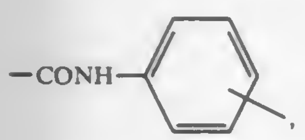
$$—X—Y—Z \qquad \text{I}$$

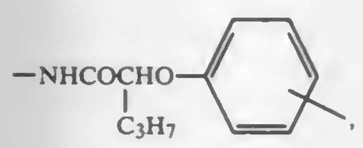
wherein X—Y in the formula I is selected from a group consisting of

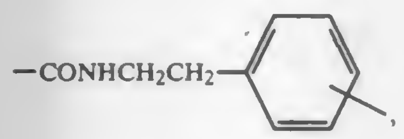












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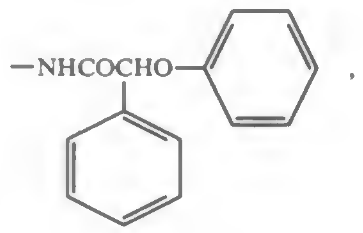
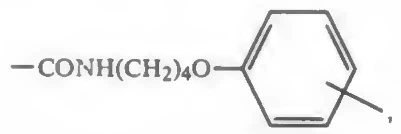
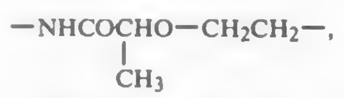


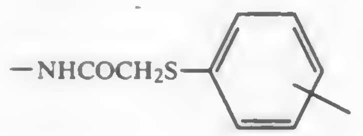


$—NHCOCH_2—, —NHCOCH_2CH_2—,$

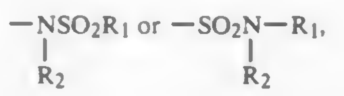


$$—NHCO\underset{\underset{CH_3}{|}}{C}HO—CH_2CH_2—,$$

$—NHCOCH_2OCH_2CH_2—$ and



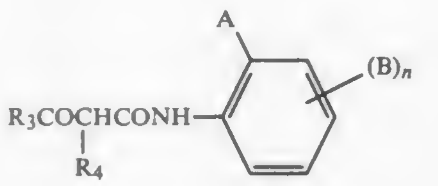
wherein X is —NHCO— or —CONH—, wherein Z is



$$—\underset{\underset{R_2}{|}}{N}SO_2R_1 \text{ or } —SO_2\underset{\underset{R_2}{|}}{N}—R_1,$$

wherein R_1 is an alkyl or aryl radical, and R_2 is a hydrogen atom or an alkyl or aryl radical, and wherein

a residue of the yellow coupler to which the moiety represented by formula I is attached is represented by the following formula II:



II

wherein the moiety represented by the formula I is attached to R_3 or the benzene ring, R_3 represents an alkyl or aryl radical; A represents a halogen atom, an alkyl radical, an alkoxy radical, or an aryloxy radical; B is a halogen atom, an alkyl radical, an alkoxy radical, or an aryloxy radical; n is 0 or 1; R_4 is a radical separable at the time of the coupling of the oxidized product of developing agents with couplers.

4,356,259

PRESERVING SPERM OF DOMESTIC ANIMALS

Kimio Banba, No. 1000, Orito, Shimizu-shi, Shizuoka-ken, Japan

Filed Aug. 15, 1980, Ser. No. 178,480

Claims priority, application Japan, Aug. 27, 1979, 54-108123

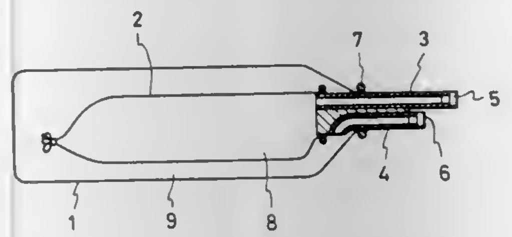
Int. Cl.^{3} A01N *1/02*

U.S. Cl. 435—2 **8 Claims**

1. A method of preserving sperm of domestic animals comprising the steps of:

(i) encapsulating a quantity of sperm in a dialytic tube;

(ii) placing said dialytic tube in a vessel filled with Ringer's solution containing an absorbent selected from the group consisting of
albumin and
activated carbon
whereby a protective buffer layer of said solution surrounds said dialytic tube, and



(iii) maintaining said dialytic tube and said vessel and their contents at a temperature of about 15° C.

4,356,260

ENZYMATIC INDICATOR SYSTEM

Hans B. Elwing, Chalmersgatan 5, 411 35 Gothenburg, Sweden

Continuation of Ser. No. 143,939, Apr. 25, 1980, abandoned, which is a continuation of Ser. No. 23,191, Mar. 14, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,473

Claims priority, application Sweden, Jul. 14, 1977, 7708179

Int. Cl.^{3} C12Q *1/02*

U.S. Cl. 435—29 **6 Claims**

1. A method of determining enzymatic activity comprising
providing a solid surface,
binding a thin layer of an indicator for lysis determination to said solid surface,
applying an immobilized matrix to said thin layer,
supplying a quantity of an enzyme-containing sample to said immobilized matrix,
permitting the enzyme in said enzyme-containing sample to diffuse in said immobilized matrix and react with said thin layer,
removing said immobilized matrix, and
determining the lysis indicated on said solid surface.

4,356,261

ANTI-INVASION FACTOR CONTAINING CULTURES

Klaus E. Kuettner, Chicago, Ill., assignor to Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.

Filed Apr. 22, 1980, Ser. No. 142,731

Int. Cl.^{3} C12N *5/00;* **C12P** *21/00*

U.S. Cl. 435—68 **4 Claims**

1. A method for culturing chondrocytes to produce cartilage tissue comprising:
selecting mammalian cartilage tissue providing viable chondrocytes,
preparing shavings from the cartilage tissue,
digesting said shavings to remove the extracellular matrix to provide denuded cartilage cells,
plating said denuded cells in a roller bottle in sufficient density to provide at least a monolayer of cells so that said cells are in surface contact with each other, and
providing a growth medium and rotating said roller bottle to grow said cells and produce a culture with an extracellular matrix.

4,356,262

PROCESS FOR THE PRODUCTION OF HIGH FRUCTOSE SYRUPS AND ETHANOL

Robert E. Heady, Park Forest, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jun. 3, 1980, Ser. No. 156,134

Int. Cl.^{3} C12P *7/06, 19/04, 19/02*

U.S. Cl. 435—97 **12 Claims**

1. A process for the simultaneous production of ethyl alcohol and fructose polymers which comprises contacting a sucrose-containing substrate at a temperature of about 20° C. to about 35° C. and a pH of about 4.0 to about 6.5 with a mixture of an effective amount of fructosyl transferase enzyme and an effective amount of a yeast preparation, that does not hydrolyze sucrose or fructose polymers or ferment fructose polymers, to produce fructose polymers and ethyl alcohol.

4,356,263

METHOD OF MAKING A POLYSACCHARIDE VACCINE

Dennis L. Kasper, Newton Center, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Division of Ser. No. 157,859, Jun. 9, 1980, Pat. No. 4,324,887, which is a continuation-in-part of Ser. No. 934,214, Aug. 16, 1978, Pat. No. 4,207,414. This application Oct. 29, 1981, Ser. No. 316,544

Int. Cl.^{3} C12P *19/04*

U.S. Cl. 435—101 **19 Claims**

1. In a method of making a polysaccharide vaccine against Group B streptococci which comprises culturing the streptococci in a nutrient broth the improvement which comprises introducing into the broth at least 10 g/l of glucose and maintaining the pH of the broth at pH 6–8 to provide polysaccharide antigen including a fraction having a molecular size above 0.8×10^6 d, and recovering said antigen from the broth.

4,356,264

ZINC-CONTAINING ANTIBIOTIC AGENTS

Jerome L. Martin, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Apr. 11, 1980, Ser. No. 139,597

Int. Cl.^{3} C12P *17/18;* **A61K** *31/555;* **C12R** *1/465*

U.S. Cl. 435—119 **15 Claims**

1. A method for producing a zinc complex of a mono-nitrogen containing divalent pyrrole ether antibiotic, said method comprising:

(a) fermenting a fermentation broth inoculated with a Streptomyces microorganism capable of producing by fermentation of the broth the antibiotic X-14547 for a period of time and under suitable fermentation conditions in order to produce said antibiotic in said fermentation broth:

(b) providing in said antibiotic containing fermentation broth a water-soluble zinc salt in an amount sufficient to form a zinc complex of X-14547, which complex is insoluble in the fermentation broth; and recovering said insoluble zinc complex of X-14547 from said fermentation broth, wherein the fermentation of the inoculated broth is conducted at a temperature of from about 25° C. to 35° C. and at a pH of from about 6.5 to 7.5.

4,356,265

METHOD FOR THE PRODUCTION OF ANTIBIOTIC C-15003 P-3

Kazunori Hatano, Kawanishi; Masanari Nakamichi, Amagasaki, and Shun-ichi Akiyama, Fujisawa, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 24, 1980, Ser. No. 209,983

Claims priority, application Japan, Dec. 28, 1979, 54-173819

Int. Cl.^{3} C12P *17/18*

U.S. Cl. 435—119 **6 Claims**

1. A method for producing and accumulating Antibiotic C-15003 P-3 which comprises cultivating a microorganism belonging to the genus Nocardia which is capable of producing Antibiotic C-15003 in a culture medium, said culture medium including a member selected from the group consisting of isobutyl aldehyde, isobutyl alcohol and a fatty acid ester of isobutyl alcohol.

4,356,266

PROCESS FOR THE HYDROLYSIS OF STARCH AND FERMENTABLE HYDROLYSATES OBTAINED THEREFROM

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 43,191, May 29, 1979, abandoned. This application Aug. 15, 1980, Ser. No. 178,335

Int. Cl.^{3} C12P *7/14, 19/14, 19/20*

U.S. Cl. 435—162 26 Claims

1. A process for the hydrolysis of starch to provide an aqueous solution of fermentable sugar which comprises:

(a) liquefying an aqueous slurry of starch in the presence of a liquefying agent selected from the group consisting of strong acid and liquefying enzyme to provide sterile liquefied partially hydrolyzed starch;

(b) partially saccharifying the liquefied partially hydrolyzed starch in a primary saccharification vessel or vessels in the absence of added starch hydrolysate in the presence of a saccharifying enzyme to provide sterile saccharified starch containing from about 60 to about 80 weight percent of the original starch in the form of fermentable sugar, the remaining portion of the starch being present in the form of partial hydrolysate; and,

(c) further saccharifying the partially saccharified starch resulting from step (b) in a secondary vessel or vessels having a total volume of at least $V_2=V_1$ (x/y) wherein V_1 is the total volume of the fermentation medium in the primary saccharification vessel or vessels, x is the period of saccharification in the secondary saccharification vessel or vessels and y is the period of saccharification in the primary saccharification vessel or vessels.

4,356,267

ENZYME IMMOBILIZATION IN CELLULOSIC HOLLOW FIBRES

Lanfranco Callegaro, Padova; Antonio Boniolo, Saluggia; Ennio Denti, Pino Torinese; Umberto Rosa, Turin, and Valdano Rossi, San Benedetto Po, all of Italy, assignors to Sorin Biomedica S.p.A., Saluggia, Italy

Filed Feb. 12, 1981, Ser. No. 233,702

Claims priority, application Italy, Feb. 13, 1980, 67212 A/80; Feb. 12, 1981, 67023 A/81

Int. Cl.^{3} C12N *11/12;* **C12M** *1/40;* **B01D** *13/00*

U.S. Cl. 435—179 20 Claims

1. A method for immobilizing an enzyme in a bundle of cellulosic hollow fibres for a fibre-bundle dialyzer for purifying blood, comprising the following sequential steps:

(a) activating said cellulosic hollow fibres by circulating through the lumen of the fibres in the bundle an aqueous solution of sodium periodate at a concentration of 0.7–2.1 mg/ml, at a circulation rate of 300–500 mm^3/minute/mm^2 at a temperature of 15°–30° C. for a period of time not exceeding 70 minutes.

(b) removing excess sodium periodate by circulating through the lumens of the fibres in the bundle deionized water to a total volume amounting to at least 10 times the total volume of the lumens of the fibres, and subsequently circulating a dilute aqueous solution of glycerol to the lumens of the fibres in the bundle; and

(c) directly or indirectly anchoring the enzyme to the activated cellulosic fibres through covalent linkages.

4,356,268

MICROORGANISM FOR TREATING WASTE WATER

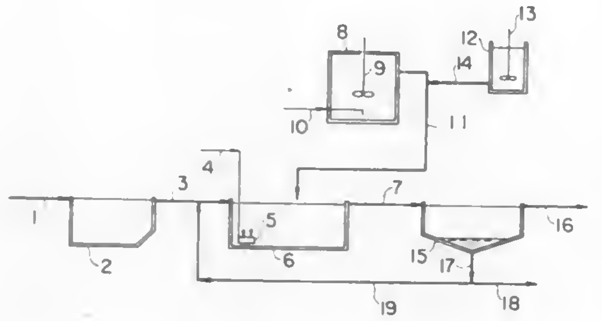
Norio Shimizu; Yoji Odawara, both of Hitachi, and Yasunori Masaki, Yamaguchi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 46,236, Jun. 7, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,222

Claims priority, application Japan, Sep. 22, 1978, 53-115813

Int. Cl.^{3} C12N *1/20*

U.S. Cl. 435—253 6 Claims



1. A biologically pure culture of the microorganism *Alcaligenes faecalis* having the identifying characteristics of ATCC 31529, said culture being:

capable of growth at 10° C.;
incapable of growth at 37° C.;
capable of reducing nitrate to nitrite;
incapable of utilizing nitrate as source of inorganic nitrogen;
incapable of growth at pH 4.95;
capable of hydrolyzing urea; and
capable of forming flocs when mixed with activated sludge in a waste water treatment process.

4,356,269

PLANT FOR THE PRODUCTION OF METHANE

Ove Thomsen, Växjö, and Peter Rönnow, Mölnlycke, both of Sweden, assignors to A-Betone AB, Växjö, Sweden

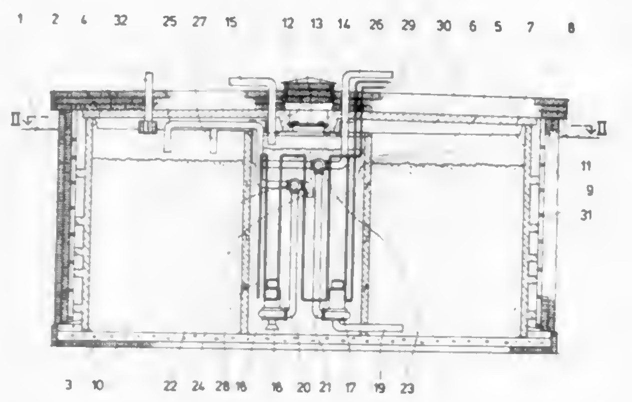
PCT No. PCT/SE79/00041, § 371 Date Nov. 6, 1979, § 102(e) Date Nov. 6, 1979, PCT Pub. No. WO79/00719, PCT Pub. Date Oct. 4, 1979

PCT Filed Feb. 28, 1979, Ser. No. 170,673

Claims priority, application Sweden, Mar. 6, 1978, 7802501-2

Int. Cl.^{3} C12M *1/02*

U.S. Cl. 435—316 4 Claims



1. An apparatus for the production of methane from a biomass substrate comprising organic materials by culturing and growing therein of anaerobic thermophilic organisms capable of releasing methane from a biomass, comprising a processing chamber (**8**, **41**) for enclosing said biomass substrate containing said culture during methane formation; said processing chamber including means (**32**, **39**) for collecting and removing the methane formed; and antechamber (**7**, **14**) connected to said processing chamber via conduit means (**20**, **21**, **18**, **25**, **27**, **47***a*, **47***b*); said antechamber including means (**28**, **45**) for heating said fresh substrate; pumping means (**16**,**17**, **47**) for transferring heated substrate from said antechamber (**7**,**40**) to said processing chamber (**8**, **41**) and for mixing and distributing said heated substrate throughout said chambers said pumping means (**16**, **17**, **47**) including valve means for directing the discharge of said pumping means between the transfer and introduction of the substrate from said antechamber (**40**) to said processing chamber (**41**) and for mixing and distributing by pumping action of said biomass substrates within each of said chambers.

4,356,270

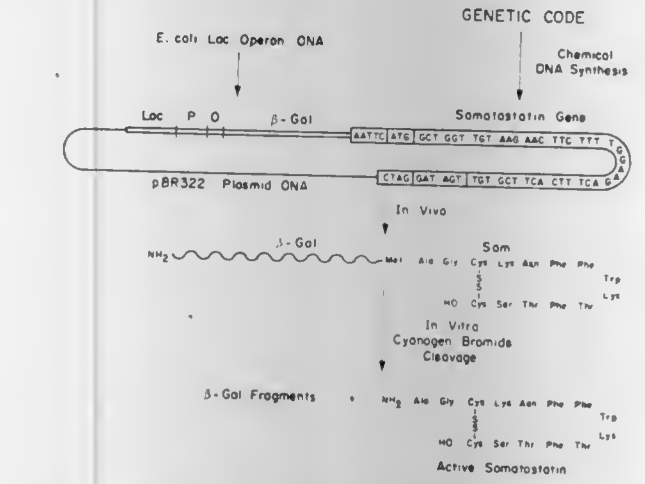
RECOMBINANT DNA CLONING VEHICLE

Keiichi Itakura, Arcadia, Calif., assignor to Genentech, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 849,691, Nov. 8, 1977, abandoned. This application Nov. 5, 1979, Ser. No. 91,334

Int. Cl.^{3} C12N *1/00*

U.S. Cl. 435—317 9 Claims



1. A recombinant microbial cloning vehicle comprising a first restriction endonuclease recognition site, a structural gene coding for the expression of the amino acid sequence of a mammalian polypeptide, and a second restriction endonuclease site, at least a majority of the codons of said structural gene being codons preferred for the expression of microbial genomes.

4,356,271

NONCOLLAPSIBLE CERAMIC FOAM

Thomas L. Francis, Murrysville; John E. Marhanka, Delmont, and Raymond P. Heilich, Upper Burrell Township, Westmoreland County, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 153,596, May 27, 1980, abandoned. This application Apr. 16, 1981, Ser. No. 254,926

Int. Cl.^{3} C04B *21/00*

U.S. Cl. 501—84 11 Claims

1. A method for making a stabilized foamed ceramic material suitable for use in making a refractory that is resistant to attack from molten metal, the method comprising the steps of:

(a) mixing ceramic particles, foaming agent, calcium aluminate cement, and a colloidal bonding material with water for a time sufficient to produce a foamed slurry of constant volume; and

(b) mixing phosphoric acid with said foamed slurry for a time sufficient to produce a foamed slurry of increased constant volume.

4,356,272

SINTERED BODIES AL$_2$O$_3$-TIC-TIO$_2$ CONTINUING YTTRIUM (Y)

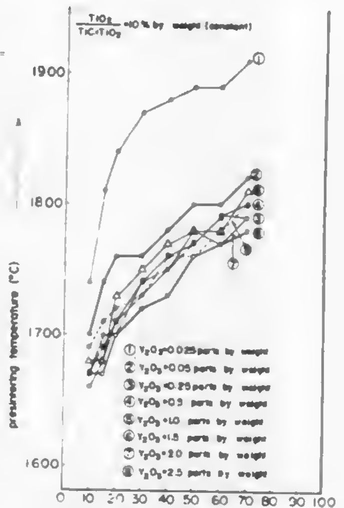
Yutaka Kanemitsu, Fukuoka; Takehiko Hagio, Dazaifu; Mitsuhiko Furukawa, Fukuoka; Michito Miyahara, Nakagawa; Yoshimichi Hara, and Takashi Kitahira, both of Fukuoka, all of Japan, assignors to Nippon Tungsten Co., Ltd., Fukuoka, Japan

Filed Mar. 24, 1981, Ser. No. 247,039

Claims priority, application Japan, Mar. 29, 1980, 55-041071

Int. Cl.^{3} C04B *35/00, 35/10, 35/46, 35/56*

U.S. Cl. 501—87 6 Claims



1. A sintered body consisting essentially of:

(1) 100 parts by weight of titanium carbide, titanium oxide and aluminumoxide, said titanium carbide and titamium oxide accounting for 15 to 60 percent by weight and said aluminum oxide accounting for 85 to 40 percent by weight, the amount of said titanium oxide relative to said titanium carbide and titanium oxide being 5 to 15 percent by weight, and

(2) 0.039 to 1.575 parts by weight of yttrium, wherein said yttrium and titanium oxide exist in at least one of the following forms, (a) yttrium oxide, (b) a composition of yttrium oxide and titanium carbide, (c) a composition of yttrium oxide, titanium carbide and yttrium carbide, (d) a double carbide of titanium carbide and yttrium carbide, (e) a solid solution of aluminum oxide, yttrium oxide and titanium oxide, (f) a composition of solid solution consisting of aluminum oxide, yttrium oxide and titanium oxide and a double carbide of titanium carbide and yttrium carbide, (g) a composition of solid solution consisting of aluminum oxide, yttrium oxide and titanium oxide and titanium carbide, (h) a composition of solid solution consisting of aluminum oxide, yttrium oxide and titanium oxide and yttrium carbide, (i) a composition of solid solution consisting of aluminum oxide, yttrium oxide and titanium oxide and a solid solution consisting of titanium oxide, yttrium carbide and titanium carbide and (j) a composition of solid solution consisting of aluminum oxide, yttrium oxide and titanium oxide and a solid solution consisting of titanium carbide and titanium oxide.

4. A sintered body consisting essentially of:

(1) 100 parts by weight of titanium carbide, titanium oxide and aluminum oxide, said titanium carbide and titanium oxide accounting for 15 to 60 percent by weight and said aluminum oxide accounting for 85 to 40 percent by weight, the amount of said titanium oxide relative to said titanium carbide and titanium oxide being 5 to 15 percent by weight,

(2) 0.039 to 1.575 parts by weight of yttrium, and

(3) 0.1 to 1.0 part by weight of at least one sintering aid selected from a group consisting of nickel oxide, molybdenum oxide, chromium oxide, cobalt oxide, magnesium oxide, iron oxide and manganese oxide, wherein said yttrium, titanium oxide and sintering aid exist in at least

one of the following forms, (a) yttrium oxide, (b) a composition of yttrium oxide and titanium carbide, (c) a composition of yttrium oxide, titanium carbide and yttrium carbide, (d) a double carbide of titanium carbide and yttrium carbide, (e) a solid solution of aluminum oxide, yttrium oxide, titanium oxide and at least one of said sintering aids, (f) a composition of solid solution consisting of aluminum oxide, yttrium oxide, titanium oxide and at least one of said sintering aids and a double carbide of titanium carbide and yttrium carbide, (g) a composition of solid solution consisting of aluminum oxide, yttrium oxide, titanium oxide and at least one of said sintering aids and titanium carbide, (h) a composition of solid solution consisting of aluminum oxide, yttrium oxide, titanium oxide and at least one of said sintering aids and yttrium carbide, (i) a composition of solid solution consisting of aluminum oxide, yttrium oxide, titanium oxide and at least one of said sintering aids and a solid solution consisting of titanium oxide, yttrium carbide and titanium carbide and (j) a composition of solid solution consisting of aluminum oxide, yttrium oxide titanium oxide and at least one of said sintering aids and a solid solution consisting of titanium carbide and titanium oxide.

4,356,273

FLUOROCHEMICAL FOAM STABILIZER AND FOAMED POLYURETHANES MADE THEREWITH

Fredrich A. Soch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 34,383, Apr. 30, 1979, Pat. No. 4,289,892, which is a continuation of Ser. No. 20,113, Mar. 3, 1970, abandoned. This application Dec. 22, 1980, Ser. No. 218,967

Int. Cl.^{3} C08G *18/14*

U.S. Cl. 521—114 **13 Claims**

1. In a process for preparing a foamed polyurethane, the improvement comprising using a fluoroaliphatic radical-substituted poly(oxyalkylene)polyol as a foam stabilizer, wherein said stabilizer has the formula:

$$(R_f)_mQ_z[(RO)_xH_y]_n$$

where R_f is a fluorinated, saturated, aliphatic radical, R is a saturated aliphatic hydrocarbyl radical, H is an active hydrogen atom, Q is a linkage free of active hydrogen atoms and having a valence of m+n, m and n are integers of at least 1, z is an integer of 1-3, x is an integer of at least 25, y is an integer of at least 1, and the product ny is at least 2.

4,356,274

SMOKE SUPPRESSED RIGID POLYURETHANE FOAM

Stanley R. Sandler, Springfield, and Jeffrey D. Miano, Norristown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 897,617, Apr. 19, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,400

Int. Cl.^{3} C12P *17/14*

U.S. Cl. 521—120 **6 Claims**

1. A rigid polyurethane foam prepared from a reaction mixture which includes a smoke suppressing amount of a compound selected from the group consisting of ferrous 2-mercaptobenzothiazole, cupric 2-mercaptobenzothiazole, ferrous 2,5-dimercapto-1,3,4-thiadiazole, cupric 2,5-dimercapto-1,3,4-thiadiazole, and zinc 2,5-dimercapto-1,3,4-thiadiazole.

4,356,275

AMINOPLAST FOAMS

Kuno Wagner; Manfred Dahm, and Hanns P. Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 766,680, Feb. 8, 1977, abandoned. This application Oct. 19, 1981, Ser. No. 312,225

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605891

Int. Cl.^{3} C08L *61/00;* C08G *12/12*

U.S. Cl. 521—136 **3 Claims**

1. An aminoplast foam consisting of a hardened reaction product of an aldehyde and an at least bifunctional modified α,ω-urea having a molecular weight of from 200 to 10,000 and corresponding to the formula

$$R—(O—CO—NH—R'—NH—CO—NH_2)_n$$

in which R represents an n-functional radical which contains at least one of ether, thioether, acetal, ester, ester amide and carbonate groups and has a molecular weight of from 44 to 10,000, and R' represents the radical of an at least bifunctional isocyanate and n is an integer from 2 to 4.

4,356,276

BINDER COMBINATION FOR CATHODICALLY DEPOSITABLE PAINTS

Helmut Hönig; Wolfgang Leitner, and Georg Pampouchidis, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Sep. 15, 1981, Ser. No. 302,661

Claims priority, application Austria, Sep. 25, 1980, 4768/80

Int. Cl.^{3} C08L *63/00*

U.S. Cl. 523—404 **10 Claims**

1. A binder combination for cationically dispositable paints based on modified epoxy resins comprising
   - (A) 40 to 80% by weight of an epoxy resin having an epoxy equivalent of from 150 to 800, the epoxy groups of which are esterified with equimolar quantities of a member of the group consisting of acrylic acid; methacrylic acid; a semiester of a dicarboxylic acid anhydride and mixtures thereof, and a hydroxyalkyl(meth)acrylate, the free hydroxy groups thereof being reacted totally or partially with a reaction product obtained from equimolar quantities of toluene diisocyanate and a dialkanolamine;
   - (B) 5 to 30% by weight of an epoxy resin having an expoxy equivalent of from 150 to 800, the epoxy groups of which are reacted with equimolar quantities of a member of the group consisting of a dialkylamine, a dialkanolamine and mixtures thereof, the free hydroxy groups thereof being reacted totally or partially with a reaction product of equimolecular amounts of toluene diisocyanate and hydroxyalkyl(meth)acrylate, and
   - (C) 10 to 40% by weight of an epoxy resin having an epoxy equivalent of between 150 and 800,
     - 30 to 60 mole % of the epoxy groups thereof being reacted with a semi-ester of a dicarboxylic acid anhydride and an N-2-hydroxyalkyloxazolidin, and
     - 10 to 50 mole % of the epoxy groups thereof being reacted with a primary and/or secondary amine, the unconsumed rest being reacted with a saturated and/or unsaturated monocarboxylic acid.

4,356,277

REACTION PRODUCTS OF A POLYGLYCIDYL ETHER OF A POLYPHENOL AND AN AMINO ACID AND AQUEOUS SOLUBILIZED PRODUCTS THEREFROM

William J. Birkmeyer, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 775,490, Mar. 8, 1977, Pat. No. 4,299,747. This application Aug. 28, 1978, Ser. No. 937,378

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.^{3} C08G *8/10, 12/32, 59/14;* C08K *3/20*

U.S. Cl. 523—406 **13 Claims**

1. An anionic aqueous composition comprising water and
   - (1) an at least partially based neutralized reaction product of:
     - (a) a polyglycidyl ether of a polyphenol having a 1,2-epoxy equivalency greater than 1.0; and
     - (b) an aromatic amino acid selected from the class consisting of anthranilic acid, p-aminobenzoic acid, m-aminobenzoic acid, 3-amino-p-toluic acid, 3-aminosalicylic acid, 3-amino-4-methoxybenzoic acid, 6-amino-m-toluic acid, 3-amino-4-chlorobenzoic acid, 2-amino-5-nitrobenzoic acid, 2-nitro-5-aminobenzoic acid, 5-aminoisophthalic acid;

     said reaction product having unreacted carboxylic acid groups which are neutralized with base to form anionic salt groups,
   - (2) a curing agent for said reaction product selected from the class consisting of aminoplast resins, phenoplast resins or blocked or semi-blocked polyisocyanates.

4,356,278

HEAT-HARDENABLE RESINS SUITABLE FOR CATHODIC DEPOSITION

Wolfgang Daimer, and Heiner Verdino, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Oct. 23, 1978, Ser. No. 953,749

Claims priority, application Austria, Nov. 3, 1977, 7830/77

Int. Cl.^{3} C08L *63/08*

U.S. Cl. 523—414 **10 Claims**

1. Aqueous composition suitable for cathodic deposition in an electrodeposition system comprising the neutralized product of the reaction product of an unsaturated diene polymer carrying at least one 1,2-epoxy group per molecule, an amine compound containing amine functionality reactive with an epoxy group, and an alpha,beta-ethylenically unsaturated monomer free from epoxy reactive groups; the homopolymers of said monomer having a glass transition temperature of above about 320° K.

4,356,279

2,2,6,6-TETRAMETHYL-4-PIPERIDYL-SUBSTITUTED HETEROCYCLIC RING COMPOUND AND POLYMERS CONTAINING SAME

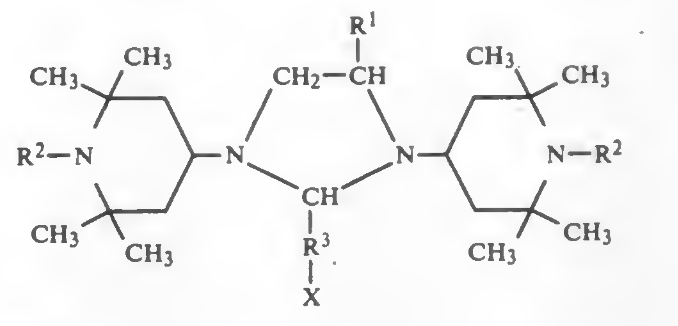
Kenneth R. Molt, Cincinnati, Ohio, assignor to Carstab Corporation, Reading, Ohio

Division of Ser. No. 117,878, Feb. 4, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 286,400

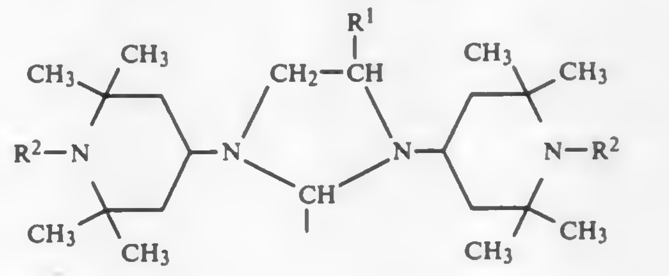
Int. Cl.^{3} C08K *5/34*

U.S. Cl. 524—102 **7 Claims**

1. An organic polymer composition comprising an organic polymer normally susceptible to deterioration induced by light, by heat or by a combination of light and heat and a stabilizingly effective amount of a compound having the following formula:



wherein
- R^1 is hydrogen or methyl;
  - R^2 is hydrogen, alkyl having 1 to 8 carbon atoms, unsubstituted aralkyl having 7 to 18 carbon atoms, or aralkyl having 7 to 18 carbon atoms having up to 3 substituents on the aryl ring selected from alkyl having 1 to 4 carbon atoms and alkoxy having 1 to 4 carbon atoms;
- R^3 is a straight or branched chain alkylene having 1 to 14 carbon atoms, straight or branched chain alkenylene having 2 to 14 carbon atoms and from 1 to 3 carbon-carbon double bond, unsubstituted arylene having 5 to 7 carbon atoms, or cycloalkylene having 5 to 7 carbon atoms; and
- X is a group having the following formula:



where R^1 and R^2 are as defined above.

4,356,280

ADDITIVE DISPERSIONS AND PROCESS FOR THEIR INCORPORATION WITH FIBER-FORMING POLYMERS

Rodney L. Wells, Chester; Monty L. Rowe, Midlothian, both of Va.; Samuel L. Yates, Lexington, S.C., and George R. Muller, Hopewell, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 15, 1981, Ser. No. 254,348

Int. Cl.^{3} C08K *5/09;* D06M *13/00, 13/20*

U.S. Cl. 524—148 **39 Claims**

1. A dispersion for incorporation with polyamide polymer, said dispersion comprising:
   - (a) 20 to 80 weight percent of at least one polymer additive having an average diameter of up to 0.5 micron at spinning temperature; and
   - (b) 20 to 80 weight percent of a glyceride which is non-resin forming when exposed to temperatures of up to 280° C. and pressures of up to 4000 psig (27,600 kPa) for up to 30 seconds, and which has an average molecular weight of between about 600 and 2400.

30. In a process for melt-spinning yarn from fiber-forming polyamide polymer the improvement comprising:
- adding to the polymer prior to spinning a dispersion comprising;
- 20 to 80 weight percent of at least one polymer additive having an average diameter of up to 0.5 micron at spinning temperature; and 20 to 80 weight percent of a glyceride which is non-resin forming when exposed to temperatures up to 280° C. and pressures of up to 4000 psig (27,600 kPa) for up to 30 seconds, and which has an average molecular weight of between 600 and 2400.

31. The process of claim **30** wherein the dispersion is added into the polymer when the polymer is in chip form.

4,356,281

POLYETHYLENE TEREPHTHALATE MOLDING COMPOSITION HAVING REDUCED FLAMMABILITY, AND MOLDED PRODUCTS MADE THEREFROM

Ted Brink, Arnhem, and Stephanus A. G. de Graaf, Renkum, both of Netherlands, assignors to Akzo NV, Arnhem, Netherlands

Filed Oct. 7, 1980, Ser. No. 194,941

Claims priority, application Netherlands, Oct. 8, 1979, 7907435

Int. Cl.^{3} C08L *5/09*

U.S. Cl. 524—397 **16 Claims**

1. A flame retardant polyethylene terephthalate molding composition which contains as flame retardant additive a complex salt of oxalic acid, characterized in that, based on the weight of the total composition, the molding composition contains:

(a) 5–15% by weight of at least one of the oxalic acid salts selected from the group consisting of $K_3[Al(C_2O_4)_3]$, $K_2[Mg(C_2O_4)_2]$ and $Rb_3[Al(C_2O_4)_3]$; and

(b) 0.1–0.5% by weight of polytetrafluoroethylene having a number average molecular weight, $\overline{M}n$, higher than 10^5.

4,356,282

PHOSPHINE SUPPRESSANTS FOR POLYMERIC COMPOSITIONS INCLUDING RED PHOSPHORUS AS A FLAME RETARDANT

Theodore Largman, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 6, 1981, Ser. No. 280,565

Int. Cl.^{3} C08K *5/09, 3/16, 3/02*

U.S. Cl. 524—398 **7 Claims**

1. In a polymeric composition of the type comprising one or more organic thermoplastic, thermosetting, and/or elastomeric polymeric materials and red phosphorus as a flame retardant, the improvement comprising:

at least about 0.05 weight percent based on the total weight of the composition to suppress phosphine evolution of a phosphine suppressant selected from the group consisting of cuprous chloride, cupric chloride, cuprous acetate, cupric acetate, copper metal and mixture thereof.

4,356,283

VINYL CHLORIDE POLYMER MIXTURES FOR PROCESSING AS PLASTISOLS OR ORGANOSOLS

Jürgen Weinlich, Eppstein; Otto Plewan, Neuötting, both of Fed. Rep. of Germany; Hans-Joachim Leugering, deceased, late of Burgkirchen, Fed. Rep. of Germany; by Ursula M. Leugering nee Wegener, heiress, Hamm, Fed. Rep. of Germany; by Lothar Leugering, heir, Wildeck, Fed. Rep. of Germany; by Manfred Leugering, heir, Frankfurt am Main, Fed. Rep. of Germany; by Rita Bahn nee Leugering, heiress, Liederbach, Fed. Rep. of Germany, and by Günter Leugering, heir, Frankfurt am Main, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 11, 1981, Ser. No. 262,172

Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018940

Int. Cl.^{3} C08L *27/06, 51/00*

U.S. Cl. 524—504 **7 Claims**

1. A process for preparing a plasticized vinyl chloride polymer mixture sufficiently plasticized for processing as a plastisol or organosol, which comprises mixing together a plurality of vinyl chloride polymers with a plasticizer, the resulting plasticized vinyl chloride polymer mixture comprising:

a plasticizing amount of said plasticizer,

a vinyl chloride polymer which is a homopolymer or copolymer, and

5–70% by weight, relative to the total quantity of polymers in the mixture, of another vinyl chloride polymer which is a graft copolymer having a K value of 50 to 80 and an average particle size of 20 to 60 μm and which contains:

99.5 to 88% by weight, relative to the graft copolymer, of polymerized vinyl chloride units,

0.1 to 11.9% by weight, relative to the graft copolymer, of polymerized vinyl acetate units, and

0.1 to 2.2% by weight, relative to the graft copolymer, of polymerized ethylene units, with the proviso that the total of the polymerized units of ethylene and vinyl acetate is 0.5 to 12% by weight, relative to the graft copolymer;

said graft copolymer having been prepared in the presence of at least one oil-soluble activator which decomposes to give free radicals, a suspension stabilizer and an emulsifier, the graft copolymer having been prepared by polymerizing vinyl chloride or a mixture of vinyl chloride and vinyl acetate in the presence of 0.45 to 2.5% by weight, relative to the monomer or mixture of monomers employed, of a copolymer which contains 20 to 80% by weight, relative to the copolymer, of polymerized ethylene units, and which has a molecular weight, determined by osmotic methods, of 5,000 to 200,000.

4,356,284

THERMOPLASTIC COMPOSITIONS CONTAINING POLYVINYLIDENE FLUORIDE AND CHLORINATED POLYETHYLENE

Thomas A. Kutnyak; Mahendra N. Desai, both of Greenwood, S.C., and Roy A. Berman, Ashland, Ohio, assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Oct. 29, 1981, Ser. No. 316,292

Int. Cl.^{3} C08L *23/28, 27/08*

U.S. Cl. 524—520 **8 Claims**

1. A thermoplastic composition comprising an intimate resin admixture of from 50 to 95% of chlorinated polyethylene with from 50 to 5% of polyvinylidiene fluoride by total resin weight.

4,356,285

THERMOSETTING RESIN COMPOSITION

Yugo Kumagai, Hitachi, Japan, assignor to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,063

Claims priority, application Japan, Sep. 19, 1980, 55/131327; Sep. 19, 1980, 55-131329

Int. Cl.^{3} C08L *63/00, 67/00*

U.S. Cl. 525—111 **11 Claims**

1. A thermosetting resin composition which comprises, as the main components, (A) an epoxy group-containing polyester resin obtained by reacting a hydroxy group-containing polyester resin with an epoxy ester resin intermediate having both epoxy and alkyl ester groups, which intermediate being obtained, in turn, by reacting a polyepoxy compound having at least two epoxy groups with a monoalkyl terephthalate, and (B) a hardener containing two or more carboxy groups.

4,356,286

THERMOPLASTIC ELASTOMER BLENDS OF A NITRILE RUBBER AND A CRYSTALLINE POLYAMIDE MIXTURE

Tristram W. Bethea, Akron, and Shingo Futamura, Wadsworth, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 23, 1981, Ser. No. 246,838

Int. Cl.^{3} C08L *77/00*

U.S. Cl. 525—183 **6 Claims**

1. A process for preparing blends of a nitrile rubber and a crystalline polyamide mixture, comprising the steps of:

obtaining a nitrile rubber, the amount of nitrile component in said nitrile rubber ranging from about 10 percent to about 60 percent by weight, said nitrile component being derived from monomers selected from the group consisting of acrylonitrile, methacrylonitrile, vinylidene cyanide, and fumaronitrile, the diene component of said nitrile rubber being derived from monomers selected from the group consisting of (1) conjugated dienes having from 4 to

10 carbon atoms, (2) at least two conjugated dienes having from 4 to 10 carbon atoms, (3) chloroprene, (4) vinyl substituted aromatic compounds having from 7 to 12 carbon atoms and (a) conjugated diene having from 4 to 10 carbon atoms or (b) chloroprene and combinations thereof;

adding to and blending with said nitrile rubber a crystalline polyamide mixture of a first polyamide having a high melting point and a second polyamide having a lower melting point than said first polyamide, the total amount of said polyamide mixture ranging from about 80 percent to about 20 percent by weight based on said nitrile rubber and the total weight of said polyamides; and,

mixing and heating said nitrile rubber and said polyamide mixture at a temperature below the melting point of said first polyamide having the higher melting point and above the melting point of said second polyamide having said lower melting point to produce a processable thermoplastic elastomer blend, said mixing temperature ranging from 185° to 220° C.

4,356,287

NOVEL POLYMERIC LIGHT STABILIZERS FOR POLYMERS

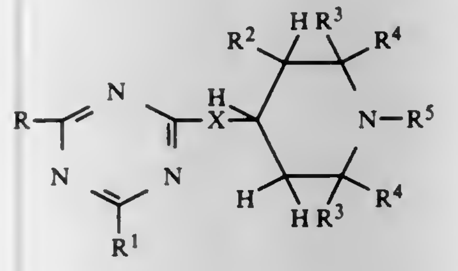
Frank F. Loffelman, Bridgewater, and Thomas E. Brady, Whitehouse Station, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,881

Int. Cl.^{3} C08F *26/06;* **C08L** *39/04*

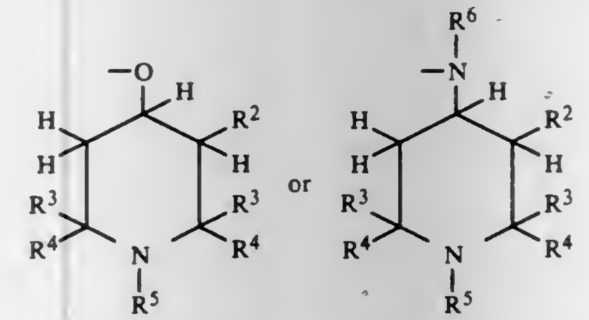
U.S. Cl. 525—204 **12 Claims**

1. A polymer prepared by the polymerization of a monomer, represented by formula (I)

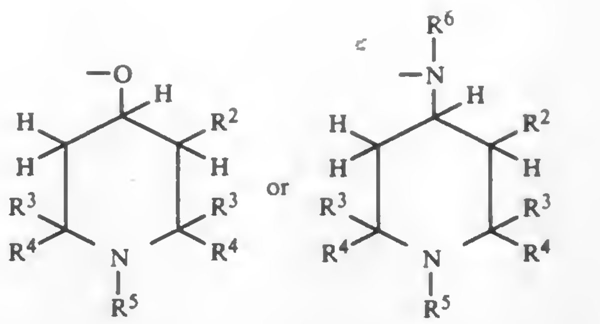


(I)

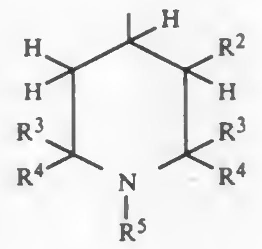
wherein R represents C_3–C_6 alkenyloxy, C_3–C_6 alkenylamino, or di(C_3–C_6 alkenyl)amino; R^1 represents C_1–C_8 alkyl, C_1–C_8 alkoxy, halo, C_1–C_8 alkylthio, C_3–C_6 alkenyloxy, amino, C_3–C_6 alkenylamino, di(C_3–C_6 alkenyl)amino, the groups



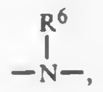
wherein R^2, R^3, R^4, R^5, and R^6 are as defined below, C_1–C_{18} alkylamino, C_1–C_{18} dialkylamino, morpholino, piperidino, pyrrolidyl, a substituted C_1–C_{18} alkylamino, or a substituted C_1–C_{18} dialkylamino, wherein the substituents are selected from amino, cyano, carboxy, alkoxycarbonyl wherein the alkoxy moiety has 1 to 8 carbon atoms, and the groups



wherein R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; and R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; R^6 represents hydrogen, C_1–C_8 alkyl, or



wherein R^2, R^3, R^4, and R^5 are as previously defined; X is oxy, or



$$-\overset{R^6}{\overset{|}{N}}-,$$

wherein R^6 is as previously defined.

7. A method for stabilizing a polymer which is normally subject to degradation by ultraviolet radiation which comprises incorporating into said polymer an ultraviolet stabilizingly effective amount of a polymer of claim **1**.

4,356,288

NOVEL POLYMERS OF ALKYL ACRYLATES

Sheldon N. Lewis, LePlan de Grasse, France, and Richard A. Haggard, Fort Washington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 17,507, Mar. 5, 1979, Pat. No. 4,246,370, which is a division of Ser. No. 629,186, Nov. 5, 1975, Pat. No. 4,185,736, which is a continuation-in-part of Ser. No. 241,177, Apr. 5, 1972, abandoned. This application May 19, 1980, Ser. No. 151,052

Int. Cl.^{3} C08F *220/10*

U.S. Cl. 525—308 **9 Claims**

1. A process for preparing a free radical polymerized polymer which comprises the steps of preparing an alkoxide-polymerized addition polymer of at least one ester of acrylic acid wherein the average chain length of the polymer, n, is about 6 to about 30 mers and reacting the alkoxide polymerized polymer with an ethylenically unsaturated monomer under free radical polymerization conditions.

4,356,289

POLYMERIC N-HALOGENOAMIDES ON THE BASIS OF ACRYLAMIDE AND METHACRYLAMIDE

Hans-Georg Zengel, Kleinwallstadt; Manfred Bergfeld, and Rainer Zielke, both of Erlenbach, Fed. Rep. of Germany, assignors to AKZO N.V., Arnhem, Netherlands

Division of Ser. No. 131,368, Mar. 18, 1980. This application Jan. 9, 1981, Ser. No. 223,720

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931572

Int. Cl.^{3} C08F *8/22*

U.S. Cl. 525—358 **4 Claims**

1. A process for making polyfunctional N-chloramide derivatives of homo- or copolymers of acrylamide or methacrylamide comprising chlorinating a homo- or copolymer of acrylamide or methacrylamide by means of chlorine in an dilute aqueous suspension of a mineral acid at a temperature of 0° to 40° C.

4,356,290

BLOCK POLYMERS OF POLYPHENYLENE OXIDE AND AROMATIC POLYFORMALS

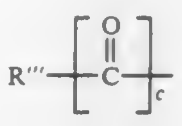
Dwain M. White, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,662

Int. Cl.^{3} C08G *81/00, 65/38*

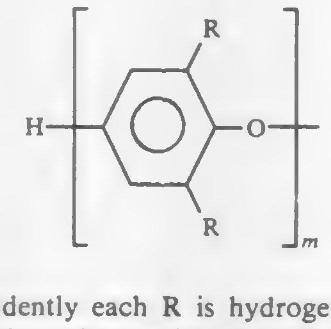
U.S. Cl. 525—397 **7 Claims**

2. A coupled polyphenylene oxide aromatic polyformal block copolymer comprising an acyl radical of the formula:

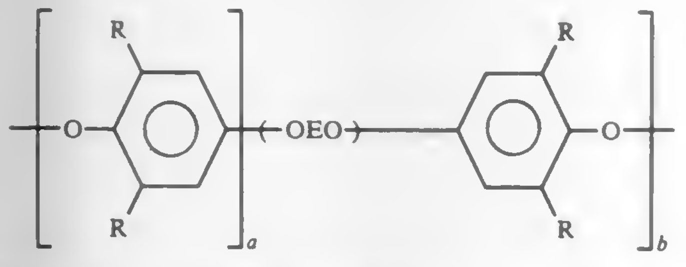


$$R'''\left[\overset{O}{\overset{\|}{C}}\right]_c$$

wherein c is a number at least equal to 2, and R''' is C_{1-8} alkylene, C_{1-8} alkenylene, phenylene, halophenylene and C_{1-18} alkyl substituted phenylene; a polyphenylene oxide radical of the formulas:



wherein independently each R is hydrogen, a hydrocarbon radical, a halohydrocarbon radical, a hydrocarbonoxy radical or a halohydrocarbonoxy radical, m is a number of at least 1, or



wherein independently each —(OEO)— is a divalent quinone residue, E is a divalent arene radical, either a or b is at least equal to 1, the sum of a plus b is at least equal to 10, R is the same as above, and an aromatic polyformal radical of the formula:

$$\{OR'OCH_2\}_nO.$$

wherein n is an integer at least equal to 1, and R' is a divalent aromatic radical.

4,356,291

PURIFICATION AND POLYMERIZATION OF HEXAFLUOROPROPYLENE OXIDE

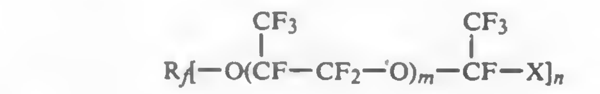
Thomas R. Darling, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1981, Ser. No. 250,905

Int. Cl.^{3} C08G *65/22*

U.S. Cl. 525—403 **22 Claims**

1. A polymer of hexafluoropropylene oxide of the formula



$$R_f[-O(\overset{CF_3}{\overset{|}{C}}F-CF_2-O)_m-\overset{CF_3}{\overset{|}{C}}F-X]_n$$

wherein

X is COF, COOR, $CONR_2$, H, F, CN, Br, I, CH_2OH, CH_2NR_2, $C(CH_3)_2OH$, COO^-M^+, or $CF_2—O—CF_2CF_2I$,
R is hydrogen, alkyl, aryl, or cycloalkyl,
M^+ is a mono-, di-, tri- or tetra-valent metal ion,
R_f is the initiator residue and can be monofunctional or difunctional,
m is an integer greater than 200, and
n is 1 if R_f is monofunctional and 2 if R_f is difunctional.

4,356,292

POLYAROMATIC ETHER-KETO-SULFONES CURABLE BY DIELS-ALDER CYCLOADDITION

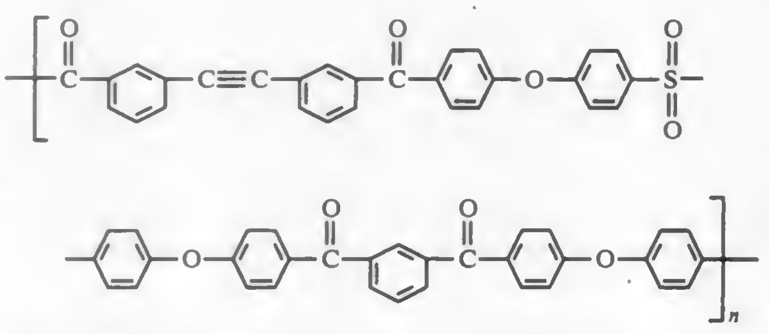
Venkatesa Sankaran, Wilmington, Del., and Carl S. Marvel, Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,521

Int. Cl.^{3} C08G *75/23*

U.S. Cl. 525—419 **6 Claims**

1. A polyaromatic ether-keto-sulfone containing acetylene units on the polymer chain and consisting essentially of recurring units having the following structural formula:



where n is an integer having a value of from about 20 to 30.

4,356,293

ORGANOSILOXANE BLOCK COPOLYMERS

Bernward Deubzer, Burghausen; Norbert Egerter, Emmerting; Volker Frey, Burghausen, all of Fed. Rep. of Germany, and Kurt Leitner, Ach, Austria, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 210,920

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003116

Int. Cl.^{3} C08G *77/44, 77/08*

U.S. Cl. 525—477 **5 Claims**

1. A process for preparing organosiloxane block copolymers which comprises reacting (a) organopolysiloxanes containing Si-bonded hydroxyl groups and having an average molecular weight of at least 800 g/mole in which at least 80 mole-percent

of the siloxane units of the organopolysiloxanes are represented by the formula $RSiO_{3/2}$, where R is an SiC-bonded organic radical and the remaining silicon valences are satisfied by siloxane oxygen atoms or hydroxyl groups with (b) diorganopolysiloxanes having one Si-bonded hydroxyl group in each terminal unit and an average of at least 10 silicon atoms per molecule in which siloxane units other than diorganosiloxane units are present in an amount which does not exceed about 20 mole percent, in the presence of (c) an organic solvent for the organopolysiloxanes and (d) an alkali metal carbonate.

4,356,294

PRODUCTION OF POLYOLEFINS HAVING IMPROVED ESCR

Louis J. Rekers, Wyoming; Richard J. French, Loveland, and Harry W. Mayhew, Cincinnati, all of Ohio, assignors to National Petro Chemicals Corp., New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,360

Int. Cl.^{3} C08F *4/02, 4/24*

U.S. Cl. 526—100 **8 Claims**

1. A method of improving the flexural properties in olefin resins by control of catalyst characteristics comprising polymerizing at least one olefin in the presence of a heat activated chromium containing catalyst system, said catalyst being modified by the incorporation of from about 0.1 to 10% by weight of an aluminum compound reactive with surface hydroxyl on the support said support comprising a controlled, reduced level of silanol groups produced by a drying treatment of a silica xerogel at a temperature of at least about 475° F. for a period of at least 1 hour, prior to interaction with said aluminum compound, said support at the time of interaction with said aluminum compound comprising a controlled selected level of water, in the range of 0.25 to 6.0% by weight of the support, and wherein the weight ratio of water to aluminum compound is 0.025 to 60, and the weight ratio of silanol group content to aluminum compound is 0.55 to 1.10.

4,356,295

PROCESS FOR POLYMERIZING OLEFINS

Masaki Fujii, and Shiro Goto, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed May 30, 1979, Ser. No. 43,732

Claims priority, application Japan, Jun. 5, 1978, 53-67446

Int. Cl.^{3} C08F *4/02, 10/06*

U.S. Cl. 526—125 **3 Claims**

1. A process for polymerizing propylene which comprises causing an olefin selected from propylene and a mixture of propylene and up to 20% by weight of another olefin to contact a catalyst comprising a combination of a component A and a component B thereby to cause the olefin to polymerize wherein:

said component A is a solid composition obtained by causing constituents (c) and (d) to react with each other in a molar ratio of (c): (d) of 1:1.1 to 500 to form binder constituent (c–d) and then causing constituents (a) and (b), in a weight ratio of (a): (b) of 1:0.01 to 1000 and (c–d) in a weight ratio of (a) to (c–d) of 1:0.005 to 50 to contact each other said binder constituent (c–d) being milled with said constituent (a),
the constituent (a) being a solid which contains magnesium chloride which has been subjected to milling,
the constituent (b) being a halogen containing titanium compound,
the constituent (c) being a halide of aluminum and
the constituent (d) being an organic compound selected from the group consisting of halohydrocarbons, halogen-containing organic acid esters, and alcohols, and
the component B is an organoaluminum compound.

4,356,296

FLUORINATED DIACRYLIC ESTERS AND POLYMERS THEREFROM

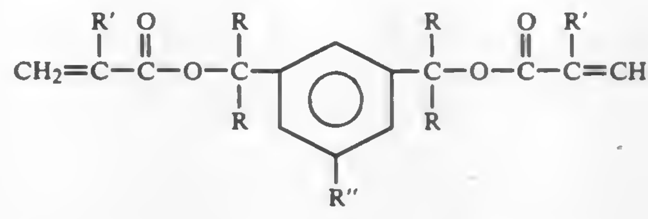
James R. Griffith, Riverdale, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1981, Ser. No. 237,838

Int. Cl.^{3} C08F *14/18*

U.S. Cl. 526—242 **10 Claims**

1. The polymer obtained from polymerizing a fluorodiacrylic ester represented by the formula:



where R represents —CF_3 or —C_2F_5, R' represents —H or —CH_3, R'' represents —H or —$(CF_2)_nR$, and n is an integer from 1 to 10.

4,356,297

IN-SITU FORMATION OF A DIPRIMARY AMINE CURING AGENT

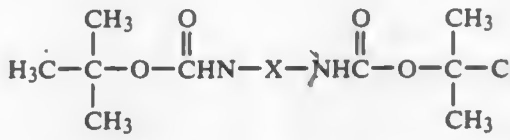
Yue G. L. Lee, Schenectady, and Charles D. Dudgeon, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1981, Ser. No. 225,108

Int. Cl.^{3} C08G *18/30*

U.S. Cl. 528—44 **10 Claims**

1. A composition of matter comprising a urethane of the formula:



$$H_3C-\underset{CH_3}{\overset{CH_3}{C}}-O-\overset{O}{\overset{\|}{C}}HN-X-NH\overset{O}{\overset{\|}{C}}-O-\underset{CH_3}{\overset{CH_3}{C}}-CH_3$$

wherein X is a divalent hydrocarbon radical of from 2 to 30 carbon atoms, optionally including the group —O—, —SO_2—, —S—, and an organic compound containing one or more radicals reactive with a primary amino group.

4,356,298

POLYAROMATIC ETHER-KETONE-SULFONES CONTAINING 1,3-BUTADIENE UNITS

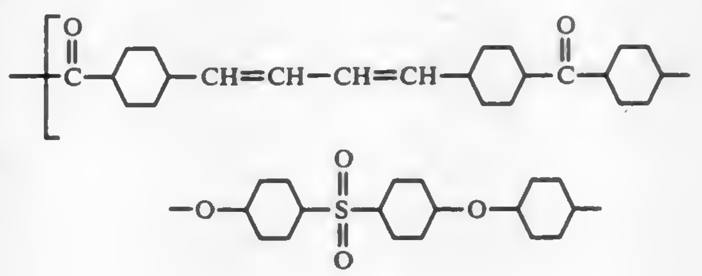
Carl S. Marvel, Tucson, Ariz., and Venkatesa Sankaran, Wilmington, Del., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,721

Int. Cl.^{3} C08G *75/23*

U.S. Cl. 528—173 **2 Claims**

1. A polyaromatic ether-ketone-sulfone containing 1,3-butadiene units and consisting essentially of recurring units having the following structural formula:



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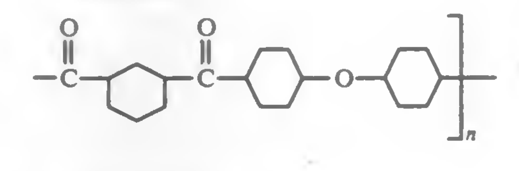


wherein n is an integer of from twenty to thirty.

4,356,299

CATALYST SYSTEM FOR A POLYETHYLENE TEREPHTHALATE POLYCONDENSATION

Michael S. Cholod, Cornwells Heights, Pa., and Nipun M. Shah, Fayetteville, N.C., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 4, 1982, Ser. No. 345,859

Int. Cl.³ C08G *63/04, 63/34*

U.S. Cl. 528—279 **24 Claims**

1. A polyethylene terephthalate polycondensation catalyst system comprising from about 2 parts to about 18 parts of catalyst metal in the form of an alkyl titanate and from about 40 parts to about 300 parts of catalyst metal in the form of an antimony compound, each of said metals being per million parts of polymer product.

4,356,300

POLYETHERPOLYAMIDE COPOLYMERS

Walter Isler, Paspels, and Eduard Schmid, Bonaduz, both of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Feb. 21, 1980, Ser. No. 123,224

Claims priority, application Switzerland, Feb. 26, 1979, 1866/79

Int. Cl.³ C08G *69/14*

U.S. Cl. 528—324 **8 Claims**

1. A thermoplastically processable, flexible polyether polyamide composition comprising the poly-condensation product of

a diamine having a polyether block taken from the class consisting of

$$H_2N—[—(CH_2)_n—O—]_m—(CH_2)_q—NH_2 \quad (I)$$

and

$$H_2N—(CH_2)_3—O—[—(CH_2)_4—O—]_p—(CH_2)_3—NH_2 \quad (II)$$

wherein n and q are individually at least 3, m is 3 to 30, and p is 2 to 30, and

a dicarboxylic acid,

whereby said polyether block is present in an amount of about 8 to about 60% by weight of said composition, said composition further comprising at least one polyamide constituent taken from the class consisting of caprolactam, laurolactam, and aminoundecanoic acid, the sum of all constituents being 100%.

4,356,301

POLYACETYLENE WITH ANTHRAQUINONE SYSTEM

Robert D. Gleim, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 22, 1980, Ser. No. 219,405

Int. Cl.³ C08K *5/42, 3/30*

U.S. Cl. 528—487 **31 Claims**

1. A process for reducing polyacetylene oxidation and embrittlement comprising the steps of treating said polyacetylene with a solution having a pH greater than 7, of a material selected from the class consisting of:

(a) A combination of anthraquinone or an anthraquinone salt, a base capable of maintaining a solution pH greater than 7, and a reducing agent capable of reducing anthraquinone or an anthraquinone salt.

31. A process according to claim **27** wherein said reducing agent is sodium dithionite.

4,356,302

4H-1,4-BENZOTHIAZINE DERIVATIVES

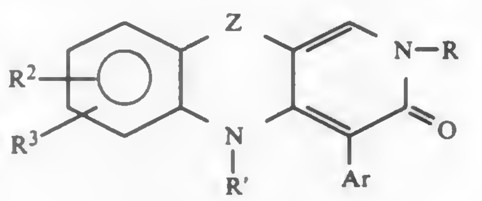
Robert J. Chorvat, Arlington Heights; Bipinchandra N. Desai, Vernon Hills, and Suzanne E. Radak, Wheeling, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Mar. 9, 1981, Ser. No. 241,984

Int. Cl.³ C07D *513/14*

U.S. Cl. 544—34 **24 Claims**

1. A compound of the formula



wherein R and R' each represent hydrogen or lower alkyl containing 1 to 4 carbon atoms; R2 and R3 represent hydrogen, halogen, nitro, amino or alkoxy containing 1 to 4 carbon atoms; Z represents sulfur, sulfinyl or sulfonyl; Ar represents phenyl, mono or di substituted phenyl wherein the substituents may be halogen, hydroxy, trifluoromethyl, methoxy, cyano or lower alkyl having 1 to 4 carbon atoms; and pharmaceutically acceptable acid addition salts thereof.

4,356,303

SINGLE STEP PROCESS FOR CYANURIC ACID

John A. Wojtowicz, Cheshire, and Haywood Hooks, Jr., West Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 2, 1981, Ser. No. 279,653

Int. Cl.³ C07D *251/32*

U.S. Cl. 544—192 **18 Claims**

1. In a process for producing cyanuric acid by the pyrrolysis of a solution of a nitrogen-containing compound selected from the group consisting of urea, biuret and mixtures thereof in a solvent therefore, characterized by the improvement which comprises feeding droplets of said solution into a gas heated to a temperature sufficient to pyrolyze said nitrogen-containing compound to solid particles of cyanuric acid while substantially simultaneously vaporizing said solvent into said gas to form a gaseous mixture, and recovering said cyanuric acid particles.

4,356,304

SYNTHESIS OF OXYALKYLATED POLYAMINO-1,3,5-TRIAZINES

Jeno G. Szita, Norwalk, and Roland R. DiLeone, Rowayton, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 211,889, Nov. 10, 1980, abandoned. This application Jul. 22, 1981, Ser. No. 285,729

Int. Cl.³ C07D *251/18, 251/70*

U.S. Cl. 544—196 **13 Claims**

1. A process for preparing oxyalkylated polyamino-1,3,5-triazines which comprises reacting a hydroxyalkyl (C_2–C_{12}) or hydroxyaryl polyamino-1,3,5-triazine compound with an alkylene oxide at a temperature between about 80° C. and 200° C. in the substantial absence of a solvent.

4,356,305

PROCESS FOR THE PREPARATION OF HALOVINCAMONE DERIVATIVES

Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancsi; Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

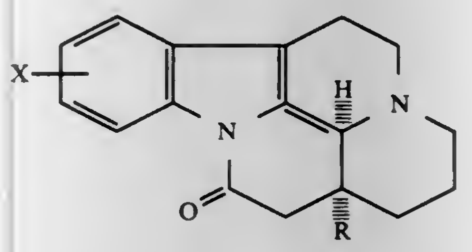
Filed Aug. 5, 1980, Ser. No. 175,384

Claims priority, application Hungary, Aug. 13, 1979, RI 722

Int. Cl.³ C07D *461/00;* **A61K** *31/435*

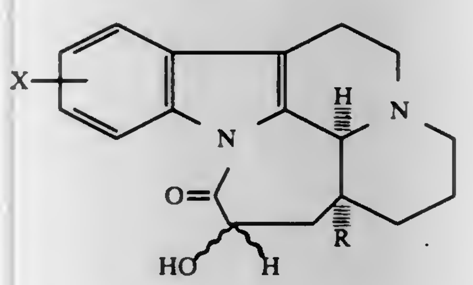
U.S. Cl. 546—51 **1 Claim**

1. A process for the preparation of a halovincamone of the formula (I)



wherein

R is a C_1 to C_6 alkyl group and X is halogen, or an optically active isomer or a pharmaceutically acceptable acid addition salt thereof, which comprises oxidizing at a temperature of 40° to 140° C. a single epimer or an epimer mixture of a racemic or optically active halogenated 14-oxo-15-hydroxy-E-homoeburnane of the formula (II)



or a pharmaceutically acceptable acid addition salt thereof with manganese dioxide precipitated onto an inert support with a large surface area, and if desired, the resulting compound of the formula (I) is converted into a pharmaceutically acceptable acid addition salt thereof and/or resolved.

4,356,306

WATER-SOLUBLE DERIVATIVES OF 6,6'-METHYLENE-BIS-(2,2,4-TRIMETHYL-1,2-DIHYDROQUINOLINE)

Vilmos Bär; Joszef Böszörmenyi; Peter Richter; Jenö Mercz, and Tamas Rozsnyai, all of Budapest, Hungary, assignors to Material Vegyipari Szovetkezet and Human Oltoanyagtermelo es Kutato Intezet, both of Budapest, Hungary

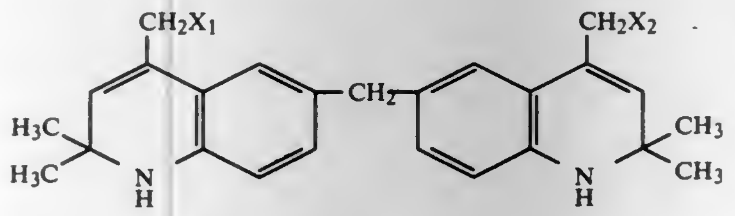
Filed Jul. 2, 1980, Ser. No. 164,526

Claims priority, application Hungary, Jul. 6, 1979, MA 3172

Int. Cl.³ C07D *215/12*

U.S. Cl. 546—176 **5 Claims**

1. A 6,6'-Methylene-bis(2,2,4-trimethyl-1,2-dihydroquinoline) compound of the formula I



(I)

wherein X_1 and X_2 stand for hydrogen, $—SO_3Me$ or $—SO_2NH_2—$

wherein Me represents an alkali metal atom, but that one of X_1 and X_2 is always different from hydrogen.

4,356,307

CYCLIC IMIDES, THEIR PREPARATION AND USE

Heike Kelkenberg, Bottrop, and Elmar Wolf, Recklinghausen, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

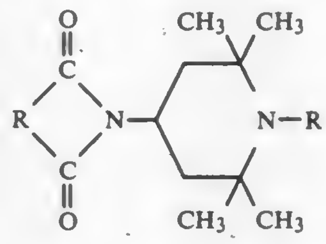
Filed Feb. 17, 1981, Ser. No. 234,609

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006272

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—200 **5 Claims**

1. A cyclic imide of the formula:



wherein R is a saturated or unsaturated, optionally alkyl- or alkenyl-substituted alkylene or cycloalkylene radical having 2–120 C-atoms and R' is selected from the group consisting of hydrogen,

an alkyl radical having 1–20 C-atoms,
an alkenyl radical having 3–5 C-atoms,
an aralkyl radical having 7–12 C-atoms,
$—CH_2—CH_2—CN$,
$—CH_2—CH_2—COO—$alkyl,
$—CH_2—CH(CH_3)—COO—$alkyl,
an acyl radical or
$—(CH_2—CH_2O)_nH$, wherein n is 1–10.

4. The cyclic imide of claim **1**, wherein R is selected from the group consisting of 1,2-cyclohexanediyl and methyl-substituted 1,2-cyclohexanediyl radicals.

4,356,308

PROCESS FOR THE PREPARATION OF 2,2,6,6-TETRAMETHYLPIPERIDONE-4

Hartmut Wiezer; Günther Nowy, and Harald Häberlein, all of Gersthofen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,563

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013403

Int. Cl.³ C07D *211/74*

U.S. Cl. 546—242 **8 Claims**

1. A process for the preparation of 2,2,6,6-tetramethylpiperidone-4 by reaction of acetone with ammonia at elevated temperatures in the presence of a catalyst, wherein the catalyst is a partially halogenated or perhalogenated, aliphatic or cyclic hydrocarbon which is liquid or solid at room temperature and has from 1 to 28 or 5 or 6 carbon atoms, respectively; these carbon atoms, in the case where their number is from 2 to 6, may also be linked to one another by nonpolymerizable double bonds.

4,356,309

N-ALKYLATED 2-(2-PYRIDYL)IMIDAZOLES USEFUL AS METALLURGICAL EXTRACTANTS

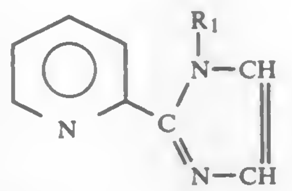
James W. Lalk, Shepherd, and Frances P. Hamburg, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 13, 1981, Ser. No. 282,628

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—278 **6 Claims**

1. A compound of the formula

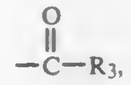


(I)

wherein R_1 represents

C_1 to C_{20} alkyl-substituted benzyl, or

C_{12} to C_{20} alkyl which can optionally bear one or two $—OR_2$ radicals, wherein each R_2 independently represents hydrogen or the radical



$$-\overset{\overset{\displaystyle O}{\|}}{C}-R_3,$$

wherein R_3 represents C_1 to C_{20} alkyl.

4,356,310
PROCESS FOR PREPARING GAMMA-BUTYROLACTONE AND BUTENOLIDE

Thomas S. Brima, Cincinnati, Ohio, assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Jul. 2, 1981, Ser. No. 280,168

Int. Cl.³ C07D ***307/58, 307/32***

U.S. Cl. 549—295 **9 Claims**

1. A process for preparing a mixture of gamma-butyrolactone and butenolide which comprises reacting 1,3-butadiene with oxygen in the vapor phase at elevated temperature in the presence of a catalytically effective amount of a mixed metal oxide catalyst containing boron, molybdenum and titanium values said mixed metal oxide catalyst being obtained by:

(a) reacting a titanium halide with boric acid;

(b) reacting the titanium and boron-containing reaction product of step (a) with ammonium heptamolybdate to provide a titanium, boron and molybdenum-containing solid; and,

(c) calcining the solid obtained in step (b) to provide said catalyst.

4,356,311
PRODUCING EPOXIDE FROM OLEFIN USING METAL NITRO COMPLEXES

Steven E. Diamond, New Providence; Frank Mares, Whippany; Deborah A. Muccigrosso, Somerville, and Jeffrey P. Solar, Flanders, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 21, 1981, Ser. No. 332,782

Int. Cl.³ C07D ***301/03***

U.S. Cl. 549—524 **10 Claims**

1. A process of producing an oxirane compound which comprises reacting in the liquid phase a transition metal nitro complex, having the transition metal bonded to the nitrogen atom of the nitro radical, with an olefinically unsaturated substrate free of easily oxidizable groups, in the presence of a thallium(III) compound.

4,356,312
ETHYLENE OXIDE PROCESS

Robert P. Nielsen, Houston, Tex., and John H. La Rochelle, Baton Rouge, La., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 3,156, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 621,267, Oct. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 480,896, Jun. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 317,349, Dec. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 216,188, Jan. 7, 1972, abandoned. This application Mar. 22, 1979, Ser. No. 22,750

Int. Cl.³ C07D ***301/10***

U.S. Cl. 549—534 **25 Claims**

1. In the process for the production of ethylene oxide wherein ethylene is contacted in vapor phase with an oxygen-containing gas at ethylene oxide forming conditions at an elevated temperature of from 210° C. to about 285° C. in the presence of a fixed bed of silver metal-containing catalyst, the improvement which comprises employing as said catalyst an article comprising a porous refractory support having deposited on its exterior and pore surfaces from about 2% by weight to about 20% by weight of silver and, coincidentally deposited with silver, a total of from about 3.0×10^{-4} gew per kilogram of total catalyst to about 3.2×10^{-3} gew per kilogram of total catalyst of alkali metal present in final form on the support in the form of an oxide in which the said oxide consists of the oxide of potassium.

4,356,313
[(5,6,9a-SUBSTITUTED-3-OXO-1,2,9,9a-TETRAHYDRO-3H-FLUOREN-7-yl)OXY]ALKANOIC AND CYCLOALKANOIC ACID ESTERS AND THEIR ANALOGS, THE PARENT ACIDS AND THEIR SALTS

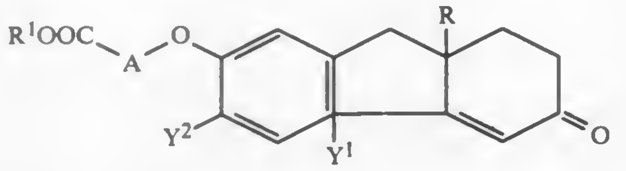
Edward J. Cragoe, Jr., Lansdale; Gerald E. Stokker, Gwynedd Valley, and Norman P. Gould, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 86,626, Oct. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 164,704, Jun. 30, 1980, abandoned. This application Feb. 19, 1981, Ser. No. 235,376

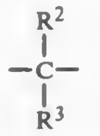
Int. Cl.³ C07C ***69/94***

U.S. Cl. 560—53 **16 Claims**

1. A compound of the formula:



wherein R is C_3 to C_6 cycloalkyl and C_3 to C_6 cycloalkyl C_1 to C_4 alkyl, branched or unbranched; R^1 is H, lower alkyl; lower alkenyl; lower alkynyl; lower cycloalkyl; substituted lower alkyl, where the substituent is carboxy, lower alkoxycarbonyl, oxo, hydroxy, lower alkoxy, halo, lower acyloxy, lower dialkylamino, sulfamoyl, pyridyl, furyl, tetrahydrofuryl, aryl, 1-methylpiperidyl, morpholinyl, pyrrolidinyl, 1-methylpiperazinyl, and thienyl; substituted cycloalkyl; a heterocyclic moiety selected from the group consisting of imidazolyl, pyridyl, thiazolyl, pyrazinyl, and furyl; aryl; Y^1 and Y^2 are independently Cl and CH_3; A is $(CH_2)_2$ or



$$-\underset{\underset{\displaystyle R^3}{|}}{\overset{\overset{\displaystyle R^2}{|}}{C}}-$$

where R^2 is H, methyl or ethyl, R^3 is H, F or methyl and R^2 and R^3, may be joined together to form the ring $>C(CH_2)_n$ where n is the integer 2, 3, or 4; and pharmaceutically acceptable salts thereof.

4,356,314
[5,6,9A-SUBSTITUTED-3-OXO-1,2,9,9A-TETRAHYDRO-3H-FLUOREN-7-YL)OXY]ALKANOIC AND CYCLOALKANOIC ACIDS, THEIR ANALOGS, ESTERS, SALTS, AND DERIVATIVES

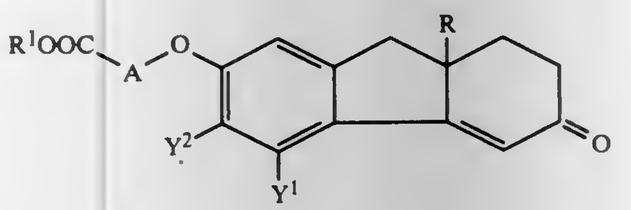
Edward J. Cragoe, Jr., Lansdale; Gerald E. Stokker, Gwynedd Valley, and Norman P. Gould, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 164,754, Jun. 30, 1980, and a continuation-in-part of Ser. No. 86,625, Oct. 19, 1979. This application Feb. 19, 1981, Ser. No. 236,076

Int. Cl.³ C07C ***69/94***

U.S. Cl. 560—53 **15 Claims**

1. A compound of the formula:

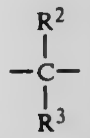


wherein

R is C_2 to C_4 alkenyl, branched or unbranched; R^1 is H, lower alkyl, lower alkenyl, loweralkynyl, lower cycloalkyl; substituted lower alkyl, where the substituent is carboxy, lower alkoxycarbonyl, oxo, hydroxy, lower alkoxy, halo, lower acyloxy, lower dialkylamino, sulfamoyl, pyridyl, furyl, tetrahydrofuryl, aryl, 1-methylpiperazinyl, and thienyl; substituted cycloalkyl; a heterocyclic moiety selected from the group consisting of imidazolyl, pyridyl, thiazolyl, pyrazinyl, and furyl; and aryl;

Y^1 and Y^2 are independently Cl and CH_3;

A is $(CH_2)_2$ or



$$-\underset{\underset{\displaystyle R^3}{|}}{\overset{\overset{\displaystyle R^2}{|}}{C}}-$$

where R^2 is H, methyl or ethyl, R^3 is H, F or methyl and R^2 and R^3, may be joined together to form the ring $>C(CH_2)_n$ where n is the integer 2, 3 or 4; and pharmaceutically acceptable salts thereof.

4,356,315
CARBOXYPHENYLALKANOIC ACIDS AND LOWER ALKYL ESTERS THEREOF

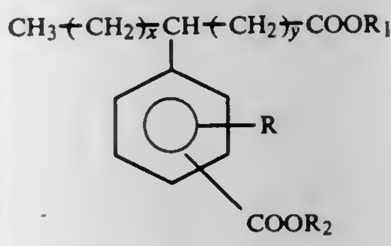
Irwin S. Schlossman, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Mar. 20, 1981, Ser. No. 245,466

Int. Cl.³ C07C ***69/612, 69/773, 55/28***

U.S. Cl. 560—81 **9 Claims**

1. A compound having the formula



wherein

R represents hydrogen, a carboxyl group or a $C_{1\text{-}4}$ alkyl group;

R_1 and R_2 are the same or different and are each selected from the group consisting of hydrogen or $C_{1\text{-}4}$ alkyl; and

x and y are positive integers such that $x+y$ equals from 5 to 23.

4,356,316
PROCESS FOR PRODUCING UNSATURATED CARBOXYLIC ESTERS

Atsushi Aoshima, Yokohama, and Toshiaki Murofushi, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1981, Ser. No. 236,956

Claims priority, application Japan, Mar. 5, 1980, 55-26759; Apr. 22, 1980, 55-53154

Int. Cl.³ C07C ***67/39***

U.S. Cl. 560—208 **18 Claims**

1. A process for producing an ester of acrylic or methacrylic acid by oxidizing propylene or isobutylene in the liquid phase in the presence of a straight chain lower alcohol and molecular oxygen, characterized by effecting the reaction at 150° C. or below in the presence of

(1) a catalyst consisting of palladium and at least one metal selected from the group consisting of lead, bismuth, thallium, tellurium and mercury, and

(2) at least one compound selected from the group consisting of mineral acids, heteropoly-acids, heteropoly-acid salts, molybdic acid and organic sulfonic acids.

4,356,317
ACYLOXYALKENOIC ACIDS AND PROCESS THEREFOR

James P. Coleman; Richard C. Hallcher, both of Maryland Heights, and Dudley E. McMackins, St. Charles, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1981, Ser. No. 222,200

Int. Cl.³ C07C ***67/05***

U.S. Cl. 560—241 **27 Claims**

1. A process for preparing acyloxy-alkanoic acids which comprises reacting lower alkanoic acid having at least one replaceable hydrogen atom on the alpha carbon atom and butadiene in the presence of lower alkanoic acid anhydride and one or more metal oxidants in a valence higher than its lowest positive valence and selected from manganese, vanadium and cerium at an elevated temperature to produce such acyloxyhexenoic acids, utilizing the metal ion oxidant in an amount less than stoichiometric with respect to butadiene and repeatedly electrolytically regenerating and utilizing the higher valent state of the ion during the course of the reaction.

4,356,318
TOLUIC ACID

Francis J. Waller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 174,920, Aug. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 108,819, Dec. 31, 1979, abandoned. This application Dec. 15, 1980, Ser. No. 215,712

Int. Cl.³ C07C ***51/145***

U.S. Cl. 562—406 **26 Claims**

1. Process for oxidatively carbonylating toluene to toluic acid, at least 50 mol % of the toluic acid being the p-isomer, said process comprising contacting and reacting, at 110°-250° C., at a pressure of at least 500 psi (3.45 MPa), toluene, carbon monoxide, oxygen and the catalyst ingredients consisting essentially of

(a) a compound of rhodium, iridium, ruthenium, platinum, palladium or osmium;

(b) a sulfur oxy-acid or a Group Ia or IIa metal salt of a sulfur oxy-acid; and

(c) an acid or acid mixture having a Hammett acidity value ($—H_o$) of greater than 7.0,

said catalyst ingredients containing 0.5-30 mol % of (a) and

70–99.5 mol % of (b+c), with the molar ratios of (b/a) and (c/a) each being at least 2, and recovering toluic acid.

4,356,319

METHOD OF RECOVERING IN ACTIVE FORM THE CATALYST FOR THE TEREPHTHALIC ACID SYNTHESIS

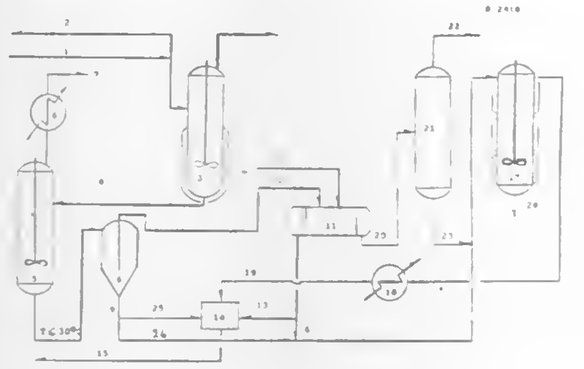
Paolo Roffia, Saronno; Pierangelo Calini, Rho, and Sergio Tonti, Venezia Mestre, all of Italy, assignors to Montedison, S.p.A., Milan, Italy

Filed Jan. 19, 1981, Ser. No. 226,382

Claims priority, application Italy, Jan. 23, 1980, 193393 A/80

Int. Cl.³ C07C *51/29, 51/265;* **B01J** *31/40*

U.S. Cl. 562—414 **8 Claims**



1. A method of recovering in active form the catalyst used in the synthesis of terephthalic acid from the dehydrated acetic mother liquor which comprises the steps of:

(a) removing from said mother liquor by evaporation from 70 to 90% of the acetic acid contained therein;
(b) cooling the concentrate to a temperature below 60° C.;
(c) recovering the resulting precipitate, which contains substantially all the residual terephthalic acid product, for recycle to the synthesis zone;
(d) subjecting the remaining liquid phase, which contains organic impurities, to extraction with water or with aqueous-acetic acid solutions, at a temperature of from 20° to 80° C. and in the presence of a coadjuvant in an amount by weight of 0.5 to 2.5 times the amount of said liquid phase and selected from the group consisting of p-xylene, isobutyl acetate and secondary butyl acetate;
(e) separating the heavy aqueous phase, which contains substantially all the catalyst to be recovered, from the lighter organic phase, which contains said organic impurities, and recovering said aqueous phase for recycle to the synthesis zone.

6. A method according to claim 1, characterized in that an amount equal to or higher than 50% of the solid phase which separates, in consequence of cooling, is directly recycled to the terephthalic acid synthesis.

8. A method according to claim 1, characterized in that the coadjuvant is added in admixture with H_2O.

4,356,320

PREPARATION OF CARBOXYLIC ACIDS

Anthony N. Naglieri, Pine Brook, and Nabil Rizkalla, River Vale, both of N.J., assignors to The Halcon SD Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 740,146, Nov. 8, 1976, abandoned. This application Oct. 6, 1977, Ser. No. 839,948

Int. Cl.³ C07C *51/12*

U.S. Cl. 562—519 **5 Claims**

1. A process for the preparation of a monocarboxylic acid which comprises reacting carbon monoxide and a hydrocarbyl alcohol in the presence of an iodide and in the presence of a catalyst consisting essentially of nickel or a nickel compound and a phosphine promoter, said iodide being employed in the amount of 10 to 200 mols, expressed as I, per 100 mols of alcohol, and said reacting being carried out at a temperature of 25°–350° C. and at a carbon monoxide partial pressure of 1–10,000 psi.

4,356,321

PRODUCTION OF N,N,N′,N′-TETRAACETYLETHYLENEDIAMINE

Stephen J. Hannam, Clwyd, Wales, assignor to Warwick Chemical Limited, Leeds, England

Continuation of Ser. No. 214,403, Dec. 8, 1980. This application Feb. 8, 1982, Ser. No. 346,680

Claims priority, application United Kingdom, Jun. 27, 1980, 8021142

Int. Cl.³ C07C *102/00, 102/04*

U.S. Cl. 564—144 **9 Claims**

1. A process for making TAED (N,N,N′,N′-tetraacetylethylenediamine) comprising (a) reacting DAED (N,N′-diacetylethylenediamine) in a vessel with acetic anhydride, at a molar ratio of at least 1:6, and thereby forming a reaction mixture comprising TAED and acetic acid and acetic anhydride and (b) distilling the reaction mixture to remove acetic acid from the mixture, and in step (b) further acetic anhydride is added to the mixture before the distillation of the acetic acid is complete and the distillation of acetic acid is thereafter continued.

4,356,322

PHENOXYALKANOLAMINE DERIVATIVES

Dieter Lehmann; Klaus Femmer, and Gottfried Faust, all of Radebeul, German Democratic Rep., assignors to Veb Arzneimittelwerk Dresden, Radebeul, German Democratic Rep.

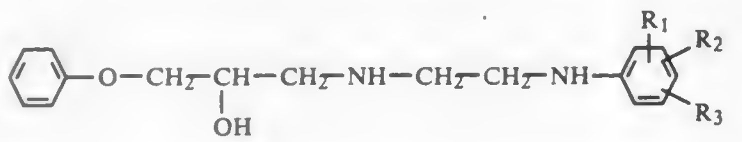
Continuation-in-part of Ser. No. 963,960, Nov. 27, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,128

Claims priority, application German Democratic Rep., Dec. 1, 1977, 202331

Int. Cl.³ C07C *93/06, 91/16*

U.S. Cl. 564—185 **20 Claims**

1. A compound of the general formula:



I

and salts thereof with physiologically compatible inorganic or organic acids, wherein R_1, R_2 and R_3 are the same or different and are hydrogen, alkyl of 1 to 2 C atoms, methoxy, halogen, amino, nitro or acylamino residues.

4,356,323

PROCESS FOR THE PRODUCTION OF 1-AMINO-PROPANEDIOL-(2,3) (I)

Axel Kleemann, Greifenhagenstrasse 25; Robert Nygren, Furstenbergstrasse 8, and Rudolf Wagner, Furstenbergstrasse 6, all of 6450 Hanau 9, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,460

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014098

Int. Cl.³ C07C *89/02, 91/10*

U.S. Cl. 564—475 **13 Claims**

1. In a process for the production of 1-amino-propanediol-2,3 by the reaction of glycidol with ammonia the improvement comprising reacting glycidol and liquid ammonia under pressure sufficient to keep the ammonia in liquid form.

4,356,324

OPTICALLY ACTIVE 1,2-BIS-(DIPHENYLPHOSPHINE)-COMPOUNDS

Wolfgang Bergstein, Lindenstrasse 10, 6458 Rodenbach 1; Axel Kleemann, Greifenhagenstrasse 9, 6450 Hanau 9, and Jurgen Martens, Hochstrasse 5, 8755 Alzenau, all of Fed. Rep. of Germany

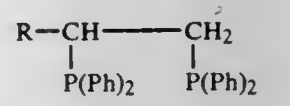
Filed Dec. 31, 1980, Ser. No. 221,915

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000445

Int. Cl.³ C07F *9/50*

U.S. Cl. 568—17 **4 Claims**

1. An optically active 1,2-bis-(diphenylphosphino)-compound of the formula



$$R-\underset{\underset{\displaystyle P(Ph)_2}{|}}{CH}\text{———}\underset{\underset{\displaystyle P(Ph)_2}{|}}{CH_2}$$

in which Ph is a phenyl group and R is isopropyl, isobutyl, sec.butyl or a benzyl group.

4,356,325

PROCESS FOR PREPARATION OF ACETYLENE TERMINATED SULFONES, OLIGOMERS AND PRECURSORS THEREFOR

James J. Harrison, Glenshaw; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 28, 1980, Ser. No. 211,318

Int. Cl.³ C07C *147/10, 147/12, 147/06*

U.S. Cl. 568—33 **145 Claims**

1. A process for the production of an acetylene terminated sulfone which comprises:

(a) reacting a sulfonyldiphenol with a material selected from the group consisting of a meta-dibromobenzene, a para-dibromobenzene and mixtures thereof in the presence of a potassium base to form a bis-bromophenoxydiphenyl sulfone;
(b) reacting said bis-bromophenoxydiphenyl sulfone with a substituted terminal acetylene compound containing at least three carbon atoms and an hydroxy group on the carbon atom adjacent to the acetylene group to form the corresponding hydroxy-acetylene terminated phenoxydiphenyl sulfone; and
(c) subjecting said hydroxy-acetylene terminated phenoxydiphenyl sulfone to base catalyzed cleavage to form the corresponding acetylene terminated sulfone.

4,356,326

PROCESS FOR PRODUCING 3-OXOCYCLOPENTENES

Kenji Saito, Sonehigashi, and Hiroshi Yamachika, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 5, 1980, Ser. No. 213,632

Claims priority, application Japan, Dec. 6, 1979, 54-158817; May 16, 1980, 55-65771

Int. Cl.³ C07C *45/47, 49/573*

U.S. Cl. 568—322 **3 Claims**

1. 2-Propargyl-3-hydroxy-3-methyl-4-cyclopentenone.

4,356,327

PROCESS FOR PREPARING PROPYLENE GLYCOL MONOALKYL ETHERS AND ALKOXYACETONES

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,193

Int. Cl.³ C07C *45/49, 41/01*

U.S. Cl. 568—387 **16 Claims**

1. A process for preparing propylene glycol monoalkyl ethers and alkoxyacetones which comprises reacting a mixture of hydrogen, carbon monoxide, a material selected from the group consisting of (a) acetaldehyde and (b) an acetal of the formula:

$(R'O)_2CHCH_3$

wherein R′ is an alkyl radical of from 1 to 10 carborn atoms, and an alcohol of the formula:

ROH,

wherein R is an alkyl radical of from 1 to 10 carbon atoms, in the presence of a catalyst comprising a cobalt-containing compound and a promoter selected from the group consisting of tin- and germanium-containing compounds at superatmospheric pressures of about 500 psi or greater and at a temperature of from about 50° to about 350° C.

4,356,328

PROCESS FOR THE PREPARATION OF ACETALDEHYDE

David Moy, Ridgewood, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,324

Int. Cl.³ C07C *47/06*

U.S. Cl. 568—484 **4 Claims**

1. A process for the preparation of acetaldehyde which comprises reacting acetic anhydride with hydrogen in the presence of a supported Group VIII noble metal catalyst wherein the reaction is carried out in the vapor phase, whereby acetaldehyde is produced with high selectivity and the formation of ethylidene diacetate is minimized.

4,356,329

HYDROQUINONE ETHERS HAVING JUVENILE HORMONE ACTIVITY

Franco Bettarini, Novara; Pietro Massardo, Milan; Paolo Piccardi, Milan, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

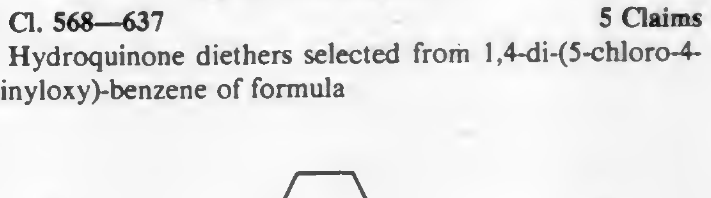
Continuation-in-part of Ser. No. 50,335, Jun. 20, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,488

Claims priority, application Italy, Jun. 21, 1978, 24794 A/78; Mar. 5, 1979, 20734 A/79

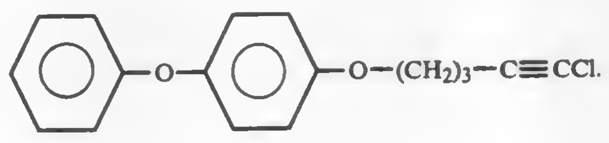
Int. Cl.³ C07C *43/215*

U.S. Cl. 568—637 **5 Claims**

1. Hydroquinone diethers selected from 1,4-di-(5-chloro-4-pentinyloxy)-benzene of formula



and 1-(5-chloro-4-pentinyloxy)-4-phenyloxybenzene of formula



4,356,330

METHOD OF DECOLORIZING MIXTURES OF T-BUTYL ALKYLPHENOLS WITH N-(2-HYDROXYETHYL)OXAZOLIDINE

Michael Cuscurida, and George P. Speranza, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,905

Int. Cl.^{3} C07C ***37/68***

U.S. Cl. 568—756 **3 Claims**

1. A method for removal of color-forming bodies from a mixture of t-butyl nonylphenols derived by reacting isobutylene with nonylphenol comprising reacting the mixture with N-(2-hydroxyethyl) oxazolidine in proportions of 1 to 5 weight percent of the mixture at a temperature in the range of 25° to 150° C.

4,356,331

PROCESS FOR SEPARATING AN ALKYLPHENOL ISOMER

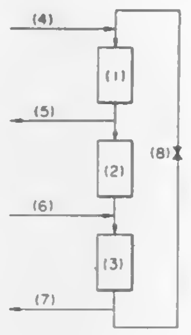
Takehisa Inoue, Tokyo, and Kishio Miwa, Kamakura, both of Japan, assignors to Toray Industries, Incorporated, Japan

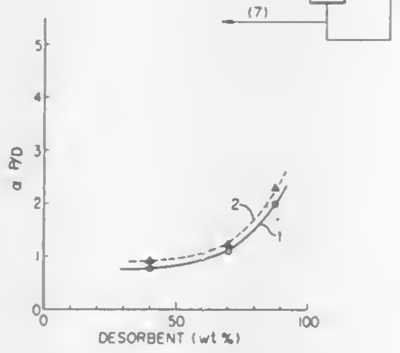
Filed Sep. 12, 1980, Ser. No. 186,480

Claims priority, application Japan, Sep. 20, 1979, 54-120085

Int. Cl.^{3} C07C ***37/82, 37/70***

U.S. Cl. 568—758 **12 Claims**





1. An adsorptive-separation process for a mixture of monoalkylphenol isomers selected from the group consisting essentially of a mixture containing at least two cresol isomers selected from para-cresol, meta-cresol and ortho-cresol, and a mixture containing at least two ethylphenol isomers selected from para-ethylphenol, meta-ethylphenol, and ortho ethylphenol, said process comprising:

(i) contacting a feed containing a mixture of monoalkylphenol isomers with a faujasite type Y zeolite containing potassium cations adsorbent; and

(ii) contacting said faujasite type Y zeolite containing potassium cations adsorbent resulting from step (i) with a desorbent comprising an aliphatic ketone and an aliphatic alcohol, said aliphatic ketone having the formula $R_1—CO—R_2$, wherein R_1 and R_2 are each alkyl and wherein said contacting in steps (i) and (ii) is carried out at a temperature in the range of from 0° to 350° C. and at a pressure in the range of from atmospheric to 40 kg/cm^2.

4,356,332

PROCESS FOR PREPARING ETHYLENE GLYCOL

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,197

Int. Cl.^{3} C07C ***31/20***

U.S. Cl. 568—852 **19 Claims**

1. A process for preparing ethylene glycol which comprises reacting a mixture of hydrogen, carbon monoxide and formaldehyde in the presence of a catalyst comprising a cobalt-containing compound and a promoter selected from the group consisting of a tin-containing compound and a germanium-containing compound and in the presence of a substantially inert oxygenated hydrocarbon solvent at superatmospheric pressures of about 500 psi or greater until substantial formation of the said ethylene glycol has been achieved and recovering the said glycol from the reaction mixture.

4,356,333

PROCESS FOR PREPARING N-OCTADIENOL

Noriaki Yoshimura, and Masuhiko Tamura, both of Kurashiki, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Mar. 25, 1981, Ser. No. 247,290

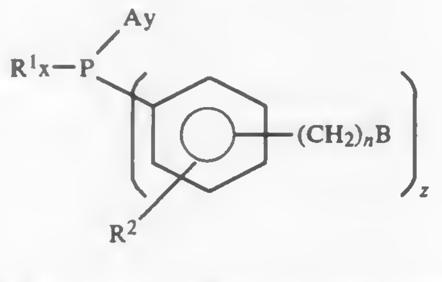
Claims priority, application Japan, Mar. 28, 1980, 55-40989; Apr. 11, 1980, 55-48256; Jan. 26, 1981, 56-10560

Int. Cl.^{3} C07C ***29/00***

U.S. Cl. 568—840 **22 Claims**

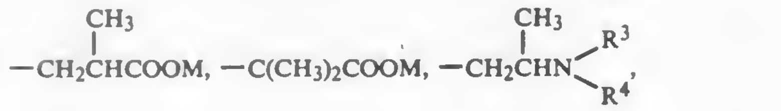
1. A process for preparing n-octadienol, comprising the steps of:

(i) reacting at a temperature of 10° C. to 150° C. butadiene with water in an aqueous sulfolane solution having a water/sulfolane weight ratio in the range of 20/80 to 70/30 and containing carbonate ions, bicarbonate ions or mixtures thereof, in the presence of (A) palladium or a palladium compound, (B) a monodentate phosphine of the formula:

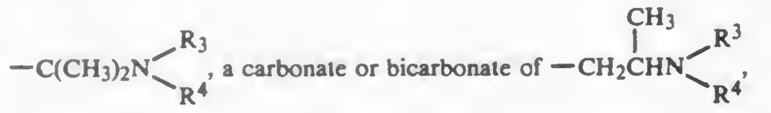


(I)

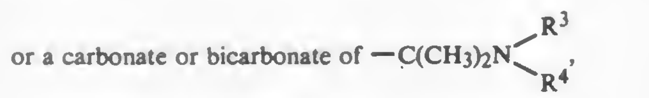
wherein R^1 is an aliphatic, alicyclic or substituted or unsubstituted aromatic hydrocarbon group having 1 to 8 carbon atoms; R^2 is hydrogen, methyl, nitro, cyano, methoxy, or halogen; n is 0 or 1, x is 0, 1 or 2, and y and z are each 0, 1, 2 or 3, with the proviso that y and z are not concurrently equal to 0 and that x+y+z=3; A is



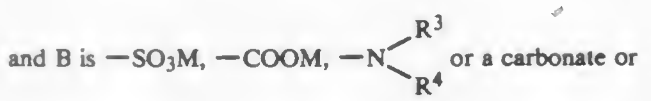
$$-CH_2\overset{CH_3}{\overset{|}{C}}HCOOM,\ -C(CH_3)_2COOM,\ -CH_2\overset{CH_3}{\overset{|}{C}}HN\genfrac{}{}{0pt}{}{R^3}{R^4},$$



$$-C(CH_3)_2N\genfrac{}{}{0pt}{}{R_3}{R^4},\ \text{a carbonate or bicarbonate of}\ -CH_2\overset{CH_3}{\overset{|}{C}}HN\genfrac{}{}{0pt}{}{R^3}{R^4},$$

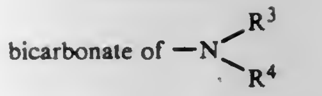


$$\text{or a carbonate or bicarbonate of}\ -C(CH_3)_2N\genfrac{}{}{0pt}{}{R^3}{R^4},$$



$$\text{and B is}\ -SO_3M,\ -COOM,\ -N\genfrac{}{}{0pt}{}{R^3}{R^4}\ \text{or a carbonate or}$$

-continued



$$\text{bicarbonate of}\ -N\genfrac{}{}{0pt}{}{R^3}{R^4}$$

wherein R^3 and R^4 are each methyl, ethyl or n-propyl and M is an alkali metal in an amount of at least 6 moles per gram atom of said palladium; and (C) a monodentate tertiary amine having a basicity constant (pKa) of at least 7 in an amount of 1 to 50% by volume based on the sulfolane to form n-octadienol;

(ii) extracting at least part of the reaction mixture obtained in step (i) with a saturated aliphatic hydrocarbon, a monoolefinic hydrocarbon or an alicyclic hydrocarbon; and

(iii) recycling at least part of the extraction residue obtained in step (ii) which contains the catalyst components to step (i).

4,356,334

SYNTHESIS OF ALCOHOLS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 113,880, Jan. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 39,633, May 16, 1979, abandoned. This application Feb. 20, 1981, Ser. No. 236,430

The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.

Int. Cl.^{3} C07C ***27/22***

U.S. Cl. 568—909 **11 Claims**

1. In a process for the synthesis of an alcohol by the reaction of an olefinic hydrocarbon, carbon monoxide, and hydrogen in the presence of a catalyst selected from the group consisting of rhodium carbonyl compounds and rhodium-organometallic compounds, at reaction conditions, and recovering the resultant alcohol, the improvement which comprises utilizing an aqueous solution of ammonia as a promoter to produce alcohol as the major product of the process.

4,356,335

ARYL- OR ARALKYLBENZENE HAVING TWO BENZENE RINGS AT LEAST ONE OF WHICH IS SUBSTITUTED BY AT LEAST ONE 3,3,3-TRIFLUOROPROPYL GROUP

Yoshiro Kobayashi, Tokyo; Itsumaro Kumadaki, Hachiohji; Masaaki Takahashi, Tokyo, and Takashi Yamauchi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

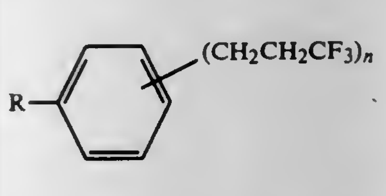
Filed Feb. 12, 1981, Ser. No. 233,715

Claims priority, application Japan, Feb. 22, 1980, 55-21090; Feb. 22, 1980, 55-21091; Feb. 22, 1980, 55-21092; Feb. 22, 1980, 55-21093; Feb. 22, 1980, 55-21094; Sep. 1, 1980, 55-120928; Nov. 21, 1980, 55-164434

Int. Cl.^{3} C07C ***21/14***

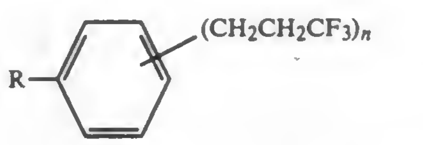
U.S. Cl. 570—129 **8 Claims**

1. A trifluoropropyl derivative of aryl- or aralkylbenzene of the general formula:



wherein R is a phenyl group, benzyl group, phenethyl group or alpha-methylbenzyl group, either unsubstituted or substituted by 3,3,3-trifluoropropyl group and n is 1, 2 or 3, provided that the total number of the 3,3,3-trifluoropropyl groups in said trifluoropropyl derivative of aryl- or aralkylbenzene is at most 3.

8. A dielectric material comprising at least one of the 3,3,3-trifluoropropyl derivatives of aryl- or aralkylbenzene of the formula:



wherein R is a phenyl group, benzyl group, phenethyl group or alpha-methylbenzyl group, either unsubstituted or substituted by a 3,3,3-trifluoropropyl group and n is an integer of 1, 2 or 3, provided that the total number of the 3,3,3-trifluoropropyl groups in said 3,3,3-trifluoropropyl derivative of aryl- or arakybenzene is at most 3.

4,356,336

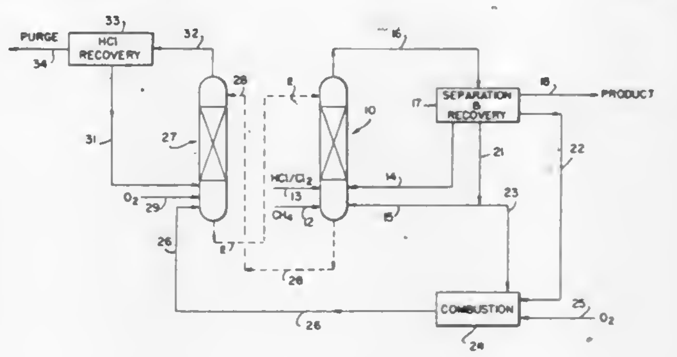
PURGING OF INERTS IN CHLORINATED HYDROCARBON PRODUCTION

Angel Sy, Cedar Park, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Jun. 15, 1978, Ser. No. 915,895

Int. Cl.^{3} C07C ***17/152***

U.S. Cl. 570—243 **7 Claims**



1. In a process for producing a chlorinated hydrocarbon from a C_1 to C_4 aliphatic hydrocarbon in a chlorinated hydrocarbon production zone wherein the effluent withdrawn from the chlorinated hydrocarbon production zone includes inert gas, the improvement comprising:

recovering an effluent from the chlorinated hydrocarbon production zone containing chlorinated hydrocarbon, inert gas, unreacted hydrocarbon and waste chlorinated byproduct;

recovering from the effluent a gas recycle stream containing unreacted hydrocarbon and the inert gas present in the effluent, a portion of which is recycled to the chlorinated hydrocarbon production zone;

recovering chlorinated hydrocarbon from the effluent;

recovering waste chlorinated byproducts from the effluent;

combusting waste chlorinated byproducts, said combustion employing the remaining portion of the gas recycle stream to recover hydrocarbon fuel values, said remaining portion of the gas recycle stream used in the combustion provides for purging of the net inert gas from the effluent subsequent to said combustion, said combustion producing a gaseous combustion effluent, said gaseous combustion effluent containing chlorine values and the inert gas;

separating from the combustion effluent chlorine values and a gas containing the inert gas; and

purging the gas containing the inert gas from the system.

4,356,337

PRODUCING CYCLOHEXENE OR ALKYLCYCLOHEXENE

Guido P. Pez, Boonton, and Irving L. Mador, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 2, 1981, Ser. No. 317,626

Int. Cl.^{3} C07C *5/00*

U.S. Cl. 585—267 **10 Claims**

1. A process for the selective hydrogenation of aromatic hydrocarbons which comprises reacting a liquid aromatic hydrocarbon selected from the group consisting of benzene and alkylbenzenes containing 7–10 carbons with an alkali metal selected from the group consisting of sodium, potassium and mixtures thereof, and with hydrogen in the presence of a polyamine containing only C, N and H, with at least 3 nitrogens, each nitrogen being linked to three carbons and each carbon bridge between nitrogens being at least two methylene units long, under conditions producing cyclohexene or alkylcyclohexene.

4,356,338

EXTENDING CATALYST LIFE BY TREATING WITH PHOSPHORUS AND/OR STEAM

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 61,223, Jul. 27, 1979, abandoned. This application Oct. 8, 1980, Ser. No. 195,032

Int. Cl.^{3} C10G *11/05, 49/08, 63/04*

U.S. Cl. 585—407 **8 Claims**

1. In the process of carrying out aromatization hydrocarbon conversion reactions over a catalyst comprising a crystalline zeolite characterized by a silica to alumina molar ratio of at least 12 and a Constraint Index of from about 1 to 12, the improvement which comprises:

pretreating said catalyst to reduce the rate of catalyst aging and detrimental formation of coke thereon which occurs during said conversion reactions, by reacting said catalyst with a phosphorus-containing compound to deposit between 2% and 15% by weight of phosphorus on said catalyst and by subjecting said catalyst to an atmosphere comprising from 5% to 100% of steam at a temperature of from about 250° C. to about 1000° C. for a period of from about 15 minutes to about 100 hours.

4,356,339

PROCESS FOR ISOLATING AND RECOVERING BUTENE-1 OF HIGH PURITY

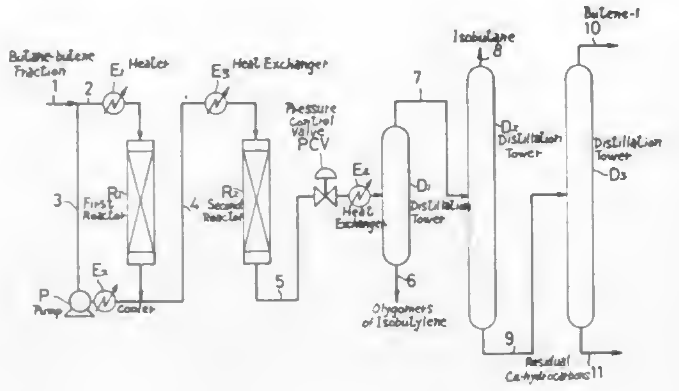
Masao Imaizumi, Tokyo; Tetsuya Takezono, Kawasaki; Takaaki Amari, Yokohama, and Yutaka Oguchi, Tokyo, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,317

Claims priority, application Japan, Dec. 15, 1980, 55-176882; Dec. 15, 1980, 55-176883; Dec. 15, 1980, 55-177008; Jul. 11, 1981, 56-108685

Int. Cl.^{3} C07C *7/12*

U.S. Cl. 585—829 **11 Claims**



1. A process for isolating and recovering butene-1 of high purity at a high yield comprising the steps of continuously passing a butane-butene fraction containing 0.1 to 15 wt% of isobutylene and 10 to 50 wt% of butene-1 through a first reactor packed with a strongly acidic cation exchange resin having an average particle size of from 0.2 to 10 mm at a temperature of from 30° to 100° C. and at a space velocity of liquid of from 0.1 to 50 hr^{-1} under a pressure of from 1 to 50 atom., dividing the output mixture flowing out of said first reactor into two flows at a division ratio in flow rate of $1 \sim 15{:}1$, recirculating the first flow having the flow rate of $1 \sim 15$ into said first reactor packed with said cation exchage resin, passing the second flow having the flow rate of 1 through a second reactor packed with a strongly acidic cation exchange resin having an average particle size of from 0.2 to 10 mm at a temperature of from 30° to 100° C. and at a space velocity of liquid of from 0.1 to 50 hr^{-1} under a pressure of from 1 to 50 atm., distilling the output flow from said second reactor to separate the same into a heavy hydrocarbon fraction containing oligomers of isobutylene as the main ingredient and a light hydrocarbon fraction containing butane and butene as the main ingredients, and rectifying said light hydrocarbon fraction to isolate butene-1 from other C_4-hydrocarbons.

ELECTRICAL

4,356,340

DC ARC FURNACE HAVING A SHIELDED ARC

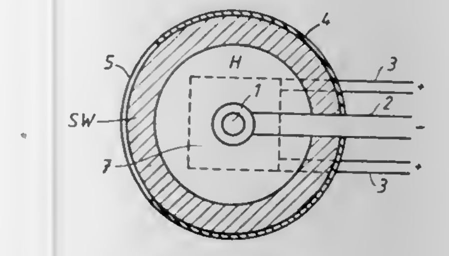
Sven-Einar Stenkvist, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

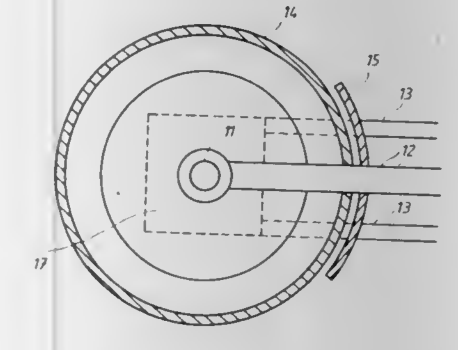
Filed Mar. 11, 1980, Ser. No. 129,261

Claims priority, application Sweden, Mar. 12, 1979, 7902178; Oct. 9, 1979, 7908349

Int. Cl.^{3} H05B *7/00*

U.S. Cl. 373—107 **6 Claims**





1. A DC arc furnace comprising a furnace vessel having a side wall and a hearth containing a melt, a melt connection through the hearth, an arcing electrode above the hearth, said melt connection being positioned vertically below said arcing electrode, DC powered conductors connecting to the melt connection and arcing electrode, the conductor connecting to the melt connection extending horizontally beneath the hearth from the melt connection away from the furnace transversely with respect to the side wall, the conductors powering an arc between the arcing electrode and melt and at least the conductor connecting to the melt connection forming a magnetic field capable of causing the arc to have an angularity with respect to the arcing electrode, and means for forming a magnetic metal shield surrounding only a portion of the side wall and on its side from which extends the conductor connecting with the melt connection so as to at least reduce said angularity.

4,356,341

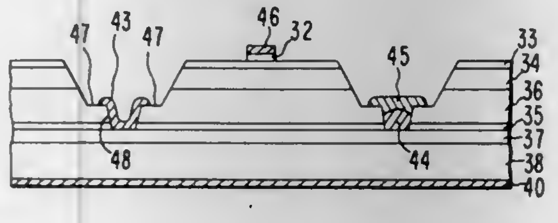
CASCADE SOLAR CELL HAVING CONDUCTIVE INTERCONNECTS

Peter G. Borden, Menlo Park, and Ram R. Saxena, Saratoga, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 13, 1981, Ser. No. 243,676

Int. Cl.^{3} H01L *31/06*

U.S. Cl. 136—249 **8 Claims**



1. A cascade solar cell having a wide bandgap cell epitaxially grown on a narrow bandgap cell and being electrically connected in series therewith, the improvement comprising:

said cells being electrically connected by means of a conductive interconnection formed between the base of the top cell and the emitter of the bottom cell through grooves formed in the top cell.

4,356,342

FULLY-FILLED TELECOMMUNICATION CABLES

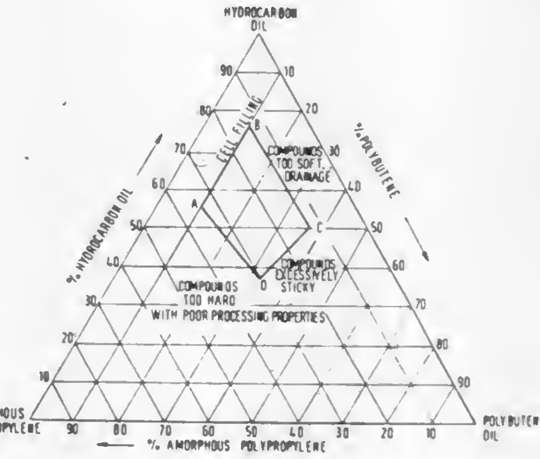
Stefan Verne, London, England, assignor to BICC Limited, London, England

Continuation-in-part of Ser. No. 952,590, Oct. 18, 1978, abandoned, and Ser. No. 87,437, Oct. 22, 1979, abandoned. This application Aug. 13, 1980, Ser. No. 177,925

Claims priority, application United Kingdom, Aug. 29, 1979, 7929881; Aug. 29, 1979, 7941631

Int. Cl.^{3} H01B *3/18*

U.S. Cl. 174—23 C **7 Claims**



1. A fully-filled telecommunication cable comprising a multiplicity of conductors each insulated with cellular polymeric material selected from the group consisting of polyethylene and polypropylene and enclosed in a sheath, the interstices between the insulated conductors and between them and the sheath being filled with a waterproof filling medium having a base comprising a hydrocarbon oil, characterised by the use of two non-polar additives, namely:

(i) a first additive which is soluble and consists substantially of molecules that are substantially incapable of diffusing into polyethylene or polypropylene at temperatures of up to 80° C. but having a low enough (number average) molecular weight to reduce significantly the osmotic pressure of the base, this additive having no appreciable useful effect on the composition's resistance to flow at temperatures in the range 50°–80° C.; and

(ii) a second additive which is polymeric and has a high enough (viscosity average) molecular weight to raise the resistance to flow of the composition so that the cable will pass a water-penetration test as defined in Post Office Telecommunications Specification No. CW236 (issued by the Post Office Corporation in Great Britain) not only at room temperature but also at temperatures up to a limit that is higher than 50° C.

4,356,343

CLOSURE AND SEAL FOR SHEATHED MULTI-STRAND CABLE ENDS

Robert L. Larson, 2873 Velasco La., Costa Mesa, Calif. 92626

Filed May 12, 1980, Ser. No. 149,049

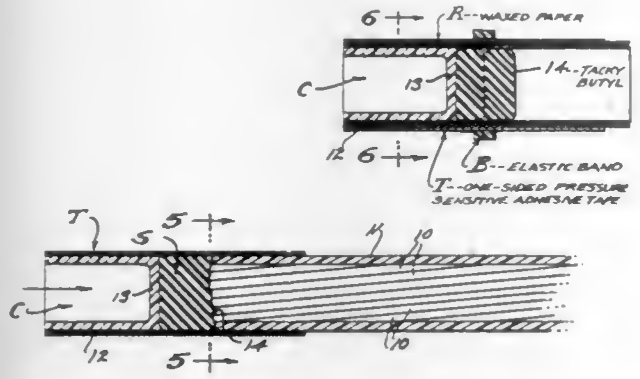
Int. Cl.^{3} H02G *15/04*

U.S. Cl. 174—74 A **21 Claims**

1. A seal assembly unit for the hermetic closure of a cut off end of a sheathed electrical cable having multiple conductors with interstices therebetween, including;

a form carrier with an exterior diameter approximately the

same as the exterior diameter of the cable sheath and having an end wall to oppose the cable end,
a sealant body of fluid material having a tacky consistency also with an exterior diameter approximately the same as the exterior diameter of the cable sheath and having opposite end faces,
one end face of the sealant body being adhesively attached to the end wall of the form carrier, and the other end face of the sealant body being exposed for opposed conforming engagement with the cut off end of the sheathed cable,
and a one-sided pressure sensitive adhesive tape laminated with a removable protective sheet having opposite release faces and wrapped around the assembled from carrier and sealant body for subsequent release and removal therefrom,
the protective sheet being removable from the adhesive tape which then can be rewrapped around and adhesively secured to the form carrier and sealant body and cable sheath, subsequent to forcefully applying the sealant body against said cut off cable end by manipulation of the form carrier and end wall thereof to which the sealant body is attached.

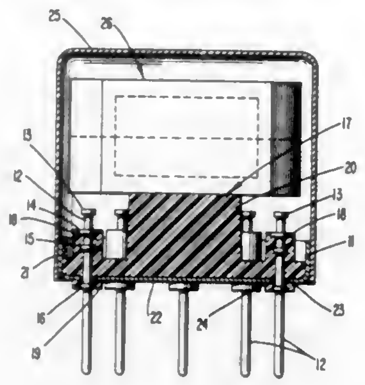


14. A sheathed electrical cable having multiple electrical conductors with interstices therebetween and having a cut off end, and a seal hermetically closing said cut off end, comprising, in combination;
a form carrier with an exterior diameter approximately the same as the exterior diameter of the cable sheath and having an end wall opposing the cable end,
a sealant body of fluid material having a tacky consistency also with an exterior diameter approximately the same as the exterior diameter of the cable sheath and having opposite end faces,
one end face of the sealant body being adhesively attached to the end wall of the form carrier, and the other end face of the sealant body being adhesively attached to and in conforming engagement with the cut off end of the sheathed cable with a portion of the sealant body extending into said interstices,
and a one-sided pressure sensitive adhesive tape wrapped around and adhesively secured to the form carrier and sealant body and cable sheath.

4,356,344
METAL-PLASTIC HEADER ASSEMBLY

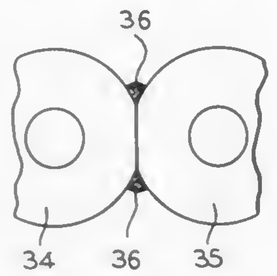
James J. Carey, Henrietta, N.Y., assignor to Chloride Electro Networks, Division of Chloride, Inc., N. American Operation, Tampa, Fla.
Filed Jan. 26, 1981, Ser. No. 228,187
Int. Cl.³ H05K *5/06*
U.S. Cl. 174—52 S **9 Claims**

1. A hermetic enclosure assembly for a high voltage transformer comprising:
a metal header cover having interior and exterior portions and defining a plurality of apertures,
a header body comprising a rigid thermosetting plastic material form securely adhered to and filling a substantial part of the interior portion of the header cover,
a plurality of conductive pins protruding through said apertures, the header body further comprising first and second bushings surrounding and securely adhered to first and second portions of each of the pins respectively located at the interior and exterior portions of the header cover where the pins protrude,
the form and the first and second bushings of the header body being integral whereby the rigid thermosetting plastic material of which the header body is composed hermetically seals any remaining open spaces in the apertures, the first and second bushings providing a long creepage distance for moisture to travel along the pins from the outside of the assembly to inside the assembly to minimize moisture in the atmosphere from developing inside the assembly, and wherein the header body and header cover seal the interior of the assembly from potentially damaging materials and conditions in the atmosphere surrounding it.



4,356,345
MULTICONDUCTOR CABLE ASSEMBLY

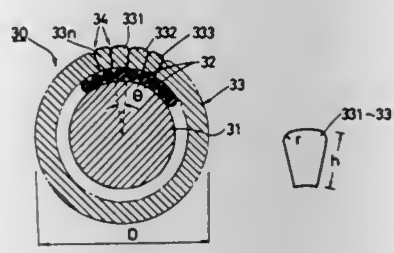
Richard J. Gonia, New Berlin, Wis., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 31, 1980, Ser. No. 202,530
Int. Cl.³ H01B *7/08*
U.S. Cl. 174—117 F **2 Claims**



1. A multiconductor cable assembly having a flat-profiled first portion comprising:
A. multiple insulation-sheathed conductors arranged in side-by-side contiguous relation, providing a substantial interfacing contact area between the adjacent conductors;
B. first and second beads of material, integral with the sheaths of adjacent conductors, located on each side of said flat-profiled portion adjacent each said interfacing contact area; and
C. an unbonded portion of said interfacial contact area between said first and second beads.

4,356,346
TRANSMISSION CONDUCTOR

Sadao Sakabe, Kyoto, Japan, assignor to Kansai Electric Power, Ltd., Osaka, Japan
Filed Nov. 12, 1980, Ser. No. 206,132
Claims priority, application Japan, Nov. 13, 1979, 54-147478; Sep. 17, 1980, 55-129605
Int. Cl.³ H01B *5/10*
U.S. Cl. 174—130 **4 Claims**



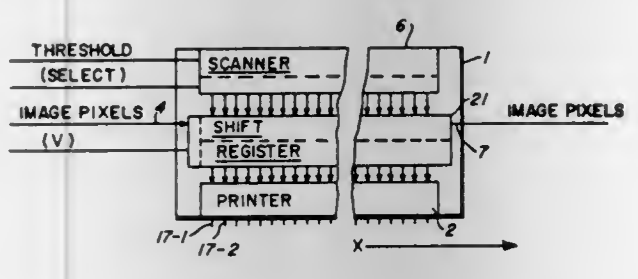
1. A transmission conductor, comprising:
an inner conductor formed in a cylindrical shape; and
an outer conductor layer covering said inner conductor and being annular in section and having an even outer surface,
said outer conductor layer being split in at least one plane extending radially through the center of said transmission conductor into a plurality of split conductor elements, said plurality of split conductor elements being stranded in the longitudinal direction of said transmission conductor,
outer corners of the two adjacent split conductor elements at every predetermined number of junctions between said plurality of split conductor elements being formed in rounded corners to be arcuate in section with a radius r (m) of curvature,
said radius r (m) of curvature being selected to satisfy the following equation:

$$r = \frac{0.0508}{V}\left(10^{\frac{\theta - 28.5}{113}} \sim 10^{\frac{\theta + 5.2}{113}}\right)$$

where V (m/sec) is a wind velocity and θ (degree) is the angle from the groove to the groove, with respect to the center of the transmission conductor,
whereby at least one groove is formed on the outer surface of said outer conductor layer extending in the stranded longitudinal direction between said rounded corners of said adjacent split conductor elements.

4,356,347
INTEGRATED STYLUS ARRAY FOR PRINTER OPERATION

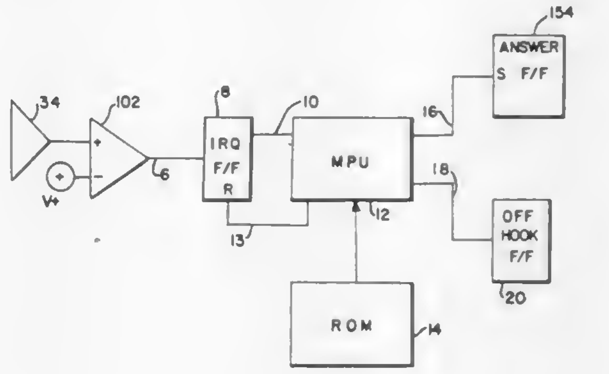
Patricia P. Wiener, La Honda, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 25, 1980, Ser. No. 181,330
Int. Cl.³ H04N *1/24*
U.S. Cl. 178—30 **20 Claims**



5. A solid state multi-mode printing array comprising in combination:
(a) multiple printing styli forming at least one printing array;
(b) multiple stage buffering means, the output of successive stages of said buffering means being coupled to successive ones of said printing styli;
(c) multiple scanning elements forming at least one scanning array for scanning images and producing image pixels representative of the images scanned;
successive ones of said scanning elements being coupled to the input of successive ones of said buffering means stages to provide parallel input of image pixels to said buffering means; and
(d) clock means for driving said buffering means to clock image pixels from said scanning array through said buffering means to said printing array.

4,356,348
TECHNIQUES FOR DETECTING A CONDITION OF RESPONSE ON A TELEPHONE LINE

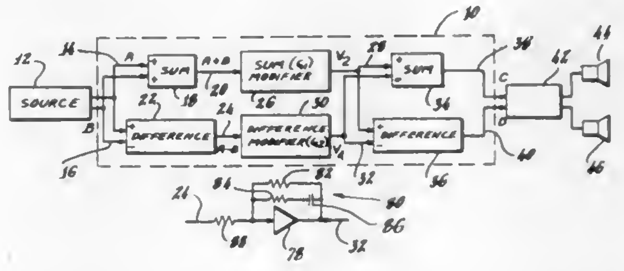
Fred J. Smith, Plantation, Fla., assignor to Digital Products Corporation, Fort Lauderdale, Fla.
Filed Dec. 7, 1979, Ser. No. 101,149
Int. Cl.³ H04M *3/22*
U.S. Cl. 179—1 MN **42 Claims**



1. Apparatus for detecting a condition on a telephone line comprising:
means for monitoring a telephone line and ascertaining the presence of signals thereon;
means for determining a value representative of the period of each signal ascertained;
means for storing an indicia of each value determined for a group of signals whose presence was ascertained in a sequence; and
means for detecting the most common indicia of value stored for said group of signals whose presence was ascertained in said sequence.

4,356,349
ACOUSTIC IMAGE ENHANCING METHOD AND APPARATUS

Richard P. Robinson, Wallingford, Conn., assignor to Trod Nossel Recording Studios, Inc., Northford, Conn.
Filed Mar. 12, 1980, Ser. No. 129,752
Int. Cl.³ G11B *3/74;* **H04R** *5/04*
U.S. Cl. 179—1 G **21 Claims**



7. An apparatus for modifying first and second audio signals to enhance the acoustic imagery perceived when the modified audio signals are projected by audio transducers comprising

means for time delaying the first and second audio signals as a function of frequency in a predetermined manner, with the delay selected generally less than the refractory period of the human ear in the range from about fifty to about five hundred microseconds and with the delay operative over a frequency range below about five hundred Hertz;

means for generating a first composite signal formed of undelayed and delayed first audio signals and an out-of-phase delayed cross-feed of said second audio signal, the amplitude ratios of said delayed first audio signal, and of said delayed out-of-phase second audio signal cross-feed, relative to the undelayed first audio signal being each in the range from about 1.4 to about 4.3 as determined at a high frequency; and

means for generating a second composite signal formed of undelayed and delayed second audio signals and an out-of-phase delayed cross-feed of said first audio signal, the amplitude ratios, of said delayed second audio signal, and said delayed out-of-phase first audio signal cross-feed, relative to the undelayed second audio signal being each in the range from about 1.4 to about 4.3 as determined at a high frequency;

whereby said first and second composite signals when applied to said audio transducers significantly enlarge the spatial image perceived of the sound emanating therefrom.

10. A method for forming an audio stereo recording with first and second audio signals to enhance the acoustic imagery perceived when the audio recording is played back on audio transducers comprising the steps of:

delaying the first and second audio signals by a predetermined relatively short time period generally less than the refractory period of the human ear in a range extending from about fifty to about five hundred microseconds and with the delay operative over a frequency range extending below about five hundred Hertz;

combining the first and second audio signals respectively with said delayed first and second audio signals to generate first and second composite signals wherein the amplitude ratios of the delayed portions with respect to undelayed audio signals in each of said composite signals are in the range from about 1.4 to about 4.3 as determined at a high frequency; and

recording the first and second composite signals on a recording medium to form a stereo recording capable of producing, when played back through audio transducers, an enhanced spatial perception of the played back sound.

4,356,350
FM RECEIVER

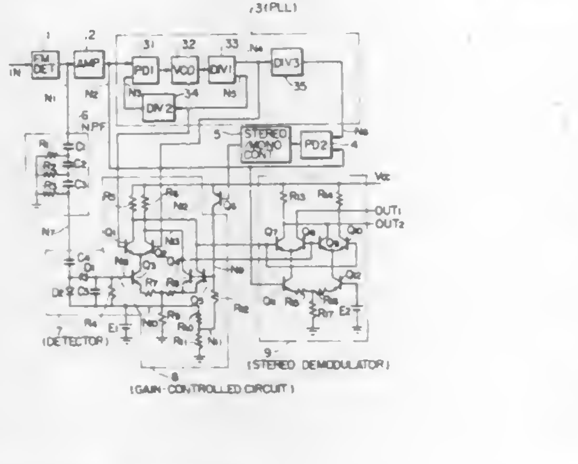
Masanori Ienaka, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 162,087

Claims priority, application Japan, Sep. 21, 1979, 54-120648

Int. Cl.³ H04H ***5/00***

U.S. Cl. 179—1 GJ **4 Claims**



1. An FM receiver comprising:

an FM detector;

a stereo demodulator which receives a main-channel signal and a sub-channel signal of a stereo composite signal obtained from an output terminal of said FM detector, as well as a 38 KHz sub-carrier signal;

a gain-controlled circuit which transmits said 38 KHz sub-carrier signal to said stereo demodulator;

a high-pass filter for obtaining high-frequency components in an output signal of said FM detector; and

a level detector for detecting the level of said high-frequency components that are obtained from said high-pass filter,

wherein the output signal of said level detector is transmitted to said gain-controlled circuit, and the amplitude level of said 38 KHz sub-carrier signal applied by said gain-controlled circuit to said stereo demodulator is gradually lowered in accordance with a rise in the level of said high-frequency components that are obtained from said high-pass filter.

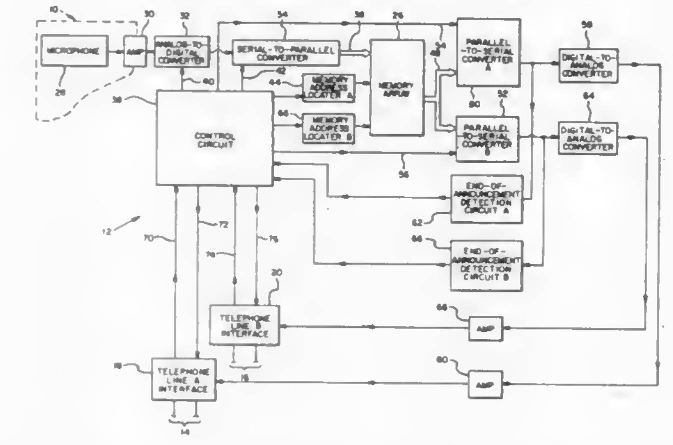
4,356,351
DIGITAL MEMORY AUDIO PLAYBACK APPARATUS

Gerald E. Shefler, and Ralph J. Weaver, III, both of Milwaukie, Oreg., assignors to Ford Industries, Inc., Portland, Oreg.

Filed Oct. 14, 1980, Ser. No. 196,688

Int. Cl.³ H04M ***1/64***

U.S. Cl. 179—1 B **4 Claims**


MICROPHONE
AMP
ANALOG-TO-DIGITAL CONVERTER
SERIAL-TO-PARALLEL CONVERTER
MEMORY ADDRESS LOCATER A
MEMORY ADDRESS LOCATER B
MEMORY ARRAY
PARALLEL-TO-SERIAL CONVERTER A
PARALLEL-TO-SERIAL CONVERTER
DIGITAL-TO-ANALOG CONVERTER
CONTROL CIRCUIT
END-OF-ANNOUNCEMENT DETECTION CIRCUIT A
END-OF-ANNOUNCEMENT DETECTION CIRCUIT B
TELEPHONE LINE B INTERFACE
TELEPHONE LINE A INTERFACE
AMP

1. Apparatus usable with a telephone answering device or the like for enabling the playing out of a common recorded announcement to a plurality of telephone lines which are operatively connected to the device, said apparatus comprising

a digital memory array constructed to receive and store an announcement in digital form,

for each telephone line, an associated pointer operatively connected to said array, each pointer being operable, on command, to track through the array, independent of each other pointer, and regardless of the current operating condition of any other pointer, to read out the announcement, and

means for each telephone line operatively connected to said array for enabling audio coupling to the line of an announcement read out by the associated pointer.

4,356,352
CIRCUIT ARRANGEMENT FOR TELEPHONE EXCHANGE SYSTEMS HAVING TIME STAGGERED CHARGE METERING PULSE FREQUENCIES

Friedrich Hilliges, Eichenau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,868

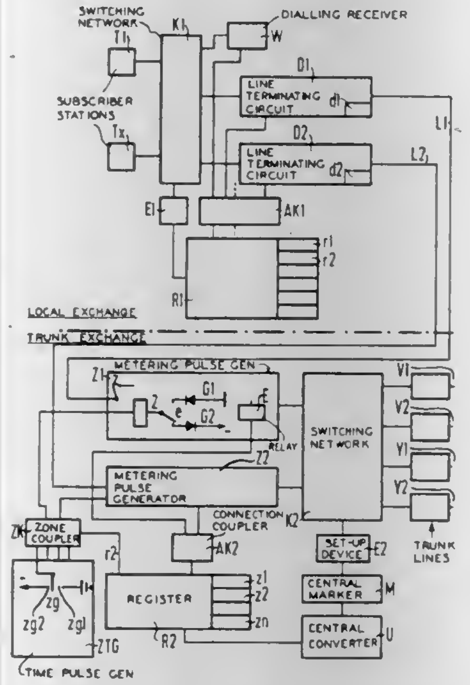
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925794

Int. Cl.³ H04M ***15/12;*** **H04Q** ***3/70***

U.S. Cl. 179—7.1 R **3 Claims**

1. In a circuit arrangement for telecommunications exchanges in which trunk connections are established with the aid of a common control device via free connection lines which are combined in groups in response to a calling subscriber dialing a local code number and a subscriber number of a called subscriber, and in which charge metering pulses are produced by charge metering equipment for the calling subscriber in reponse to answer by the called subscriber and at a frequency which is reduced in accordance with criteria including distance, time of day and calendar date, the improvement comprising:

first means responsive to a special, subscriber-dialed, code number preceeding the subscriber number to store a renunciation character; second means for selecting a free connection line from a group of connection lines which are simultaneously to be connected and responsive to stored renunciation characters to select free connection lines on a priority basis for those calling subscribers dialing a special code number only when charge metering reduction is in effect and to otherwise select lines on an equal priority basis; and third means responsive to a renunciation character and upon trunk line selection and completion of trunk line connection to provide a charge reduction signal to the charge metering equipment.



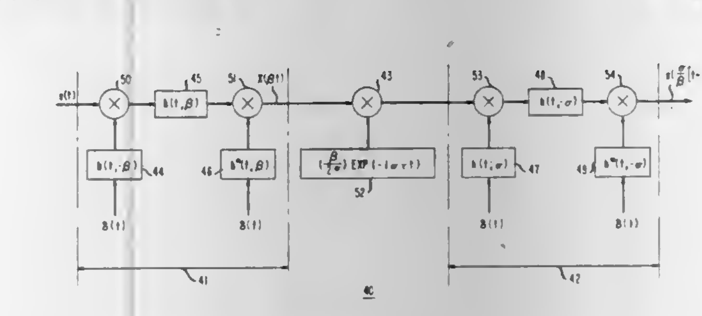
4,356,353
SAW-IMPLEMENTED TIME COMPANDOR

Kai Y. Eng, Parlin, and On-Ching Yue, Hazlet, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 21, 1980, Ser. No. 209,147

Int. Cl.³ H04B ***1/66***

U.S. Cl. 179—15.55 T **10 Claims**



1. A time compandor including

companding means (**40**) capable of being responsive to a continuous-time input signal and also capable of delaying and either one of expanding the time duration of said input signal and compressing the time duration of said input signal to produce a companded output signal including a predetermined companding factor (α) and a predetermined time delay τ

characterized in that

the companding means includes a cascaded arrangement of a first pi-network arrangement (**41**) comprising a separate linear dispersive filter in each branch of the pi, delay means (**43,52**) capable of multiplying the output signal from said first pi-network arrangement by a sinusoidal waveform whose frequency is proportional to the predetermined time delay (τ), and a second pi-network arrangement (**42**) comprising a separate linear dispersive filter in each branch of the pi.

4,356,354
ELECTRONIC SUBSCRIBER JUNCTOR

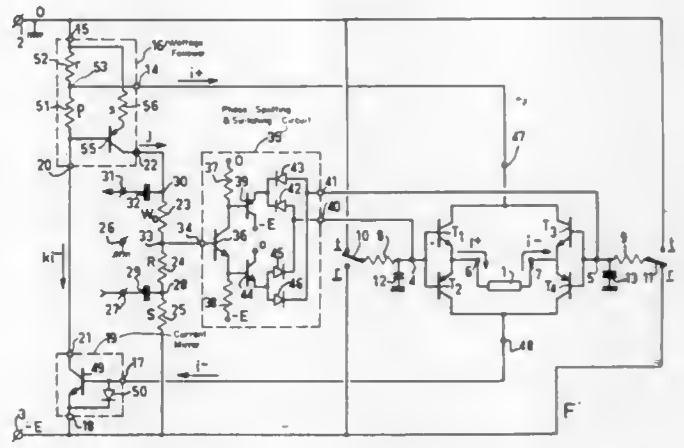
Gilbert M. M. Ferrieu, Bievres, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Jun. 16, 1980, Ser. No. 159,732

Claims priority, application France, Jun. 25, 1979, 79 16261

Int. Cl.³ H04M ***1/76, 19/00***

U.S. Cl. 179—16 AA **13 Claims**



1. A subscriber junctor having a symmetrical power amplifier provided with two supply terminals for connection to a d.c. power supply, and two output terminals for connection to the two conductors of a subscriber's line, said junctor having a characteristic feeding bridge resistance (R_o) between the two terminals of the supply and being connectible to a telephone exchange, comprising:

means for forming a weighted sum current of the currents entering and leaving the subscriber's line,

a load impedance,

means for phase splitting and switching to form first and second voltages in phase and in phase opposition respectively with the voltage at the terminals of said load impedance through which the said weighted sum current flows and for applying said two voltages as negative feedback voltages to the two input terminals of the amplifier,

a current mirror for forming said weighted sum current, the summing terminal and input terminal of which are linked to a terminal of the d.c. power supply and to the corresponding supply terminal of said symmetrical power amplifier respectively,

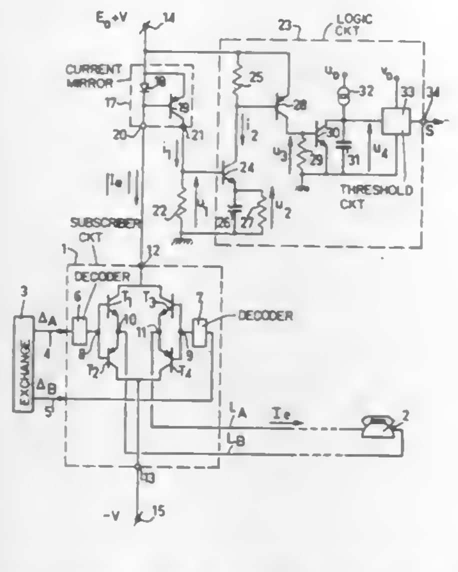
a voltage divider circuit, the output terminal of said current mirror being connected to one end of said voltage divider circuit, the other end and an intermediate terminal of said current miror being connected to the other terminal of said d.c. power supply and to the corresponding supply terminal of said amplifier respectively, the voltage ratio of said voltage divider circuit being adjusted so as to be substantially equal to the current ratio of said current mirror, and

a voltage follower circuit, the voltage at the ends of said voltage divider circuit being applied to said voltage follower circuit which is regulated so as to provide said weighted sum current having the desired amplitude.

4,356,355
APPARATUS FOR DETECTING THE CLOSURE OF A SUBSCRIBER'S LINE DURING RINGING

Gilbert M. M. Ferrieu, Bievres; Etienne J. R. Osmond, and Yves J. F. Hetet, both of Lannion, all of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Nov. 17, 1980, Ser. No. 207,118
Claims priority, application France, Nov. 21, 1979, 79 28722
Int. Cl.³ H04M *3/02*
U.S. Cl. 179—18 HB **4 Claims**



1. A device for detecting the closure of a two wire subscriber's telephone line during the ringing period, the line being fed during the ringing period with an a.c. ringing voltage and a d.c. voltage, comprising:

- means for forming a signal which is representative of the absolute value of the current in the subscribers line, said signal comprising cyclically varying unidirectional voltages having substantially equal peak values caused by the a.c. voltage when the line is open and unequal peak values caused by the superimposed d.c. voltage when the line is closed,
- a capacitor,
- means for charging said capacitor when the voltage across the capacitor is less than the instantaneous value of said signal,
- means for discharging said capacitor when the voltage across said capacitor is greater than the instantaneous value of said signal, and
- means for producing a loop closure detection signal from a characteristic of the charging current for said capacitor, whereby the time constant of said discharging means is such that when the line is closed the voltage across said capacitor falls by less than the difference between the higher and lower peak values so that said capacitor is not charged when the lower peak value occurs.

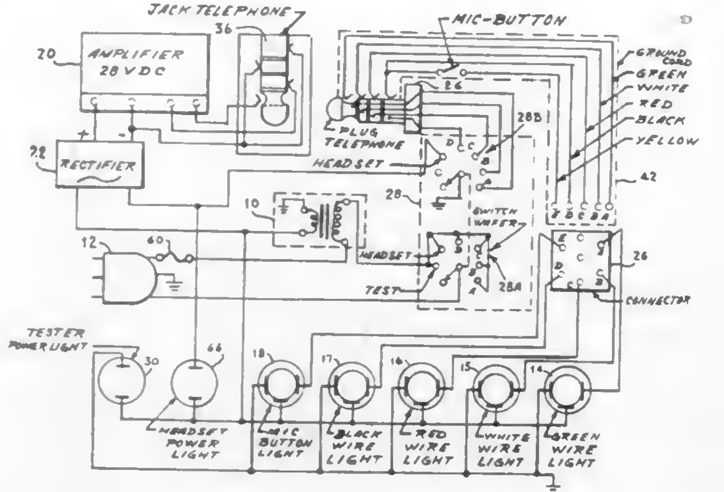
4,356,356
HEADSET/GROUNDCORD TESTER APPARATUS

Martin E. Corbett, 5209 APO, New York, N.Y. 09179

Filed Sep. 18, 1980, Ser. No. 188,411
Int. Cl.³ H04M *3/22;* **H04R** *29/00*
U.S. Cl. 179—175.1 R **5 Claims**

1. A headset/groundcord tester apparatus comprising in combination:

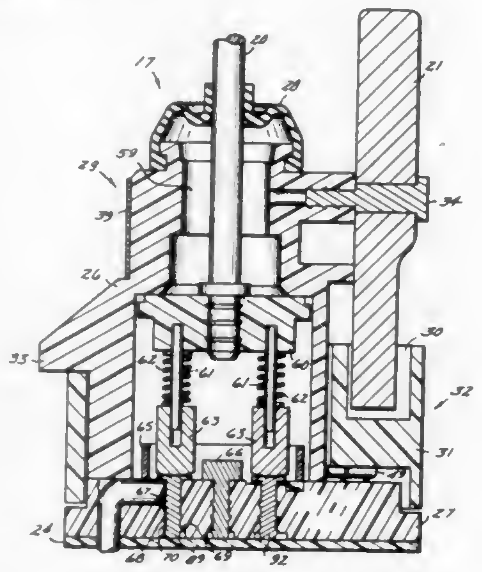
- an energizing means to provide an electrical signal,
- a plurality of indicating means each respectively connected to said energizing means,
- first and second connector means to respectively attach to said groundcord, said first connector means containing a plurality of connector pins therein, said connector pins being wired respectively to said plurality of indicating means, each of said connector pins respectively mating with one of a plurality of electrical conductors in said groundcord, said second connector means receiving the other end of said groundcord and providing electrical connectors for each of said electrical conductors in said groundcord, and,
- a switching means connected to said second connector means to provide a switchable signal return path for said electrical connectors, said switching means connected between said energizing means and said plurality of indicating means, said switching means switchably connecting each of said plurality of indicating means, said switching means providing electrical isolation between said second connector means and said plurality of indicating means, said switching means respectively applying said electrical signal to each of said plurality of electrical conductors in said groundcord while simultaneously providing a signal return path, each of said indicating means respectively indicating the state of each of said plurality of electrical conductors.



4,356,357
SELECTOR AND DIRECTIONAL ACTUATOR FOR ELECTRICAL REMOTE CONTROL REARVIEW MIRRORS

Robert J. Fisher, Livonia, Mich., assignor to Harman International Industries, Inc., Grandville, Mich.

Filed Jul. 15, 1980, Ser. No. 169,189
Int. Cl.³ H01H *9/00, 19/00, 25/00*
U.S. Cl. 200—5 R **5 Claims**



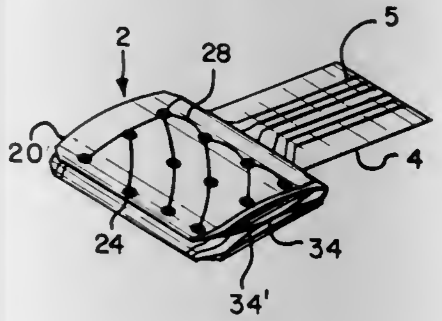
1. A combination selector and direction control switch in a single elongate body for operating electrically powered left and right rearview remote control mirrors from a single actuator comprising:

- a circuit plate in said body having a selectively operated inboard plurality of contacts for polarity reversal in four separate motors together with power leads and an integrated group of six contacts peripherally and concentrically outboard of said polarity reversal contacts and enabling operational selection of mirrors as between said left and right mirrors;
- a selector ring having bridging contactors selecting as between said left and right mirrors and in engagement with selected of said concentric outboard contacts;
- a pendant element concentric within said selector ring and selectively contacting said inboard contacts and said power leads on said circuit plate to achieve selected reversal of polarity in two planes normal to each other; and
- a lever separate from said pendant and concentrically operating said selector ring in one of said two concentric extremes of operating positions.

4,356,358
MEMBRANE SWITCH

Kazutoyo Fukukura, Reading, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 1, 1981, Ser. No. 279,289
Int. Cl.³ H01H *13/52*
U.S. Cl. 200—5 A **8 Claims**



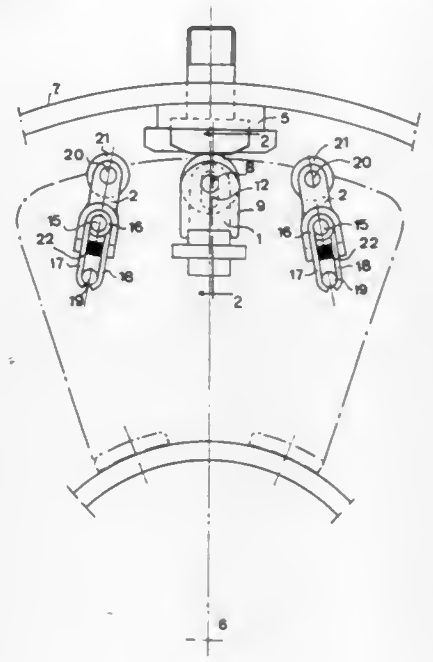
1. A membrane switch device of the type comprising a first membrane switch having a sheet of flexible insulating film with side edges and first and second end edges, conductors and switch electrodes on one surface of said sheet, a first fold line located substantially midway between said end edges and extending normally of said side edges, said sheet being folded along said fold line so that said end edges coincide and said sheet is divided into two parallel sections with the first surface on each section opposed to the first surface on the other section and with said switch electrodes opposed to each other, first separator means between said opposed first surfaces which maintains said surfaces in spaced-apart relationship, said separator means permitting relative movement of said electrodes towards and against each other, and a tail extending from said first end edge, said conductors extending onto said tail, said switch device being characterized in that:

- a second sheet of film is integral with said first sheet of film, said second sheet of film extending from said second end edge of said first sheet, a slit is provided between said first sheet and said second sheet, said tail being inserted through said slit,
- said second sheet of film having side edges and having an end edge which is remote from said first sheet, said second sheet being folded along a second sheet fold line which extends parallel to said first fold line to form a second membrane switch which is similar to said first membrane switch and which has opposed surfaces on which are provided second conductors and second opposed switch electrodes with a second separator means,
- said second membrane switch being folded as a unit along said second edge of said first sheet whereby said first switch and said second switch are in parallel planes.

4,356,359
ELECTRICAL APPARATUS COMPRISING A SERIES OF CURRENT TAPS AND VARIABLE SWITCHING GEAR

Jean-Claude Dufrasne, Couillet, and Jules Thibaut, Mont-sur-Marchienne, both of Belgium, assignors to Ateliers de Constructions Electriques de Charleroi, Charleroi, Belgium

Filed Nov. 18, 1980, Ser. No. 207,880
Claims priority, application European Pat. Off., Nov. 21, 1979, 79200685.0
Int. Cl.³ H01F *29/04;* **H01H** *1/16, 1/56, 9/00*
U.S. Cl. 200—11 TC **6 Claims**



1. An electrical contact apparatus comprising:

- an insulating support upon which a row of stationary contacts is arranged, each stationary contact comprising at least one rolling surface;
- a control slide mounted for parallel movement with respect to the row of stationary contacts;
- an assembly of three moving contacts mounted on the control slide, comprising: a center strap telescopically mounted to said control slide, two end straps, each of said center and end straps being equipped with at least one associated roller capable of rolling on at least one surface of said stationary contacts, and means for mounting said end straps to said control slide such that the distance between said end straps varies laterally with respect to said center strap in response to said associated rollers of said end straps contacting a rolling surface of a stationary contact during movement of said control slide, and two impedances mounted on said control slide connecting said end straps, respectively, with said center strap.

4,356,360
PULL-TO-TURN SWITCH

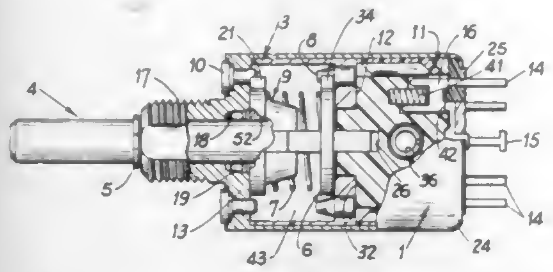
Jack H. Volz, Maplewood, N.J., assignor to AMF Incorporated, White Plains, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,304
Int. Cl.³ H01H *21/00*
U.S. Cl. 200—11 R **14 Claims**

1. A pull-to-turn electrical switch including in combination:

- a case having a first open end and a second wall end with an opening for access to the interior of the case;
- a first stop pin means projecting inwardly from the second wall end of said case;
- a shaft mounted in said opening of the case for axial and rotational movement, having an interior end portion, and having an actuating end portion without the case;
- stop collar means keyed to the shaft for rotation therewith and having a tab extention for abutting with said first stop pin means for defining the rotatable arc of the shaft;

a second plurality of stop pins disposed within the interior of the case;
stop washer means affixed to an intermediate portion of the shaft for axial and rotational movement therewith and having a tab projecting from a peripheral portion for abutting with one or more of said second plurality of stop pins for restricting rotation of the shaft while in a first axial position and not restricting rotation of the shaft while in a second axial position;

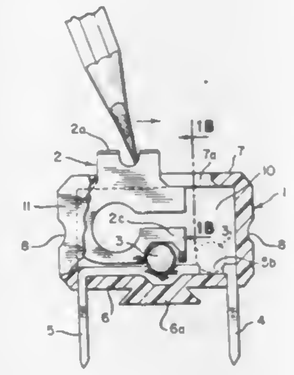


a rotor rotatably positioned within the case having means engaging the interior end portion of the shaft to effect rotation of the rotor therewith, and having at least one bridging contact movable with the rotor and positioned at an end thereof opposite to said engaging means; and
an end plate having at least two contact means secured thereto and adapted to be engaged by the bridging contact in a rotational position of the shaft, said end plate being secured to the first open end of the case.

4,356,361

MODULAR ELECTRICAL SHUNTS AND SWITCHES FOR INTEGRATED CIRCUIT APPLICATIONS

Pierre P. Schwab, Ocean Springs, Miss., assignor to B/K Patent Development Company, Inc., Los Angeles, Calif.
Filed Oct. 21, 1980, Ser. No. 199,354
Int. Cl.³ H01H *15/00*
U.S. Cl. 200—16 D 9 Claims



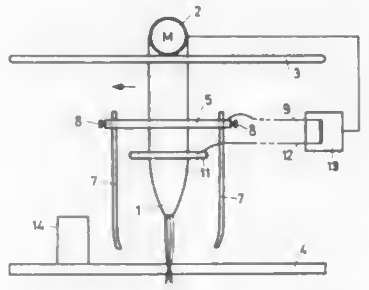
1. An electrical switch comprising:
an electrically insulating, substantially rectangular housing having a plurality of electrically non-conducting walls, including a base wall, a top wall having an aperture therein, and two end walls, said housing having additionally a pair of electrically non-conducting side walls bonded thereto;
a pair of elongated electrically conducting terminals secured to and extending through the base wall of the housing and protruding outwardly therefrom in substantially mutually parallel spaced relationship, each of said terminals having a portion located inwardly of the housing in a non-contacting, spaced relationship to the inwardly located portion of the other terminal;
an electrically conducting contact bearing disposed within the housing and adapted to be movable between a first position in which the contact bearing is in contact with but one of the terminal portions located within the bearing housing and a second position in which the bearing bridges the span between and is in simultaneous contact with both of the inwardly located terminal portions, said first and second positions corresponding respectively to "off" and "on" configuration of the electrical switch; and
a switch actuating member of electrically non-conducting material, said member being slidably disposed within the housing and engageable through the aperture in the top wall of the housing for actuating the switch, said member being adapted to resiliently bias the movable contact bearing in said first and second positions and permit the contact bearing to move in response to and in cooperation with the sliding movement of the member between the first and second positions.

9. A cartridge-dispenser for loading electrical switches according to claim 1 and installing and extracting said switches from integrated circuits, said cartridge-dispenser comprising:
a substantially flat elongated housing having a longitudinal recess extending the full length of said housing and adapted to slidably receive said switches therein;
an elongated cavity disposed within the housing on either side at each end of the longitudinal recess, each cavity containing a tension spring and a ball at the end of the cavity, said ball being dispensed to project resiliently into the longitudinal recess and coact with the end walls of the electrical switch; and
a cover fastened to the surface of the elongated housing and having an elongated aperture therein substantially narrower than the elongated recess in the housing and extending for at least a portion of the length of the elongated housing;
a button substantially rectangular in shape and disposed between the housing and the cover so as to be held slidably captive therebetween.

4,356,362

HAZARD SWITCH ARRANGEMENT

Karl H. Schmall, Waldstrasse 20, D-7570 Baden-Baden 19, Fed. Rep. of Germany
Filed Nov. 21, 1980, Ser. No. 208,937
Claims priority, application Switzerland, Dec. 20, 1979, 11306/79
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—47 6 Claims

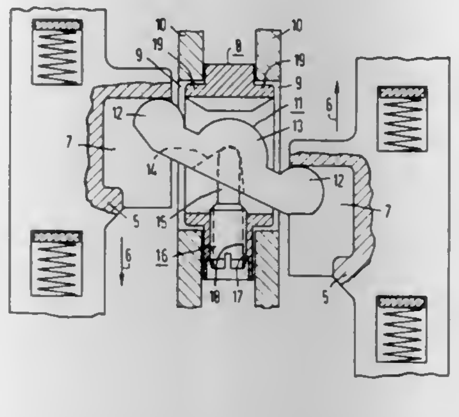


1. In a hazard arrangement for flame-cutting and welding units in which a torch is moved in at least one axis by a servomotor as a function of control signals which can be preset, and wherein the arrangement includes a feeler provided in the region of the torch nozzle, said feeler being connected to an emergency switch device and and emitting a warning signal to prevent damage to the torch, when obstacles occur in the direction of motion of the torch nozzle, characterized in that said feeler comprises a plurality of feeler rods which screen the torch at least in the direction of the motion, and that said feeler rods are connected to a plurality of movement switches for activating said emergency switch device.

4,356,363

LOCKING DEVICE FOR CONTACT CARRIERS

Werner Harbauer, Schwandorf, and Edgar Wiessner, Amberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 5, 1980, Ser. No. 184,427
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937710
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—50 C 10 Claims

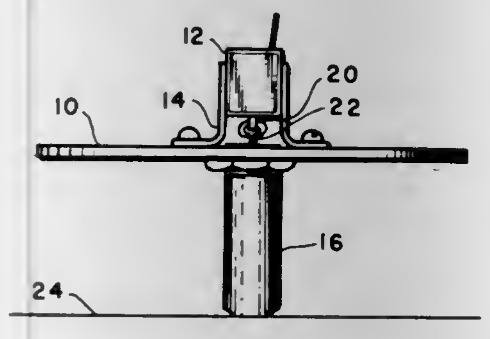


1. An interlocked contact assembly comprising two contact carriers each movable between first and second positions, housings in which respective contact carriers are disposed, a mounting structure to which the two housings are secured so that the contact carriers are spaced apart in a side-by-side relationship, a locking device disposed between the two contact carriers for preventing both contact carriers from being in the first position at any one time, the locking device including a frame held by the housings, a latching member pivotally supported between the two contact carriers engaging both contact carriers and pivoting in response to movement of a contact carrier relative to the other contact carrier, means for pivotally supporting the latching member from the frame, and means for adjusting the latching member relative to the contact carriers.

4,356,364

SHOCK-SENSITIVE ELECTRICAL SWITCH

John Soto, 1133 Rex Rd., Hayward, Calif. 94541
Filed Apr. 20, 1981, Ser. No. 255,701
Int. Cl.³ H01H *35/14*
U.S. Cl. 200—61.52 7 Claims

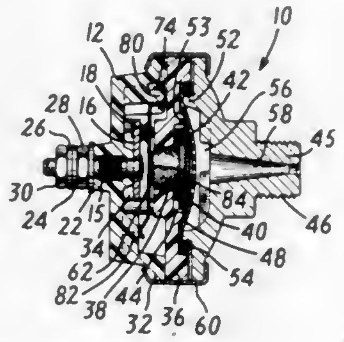


1. An electrical switching assembly for switching from a first switch position to a second switch position when subjected to a predetermined level of shock and vibration, said switching assembly comprising:
a horizontal plate;
an electrical switch mounted to the top surface of said plate, said switch having an inward and outward actuating trigger extending downward through an opening in said plate at the center of gravity of said plate;
a vertical tube, the top end of said tube being connected to said plate through said opening at the center of gravity of said plate whereby the longitudinal axis of said tube is substantially aligned with said center of gravity; and
an actuating rod connected to said switch actuating trigger, said rod extending through said tube and outward from the end thereof when said switch is in a second switch position, and the end of said rod being flush with the bottom end of said tube when said switch is in its first switch position.

4,356,365

AIR OPERATED DC SWITCH

Hemming G. Siiberg, New Providence, N.J., assignor to Edison International, Inc., Rolling Meadows, Ill.
Filed Oct. 24, 1980, Ser. No. 200,451
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 J 15 Claims



1. In a switching device having at least one fixed contact, an armature, and an actuating means for moving said armature, the improvement wherein:
- (a) said armature comprises floating blade having a first end including a main portion with at least two fingers extending therefrom, said main portion defining mechanical contact means;
- (b) at least one of said fingers having a contact at the distal end portion thereof;
- (c) means for supporting said armature so that said contact at the distal end portion of said one finger is in registration with and spaced from said fixed contact;
- (d) said armature support means including:
  - (i) means fixedly positioning the distal end portion of the other of said two fingers of said floating blade of said armature; and
  - (ii) surface means supportively engaging said mechanical contact means of said main portion of said armature, said mechanical contact means being slidable along said surface means in response to the application to force to said armature by said actuating means; and
- (e) said actuating means being positioned adjacent to an intermediate portion of said other of said at least two fingers for applying a force to said intermediate portion, said armature flexing in response to the application of said force for engaging said contacts in a wiping motion.

4,356,366

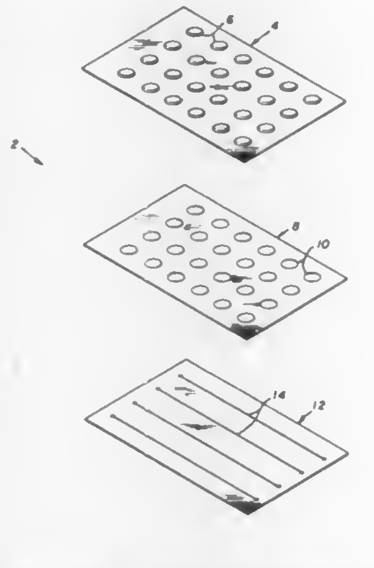
CIRCUITRY COMPONENT

William P. Harper, Phoenix, and Michael J. Taylor, Mesa, both of Ariz., assignors to Rogers Corporation, Rogers, Conn.
Filed Jun. 5, 1980, Ser. No. 156,759
Int. Cl.³ H01N *3/12;* H01B *1/06*
U.S. Cl. 200—159 B 10 Claims

1. An improved switch array for use in a keyboard assembly comprising:
means defining first contacts of the switches of the array, said first contact defining means including a planar non-conductive substrate having a plurality of conductors disposed on a first surface thereof; and
means defined second contacts of the switches of the array, said second contact defining means including:

a flexible non-conductive substrate, said flexible substrate defining a second plane parallel to the plane of the substrate of said first contact defining means, said flexible substrate having a plurality of protusions therein, said protusions extending away from said first contact defining means and being configured to snap through said second plane towards said first contact defining means upon application of force thereto, said protusions being in registration with conductors on the substrate of said first contact defining means;

a plurality of spacially separated conductive regions on a first surface of said flexible substrate, said first surface facing said first surface of said first contact defining means, said conductive regions being spacially separated from said plurality of conductors, said conductive regions have been formed by the selective chemical removal of adhered conductive material from said first surface of said flexible substrate, each of said protusions having conductive regions extending partly onto the wall thereof from a pair of spaced locations; and



a conductive ink on the wall of said protusions and at least partly overlaping adhesive from which conductive material has been chemically removed, said conductive ink bridging the space between the conductive regions which extend part way into the protusions to establish a current path therebetween, said conductive ink also functioning as a moveable switch contact and contacting a conductor on said first contact defining means when the associated protusion is caused to snap through said second plane, said conductive ink including conductive particles in a thermosetting binder, said thermosetting binder being selected from the group of binders having hydroxyl functionality and the ability to form hydroxyl groups, said conductive ink further including a multi-functional isocyanate having a molecular weight in the range of 150 to 350 and a low vapor pressure relative to other low molecular weight isocyanates at standard temperature and pressure, said isocyanate comprising about three percent to about ten percent by weight of the binder.

4,356,367
ELECTRIC SWITCH

David W. Moldenhauer, LaGrange, N.C., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jun. 8, 1979, Ser. No. 46,975

Int. Cl.^{3} H01H *9/02*

U.S. Cl. 200—298 **43 Claims**

1. An electric switch apparatus comprising:

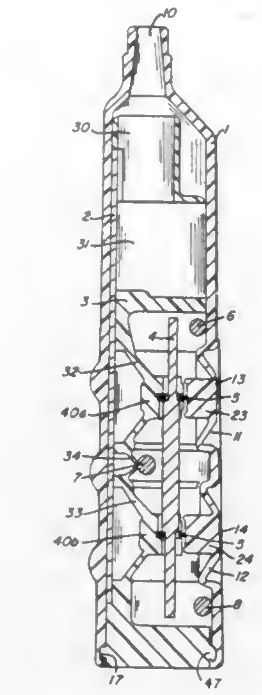
an inner member composed of a resilient electrically non-conducting material;

a plurality of electrical contacts at least partially disposed within said inner member;

conducting means at least partially disposed within said inner member for selectively forming a conductive electrical path between preselected pairs of said contacts;

said inner member having at least one integral resiliently deformable diaphragm means for at least partially supporting said conducting means;

an outer resilient housing member at least partially surrounding said inner member;



said outer member having cable entrance means for providing for access by a plurality of electrical conductors to said contacts; and

said outer member having at least one integral resilient deformable diaphragm means adapted to be operably engaging said conducting means for at least partially supporting said conducting means and transmitting forces applied to the exterior of said housing member to said conducting means to form an electrical path between preselected pairs of said contacts.

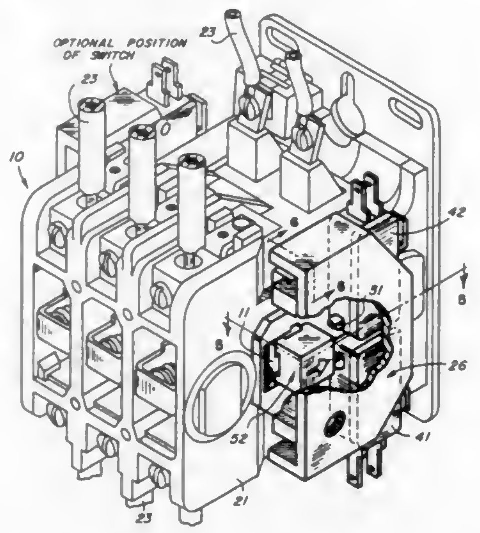
4,356,368
AUXILIARY SWITCH ASSEMBLY FOR A POWER CONTACTOR

Thomas F. Osika, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed May 1, 1980, Ser. No. 145,804

Int. Cl.^{3} H01H *45/02, 45/08*

U.S. Cl. 200—307 **5 Claims**



1. An auxiliary electrical switch assembly adapted to be mounted on and to be operated by a power contactor, which contactor has a side wall and an actuator movable in a cavity in such wall, said assembly including

an insulating housing having a cover portion and separated wall portions at right angles to said cover portion to engage said contactor side wall and space said cover portion therefrom to accommodate auxiliary electrical switch assembly elements within said space,

said housing cover portion having a plurality of integral projecting portions and a plurality of integral studs on the inside thereof, with each said projecting portions having a bore extending therethrough to receive a mounting screw therein for securing said assembly to said contactor side wall and each having projecting means thereon to position said housing relative to said acutator prior to securing said assembly on said wall, with said integral studs adapted to extend through the housing on an electrical switch and position said switch in said housing and assembly,

an electrical switch including a housing with bores therein adapted to receive said integral studs within said switch housing, said switch including a plunger extending out of said switch housing and a plurality of terminals, with said terminals extending out of said insulating housing between said separated wall portions, and

said auxiliary assembly including a connector to be mechanically connected to said actuator at a position within the space in such insulating housing and positioned therein to engage said switch plunger upon movement of said actuator and said connector.

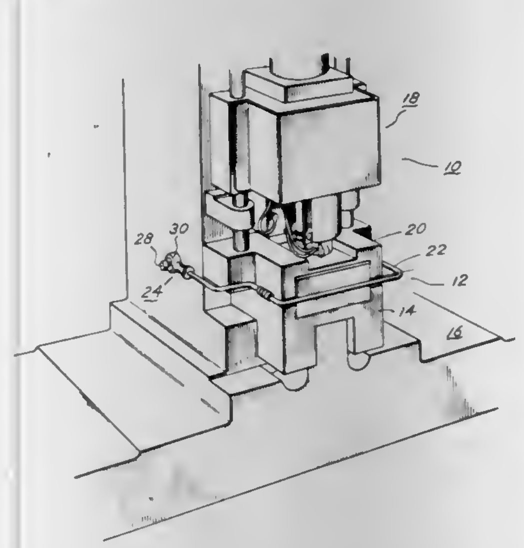
4,356,369
GUARD APPARATUS

Thomas E. Hostetler, New Carlisle, and Ted J. Ellis, Jr., Goshen, both of Ind., assignors to Bristol Corporation, Elkhart, Ind.

Filed Feb. 12, 1981, Ser. No. 233,926

Int. Cl.^{3} H01H *9/20, 3/20*

U.S. Cl. 200—334 **12 Claims**



1. A guard apparatus for production machines having an emergency stop circuit and hazardous work areas in which injury to workers can occur, comprising a guard rod disposed generally horizontally around the perimeter of the hazardous work area of the machine, including a guard section and an angularly moveable end section, pivot means supporting said angularly moveable end section, an activation mechanism connected to said end section of said rod, a switch disposed in said mechanism and operated by pivotal movement of said one rod end section in angular opposite directions, a resilient means urging said rod to a central position, an electric circuit connecting said switch to the emergency stop circuit of the machine, and means for connecting said rod to said switch so that upward or downward deflection of said rod sections from said central position trips said switch for interrupting the operation of the machine through said electric circuit and the emergency stop circuit.

4,356,370
APPARATUS FOR CONTROLLING ELECTRONIC CONTROLLED COOKING APPARATUS

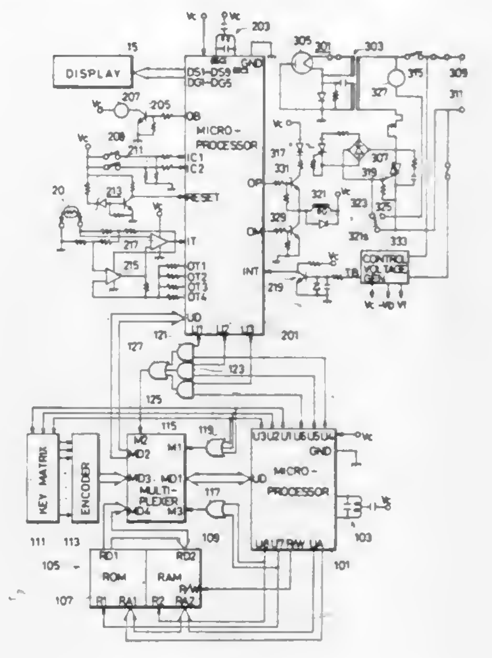
Atsushi Horinouchi, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 13, 1980, Ser. No. 130,152

Claims priority, application Japan, Mar. 19, 1979, 54-33094

Int. Cl.^{3} H05B *6/68*

U.S. Cl. 219—10.55 B **18 Claims**



1. An apparatus for controlling an electronic controlled cooking apparatus, comprising:

energy generating means for generating energy for cooking a material being cooked,

entry means for providing data concerning cooking conditions being applied to said material being cooked,

storage means for storing data concerning a fixed cooking condition corresponding to a specified one of the pieces of said cooking condition data being provided by said entry means,

data display means for displaying at least said cooking condition data entered by said entry means, and

control means responsive to at least one of said cooking condition data entered by said entry means and said fixed cooking condition data obtained from said storage means for controlling said energy generating means,

said control means comprising at least two independently operable microprocessor means which cooperate with each other, data transmission means for providing a data transmission path between said two microprocessor means, at least one of said microprocessor means being adapted to detect said cooking condition data entered by said entry means, at least the other of said microprocessor means being responsive to the data received from said one microprocessor means to control said energy generating means and one of said two microprocessor means also for controlling said data display means to display the data received by said one microprocessor means,

each of said at least two microprocessor means further comprising means for cyclically providing a separate individual synchronizing signal,

coincidence detecting means for detecting coincidence of said synchronizing signals of said at least two microprocessor means, and

said data transmission means being responsive to the output of said coincidence detecting means for directly transmitting data from said one microprocessor means to said other microprocessor means to be received thereby for controlling said energy generating means in accordance with the data entered into and transmitted from said one microprocessor means.

4,356,371

SMALL LOAD DETECTION BY COMPARISON BETWEEN INPUT AND OUTPUT PARAMETERS OF AN INDUCTION HEAT COOKING APPARATUS

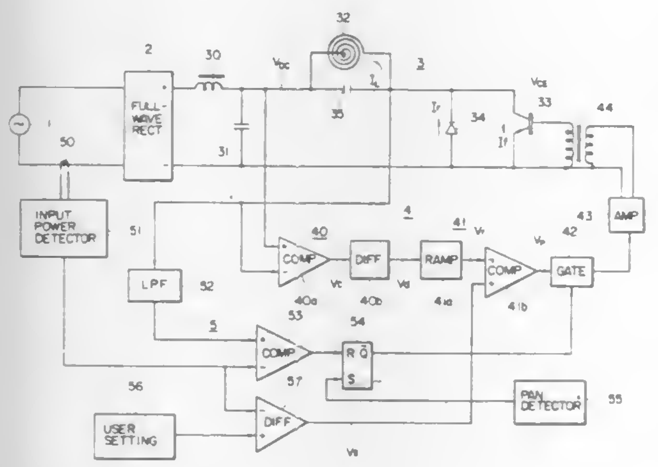
Mitsuyuki Kiuchi, Minoo; Takumi Mizukawa, Neyagawa; Hideyuki Kominami, Takatsuki, and Kenji Hattori, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Nov. 10, 1980, Ser. No. 205,861

Claims priority, application Japan, Nov. 12, 1979, 54-146893; Jan. 9, 1980, 55-1091

Int. Cl.³ H05B *6/08, 6/12*

U.S. Cl. 219—10.77 **11 Claims**



1. An induction heat cooking apparatus comprising:
- a semiconductor power-rated switching device,
- a resonant circuit formed by an induction heating coil and a capacitor means for converting a low frequency input into a high frequency output in response to the conduction of said semiconductor power-rated switching device and for heating an inductive load placed in overlying relation with said heating coil,
- an input detector means for sensing said low frequency input,
- an output detector means for sensing said high frequency output,
- reference means for generating a reference voltage corresponding to a user's power setting level,
- a feedback circuit including:
  - a reference crosspoint detector means for sensing when said high frequency output reaches a predetermined voltage level, and
  - a pulse-width modulated pulse generator means responsive to the output of said reference crosspoint detector means for generating a gating pulse having a duration which is a function of said reference voltage for gating said switching device into conduction thereby controlling the power level of said high frequency output to tend toward said power setting level and to attain a high value in comparison with said low frequency input when said inductive load is lower than a predetermined value, and
- a comparator means for comparing the outputs of said input and output detector means to generate a comparator output when the sensed high frequency output is greater in magnitude than the sensed low frequency input, and
- means for inhibiting said apparatus in response to said comparator output.

4,356,372

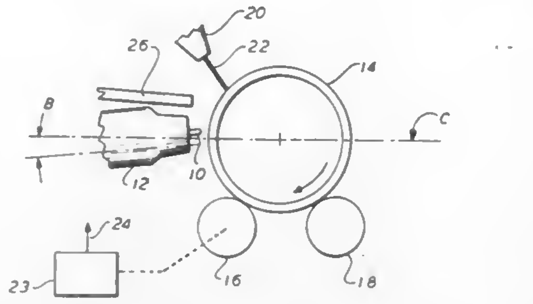
SHEILED-ARC TUBE WELDER WITH INTERMEDIATE GAS SUPPLY

Howard P. Inscho, Steuben, and Lucas H. Van Rhyn, Livingston, both of N.Y., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Dec. 3, 1979, Ser. No. 99,798

Int. Cl.³ B23K *9/16*

U.S. Cl. 219—60 R **14 Claims**



1. Welding apparatus for forming a joint between two sections comprising:
- weld means for welding together portions of said two sections adjacent said weld means, said weld means including an electrode adjacent said joint;
- a shielding hood encircling said weld means, said shielding hood encircling said electrode;
- feed means spaced a given distance from said weld means for feeding filler wire into a melted portion of said joint;
- translation means for producing relative motion between said joint and said weld means; and
- intermediate means for applying a stream of gas to said joint at a location said feed means and said weld means, said stream of gas being directed to restrict flow of said gas toward said weld means and to urge said melted portion of said joint in a direction to allow joining of said two sections, said stream of gas being composed differently than the gaseous ambient within said shielding hood, said intermediate means comprising: a conduit spaced from said hood for conducting said gas to a region of said joint outside said hood, said hood being outside of said conduit.

4,356,373

ELECTRICAL RESISTANCE WELDING APPARATUS

Karl E. Mattson, Näsum, and Hass Bertil, Olofstrom, both of Sweden, assignors to AB Volvo, Gothenburg, Sweden

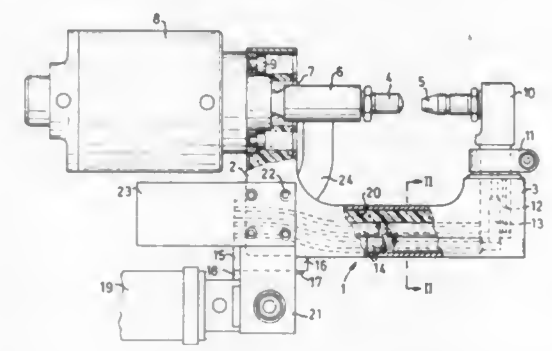
PCT No. PCT/SE79/00159, § 371 Date Mar. 21, 1980, § 102(e) Date Mar. 14, 1980, PCT Pub. No. WO80/00229, PCT Pub. Date Feb. 21, 1980

PCT Filed Jul. 19, 1979, Ser. No. 190,870

Claims priority, application Sweden, Jul. 21, 1978, 7808042

Int. Cl.³ B23K *11/10*

U.S. Cl. 219—86.31 **3 Claims**



1. In electrical resistance welding apparatus comprising an electrode holder arm (**1**,**2**,**3**) which at its free end (**3**) carries a liquid-cooled electrode (**5**) and at a distance from the same has connections (**15**) for current supply and coolant, said arm being made as a hollow shell construction and current as well as coolant supply to the electrode (**5**) being effected through the arm (**1**); the improvement in which in the interior of the arm (**1**), two tubes (**14**) of a material with good electrical conductivity extend from the current and coolant connections (**15**) to a holder means (**10**) for the electrode (**5**), said tubes (**14**) conducting current to, as well as coolant to and from, the electrode (**5**), and a rigid sound-damping material means in the interior cavity of the arm (**1**) between its walls and the tubes (**14**).

4,356,374

ELECTRONICS CIRCUIT DEVICE AND METHOD OF MAKING THE SAME

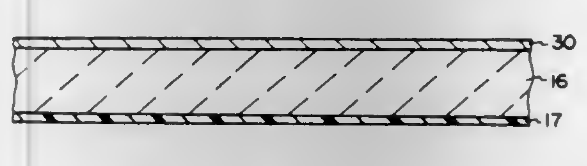
Masaharu Noyori, and Hiroaki Fujimoto, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 882,152, Feb. 28, 1979, Pat. No. 4,246,595. This application Jul. 10, 1980, Ser. No. 168,418

Claims priority, application Japan, Mar. 8, 1977, 52-25603; Apr. 7, 1977, 52-40022; May 13, 1977, 52-55624; Sep. 21, 1977, 52-114296; Sep. 28, 1977, 52-117068

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PE **7 Claims**



1. A method of making an electronic circuit device comprising the steps of:
- forming an etching mask of a specified pattern on a first resin film of a composite resin film comprising said first resin film and a second resin film, said first resin film and said second resin film being subject to etching by different etchants respectively,
- selectively etching said first resin film with a first etchant by utilizing said etching mask thereby forming recesses or holes,
- bonding at least one semiconductor device on said second resin film at the part where said recesses or holes are formed on the opposite side of the composite resin film by utilizing said second resin film as a bonding film,
- etching said second resin film exposed from said recesses or holes by means of a plasma etchant which is different from the first etchant, thereby forming through-holes with a sloped wall with a round peripheral part, and
- forming a wiring conductor of a metal film of a specified pattern on said first resin film and continuously into said through-holes, thereby electrically connecting specified parts of said semiconductor device and said wiring conductor.

4,356,375

PROCESS FOR PRODUCING LINES OF WEAKNESS IN THE PROTECTIVE BACKING OF AN ADHESIVE LAMINATE

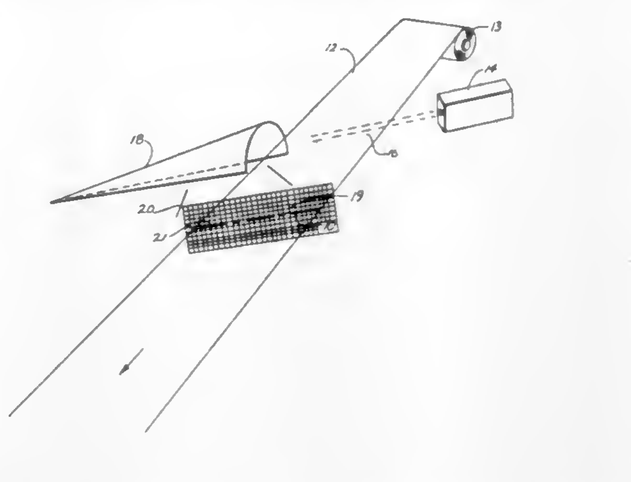
Karl Josephy, Los Angeles, and Richard R. Baggarley, Arcadia, both of Calif., assignors to Avery International Corporation, San Marino, Calif.

Filed Jul. 10, 1980, Ser. No. 168,192

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LH **35 Claims**

1. A process for forming a line of weakness in the protective backing of an adhesive laminate, the process comprising the steps of:
- (a) generating a laser beam of sufficient energy density to vaporize at least a portion of the protective backing of an adhesive laminate;
- (b) focusing the laser beam in a focal line extending across the protective backing for a time sufficient for vaporizing at least a portion of the protective backing; and



- (c) vaporizing at least a portion of the protective backing with the laser beam to a depth sufficient for forming a line of weakness in the protective backing along the focal line.

4,356,376

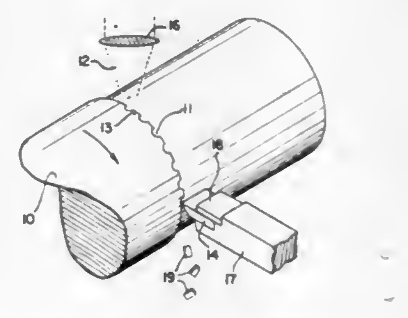
PULSE LASER PRETREATED MACHINING

Ranga Komanduri; Minyoung Lee, both of Schenectady; Donald G. Flom, Scotia; Robert A. Thompson, Quaker Street; Marshall G. Jones, Scotia, and Robert J. Douglas, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 13, 1981, Ser. No. 263,235

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LN **9 Claims**



1. A method of machining a workpiece made of a difficult-to-machine material comprising:
- pretreating the outer surface of the workpiece prior to the cutting process by using a pulse laser beam to drill circumferentially spaced holes in a layer of material to be removed, said holes having a depth no greater than a known depth of cut of a cutting tool; and
- rotating said workpiece relative to said cutting tool to remove the layer of material which is weakened by said holes and to generate a segmented chip.

4,356,377

CUTTING THIN METAL SHEET WITH AN ELECTRON BEAM

James F. Norton, Alplaus; Gerald B. Kliman, Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

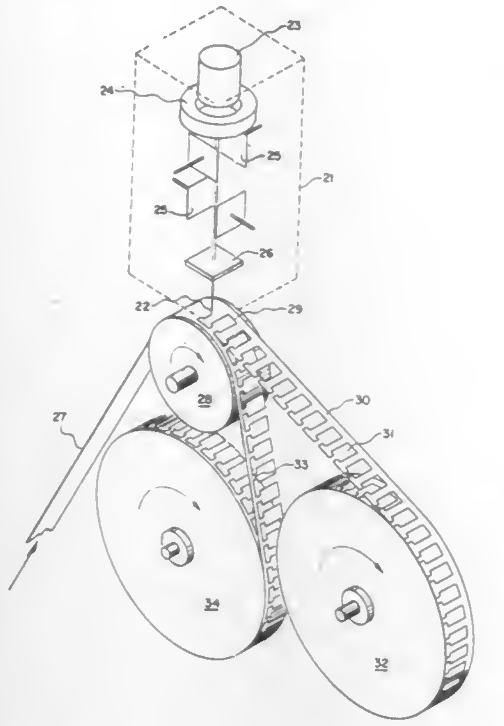
Filed Feb. 19, 1981, Ser. No. 235,811

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 EH **10 Claims**

1. The method of rapidly cutting thin metal sheet material which comprises:
- moving a focused electron beam and said metal sheet relative to one another to heat local regions of the entire thickness of the material above its melting temperature and produce molten metal and cut through said sheet along designated lines;
- said metal sheet moving along a curved path beneath said

electron beam and having sufficient centrifugal force to propel molten metal away from the surface of said sheet so



that the edges of the cut solidify with no appreciable formation of beads along the cut edges and with negligible increase in the thickness of said metal sheet.

4,356,378

APPARATUS FOR AUTOMATICALLY GUIDING A WELDING GUN ALONG A PROGRAMMED WELDING SEAM

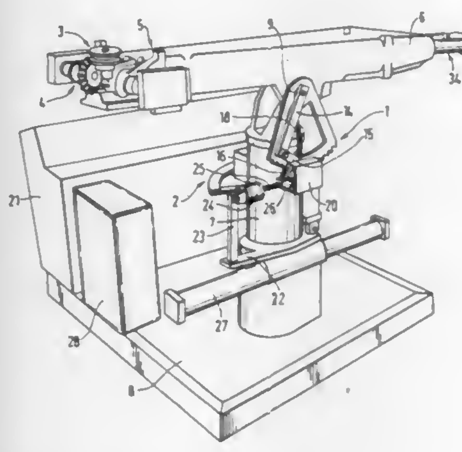
Erwin Cloos, Haiger; Manfred Schmidt, Haiger-Allendorf; Helmut Kring, Haiger-Steinbach; Gerhard Schnell, Beilstein, and Joachim Thielmann, Haiger-Rodenbach, all of Fed. Rep. of Germany, assignors to Carl Cloos Schweisstechnik GmbH, Haiger, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,530

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851063

Int. Cl.^{3} B23K *9/12*

U.S. Cl. 219—124.1 11 Claims



1. A welding robot, comprising:
a base;
an arm mounted on said base for pivotal movement about mutually perpendicular axes;
adjustment means for effecting a variance of the length of said arm at one end thereof;
a first decoder means for measuring the angle of traverse of said arm about one of said mutually perpendicular axes;
mounting means on said one end of said arm;
commuter means mounted on said mounting means, said commuter means including welding gun means and support means supporting said welding gun means for movement in two mutually perpendicular planes separate from planes defined by the movement of said arm about said mutually perpendicular axes, said commuter means including a housing, a drive motor mounted on said housing, a first axle rotatably supported on said housing and driven by said drive motor, a guide bar secured to said first axle for movement therewith, a slide block slidably secured to said guide bar and having means thereon defining a second block axle extending parallel to said first axle, said support means including a cross-slide member having first and second carriages, said first carriage being fixedly mounted on said second axle, said second carriage being mounted for relative movement between said first carriage and said housing, said welding gun means further including a welding gun secured to and movable with said first carriage; and
a second decoder means for measuring the angle of traverse of said first axle relative to said housing.

4,356,379

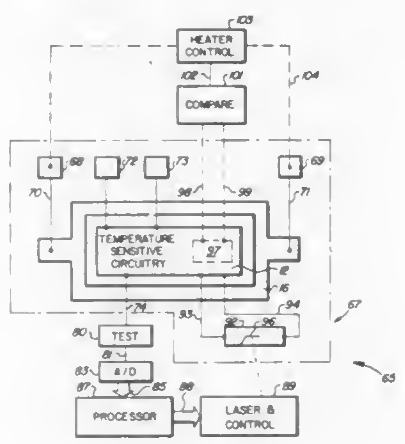
INTEGRATED HEATING ELEMENT AND METHOD FOR THERMAL TESTING AND COMPENSATION OF INTEGRATED CIRCUITS

Jerald G. Graeme, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

Continuation of Ser. No. 869,228, Jan. 13, 1978, abandoned. This application May 27, 1980, Ser. No. 153,764

Int. Cl.^{3} H05B *1/00;* **B01J** *17/00*

U.S. Cl. 219—209 7 Claims



1. A monolithic integrated circuit chip including temperature sensitive circuitry located in a relatively small portion of said integrated circuit, said integrated circuit comprising in combination:

(a) a heating resistor substantially surrounding said temperature sensitive circuitry for heating said temperature sensitive circuitry in response to an electrical signal being applied to the heating resistor, said heating resistor being sufficiently close to said temperature sensitive circuitry to cause said heating resistor to heat said temperature sensitive circuitry to a predetermined temperature substantially more rapidly than thermal equilibrium is attained in remaining portions of the integrated circuit chip;
(b) first bonding means connected to one electrode of said heating resistor for conducting said electrical signal to said heating resistor;
(c) a trimmable element determinative of the thermal drift of a temperature sensitive electrical parameter of said temperature sensitive circuitry, whereby said trimmable element may be trimmed to compensate the thermal drift in response to a measurement of the temperature sensitive parameter when said heating resistor is utilized to heat the temperature sensitive circuitry; and
(d) means in said temperature sensitive circuitry for effecting measuring of said temperature sensitive parameter after said temperature sensitive circuitry has risen to said predetermined temperature and substantially before thermal equilibrium is established in said remaining portions of the integrated circuit;

whereby said resistive heating means can be energized to rapidly heat said temperature sensitive circuitry to said first temperature and immediately measure said temperature sensitive parameter while said integrated circuit is in a wafer without the necessity of waiting for portions of the wafer more remote from said resistive heating means than said temperature sensitive circuitry to be heated to said predetermined temperature.

4,356,380

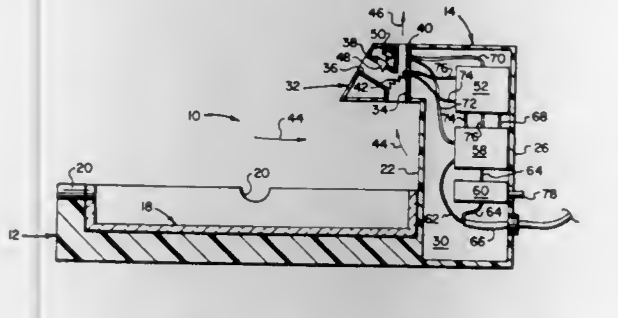
ELECTRIC CIGARETTE LIGHTER

Charles T. Kao, 465 Stillmeadow, Richardson, Tex. 75081

Filed Dec. 12, 1980, Ser. No. 215,617

Int. Cl.^{3} F23Q *7/20*

U.S. Cl. 219—262 4 Claims



1. An electric cigarette lighter comprising, in combination:
a housing of electrically insulating material having a lower base portion defining an ashtray and an upper housing portion supported in a position overlying the ashtray, said upper housing portion having an upwardly extending passage defining a chimney overlying the ashtray, and having a transversely extending cigarette guide passage communicating with the chimney passage;
an electrical resistance heating element disposed within the chimney passage in alignment with the cigarette guide passage;
an electrical circuit connected to said heating element for conducting electrical current to said heating element from an external power source; and,
switching means coupled to said circuit for opening and closing a conductive path from the external power source to said heating element.

4,356,381

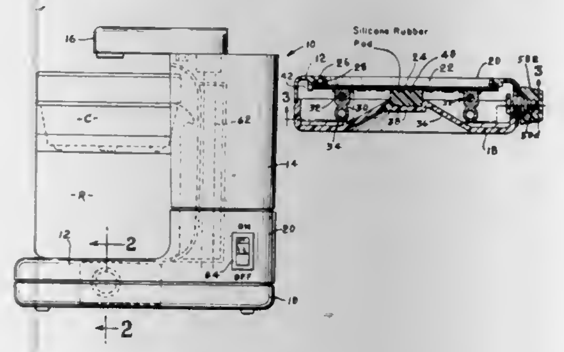
WARMING PLATE MOUNTING ARRANGEMENT IN A SINGLE-PASS DRIP-TYPE ELECTRIC COFFEEMAKER

John J. Flaherty, Jr., West Hartford, and Gus W. Wallin, Waterbury, both of Conn., assignors to Scovill Inc., Waterbury, Conn.

Filed Oct. 1, 1980, Ser. No. 192,904

Int. Cl.^{3} A47J *31/00;* **H05B** *1/02;* **F24H** *1/12*

U.S. Cl. 219—283 3 Claims



1. An electric single-pass drip-type coffeemaker comprising a plastic base having upper and lower halves, the upper half having an upper surface formed with opening adjacent the front thereof, the opening surrounded by a downward lip, a reservoir extending up at the rear of the base of a product spout at the top of the reservoir, a metal warming plate laterally immobilized in the opening by a plurality of downward projections on the upper half, a generally U-shaped extrusion secured against the underside of the warming plate, the extrusion having an upper passage containing a heating element and a lower passage for conducting liquid and having first and second ends, first conduit means containing check valve means and connecting the reservoir and the first end and second conduit means connecting the second end and the spout, electrically conductive means for supplying current to the heating element, the lower half of the base having a central upward boss terminating upwardly in a silicone pad engaging and supporting the underside of the warming plate up against the lip to immobilize the plate vertically when the upper and lower halves are held together, and means holding together the upper and lower halves of the base.

4,356,382

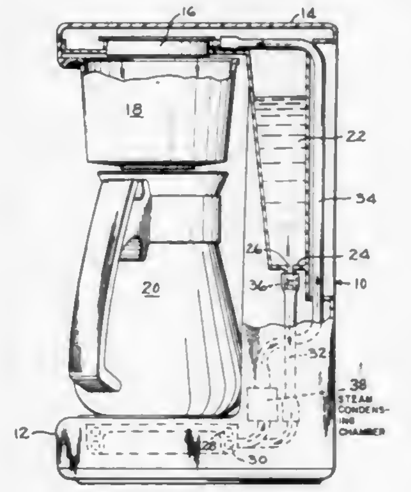
DRIP COFFEEMAKER HAVING A CONDENSER ELIMINATING DELIVERY OF STEAM TO THE WATER SPREADER

Bahram Keramati, Scotia, N.Y.; Steven C. Bray, Chillicothe, Ill., and Ralph T. Wood, Clifton Park, N.Y., assignors to General Electric Company, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,955

Int. Cl.^{3} A47J *31/051, 31/54;* **F24H** *1/12;* **F04B** *19/24*

U.S. Cl. 219—297 4 Claims



1. In a drip coffeemaker having an upright C-shaped housing, one horizontal leg having a heated carafe support and the other a water spreader, the vertical leg enclosing an accessible water reservoir with an apertured bottom wall and a pump and hot water generator in the bottom of said housing for delivering heated water through tube means to the spreader, the improvement comprising,
a separate plenum chamber with a single inlet and outlet connected in said tube means,
said chamber being connected in series flow relationship in said tube between the hot water generator and said spreader,
a one-way inlet valve between the reservoir and hot water generator,
a one-way outlet valve adjacent the chamber exit preventing back-flow through the chamber,
said chamber and outlet valve being connected in series flow relationship in said tube between the hot water generator and said spreader and disposed as the only connected component between the heated carafe support and said spreader so all water from the generator flows unidirectionally through said plenum chamber to said spreader to eliminate steaming and reduce clogging.

4,356,383

THERMOSTATICALLY CONTROLLED ELECTRIC FLUID HEATING APPARATUS

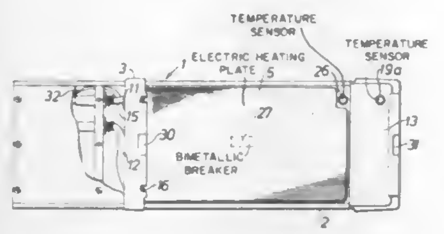
Bengt A. G. Dahlberg, Lund; Bengt M. Holmberg, Bjarred, and Lennart O. E. Nilsson, Genarp, all of Sweden, assignors to Gambro AB, Sweden

Filed Nov. 20, 1979, Ser. No. 96,001

Claims priority, application Sweden, Nov. 22, 1978, 7812016

Int. Cl.^{3} H05B *1/02;* B67D *5/62;* A61F *7/00;* F24H *1/12*

U.S. Cl. 219—308 17 Claims



1. A heating apparatus for heating of a fluid comprising:
a conduit having a fluid passage therethrough for conduction of a fluid to be heated;
heating means in heat transfer contact with a portion of said conduit for heating the fluid being conducted therethrough;
temperature sensing means positioned in engagement with said conduit at a predetermined location along said conduit external to said conduit for sensing the temperature of fluid to be conducted through said conduit;
means operatively associated with said temperature sensing means for controlling operation of said heating means in response to the temperature of the fluid sensed by said temperature sensing means; and
constricting means associated with said conduit for maintaining the fluid in said fluid passage in contact with said conduit at said predetermined location when the flow rate of said fluid through said fluid passage is below a predetermined flow rate so as to guide the fluid in said conduit in temperature sensing relationship with said temperature sensing means, said constricting means being responsive to the flow rate of fluid through said fluid passage at said predetermined location to vary the cross-sectional area of the fluid passage between a predetermined cross-section area when the flow rate of said fluid is below a predetermined flow rate and a larger cross-sectional area when the flow rate of said fluid is above said predetermined flow rate, said predetermined cross-sectional area being of a size less than the unconstricted cross-sectional area of said fluid passage in said portion of said conduit in heat tranfer contact with said heating means.

4,356,384

METHOD AND MEANS FOR HEAT TREATING SEMICONDUCTOR MATERIAL USING HIGH INTENSITY CW LAMPS

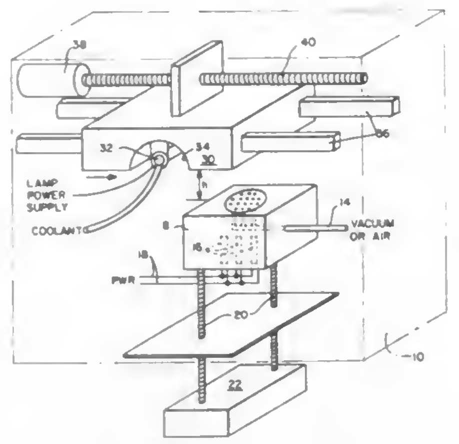
Arnon Gat, 1875 Newell Rd., Palo Alto, Calif. 94303

Division of Ser. No. 126,458, Mar. 3, 1980, Pat. No. 4,331,485. This application Mar. 2, 1981, Ser. No. 239,425

Int. Cl.^{3} H05B *1/00*

U.S. Cl. 219—347 8 Claims

1. Apparatus for heat treating a semiconductor wafer comprising
a heated support for holding and heating a semiconductor wafer,
a high intensity incoherent CW light source positionable with respect to said support for radiation heating of a wafer held on said support, and



means for effecting relative motion between said light source and said support whereby the entire surface of a wafer can be scanned by said light source.

4,356,385

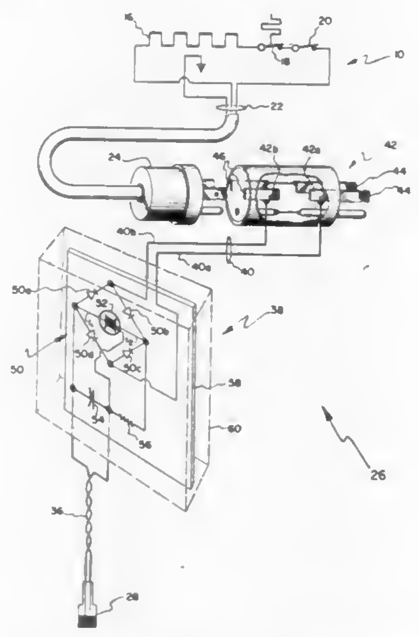
APPARATUS FOR PRECISELY REGULATING THE PARAFFIN TEMPERATURE IN AN ELECTRICALLY HEATED TISSUE PROCESSOR

Arthur A. Stein, Albany, and Max Goldman, Latham, both of N.Y., assignors to Pathology Products Ltd., Albany, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,686

Int. Cl.^{3} H05B *3/06*

U.S. Cl. 219—441 10 Claims



6. In combination with an electrically heated tissue processor configured of a paraffin-containing cavity, a heating element affixed to the underside of the cavity for heating the paraffin contained therein when the heating element is energized with alternating current, a bimetallic thermostatic switch and a line cord having a plug at the end thereof for coupling the heating element and bimetallic switch across a source of alternating current, apparatus for precisely regulating the temperature of paraffin heated in the paraffin-containing cavity by the heating element, said apparatus comprising:
a sensor responsive to the temperature of paraffin heated in the paraffin-containing cavity by the heating element, said sensor changing conduction states from a first to a second state when the temperature of paraffin in the paraffin-containing cavity rises above a predetermined temperature;
clamp means for detachably securing said sensor to paraffin containing cavity so that at least a portion of said sensor is immersed in the paraffin in said paraffin-containing cavity;
controller means electrically coupled to said sensor and being responsive to the conduction state of said sensor for providing a low impedance circuit path thereacross for alternating current during intervals while said sensor remains in its first conduction state and for providing a high impedance circuit path thereacross for alternating current during intervals while said sensor remains in its second conduction state following a rise in paraffin temperature above said predetermined temperature; and
means coupled to said controller means for detachably coupling said controller means in series with the tissue processor heating element and bimetallic thermostatic switch across a source of alternating current.

4,356,386

DESK-TOP CALCULATOR

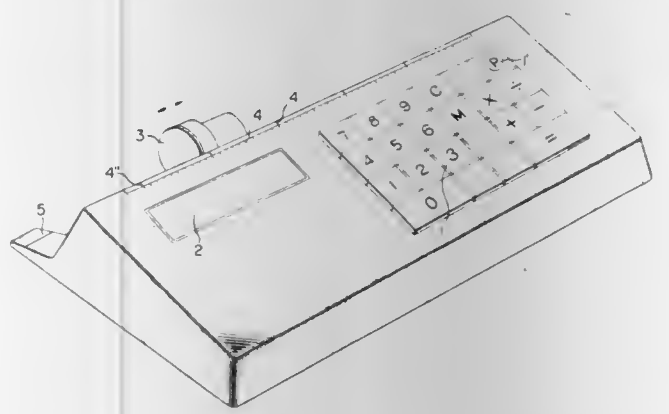
Takayoshi Hanagata, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,940

Claims priority, application Japan, Jan. 30, 1979, 54-9369

Int. Cl.^{3} G06C *11/04*

U.S. Cl. 235—61 PK 2 Claims



1. A calculator having:
a rotatable character wheel having a character surface on which a plurality of characters are provided, wherein ink is supplied to the character surface from an ink roller;
means for causing said character wheel to move toward a printing position, and for transferring the ink on a selected character of said character wheel to an arbitrary printing paper on a desk or table by means of urging said character wheel to the printing paper; and
means for returning said character wheel to an initial position when the calculator is lifted.

4,356,387

APPARATUS FOR COUNTING THE NUMBER OF OBJECTS PASSING A GIVEN POINT

Naoki Tsubota, and Satoru Shibuya, both of Kyoto, Japan, assignors to Giken Trading Co., Ltd., Kyoto, Japan

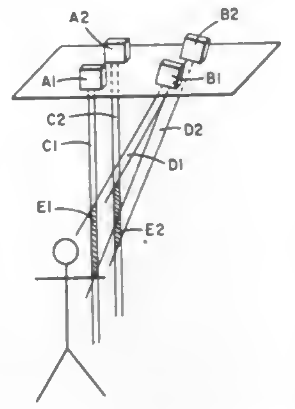
Filed Jun. 11, 1979, Ser. No. 47,324

Claims priority, application Japan, Jul. 21, 1978, 53-89697

Int. Cl.^{3} G07C *9/00*

U.S. Cl. 235—92 PK 3 Claims

1. An apparatus for counting the number of persons passing a given point comprising:
at least one radiant energy emitter and at least one corresponding radiant energy receiver provided on a ceiling above said given point, said radiant energy receiver being provided at an angle to said radiant energy emitter and being arranged and configured together with said radiant energy emitter such that the radiant energy emitted by said radiant energy emitter only intersects an extension of a radiant energy reception path of said radiant energy receiver in an area of intersection having a low point located at a height corresponding to substantially the minimum height of a person to be counted whereby said radiant energy receiver receives radiant energy only while a person to be counted is passing through the area of intersection and said radiant energy emitted by said radiant energy emitter is reflect from a head or shoulders of said person to be counted;



means for generating a signal corresponding to the reception of said reflected radiant energy; and
a means coupled to said receiver for counting said signals.

4,356,388

ODOMETER

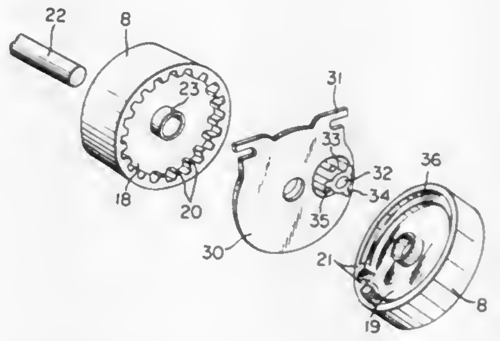
Yasuyuki Kobayashi; Hisao Nezu, and Etsushi Nishikata, all of Nagaoka, Japan, assignors to Nippon Seiki Kabushiki Kaisha, Niigata, Japan

Filed Feb. 13, 1980, Ser. No. 120,990

Claims priority, application Japan, Feb. 17, 1979, 54-19139[U]

Int. Cl.^{3} G01C *22/00*

U.S. Cl. 235—96 1 Claim



1. A unidirectional odometer, comprising:
a supporting shaft;
at least two digit wheels rotationally mounted on said shaft in mutual juxtaposition,
each of said wheels being I-shaped in cross-section taken therethrough in the plane of the longitudinal axis of said shaft, with a first circular recess on the least significant digit side thereof and a second circular recess on the most significant digit side thereof;
a driven gear comprising a continuous series of teeth formed on the inner circumference of said first circular recess;
a circular step peripheral to said second circular recess;
a driving gear comprising two adjacent teeth formed on the inner circumference of said second circular recess outside said step and occupying only a minor portion thereof, the remainder of said inner circumference of said second circular recess being untoothed;
a pinion gear holder disposed between said digit wheels;
a pinion gear mounted on said pinion gear holder for rotation about an axis parallel to and spaced apart from said shaft to unidirectionally couple said driving gear to said driven gear;
said pinion gear having a first group of relatively circumferentially short teeth and a second group of relatively circumferentially long teeth interspersed therewith, so that each tooth of one group is surrounded by two teeth of the other group,
each of said groups of teeth having a forward face for engag-

ing the teeth of said driving gear to permit rotation of said driving gear, pinion gear and driven gear in a desired forward direction, and an opposite rear face for engaging the teeth of said driving gear upon rotation thereof in the reverse direction,

the rear face of each of said relatively circumferentially short teeth having an intermediate shoulder for receiving an adjacent part of the leading edge of one of said two adjacent teeth of said driving gear when said driving gear is rotated in the reverse direction, said shoulder being dimensioned and said pinion gear teeth being dimensioned and spaced so that when said driving gear is rotated in the reverse direction and the leading edge of the leading tooth of said two adjacent teeth of said driving gear engages said shoulder, the leading edge of the other tooth of said driving gear jams against the relatively circumferentially long surface of an adjacent tooth of said pinion gear to prevent rotation thereof in said reverse direction; and

means for rotating the least significant digit wheel, including a pair of elastic arms having front ends in engagement with the teeth of the driven gear thereof.

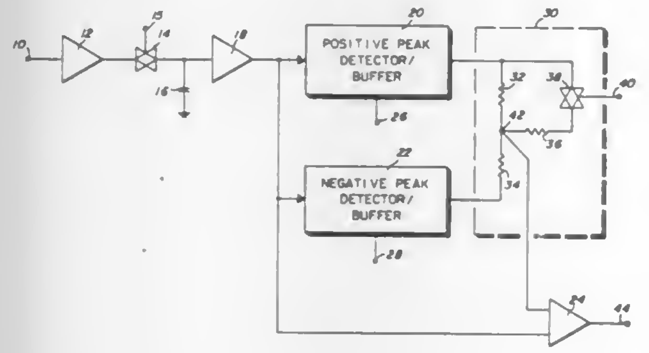
4,356,389
BAR CODE SCANNER INTERFACE

Tim A. Quirey, Davie, and Thomas V. D'Amico, Boca Raton, both of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jun. 27, 1980, Ser. No. 163,855

Int. Cl.^{3} G06K *7/14*

U.S. Cl. 235—455 **8 Claims**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POSITIVE PEAK DETECTOR/ BUFFER
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NEGATIVE PEAK DETECTOR/ BUFFER
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44

1. An interface circuit as for a bar code scanner and comprising:

DC coupled input means for receiving a signal varying in DC level and peak values;

positive peak detector means coupled to the input means;

negative peak detector means coupled to the input means;

reset means coupled to reset the peak detectors during each signal cycle, one after each signal transition;

switchable reference means coupled to the positive and negative peak detector means outputs for providing a reference signal having an instantaneous value equal to the last detected peak value summed with a fixed fraction of the difference between the last detected peak value and the presently detected peak value, said fixed fraction being substantially greater than one-half;

comparator means coupled to the outputs of the input means and the switchable reference means; and

output means coupled to the comparator means.

4,356,390
OPTICAL PATH MONITORING CIRCUIT FOR A DOCUMENT SCANNER

Michal M. Feilchenfeld, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 11, 1981, Ser. No. 242,755

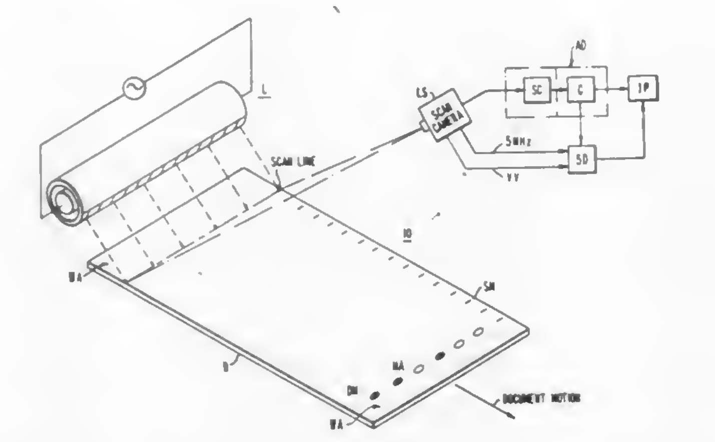
Int. Cl.^{3} G06K *9/00*

U.S. Cl. 235—455 **2 Claims**

1. In a document reading system employing an optical means for scanning information on a line-by-line basis from the surface of a document and generating a first output signal indicative of the level of light reflected from, or transmitted through the document for each scan line, and a second output signal indicative of the occurrence of each scan line, the improvement for alerting the system as the presence of dirt, smudges, etc. in the optical path of the optical means which could adversely affect the validity of information received by the system, said improvement comprising,

first circuit means for developing output signals indicative of the presence of a document within the view of said optical means,

second circuit means for designating a predetermined number of document scan lines within a blank portion of the document surface to provide a basis for monitoring the optical path of the system, and



third circuit means operatively connected to said first and second means for monitoring the level of the output signal of said optical means for said predetermined number of document scan lines and developing a first output signal when the output signal of said optical means for each of said predetermined number of document scan lines is of a level indicative of the absence of dirt, smudges, etc. in the optical path, and developing a second output signal when the output signal of said optical means for one or more of said predetermined number of document scan lines is of a level indicative of the presence of dirt, smudges, etc. in the optical path, said second output signal being provided to said system to alert said system as to the presence of dirt, smudges, etc. in the optical path of said optical means.

4,356,391
MAGNETIC CARDS AND METHOD OF MANUFACTURING THE SAME

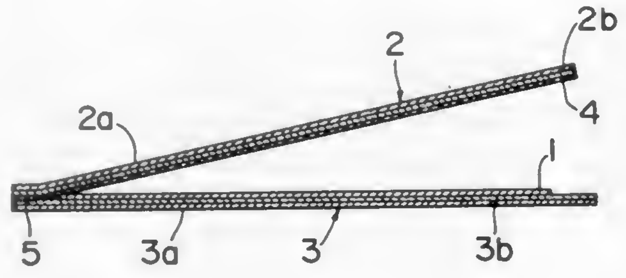
Shigekazu Takeda, 21-10, Nishiminemachi, Ohta-Ku, Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 220,085

Claims priority, application Japan, Dec. 28, 1979, 54-181360[U]; Dec. 28, 1979, 54-181361[U]; May 2, 1980, 55-57911

Int. Cl.^{3} G06K *19/02*

U.S. Cl. 235—493 **8 Claims**



1. A magnetic card comprising:

a sheet having printed or written matter thereon;

a transparent resinous upper pack film having an inner surface facing said sheet, said upper pack film overlying said sheet;

a magnetic band bonded to said inner surface of said upper pack film; and

resinous lower pack film underlying said sheet;

peripheral portions of said upper and lower pack films being bonded together to seal said sheet and said magnetic band between said upper and lower pack film.

4,356,392
OPTICAL IMAGING SYSTEM PROVIDED WITH AN OPTO-ELECTRONIC DETECTION SYSTEM FOR DETERMINING A DEVIATION BETWEEN THE IMAGE PLANE OF THE IMAGING SYSTEM AND A SECOND PLANE ON WHICH AN IMAGE IS TO BE FORMED

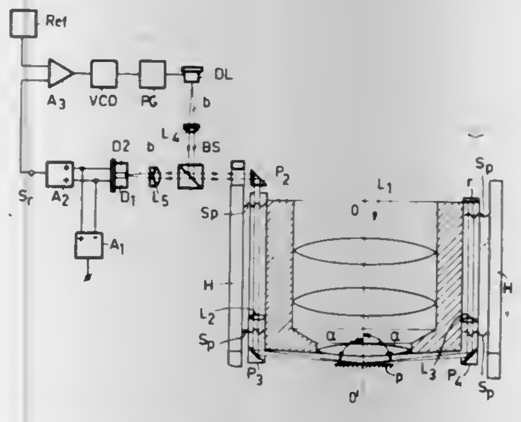
Stefan Wittekoek, and Theodorus A. Fahner, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1980, Ser. No. 158,653

Claims priority, application Netherlands, Dec. 6, 1979, 7904579

Int. Cl.^{3} G01J *1/20*

U.S. Cl. 250—201 **5 Claims**



1. In an optical system for imaging an object such as a mask pattern or the like, an apparatus for detecting a deviation between an image plane of the imaging system and a second plane on which the object is to be imaged, said apparatus comprising means for producing an auxiliary beam of radiation which is directed toward said second plane along a first path and is reflected from said second plane along a second path, means disposed in said first path for focusing said beam to a first spot on said second plane, means disposed in said second path for directing the beam reflected by said second plane back along itself towards said second plane, said directing means being coupled to said imaging system and comprising means for inverting the beam directed back along said second path and focusing the inverted beam to a second spot at the location of said first spot on said second plane so that said beam is reflected a second time by said second plane, and radiation-sensitive detector means disposed in the path of said beam reflected for said second time, said detecting means producing an electrical signal representative of the deviation of said image plane from said second plane.

4,356,393
ALIGNMENT INDICATOR FOR PHOTOELECTRIC SCANNERS

Robert W. Fayfield, Excelsior, Minn., assignor to Banner Engineering Corp., Minneapolis, Minn.

Filed May 29, 1980, Ser. No. 154,223

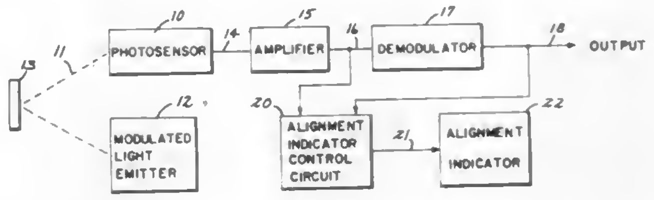
Int. Cl.^{3} H01J *40/14*

U.S. Cl. 250—214 R **15 Claims**

1. Photoelectric measuring and indicating apparatus, comprising:

light responsive means for receiving light and producing an intensity signal indicative of the intensity of the received light;

control means connected to receive said intensity signal and operative in response thereto to produce an output having a frequency that varies with the intensity of the received light; and



an indicator connected to receive said output and operative in response thereto to produce a repetitive indication synchronous with said output frequency whereby the intensity of the received light may be discerned.

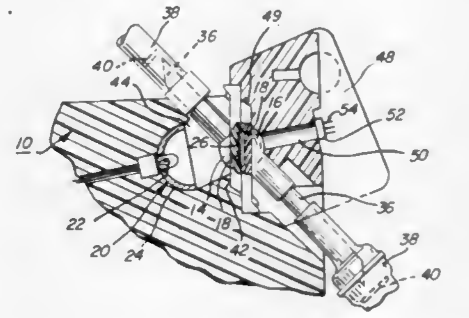
4,356,394
APPARATUS FOR APPLYING RADIANT BEAM

Richard W. Cobean, Libertyville; Michael F. Wicnienski, Antioch, and Gary Feldman, Wilmette, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 30, 1981, Ser. No. 230,076

Int. Cl.^{3} G01J *1/20*

U.S. Cl. 250—222 R **18 Claims**



1. In apparatus for applying a radiant beam against an opaque diaphragm, to melt an aperture in said diaphragm, which comprises bracket means for positioning said diaphragm at a predetermined position, a source of said radiant beam, and electric circuit means for activating said source, the improvement comprising, in combination:

photocell means positioned whereby a properly positioned diaphragm initially shades said photocell means from the beam and said beam strikes said photocell when said aperture is formed, and means to shut off said radiant beam responsive to the beam striking said photocell.

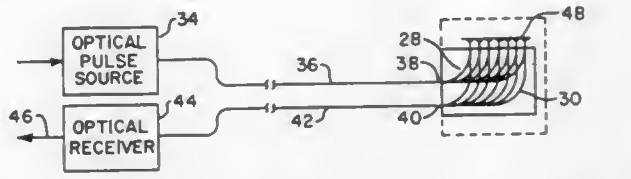
4,356,395
DIGITAL FIBER OPTIC SENSOR SYSTEM

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 6, 1979, Ser. No. 55,438

Int. Cl.^{3} G02B *5/14;* **H03K** *13/02*

U.S. Cl. 250—227 **9 Claims**



1. Apparatus for converting a single optical pulse into a serial train of time-multiplexed pulses of essentially uniform amplitude and shape, comprising means for simultaneously directing a single light pulse onto the ends of optical fibers such that each fiber receives the same amount of light, the fibers being of different lengths whereby the pulses emanating from all of the opposite ends of the fibers will be delayed one with respect to the other, said pulses emanating from the opposite ends of the fibers being directed onto reflective surfaces and

being thereafter reflected back through the optical fibers of different lengths to a single optical fiber where they pass through said single fiber as a serial train of pulses.

4,356,396

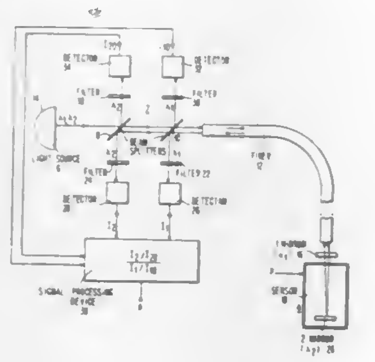
FIBER OPTICAL MEASURING DEVICE WITH COMPENSATING PROPERTIES

Hartwig Ruell, Fuerstenfeldbruck, and Ekkehard Klement, Munich, both of Fed. Rep. of Germany, assignors to Siemens Corporation, Iselin, N.J.

Filed Dec. 17, 1980, Ser. No. 217,452

Int. Cl.^{3} G02B *5/14*

U.S. Cl. 250—227 **13 Claims**



1. A fiber optical measuring device, comprising in combination:

(a) a fiber optical transmission line having an input end and an output end for transmitting light therebetween;

(b) means for generating a first light beam having a first wavelength;

(c) means for generating a second light beam having a second wavelength differing from said first wavelength;

(d) means for directing said first and second light beam into said input end of said transmission line, said first and said second light beam thereby being transmitted from said input end to said output end of said transmission line;

(e) a first mirror associated with said output end for passing at least a portion of said transmitted second light beam therethrough and for reflecting at least a portion of said transmitted first light beam back into said transmission line, the reflected first light beam thereby being transmitted from said output end to said input end thereof;

(f) a sensor associated with said output end for measuring a physical parameter, for receiving said second light beam and returning a portion of said second beam dependent upon the physical parameter back into said output end of said transmission line;

(g) an optical device arranged with said input end for separating the reflected portion of said first light beam from the returned portion of said second light beam;

(h) a first optical detector exposed to light from said optical device for transforming said reflected first light beam portion into a first electric signal;

(i) a second optical detector exposed to light from said optical device for transforming said returned second light beam portion into a second electric signal; and

(j) a signal processor for determining the ratio between said second and first electric signals, said ratio indicating the value of the physical parameter to be measured.

4,356,397

OPTICAL VALVE POSITION SENSOR SYSTEM

Bruce N. Lenderking, Glen Burnie, Md., and Donald P. Garrett, Jacobus, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1980, Ser. No. 160,412

Int. Cl.^{3} G01D *5/34*

U.S. Cl. 250—231 SE **5 Claims**

1. A valve condition sensor operable with a valve having a movable member the position of which is indicative of the degree of opening of said valve, comprising:

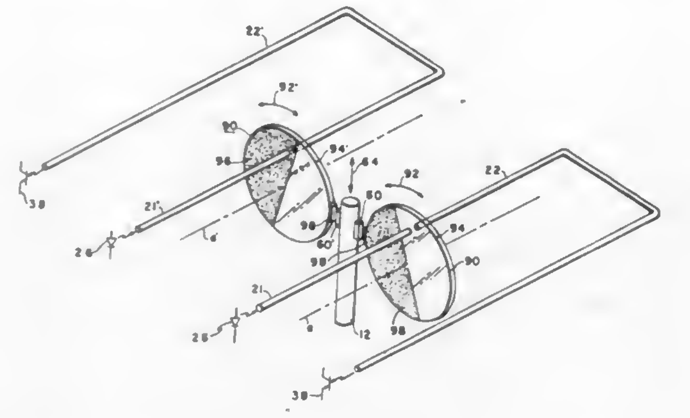
(A) optical fiber means defining first and second separated but optically aligned light conducting sections;

(B) light transmitter means operable to project a light beam into said first section;

(C) light receiver means positioned to intercept any of said light emanating from said second section;

(D) a light modulating means in the form of a rotatable shutter having both transparent and opaque sections rotatable into the light path between said first and second light conducting sections;

(E) said rotatable light modulating means being positioned proximate said movable member of said valve;



(F) means communicating movement of said movable member to said rotatable light modulating means to thereby rotate it to change its positional orientation;

(G) additional optical fiber means defining third and fourth separated but optically aligned light conducting sections;

(H) optical transmitter and receiver means for transmission of light into and reception of light from said additional optical fiber means;

(I) a second rotatable shutter having both transparent and opaque sections rotatable into the light path between said third and fourth light conducting sections;

(J) said second shutter being rotatable in response to movement of said movable member of said valve; and

(K) said shutters being oriented such that during normal operation only one of said shutters will allow light transmission at a time.

4,356,398

METHOD OF PROCESSING RADIOGRAPHIC IMAGE

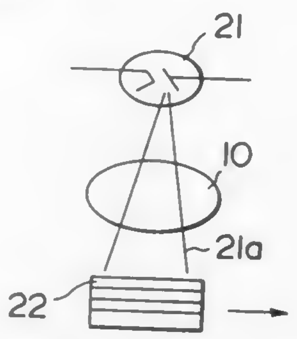
Takao Komaki; Seiji Matsumoto, and Masamitsu Ishida, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,800

Claims priority, application Japan, Jul. 11, 1979, 54/87809; Jul. 11, 1979, 54/87810

Int. Cl.^{3} G03C *5/16;* **G01T** *1/11;* **H04N** *1/40*

U.S. Cl. 250—327.2 **14 Claims**



1. A method of processing a radiographic image in a radiographic image recording system in which a stimulable phosphor plate is exposed to X-rays passing through an object to record a radiographic latent image of the object in the form of energy of X-rays stored therein, the stimulable phosphor plate is then exposed to stimulating rays to emit light according to the energy of X-rays stored therein, the emitted light is detected by a photodetecting means and converted to an image signal and the image signal is used for recording a visible image on another recording material,

said processing method comprising recording images of the same object from the same direction on a plurality of said stimulable phosphor plates, superposing the image signals obtained from the plurality of stimulable phosphor plates to obtain an image signal having averaged image information, and enhancing the contrast of said image signal thus obtained by a gradation processing.

4,356,399

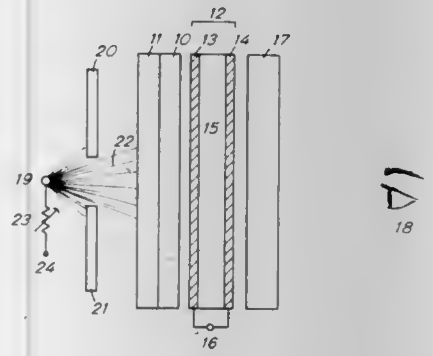
TRANSPARENCY CONTRAST ENHANCEMENT SYSTEM USING A PLANAR ULTRAVIOLET SOURCE

Albert Macovski, Menlo Park, Calif., assignor to Maxim Diagnostic Imaging, Palo Alto, Calif.

Filed Oct. 17, 1980, Ser. No. 198,218

Int. Cl.^{3} G01N *21/64*

U.S. Cl. 250—461.1 **9 Claims**



1. Apparatus for viewing a transparency comprising a phosphorescent screen on which the transparency is placed and a planar structure which transmits visible light and produces ultraviolet light which is placed adjacent to the transparency between the transparency and the viewer.

4,356,400

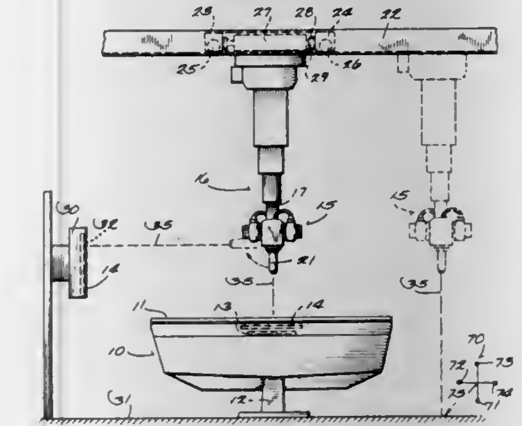
X-RAY APPARATUS ALIGNMENT METHOD AND DEVICE

Emanuel V. Polizzi, Hartland, and David G. Lieder, Waukesha, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 4, 1980, Ser. No. 175,162

Int. Cl.^{3} G03B *41/16*

U.S. Cl. 378—138 **6 Claims**



1. A method of enabling visualization of the central ray of an x-ray beam emitted from a focal spot of an x-ray tube in a casing that has a port through which an x-ray beam may be projected and is mounted for moving relative to at least one image receptor plane in a diagnostic x-ray system, said method comprising the steps of:

installing a central ray locator device housing in an adapter which is mounted to said casing at said port and is movable transversely of the direction in which the x-ray beam is to be projected, the locator device including an element having a hole whose axis is directed at said focal spot for passing a central ray aligned with said axis, said device having a phosphor screen spaced from said hole and said screen having crosshairs on whose intersection the axis of said hole projects,

energizing the x-ray tube and shifting said adapter as required until the bright spot visible on said screen due to passage of rays through said hole occurs at the intersection of said crosshairs as an indication that the central ray has been located, and then clamping said adapter to said casing,

then substituting for said locator device in said adapter a housing in which there is a laser mounted in said housing such that its output beam is concident with the same axis as said hole and said crosshairs so that when said laser is energized its beam will produce a visible light spot where the invisible central x-ray would impinge.

4,356,401

THERMO-ELECTRIC POWER STATION SUPPLIED BY GEOTHERMAL HEAT SOURCE

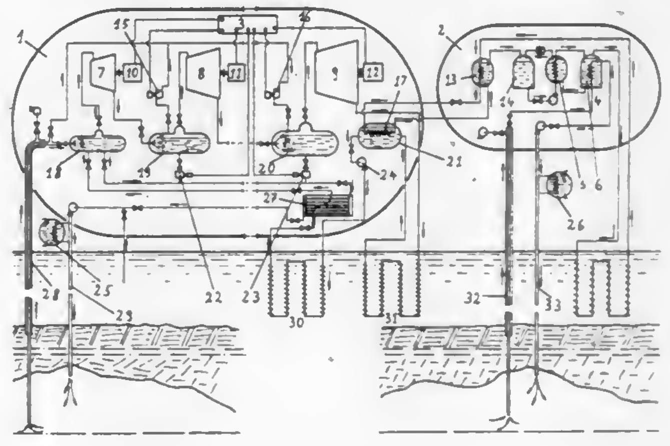
Gianio G. Santi, Via Fratelli Gabba 6, Milan, Italy

Filed Jun. 19, 1980, Ser. No. 161,007

Claims priority, application Italy, Jul. 3, 1979, 24057 A/79

Int. Cl.^{3} F03G *7/00*

U.S. Cl. 290—1 R **6 Claims**



1. A thermo-electric power station, supplied by a geothermal heat source, in which water being heated in the subsoil, transfers its energy to at least one power-generating machine, characterized by the fact that the power station operates with water and carbon dioxide, comprising:

a source of water adapted to be heated by geothermal energy; means including at least one well (**29**, **33**) for pumping the water into the subsoil; means including at least one insulated well (**28**, **32**) for recovering the water heated to a pre-established temperature at the power station;

a source of carbon dioxide;

means (**18**) for bringing the carbon dioxide in direct contact with the water for absorbing the thermal energy in the water;

means (**7**) for transforming the thermal energy of the carbon dioxide into mechanical energy; and

pumping means (**22**, **23**) for re-injecting the water into the subsoil.

4,356,402

ENGINE GENERATOR POWER SUPPLY SYSTEM

Izumi Morimoto, and Isao Sakamoto, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,887

Claims priority, application Japan, Jun. 5, 1980, 55/78322[U]

Int. Cl.^{3} H02J *1/10*

U.S. Cl. 307—19 **4 Claims**

1. An engine generator power supply system comprising:

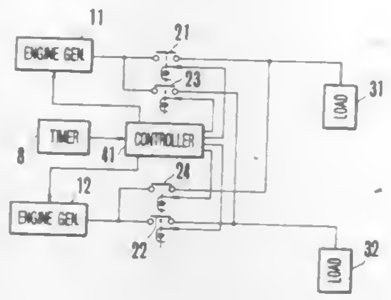
a plurality of engine generator;

a plurality of separate power feed lines for independently feeding power from respective engine generators to a plurality of loads respectively associated with the separate power feed lines;

contactor means inserted in each of the power feed lines, said contactor means being normally enabled for feeding power to said plurality of loads from one of the engine generators; and

control means for controlling such that the supply of power from a first engine generator to the plurality of loads is switched to the supply of power from a second engine generator to the plurality of loads at a predetermined time interval,

said contactors being sequentially enabled upon said switching such that after a first contactor for the supply of power from the first engine generator to a first load is disabled, a second contactor for the supply of power from said first engine generator to a second load continues to be enabled; after disabling of said first contactor and during continued enabling of said second contactor, a third contactor for the supply of power from said second engine generator to the first load is enabled; and after disabling of said second contactor and during continued enabling of said third contactor, a fourth contactor for the supply of power from said second engine generator to the second load is enabled, so that the supply of power to one of the first and second loads is continuous upon said switching.

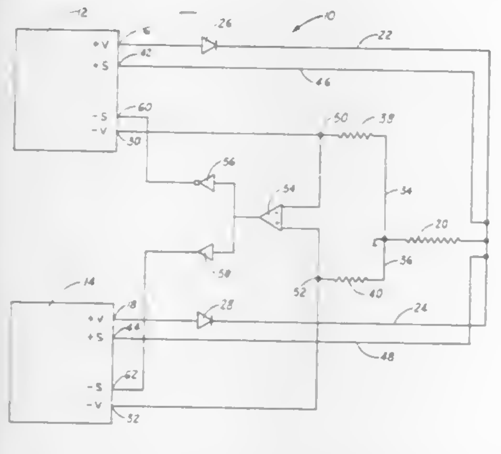


4,356,403
MASTERLESS POWER SUPPLY ARRANGEMENT
William D. Mohat, Euclid, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 20, 1981, Ser. No. 236,402

Int. Cl.^{3} H02J *1/04*

U.S. Cl. 307—60 **8 Claims**



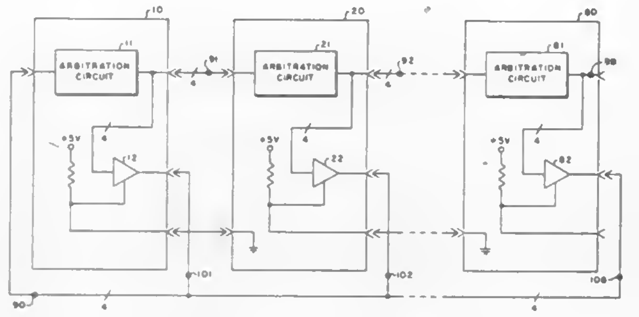
1. A power supply apparatus for supplying electrical power to a common load comprising a first power supply means electrically connected to said common load, a second power supply means electrically connected to said common load, means for detecting the existence of a difference in the output current (due to a difference in the output voltages) of said first and second power supply means, said detecting means being electrically connected to said common load and producing a signal proportional to said difference in said output voltage of said first and second power supplies, and means responsive to said signal produced by said detecting means causing the output voltage of one of said first and second power supply means to change so as to be approximately equal to the output voltage of the other of said first and second power supply means.

4,356,404
CIRCUIT FOR EQUIPPING A VARIABLE NUMBER OF BUS UNITS ON A CLOSED LOOP BUS
Joseph A. Comfort; Thomas J. Perry, and Michel Loos, all of Phoenix, Ariz., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed May 26, 1981, Ser. No. 267,165

Int. Cl.^{3} H01H *19/14*

U.S. Cl. 307—115 **6 Claims**



1. A circuit for equipping a variable number of bus units on a tri-state bus comprising:

a plurality of bus units including a first and at least one succeeding bus unit, the number of said succeeding bus units being selectively variable;

first tri-state bus means connected between said first bus unit and each said succeeding bus unit;

a plurality of tri-state buffer elements corresponding to said plurality of bus units, each said corresponding tri-state buffer element connected to said first bus unit via said first tri-state bus means;

sequentially expandable tri-state bus means connected between said first bus unit and said succeeding bus unit, said sequentially expandable tri-state bus means series connected between a succeeding bus unit and a next succeeding bus unit for each of said variable number of succeeding bus units;

means for connecting said tri-state buffer element of each corresponding bus unit to said next succeeding bus unit, each said succeeding bus unit effective to maintain said succeeding tri-state buffer element in a high impedance state;

means for operating said tri-state buffer element of a last succeeding bus unit whereby said first tri-state bus means is connected to said sequentially expandable tri-state bus means for forming an expanded closed loop connection of said selectively variable number of bus units.

4,356,405
FAIL-OFF PHOTOSENSITIVE SWITCH
John G. Russo, Middletown, Conn., assignor to Ripley Company, Inc., Cromwell, Conn.

Filed Jan. 21, 1980, Ser. No. 114,372

Int. Cl.^{3} H01H *43/30*

U.S. Cl. 307—117 **1 Claim**

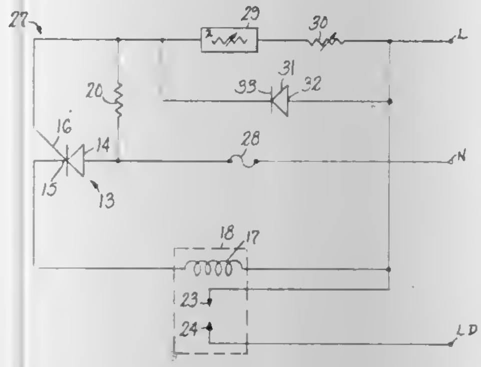
1. A photosensitive switch having a line terminal and a neutral terminal adapted to be connected to a power supply and a load terminal adapted to be connected to a load to control the load in response to the ambient light level comprising:

a thermal relay having a heater and normally-open contact points, one side of said heater and one of said contact points being connected to said line terminal;

an SCR having its anode connected to the neutral terminal, its cathode connected to the other side of the heater, and further having a gate;

a voltage divider comprising a fixed resistor between the SCR anode and the SCR gate and a photosensitive resistor between the SCR gate and the line terminal, said photosensitive resistor having a relatively low resistance at high light levels and a relatively high resistance at low light levels, the ratio of resistance of the fixed resistor to the photosensitive resistor being such that the SCR is energized below a preselected light level, and is maintained off at light levels above said preselected level; and

a fuse connected at one end thereof to the junction between the SCR anode and the fixed resistor and at the other end thereof to the neutral terminal, and a diode across the photosensitive resistor.

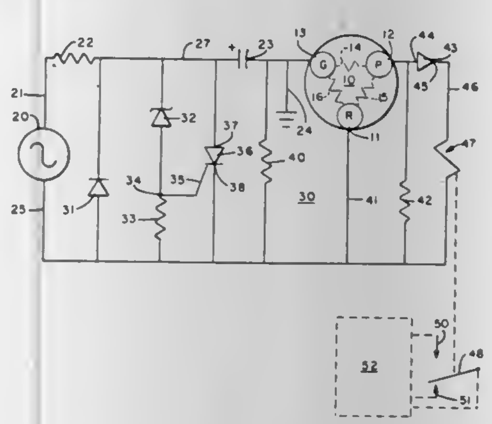


4,356,406
CONDUCTIVE FLUID PROBE POWERING MEANS
James I. Bartels, Hudson, Wis., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 17, 1981, Ser. No. 235,254

Int. Cl.^{3} G01F *23/00;* G08B *21/00*

U.S. Cl. 307—118 **8 Claims**



1. A power supply and control for a conductive fluid probe which is adapted to be connected to a source of voltage having alternating voltage phases, and wherein said probe has a guard ring intermediate a probe element and a common element with said probe adapted to be immersed in a conductive fluid, including: capacitor means and impedance means connected to said voltage source with said capacitor means being charged and discharged through said impedance means; said conductive fluid probe forming part of said impedance means when said probe is immersed in said conductive fluid; said impedance means further including unidirectional switch means connected to rapidly discharge said capacitor means through said impedance means including said fluid when said fluid is present, and with said switch means controlled by a first phase of said voltage source; diode means connected as part of said impedance means in a polarity opposite to said unidirectional switch means to conduct current from said voltage source on an alternate phase from said first voltage phase; amplifier means having input means connected to a portion of said impedance means with said amplifier means being responsive to the charge and discharge of said capacitor means through said conductive fluid; and said amplifier means having output means with said amplifier output means being responsive to the presence of said fluid at said probe.

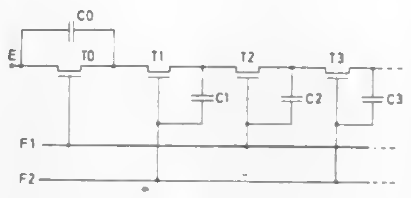
4,356,407
INPUT CIRCUIT FOR BUCKET BRIGADE
Manfred F. Ullrich, Denzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 19,397, Mar. 12, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,707

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813606

Int. Cl.^{3} G11C *19/28;* H03K *13/34*

U.S. Cl. 307—221 D **4 Claims**



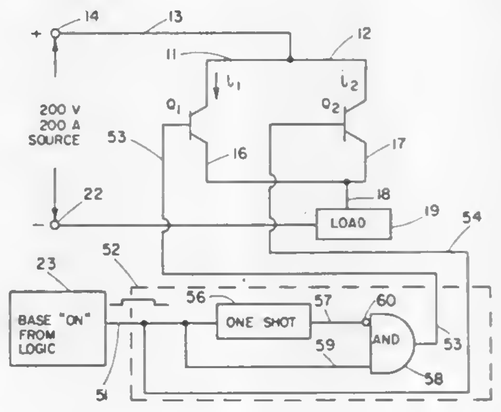
1. An insulated-gate field effect transistor bucket brigade circuit comprising a plurality of stage transistors each having a source, drain and gate connected in an array with the drain of each stage transistor connected to the source of another said stage transistor to define a like plurality of stages in said array, with the gates of said stage transistors in even-numbered stages interconnected for connection to a first clock signal and with the gates of said stage transistors in odd-numbered stages interconnected for connection to a second clock signal; a like plurality of stage capacitors, each of which is connected across the gate and drain of one of said stage transistors; and an input stage including an input transistor, having a source for providing an input terminal to said bucket brigade circuit, a drain connected to the source of said first stage transistor and a gate connected to the gates of said even-numbered stage transistor, and an input capacitor connected across the source and drain of said input transistor, wherby said bucket brigade circuit is isolated from ground to eliminate undesired ground potential variations.

4,356,408
DRIVE CIRCUIT FOR PARALLEL NON-MATCHED SEMICONDUCTORS
Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 1, 1980, Ser. No. 174,488

Int. Cl.^{3} H03K *17/00, 3/33, 3/01*

U.S. Cl. 307—254 **16 Claims**



1. A drive circuit coupled to electrical devices connected in parallel in a circuit network, said electrical devices having distinct total on-time periods when they are simultaneously energized, and then de-energized, said circuit network having a source of power coupled through said parallel connected electrical devices to a load, said drive circuit including in combination;

a signal source coupled respectively through a time adjustable circuit to a first electrical device and to a second electrical device, said time adjustable circuit being adjusted such that the total on-time of said first electrical device matches the total on-time of said second electrical device to thereby ensure equal current at all times through said electrical devices to said load while maintaining the distinct total on-time periods of said first and said second electrical devices.

4,356,409
LEVEL CONVERSION CIRCUIT

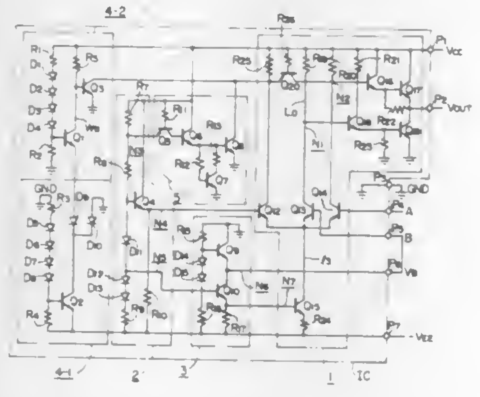
Kouji Masuda, Ohme; Masao Mizukami, Yokohama, and Nobuaki Kitamura, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi Ome Electric Co., Ltd., both of Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,853

Claims priority, application Japan, Jun. 29, 1979, 54-81351; Sep. 3, 1979, 54-111777; Dec. 27, 1979, 54-169338

Int. Cl.^{3} H03K *5/01, 5/02*

U.S. Cl. 307—264 5 Claims



1. A level conversion circuit comprising:
- a first and a second input transistor connected to each other at their emitters in a differential manner, the base of said first input transistor being connected to receive a predetermined voltage level;
- a first load connected between the collector of said first input transistor and a positive source voltage;
- a second load connected between the collector of said second input transistor and said positive voltage;
- a current source connected between the emitters of said first and second input transistors and a negative source voltage;
- a first output transistor having a base adapted to be driven by the output from the collector of said second input transistor, a collector connected to said positive source voltage and an emitter connected to an output terminal;
- a second output transistor having a base adapted to be driven by the collector output of said first input transistor, a collector connected to said output terminal and an emitter connected to a grounding terminal;
- a source voltage detecting circuit adapted to detect at least one of said positive and negative source voltages and to provide an output signal indicating a state of the level thereof;
- a first protective transistor having a base to which is applied a biasing voltage of a level lower than the predetermined voltage level to be applied to said first input transistor, a collector connected to said positive source voltage through a third load and an emitter connected to said emitters of said first and second input transistors;
- a second protective transistor having a base adapted to receive the output signal from said source voltage detecting circuit, an emitter connected to the grounding terminal and a collector connected to the collector of said first protective transistor; and
- a capacitance separation element disposed between said collector of said second input transistor and said collectors of said first and second protective transistors.

4,356,410
PULSE TRANSMISSION AND REPETITION CIRCUIT

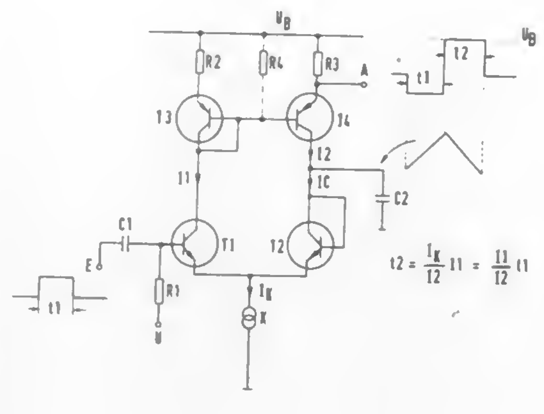
Leslie Miskin, Gundelfingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,562

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935917

Int. Cl.^{3} H03K *5/04, 4/50, 5/156*

U.S. Cl. 307—265 2 Claims



1. A circuit arrangement for receiving an input pulse and in response thereto, transmitting a first pulse equal in duration to the input pulse, and a second pulse having a duration proportional to that of the input pulse, said circuit comprising:
- first and second transistors each having emitters commonly connected and adapted to be connected to a constant current source;
- an input capacitor having a first terminal thereof adapted to receive the input pulse and a second terminal thereof connected to a base of the first transistor;
- a first resistor having a first terminal thereof connected to the base of the first transistor and a second terminal adapted to receive a fixed potential greater than zero;
- a base of the second transistor being connected to a collector thereof;
- a capacitor having a first terminal connected to the collector of the second transistor and a second terminal adapted to be connected to a zero potential;
- a third transistor of a type complementary to said first transistor having a collector connected to the collector of the first transistor so that said third transistor functions as a load transistor, the collector of said third transistor also being connected to a base of said third transistor;
- a second resistor having a first terminal connected to an emitter of the third transistor and a second terminal adapted to be connected to an operating voltage, said operating voltage being greater then said fixed potential and of the same polarity;
- a fourth transistor having a collector connected to the collector of said second transistor and being complementary thereto so as to function as a load transistor;
- a base of said fourth transistor being connected to the base of said third transistor; and
- a third resistor having a first terminal connected to an emitter of said fourth transistor and a second terminal adapted to be connected to said operating voltage, the emitter of said fourth transistor functioning as an output of said circuit for providing the transmitted pulses, the duration of the first transmitted pulse being equal to the duration of the input pulse and the duration of the second transmitted pulse being determined by the ratio of the collector currents of said third and fourth transistors.

4,356,411
FLIP-FLOP CIRCUIT

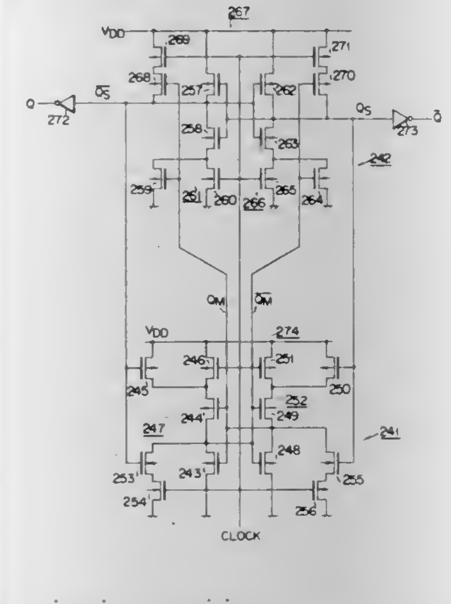
Yasoji Suzuki, Kawasaki, and Minoru Takada, Ohmori Nishi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 7, 1979, Ser. No. 101,103

Claims priority, application Japan, Dec. 12, 1978, 53-153536; Dec. 12, 1978, 53-153537; Dec. 12, 1978, 53-153539; Dec. 12, 1978, 53-153540

Int. Cl.^{3} H03K *3/289*

U.S. Cl. 307—272 A 10 Claims



1. A flip-flop circuit comprising:
- a master flip-flop including a first logic gate circuit having a first input terminal and a first output terminal and a second logic gate circuit having a second input terminal and a second output terminal, said first input terminal being connected to said second output terminal and said second input terminal being connected to said first output terminal;
- a slave flip-flop including a third logic gate circuit having third and fourth input terminals and a third output terminal and a fourth logic gate circuit having fifth and sixth input terminals and a fourth output terminal, said third input terminal being connected to said fourth output terminal, said fifth input terminal being connected to said third output terminal, said fourth input terminal being connected to said first output terminal, and said sixth input terminal being connected to said second output terminal;
- first means for producing and supplying clock pulses to said master and said slave flip-flops;
- second means connected to said first, third and fourth logic gate circuits for producing a preset signal for predetermining the output of said slave flip-flop; and
- third means connected to said second, third, and fourth logic gate circuits for producing and supplying a clear signal for clearing the state of said master and said slave flip-flops.

4,356,412
SUBSTRATE BIAS REGULATOR

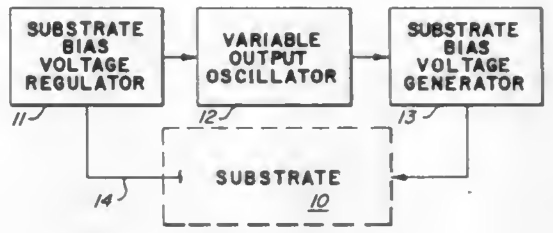
Jerry D. Moench, and Rodney C. Tesch, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 17,523, Mar. 5, 1979, abandoned. This application May 5, 1981, Ser. No. 260,571

Int. Cl.^{3} H03K *3/01, 3/353*

U.S. Cl. 307—304 6 Claims

1. A substrate bias voltage regulator for controlling a substrate bias voltage generator to provide a predetermined substrate bias voltage to a semiconductor substrate, comprising:
- a first field effect transistor having a first electrode and a gate electrode coupled to a first supply voltage, and a second electrode;
- a second field effect transistor having a first electrode coupled to the second electrode of the first transistor, a second electrode connected directly to the substrate, and a gate electrode directly connected to ground without intervening elements, the second transistor developing a control voltage on the first electrode thereof which is related to the deviation from the predetermined substrate bias voltage of the bias voltage developed on the substrate by the substrate bias voltage generator; and


SUBSTRATE BIAS VOLTAGE REGULATOR
VARIABLE OUTPUT OSCILLATOR
SUBSTRATE BIAS VOLTAGE GENERATOR
11
12
13
14
SUBSTRATE
10

- amplifier means for coupling the control voltage developed on the first electrode of the second transistor to the substrate bias voltage generator to control the operation thereof.

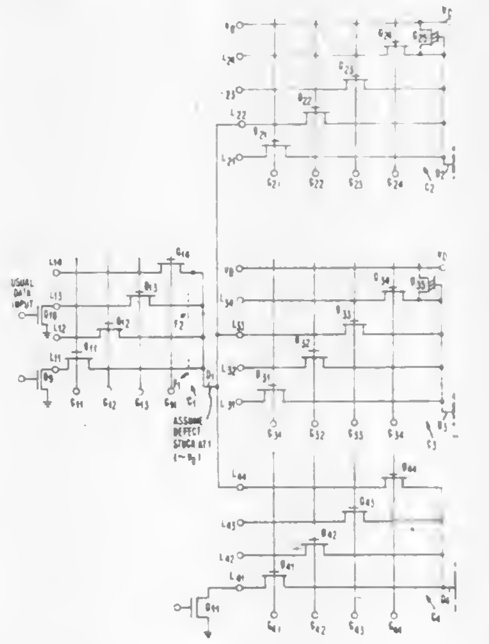
4,356,413
MOSFET CONVOLVED LOGIC

William Rosenbluth, and Thomas A. Williams, both of Reston, Va., assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 20, 1980, Ser. No. 179,847

Int. Cl.^{3} H03K *19/003, 19/017, 19/173;* **G01R** *15/12*

U.S. Cl. 307—443 2 Claims



1. An FET logic circuit including a plurality of convolved logic arrays, each array having non-thresholded path routing to eliminate logic transition times in the critical data path, for enabling stuck fault testing of embedded ones of said arrays, comprising:
- a first convolved logic array including a first FET data input device having its gate connected to a first data input source and its source/drain path connected between a first data path and a first reference potential;
- a second FET data input device in said first array, having its gate connected to a second data input source and its source/drain path connected between a second data path and said first reference potential;
- a first FET transfer device in said first array, having its source/drain path connected in said first data path between said first data input device and an output node of said first array, having its gate input connected to a first control signal path of said first array;
- a second FET transfer device in said first array, having its source/drain path connected in said second data path between said second data input device and said output node of said first array, having its gate input connected to a second control signal path of said first array;
- a second convolved logic array including a first FET transfer

device having its source/drain path connected in a first data path between said output node of said first array and an output node of said second array, having its gate input connected to a first control signal path of said second array;

a second FET transfer device in said second array, having its source/drain path connected in a second data path between a second data input of said second array and said output node of said second array, having its gate input connected to a second control signal path of said second array;

an FET load device in said second array, connected between a second reference potential and said output node of said second array;

said output node of said second array connected to a first output terminal of said circuit which serves as a first data output in a normal operating mode when a current selectively flows from said load device through said first transfer device in said second array and through said first transfer device of said first array to said first reference potential;

a third convolved logic array including a first FET transfer device having its source/drain path connected in a first data path between said output node of said first array and an output node of said third array, having its gate input connected to a first control signal path of said third array;

a second FET transfer device in said third array, having its source/drain path connected in a second data path between a second data input of said third array and said output node of said third array, having its gate input connected to a second control signal path of said third array;

an FET load device in said third array, connected between said second reference potential and said output node of said third array;

said output node of said third array connected to a second output terminal of said circuit which serves as a second data output in a normal operating mode when a current selectively flows from said load device of said third array through said first transfer device in a first direction in said third array and through said first transfer device of said first array to said first reference potential;

a switch selectively connected between said output node of said third array and said first reference potential, for remaining in an open state during said normal mode and for closing during a testing mode to enable testing for a stuck fault at said output node of said first array by allowing a current to selectively flow from said load device in said second array through said first transfer device in said second array and through said first transfer device in a second direction in said third array and through said switch to said first reference potential, the test result being output at said output node of said second array;

whereby stuck fault testing of embedded ones of said arrays can be selectively performed.

4,356,414

MONOLITHICALLY INTEGRABLE LOGIC CIRCUIT

Helmut Güntner, Gräfelfing, and Ernst Wittenzellner, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

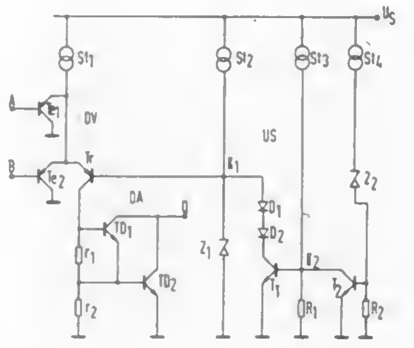
Filed Jan. 17, 1980, Ser. No. 113,119

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903659

Int. Cl.^{3} H03K *19/086, 19/092*

U.S. Cl. 307—455 **7 Claims**

1. Monolithically integrable logic circuit having at least one NAND function and a Darlington stage serving as the signal output of the circuit, comprising a differential amplifier having its non-inverted output connected to the input of the Darlington stage, said differential amplifier including at least two identical input transistors with control electrodes which form the signal inputs of the circuit and a reference transistor which is identical to said input transistors, said reference transistor having one of its current carrying electrodes connected to the same current carrying electrodes of said input transistors, a current source connected to the connection of said input and reference transistor electrodes, switch-over means including transistors and diodes for switching said input transistors to different threshold voltage values, said switch-over means being connected to the control electrode of said reference transistor and said switch-over means including a first current source, a first circuit node connected to said first current source and forming the connection of said switch-over means to the control electrode of said reference transistor, a first Zener diode connected in the blocking direction from said first circuit node to ground, a first transistor having its emitter electrode connected to ground, at least one diode connected in the flow direction from said first circuit node to the collector electrode of said first transistor, a second circuit node connected to the control electrode of said first transistor, a first leak resistor connected between said second circuit node and ground, a second current source connected to said second circuit node, a second transistor havings its collector electrode connected to said second circuit node and its emitter electrode connected to ground, a voltage divider connected to the control electrode of said second transistor, and a third current source, said voltage divider being formed of a series circuit of a second leak resistor connected to ground and a second Zener diode connected in the blocking direction to said second leak resistor with its cathode connected to said third current source.



4,356,415

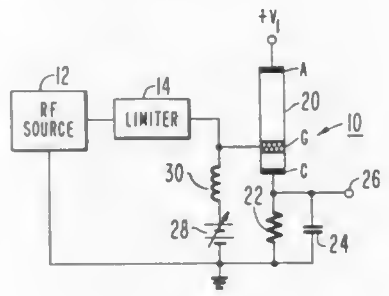
FREQUENCY DISCRIMINATOR UTILIZING A TRANSFERRED ELECTRON DEVICE

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,044

Int. Cl.^{3} H03D *3/26;* **H03K** *17/56, 17/04*

U.S. Cl. 307—522 **4 Claims**



1. A frequency discriminator circuit responsive to an input radio frequency signal of a given amplitude for producing an output signal having a value representative of the frequency of the input signal comprising, in combination:

a three terminal transferred electron device (TED) having an anode terminal, a cathode terminal, and a gate terminal;

an output circuit coupled in series with said TED;

means for applying said input signal to said gate terminal; and

means coupled to said anode, cathode and gate terminals for biasing said TED such that nucleation occurs in the TED only in response to the peak in one sense of each cycle of input signal at said gate terminal whereby the signal appearing at the output circuit is a measure of input frequency.

4,356,416

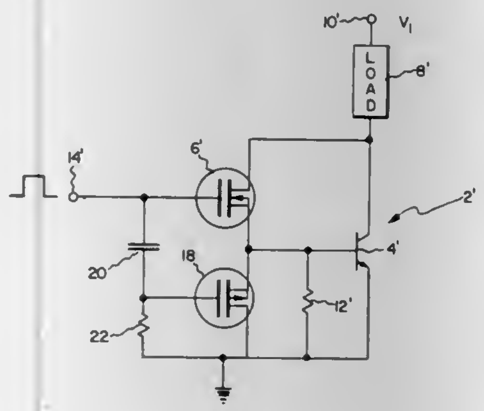
VOLTAGE CONTROLLED NON-SATURATING SEMICONDUCTOR SWITCH AND VOLTAGE CONVERTER CIRCUIT EMPLOYING SAME

Richard C. Weischedel, Camillus, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,737

Int. Cl.^{3} H03K *17/04, 17/16, 17/56;* **H02M** *7/537*

U.S. Cl. 307—570 **3 Claims**



1. A voltage controlled semiconductor switch comprising:

(a) a bipolar transistor having base, emitter and collector electrodes,

(b) first means for coupling the collector-emitter current path of said bipolar transistor between a voltage source and a voltage reference point,

(c) a driver field effect transistor having source, drain and gate electrodes, and exhibiting a high input impedance at its gate electrode and a finite on resistance between its drain and source electrodes,

(d) second means for coupling the drain-source current path of said field effect transistor from said collector electrode to said base electrode for conducting the bipolar transistor base current as a portion of the current flowing in said collector-emitter path, said gate electrode being responsive to a control signal for controlling the base current conduction so as to switch on and off said bipolar transistor, whereby said bipolar transistor is prevented from going into saturation by operation of said field effect transistor so as to enhance the switching speed of said bipolar transistor,

(e) an auxiliary current path coupled from said base electrode to the emitter side of said collector-emitter current path for contributing to a rapid switching off of said bipolar transistor, said auxiliary current path including the drain-source current path of another field effect transistor of opposite conductivity type to that of said driver field effect transistor, the gate electrode of said other field effect transistor being also responsive to said control signal.

4,356,417

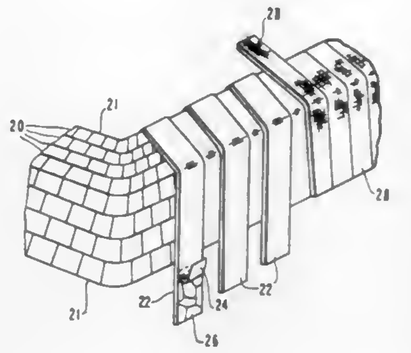
CATECHOL OR PYROGALLOL CONTAINING FLEXIBLE INSULATING TAPE HAVING LOW GEL TIME

James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 39,918, May 17, 1979, Pat. No. 4,296,018. This application Sep. 17, 1980, Ser. No. 188,169

Int. Cl.^{3} H02K *1/04;* **B05D** *5/12*

U.S. Cl. 310—43 **17 Claims**



1. A method of making a flexible mica insulating tape comprising

- (A) preparing a composition which comprises:
  - (1) semi-solid epoxide, a mixture of solid epoxide and liquid epoxide or a mixture of semi-solid epoxide and liquid epoxide, with a solvent for said epoxide, where the weight ratio of total epoxide to total solvent is from about 85:15 to about 10:90;
  - (2) about 0.01 to about 5.0 phr of an organotin compound having the structural formula:

    $R_3\,SnX$

    where each R is an organic group and X is selected from the group consisting of halide, hydroxide, acetate, butyrate, propionate, and dimethyl phosphate; and
  - (3) about 0.001 to about 1 phr of an activator selected from the group consisting of catechol, pyrogallol, and mixtures thereof;
- (B) applying said composition to a flexible sheet material comprising mica, so that said organo-tin compound contacts said mica causing the organo-tin compound to act as a latent catalyst; and
- (C) removing at least 95 weight percent of the solvent from the epoxide-solvent-organo-tin admixture in said sheet material without any substantial curing of the epoxide or reaction of the organo-tin compound, forming a flexible sheet with substantially unreacted epoxide and causing an increased amount of substantially unreacted organo-tin compound to contact mica in the sheet material; wherein the amount of organo-tin compound added is effective to advance the epoxide in the sheet material from the substantially unreacted state to a cured thermoset state upon heating over an epoxide-catalyst temperature of 150° C.

7. A method according to claim **1** wherein said epoxide is about 5 to about 25% by weight of the weight of said mica tape.

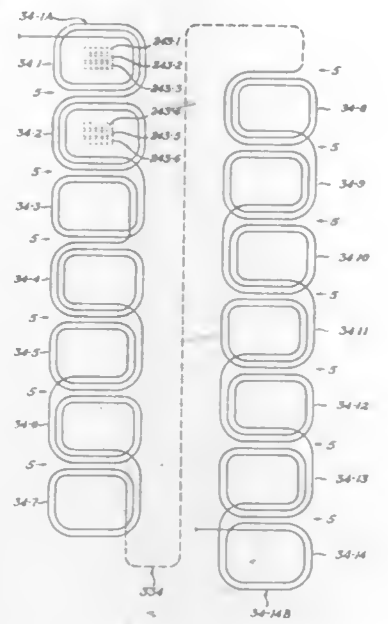
8. A method according to claim **7** including the additional last steps of wrapping said tape around a motor coil, vacuum-pressure impregnating said wrapped tape with an impregnating resin, and curing said resin and said epoxide.

10. An insulating tape made by the method of claim **1**.

11. A tape according to claim **10** wrapped around an electrical conductor selected from the group consisting of copper and aluminum and cured at an epoxide-catalyst temperature of at least 150° C.

4,356,418
ALTERNATOR COIL WINDING

Lebern W. Stroud, 3237 Gerome, Fort Worth, Tex. 76118
Filed May 27, 1980, Ser. No. 153,425
Int. Cl.³ H02K *3/00*
U.S. Cl. 310—184 **5 Claims**

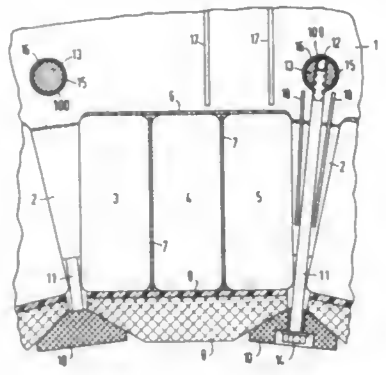


1. An alternator of the type having an annular stationary stator with a rotor concentrically located therein, comprising:
an annular structure formed of ferro-magnetic material defining an annular stator core having forty-two segments with adjacent segments being separated by a slot such that there are forty-two slots which extend in a direction parallel to the axis of said stator core, and
a three phase stator winding connected in a Y configuration, each phase comprising a winding having fourteen coils extending around said stator core on the inside thereof,
each of said coils of each phase winding comprising a plurality of turns of wire encircling three segments,
said fourteen coils of each phase winding having a plurality of turns located in fourteen of said slots such that said fourteen slots for each phase winding respectively has the following number of turns located therein, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5,
said fourteen coils of each phase winding respectively having the following number of turns at one edge of said winding located outside of said slots on one side of said core, 2, 2, 3, 2, 3, 2, 3, 2, 3, 2, 3, 2, 3, 2,
said fourteen coils of each phase winding respectively having the following number of turns at the other edge of said winding located outside of said slots on the other side of said core, 2, 3, 2, 3, 2, 3, 2, 3, 2, 3, 2, 3, 2, 3.

4,356,419
APPARATUS FOR FASTENING AN AIR GAP WINDING

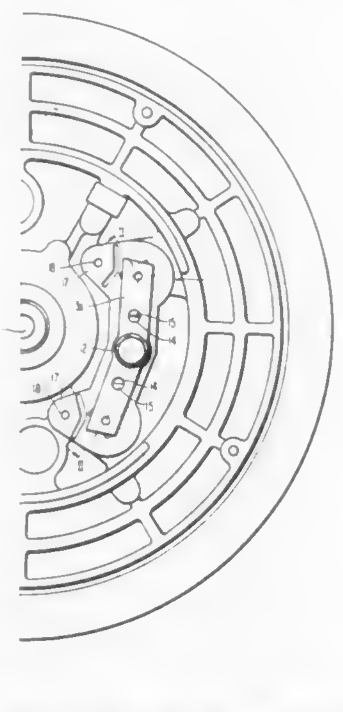
Joachim Böer, and Heinrich Beermann, both of Mulheim an der Ruhr, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim on der Ruhr, Fed. Rep. of Germany
Filed Jun. 13, 1980, Ser. No. 159,308
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924863
Int. Cl.³ H02K *1/06*
U.S. Cl. 310—217 **7 Claims**

1. Apparatus for fastening an air gap winding for electric machines having a large power rating, such as turbo generators, comprising a stator lamination stack formed of magnetic lamination segments, a mounting body formed of non-magnetic lamination segments having teeth with slots formed therebetween, said non-magnetic mounting body being integral with said magnetic stator lamination stack forming common homogeneous lamination segments by welding said teeth in the regions of the base lines thereof to said stator lamination stack segments in the circumferential direction, winding bars being held in said slots and extending beyond said teeth into the mechanical air gap, pressure strips disposed in longitudinal direction of said slots pretensioning said winding bars in radial direction, clamping screws being radially disposed in the vicinity of said slot teeth and holding said pressure strips, and abutments anchoring said clamping screws in the vicinity of said stator lamination stack.



4,356,420
BRUSH HOLDER FOR ROTATING ELECTRICAL MACHINES

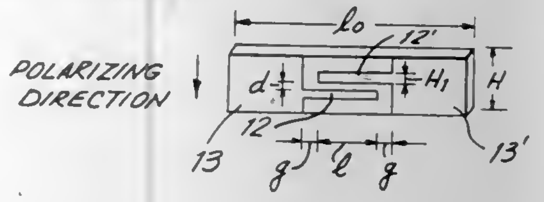
Dominique Mercuzot, Talant, France, assignor to CEM Compagnie Electro Mecanique, Paris, France
Filed Apr. 9, 1980, Ser. No. 138,722
Claims priority, application France, Apr. 11, 1979, 79 09178
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—239 **8 Claims**

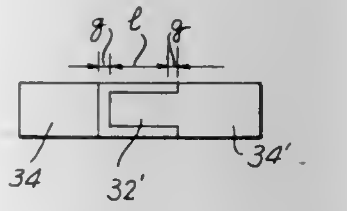


1. A brush holder for supporting an electrically conductive brush and a compression spring in an operative position on a rotating electrical machine, comprising:
a metallic sleeve having a longitudinal notch extending to one edge thereof;
an insulating support having a cavity in which the metallic sleeve is encased; and
a stop member projecting from said support into engagement with the notch in said sleeve, to thereby limit the longitudinal movement of said sleeve in one direction within said cavity.

4,356,421
PIEZOELECTRIC RESONATORS OF AN ENERGY-TRAPPING TYPE OF A WIDTH EXTENSIONAL VIBRATORY MODE

Hiroshi Shimizu, Sendai, and Hiroshi Watanabe, Izumi, both of Japan, assignors to Tohoku Metal Industries, Ltd., Miyagi, Japan
Filed Mar. 9, 1981, Ser. No. 241,738
Claims priority, application Japan, Mar. 25, 1980, 55-36960; Mar. 25, 1980, 55-36961
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—320 **16 Claims**



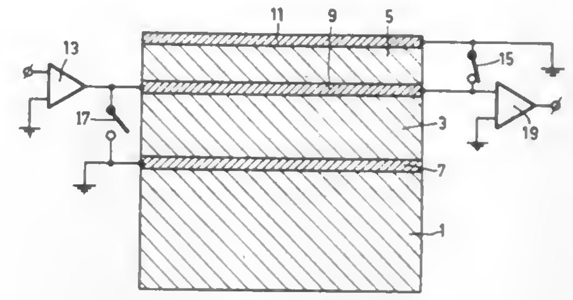


1. A piezoelectric resonator of an energy-trapping type of a width-extensional mode comprising:
a lengthy rectangular piezoelectric plate polarized in a direction perpendicular to the lengthwise direction thereof, said plate having a width determined by a predetermined resonance frequency;
at least one pair of first and second elongated excitation electrode means having a width narrower than said width of said plate and formed on a central portion of said piezoelectric plate to extend in the lengthwise direction of said plate in parallel with one another and apart from one another by a distance in said polarizing direction;
first peripheral electrode means formed on, and over the width of, one end portion of the surface of said piezoelectric plate on which said first excitation electrode means is formed, said first peripheral electrode means connected to a lead wire means;
first portion extended from said first excitation electrode means towards said first peripheral electrode means to connect therebetween;
second peripheral electrode means formed on, and over the width of, the other end portion of the surface of said piezoelectric plate on which said second excitation electrode means is formed, said second peripheral electrode connected to another lead wire; and
second portion extended from said second excitation electrode means towards said second peripheral electrode means to connect therewith.

4,356,422
ACOUSTIC TRANSDUCER

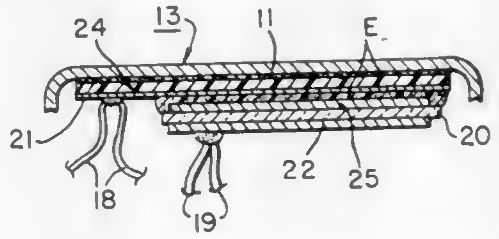
Gerardus A. van Maanen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 2, 1980, Ser. No. 155,698
Claims priority, application Netherlands, Jun. 25, 1979, 7904924
Int. Cl.³ H01L *41/10*
U.S. Cl. 310—322 **10 Claims**

1. An acoustic transducer, comprising a transmitter including a plate of piezoelectric ceramic material having electrodes on opposite surfaces, one side of said plate being covered with an adaptation layer of a thickness approximately one quarter of the wave-length of sound at the resonance frequency of the plate, said adaptation layer comprising a receiver including a layer of piezoelectric or ferroelectric polymer material having a pair of electrodes on opposite surfaces thereof.



4,356,423
PRESSURE SENSITIVE INTRUSION SENSING LINE

Martin G. Gudzin, Dallas, Tex., assignor to Teledyne Industries, Inc., Geotech Division, Dallas, Tex.
Filed Nov. 28, 1980, Ser. No. 211,003
Int. Cl.³ H01L *41/04*
U.S. Cl. 310—338 **8 Claims**



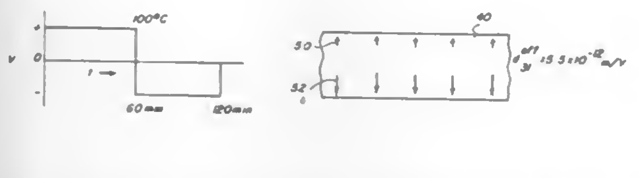
1. An intrusion sensing line to be buried below the surface of a medium and operative to deliver electrical signals in response to pressure changes in the medium resulting from intrusive stresses applied thereto, comprising:
(a) multiple sealed metal transducer shells respectively spaced apart along said sensing line and joined together by multiple lengths of flexible metal tubing, the lengths having ends which extend into and terminate within the shells, the tubing and shells being sealed together by metal-to-metal bonding, and each transducer shell having one flat face comprising a diaphragm which is flexible in response to said pressure changes;
(b) a transducer unit inside each shell comprising a thin insulating board having one side overlying and bonded to said diaphragm face and having a flat piezoceramic transducer member bonded to its other side, the member comprising a piezoceramic disc with first and second electrodes bonded to its faces, the insulating board and transducer member and electrodes being operative to flex with said diaphragm face of the shell; and
(c) two insulated wires extending through the lengths of tubing and the shells comprising the sensing line, and the wires being coupled respectively with the first and second electrodes in each shell.

4,356,424
PSEUDO-AC METHOD OF NONUNIFORMLY POLING A BODY OF POLYMERIC PIEZOELECTRIC MATERIAL AND FLEXURE ELEMENTS PRODUCED THEREBY

Michael A. Marcus, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 24, 1980, Ser. No. 209,801
Int. Cl.³ H01L *41/22*
U.S. Cl. 310—357 **11 Claims**

1. A method of nonuniformly poling a body of polymeric piezoelectric material, comprising the steps of:

applying across a thickness of the body, an electric field of a strength sufficient to induce nonuniform polarization in the material; then reversing the polarity of the applied field, thereby increasing the nonuniformity of the polarization of the material.



4,356,425
ELECTRODE FOR TUNING FORK TYPE QUARTZ CRYSTAL VIBRATOR

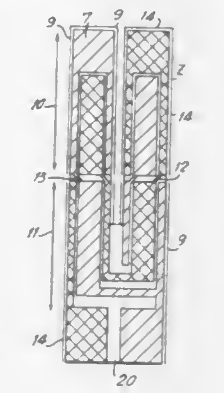
Shigeru Kogure; Eishi Momosaki, and Minoru Inoue, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Nagano, Japan

Filed Feb. 20, 1980, Ser. No. 122,870

Claims priority, application Japan, Feb. 20, 1979, 54-18857

Int. Cl.^{3} H01L *41/08*

U.S. Cl. 310—370 12 Claims



1. A tuning fork type vibrator comprising:
a vibrator leaf having a base and a pair of arms extended therefrom to form a tuning fork;
at least a first electrode and a second electrode formed on portions of the surfaces of said vibrator leaf, said electrodes being electrically separate, said electrodes on the surfaces of said arms being divided by a gap at at least one position transversely across the length of said arms, edges of said first electrode on the face surfaces of said arms being substantially adjacent and opposed to edges on said arm face surfaces of said second electrode, each said electrode on a face of an arm covering a center portion of said arm face surface on one side of said gap and at least an edge portion on the other side of said gap, said portions of the same electrode being connected across said gap by a narrow bridge segment, when electrically driven, the electric fields of adjacent portions of said first and second electrodes across said gap are out of phase with each other.

4,356,426
THYRATRON HAVING ANODE WITH LOW WORK FUNCTION MATERIAL

Hugh Menown, Writtle, England, assignor to English Electric Valve Company Limited, Chelmsford, England

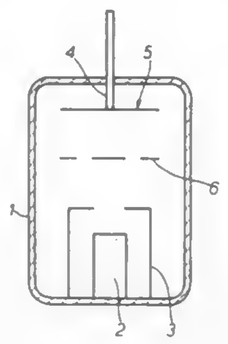
Filed May 14, 1980, Ser. No. 149,646

Claims priority, application United Kingdom, May 15, 1979, 7916814

Int. Cl.^{3} H01J *17/10*

U.S. Cl. 313—193 4 Claims

1. In a thyratron including a sealed envelope; an electrode assembly positioned within said sealed envelope including a cathode located at one end thereof, an anode at the other end and a control grid interposed between said cathode and said anode; means for applying a positive voltage to said anode with respect to said cathode; and a gas contained within said envelope, said gas forming a plasma in response to the application of a voltage to said electrode assembly and acting as a carrier for current flowing between said anode and said cathode; the improvement wherein said anode comprises a material having a low work function whereby upon reversal of the polarity of the voltage between said anode and cathode, during operation of said thyratron, said anode is bombarded by ions and said low work function material emits electrons thereby enhancing reverse current flow.



4,356,427
FLAT DISPLAY DEVICE

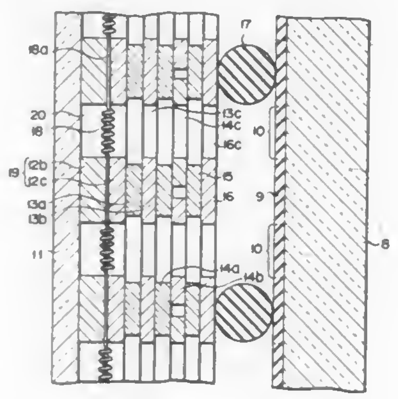
Mikio Noguchi, Chigasaki, and Kazuho Kobayashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 15, 1980, Ser. No. 178,283

Claims priority, application Japan, Aug. 16, 1979, 54/103576; Jun. 13, 1980, 55/78915

Int. Cl.^{3} H01J *29/50*

U.S. Cl. 313—422 4 Claims



1. A flat display device comprising:
a vacuum envelope constituted by a back base plate and a flat display panel provided with an inner fluorescent material layer;
a thermionic cathode structure disposed on or near the inner side of said back base plate and extending parallel to said display panel;
a plurality of flat electrode structures stacked together with intervening insulators between said thermionic cathode structure and said fluorescent material layer and each having a plurality of thermionic electron beam passage holes;
said plurality of flat electrode structures being arranged such as to control and accelerate thermionic electron beams emitted from said thermionic cathode structure so as to cause said thermionic electron beams to impinge upon picture element regions predetermined in a regular arrangement on the surface of said fluorescent material layer;
said thermionic cathode structure including a plurality of coiled heaters each having an effective thermionic electron emitting portion constituted by a coating of a thermionic electron emitting material, each of said thermionic electron emitting portion being provided for each of said picture element regions;
said thermionic electron passage holes in said flat electrode structures being each provided at a position corresponding to each of said effective thermionic electron emitting portions;
said coiled heaters being supported in their predetermined portions other than said effective thermionic electron emitting portions by a plurality of support members such as to hold said effective thermionic electron emitting portions in space; and
said support members being arranged such as to connect said coiled heaters in parallel to a heating power source.

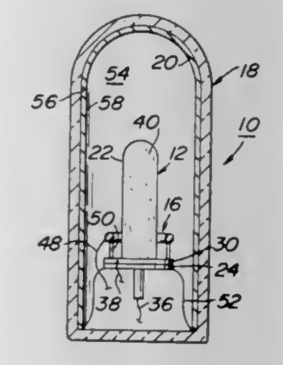
4,356,428
LIGHTING SYSTEM

Jacques M. Hanlet, Loxahatchee, Fla., assignor to Intent Patent, A.G., London, England

Continuation-in-part of Ser. No. 121,918, Mar. 5, 1980, Pat. No. 4,341,976. This application Jun. 20, 1980, Ser. No. 159,072

Int. Cl.^{3} H01J *61/42, 17/06*

U.S. Cl. 313—485 73 Claims



1. A lighting system comprising:
(a) cathode means for emitting electrons from an external surface thereof, said cathode means including a cathode sleeve member and a cathode base member hermetically sealed each to the other defining a cathode internal chamber, said cathode internal chamber having a cathode gas composition contained therein at a predetermined pressure;
(b) first anode means extending internal said cathode means for heating said cathode means thereby emitting said electrons from said external surface;
(c) second anode means positionally located external said cathode means for accelerating said electrons emitted from said cathode means external surface; and,
(d) a bulb member encompassing said cathode means, said first anode means and said second anode means in a substantially hermetic seal, said bulb member having a predetermined gas composition contained therein, said gas composition atoms being ionized by said cathode means emitted electrons, said gas composition ionized atoms radiating in the ultraviolet bandwidth of the electromagnetic spectrum, said bulb member being coated with a fluorescent material for intercepting ultraviolet energy responsive to said ionization of said gas composition atoms, said cathode sleeve member being a substantially cylindrically contoured member having a predetermined diameter, said sleeve member diameter and cathode gas composition pressure being maintained approximately in accordance with the formula:

$$2.0 > p \times d > 3.0$$

where:
p = predetermined gas composition pressure in mm. Hg.
d = predetermined diameter of sleeve member in cm.

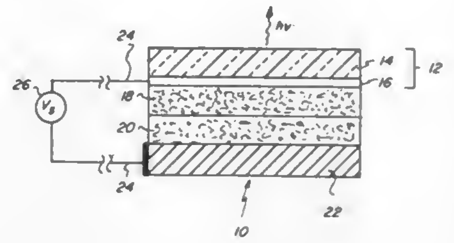
4,356,429
ORGANIC ELECTROLUMINESCENT CELL

Ching W. Tang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,705

Int. Cl.^{3} H01J *1/62;* H01L *29/28, 31/06*

U.S. Cl. 313—503 5 Claims



1. In an electroluminescent cell including an anode electrode, a cathode electrode, and a luminescent zone between said electrodes comprising an organic luminescent agent and a binder having a breakdown field strength of at least about 10^5 volt/cm,
the improvement comprising, between said luminescent zone and said anode electrode, a hole-injecting zone comprising a layer of a porphyrinic compound.

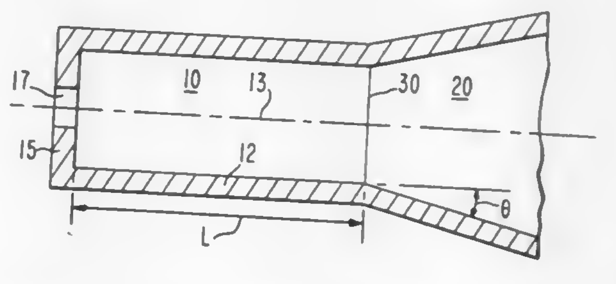
4,356,430
GYROTRON CAVITY RESONATOR WITH AN IMPROVED VALUE OF Q

David S. Stone, and James F. Shively, both of Los Altos, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 5, 1980, Ser. No. 184,492

Int. Cl.^{3} H01J *25/00*

U.S. Cl. 315—4 7 Claims



1. A cavity resonator with a reduced Q value, said resonator having a longitudinal direction and an effective length along said direction, said resonator being connected to and directly opening into an output waveguide across a junction plane which is perpendicular to said direction, each segment of the inner wall of said output waveguide making an angle smaller than 20° with said direction, the Q value of said resonator being smaller than $8\pi(L/\lambda)^2$ where L is said effective length and λ is the free-space wavelength of the cavity resonance inside said resonator.

4,356,431
MAGNETRON ENERGIZING CIRCUIT

Albert E. Feinberg, Chicago, Ill., assignor to Advance Transformer Company, Chicago, Ill.

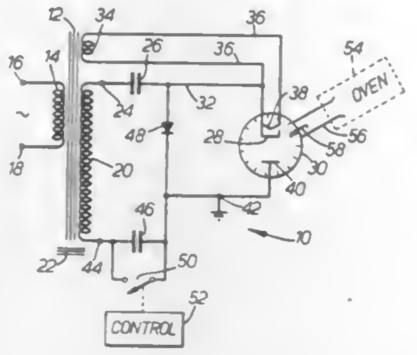
Filed Feb. 21, 1978, Ser. No. 879,261

Int. Cl.^{3} H05B *39/00, 41/14*

U.S. Cl. 315—101 5 Claims

1. In a magnetron energizing circuit for energizing a heating magnetron from an a.c. line of relatively low voltage and low frequency and which includes a magnetron having an anode and a cathode, the anode being connected to ground potential, a constant current transformer and condenser means combination which comprises (i) a step-up transformer having a pri-

mary winding connected to said a.c. line, (ii) a secondary winding isolated from said primary winding but coupled in high leakage reactance operating relation to said primary winding, said secondary winding having a high voltage end terminal and a low voltage end terminal, and (iii) condenser means connected in series with said secondary winding and to the high voltage end terminal thereof, the cathode of the magnetron being connected to said condenser means so that the condenser means is between the cathode and the high voltage end terminal, a rectifier connected across the magnetron to serve as a return path for current on alternate half cycles of the output voltage when the magnetron is not conducting, the condenser means having a capacitive reactance which is greater than the leakage reactance of the transformer so that the secondary circuit of the transformer has leading current flowing therein at all times, the invention herein which comprises:



means providing alternative connections of the low voltage end of the secondary winding to the magnetron anode, comprising one connection being a conductive path directly to ground potential to enable the energizing circuit to furnish full power to the magnetron and the second connection comprising second condenser means and leads connecting same between said low voltage end and ground potential whereby when said second connection is effective there is formed a loop which contains both condenser means in series with the secondary winding and the rectifier and switch means for selectively rendering effective said one or second connection.

4,356,432

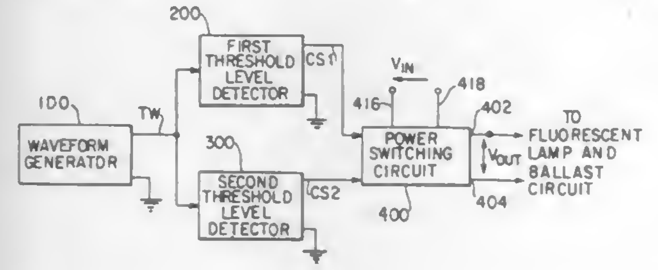
SOLID STATE POWER SWITCH FOR GAS DISCHARGE LAMPS

Edmond I. Vinarub, Cheshire, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 25, 1981, Ser. No. 238,143

Int. Cl.^{3} H05B *41/36*

U.S. Cl. 315—287 **8 Claims**


200
FIRST THRESHOLD LEVEL DETECTOR
CS1
V_{IN}
418
100
TW
416
402
WAVEFORM GENERATOR
300
POWER SWITCHING CIRCUIT
V_{OUT}
TO FLUORESCENT LAMP AND BALLAST CIRCUIT
SECOND THRESHOLD LEVEL DETECTOR
CS2
400
404

1. A power switching circuit for gas discharge lamps, comprising:

a source of a timing control signal of predetermined frequency;

first threshold detection means responsive to said timing control signal for generating a first control signal when said timing control signal crosses a first threshold level;

second threshold detection means responsive to said timing control signal for generating a second control signal when said timing control signal crosses a second threshold level;

power switching means responsive to said first and second control signals, and including input terminals adapted for connection to a power source and output terminals adapted for connection to a gas discharge lamp circuit, for connecting said input terminals to said output terminals in a first polarity in response to said first control signal and in a reverse polarity in response to said second control signal.

4,356,433

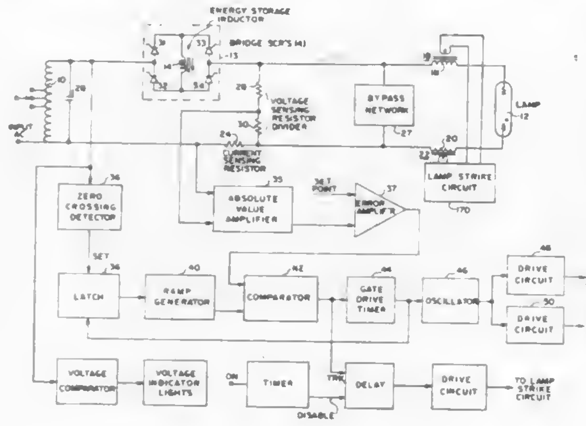
HID LAMP POWER SUPPLY

Nicholas O. Linden, Cleveland, Ohio, assignor to The Nuarc Company, Inc., Chicago, Ill.

Filed Jul. 7, 1980, Ser. No. 166,159

Int. Cl.^{3} G05F *1/00*

U.S. Cl. 315—308 **25 Claims**



1. In a lamp strike circuit for initiating an arc in a high intensity discharge lamp, the combination of, a source of alternating current, means including at least a pair of controlled rectifiers for supplying power to the lamp from said AC source, a pair of pulse transformers each having a secondary winding one each of which is connected to one electrode of the lamp, a capacitor connected across the other end of said secondary windings, means for supplying lamp strike pulses to the primary windings, means for supplying lamp strike pulses to the primary windings of the said pulse transformers so that high voltage pulses are developed across said secondary windings which cause the formation of an arc within the lamp, said capacitor shunting the ends of said secondary windings to prevent said high voltage pulses from reaching said controlled rectifiers, and said capacitor also being charged from said source when said controlled rectifiers are conducting and an arc has not been initiated in said lamp, and resistive means for discharging said capacitor between conduction periods of said controlled rectifiers to prevent voltage build-up on said capacitor during successive half cycles of said alternating current source.

4,356,434

MULTIPLE COLOR SINGLE GUN TV PICTURE TUBE

Keith T. Bleuer, 1663 Wilshire Dr. NE., Rochester, Minn. 55901

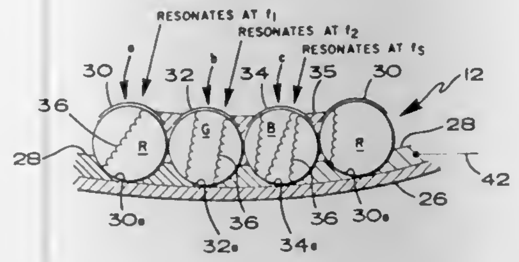
Continuation-in-part of Ser. No. 222,774, Jan. 6, 1981, which is a continuation-in-part of Ser. No. 186,234, Sep. 11, 1980, abandoned. This application Mar. 12, 1981, Ser. No. 242,976

Int. Cl.^{3} H01J *29/80*

U.S. Cl. 315—375 **18 Claims**

1. A cathode ray tube comprising an evacuated envelope having a light transmitting picture viewing face, an electron gun in said envelope positioned to direct electrons to said viewing face, and an electron responsive coating on the inside surface of said face;

said coating comprising sets of first, second and third circuits tuned to resonate at different frequencies of electron flow from said gun; and sets of first, second and third fluorescent bodies associated respectively with said first, second and third circuits and respectively providing different colors of illumination viewable through said face as said different frequencies of electron flow are applied to these circuits.



4,356,435

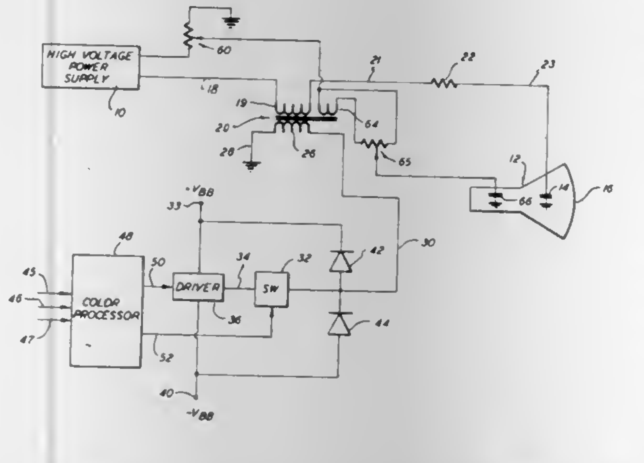
RANDOM COLOR SWITCH FOR BEAM PENETRATION CRT

Michael H. Kalmanash, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 1, 1981, Ser. No. 259,342

Int. Cl.^{3} H01J *29/80*

U.S. Cl. 315—375 **6 Claims**



1. A high voltage color switch for a beam penetration cathode-ray tube in which a baseline color is normally displayed but can be switched for a color write period to a randomly selected color, comprising:

high voltage power supply means connectable to said cathode-ray tube and having an output voltage level selected to provide said baseline color when presented to said cathode-ray tube;

transformer means connected between the output of said high voltage power supply means and said beam penetration cathode-ray tube;

driver means for amplifying an input waveform identifying a randomly selected color to be displayed in a color write period, said driver means including a low voltage power supply;

switch means having an open position and a closed position connected between the output of said driver means and said transformer means;

diode means connected between said transformer means and said low voltage power supply of said driver means; and

whereby at the end of said color write period during which a randomly selected color is displayed by said cathode-ray tube, said switch means is transitioned to its open position for a predetermined period of time allowing energy stored in said transformer means to be returned through said diode means to said low voltage power supply of said driver means.

4,356,436

PICTURE DISPLAY DEVICE

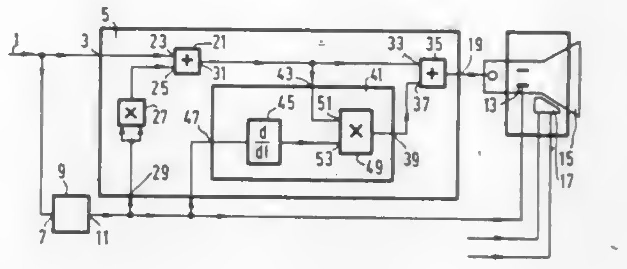
Piet G. J. Barten, and Johannes J. Bos, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,821

Claims priority, application Netherlands, Sep. 13, 1979, 7906832

Int. Cl.^{3} H01J *29/52*

U.S. Cl. 315—386 **7 Claims**



1. A picture display device for displaying a video signal on a picture screen of an electron beam type picture display tube to be scanned by means of a deflection circuit, comprising a deflection correction signal generating circuit for obtaining a deflection correction signal from a video signal to be displayed and a signal processing circuit having a brightness correction signal generating circuit for adding to the video signal to be displayed a brightness correction signal which is influenced by a signal which is predominantly proportional to a first derivative with respect to time of the deflection correction signal, to correct for brightness deviation caused by changes in the scanning velocity in response to the deflection correction signals, wherein said brightness correction signal generating circuit comprises a multiplier to which the video signal and a signal which is predominantly proportional to the first derivative with respect to time of the deflection correction signal is applied, so that the brightness correction signal is predominantly proportional to a product of the video signal and the first derivative with respect to time of the deflection correction signal.

4,356,437

CONTROL CIRCUIT FOR DC MOTORS

Tadashi Saito; Toshihiko Nakajima, both of Yokohama, and Toshio Osada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,795

Claims priority, application Japan, Jul. 20, 1979, 54/91572; Jul. 20, 1979, 54/91573; Jul. 20, 1979, 54/91574; Sep. 7, 1979, 54/114202

Int. Cl.^{3} A02K *29/02*

U.S. Cl. 318—254 **15 Claims**

1. A DC brushless motor comprising:

(a) a rotor with a magnet,

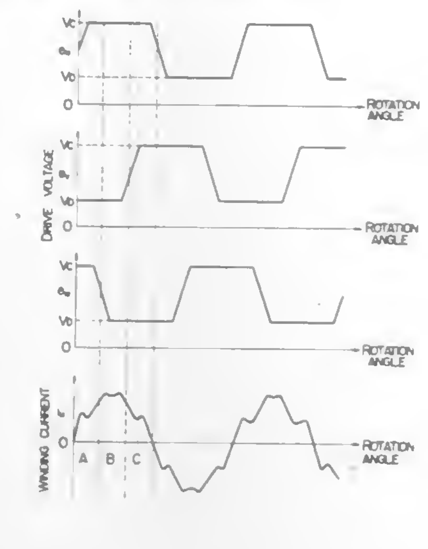
(b) drive stator coils of at least three phases connected in star connection for driving the rotation of said rotor magnet,

(c) a power drive circuit associated with each of the phases for energizing said drive coil in response to a drive signal,

(d) position sensor means associated with each of the phases for detecting the position of said rotor and producing a position signal,

(e) limit voltage setting means for producing first and second limit voltages, and

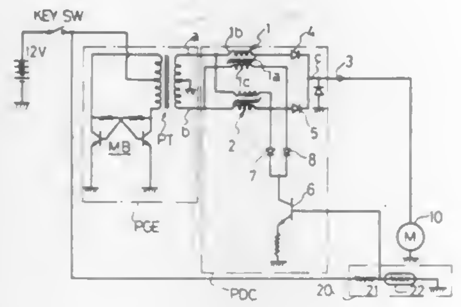
(f) a drive signal generating circuit provided between said position sensor means and said power drive circuit for each of the phases, including means for generating a drive signal of a substantially-trapezoidal voltage waveform and supplying the same to said power drive circuit, said substantially-trapezoidal waveforms for the respective phases having their upper and lower amplitudes determined by said first and second limit voltages from the limit voltage setting means and being shifted by regular phases with one another and having inclinations with respect to the rotation angle of the rotor as determined by said position signal forming the changeover portions between the upper and lower limit amplitudes.



4,356,438
MOTOR SPEED CONTROL SYSTEM

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company Limited, Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,676
Int. Cl.³ H02P *5/18*
U.S. Cl. 318—344 **8 Claims**



1. A motor speed control system for driving a control winding of a motor, comprising:

a motor including a control winding;

control means for generating a control voltage in correspondence with a desired speed of said motor;

a pulse duty controlling element including a core made of an amorphous magnetically soft material, a first electrical coil and a second electrical coil wound on said core, said first electrical coil including a first terminal coupled to said control winding to energize said control winding;

pulse generator means for applying a pulse signal to a second terminal of said first electrical coil to saturate said core magnetically;

reset means for applying a reset signal to a first terminal of said second electrical coil;

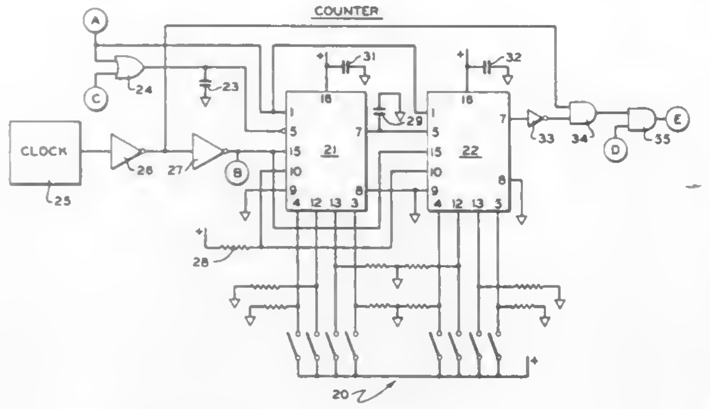
current controlling means coupled to a second terminal of said second electrical coil and to said control voltage for generating a reset current passing through said second electrical coil in accordance with said control voltage; and

wherein said reset current resets the level of magnetic flux in said core to a level in dependence on said control voltage, whereby the time until saturation of said core after application of said pulse signal to said first coil is controlled to produce at said first terminal a pulse width controlled control winding energization signal for directly energizing said control winding in relation to said control signal.

4,356,439
STEPPER MOTOR CONTROL

Richard C. Mott, Harwood Heights, and Louis S. Smulkstys, Arlington Heights, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 3, 1980, Ser. No. 126,234
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—685 **28 Claims**

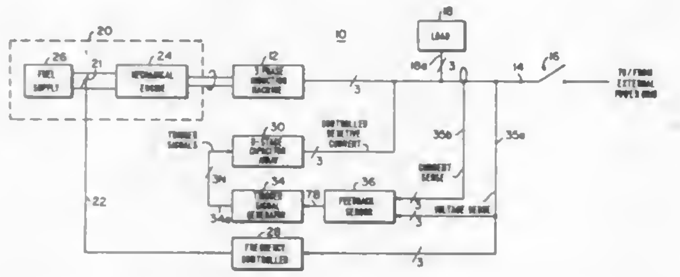


1. A control system for controlling a motor to a
motor means having a motor;
a source of pulses;
initiate means connected to said motor means for connecting said source of pulses to said motor means to drive said motor in a reverse direction to a start position; and,
positioning means including a counter having an input for receiving an input count representing said desired position, said positioning means connected to said motor means and to said source of pulses and responsive to said motor reaching said start position for connecting said source of pulses to said counter and to said motor means to drive said motor in a forward direction, said counter counting pulses from said source so that when said number of counted pulses beginning at said start position substantially equals said input count, said positioning means will stop said motor.

4,356,440
POWER FACTOR CORRECTION SYSTEM

William P. Curtiss, Winthrop, and William C. Colley, III, Boston, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Sep. 18, 1980, Ser. No. 188,305
Int. Cl.³ G05F *1/70*
U.S. Cl. 323—210 **9 Claims**



1. A power factor correction system for an n-phase power distribution system which provides power on at least n power lines, wherein each power line is coupled to an associated terminal, comprising:

A. an N-stage switched capacitor array, where N is an integer, each stage including n capacitor networks, each network being associated with a pair of said n power lines, wherein the capacitor networks within each stage are each characterized by a predetermined capacitance for that stage, and wherein each capacitor network includes an associated capacitor switch means, each switch means being responsive to a trigger signal for selectively coupling said capacitor network across its associated pair of power lines,

B. feedback means coupled to said power lines and including trigger means for generating said trigger signals,

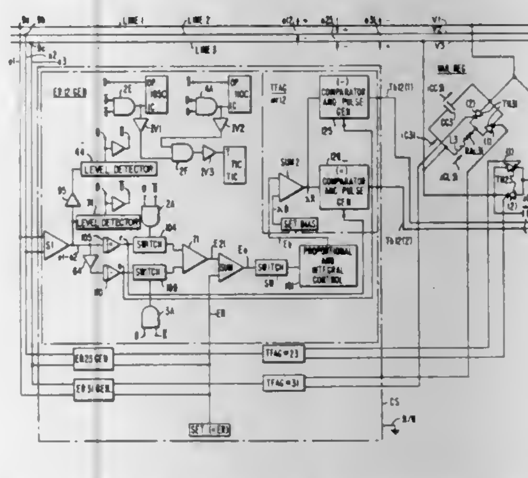
wherein said feedback means includes power factor correction means for generating power factor signals representative of the power factors at the respective ones of said terminals, and wherein said feedback means includes means for coupling said power factor signals to said trigger means whereby said power distribution system delivers substantially only real power to external loads coupled to said terminals, and

wherein said power distribution system includes n+1 power lines, one of said power lines being a neutral line, and wherein said power factor correction means includes means for generating said power factor (PF) signals for each line-to-neutral pair by integrating, over a 360 degree interval, the product of the line-to-neutral voltage at the respective terminals and the integral of the a.c. component of the corresponding line current for the line.

4,356,441
VOLTAGE REGULATOR UTILIZING A STATIC VAR GENERATOR WITH HALF PERIOD AVERAGING AND SATURATING TYPE FIRING ANGLE CONTROL

Thomas H. Putman; Laszlo Gyugyi, both of Penn Hills, and Michael B. Brennen, Wilkins Township, Allegheny County, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 30, 1977, Ser. No. 811,796
Int. Cl.³ H02J *3/18*
U.S. Cl. 323—210 **11 Claims**



1. A voltage regulator for an alternating current electrical distribution system which supplies electrical power to a pair of terminals, wherein said distribution system has an apparent impedance disposed in series circuit relationship with one of said terminals, said impedance affecting the voltage at said terminals as a function of the amount of current flowing through said impedance comprising:

(a) reference means for fixing a reference voltage for said terminals;

(b) determining means for measuring the actual voltage at said terminals and providing an output signal indicative of the positive and negative half cycles of said actual voltage, first comparator means for providing a positive first comparator output control signal for positive half cycles of said actual voltage and a negative first comparator output control signal for negative half cycles of said actual voltage, a second comparator means for providing a positive second comparator output control signal which is ninety degrees phase shifted from said positive first comparator output control signal and for providing a negative second comparator output control signal which is ninety degrees phase shifted from said negative first comparator output control signal, integrator means interconnected with the output of said determining means and having a control terminal interconnected with said first and second comparator means for integrating said actual voltage when said positive first comparator output control signal is present and for holding an integration signal representative of said integration only during a condition when said negative first comparator output control signal and said positive second comparator output control signal are concurrently present, track and store means interconnected with the output of said integrator means for tracking said integration means output signal during the time of said condition, and at a time thereafter providing as an output a signal related to the integral of said actual voltage;

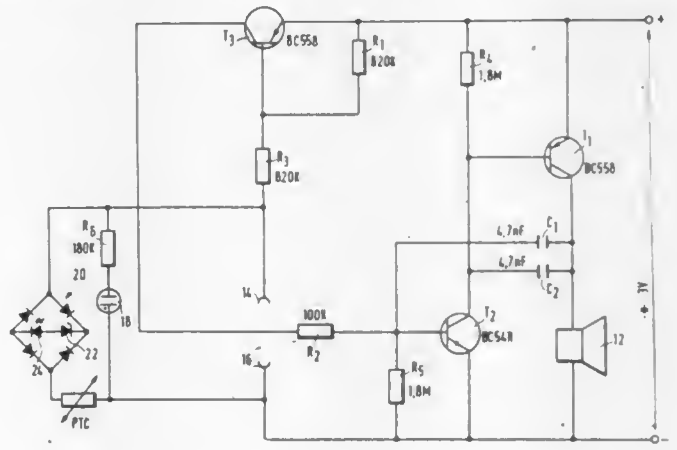
(c) third comparator means including summing means interconnected with said reference means and said track and store means for comparing said reference voltage with said integral of said actual voltage and for providing a third comparator means output signal related to the difference therebetween; and

(d) reactive current source means interconnected with said comparator means and said terminals to provide compensating reactive electrical current to said terminals of sufficient magnitude and direction as determined by said comparator means output signal to change the amount of said current flowing through said impedance to a value which causes said difference between said actual voltage and said reference voltage to be generally zero.

4,356,442
ELECTRONIC VOLTAGE AND CONTINUITY TESTING UNIT

Christian Beha, Föhrentalstrasse 6, 7804 Glottertal, Fed. Rep. of Germany

Filed Apr. 15, 1980, Ser. No. 140,476
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915530
Int. Cl.³ G01R *19/14, 31/02, 15/12*
U.S. Cl. 324—51 **10 Claims**



1. Testing apparatus having the capability of effecting a single voltage pole mode of testing and of effecting a continuity mode of testing, said apparatus comprising:

(a) first and second testing terminals;

(b) a loudspeaker;

(c) a battery energized oscillator circuit coupled to energize said loudspeaker and having a control input, said second testing terminal being coupled to said oscillator circuit;

(d) a control transistor having a base, an emitter and a collector;

(e) first and second resistances, said first resistance being connected in circuit between said base and said emitter of said control transistor, the battery being connected through said emitter and collector of said control transistor to said control input of said oscillator circuit, said first testing terminal being connected through said second resistor to apply an AC voltage component to said base of said control transistor;

(f) said first and second resistances being valued such that when a test alternating voltage component is applied solely to said first testing terminal, a sufficient voltage appears upon said first resistance for the control of said control transistor;

(g) said oscillator circuit operative in a continuity mode upon the ohmic connection of said first and second testing terminals, whereby a voltage is applied to said base rendering said control transistor conductive and applying an enable signal to said control input to render said oscillator circuit into an oscillating state thereby producing an oscillator output signal energizing said loudspeaker, and operative in a single pole voltage mode, whereby an alternating voltage component as applied solely to said first testing terminal is imposed across said first and second resistances to render conductive said control transistor and to apply an enable signal through said conductive control transistor to said control input to render said oscillator circuit to its oscillating state, thereby producing an oscillator output signal modulated by the frequency of said alternating voltage component energizing said loudspeaker.

4,356,443

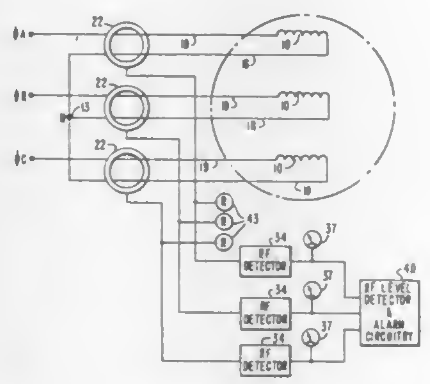
DETECTION OF ARCING FAULTS IN POLYPHASE ELECTRIC MACHINES

Franklin T. Emery, Greentree, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 26, 1980, Ser. No. 181,513

Int. Cl.^{3} G01R *31/02*

U.S. Cl. 324—51 **11 Claims**



1. An electric machine having a polyphase winding with an arcing detector, comprising:

a high-frequency current transformer disposed about each phase lead of said polyphase machine, said current transformer outputting a current signal proportionate to the magnitude of radio frequency current flowing in its associated phase lead;

means connected to the output of each of said current transformers for converting said proportionate current signal to a direct-current voltage value; and

means for individually measuring the magnitude of said direct-current voltage value for each phase winding of said polyphase electric machine.

4,356,444

TEST SYSTEM FOR CATHODIC PROTECTION CIRCUIT OF AN UNDERGROUND PIPELINE

Alfredo Saenz, Jr., 18643 Chestnut Ave., Country Club Hills, Ill. 60477

Filed Dec. 15, 1980, Ser. No. 216,385

Int. Cl.^{3} G01R *34/12*

U.S. Cl. 324—54 **11 Claims**

1. An apparatus for testing the pipe-to-soil potential of a buried pipeline having a plurality of rectifiers electrically connected to it at spaced apart intervals for applying an electrical potential to said pipe, comprising

a plurality of synchronous rectifier current interrupters, each interrupter adapted for electrical connection to a respective one of said rectifiers for turning said rectifier on and off at intervals,

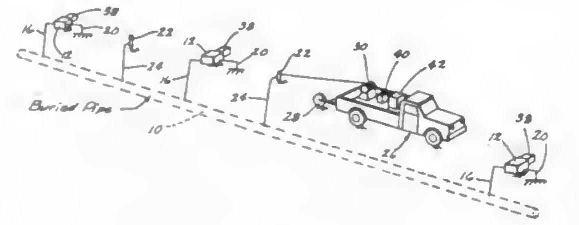
a clock reference unit electrically connectable to each of said interrupters for synchronizing each interrupter with the reference unit whereby, upon synchronization of all said interrupters, all of said rectifiers are turned on and off in unison,

a portable sensing device operative for producing signals indicative of the pipe-to-soil potential of a pipe,

a synchronous ON/OFF pipe-to-soil potential demultiplexer, said demultiplexer being electrically connected to said recording device for electronically separating the on and off potentials,

said clock reference unit being electrically connectable to said demultiplexer for synchronizing said demultiplexer with the reference unit and interrupters whereby said demultiplexer will operatively separate signals indicative of the ON and OFF potentials respectively, and

means for separately recording said separated signals.



4,356,445

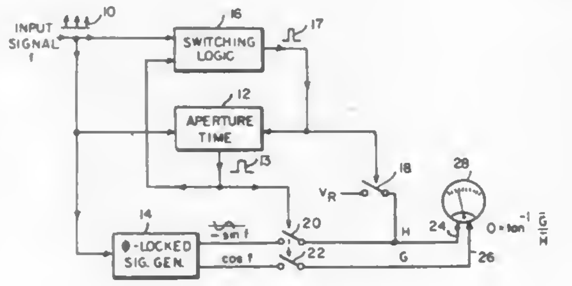
METHOD AND APPARATUS FOR DRIVING AIR CORE METER MOVEMENTS

James S. Congdon, Santa Clara, Calif., assignor to Cherry Semiconductor Corporation, Cranston, R.I.

Filed Jul. 10, 1980, Ser. No. 168,372

Int. Cl.^{3} G01R *23/00*

U.S. Cl. 324—82 **19 Claims**



1. Circuitry for providing, in response to a periodic input signal of variable frequency, first and second output signals suitable for driving an air core meter means to provide a meter deflection indicative of the frequency of the input signal, comprising:

means, responsive to the input signal, for providing first and second signals which are respectively representative of cosine and negative sine waveforms, and which have a predetermined phase relationship with the input signal;

means, responsive to the input signals, for providing a pulse signal having a duration which is determined by the period of the input signal;

means for applying a reference signal to the meter for the duration of the pulse signal;

means for defining an aperture interval following the end of said pulse signal; and

means for applying the first and second waveforms to the meter during the aperture interval.

4,356,446

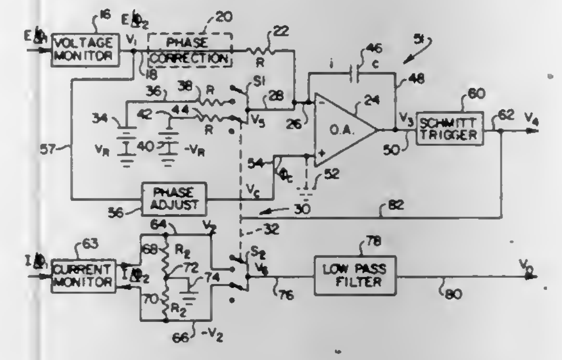
TIME DIVISION MULTIPLIER TRANSDUCER WITH SELECTIVE PHASE SHIFT

Frank E. Battocletti, Columbus, Ohio, assignor to TransData, Inc., Dublin, Ohio

Filed Mar. 23, 1981, Ser. No. 246,848

Int. Cl.^{3} G01R *25/00*

U.S. Cl. 324—83 R **17 Claims**



1. A power transducer for monitoring a power line exhibiting given power and phase characteristics, comprising:

means for monitoring a first electrical parameter of said power line to derive a first scaled signal corresponding therewith and exhibiting a phase deviating from said given phase by a first error angle;

integrator stage means, including an amplifier having inverting and non-inverting inputs, for providing an integrated output;

trigger means responsive to said integrated output for providing time variable actuating signals corresponding with said integrated output;

means for monitoring a second electrical parameter of said power line to derive second and third scaled signals of opposite polarity corresponding therewith and exhibiting a phase deviating from said given phase by a second error angle;

low pass filter means having an input for selectively receiving and second and third scaled signals and providing a power responsive output;

means responsive to said time variable actuating signals for alternately effecting the application of first and second reference signals to said amplifier inverting input and, including switching means for simultaneously alternately effecting the application of said second and third scaled signals to said low pass filter means input;

phase adjust means responsive to said first scaled signal for providing a predetermined phase related signal at said amplifier non-inverting input to effect a selected phase relationship of said filter power responsive output with respect to said given phase characteristic.

4,356,447

SYSTEM AND APPARATUS TO DETERMINE THE ANGULAR POSITION, AND SPEED OF A ROTATING SHAFT, PARTICULARLY CRANK SHAFT OF AN INTERNAL COMBUSTION ENGINE

Günter Hönig, Ludwigsburg; Uwe Kiencke, Ditzingen, and Rainer Bone, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,210

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933516

Int. Cl.^{3} G01P *3/48, 3/54*

U.S. Cl. 324—169 **9 Claims**

1. Sensing system to determine angular position of a rotary shaft (W) having

a disk element (S,S') rotating with a shaft, the disk element being subdivided into a plurality of successive zones of equal radial distance (r) from the center of the disk, and separated from each other by a plurality of circumferentially positioned angle position marker elements (21–32; **41–47**) separating said zones, which angle marker elements are narrow with respect to the circumferential extent of the zones and which are formed with abrupt flanks to result in sharp change of a physical parameter upon rotation of the disk past a fixed pick-up sensor (**35**)

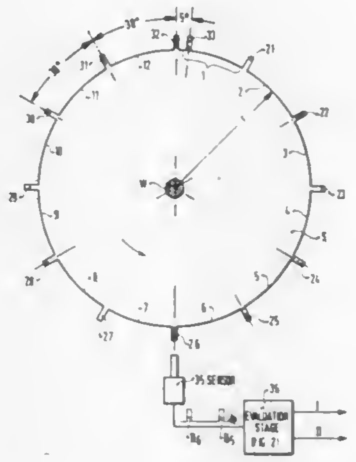
and comprising, in accordance with the invention

an additional marker element (**33**) forming a reference marker located in at least one of the zones and between two angle position marker elements, the angular distance of said additional reference marker element to a first angle position neighboring marker element (**21**) at one side of said reference marker element being substantially larger than the angular distance to a second neighboring marker element (**32**) at the opposite side of said reference marker element (**33**);

a fixed sensor (**35**) positioned in sensing relation to said disk element and sensing passing both the angle position marker element and the additional reference elements past the sensor upon rotation of the shaft and providing needle-pulse type output signals;

two counters (Z_1, Z_{12}, Z_{1n}; Z2) connected to and controlled by the sensor to start counting upon receipt of an output signal from the sensor;

means generating a first frequency (f_1), said first frequency being applied to the first counter as a counting clock frequency therefor;



means generating a second frequency (f_2) which is higher than said first frequency (f_1), said second frequency being applied to the second counter as a counting clock frequency therefor;

a memory (Sp) connected to the first counter (Z_1), Z_{12}, Z_{1n}) and receiving the count state thereof which said first counter has reached in the period of time from a preceding output signal;

a comparator (V) connected to the memory (Sp) and to said second counter (Z_2) and comparing whether the count state of the second counter, counting at the higher frequency, has a value which is greater, or less than the value stored in the memory;

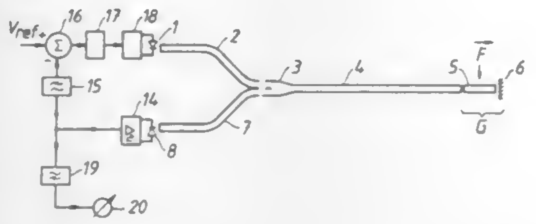
and a transfer switch, operated by the comparator to route the signal from the sensor (**35**)

(a) to a first output line (**39**) indicative of a marker pulse if the comparator determines that the count state of the second counter, (Z_2) upon termination of its counting period due to occurrence of a subsequent output signal from the sensor, has not reached the count state stored in the memory based on the preceding stored count state derived from the first lower frequency counter; and,

(b) to a second output line (**40**) if the count state of the second counter (Z2) reaches the count state stored in the memory (S_p) based on the preceding stored count state derived from the first, lower frequency counter.

4,356,448
APPARATUS FOR MEASURING ELECTRICAL OR MAGNETIC FIELDS BY ABSORPTION SPECTRUM CHANGE

Torgny Brogardh, and Olof Engström, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden
Filed May 23, 1980, Ser. No. 152,724
Claims priority, application Sweden, May 31, 1979, 7904752
Int. Cl.^{3} G01R *31/00, 33/02*
U.S. Cl. 324—244 25 Claims



1. An optical measuring device for measuring magnetic fields, comprising:

at least one radiation modulator consisting of a material having spectral properties dependent on said field;

means for measuring said spectral properties by radiation in a given wavelength range passing through said modulator, said modulator, in said given wavelength range, having at least one absorption edge in the absorption sprectrum of said material being modified by application of said field, said field dependence being caused by changes in the Landau levels in a magnetic field;

at least one optical fiber for conducting light to and from the modulator; and

said material having a specific resistivity at least as great as that of a semiconductor material.

2. An optical measuring device for measuring electrical fields, comprising:

at least one radiation modulator consisting of a material having spectral properties dependent on said field;

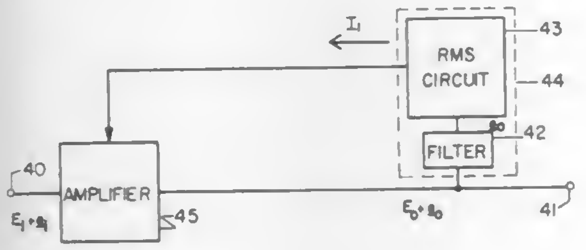
means for measuring said spectral properties by radiation in a given wavelength range passing through said modulator, said modulator, in said given wavelength range, having at least one absorption edge in the absorption spectrum of said material being modified by application of said field, said field dependence being caused by changes in the Franz-Keldysh effect of an electric field;

at least one optical fiber for conducting light to and from the modulator; and

said material having a specific resistivity at least as great as that of a semiconductor material.

4,356,449
LOGARITHMIC ATTENUATING CIRCUIT

Paul L. Thomas, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 31, 1980, Ser. No. 135,952
Int. Cl.^{3} G06G *7/24*
U.S. Cl. 328—145 9 Claims



1. A logarithmic attenuating circuit comprising:

an input port for receiving an input signal;

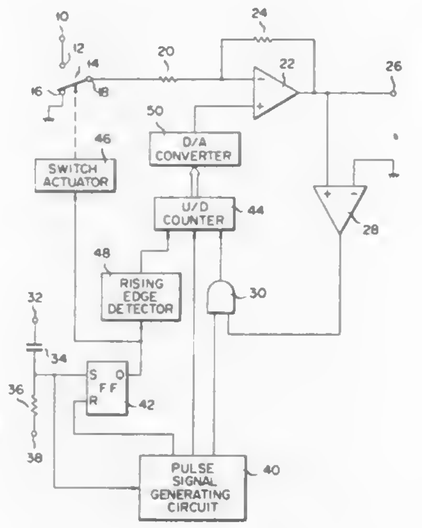
an output port;

an a.c. amplitude detector having an input connected to said output port and an output for providing an amplitude signal proportional to the amplitude of the a.c. component of an output signal present at said output port; and

an amplifier having an input connected to said input port and an output connected to said output port, said amplifier being responsive to said amplitude signal for producing a gain which is inversely proportional to the amplitude of said amplitude signal, to provide at said output port an output signal having the same shape as the input signal at the input port and having an a.c. component having an amplitude proportional to the square root of the amplitude of the a.c. component of said input signal.

4,356,450
OFFSET COMPENSATING CIRCUIT FOR OPERATIONAL AMPLIFIER

Eiji Masuda, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Nov. 17, 1980, Ser. No. 207,731
Claims priority, application Japan, Nov. 29, 1979, 54-154592
Int. Cl.^{3} H03F *1/02, 3/45*
U.S. Cl. 330—9 10 Claims



1. An offset compensating circuit for an operational amplifier having two input terminals comprising:

a reference voltage terminal connectable to a first input terminal;

comparing means connected to the output terminal of said operational amplifier and to said reference voltage terminal for comparing signal levels at both said terminals and generating a two-level signal indicating the result of said comparison;

counting means connected to said comparing means for generating a digital count at an output terminal in response to the state of said two-level signal; and

a digital-to-analog converter having an input terminal connected to the output terminal of said counting means and and having an output terminal connected to a second input terminal of said operational amplifier to supply said operational amplifier with an analog signal corresponding to said count to compensate for voltage offset in said operational amplifier.

4,356,451
ACTIVE BAND PASS FILTER

Harold E. Wilson, PSC Box 253, APO, Miami, Fla. 34002
Filed Jun. 16, 1980, Ser. No. 159,805
Int. Cl.^{3} H03F *1/34*
U.S. Cl. 330—107 7 Claims

1. An active band pass filter comprising:

an input terminal, an output terminal and a common terminal,

a differential amplifier having an inverting input and a noninverting input,

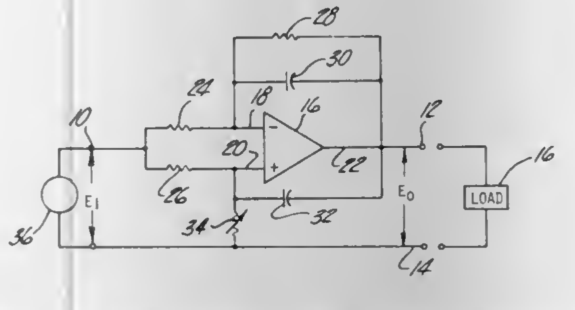
means for electrically connecting said input terminal to both said inverting and noninverting inputs,

frequency dependent feedback means for electrically connecting the output terminal to both said inverting and noninverting inputs so that said amplifier attains a predetermined gain at a resonant frequency and a lesser gain at other frequencies,

wherein said feedback means comprises a first capacitor electrically connected between said output terminal and said inverting input and a second capacitor electrically connected between said output terminal and said noninverting input and

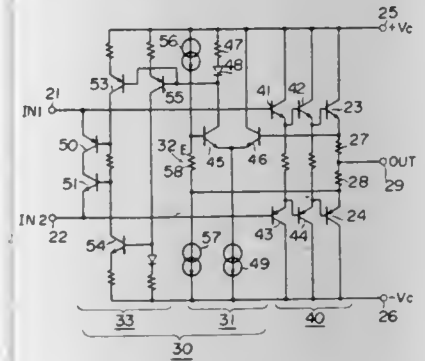
wherein only said noninverting input of said differential amplifier is connected to said common terminal through a resistor, and

wherein the resonant frequency of the amplifier varies in accordance with the value of said resistor.



4,356,452
CLASS A PUSH-PULL AMPLIFIER WITH BIAS CONTROLLING CIRCUIT

Masayuki Iwamatsu, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Aug. 26, 1980, Ser. No. 181,619
Claims priority, application Japan, Sep. 6, 1979, 54-114663; Sep. 6, 1979, 54-114664
Int. Cl.^{3} H03F *3/30*
U.S. Cl. 330—265 13 Claims



1. A class A push-pull amplifier comprising:

a first input terminal and a second input terminal to which an input signal to be amplified is applied in same phase;

an output terminal for delivering said input signal amplified to a load;

first amplification means and second amplification means for push-pull operation, each amplification means having an input point and an output point and including at least one transistor, the input point of said first amplification means being connected to said first input terminal and the input point of said second amplification means being connected to said second input terminal;

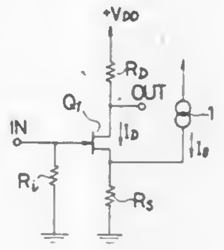
first current detection means and second current detection means for detecting respectively each value of output currents delivered from the output points of said first and second amplification means, each current detection means being connected to each other in series between the output points of said first and second amplification means, and a junction point of said first and second current detection means being connected to said output terminal;

means for detecting a potential difference developed between said first and second current detection means to produce a control signal; and

bias setting means for feeding bias currents to the input points of said first and second amplification means in response to said control signal, whereby the sum of each output current delivered from the output points of said first and second amplification means is held constant.

4,356,453
REDUCED NOISE-IMPROVED GAIN TRANSISTOR CIRCUIT

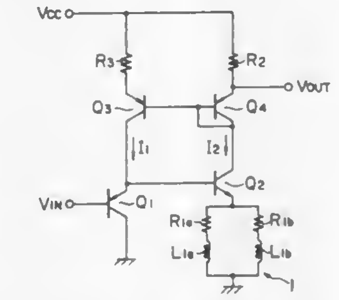
Susumu Sueyoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Feb. 1, 1980, Ser. No. 117,590
Claims priority, application Japan, Feb. 8, 1979, 54-13787
Int. Cl.^{3} H03F *3/16*
U.S. Cl. 330—277 7 Claims



1. The transistor circuit comprising: a grounded-source type field-effect transistor; a source resistor coupled between the source of said transistor and a first potential; an adjustable constant current source coupled to supply a predetermined current other than a drain current to said source resistor; and a drain resistor coupled between the drain of said transistor and a second potential, an output from said circuit being taken from said drain.

4,356,454
EQUALIZER AMPLIFIER

Susumu Sueyoshi, and Kikuo Ishikawa, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 17, 1980, Ser. No. 187,892
Claims priority, application Japan, Sep. 21, 1979, 54/121650
Int. Cl.^{3} H03F *3/04, 3/191;* H03H *5/00*
U.S. Cl. 330—294 8 Claims



1. An equalizer amplifier comprising:

a first transistor to the base of which an input signal is applied;

a second transistor to the base of which an output of said first transistor is applied, said second transistor being of the opposite conductivity type to said first transistor;

current supplying means for supplying currents to said first and second transistors with the ratio of said currents being constant;

output providing means for providing an output in response to variations of current which flows in one of said first and second transistors; and

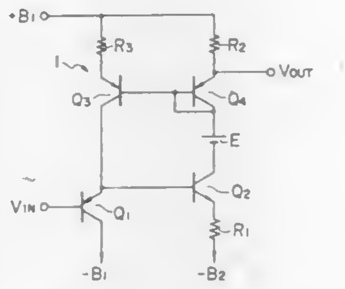
a plurality impedance elements for determining an amplification factor of said amplifier provided in the path of current flowing in at least one of said first and second transistor, at least one of said impedance elements having a reactance component which varies depending on frequency.

4,356,455

AMPLIFIER

Akio Ozawa; Susumu Sueyoshi; Keishi Saito; Kikuo Ishikawa; Kiyomi Yatsuhashi; Satoshi Ishii, and Masamichi Yumino, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 187,891
Claims priority, application Japan, Sep. 21, 1979, 54-121647
Int. Cl.^{3} H03F *3/04*
U.S. Cl. 330—296 6 Claims



1. An amplifier circuit comprising:

a first transistor to the base of which an input signal is applied;

a second transistor of an opposite conductivity type to said first transistor and to the base of which an output of said first transistor is applied;

means for supplying currents to said first and second transistors in such a manner that the ratio of said current supplied to said first transistor to said current supplied to said second transistor is a predetermined constant value; and

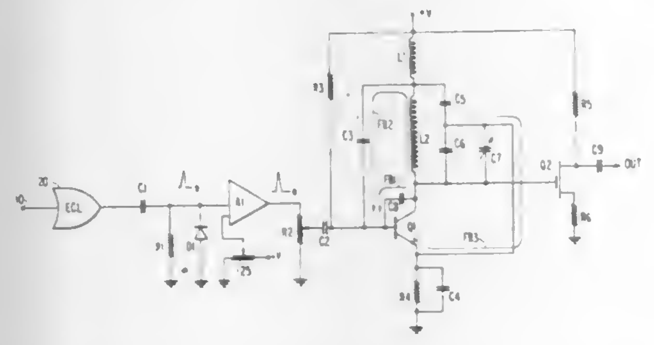
bias generating means for providing bias voltage to said first and second transistors so that the ratio of a collector-emitter voltage of said first transistor to a collector-emitter voltage of said second transistor is the reciprocal of said constant value so as to provide an output in response to variations of current in said first or second transistor.

4,356,456

DIVISION BY NONINTEGER NUMBERS USING SYNCHRONOUS OSCILLATORS

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jul. 22, 1980, Ser. No. 171,074
Int. Cl.^{3} H03B *5/12;* H03L *7/00*
U.S. Cl. 331—117 R 25 Claims



24. A method for dividing the frequency of an input signal by a non-integer number X/Y, X and Y being integers, to provide an output signal, the method comprising:

applying said input signal to synchronous oscillator means; and

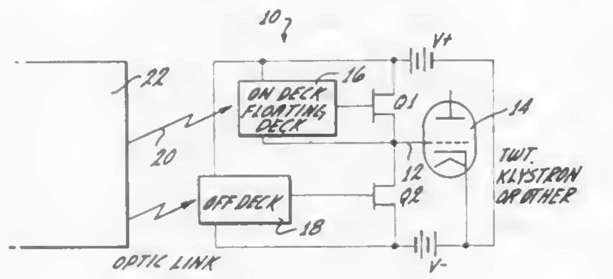
synchronizing every Yth cycle of the output signal of said synchronous oscillator means with every Xth cycle of said input signal, thereby effectively simultaneously multiplying the frequency of said input signal by Y and dividing the frequency of said input signal by X at said synchronous oscillator means to produce said output signal.

4,356,457

OPTIC FLOATING DECK MODULATOR

Edward F. Di Carlo, Baltimore, Md., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Sep. 2, 1980, Ser. No. 183,519
Int. Cl.^{3} H03K *7/08*
U.S. Cl. 332—3 8 Claims



1. An optic floating deck modulator for modulating a control element of an electron device in response to light pulses as information signals sent from a light source, said electron device having positive and negative DC voltage sources for operating said electron device, comprising:

a pair of high power switching devices connected in series between said positive and negative voltage sources,

the control element of said electron device being coupled between said switching devices to receive a positive voltage pulse and a negative voltage pulse as said switching devices are changed alternately from a first state to a second state,

means for changing said switching devices from said first state to said second state comprising a pair of decks connected one to each switching device,

one of said decks being connected between the positive voltage source and said control element and the other deck being connected between the positive voltage source and the negative voltage source,

each of said decks including,

light sensitive means for receiving light pulses from said light source and producing an electrical variation in response thereto, and

means for amplifying said electrical variation and applying same to the high power switching device to which it is connected.

8. An optic amplifier for driving an electron device in response to light pulses as information signals sent from a light source, comprising:

a positive DC voltage source,

a light sensitive device for receiving light pulses from said light source and producing an electrical variation in response thereto, and

means for amplifying said electrical variation and applying same to the electron device to which it is connected,

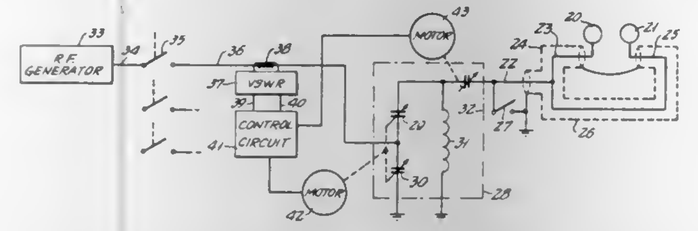
said means for amplifying said electrical variations comprises a trans-impedance amplifier, a transistor amplifier, and a FET amplifier, said amplifiers being connected in series, with said FET amplifier being connected between said positive voltage source and ground.

4,356,458

AUTOMATIC IMPEDANCE MATCHING APPARATUS

David Armitage, Bangor, England, assignor to Harry H. LeVeen, Charleston, S.C.

Filed Aug. 31, 1981, Ser. No. 297,725
Int. Cl.^{3} H03H *7/40*
U.S. Cl. 333—17 M 10 Claims



1. Automatic impedance matching apparatus comprising:

a matching unit comprising at least two reactors each of which has reactance varying means for varying the reactance thereof;

standing wave means for detecting and providing output signals corresponding respectively to the forward wave and to the reflected wave on a transmission line connected to said matching unit;

converting means connected to said standing wave means for converting said signals into digital output corresponding to the ratio of the reflected wave to the forward wave;

a pair of stepping motors, one motor being connected to the varying means of one of said reactors for controlling the reactance of the latter and the other motor being connected to the varying means of the other of said reactors for varying the reactance of the latter; and

control means connected to said motors for selecting a motor to be stepped and for stepping the selected motor in a direction which will change the impedance of said matching unit to a desired value, said control means comprising:

comparing means connected to said converting means for comparing the digital output obtained before stepping of a motor with the digital output obtained after the stepping of a motor and for providing an output signal; and

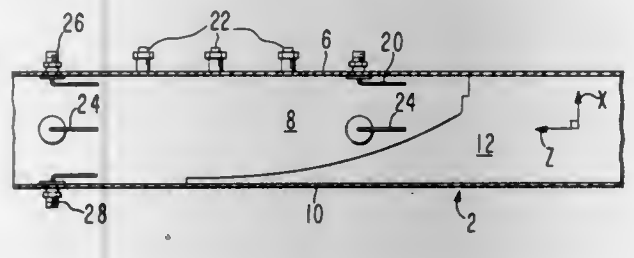
selection means connected to said motors and to said comparing means and responsive to said last-mentioned output signal to select a motor to be stepped and for stepping the selected motor in the direction which will change the reactance of the reactor connected to the selected motor to a desired value.

4,356,459

FLAT PHASE RESPONSE SEPTUM POLARIZER

Harry J. Gould, Mesa, Ariz., and Keiji Kawaguchi, Mountain View, Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Mar. 23, 1981, Ser. No. 246,461
Int. Cl.^{3} H01P *1/16*
U.S. Cl. 333—21 A 8 Claims



1. A septum polarizer for converting linearly polarized microwave energy to circularly polarized microwave energy, comprising:

an elongated hollow conductive waveguide having four elongated walls;

an elongated planar conductive septum positioned within said waveguide between a first wall and a second wall that is opposite said first wall; and

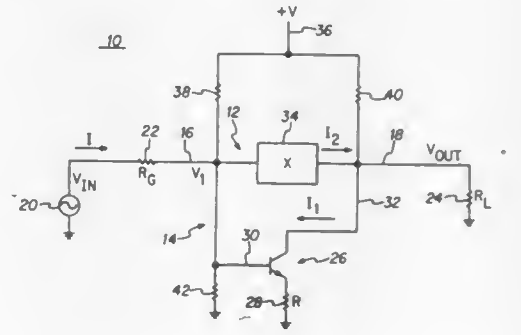
a first trapped mode resonator positioned within said waveguide, within the plane formed by the septum, and comprising a thin elongated electrically conductive structure protruding from the first wall of the waveguide for producing a resonant response in the phase response of the polarizer at a resonant frequency.

4,356,460

SPLIT PHASE DELAY EQUALIZER WITH REDUCED INSERTION LOSS

Vernon R. Cunningham, Melissa, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 8, 1980, Ser. No. 214,299
Int. Cl.^{3} H03H *11/12*
U.S. Cl. 333—28 R 7 Claims



1. A split phase delay equalizer using a single transistor which has a transfer function complying with the Equation

$$T = \frac{R - X}{M \frac{RL}{R} \left(RL + RG + \frac{(RG \cdot RL)}{R} + X\right)]}$$

where R is a transistor gain stabilizing resistor as referenced infra,

where RL is the load resistance seen by the equalizer,

where RG is the signal source resistance seen by the equalizer, and

where X is the impedance of a circuit branch as referenced infra, comprising, in combination:

a pair of circuit branches connected in parallel between an input and an output;

a transistor in one of said pair of circuit branches for providing a 180 degree phase inversion of the signal in that branch;

reactance means X in the other one of said pair of circuit branches for providing a phase shift of the signal in that branch;

a resistance means R connected in circuit with the transistor in said one of said pair of circuit branches, said equalizer receiving signals from a generator having an impedance of RG and connected to supply signals to a load having a resistance value RL; and

means connecting the base of said transistor to said input and connecting one of the emitter and collector of said transistor to the output, wherein said reactance means is connected in feedback relation from said one of the emitter and collector of said transistor to the base of said transistor.

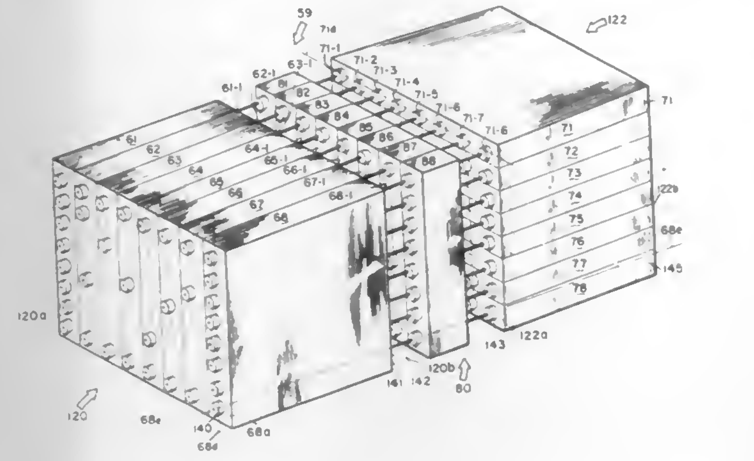
4,356,461
PRACTICAL IMPLEMENTATION OF LARGE BUTLER MATRICES

Joseph H. Acoraci, Phoenix, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 14, 1981, Ser. No. 225,071

Int. Cl.³ H01P *5/18*

U.S. Cl. 333—116 **8 Claims**



1. An N×N Butler matrix having phase shifters and interconnecting means intermediate input and output ports comprised of a plurality D of M×M Butler matrices, wherein N is greater than M and an integral multiple thereof, and wherein each of said M×M Butler matrices is contained in a stackable package having M input ports aligned on one end of said package and M output ports on the opposite end of said package, D/2 of said packages being arranged to form an input stack and D/2 of said packages being arranged to form an output stack whose packages are orthogonal to the packages of said input stack.

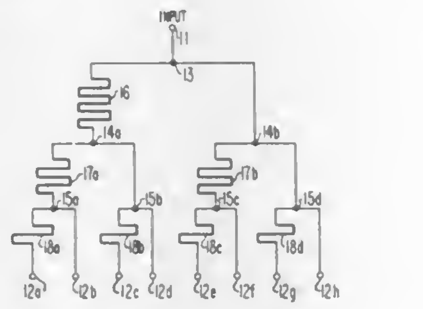
4,356,462
CIRCUIT FOR FREQUENCY SCAN ANTENNA ELEMENT

David F. Bowman, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,425

Int. Cl.³ H01P *5/12*

U.S. Cl. 333—128 **9 Claims**



1. A power distribution network for use in a frequency scanning antenna system responsive to signals applied to an input port for providing at a plurality of output ports output signals of substantially even power distribution and, at a predetermined frequency, a fixed phase relationship, said network comprising:

- a first power divider comprising a common port coupled to said input port and having m_1 branch ports for dividing power applied to said common port equally into said m_1 branch ports;
- m_1 transmission lines with each of said m_1 lines coupled at a first end to a corresponding one of said m_1 branch ports of said first power divider and having second ends;
- m_1 power dividers, each comprising a common port coupled to a corresponding one of the second ends of said m_1 transmission lines, and having m_2 branch ports for equally dividing power applied to the common ports of said m_1 power dividers;
- means including power dividers and transmission lines coupled in like manner at successive levels of power division for providing, at the n^{th} level of power division,

$$\mathop{\pi}\limits_{i=1}^{n-1} m_i$$

power dividers having

$$\mathop{\pi}\limits_{i=1}^{n} m_i$$

branch ports and

$$\mathop{\pi}\limits_{i=1}^{n} m_i$$

transmission lines each having first ends coupled to a corresponding one of the

$$\mathop{\pi}\limits_{i=1}^{n} m_i$$

branch ports of said

$$\mathop{\pi}\limits_{i=1}^{n-1} m_i$$

power dividers and having second ends coupled respectively to said plurality of output ports, wherein said transmission lines coupled to the branch ports of said power dividers have electrical lengths at said predetermined frequency which are interrelated at the j^{th} level of power division according to

$$\phi,\ \phi + k \mathop{\pi}\limits_{i=j+1}^{n} m_i,\ \phi + 2k \mathop{\pi}\limits_{i=j+1}^{n} m_i, \ldots,$$

$$\phi + \left(\mathop{\pi}\limits_{i=1}^{j} m_i - 1 \right) k \mathop{\pi}\limits_{i=j+1}^{n} m_i,$$

where $0<j\leqq n$, ϕ is an arbitrary electrical length at said predetermined frequency, and k is a non-zero constant, such that the electrical lengths of any pair of said

$$\mathop{\pi}\limits_{i=1}^{n} m_i$$

transmission lines differ by a multiple of the wavelength at said predetermined frequency, thereby providing said fixed phase relationship of the signals of said predetermined frequency at all of said output ports and predetermined phase differentials at other frequencies.

4,356,463
FILTERING DEVICE USING THE TRANSFER OF ELECTRICAL CHARGES INTO A SEMICONDUCTOR

Roger B. Gonin; Daniel Forster, and Jean E. Picquendar, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 21, 1979, Ser. No. 96,328

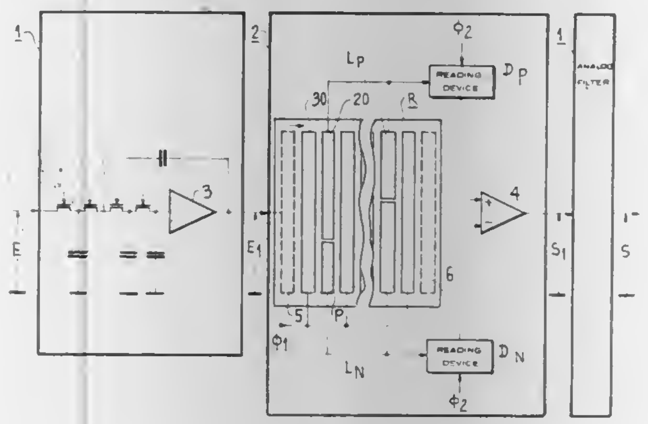
Claims priority, application France, Nov. 21, 1978, 78 32765

Int. Cl.³ H03H *15/02;* **G11C** *27/02*

U.S. Cl. 333—165 **10 Claims**

1. A filtering device using the transfer of electrical charges into a semiconductor, comprising at least one analog filter of at least the second order in series with a transverse charge transfer filter constituted by:

- a charge transfer shift register having a plurality of stages, said register being on a semiconductor substrate covered with an insulating layer, transfer electrodes constituting these stages being placed on the insulating layer parallel to one another and transversely positioned with respect to the direction of the charges and ensuring the transfer of charges into the substrate from one stage of the register to the next in the case of the periodic application of given potential;
- means for the injection of charges corresponding to the sampled input voltage of the charge transfer filter;
- weighting means connected to the output of the stages of the register allocating a weighting coefficient to the quantity of charges having passed through each stage;
- means fixing the sign of the weighting coefficients;



- summation and reading means for the quantities of weighted charges, said means supplying the electrical output signal of the charge transfer filter;
- means ensuring the discharge of the charges having passed through the final stage of the register; wherein the analog filter or filters cooperate with the charge transfer filter contributing to reducing the attenuation produced by the charge transfer filter at its sampled input voltage in such a way that in its useful frequency band the attenuation of the filtering device is substantially zero, with Att=20 $\log_{10}(E/S)$, E and S being the input and output voltages of the device, and said analog filter or filters cooperate with the charge transfer filter contributing to the increase, outside said frequency band, of the attenuation provided by the charge transfer filter at its sampled input voltage in such a way that outside this frequency band the attenuation of the filtering device is very high.

4,356,464
FILTER FOR ELECTRIC SIGNALS CONSISTING OF SWITCHES, CAPACITORS AND AMPLIFIERS

Alfred Fettweis, Bochum, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

PCT No. PCT/EP79/00064, § 371 Date May 15, 1980, § 102(e) Date May 15, 1980, PCT Pub. No. WO80/00644, PCT Pub, Date Apr. 3, 1980

PCT Filed Aug. 21, 1979, Ser. No. 196,554

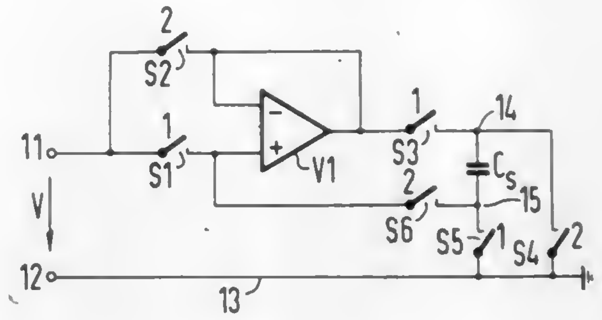
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840346

Int. Cl.³ H03H *19/00;* **H03K** *5/153*

U.S. Cl. 333—173 **11 Claims**

1. In an electric filter comprised of switches, capacitors, and amplifiers, the combination comprising:

- at least one voltage reversal switch operating to produce a voltage at first and second switch terminals, subsequent to actuation of the voltage reversal switch, which is equal in magnitude but of opposite polarity to the voltage at such terminals prior to actuation of the voltage reversal switch, said voltage reversal switch comprising:
- a capacitor for storing the voltage presented thereto during a first clock pulse phase;
- means for connecting said first switch terminal to a reference potential;
- amplifying means;
- first connecting means including said amplifying means and a first switch operated during a first clock pulse phase for connecting said second terminal to said capacitor;
- second connecting means including said amplifying means and a second switch operated during a second clock pulse phase for connecting said capacitor to said second terminal;



- said first connection means including a third switch operated during the first clock pulse phase and connected in series with said first switch;
- a fourth switch operated during the second clock pulse phase and connected between one end of said capacitor and said reference potential;
- a fifth switch operated during the first clock pulse phase and connected between the other end of said capacitor and said reference potential; and
- said second connection means including a sixth switch operated during the second clock pulse phase and connected in series with said second switch.

4,356,465
ELECTRIC CONTACT SWITCHING DEVICE

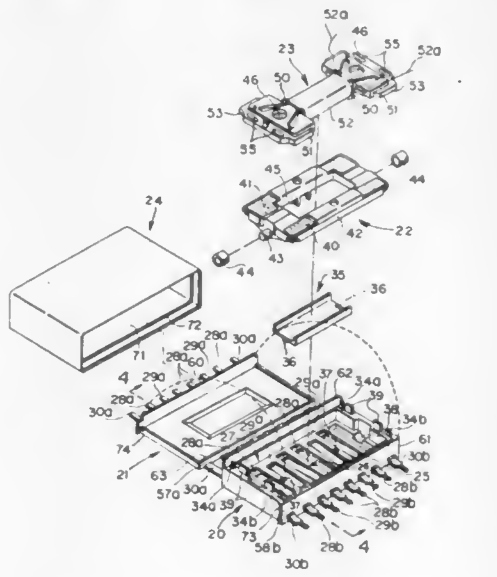
Shunichi Agatahama, Osaka, Japan, assignor to Omron Tateisi Electronics, Co., Kyoto, Japan

Filed Mar. 11, 1981, Ser. No. 242,534

Claims priority, application Japan, Mar. 15, 1980, 55/32879; Feb. 14, 1981, 56/20365; Feb. 16, 1981, 53/20967[U]; Feb. 16, 1981, 56/21671

Int. Cl.³ H01H *67/02*

U.S. Cl. 335—128 **8 Claims**



1. Electric contact switching device comprising:

- a plurality of contact member pairs arranged in parallel with each other, each pair consisting of a first lead member having a first contact and a second lead member having a second contact, said first and second contacts being disposed in mutually opposed relation;

a first insert-molded base member having a compartment and carrying said second lead members at their portions adjacent to said second contacts and said first lead member so as to support said first and second contacts within said compartment;

a second insert-molded base member carrying said second lead members away from said first base member; and

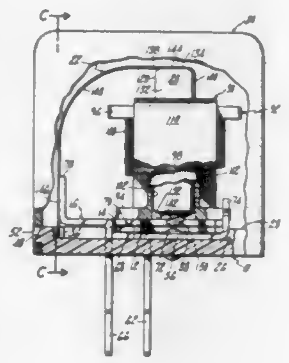
contact driving means for driving said first and/or second contacts to provide close-and-open switching operations;

the respective intermediate portions of said second lead members between said first and second base members being bent so as to allow said second base member to be mounted on said first base member, and said first and second lead members extending outwardly of the respective first and second base members.

4,356,466
ELECTROMAGNETIC SOLENOID RELAY

Samuel J. Brown, South Lyon, and Jerome L. Lorenz, Birmingham, both of Mich., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed May 21, 1981, Ser. No. 265,864
Int. Cl.^{3} H01H *51/06, 1/12*
U.S. Cl. 335—203 **6 Claims**



2. An electromagnetic solenoid relay comprising;

a base;

an electromagnet mounted on said base, said electromagnet including a bobbin having a bore extending axially therethrough, and an electrically energizable coil wound on said bobbin;

a plunger armature having spaced transverse ends and longitudinal sides therebetween, said armature being slidably located in said bore of the bobbin for linear reciprocation between an at-rest position and an actuated position upon the energization and deenergization of said coil;

a resilient spring in engagement with said armature and secured to said base for urging said armature to its at-rest position, said spring comprising a continuous length of spring strip metal and having an arcuate portion extending between an anchorage end portion fixed to said base and and arm portion overlying one end of said armature and arranged so as to abut said one end, said spring further including an integral extension portion extending at substantially a right angle from said arm portion into said bore and disposed substantially parrallel with a side of said armature, said extension portion terminating in an integral hook portion overlying the other end of said armature and arranged so as to abut said other end, said armature being axially constrained between said arm portion and said hook portion of the spring for conjoint motion of said armature and said arm portion whereby said spring is effective to urge said armature to its at-rest position upon deenergization of said coil, said armature and said spring being held together in operative relation solely by abutting engagement therebetween whereby there is a freedom of motion between said armature and said spring permitting the armature to align itself with said electromagnet upon energization of said coil;

first and second terminals mounted on said base;

a first contact on said first terminal;

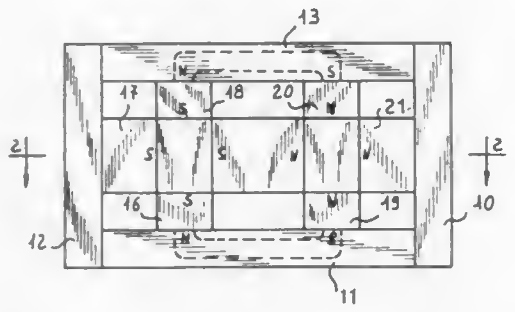
a second contact on said hook portion of the spring arranged to engage said first contact upon movement of said armature to its actuated position and to disengage from said first contact upon return of said armature to its at-rest position; and

means connecting said anchorage portion of said spring to said second terminal.

4,356,467
MAGNETIC WORK-HOLDING DEVICE

Michele Cardone; Angelo Grandini, and Bruno Zaramella, all of Milan, Italy, assignors to Magento Tecnica di Cardone Michele & C.S.n.c., Milan, Italy

Filed Oct. 4, 1979, Ser. No. 82,212
Claims priority, application Italy, Oct. 6, 1978, 28502 A/78
Int. Cl.^{3} H01F *7/20*
U.S. Cl. 335—295 **8 Claims**

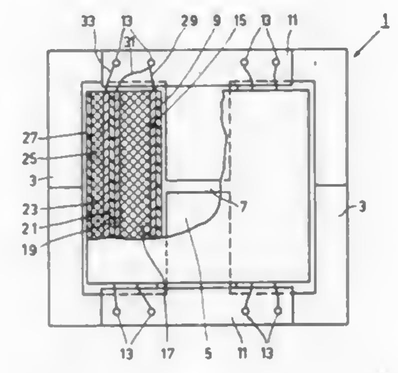


1. A magnetic work-holding device comprising: pole pieces fed by magnets and defining a work-holding surface for one or more work-pieces, there being at least two pole pieces fed by a main permanent magnet means disposed therebetween, at least two corresponding sides of each of said pole pieces cooperating with a secondary permanent magnet means, the secondary magnet means being magnetized in a direction to present to the pole of the same sign as the cooperating pole of the main magnet means, and an external ferromagnetic yoke short-circuiting the remaining poles of the secondary magnet means, at least one of said magnet means being invertible in magnetic field to activate or deactivate said work-holding surface.

4,356,468
TRANSFORMER WITH MAGNETIC SCREENING FOILS

Jan van Laar, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,563
Claims priority, application Netherlands, Jun. 5, 1979, 7904379
Int. Cl.^{3} H01F *15/04*
U.S. Cl. 336—69 **12 Claims**

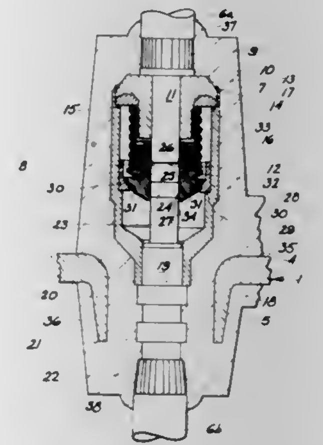


1. A transformer comprising a ferromagnetic core having one leg which supports a primary winding and at least one secondary winding, said windings being coaxial and insulated from each other, an electrically conductive screening foil positioned between the windings and said core leg and made of a soft-magnetic material, and electrically conductive screening foil means located beteen the primary and the secondary windings, and wherein the screening foil and the screening foil means are electrically connected to connection leads.

4,356,469
ELECTRICAL TERMINAL WITH THERMAL INTERRUPTER

Hilliard Dozier, c/o U.S. Terminals, Inc. 7502 Camargo Rd., Cincinnati, Ohio 45243

Filed Nov. 20, 1980, Ser. No. 208,660
Int. Cl.^{3} H01H *37/76*
U.S. Cl. 337—401 **19 Claims**



1. A temperature responsive terminal pin construction comprising a tubular casing, an axially aligned pair of conductive terminal pin parts inserted in the opposite ends of said casing, means fixedly securing said pin parts in said casing with their innermost ends in spaced apart relation to define a gap therebetween, a split ring collet adapted to surround said pin parts and make electrical contact therewith, said collet having a first position of use in which it bridges the gap between said pin parts, and a second position of use in which said collet is displaced axially so as to open the gap between said pin parts, spring means positioned to urge said collet from its first to its second position of use, and a thermosensitive annular ring having a predetermined melting point positioned to normally maintain said collet in its first position of use against the compression of said spring means, said collet having an enlarged head and said annular ring having a nose engaging the head of the collet, whereby if a temperature sufficient to cause the nose of the thermosensitive ring to melt is generated within the terminal pin, the collet will be released for movement from its first to its second position of use to break the electrical connection between said pin parts, and means in association with the nose of said thermosensitive ring urging the collet into tight engagement with said pin parts when said collet is in its first position of use.

4,356,470
MULTIFUNCTION ELECTRONIC METER FOR VEHICLE

Kouichi Kogawa; Teruo Kawasaki, both of Yokohama; Hiroyuki Nomura, Fujisawa, and Hiroshi Yano, Higashiyamato, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 17, 1980, Ser. No. 188,108
Claims priority, application Japan, Sep. 25, 1979, 54-121970
Int. Cl.^{3} G08B *19/00*
U.S. Cl. 340—52 F **4 Claims**

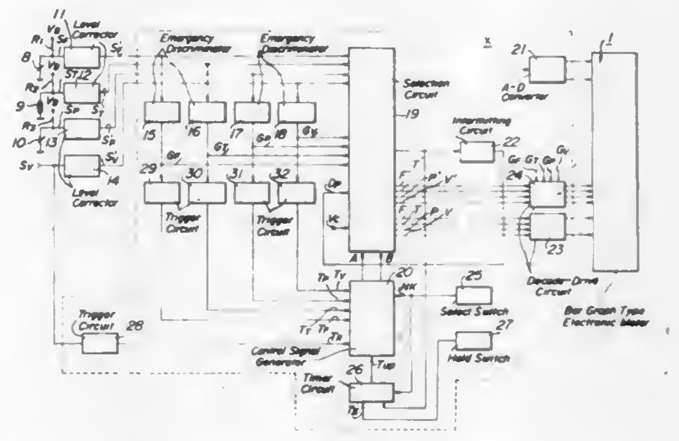
1. A multifunction electronic meter for a vehicle comprising:

an electronic indicator on a display section of which a plurality of informations derived respectively at least from a fuel amount sensor, a water temperature sensor, an oil pressure sensor and a battery are selectively displayed together with a plurality of symbolmarks provided respectively for identifying and warning said plurality of informations displayed selectively on said display section,

a display control circuit for controlling said display section such as a principal information consisting of an amount of fuel among said plurality of informations is ordinarily displayed and, when either one of said plurality of informations other than said principal information is selected, said one information is displayed, together with a respective one of said plurality of symbolmarks,

a plurality of emergency discriminators for discriminating respectively a plurality of emergencies relating respectively at least to the poor fuel amount, the too high water temperature, the too low oil pressure, and the too low battery voltage,

a switching circuit arranged so that, when either one of said plurality of emergency discriminators discriminates one of said plurality of emergencies, the information relating the discriminated emergency is displayed regardless of the contents of the display on said display section of said electronic indicator,



a self-reversion circuit arranged so that said principal information is displayed automatically reversionally when a predetermined time duration is expired after one of said plurality of informations other than said principal information is selectively displayed,

a hold switch for holding either one of said plurality of informations other than said principal information as it is displayed selectively by annulling the operation of said self-reversion circuit, and

an initially setting circuit arranged so that the information which is held by the operation of said hold switch as it is displayed selectively is switched over reversionally to said principal information when an ignition switch is closed.

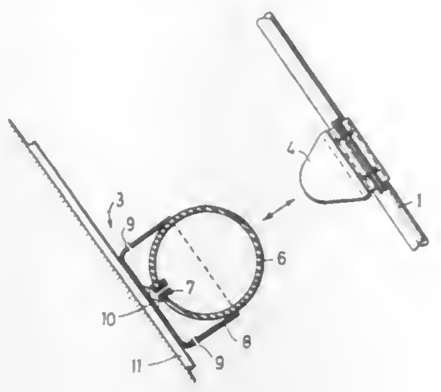
4,356,471
GAS PEDAL MOVEMENT DAMPER

Heinrich Nienaber, Klusenweg 10, D-584 Schwerte, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 205,501
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 7931507[U]
Int. Cl.^{3} B60Q *1/54;* **G08B** *21/00*
U.S. Cl. 340—52 R **5 Claims**

1. Apparatus for damping a motor vehicle operator's movement of a gas pedal comprising a base plate mounted to a floorboard surface beneath the gas pedal, and a damping assembly located on said base plate for engagement with the gas pedal upon downward movement thereof, said damping unit having biasing means for providing a force against the gas pedal, which force progressively increases as the gas pedal is

depressed further towards said floorboard surface, wherein said biasing means comprises a spherically shaped, elastic hollow body having at least one air outlet means formed therein.



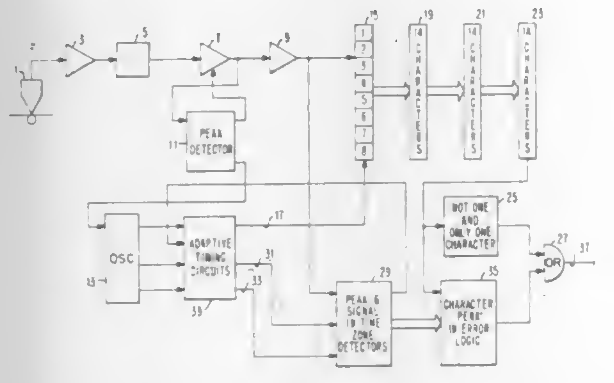
4,356,472
CHARACTER RECOGNITION SYSTEM

Edward Hau-Chun Ku, Matthews, and Gene D. Rohrer, Concord, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1980, Ser. No. 163,672

Int. Cl.³ G06K *9/00*

U.S. Cl. 340—146.3 C **3 Claims**


PEAK DETECTOR
OSC
ADAPTIVE TIMING CIRCUITS
PEAK & SIGNAL IN TIME ZONE DETECTORS
NOT ONE AND ONLY ONE CHARACTER
CHARACTER PEAK IN ERROR LOGIC
OR
15
19
21
23

1. A character recognition system comprising, in combination, scanning means for scanning characters to be read, said scanning means providing output signals distinctive for each character, said signals having at least one peak signal having an amplitude and time of occurrence characteristic of the character, peak determining means for determining the magnitude of said peak signal, timing means including a base oscillator and means for deriving a plurality of timing signals from the output of said oscillator, and delay means connected to said timing means for delaying said timing signals by predetermined amounts, said delay means being governed by said peak determining means and including a delay control trigger connected to said peak determining means, and to a plurality of delay timing circuits for governing the generation of said delayed timing signals, inhibiting means for inhibiting said delay control trigger when the scanning output signals indicate the scanning of predetermined characters, and circuit means for supplying the delayed signals to said system.

4,356,473
MONETARY DOCUMENT PROFILE LOCATION AND PREDETERMINED SELECTED PATH APPARATUS

William E. Freudenthal, Marlboro, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 23, 1980, Ser. No. 190,006

Int. Cl.³ G06K *9/04*

U.S. Cl. 340—146.3 H **5 Claims**

1. Apparatus for locating the denomination indicia contiguous with the Treasury seal on documents of United States paper currency each having a portrait thereon and a margin thereabout and said indicia being imprinted with magnetically susceptible iron oxide ink and said seal being printed with ink that is not magnetically susceptible, and for selecting a predetermined longitudinal path through said indicia comprising

means for transporting said documents, lengthwise, along a course;

means associated with said course for magnetizing the iron oxide ink printing of documents transported therealong;

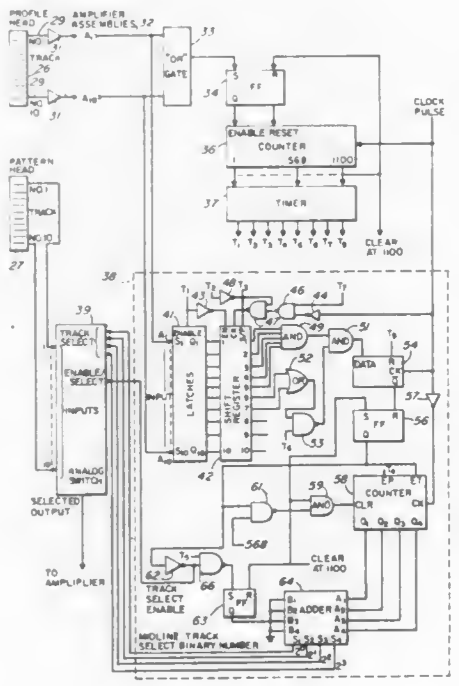
a first magnetic reproduce head, associated with said course, having a plurality of tracks oriented along a line substantially perpendicular to the direction of motion of each document transported thereagainst;

a second magnetic reproduce head, associated with said course, having a like plurality of tracks oriented along a line substantially perpendicular to the direction of motion of each document transported thereagainst, said tracks of said second head being aligned with said tracks of said first head in the course direction;

means associated with said first head for detecting a leading edge of said margin of each document transported against said first head;

means responsive to detection of said leading edge margin for producing a set of timing signals;

a like plurality of latch means responsive to said tracks of said first magnetic head upon receipt of one of said timing signals indicative of a likelihood of a portion of said denomination indicia being in proximity to said first head;



shift register means having a like plurality of stages responsive to said latch means when said likelihood of a portion of said denomination indicia is initially in proximity to said first head;

means for applying a series of clocking pulses for shifting said shift register means at a time interval when said likelihood of a portion of said denomination indicia is in proximity to said first head;

counting means for providing a count at an output thereof;

means for clearing said counting means prior to detection of said leading edge margin;

means for incrementing the count of said counting means by effectively applying a single clocking pulse thereto prior to said interval and for applying additional clocking pulses thereto during said interval;

means responsive to the outputs of a plurality of selected stages of said shift register means being in the same state for providing a track select enable signal and for causing said counting means to cease incrementation, though some or all of said additional clocking pulses have yet to be applied to said counting means during said interval;

an amplifier; and

switching means, enabled by said track select enable signal, and responsive to said count of said counting means for selecting one of said tracks of said second magnetic reproduce head for coupling to said amplifier, whereby, said amplifier becomes adapted to provide a signal indicative of said predetermined longitudinal path through said indicia.

4,356,474
ALARM SYSTEM

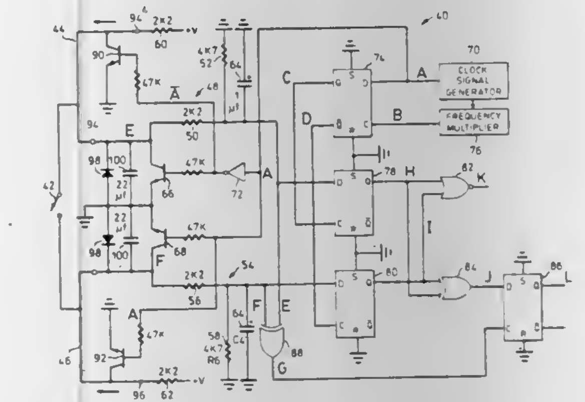
Peter Humphries, Bolton, and Paul Aeberli, Tottenham, both of Canada, assignors to Contronic Controls Limited, Mississauga, Ontario, Canada

Filed Mar. 6, 1981, Ser. No. 241,268

Claims priority, application Canada, Mar. 6, 1980, 347124

Int. Cl.³ G08B *19/00*

U.S. Cl. 340—509 **5 Claims**



1. A digital alarm system, comprising:

first and second electrically conductive loops;

current generating means electrically connected to the first and second loops for generating a first current in first loop and a second current in the second loop;

a first resistor electrically connected to the first loop so that the first current produces a first current produced voltage across the first resistor and so that a break in the first loop or an electrical shorting of the first loop to a ground point causes the magnitude of the voltage drop across the first resistor to drop to zero;

a second resistor electrically connected to the second loop so that the second current produces a second current produced voltage across the second resistor and so that a break in the second loop or an electrical shorting of the second loop to a ground point causes the magnitude of the voltage drop across the second resistor to drop to zero;

an alarm switch electrically connected between the first and second loops and adapted to electrically short the first loop to the second loop when closed;

first switching means electrically connected to the first and second resistors for alternatingly short-circuiting the first and second resistors;

second switching means connected to the first and seconmd loops and synchronized with the first switching means for alternatingly shorting the ends of the first loop to one another and the ends of the second loop to one another, so that the ends of the first loop are shorted together when the first resistor is short-circuited and the ends of the second loop are shorted together when the second resistor is short-circuited;

recording means electrically coupled to the first and second resistors for producing a first state signal indicative of the magnitude of the voltage drop existing across the first resistor during the most recent time interval in which the first resistor was not short-circuited by the first switching means, the first state signal having a first value when the first resistor voltage drop corresponds to the first current produced voltage and a second value when the first resistor voltage drop is substantially zero, and a second state signal indicative of the magnitude of the voltage drop existing across the second resistor during the most recent time interval in which the second resistor was not short-circuited by the first switching means, the second state signal having a first value when the second resistor voltage drop corresponds to the second current produced voltage and a second value when the second resistor voltage drop is substantially zero;

alarm signal generating means electrically coupled to the recording means for generating an alarm signal when both the first and second state signals have their second values; and,

fault signal generating means electrically coupled to the recording means for generating a fault signal when one of the first and second state signals assumes its second value.

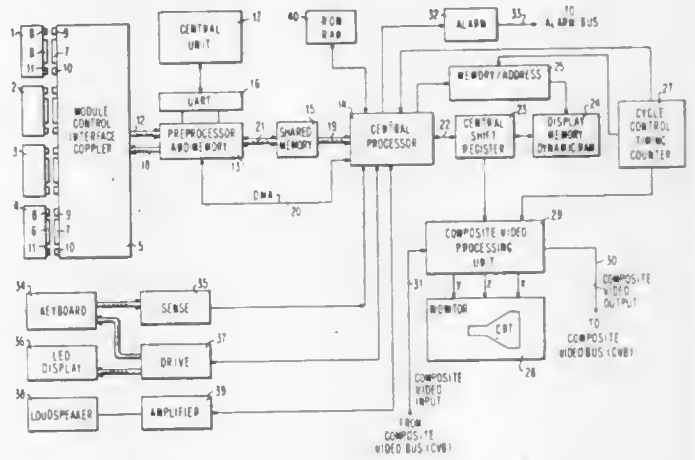
4,356,475
SYSTEM CONTAINING A PREDETERMINED NUMBER OF MONITORING DEVICES AND AT LEAST ONE CENTRAL STATION

Leopold Neumann, Lexington; Richard B. Kline, II, Stoneham, and Wolfgang Scholz, Beverly, all of Mass., assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,710

Int. Cl.³ G08B *29/00;* H04N *7/12*

U.S. Cl. 340—521 **17 Claims**



1. A system containing a predetermined number of monitoring devices and at least one central station having a central display device, each monitoring device having at least one signal generator, whose output signals can be displayed on a display device associated therewith as a specific image of the monitoring device, and said system further containing a selecting device for connecting said central station to the signal generator of a preselected one of said monitoring devices in such a way that said central station can receive output signals from the signal generator of said preselected one of said monitoring devices for display on said central display device, characterized in that said selecting device comprises

(a) a central multiplexer which is connected between said signal generators of said monitoring devices and said central display device of said central station, said multiplexer having a separate signal input for each output signal of said signal generators and having a first and second number of outputs, said first number of multiplexer outputs being connectible to said central display device;

(b) an intermediate memory having its signal input connected to said second number of multiplexer outputs and having its signal output connectible to said central display device; and

(c) a control unit for controlling said multiplexer in such a way that in a time multiplexing sequence said multiplexer supplies to said first number of multiplexer outputs undelayed signal data which originate from the signal generator of a single one of said monitoring devices, while said multiplexer supplies to said second number of outputs delayed signal data of all said signal generators, whereby said delayed data are stored in said intermediate memory for being called from there in any signal combination for the purpose of display as a mixed image on said central display device.

4,356,476

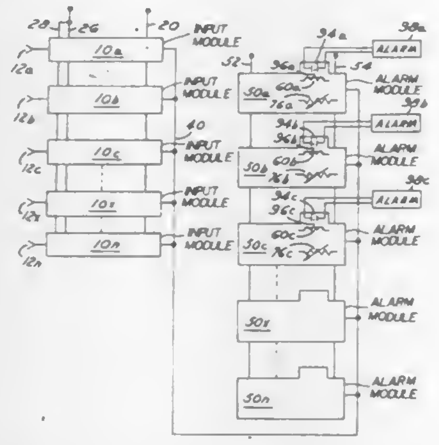
MULTIPLE ALARM DETECTOR MONITORING AND COMMAND SYSTEM

William E. Healey, Bloomfield Hills, Mich., and Morse R. Heineman, White Rock, N. Mex., assignors to W. E. Healey & Associates, Inc., Bloomfield Hills, Mich.

Filed Sep. 15, 1980, Ser. No. 187,355

Int. Cl.^{3} G08B *19/00*

U.S. Cl. 340—522 **15 Claims**



1. In an alarm system of the type including a plurality of detectors, each detector having an untriggered condition and a triggered condition, the triggered condition indicating that the detector has sensed a condition for which an alarm should be indicated, the improvement comprising:

a plurality of input modules, each associated with and electrically connected to one detector, each input module being capable of providing an output signal having a pre-selected (value) voltage level only when the detector associated therewith is in a triggered condition; and

alarm command means electrically connected to and receiving said output signals from all of said plurality of input modules, said alarm command means being capable of providing a command signal only when said input modules are simultaneously providing output signals and said output signals having a sum of at least a predetermined voltage level.

4,356,477

FM/AM ELECTRONIC SECURITY SYSTEM

Jan Vandebult, 32 Averill St., Topsfield, Mass. 01983

Filed Sep. 30, 1980, Ser. No. 192,369

Int. Cl.^{3} G08B *13/24*

U.S. Cl. 340—572 **22 Claims**

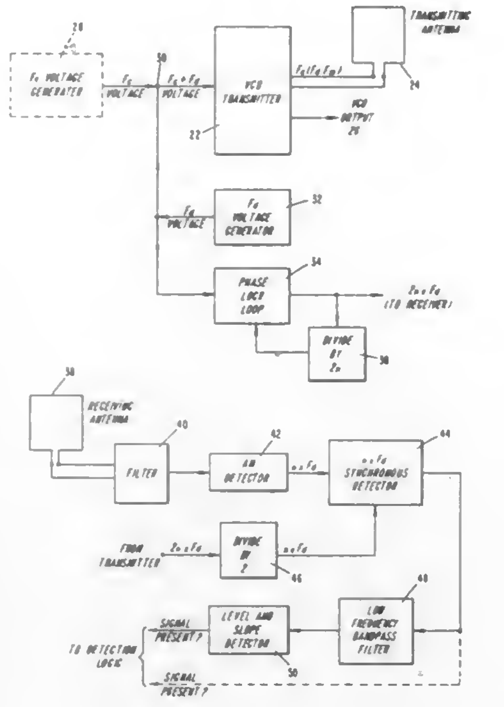
1. An electronic security system comprising:

transmitter means for providing an electromagnetic field in a predetermined area by transmitting a signal at a center frequency F_c, said signal being frequency modulated by a detection signal at a detection modulation frequency F_d and said center frequency being swept through a range of frequencies;

a resonant tag circuit having at least one resonant frequency within said range of frequencies;

receiver means for detecting a signal having a frequency which is at least a component of said detection modulation frequency F_d in said predetermined area; and

detection logic means for providing an alarm in response to detection of said signal having a frequency which is at least one component of said detection modulation frequency F_d.



4,356,478

EMPLOYING A SHAPE MEMORY ALLOY IN A FIRE ALARM TEMPERATURE SENSITIVE ELEMENT

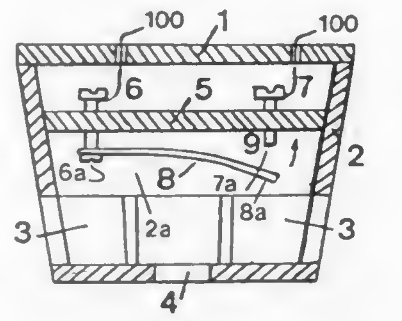
Jürg Muggli, Männedorf, and Peter Müller, Oetwil-am-See, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Apr. 17, 1980, Ser. No. 140,464

Claims priority, application Switzerland, May 21, 1979, 4719/79

Int. Cl.^{3} G08B *17/06;* **H01H** *37/60*

U.S. Cl. 340—593 **12 Claims**



1. In a fire alarm containing a temperature sensitive element, which upon exceeding a predetermined critical temperature triggers an alarm signal due to a change in the shape of said temperature sensitive element, the improvement which comprises:

said temperature sensitive element containing a shape memory alloy which, upon exceeding the critical temperature, returns into its originally impressed shape;

said shape memory alloy possessing a hysteresis behavior;

said shape memory alloy having a lower temperature threshold, different from the critical temperature at which the shape memory alloy element returns to its originally impressed shape; and

said shape memory alloy element, upon cooling to such lower temperature threshold, again altering its shape back at least approximately into an altered shape which it possessed due to a prior cold working of said shape memory alloy element.

4,356,479

ENURESIS DETECTOR AND ALARM

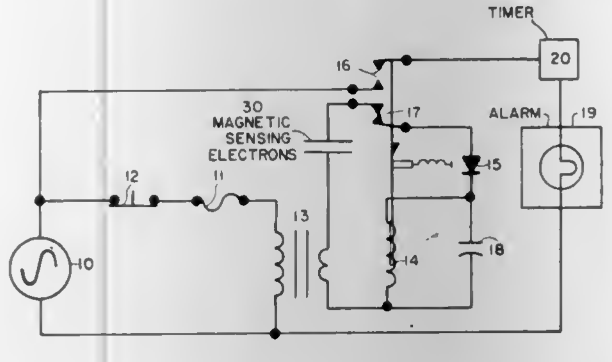
Reginald D. Wilson, 2601 Roslyn Ave., Baltimore, Md. 21216

Continuation of Ser. No. 62,489, Jul. 31, 1979, Pat. No. 4,271,406. This application Sep. 23, 1980, Ser. No. 190,032

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.^{3} G08B *21/00*

U.S. Cl. 340—604 **6 Claims**



1. A moisture sensing apparatus, comprising:

a latching relay including a coil, a set of normally open electrical contacts, and a set of normally closed electrical contacts;

a source of electrical current;

a first electrode electrically connected to one side of said source of electrical current;

a second electrode electrically connected to one end of said relay coil via said normally closed set of relay contacts;

means for connecting a second end of said relay coil to a second side of said source of electrical current;

said first and second electrodes, said normally closed set of relay contacts and said relay coil forming an electrical circuit which is disabled upon energization of said relay coil;

said first and second electrodes positioned adjacent to each other but electrically separated by a space which may be electrically closed by urine; and

an alarm means responsively connected to said set of normally open contacts.

4,356,480

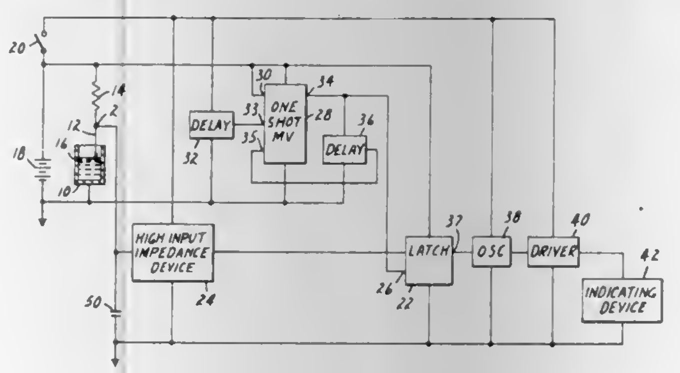
LIQUID LEVEL SENSING CIRCUITRY

Daryl D. Dressler, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 11, 1980, Ser. No. 186,213

Int. Cl.^{3} G08B *21/00*

U.S. Cl. 340—620 **17 Claims**



1. Liquid level sensing circuitry including

first means adapted for connection to an electrical source of power for providing continuous energization of said first means, said first means including a conductive probe for providing a first signal when the liquid level sensed is in contact with said conductive probe and a second signal when the liquid level sensed is not in contact with said conductive probe;

second means operatively connected to said first means and including a switch having a first and second position, said second means storing said first and second signals in response to operation of said switch to said second position;

and third means operatively connected to said second means for providing a discernible indication in response to the storing of said second signal by said second means, said indication terminating when said switch is operated to said first position.

4,356,481

SOURCE VOLTAGE DROP DETECTING CIRCUIT

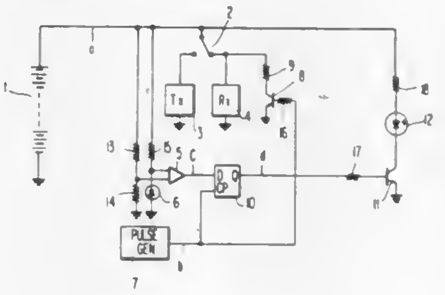
Takakuni Kuki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1980, Ser. No. 138,948

Claims priority, application Japan, Apr. 11, 1979, 54-43991

Int. Cl.^{3} G08B *21/00;* **G01R** *19/16*

U.S. Cl. 340—636 **8 Claims**



1. A voltage drop detection circuit for an apparatus having first electronics means operable when supplied with a first current for performing a first function, second electronics means operable when supplied with a second current greater than said first current for performing a second function, and a battery selectively connected to said first and second electronics means in a time-division fashion, the drop in voltage of said battery being detected when it reaches a predetermined value, said detection circuit comprising: third means for generating a series of pulses; fourth means selectively connected to said battery and adapted to conduct during the period of said pulses an auxiliary current substantially equal to the difference between said first and second current in response to said series of pulses during the operation of said first means; and fifth means for comparing the output voltage of said battery with a predetermined reference voltage to provide a detection signal.

4,356,482

IMAGE PATTERN CONTROL SYSTEM

Tetsuji Oguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,378

Claims priority, application Japan, Jun. 5, 1979, 54-70341

Int. Cl.^{3} G09G *1/16;* **G06F** *3/14*

U.S. Cl. 340—731 **9 Claims**

1. An image pattern control system comprising:

a dynamic memory;

a zoom ratio hold register;

an address register which stores addresses for reading out the contents of said dynamic memory;

a refresh address counter which stores addresses of the contents read out from said dynamic memory for refreshing;

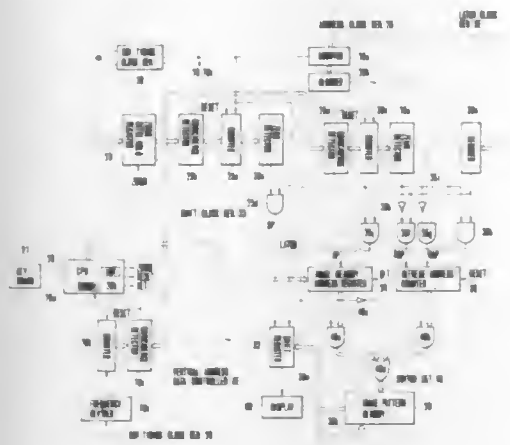
a switch circuit which sends out a control signal at a predetermined timing according to an output of said zoom ratio hold register; and

a switch circuit which, under the control of the control signal, selects outputs of the address register and the refresh address counter to send out the output of said address register to said dynamic memory during a first period and the output of said refresh address counter to said dynamic memory during a subsequent second period, whereby said dynamic memory reads stored data according to said address register output during said first period and refreshes stored data according to said refresh address counter output in said subsequent second period related to a magnified display.

7. A system with memory refreshing function comprising:

a dynamic memory for storing data corresponding to addresses;

means for transferring the data read out of the memory;



first addressing means which addresses the memory to read out the data to be sent to the transferring means;

refreshing means for rewriting the data into the memory; and

second addressing means, provided independent of the first addressing means, for generating addresses for read-out of the data to be refreshed,

whereby the data for the addresses designated by the second addressing means are refreshed while the data designated by the first addressing means are delivered out through the transferring means.

4,356,483

MATRIX DRIVE SYSTEM FOR LIQUID CRYSTAL DISPLAY

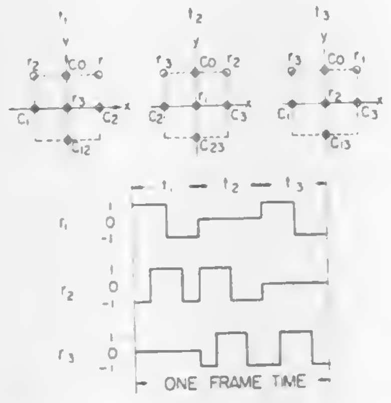
Hiroo Fujita, Sayama, and Akira Tsuzuki, Tokyo, both of Japan, assignors to Citizen Watch Company, Limited, Tokyo, Japan

Continuation of Ser. No. 877,032, Feb. 10, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,138

Claims priority, application Japan, Feb. 14, 1977, 52-14287; Apr. 30, 1977, 52-50584

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—805 **3 Claims**



1. In a liquid crystal display device comprising:

a plurality of row conductors;

a plurality of column conductors each intersecting said row conductors in a matrix configuration so that intersections define a display element whereby an electric potential applied across a pair of said row and column conductors above a threshold value energies and turns on said display element; means for cyclically applying electrical row drive signals to said row conductors, said row drive signals having a cycle time T divided into an integral number of excitation intervals of predetermined duration;

means for cyclically applying electrical column drive signals to said column conductors, said column drive signals varying, in said excitation intervals, at first and second potential levels and a reference potential level between said first and second potential levels whereby when the electric potential caused by said row and column drive signals applied to said row and column conductors respectively is above said threshold value said display element attain a display state whereas when said electric potential is below said threshold value said display element attain a non-display state;

the improvement wherein:

said row drive signals have said first and second potential levels, different from said reference potential level, during one of said excitation intervals and said row drive signals have an identical potential level equal to one of said first and second potential levels and different from said reference potential level during the other of said excitation intervals of said predetermined duration.

4,356,484

METHOD FOR TRANSMITTING DATA IN A TIME MULTIPLEX TRANSMISSION

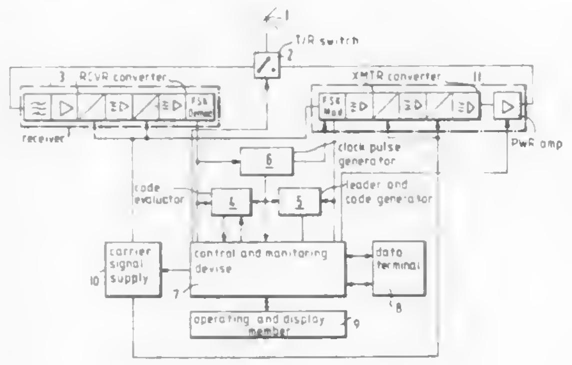
Gert Eckhardt, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,558

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932701

Int. Cl.³ H04B *1/00;* **H04Q** *7/00, 9/00*

U.S. Cl. 340—825.03 **4 Claims**



1. A method for transmitting data between at least one central office and a plurality of mobile radio stations via a relay station by a time multiplex transmission procedure in which signals are transmitted in a succession of time frames and the central office transmits on a first frequency to all mobile radio stations via the relay station, said method comprising:

causing the central office to periodically transmit different messages at arbitrarily selected times, which messages include routine inquiry messages, directed to each mobile station in sequence during each time frame;

causing each mobile station to respond to an inquiry message by transmitting a selected short message on a second frequency;

causing a selected mobile station to transmit data to the central office by transmitting to the central office an announcement of the intent to transmit data during a first time frame, causing the central office to set aside reception capacity for the data in a time frame following the first time frame, and transmitting the data to the central office in the following time frame; and

causing the duration of each time frame to vary, on the basis of data transmitted during at least one preceding time frame, between a minimum value determined by the time required to transmit a routine inquiry to each mobile station and a maximum value determined by the time required to transmit data of a predetermined length to each mobile station in succession and the time required to transmit data of a predetermined length from each mobile station in succession.

4,356,485

DEVICE FOR THE SIGNAL-TECHNICAL SECURE CONTROL AND MONITORING OF ELECTRICAL LOADS

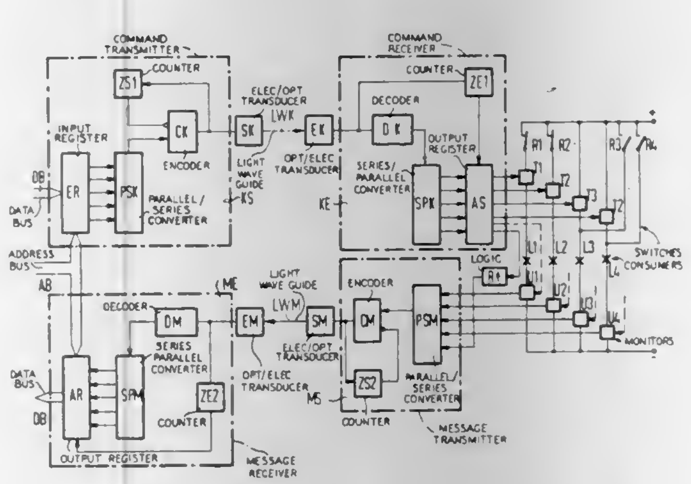
Rainer Boschulte; Heinrich Koehnecke, and Siegfried Muecke, all of Braunschweig, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,308

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951932

Int. Cl.³ H04Q *9/00;* **G08G** *1/097;* **H04B** *9/00*

U.S. Cl. 340—825.17 **9 Claims**



1. Apparatus for remotely controlling and monitoring the operational states of a plurality of spatially-proximate loads, comprising:

a control station including a command transmitter operable to cyclically transmit predetermined commands representing desired operating states of the loads;

a command receiver for receiving the commands;

switching means connected between said command receiver and the loads and operable in response to the received commands to condition the loads into the desired operating states;

monitoring means connected to said loads and operable in response to the actual operating states thereof to produce a corresponding message;

a message transmitter for transmitting the messages to said control station;

a message receiver in said control station for receiving the command messages;

comparison means in said control station connected to said command transmitter and said message receiver and operable to produce an alarm signal in response to inequality of content between a command and its reply message after the prescribed cycle interval;

control means in said control station connected to said comparison means and to said command transmitter for causing said command transmitter to transmit logic control commands, said logic control commands being formed by cyclically changing reversely-transmitted commands indicating change-overs from one tranmission to another; and

logic means connected to said command receiver and to the loads, normally conditioned to permit the cyclic predetermined operation of the loads and responsive to the logic control command to condition the loads into a special operating state in the event of the changing logic control commands not occurring over a predetermined cycle time, such non-occurrence being able to be produced by the control means too in response to predetermined disturbances in operation of the control and monitoring means.

4,356,486

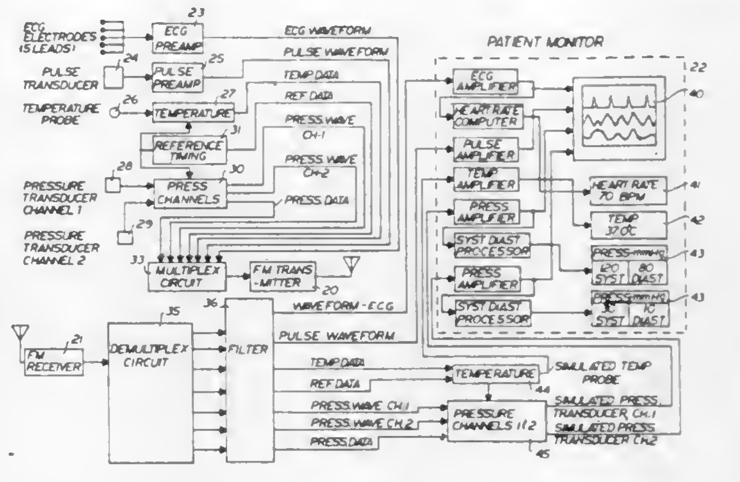
TELEMETERING SYSTEM FOR OPERATING ROOM AND THE LIKE

Bruce E. Mount, Diamond Bar, Calif., assignor to Medimetric Company, Los Angeles, Calif.

Division of Ser. No. 956,593, Nov. 1, 1978. This application Mar. 24, 1980, Ser. No. 133,276

Int. Cl.³ G08C *19/04, 19/16*

U.S. Cl. 340—870.38 **5 Claims**



1. A telemetering system for transmitting temperature information between a temperature probe and a temperature monitor, said probe including a resistor with the resistance thereof varying as a function of its temperature, including in combination:

a transmission link having transmitter and receiver;

a bridge circuit including means for connecting said probe resistor in an arm of said bridge circuit;

a plurality of resistors connected as a first resistor bank;

first switch means for selectively connecting resistors of said first resistor bank in an arm of said bridge circuit;

a counter for actuating said first switch means as a function of the count state of said counter;

first storage means for storing the count state of said counter;

comparator means for producing an output signal when said bridge circuit is balanced and fixing the count state in said first storage means;

means for connecting said count state from said first storage means as one signal of said transmission link and representing said probe resistance;

means for producing a reference signal for said counter;

a plurality of resistors connected as a second resistor bank;

second switch means for selectively connecting resistors of said second resistor bank as an input to said monitor;

second storage means for actuating said second switch means as a function of the count state of said counter; and

means for connecting said count state from said transmission link and said reference signal to said second storage means as inputs for fixing the switches in said second switch means to selectively connect said second resistor bank identically to the connection of said first resistor bank.

4,356,487

SOUNDING APPARATUS

Louis Herbreteau, Bretigny-sur-Orge, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 2, 1980, Ser. No. 164,543

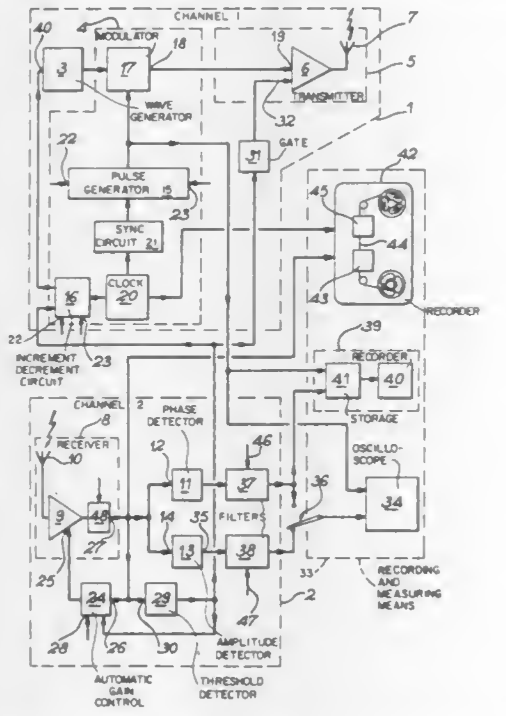
Claims priority, application France, Jul. 6, 1979, 79 17600

Int. Cl.³ G01S *13/95*

U.S. Cl. 343—5 W **8 Claims**

1. A sounding apparatus for the detection and measurement of phenomena relative to the area surrounding the earth's globe, comprising a channel (1) for the transmission of electromagnetic waves in the direction of the phenomenon to be

detected and measured and a channel (2) for receiving the echoes of said waves on the phenomenon, the transmission channel (1) incorporates means (3) for producing continuous electromagnetic waves with fixed regulatable frequencies and regulatable progressive frequencies as a function of a frequency ramp, means (4) for modulating the fixed regulatable frequency continuous waves by regulatable recurrence pulses and for modulating the regulatable progressive frequency waves by regulatable recurrence pulses in such a way that regulatable progressive frequency continuous modulated wave pulses are introduced between regulatable fixed frequency continuous modulated wave pulses of electromagnetic waves, a transmitter (5) receiving the thus modulated electromagnetic waves, and reception channels (2) incorporating a receiver (8) receiving the echoes resulting from the modulated waves transmitted onto the phenomenon, said receiver (8) having a regulatable tuning frequency reception channel (10), the receiver also including means (11) whereof one input is connected to the output of the receiver (8) for detecting phases of the echoes resulting from the regulatable fixed frequency continuous modulated transmitted waves and means (13), whereof one input is connected to the output of the receiver (8) for detecting the amplitudes of the echoes resulting from the regulatable progressive and fixed frequency continuous modulated transmitted waves, wherein the means (4) for modulating the electromagnet waves by regulatable recurrence pulses incorporate a regulatable recurrence Gaussian pulse generator (15), whereof one output is connected to an input of a modulator (17) which also receives the electromagnetic waves, the output of the said modulator (17) being connected to an input of the transmitter (5), modulating means including a logic synchronization circuit (21) of said regulatable recurrence pulse generator, reception channel (2) further comprising an automatic gain control device (24) as a function of the level of the interference measured at the receiver input at the operating frequency, an output of said device being communicated to a gain control input of the receiver (8), an input of said device being connected to the receiver output, while another input (28) of said device receives an instruction voltage for fixing the receiver gain for each regulatable progressive frequency channel, as a function of the interference level on said channel before any transmission takes place, a treshold detector (29) whose input is connected to the receiver output so as to control the transmitter in order to authorize or refuse transmission on the frequency corresponding to said channel, as a function of the maximum permitted interference level, the transmission channel further including means (16) for incrementing or decrementing the regulatablę progressive frequency level by a quantity less than the frequency step of said ramp when transmission is refused in order that the measured value differs little from the intended value, the transmission and reception channels acting in the radio-frequency band between 200 kHz and 30 MHz, the echoes phase detection means (11) being Doppler detection means.



4,356,488
DEVICE FOR INDICATING THE PROXIMITY OF A TARGET

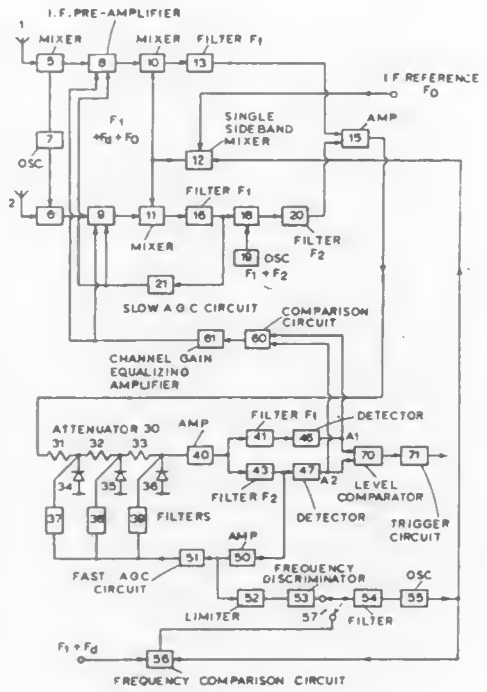
Leonard A. Cram, Winscombe; Brian Jackson, and Montague R. Gilday, both of Wells, all of England, assignors to Electric & Musical Industries Limited, Hayes, England

Filed May 19, 1961, Ser. No. 111,395

Claims priority, application United Kingdom, May 20, 1960, 17995/60

Int. Cl.^{3} F42C *13/04*

U.S. Cl. 343—7 PF **15 Claims**



1. A device for indicating the proximity of a target comprising means for setting up at least an approximate representation of the direction of the velocity of the target relative to an axis fixed in relation to the device, and signalling means responsive to the direction of the target from the device, namely the sight line of the target for producing an output signal when/between the sight line and the relative velocity direction increases to a predetermined value.

4,356,489
VEHICLE SPEED SENSING APPARATUS WITH ELECTROMAGNETIC WAVE INTERFERENCE DETECTOR

Yukitsugu Hirota, Yokohama; Akira Endo, Katsuta, and Kenji Sekine, Tokyo, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,816

Claims priority, application Japan, Apr. 27, 1979, 54/51493

Int. Cl.^{3} G01S *13/93*

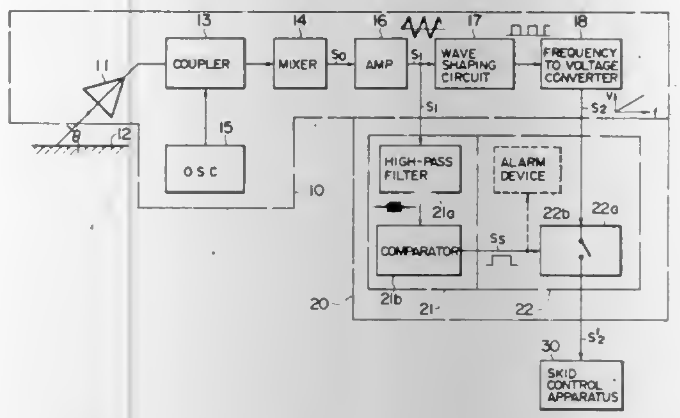
U.S. Cl. 343—7 VM **10 Claims**

8. A vehicle speed sensing apparatus for use in skid control, comprising:

a Doppler radar unit for a vehicle including means for directing RF energy to a vehicle traveling surface and for receiving reflected RF energy from the surface to produce a Doppler signal related to the speed of the vehicle and means for producing a speed signal from the Doppler signal;

a high-pass filter having a pass band which is above the frequency of a Doppler signal corresponding to a maximum vehicle speed, the filter being connected with the radar unit for extracting noise components from the Doppler signal to produce a noise detection signal therefrom; and

output means including a gate circuit connected for reception of the speed signal and operative to deliver the speed signal as an output to a skid control means when the noise detection signal is absent and to stop the speed signal to make the skid control means inoperative when the noise detection signal is fed to the gate circuit.



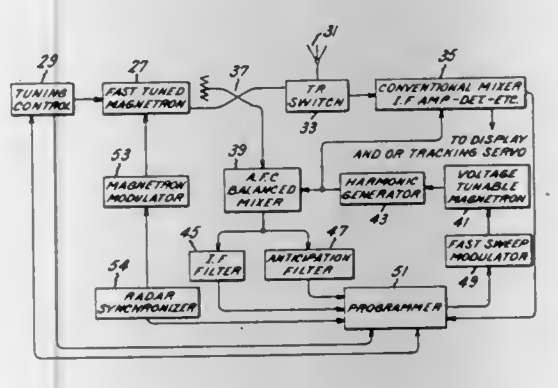
4,356,490
TRANSMISSION FREQUENCY DIVERSITY RADAR

David W. Bray, Ludlowville; John L. David, Clinton, and Erman E. Ferris, Ithaca, all of, N.Y., assignors to General Electric Company, Utica, N.Y.

Continuation-in-part of Ser. No. 855,954, Nov. 25, 1959, abandoned. This application Oct. 27, 1964, Ser. No. 407,626

Int. Cl.^{3} G01S *13/24*

U.S. Cl. 343—17.2 R **6 Claims**



1. A transmission frequency diversity radar system comprising an oscillator that is tunable over a frequency band to produce a signal for radar transmission, means for tuning said oscillator randomly on a random frequency basis, and means for frequency tracking the signal being transmitted including a variable frequency local oscillator, means to sweep the local oscillator over a range of frequencies within the pulse width time of the radar transmitted signal but after said transmission oscillator is tuned and modulator means responsive to the transmitted signal for holding said variable local oscillator on the proper tuning frequency.

4,356,491
MARINE DIRECTION FINDING SYSTEM

Lee Sczepanski, 6702 W. 164th Pl., Tinley Park, Ill. 60477

Filed Aug. 6, 1980, Ser. No. 175,869

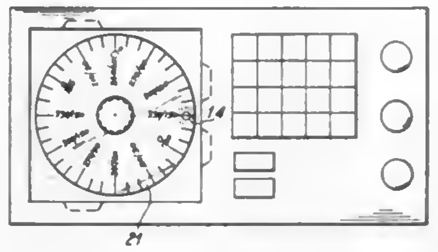
Int. Cl.^{3} G01S *3/02;* G09F *9/00*

U.S. Cl. 343—113 R **8 Claims**

1. A marine direction finding system for use on a boat having a magnetic heading indicator, comprising:

(a) a radio direction finder means having a direction indicating dial and which indicates a direction bearing between 0° and 360° of a received signal relative to a front of the boat by illumination at a corresponding portion of the dial so as to indicate bearing;

(b) an at least semi-transparent mounting plate and means for attaching the mounting plate in front of the indicating dial; and



(c) a manually settable and rotatable dial which is set to a magnetic heading of the magnetic heading indicator formed as an at least semi-transparent disc rotatably connected to the mounting plate, said rotatable dial being calibrated at a first radius from 0° to 360° and at a second radius also from 0° to 360° in the same rotational direction of marking as the first radius calibration but offset by 180°.

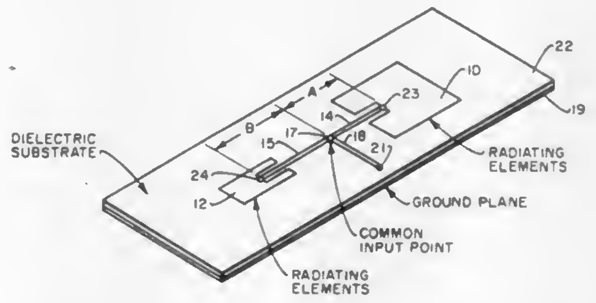
4,356,492
MULTI-BAND SINGLE-FEED MICROSTRIP ANTENNA SYSTEM

Cyril M. Kaloi, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,428

Int. Cl.^{3} H01Q *1/48*

U.S. Cl. 343—700 MS **2 Claims**



1. A multi-band single-feed microstrip antenna system, comprising:

a. a thin ground plane conductor;

b. a plurality of separate thin radiating elements spaced from and electrically separated from said ground plane conductor by a dielectric substrate, one said radiating element for each frequency to be radiated; said respective radiating elements being operable to radiate simultaneously at a different and widely separated frequency from each other, the length dimension of each said respective radiating elements being different and determined by the respective radiation frequency wavelength of each radiating element;

c. each of said radiating elements having a respective feed point thereon;

d. a single common input point;

e. said common input point being fed at all the different respective operating frequencies of said radiating elements;

f. each of said radiating elements having its respective feed connected to said common input point by means of a respective single microstrip transmission line; each one of said radiating elements being matched at its respective operating frequency to the common input point while simultaneously being electrically decoupled from each of the other of said radiating elements through its respective one of said single transmission lines which act as transformation circuits, thus permitting all said radiating elements to be fed simultaneously from said common input point through said respective single transmission lines, the lengths and widths of each of the respective single transmission lines determining the interdependence between each of said respective radiating elements;

g. each respective single microstrip transmission line which connects said common input point with the feed point on its respective one of said radiating elements being dimensioned to minimize the effect that any one of said radiating elements can have on the other of said radiating elements; the dimensions of said respective single transmission lines being varied such that at the operating frequency of each one of said respective radiating elements the input impedance looking toward the other of said radiating elements from said common input point approaches an open circuit, substantially isolating the respective radiating elements from each other while simultaneously being fed at said different respective frequencies from said common input point;

h. any of the length and width dimensions of each of said single transmission lines and the location of the feed point on each of the respective radiating elements being variable to minimize the effects of any one of said radiating elements on any of the other said radiating elements and thus operate to effectively isolate each of said radiating elements from the other of said radiating elements.

4,356,493

DISC-ON-ROD END-FIRE MICROWAVE ANTENNA

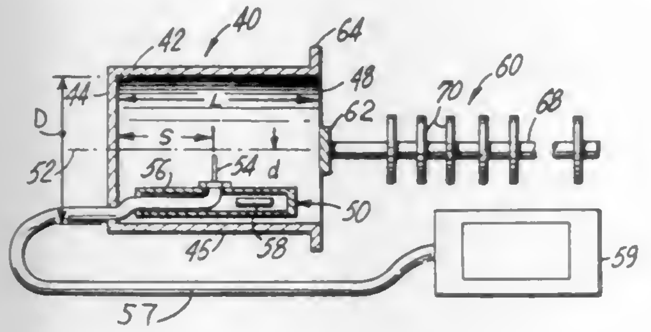
Richard D. Bogner, 4 Hunters La., Roslyn, N.Y. 11576

Filed Dec. 14, 1979, Ser. No. 103,614

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.^{3} H01Q *13/28*

U.S. Cl. 343—702 **15 Claims**



1. A probe excited waveguide, comprising:

a metallic container having an elongated axis, and including at least a back wall, side walls, and an open mouth which define an internal cavity;

a metal structure positioned within the container extending in a direction between the back wall and the mouth of the container, spaced from the side walls of the container and contained within at most one half of the volume of the cavity, said half volume being formed by cutting the container along its elongated axis;

a probe extending from the metal structure into the remaining portion of the cavity for excitation of the waveguide;

and further comprising a plate-on-rod end-fire radiator element coupled to the mouth of the container such that said probe excited wave acts as a launcher at the non-radiating end of the radiator element.

4,356,494

DUAL REFLECTOR ANTENNA

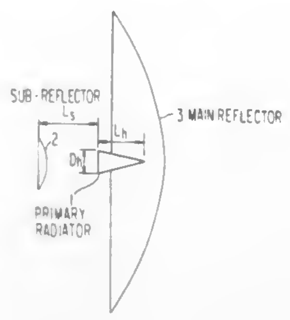
Takashi Katagi; Shuji Urasaki; Takashi Ebisui, all of Kamakura, and Katsuhiko Aoki, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,902

Claims priority, application Japan, Jan. 30, 1980, 55-9729

Int. Cl.^{3} H01Q *19/19*

U.S. Cl. 343—781 CA **4 Claims**



1. In a dual reflector antenna having a usable frequency band of at least approximately 1.8 octaves, said antenna having a primary radiator having a radiating aperture for providing a radiated beam, said primary radiator including a horn having an apex, said antenna further comprising a main reflector and a sub-reflector for reflecting said radiated beam to said main reflector, said sub-reflector having a bottom surface which is closest to said primary radiator aperture, said antenna having a t parameter defined by:

$$t = \frac{D_h^2}{8\lambda}\left(\frac{1}{L_h} + \frac{1}{L_s}\right)$$

λ: wave length in free space of said radiated beam,

D_h: diameter of the aperture of said primary radiator,

L_h: the axial length between said apex of the horn and said aperture,

L_s: the length between said aperture and said sub-reflector's bottom surface,

the improvement comprising:

the value of said t parameter being less than 0.3 at the lowest usable frequency of said antenna; and

the phase center of said primary radiator being substantially coincident with the focal point of said sub-reflector at a low frequency within said usable frequency band.

4,356,495

CORRUGATED ANTENNA FEEDHORN WITH ELLIPTICAL APERTURE

Günter Mörz, Ludwigsburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

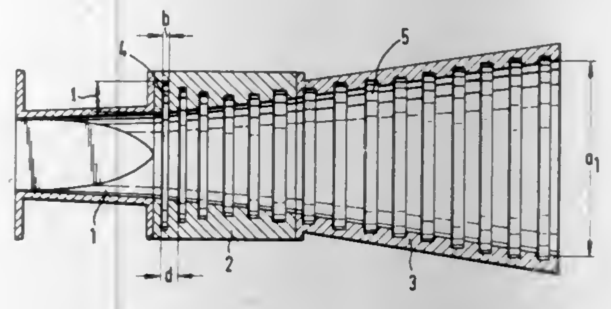
Filed Sep. 29, 1980, Ser. No. 191,745

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939562

Int. Cl.^{3} H01Q *13/02*

U.S. Cl. 343—786 **1 Claim**

1. In an antenna feedhorn including a transition waveguide for matching the cross section of the feeder line to the cross section of a following hybrid mode exciting section which in turn is followed by a horn section having an elliptical aperture, said hybrid mode exciting section and said horn section each being provided with a corrugated structure; the improvement wherein said hybrid mode exciting section has a circular cross section, and said horn section has a cross section which steadily and smoothly widens from said circular cross section of said hybrid mode exciting section to the elliptical cross section of said aperture.



4,356,496

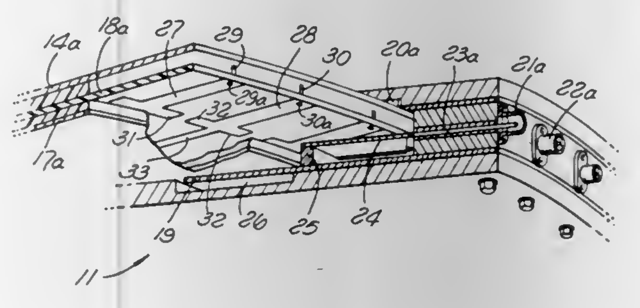
LOOP-COUPLER COMMUTATING FEED FOR SCANNING A CIRCULAR ARRAY ANTENNA

Ronald I. Wolfson, 10966 Beckford Ave., Northridge, Calif. 91326, and Ching-Fai Cho, 13083 Rajah St., Sylmar, Calif. 91342

Filed Feb. 4, 1981, Ser. No. 231,383

Int. Cl.^{3} H01Q *3/24, 3/32*

U.S. Cl. 343—854 **7 Claims**



1. A loop coupler commutating feed for a scanning circular array, comprising:

a stator assembly having a conductive body member in the general shape of an annulus having a cavity therein such that the cross-section of said annulus is generally U-shaped opening radially inward, said stator assembly also comprising a plurality of circumferentially distributed stator loops each radially elongated within said cavity, each of said stator loops having its elongated leg current paths in a radially extending plane normal to the plane of said annulus;

a rotor assembly including a conductive disc rotatable about its center, said center being substantially coincident with the geometric center of said annulus, said rotor assembly also including a plurality of rotor loops circumferentially spaced about an arcuate portion of said disc, said rotor loops also being radially elongated and each having its elongated leg current paths in radially extending planes normal to the plane of said disc, the plane of said disc being substantially parallel to a plane through said annulus normal to the axis of said rotor and through the center of said annulus, said disc extending radially into said cavity such that said rotor loops couple to an arc of said stator loops in juxtaposition with said rotor loops over said arcuate portion of said disc, said coupling effecting energy transfer between said rotor and stator loops to a changing arcuate portion of said stator loops as said disc is rotated;

first means within said rotor assembly comprising a dielectric substrate spaced parallel to said conductive disc and rotatable with and about said conductive disc center, said substrate and said disc being substantially congruent;

second means comprising a feed network having a conductor trace on the surface of said substrate discretely connected to each of said rotor loops;

third means comprising a second conductive disc spaced from and parallel to said dielectric substrate on the side thereof opposite said conductive disc, said discs and said conductor traces on said substrate surface forming a multiple stripline arrangement;

fourth means comprising a conductive trace extension of each of said traces on said dielectric substrate, said conductive extensions extending beyond the radial extremity of said second conductive disc to form legs of said rotor loops;

fifth means comprising a conductive connection between the radially outward extremity of each of said conductive extensions and said conductive disc, said conductive extensions facing said stator loops;

sixth means for providing a feed connection between said conductive traces within said stripline and at least one common port;

and seventh means comprising a plurality of stationary second ports each discretely connected to a corresponding one of said stator loops.

4,356,497

NON-DISPERSIVE ARRAY ANTENNA AND ELECTRONICALLY SCANNING ANTENNA COMPRISING SAME

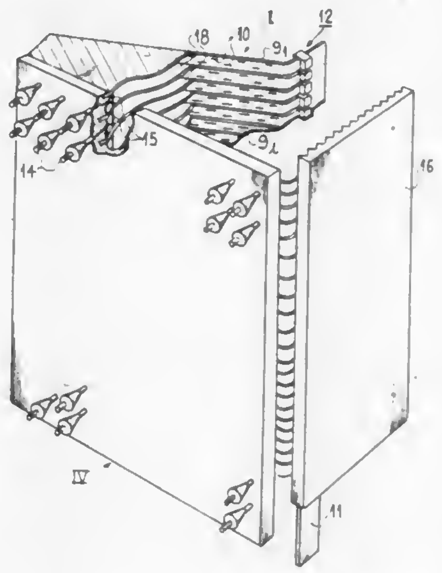
Michel Dudome, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 4, 1981, Ser. No. 299,646

Claims priority, application France, Sep. 9, 1980, 80 19413

Int. Cl.^{3} H01Q *15/02*

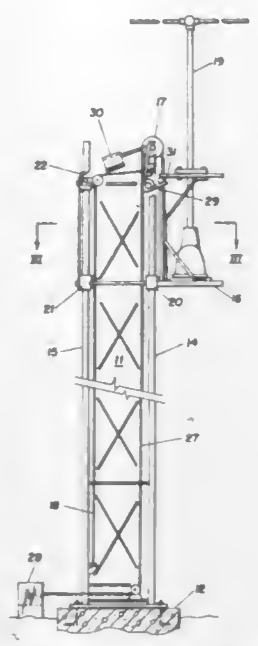
U.S. Cl. 343—854 **8 Claims**



1. In a non-dispersive array antenna, comprising a dispersive primary array constituted of a superimposition of primary, monodimensional arrays, each fed via a phase shifter for allowing electronic scanning; a secondary array in the form of a panel having elementary sources on its inner and outer faces with passive phase shifters introduced between the two faces, each such phase shifter aligned with an inner and outer element, said secondary array including an acute angle α with said primary array; and an absorbent panel closing the dihedron defined between the two arrays: the improvements comprising parallel planes arranged between said primary and secondary array so as to provide ducts for guiding the propagation of waves between corresponding radiating elements belonging to said primary and secondary arrays respectively, said array antenna being thus made of piling up of a plurality of non-dispersive, monodimensional antennas, in which the propagation between the primary array and the secondary array is guided.

4,356,498
TOWER ASSEMBLY

Bernard R. Pollard, 5603 Alan St., Aliquippa, Pa. 15001
Filed May 4, 1981, Ser. No. 259,807
Int. Cl.^{3} H01Q *1/10*
U.S. Cl. 343—890 **2 Claims**

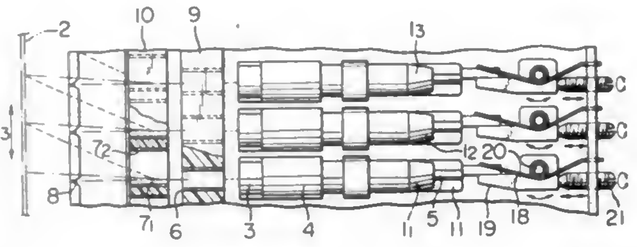


1. A tower for positioning an antenna comprising:
a. a base for supporting said tower;
b. said tower being connected to said base and having at least three upright members, a top portion, and a bottom portion;
c. carriage means for supporting an antenna and surrounding said upright members, said carriage means flexibly connected to said upright members by glide members that facilitate sliding movement along said upright members, said glide members comprising a spacer having a shaped interior surface adapted to generally conform at least a portion of said interior surface to the shape of said upright members and held in position by a single holding member whereby said glide member is free to rotate about said holding member and thereby enhance flexibility of movement of said glide member along said upright members;
d. latching means connected to said tower for securing said carriage means to the top portion of said tower, said latching means comprising a latch of the rocker arm type that automatically locks onto a portion of said carriage means thereby relieving said activation means from forces created from holding said carriage in position, and further comprising means for releasing said latching means from the locked position upon raising of said carriage means;
e. positioning means connected to said tower for raising and lowering said carriage along said tower; and
f. activation means connected to said positioning means, said activation means activation means being located at a position outside of an area defined by said upright members.

4,356,499
INK-JET RECORDING DEVICE

Yutaka Kodama, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Nov. 19, 1980, Ser. No. 208,301
Claims priority, application Japan, Nov. 28, 1979, 54/153839
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 **12 Claims**

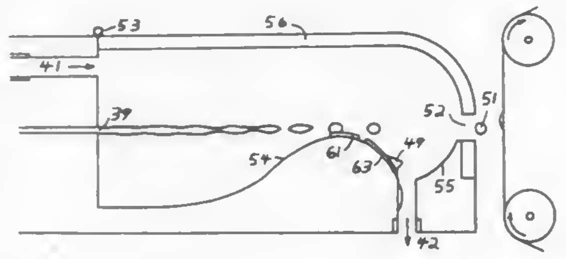
1. An ink-jet recording device of the type in which ink under pressure is supplied to a plurality of ink emission heads which in turn emit ink jets modulated by periodic pressure variations of a piezoelectric element associated therewith for recording, characterized in that
the ink under pressure is supplied from a single source of pressurized ink to an ink manifold with one inlet port and a plurality of outlet ports; and



one end of a flexible pipe is connected to each of said outlet ports while the other end thereof is connected to an ink emission head, whereby the ink under pressure is supplied to said ink emission head from said ink manifold.

4,356,500
DROPLET CONTROL ASPECTS—INK EVAPORATION REDUCTION; LOW VOLTAGE CONTACT ANGLE CONTROL DEVICE; DROPLET TRAJECTORY RELEASE MODES; USES FOR METALLIC INK DROPS IN CIRCUIT WIRING AND PRESS PRINTING

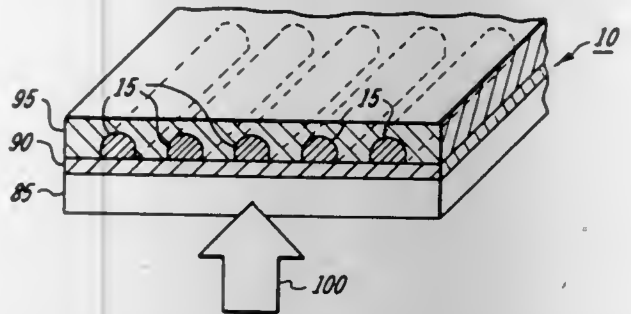
Ronald E. Graf, Rte. 3, Box 520, Crozet, Va. 22932
Division of Ser. No. 100,953, Dec. 6, 1979, Pat. No. 4,283,730.
This application Apr. 20, 1981, Ser. No. 255,708
Int. Cl.^{3} G01D *15/18*
U.S. Cl. 346—75 **12 Claims**



1. A device which comprises a structure which produces at least one stream of ink, which stream eventually breaks into separate droplets of ink,
the ink of said at least one stream of ink contacting a surface of at least one solid containing a number of special portions of the surface, each one of said number of special portions of the surface having a respective associated geometrical surface at some small depth interior to and roughly locally parallel to the special portion of the surface with which it is associated, and each said associated geometrical surface being controllable to exist at any of at least two voltage states at any instant during normal operation, assuming that appropriate control signals are stimulated during an interval shortly preceding and including that instant,
each droplet contacting at least one of said number of special portions of said surface, the voltage difference between said droplet and said geometrical surface associated with any one of said special portions of surface contacted by said droplet altering the range of contact angles of said droplet with said special portion of surface contacted depending on said voltage difference, each said range of contact angles in turn determining in part the range of acceleration force resultants during contact applied to a droplet during contact with said special portion of surface,
the net history of acceleration applied during contact with said surface of at least one solid in turn determining whether or not a particular droplet will be selected, i.e. will contact, solidify, and substantially remain, at least until removed therefrom, on an output receiving means, which means may be at least one anodized metal sheet conveyed past the said device,
the ink of said device consisting mainly, if not entirely, of metal.

4,356,501
INTEGRATED SILICON NIB FOR AN ELECTROSTATIC PRINTER

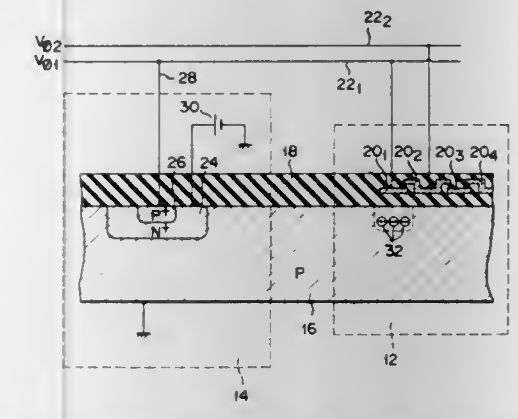
Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 19, 1979, Ser. No. 95,872
Int. Cl.^{3} G01D *15/06*
U.S. Cl. 346—155 **3 Claims**



1. A stylus device for recording discrete electrostatic charges on a dielectric media moved in a plane past a surface of said device, said stylus device comprising:
a rigid substrate;
a first layer of dielectric material overlying at least a portion of a surface of said substrate;
a stylus array positioned at the exposed surface of said first layer of dielectric material, said stylus array being comprised of a plurality of electrically conductive stylii lying in a plane substantially orthogonal to said plane of movement of said media;
a second layer of dielectric material overlying said stylus array; and
driver means coupled to each of said stylii for applying a voltage to selected ones of said stylii whereby electrostatic charges are recorded on portions of said media.

4,356,502
PROTECTION CIRCUIT FOR A SEMICONDUCTOR DEVICE

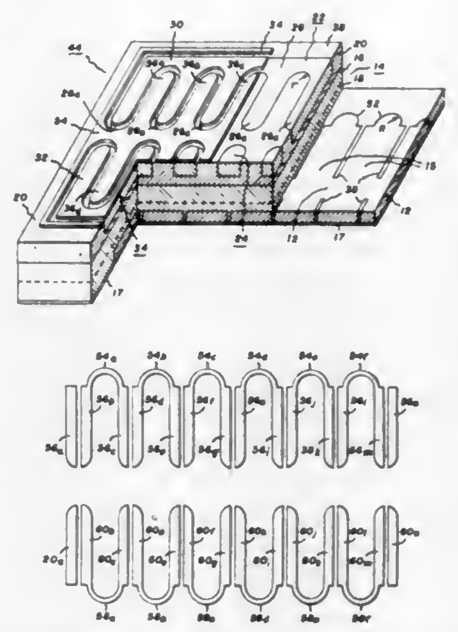
Tetsuo Yamada, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Dec. 14, 1979, Ser. No. 103,446
Claims priority, application Japan, Jan. 31, 1979, 54-9191
Int. Cl.^{3} H01L *29/90*
U.S. Cl. 357—13 **3 Claims**



1. A protection circuit for a semiconductor device formed in a common semiconductor chip with said circuit comprising:
a semiconductor substrate of a first conductivity type;
a first region of a second conductivity type formed in said semiconductor substrate;
a second region of said first conductivity type formed in said first region;
means for applying a constant potential to said first region to reverse bias a PN junction formed between said semiconductor substrate and said first region and to reverse bias a PN junction formed between said first and second regions; and
means for electrically connecting said second region and said semiconductor device to be protected.

4,356,503
LATCHING TRANSISTOR

Peter O. Shafer, and E. Duane Wolley, both of Auburn, N.Y., assignors to General Electric Company, Syracuse, N.Y.
Continuation of Ser. No. 915,563, Jun. 14, 1978, abandoned.
This application Feb. 28, 1980, Ser. No. 125,413
Int. Cl.^{3} H01L *29/74*
U.S. Cl. 357—38 **2 Claims**



1. A semiconductor switching device of the four-vertically-superimposed-layer gate-turn-off type having controllable emitter shorting and adapted to be turned both on and off by gate signals comprising:
a semiconductor body having first and second vertically separated and overlapping opposite major surfaces;
a first emitter region of a first conductivity type in said first surface having two spaced comb-shaped sections each including a relatively wide spine from which extends longitudinally and parallel to said first major surface a set of relatively narrow fingers with the fingers of each set extending toward but being spaced from the fingers of the other set;
first emitter electrode means on said first surface in ohmic contact with said first emitter region;
a first base region of a second conductivity type adjacent said first emitter region and forming a first p-n junction therewith, said junction terminating on said first major surface;
comb-shaped gate electrode means on said first major surface interdigitated with said first emitter region and in ohmic contact with said first base region, said gate electrode means being adjacent to but laterally spaced apart from said first p-n junction;
a second base region of said first conductivity type adjacent and vertically beneath said first base region and forming a second p-n junction therewith;
a control region of said first conductivity type adjacent and vertically beneath said second base region and spaced from the first base region by said second base region, said control region having a higher impurity concentration than said second base region;
a selectively shorted second emitter region of said second conductivity type adjacent said control region in vertically underlying relation with said first emitter region;
said second emitter region being situated in vertically underlying relation with essentially only that part of the first emitter region other than the spine portions of the first emitter region;

said second emitter region including a central spine region vertically underlying essentially the space between the two sets of first emitter fingers and further including a plurality of spaced second emitter fingers extending from said central spine region in vertically underlying relation with essentially only a part of the first major surface not occupied by the spine portion of the first emitter;

said second emitter fingers each including a projection extending from its end into vertical alignment with a spine portion of the first emitter region;

said second emitter region further having longitudinally extending apertures therein constituted by the spaces between the second emitter fingers, which apertures are narrower than said first emitter fingers and vertically aligned with only the laterally central portions of said first emitter fingers;

said control region extending through said apertures to said second major surface to form with said second emitter region a third p-n junction terminating on second major surface.

4,356,504

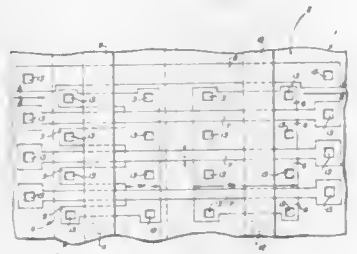
MOS INTEGRATED CIRCUIT STRUCTURE FOR DISCRETIONARY INTERCONNECTION

Orhan N. Tozun, Milpitas, Calif., assignor to International Microcircuits, Inc., Santa Clara, Calif.

Filed Mar. 28, 1980, Ser. No. 134,968

Int. Cl.^{3} H01L *27/02, 29/34*

U.S. Cl. 357—42 **10 Claims**



1. At least two MOS transistors on a common substrate of a first conductivity type, each transistor comprising source and drain regions of a second conductivity type opposite said first conductivity type and a gate;

at least one of said source and drain regions being common to each of said two transistors;

means for contacting each of said source and drain regions at two locations so that said regions can act as both source or drain regions and as interconnection underpasses; and

metallized connection means for supplying current to said MOS transistors, said connection means passing over each of said source and drain regions and over said gate, and said connection means lying between said contact means for each of said source and said drain regions.

4,356,505

CONDUCTIVE ADHESIVE SYSTEM INCLUDING A CONDUCTIVITY ENHANCER

Andrew J. Lovinger, New York, N.Y., and Louis H. Sharpe, Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 931,159, Aug. 4, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,453

Int. Cl.^{3} H01L *23/28*

U.S. Cl. 357—72 **4 Claims**

1. A method for bonding one electrical assembly or element to another or to a support member with an epoxy material, comprising the steps of applying an uncured epoxy material comprising a conductivity component consisting essentially of metal powder or flakes, of particle size typically between 0.5μm and 50μm, the weight of the conductivity component being between about 25% and about 85% by weight of the epoxy material, and a dispersing component, to at least one surface, applying the surfaces to be bonded together, and curing the epoxy material, the method characterized in that the epoxy material contains 0.1% to 10%, by weight, based on the weight of the epoxy resin, of a conductivity enhancer selected from the group consisting of

$$HO—CH_2—[CH_2—O—CH_2]_n—CH_2—OH$$

n being within the range of 2–10.

4,356,506

AUTOMATIC CHROMINANCE CONTROL CIRCUIT FOR A COLOR VIDEO TAPE RECORDER

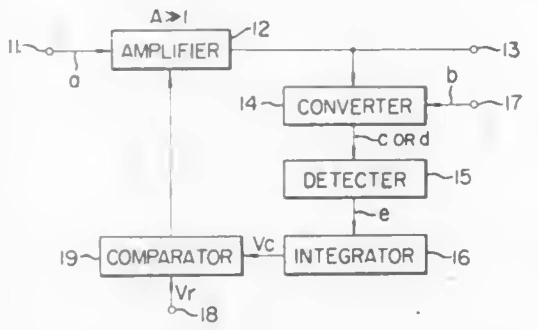
Chojuro Yamamitsu, Kawanishi, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jun. 12, 1980, Ser. No. 158,729

Claims priority, application Japan, Jun. 18, 1979, 54-77415; Jun. 25, 1980, 55-22537

Int. Cl.^{3} H04N *5/79*

U.S. Cl. 358—316 **8 Claims**



1. A color video signal recording and reproducing apparatus of the type in which the luminance signal and the composite carrier color signal, including a carrier color signal component and a color burst signal component, are separated from the color video signal; the separated composite carrier color signal and the separated luminance signal are processed for recording on a recording medium by a transducer; and the transmission circuit for coupling the separated composite carrier color signal to the transducer includes a variable gain control circuit responsive to a gain control signal for providing an optimum recording current at a maximum amplitude of the composite carrier color signal, said apparatus comprising:

first means for amplitude detecting the composite carrier color signal;

second means coupled to said first means for modifying the output of said first means by enhancing the amplitude of said color burst signal component of said composite carrier color signal relative to the carrier color signal component thereof;

third means for integrating the output of said first means to provide a varying DC voltage; and

means for comparing said DC voltage to a reference voltage to provide said grain control signal, so that the amplitude of the composite carrier color signal is enhanced when the amplitude of the carrier color signal component thereof is less than a predetermined maximum value.

4,356,507

METHOD AND APPARATUS FOR DIGITAL TELEVISION ERROR CORRECTION WITHOUT OVERHEAD BITS

Abraham A. Goldberg, and John P. Rossi, both of Stamford, Conn., assignors to CBS Inc., New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,864

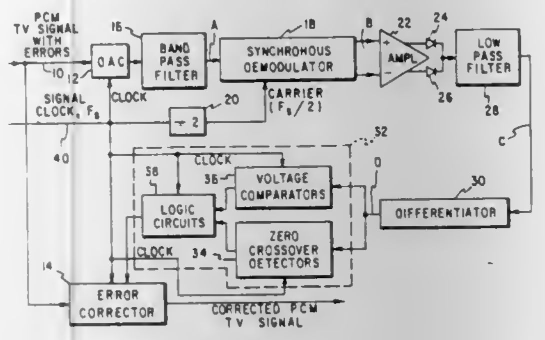
Int. Cl.^{3} H04N *5/44*

U.S. Cl. 358—13 **13 Claims**

1. A method of detecting and correcting bit errors contained in a PCM-encoded digital television signal encoded at a sampling frequency F_s, comprising the steps of:

converting said digital television signal to an analog television signal;

band-pass filtering said analog signal at a center response frequency of substantially $F_s/2$ for producing responsively to bit errors frequency bursts of differing levels according to the significance of the bit in error;



demodulating said frequency bursts for producing envelopes thereof each representative of the location and significance of the bits in error;

determining the location of the bits in error and their significance; and

correcting said bit errors by inverting the bits in said digital television signal that were found to be in error.

4,356,508

BRIGHTNESS ADJUSTING CIRCUIT FOR A CATHODE RAY TUBE

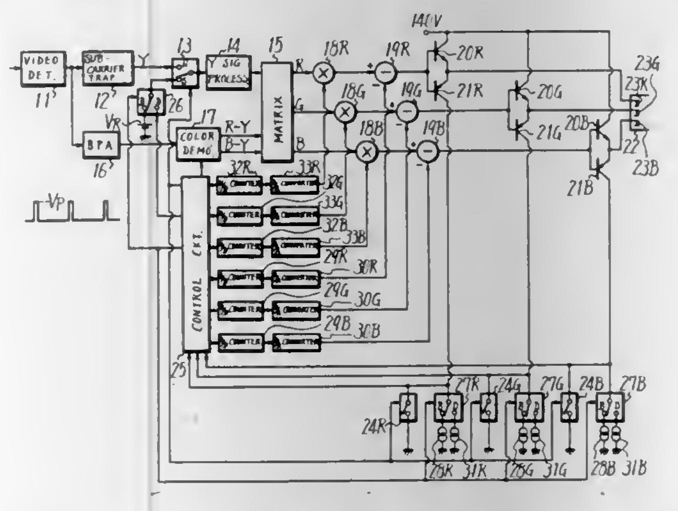
Takashi Okada, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,977

Claims priority, application Japan, Jan. 23, 1980, 55-6667

Int. Cl.^{3} H04N *9/535*

U.S. Cl. 358—29 **20 Claims**



1. An automatic brightness adjusting circuit for a cathode ray tube having at least one electrode normally supplied with a video signal, and comprising: a video signal source from which said video signal is derived; a reference signal source for supplying a reference signal; signal processing means between said video signal source and said cathode ray tube for normally processing the signals provided by said video signal source; switching means for selectively supplying a signal provided by said video signal source or said first reference signal to said signal processing means, said switching means supplying said reference signal to said signal processing means during a brightness adjusting period; control signal generating means connected to said signal processing means for supplying the latter with an adjustable control signal the level of which varies gradually; means connected to said cathode ray tube for sensing the signal level at said at least one electrode; and control means responsive to said sensed signal level for stopping said control signal generating means from varying the level of said control signal and for actuating said switching means to supply said signal provided by said video signal source to said signal processing means when the sensed signal level at said at least one electrode exceeds a predetermined value.

4,356,509

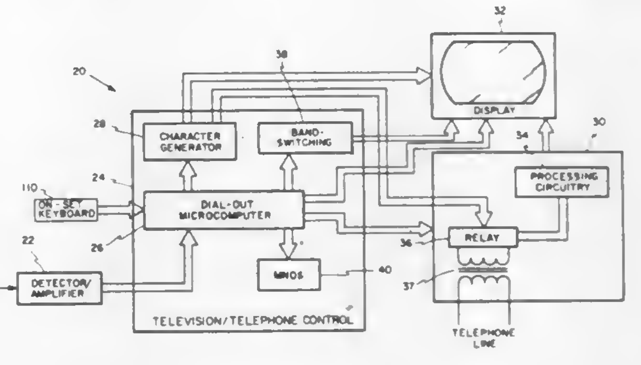
MICROCOMPUTER-CONTROLLED TELEVISION/TELEPHONE SYSTEM AND METHOD THEREFORE

Peter C. Skerlos, Arlington Heights; Paul A. Snopko, Chicago; Frank C. Templin, Arlington Heights, and Thomas J. Zato, Palatine, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 12, 1981, Ser. No. 243,010

Int. Cl.^{3} H04N *5/00*

U.S. Cl. 358—85 **32 Claims**



1. In a television receiver for receiving a transmitted composite video signal having a video component and an audio component and having a tuner for selectively tuning said television receiver from a currently tuned channel to a desired channel, said television receiver including a video display and audio signal processing circuitry including audio amplifier-speaker means, a system for selectively operating said television receiver in a television mode wherein said received video signals are presented on said video display and said received audio signals are provided to said audio signal processing circuitry and said audio amplifier-speaker means, and in a telephone mode wherein audio communication by means of a telephone coupled to said television receiver may be initiated or responded to with the audio signals transmitted by said telephone coupled to said audio signal processing circuitry and audio amplifier-speaker means and to microphone means for sensing acoustic signals during a telephone conversation comprising:

remotely located control means having a plurality of selectable keys for generating binary signals representing channel numbers and alpha-numeric telephone number characters;

mode selection means coupled to said remote control means for generating a modulated signal, said modulated signal representing the telephone mode of operation of said television receiver;

microcomputer means coupled to said remotely located control means and said mode selection means for receiving said binary signals and said modulated signal and for generating a plurality of binary addresses for outputting a plurality of digital dialing words corresponding to alphanumeric telephone number characters and a telephone switch signal, respectively, or for generating a plurality of binary addresses for outputting a plurality of digital tune words corresponding to a selected channel number from a memory matrix containing a plurality of said digital dialing and digital tune words to said tuner in tuning from a currently tuned channel to a desired channel when said modulated signal is not received; and

switching circuit means coupled to said microcomputer means for receiving said telephone switch signal and said digital dialing words and to said audio amplifier-speaker means, said microphone means and said telephone for providing said digital dialing words to said telephone following the receipt of said telephone switch signal for initiating a telephone call and coupled to said television receiver audio signal processing circuitry for answering a telephone call and for carrying on audio communication on said telephone by means of said television receiver.

4,356,510

TELEVISION SOUND MULTIPLEX SIGNAL RECEIVING DEVICE

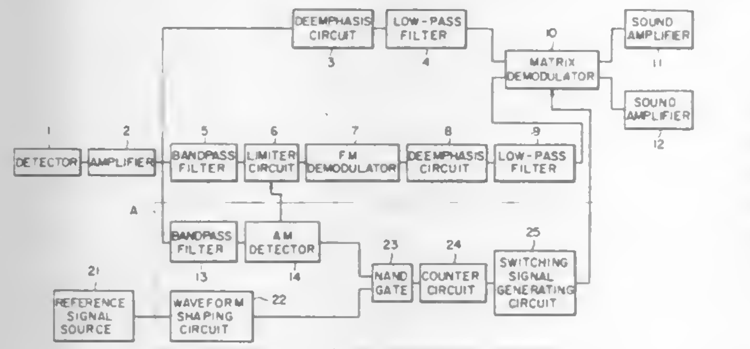
Koichi Nakayama, Hatoyama, Japan, assignor to Toko Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,559

Claims priority, application Japan, Dec. 14, 1978, 53-155520; Dec. 14, 1978, 53-155521; Mar. 8, 1979, 54-29629[U]

Int. Cl.^{3} H04N *5/60*

U.S. Cl. 358—143 **11 Claims**



1. A television sound multiplex broadcast signal receiving device comprising:
   (a) means for detecting the arrival of a control subcarrier signal which has been amplitude modulated by a control signal;
   (b) means for detecting said control signal amplitude-modulating said control sub-carrier signal;
   (c) a counter circuit and a means for supplying a reference signal to said counter circuit at time intervals dependent on the frequency of said control signal; and
   (d) means for determining whether a television sound broadcast is a stereophonic broadcast, a different program broadcast or monaural broadcast depending on the presence or absence of a signal from said means for detecting the arrival of a control sub-carrier signal and a signal from said counter circuit.

4,356,511

DIGITAL SOFT-EDGE VIDEO SPECIAL EFFECTS GENERATOR

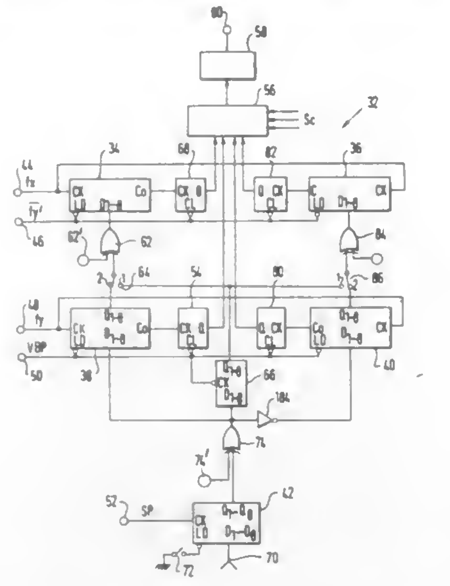
Katsuhito Tsujimura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 908,769, May 23, 1978, abandoned. This application Jul. 9, 1980, Ser. No. 166,976

Int. Cl.^{3} H04N *5/22*

U.S. Cl. 358—181 **11 Claims**

1. A digital soft-edge circuit for a special effects generator, including means for generating a switching signal for selecting respective portions of at least two input video signals under the control of said switching signal to produce, at an output, a single composite video signal which contains a composite of selected portions of said at least two video input signals with a soft-edged boundary region therebetween, said soft-edge circuit comprising: means responsive to said switching signal for defining at least one time interval corresponding to the width of said soft-edged boundary region and providing at least one boundary signal corresponding to said boundary region; pulse generating means responsive to said at least one boundary signal for generating a series of pulses of progressively changing mark-to-space ratio during said at least one time interval; means for forming a composite switching signal of said switching signal and said series of pulses of progressively changing mark-to-space ratio; and means responsive to said composite switching signal to switch between said at least two video input signals such that said at least two video input signals are alternately applied to said output during said at least one time interval in accordance with the progressively changing mark-to-space ratio of said pulses to produce said soft-edged boundary region.



4,356,512

TELEVISION KEYING CIRCUIT

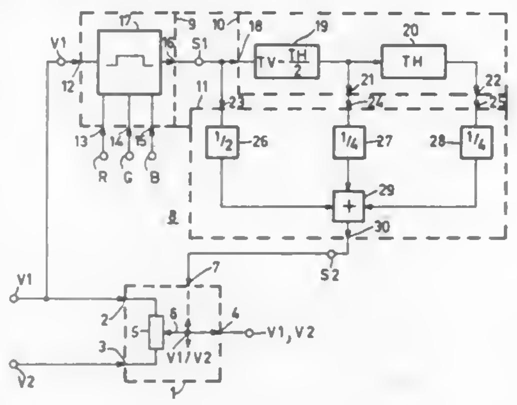
Klaas H. J. Robers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,867

Claims priority, application Netherlands, Apr. 25, 1979, 7903241

Int. Cl.^{3} H04N *5/22*

U.S. Cl. 358—183 **9 Claims**



1. A television keying circuit, for switching between two video signals in which a resultant interlaced picture exhibits substantially no flicker, having a keying generator and a video signal switching device, said video signal switching device including a first and a second input for receiving a first and a second video signal, respectively, and an output for supplying one of the two video signals or a signal combination of the first and the second video signal, and a third input for receiving a modified keying signal for the control thereof, and said keying generator including one or more inputs, for receiving the first, the second and a third signal, and an output for supplying the modified keying signal, characterized in that the keying generator comprises a circuit coupled to said keying generator input, or inputs for generating a keying signal, a signal delay circuit having an input and two outputs exhibiting time delays equal to a television field period minus and plus half a line period, respectively, the input of the signal delay circuit being connected to the output of said circuit for generating said keying signal, and a signal combining circuit having inputs to which the input and two outputs of the signal delay circuit are connected and an output which constitutes the modified keying signal output of the keying generator.

4,356,513

CCD SCANNER WITH IMPROVED RESOLUTION

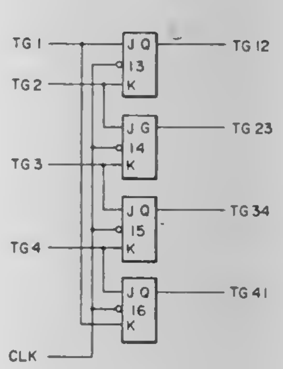
Norihiko Yoshimura; Masaaki Niiho; Shoji Kamasako, all of Tsurugashima, and Hideyuki Ishiai, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,811

Claims priority, application Japan, Feb. 26, 1980, 55-23126

Int. Cl.^{3} H04N *3/14*

U.S. Cl. 358—213 **6 Claims**



1. A video signal composing circuit for an optical reading device for reading patterns of characters and figures with a plurality of scanned CCD's arranged in a line parallel to a reading surface, comprising:
   a plurality of switch groups for setting corresponding output codes;
   counter circuit means for counting scanning clock pulses supplied to said CCD's;
   a plurality of comparison circuits operatively coupled to said counter circuit means for comparing said output codes set by said switch groups with a count output of said counter circuit means;
   flip-flop circuits having inputs coupled to output coincidence signals of said comparison circuits; and
   a gating circuit operating in response to outputs of said flip-flop circuits and video signals outputted by said CCD's for producing a single composite video signal.

3. A method for composing video signals from a plurality of scanned CCD's comprising the steps of providing:
   a plurality of switch groups for setting corresponding output codes;
   counter circuit means for counting scanning clock pulses supplied to said CCD's;
   a plurality of comparison circuits operatively coupled to said counter circuit means for comparing said output codes set by said switch groups with a count output of said counter circuit means;
   flip-flop circuits having inputs coupled to output coincidence signals of said comparison circuits; and
   a gating circuit operatively in response to outputs of said flip-flop circuits and video signals outputted by said CCD's for producing a single composite video signal;
   coarsely mechanically aligning said CCD's;
   providing a video signal composing pattern comprising alternating patterns of vertical and horizontal stripes;
   setting said switch means such that said composite video signal includes no overlap of video signals from adjacent CCD's.

4,356,514

APPARATUS FOR USE IN SCANNING A CINEMATOGRAPH FILM

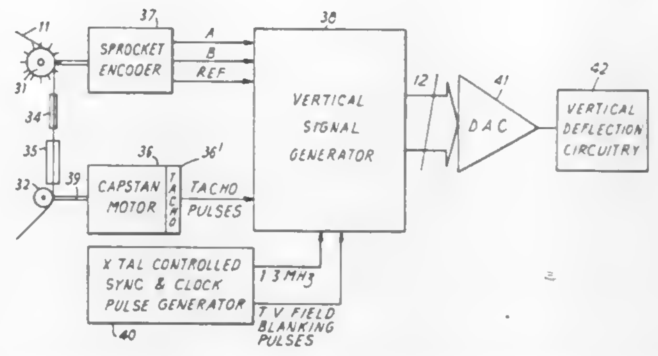
Andrew S. Armstrong, Ilford, and Martin R. Sach, Tewin Wood, both of England, assignors to Transcan Video Limited, London, England

Filed Oct. 6, 1980, Ser. No. 194,318

Claims priority, application United Kingdom, Oct. 8, 1979, 7934819

Int. Cl.^{3} H04N *3/36*

U.S. Cl. 358—214 **9 Claims**


11
31
34
35
32
39
37
SPROCKET ENCODER
A
B
REF
38
VERTICAL SIGNAL GENERATOR
36
36'
CAPSTAN MOTOR
TACHO
TACHO PULSES
12
41
DAC
42
VERTICAL DEFLECTION CIRCUITRY
X TAL CONTROLLED SYNC & CLOCK PULSE GENERATOR
40
13 MHz
T V FIELD BLANKING PULSES

1. Apparatus for use in scanning a cinematograph film from which a television video signal is to be produced while the film is being moved in a continuous manner in a film transport, the apparatus including.
   signal generating means for generating a rate signal representing the rate of movement of a cinematograph film in the transport, a direction signal representing the direction of movement of the film, and a position signal representing the position of a predetermined point along the length of each film frame during the time in which the said point moves from a reference position in a film scanning region to a position reached when the predetermined point of the next film frame entering the scanning region arrives at the reference point,
   raster reference means for producing a raster reference signal having a value representative of the rate of increase of the vertical coordinate of a scanning raster of the dimensions required for scanning a frame of the film in the absence of movement of the film, and
   signal combining means connected to the signal generating means and to the raster reference means said signal combining means being responsive to said position signal and to said raster reference signal for sampling the value of the position signal substantially at each time at which a scanning raster is to be initiated, the combining means having a raster output and being further responsive to said direction signal and to said rate signal for producing at the raster output in each interval beginning substantially at the time of a respective sampled value of the position signal and ending substantially at the time of the next sampled value thereof an output signal having a value substantially representing the said vertical coordinate of the scanning raster required for scanning a frame of the film during the said interval, the said vertical coordinate being parallel to the length of the film at least at the scanning region.

4,356,515

CATHODE RAY TUBE

Hiroji Sumiyoshi, Sagamihara; Mitsumasa Suzuki, Tokyo, and Hiroshi Okazaki, Matsudo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 5, 1981, Ser. No. 260,850

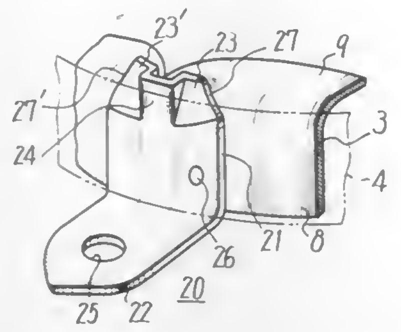
Claims priority, application Japan, May 14, 1980, 55/66145[U]

Int. Cl.^{3} H01J *29/87;* H04N *5/645*

U.S. Cl. 358—246 **7 Claims**

1. A cathode ray tube, comprising: a panel member with a phosphor layer coated on its inner surface; a funnel member; a

neck member having an electron gun therein, said panel member, funnel member and neck member forming an envelope of said cathode ray tube in which an image is formed on said phosphor layer by an electron beam emitted from said electron gun; fittings respectively located at corners of said panel member; and a tension band wrapped on said panel member on the outside of said fittings and then tightened to said panel member; each of said fittings consisting of a first portion substantially parallel to a tubular axis of said envelope and a second portion continued from said first portion and extending in a direction substantially perpendicular to the tubular axis whereby each of said fittings has an L-shaped configuration in cross-section, said first portion having at its outer end portion curved surfaces which conform with a peripheral wall surface of said envelope and has a center rib portion between said curved surfaces, said center rib portion having a surface substantially parallel to the tubular axis of said envelope.



4,356,516
TRANSMITTER FOR FACSIMILE

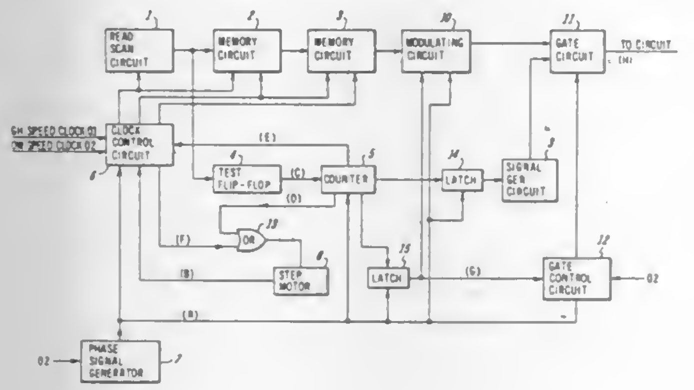
Kenji Koguchi, Tokyo, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,410

Claims priority, application Japan, Feb. 15, 1980, 55/17136[U]

Int. Cl.³ H04N ***1/36***

U.S. Cl. 358—288 **8 Claims**



1. A facsimile system which allows faster scanning and transmission of information on a document by skipping over blank areas on said document and comprises a phase signal generating circuit (7) for generating a phase signal, a reading scanning circuit (1) for reading an original document, memory circuits (2, 3) for storing an image signal for one line, a detecting circuit (4) for testing whether or not the image signals for one line are all white signals, a counting circuit (5) for counting signals being generated by the detecting circuit, a scanning mechanism (8) for performing skips by one line on the original document, a clock controlling circuit (6) for controlling the reading scanning circuit (1), the memory circuits (2, 3) and the sub-scanning circuit (8), an oscillator circuit (9) being controlled by the counted value of the counting circuit (5), and a gate controlling circuit (12) being controlled by the count value in said counter circuit, wherein the improvement is characterized by the content of the image information having been obtained by the prior scanning of one line is sequentially tested by the detecting circuit (4), the scanning mechanism being advanced by one line when the information having been detected is one to be skipped, the number of lines to be consecutively skipped being counted by the counter, the phase signal and the image signal being transmitted when the counted value is 0, and the scanning controlling signal corresponding to the counted value being transmitted from the beginning of the phase when the counted value is equal to or more than 1.

4,356,517
PCM AUDIO REPRODUCING SYSTEM

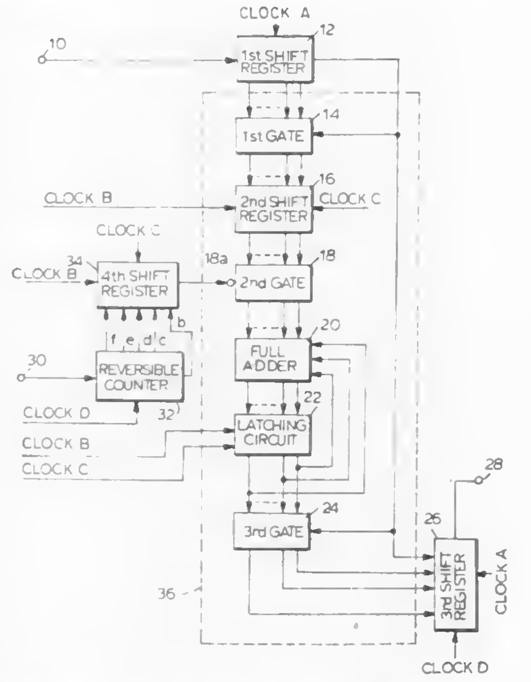
Minoru Ozaki; Ken Onishi, and Kunimaro Tanaka, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 72,847

Claims priority, application Japan, Sep. 21, 1978, 53-117221

Int. Cl.³ G11B ***27/02, 5/00***

U.S. Cl. 360—13 **7 Claims**



1. A PCM audio reproducing system for reproducing an original audio signal from a record medium having recorded thereon a digitized PCM audio signal produced by subjecting said original audio signal to the pulse code modulation; said system comprising weighting means for successively changing the weight of digital signal bits comprising said digitized PCM audio signal in accordance with a command signal to thereby perform a fade-out or fade-in operation.

4,356,518
HIGH FREQUENCY DIGITAL PCM DECODING APPARATUS

Maurice G. Lemoine, and Leonard A. Pasdera, both of Redwood City, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 1, 1980, Ser. No. 117,881

Int. Cl.³ G11B ***5/09***

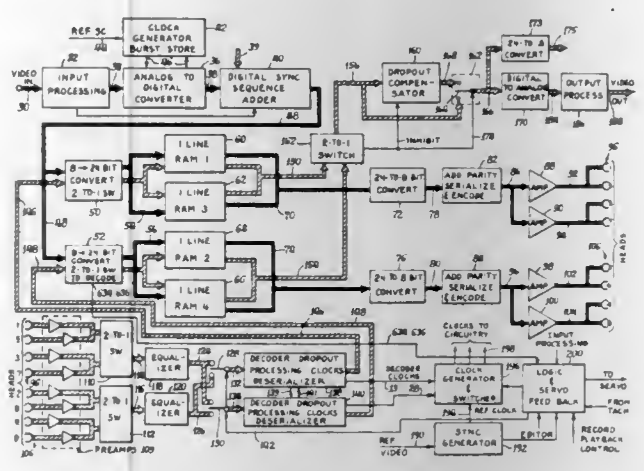
U.S. Cl. 360—51 **13 Claims**

1. In a data decoder for decoding at least one stream of high predetermined frequency, serial self-clocking encoded data transmitted in successive bit cells, the stream of encoded data having logic signal transitions which can occur in a plurality of predetermined locations within each bit cell, apparatus for generating a generally continuous clock signal from said stream of encoded data, and for reclocking said stream of encoded data to minimize any mispositioning of the logic signal transitions in the bit cells, comprising:

means for producing a pulse in response to each transition that occurs in said stream of encoded data;

means responsive to said pulses for producing a continuous sine wave signal;

means converting said continuous sine wave signal to a continuous square wave signal; and



means for reclocking each transition in said stream of encoded data in response to said generated clock signal to accurately position said logic signal transition within their respective bit cells to permit accurate decoding thereof.

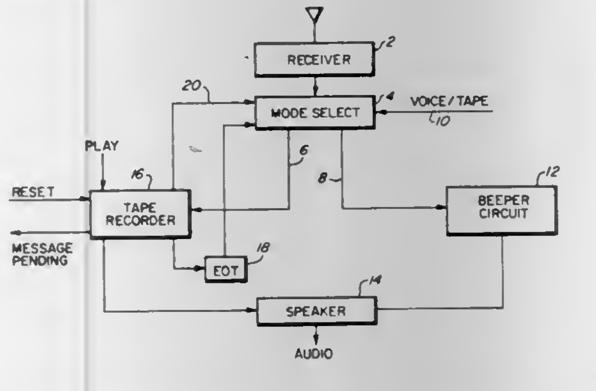
4,356,519
PORTABLE ANSWERING DEVICE

Lawrence A. Cogdell, Jr., 8750 E. McDowell Apt. #18, Scottsdale, Ariz. 85257

Filed Feb. 25, 1980, Ser. No. 123,929

Int. Cl.³ G11B ***31/00, 5/00;*** **H04M** ***11/02***

U.S. Cl. 360—61 **2 Claims**



1. A portable hand held electronic voice pager, comprising:

first means for receiving an audio voice message;

second means coupled to said first means for recording the received message on magnetic tape;

third means coupled to said first means for delivering a real-time audio representation of said message; and

a plurality of controls for operating said pager, each of said plurality of controls being operable by finger movements of the hand in which said pager is held, including fourth means for activating one of said second and third means, said fourth means comprises:

generating means for generating a control signal having first and second states; and

a mode select switch coupled to said tape recorder and to said third means and responsive to said control signal for activating said tape recorder or said third means, including fifth means for indicating when a message has been recorded on said tape recorder, including switch means for resetting said fifth means, sixth means coupled to said tape recorder and to said mode select switch for detecting end of tape and forcing said mode select switch to activate said third means.

4,356,520
MAGNETIC RECORD/REPRODUCTION APPARATUS OF A STATIONARY HEAD TYPE

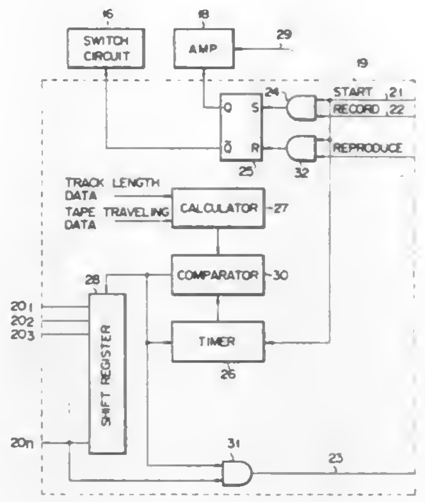
Tuneo Yanagida, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,196

Claims priority, application Japan, Jul. 16, 1979, 54-90026

Int. Cl.³ G11B ***15/12***

U.S. Cl. 360—63 **5 Claims**



1. A magnetic record/reproduction apparatus of the stationary head type comprising:

multichannel magnetic heads;

signal lines for carrying record signals and reproduction signals;

an electronic switching circuit coupled between said magnetic heads and said signal lines; and

switching control means which selectively supplies switching control signals to said electronic switching circuit for selectively connecting said magnetic heads to said signal lines, said switching control means including:

a calculator for calculating an allowable recording or reproduction time as a function of a track length and a traveling speed of the magnetic tape;

a timer for counting the recording or reproduction time and for generating a count value output signal;

a comparator coupled to said timer and to said calculator for comparing the count value of the output of said timer with said allowable time calculated by said calculator and, when said count value and said allowable time coincide with each other, said comparator producing an output signal; and

a shift register responsive to said output signal from said comparator for supplying said switching control signals to said electronic switching circuit for selectively connecting said magnetic heads to said signal lines.

4,356,521
MAGNETIC TAPE POSITION DISPLAY SYSTEM FOR A SOUND REPRODUCTION SYSTEM

Harold N. Selim, Wichita, Kans., assignor to A. H. Hunt, III, Wichita, Kans., a part interest

Filed Oct. 18, 1979, Ser. No. 86,164

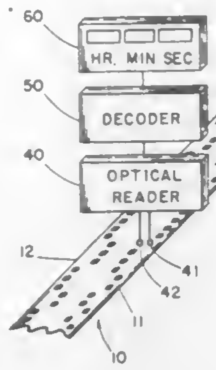
Int. Cl.³ G11B ***13/04, 27/34***

U.S. Cl. 360—72.2 **1 Claim**

1. In a sound reproduction system, including means for audibly reroducing sound that has been magnetically recorded on magnetic recording tape, a tape position display system comprising:

(a) a magnetic recording tape having audio signals magnetically recorded thereon, said tape having portion-indicating groups of coded marks of different optical characteristics than other areas of said tape which successively and uniquely identify portions of tape in successive increments, said tape further having subject-matter-indicating groups of coded marks which indentify the subject matter of the sound that has been magnetically recorded on said tape;

(b) an optical reader, said reader being sensitive to said marks and positioned to read said marks when said tape is in position for sound reproduction by said sound system; and



(c) decoder means for responding to said optical reader and for identifying in numerical format the portion of said tape that is in position for sound reproduction by said sound system as said tape is passing said optical reader, said decoder means further including means for identifying in alphanumeric format the subject matter of the sound that has been recorded on the portion of said tape that is in position for sound reproduction by said sound reproduction system.

4,356,522

HEAD POSITIONING SIGNAL GENERATING APPARATUS

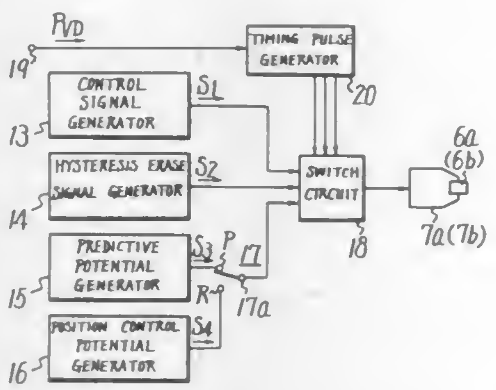
Masayuki Takano, Hon, and Sadao Hosoi, Ebina, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,051

Claims priority, application Japan, Oct. 29, 1979, 54-139666

Int. Cl.^{3} G11B *21/10, 21/18, 5/52*

U.S. Cl. 360—77 **12 Claims**



1. A head positioning apparatus for a helical scan tape recorder of the type including a rotary transducer adapted to reproduce signals from recording tracks on a recording medium and mounted on electrically deflectable means, comprising:

pulse signal generating means for generating pulse signals representative of the speed of movement of said recording medium;

control signal reproducing means for reproducing control signals representing positions of said recording tracks on said recording medium relative to said rotary transducer;

first counting means for counting one of up and down said pulse signals from said pulse signal generating means;

reference signal generating means for generating a reference signal in association with the rotation of said rotary transducer;

second counting means for counting one of up and down said pulse signals, with said second counting means being preset with an output of said first counting means at the occurrence of said reference signal; and

sampling means for sampling an output of said second counting means shortly before the second counting means is preset with the output of said first counting means so as to derive a control potential which is applied to said electrically deflectable means so that said rotary transducer accurately scans the beginning of said recording tracks.

4,356,523

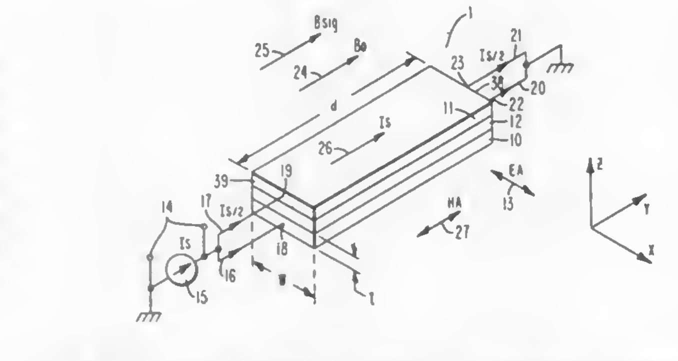
NARROW TRACK MAGNETORESISTIVE TRANSDUCER ASSEMBLY

Nan-Hsiung Yeh, Foster City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jun. 9, 1980, Ser. No. 157,767

Int. Cl.^{3} G11B *5/12;* **G11C** *11/00;* **G11B** *5/30*

U.S. Cl. 360—113 **18 Claims**



1. A magnetoresistive transducer assembly suitable for detecting signals recorded on narrow tracks of an associated medium, comprising in combination:

two magnetostatically coupled magnetoresistive elements having corresponding dimensions and similar magnetic and electric properties, each element having a thickness significantly smaller with respect to its other dimensions, said elements having corresponding planar surfaces arranged in closely spaced parallel relationship;

a nonmagnetic nonconductive material interposed between said corresponding planar surfaces to separate said elements from each other and to prevent exchange coupling therebetween;

said recorded signals providing a magnetic signal field applied to said magnetoresistive elements in a first direction;

each magnetoresistive element having an easy axis of magnetization in a second direction substantially perpendicular to said first direction, said first and second direction defining a plane substantially parallel with said corresponding planar surfaces; and

a first means coupled to apply a D.C. sense current flow in the same direction through both said elements and substantially in parallel with the first direction.

4,356,524

MAGNETIC HEAD

Seizo Watanabe, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,827

Claims priority, application Japan, Jul. 27, 1979, 54/93900

Int. Cl.^{3} G11B *5/10, 5/22*

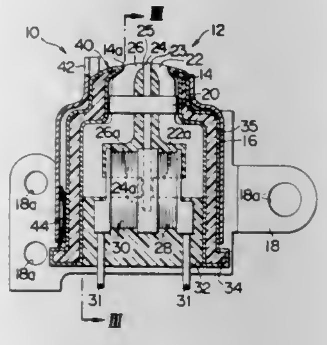
U.S. Cl. 360—129 **6 Claims**

6. A magnetic head, comprising:

a magnetic head element including a core having a coil disposed thereon;

a core holder for holding the magnetic head element; said core holder including a first conductive member in contact with said magnetic head element and said first conductive member encloses an internal body portion formed of non-conductive material;

a second conductive member in contact with said first conductive member, said second conductive member providing a magnetic shield for said magnetic head element and said core holder, so that when the magnetic head element is engaged by a magnetic tape which has a conductive area, any static electricity developed on said magnetic tape is discharged through said first conductive member and said second conductive member.



4,356,525

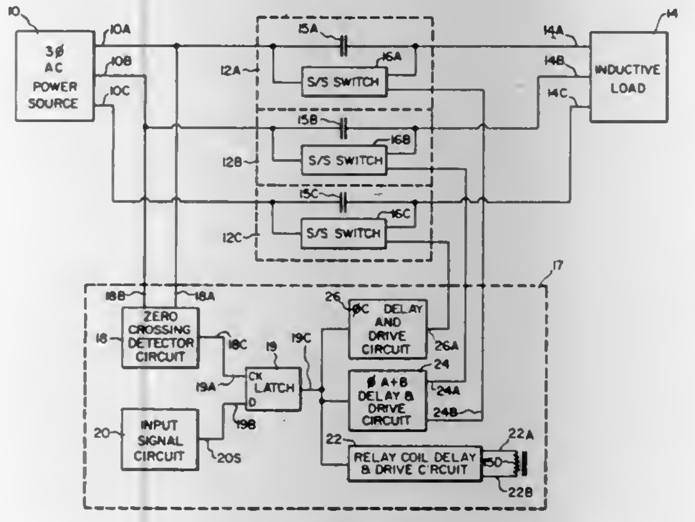
METHOD AND CIRCUIT FOR CONTROLLING A HYBRID CONTACTOR

William P. Kornrumpf, Schenectady, and Joseph L. Ciccone, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,412

Int. Cl.^{3} H02H *3/00*

U.S. Cl. 361—4 **25 Claims**



1. A method of controlling the flow of power from an AC power source to an inductive load by way of a switching circuit comprising a control circuit operably connected to a first hybrid contactor having a pair of relay contacts connected in parallel with a switching unit including at least one switching device, the AC power source having at least one output line and the inductive load having at least one input line, said first hybrid contactor switchably electrically connecting said at least one output line to said at least one input line, the steps comprising:

- I. turning on the flow of power by:
  - (a) generating a turn-on signal,
  - (b) sensing a relative waveform from the output line of the AC power source,
  - (c) generating an indicating signal based on said relative waveform,
  - (d) switching the switching unit of the first hybrid contactor to an on state responsive to said turn-on signal and at a point in time determined by, and other than at a zero crossing of, the sensed relative waveform to cause a minimal DC offset current to be generated by the integrating property of the inductive load, and
  - (e) switching the pair of relay contacts of the first hybrid contactor to assume a closed state only after the switching unit is in an on state; and
- II. turning off the flow of power by:
  - (a) generating a turn-off signal,
  - (b) switching the pair of relay contacts of the first hybrid contactor to an open state responsive to the turn-off signal, and
  - (c) switching the switching unit of the first hybrid contactor to an off state only after the pair of relay contacts are opened, to halt the flow of power from the AC power source to the inductive load.

4,356,526

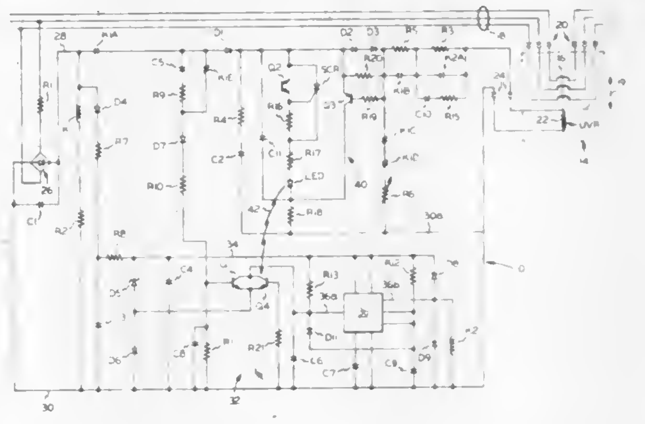
CONTROL CIRCUIT FOR RESETTING DRAWOUT CIRCUIT BREAKER UVR SOLENOID

Ronald R. Russell, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,317

Int. Cl.^{3} H02H *3/24*

U.S. Cl. 361—59 **8 Claims**



1. A circuit for controlling an undervoltage release (UVR) solenoid having a plunger mechanically operative to trip a circuit breaker in response to a system undervoltage condition, said control circuit including, in combination:

- A. first and second buses having input ends coupled with an electrical distribution system for developing thereacross a DC control voltage proportional to the system voltage;
- B. a first control relay having an operating coil connected between said first and second buses to be picked up by said control voltage so long as said system voltage remains above a predetermined minimum level, said first control relay further including normally open first contacts connected in said first bus downstream from its operating coil;
- C. a dropping resistor connected in series with the UVR operating solenoid coil across said first and second buses downstream from said first control relay contacts, whereby the pickup of said first control relay closes its first contacts to apply said control voltage across the series combination of said dropping resistor and UVR solenoid coil pursuant to developing sufficient holding voltage across the UVR solenoid coil to magnetically hold its plunger in a reset position and thus preclude tripping of the circuit breaker;
- D. a UVR solenoid drop-out delay including an energy storage capacitor connected across said first and second buses downstream from said first control relay contacts to be charged by said DC control voltage while said first control relay is picked up and its first contacts closed, whereby upon drop-out of said first control relay in response to the system voltage falling below said predetermined minimum level, said energy storage capacitor discharges through the UVR solenoid coil to develop sufficient holding voltage to hold the plunger in its reset position for a predetermined duration pending restoration of normal system voltage; and
- E. a UVR solenoid resetting network including
  - (1) a second control relay having an operating coil and

normally open contacts connected in shunt with said dropping resistor,

(2) a timer connected with said second control relay operating coil to effect the pickup of said second control relay for a pre-selected time interval in response to an initiating signal;

(3) first means connected with said first and second buses downstream from said first control relay contacts for developing said timer initiating signal in response to the pickup of said first control relay following the dropout thereof in response to a system undervoltage condition, and

(4) second means connected with said first and second buses downstream from said first control relay contacts for developing said timer initiating signal in response to the reconnection of the UVR solenoid into said control circuit while said first control relay is picked up following the disconnection therefrom as occurring on occasion when the circuit breaker is installed in a drawout configuration,

(5) whereby, said second control relay is picked up under the control of said timer acting in response to said initiating signal to close said contacts thereof and thus shunt said dropping resistor for said pre-selected time interval such that virtually the full magnitude of said DC control voltage is applied across the UVR operating coil to develop sufficient magnetic attraction to draw the UVR solenoid plunger from its trip initiating, extended position back to its reset position.

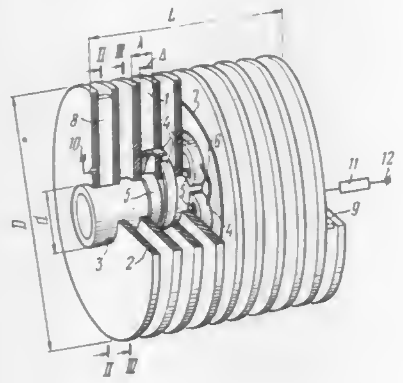
4,356,527
VALVE ARRESTER

Erik I. Asinovsky, 16-ya Parkovaya ulitsa, 49, korpus 1, kv. 78; Anatoly A. Afanasiev, ulitsa Shosseinaya, 10, kv. 137, and Evgeny P. Pakhomov, Yakhromskaya ulitsa, 3, korpus 2, kv. 30, all of Moscow, U.S.S.R.

Filed May 21, 1981, Ser. No. 265,817

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—134 **2 Claims**



1. A valve arrester comprising: arcing horns adapted to form spark gaps connected in series with one another;

at least one nonlinear resistor connected in series with said spark gaps;

arc extinction chambers in which said arcing horns are accommodated;

a single helical blade of an electric insulation material adapted to form the walls of said arc extinction chambers;

a central cylindrical member carrying said single helical blade;

said arcing horns located between the turns of said helical blade, assuming a helical space orientation, and affixed to the surface of the central cylindrical member, thereby providing for the formation of a single helical arc from the arcs produced in the spark gaps during the arrester breakdown, said arcs being joined together during their movement.

4,356,528
ATOMIZATION OF LIQUIDS

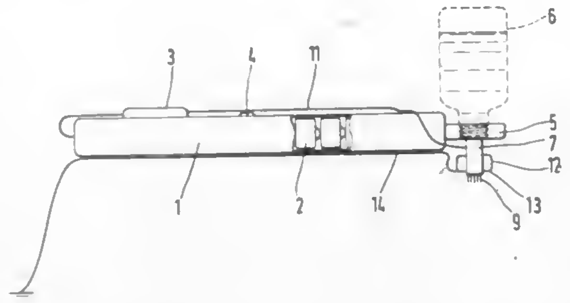
Ronald A. Coffee, Haslemere, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation-in-part of Ser. No. 812,440, Jul. 1, 1977, abandoned. This application Sep. 28, 1979, Ser. No. 79,950

Claims priority, application United Kingdom, Jul. 15, 1976, 29539/76; Feb. 21, 1977, 7186/77

Int. Cl.³ B05B *5/02*

U.S. Cl. 361—226 **41 Claims**



1. A process of spraying pesticides at ultra-low volume onto plants comprising supplying a liquid pesticidal composition from a source thereof through a liquid passage to a spray orifice which has an at least electrically semiconducting surface adjacent a field intensifying electrode, said surface being electrically charged and the electrode being at such a potential and so sited relative to said surface that an atomising field strength is created at said orifice so that the liquid pesticide at said orifice is drawn out preponderantly by electrostatic forces substantially without corona discharge into ligaments which break up into electrically charged particles which are projected away from the electrode and into contact with the plants.

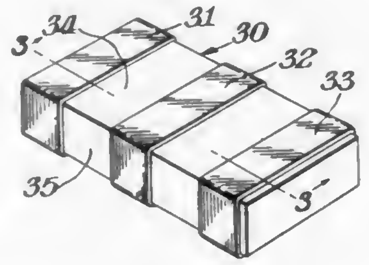
4,356,529
TERMINATED MONOLITHIC CERAMIC CHIP CAPACITOR

Jeffrey L. Kopel, Henrietta, Tex., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 21, 1981, Ser. No. 226,962

Int. Cl.³ H01G *1/147*

U.S. Cl. 361—304 **7 Claims**



1. A monolithic ceramic capacitor having a rectangular chip shaped ceramic body with a plurality of sets of electrodes buried therein wherein the improvement comprises:

said sets of electrodes extending to only one particular edge of said body at separate portions thereof, respectively, a plurality of parallel spaced conductive layer strips, one part of each of said strips being bonded to and extending fully across only one major face of said chip shaped body and another part further extending over one of said particular edge portions to contact the corresponding of said electrode sets.

4,356,530
CERAMIC CAPACITOR

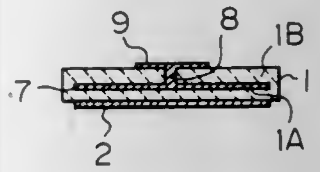
Atsushi Sato, and Hiroshi Tsuyuki, both of Nikaho, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,669

Claims priority, application Japan, Dec. 15, 1979, 54/163316; Jan. 25, 1980, 55/8048

Int. Cl.³ H01G *1/14, 4/12*

U.S. Cl. 361—321 **5 Claims**



1. A ceramic capacitor comprising:

(a) a dielectric plate having a first thin plate and a second thick plate laminated with each other, said first thin plate being too thin to support the capacitor itself, but said second thick plate being thick enough to support the capacitor, the material of the first thin plate being the same as that of the second thick plate;

(b) a first outer electrode attached on the major portion of the outer surface of said thin plate,

(c) a second inner electrode extending between said thin plate and said thick plate so that the first and second electrodes sandwiches the thin plate to provide capacitance,

(d) an external terminal attached on the outer surface of said thick plate,

(e) said thick plate having a small hole in the thickness direction of the same, and said hole being filled with a conductive means connecting electrically said inner electrode and said external terminal, and

(f) said thick portion having a single recess at the end of the small hole adjacent said inner electrode to accept the surplus conductive means, the diameter of the recess being larger than the diameter of the small hole.

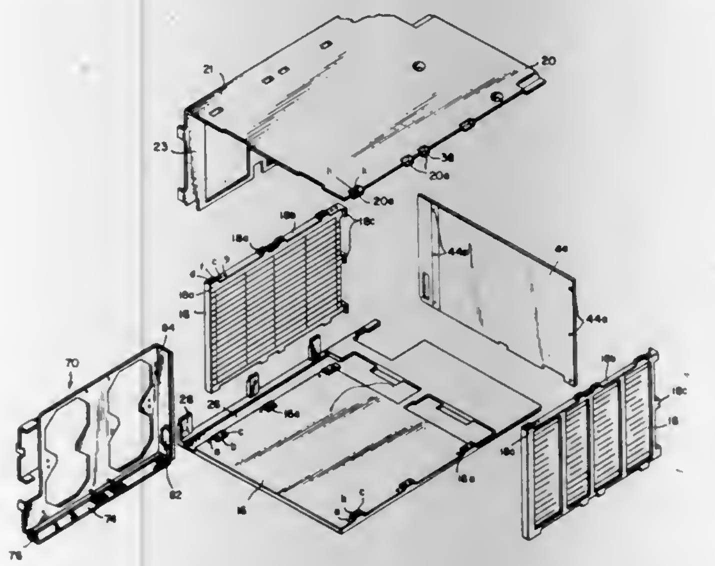
4,356,531
COMPUTER MOUNTING ASSEMBLY

Jerry C. Marino, Sudbury, and Lawrence J. Bibeau, Worcester, both of Mass., assignors to Data General, Inc., Westboro, Mass.

Continuation of Ser. No. 21,257, Mar. 16, 1979, abandoned. This application Feb. 5, 1981, Ser. No. 231,869

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—384 **7 Claims**



1. A computer housing receiving a plurality of computer components in precisely predetermined relation to each other, comprising orthogonally positioned intersecting top, bottom and side walls, mutually-interengaged first positioning means preformed at the intersections of the walls which, by interengagement, hold the walls in precisely predetermined relation to each other, fastening means at said intersections which secure the walls in said predetermined relation to each other as determined by said positioning means, second positioning means carried by the walls receiving said components, said second positioning means being positioned so that, when the walls are secured in said predetermined positions relative to each other as determined by the first positioning means, said components received by said second positioning means will bear a predetermined operative relation to each other, and wherein one of the computer components comprises a fan module and wherein one of the side walls is spaced inwardly from the edge of the bottom wall and that portion of the bottom wall outwardly of the side wall contains a groove slidingly receiving the fan module in parallel relation to the side walls.

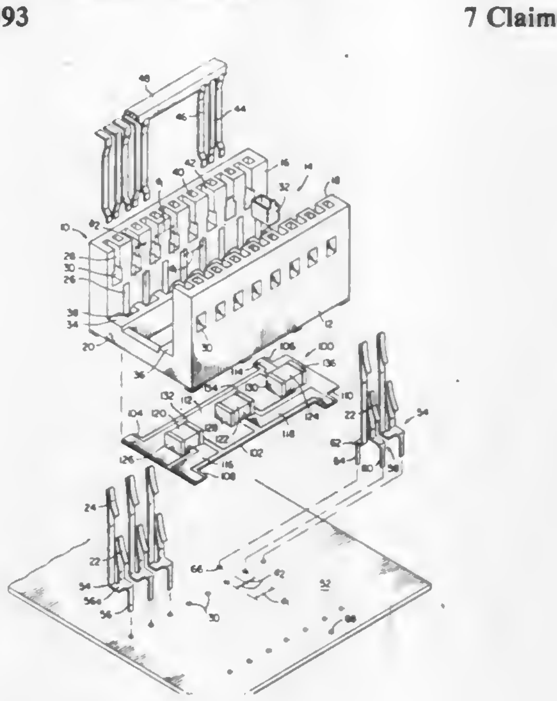
4,356,532
ELECTRONIC PACKAGE AND ACCESSORY COMPONENT ASSEMBLY

Charles J. Donaher, Los Altos Hills, and Gordon D. Christensen, San Jose, both of Calif., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Jul. 18, 1980, Ser. No. 170,014

Int. Cl.³ H05K *7/10*

U.S. Cl. 361—393 **7 Claims**



1. An electronic assembly comprising:

an electronic package having electrical contacts;

accessory component means for said package having electrical contacts for connection with said package contacts, said component means including a substrate and a component supported by said substrate, said substrate defining said component means contacts;

receptacle means having an upstanding housing defining a top opening removably receiving said package, a bottom opening removably receiving said component means and a channel extending between such top and bottom openings providing for residence of said package and said component means in vertically spaced relation in said receptacle means, said substrate being juxtaposed with a housing surface adjacent said bottom opening;

a plurality of contact elements having first portions fixedly supported in said housing, said first portions extending through said bottom opening and exteriorly thereof for engagement externally of said assembly and second portions vertically spaced from said first portions and electrically engaging said package contacts;

said substrate further including ear portions extending horizontally outwardly thereof, said contact element first portions including horizontally extending lands adjacent said housing surface, said substrate ear portions and said lands being electrically connected adjacent said housing surface.

4,356,533
ELECTRIC FLASH DEVICE

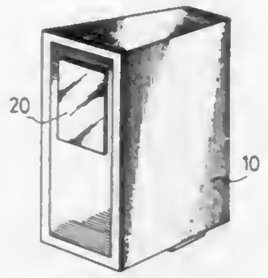
Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan

Division of Ser. No. 939,704, Sep. 5, 1978, Pat. No. 4,223,372. This application Mar. 24, 1980, Ser. No. 133,120

Claims priority, application Japan, Sep. 2, 1977, 52-118271[U]; Dec. 9, 1977, 52-165292[U]

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—17 **9 Claims**



PRIOR ART

1. An electric flash device comprising a housing, a flash unit mounted in said housing and having a reflector which comprises a frame, a reflecting mirror carried by said frame, and a flash tube inserted into said reflecting mirror and having at least one pair of main current electrodes and a trigger electrode for triggering said flash tube and electrically connected to said reflecting mirror, said frame of the reflector being formed integrally with said housing.

4,356,534
LIGHT SUPPLY DEVICE FOR AN ENDOSCOPE

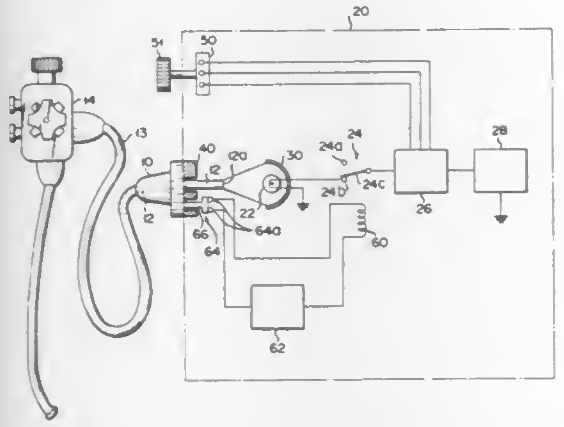
Shinichiro Hattori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,440

Claims priority, application Japan, Oct. 19, 1979, 54/134145; Oct. 19, 1979, 54/134146

Int. Cl.³ F21V *7/04*

U.S. Cl. 362—32 **9 Claims**



1. A light supply device which includes a housing and which supplies illumination light to an endoscope having a connector connected to light guide means which transmits the illumination light to the endoscope, comprising:

light source means mounted within said housing for emitting light when energized;

power source means mounted within said housing and connected to said light source means for supplying electric power to said light source means to energize said light source means;

a socket mounted on said housing and to which said connector of said endoscope is detachably connected, said socket having an opening through which said light guide means extends when said connector is connected to said socket;

light converging means for converging said light emitted from said light source means and for causing said light from said light source means to be incident onto said light guide means when said connector of said endoscope is connected to said socket; and

light control means coupled to said light source means and including detection means for detecting the state of the connection between said connector of said endoscope and said socket; and means for causing an amount of light from said light source means to be decreased to a predetermined level when said detection means detects that said connector is disconnected from said socket.

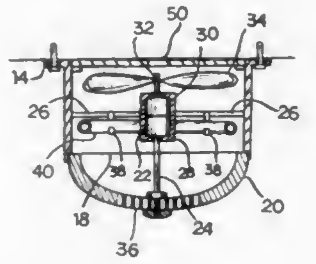
4,356,535
MODERN FAN DEVICE

Chung S. Chu, No. 2, La. 9, Tan Shain Rd., Pan Chaiu City, Taipei, Taiwan

Filed Sep. 17, 1980, Ser. No. 187,940

Int. Cl.³ F21V *21/30*

U.S. Cl. 362—35 **4 Claims**



1. A modern fan device comprising

a shell body;

a first motor having a turning axle and a fan leaf mounted on said turning axle of said first motor;

said first motor and said fan leaf positioned at the upper part of said shell body with said fan leaf driven by said first motor to fan air out of said shell body;

a second motor positioned at a lower part of said shell body;

a light penetrating shade covering over an opening in said shell body connected for rotation by said second motor;

and an annular illuminating lamp supported between said fan leaf and said shade.

4,356,536
FAIRING AND HEADLIGHT ASSEMBLY FOR A TWO-WHEELED MOTOR VEHICLE

Katsunori Funabashi, Kawagoe, and Jyoji Taira, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 184,613

Claims priority, application Japan, Sep. 17, 1979, 54-126873[U]

Int. Cl.³ F21V *33/00*

U.S. Cl. 362—72 **4 Claims**

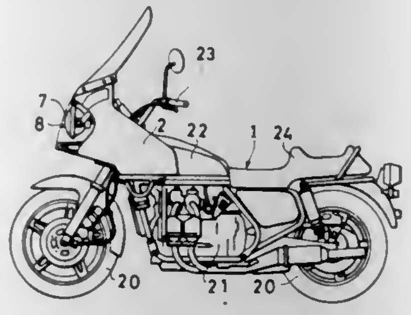
1. A fairing and headlight assembly for a two-wheeled motor vehicle, comprising:

fairing carried by the motor vehicle and which has a recess in a forwardly presented face thereof for the reception of a headlight sub-assembly, walls of said recess providing opposite substantially horizontally extending grooves for the reception and support of members of said headlight sub-assembly; and

a headlight sub-assembly detachably received within said recess, said headlight sub-assembly including,

a yoke having arms which terminate in members positioned within the respective grooves of the fairing with a tight fit and which are slidable longitudinally of said grooves; and

a threaded sleeve rigidly supported by said yoke and which extends through an aperture in the fairing, and which is rigidly secured therein by a threaded member received on said sleeve to secure said yoke and said headlight sub-assembly immovably within said recess.



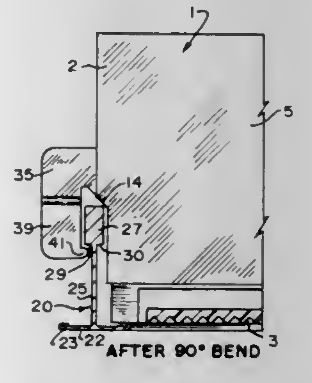
4,356,537
LIGHTING FIXTURE RETAINER HOOK

Leo G. Stahlhut, Kirkwood, Mo.; Willard R. Garnett, Tupelo, and Lewis W. Kenyon, Baldwyn, both of Miss., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 15, 1980, Ser. No. 178,472

Int. Cl.³ F21S *1/02*

U.S. Cl. 362—148 **5 Claims**



1. In a recessed lighting fixture adapted to be laid onto horizontal flanges of inverted T-shaped rails of a grid-type ceiling, said rails having a stem with a bulb defining shoulders below the upper edge of said stem, said fixture having a housing with metal end plates, the improvement comprising a hook formed integrally with and intermediate the span of a planar section of one of said end plates and adapted to project at substantially right angles to the said planar section and to extend across and embrace said bulb, and means integral with said end plate for projecting beneath one of said shoulders wholly on one side of said stem.

4,356,538
PHOTOGRAPHIC LIGHTING APPARATUS

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 4, 1980, Ser. No. 175,060

Int. Cl.³ F21S *3/00*

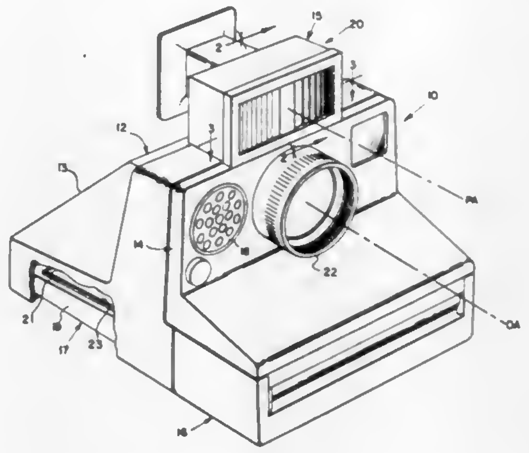
U.S. Cl. 362—217 **21 Claims**

1. An artificial lighting assembly comprising:

an elongated cylindrical light source of given diameter and length;

a concave, open-ended reflector, bilaterally symmetric about a plane, said reflector being of given width and having a constant nonconic, aspheric cross-sectional shape, said aspheric shape having a radius of curvature, and hence optical power, which progressively changes in a gradual manner without discontinuities with distance along said curve, said curve being shaped so that the radius of curvature thereof increases with increasing distance from th apex thereof so as to reduce the optical power of said reflector in a predetermined manner with increasing distance along said curve; and

means for positioning said source within said reflector in a predetermined manner to project a beam of illumination of predetermined angular divergence as measured in said reflector plane of symmetry and a plane orthogonal thereto to illuminate points on any plane normal to said reflector plane of symmetry, spaced ahead of said assembly and within said beam angle of divergence and effective range, with a predetermined distribution of illumination, said reflector shape being structured to reflect light from said source in a manner whereby the illumination of said points due to said reflected light, above and below a central axis in any said normal plane defined by the intersection of said reflector plane of symmetry and any said normal plane, progressively increases in a gradual manner without discontinuities in accordance with increasing angular divergence of said beam measured away from said reflector plane of symmetry to compensate for natural losses in illumination which would otherwise be present at those same points absent said reflector; to abruptly cause a reduction in the intensity of illumination of points on any said normal plane, above and below that normal plane central axis, which points correspond to an angular divergence beyond a predetermined value.



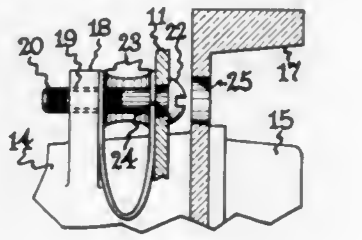
4,356,539
VEHICLE HEADLAMP HAVING AN INTEGRAL BUGGY SPRING MOUNTING ASSEMBLY

Bruce E. Shanks, Chesterland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 16, 1979, Ser. No. 85,368

Int. Cl.³ F21V *21/26*

U.S. Cl. 362—273 **15 Claims**



1. A vehicle headlamp assembly comprising a light source sealed within and focused relative to a sealed polymer envelope having a reflector portion and a light transmissive lens effective for producing a light beam having an axis substantially parallel to the optical axis of said headlamp, three mounting blocks integral with and mediately projecting radially outwardly from, and circumferentially spaced about the exterior surface of said envelope in a triangular configuration, said

mounting blocks having axially facing surfaces predeterminedly positioned relative to said axis of said light beam and to said envelope and defining a precisely located reference plane extending transverse to the axis of said light beam and referentially characterizing said light beam and effective for use in predeterminedly aligning said light beam relative to the vehicle by fastening said mounting blocks to respective openings in the vehicle.

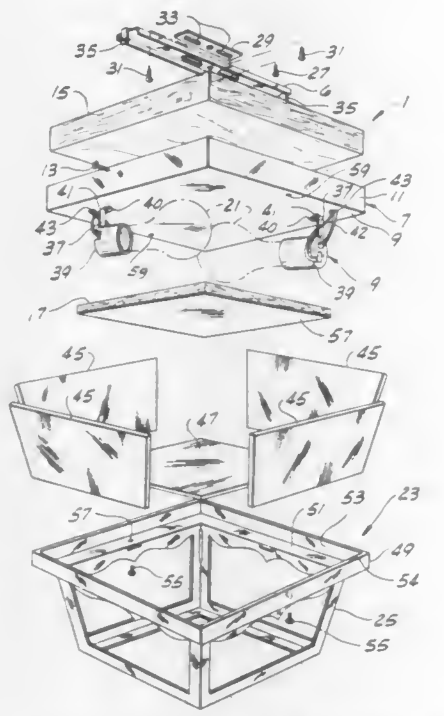
4,356,540
LIGHTING FIXTURE

Charles D. Goralnik, 200 Brynwyck Pl., St. Louis County, Mo. 63141

Continuation-in-part of Ser. No. 934,461, Aug. 17, 1978, Pat. No. 4,234,916. This application Jul. 31, 1980, Ser. No. 174,272

Int. Cl.^{3} F21V *29/00*

U.S. Cl. 362—294 **18 Claims**



1. A lighting fixture adapted to be mounted on a ceiling by attachment to an outlet box in the ceiling, comprising a pan having a bottom and a rim engageable with the ceiling for spacing the bottom of the pan therefrom, a crossbar adapted to be attached to the bottom of the outlet box in position extending horizontally across the bottom of the box, means for fastening the rim of the pan to the crossbar, a first layer of insulation in the pan secured to the pan above the bottom thereof, a second layer of insulation secured on the underside of the bottom of the pan, means for mounting a light source on the underside of the pan below said second layer of insulation, and a diffuser having an open top adapted to be mounted on the underside of the pan around said mounting means and said light source with said second layer of insulation on the underside of the pan being disposed above the light source for thermally insulating it from the pan and the outlet box to reduce the transfer of heat generated by the light source to the outlet box.

4,356,541
RECTIFIER

Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagi; Shin-yng Liu, Sendai; Shuichi Umemoto, Yokohama, and Naoki Arai, Machida, all of Japan, assignors to Tsuneo Ikenoue; Tohoku Ricoh Co. Ltd.; Stanley Electric Co., Ltd. and Micron Kiki Co., Ltd., all of Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 216,923

Claims priority, application Japan, Dec. 19, 1979, 54-165011

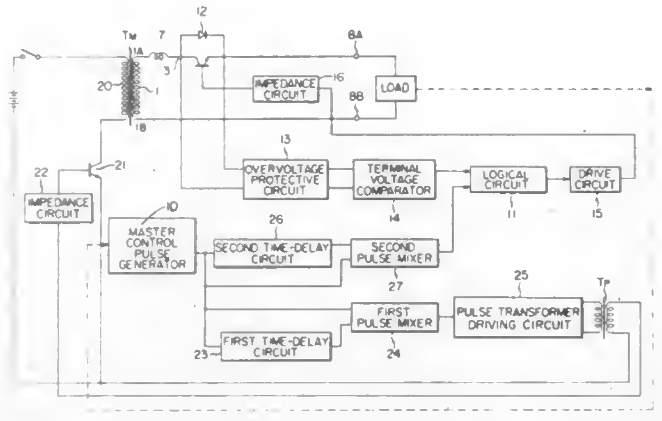
Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—20 **3 Claims**

1. A rectifier for an AC input voltage, comprising:

a parallel combination circuit of a semiconductor active rectifying element having a control terminal and a diode, said active element and said diode being connected in parallel in the same conduction direction;

a terminal voltage comparator coupled to said parallel combination circuit for comparing the input voltage with the output voltage of said parallel combination; and



a pulse control circuit comprising a master control pulse generator coupled to said terminal voltage comparator, an operational circuit and a drive circuit coupled to the control terminal of said semiconductor active element for controlling the same in response to the output from said master control pulse generator.

4,356,542
DIGITAL CONTROLLER

Ronald L. Bruckner, Longwood; Ishwar S. Khamare, Fern Park; Joseph L. Voyer, Longwood; Rodney V. Hamilton, and Paul Gheorghiu, both of Orlando, all of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 11, 1981, Ser. No. 242,788

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—26 **19 Claims**

1. In a power supply comprising an input circuit, an output circuit and switching means coupling the input and output circuits when enabled, means for generating pulse-width modulated control signals enabling the operation of said switching means includes:

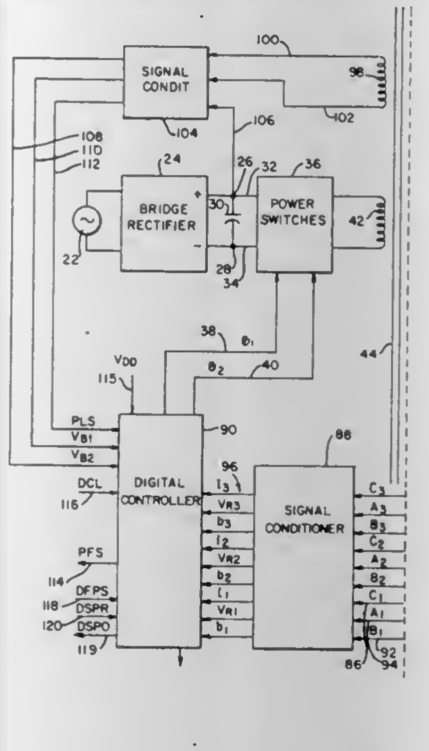
means for sampling the voltage level of said output circuit;

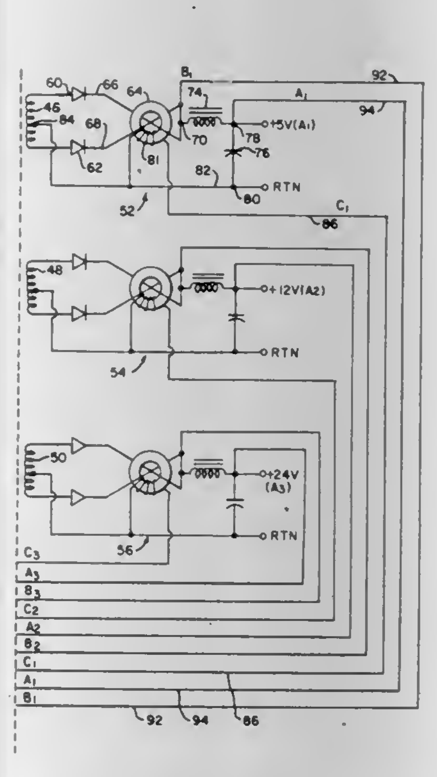
first means for generating a first digital value for each voltage sample;

second means for generating a second digital value representing the difference between succeeding first digital values;

first adding means receiving a third digital value representing the standard pulse-width modulated control signal for the required power output of the power supply, said adding means connected to said second generating means for adding said second and third digital values to output a fourth digital value;

and third means connected to said switching means and said first adding means for generating a pulse-width modulated





control signal in accordance with said fourth digital values.

4,356,543
OVERCURRENT-PROTECTED INVERTER

William R. Reynolds, c/o Electronic Systems & Components, Inc., 110 Summit Ave., Chatham, N.J. 07928

Division of Ser. No. 103,735, Dec. 14, 1979, Pat. No. 4,316,097. This application Jun. 12, 1981, Ser. No. 273,240

Int. Cl.^{3} H02M *3/335*

U.S. Cl. 363—56 **4 Claims**

1. A foldback-characterized, overcurrent-protected inverter comprising:

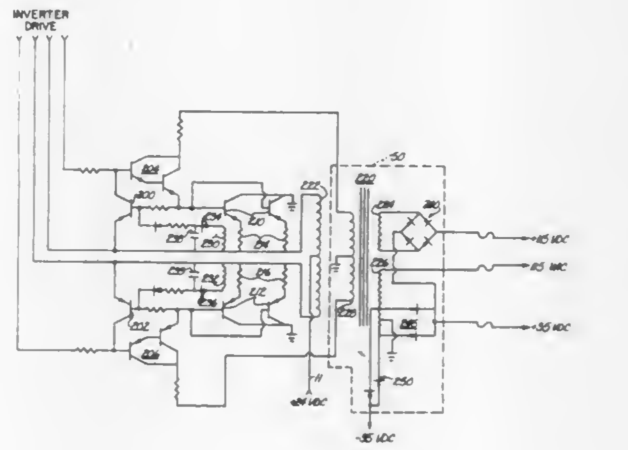
a direct current source having a current output and a current return;

a transformer having a center-tapped primary winding and a plurality of secondary windings including at least one blocking signal generating winding, direct current from the current output of the source being applied to the center tap of the primary winding;

first and second power transistor switch means each having a pair of power leads and a control input lead, one of the power leads of the first power transistor switch means being connected to one end of the primary winding, one of the power leads of the second power transistor switch means being connected to the other end of the primary winding, the other power leads of the first and second power transistor switch means being connected to the current return of the direct current source, application of complementary trigger signals to the control inputs causing complementary switching of the first and second power transistor switch means wherein the current supplied by the direct current source is chopped, and converted to alternating current by the secondary windings of the transformer;

first and second driver means responsive to an inverter drive signal to provide the trigger signals to the transistor switch means;

first and second inverter drive signal shunting transistors each connected to a respective one of the first and second driver means, the base electrodes of the shunting transistors each being responsive to at least one load current sampling resistor in electrical series relation with at least a portion of the primary winding wherein a voltage drop across the sampling resistor in response to load current through it generates a feedback signal constituted by a

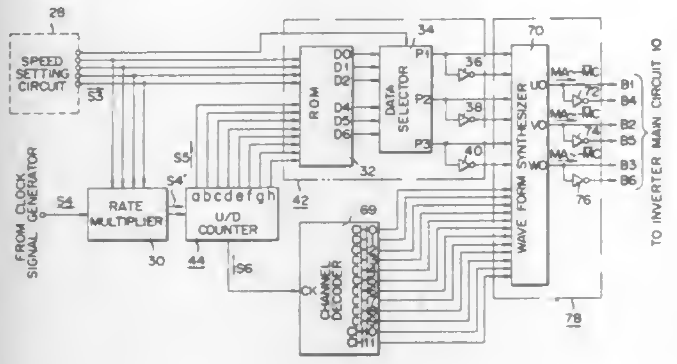


base drive current to the shunting transistors to switch them to a conducting condition wherein the inverter drive signal is shunted away from the first and second driver means to preclude complementary switching of the power transistor switch means; and

a blocking signal generating circuit including the blocking signal generating winding of the transformer, the blocking signal generating winding providing a feedback voltage applied to the base electrodes of the shunting transistors, the feedback voltage blocking and opposing the application of the base drive current to the shunting transistors to hold them in a non-conducting condition, an overload condition on one or more of the transformer secondary windings causing at least partial collapse of the feedback voltage wherein the base drive current is applied to switch on the shunting transistors to preclude complementary switching of the power transistor switch means, said sampling resistor and at least one base-emitter junction of said power transistor switch means providing a series path for said base drive current, said blocking signal generating winding providing the feedback voltage to buck the voltage drop across the sampling resistor and base-emitter junction.

4,356,544
APPARATUS FOR CONTROLLING AN INVERTER MAIN CIRCUIT

Takuo Ono, Yokohama; Sigeo Fukui, Nagoya, and Junichi Ookura, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed May 29, 1981, Ser. No. 268,247
Claims priority, application Japan, Jun. 5, 1980, 55-78392[U]
Int. Cl.^{3} H02M *7/537*
U.S. Cl. 363—132 4 Claims



1. An apparatus for controlling an inverter main circuit, comprising:

an output setting circuit for generating digital signals determining the output frequency of an inverter main circuit;

a memory circuit connected to the output setting circuit for storing control signals having logic patterns which correspond to the frequencies represented by the digital signals, said control signals each corresponding to a 180°/n portion of the output voltage waveform of the inverter main circuit, where n is a positive integer;

a correcting circuit connected to the output setting circuit for generating, according to the digital signals, a first clock signal which makes the output voltage of the inverter main circuit have a predetermined relation with the frequency represented by the digital signals;

an up-down counter connected to the correcting circuit for counting up and down the first clock signals and reading the control signals from the memory circuit in ascending and descending sequences of address numbers of the memory circuit, thereby generating a second clock signal every time the counting direction is reversed;

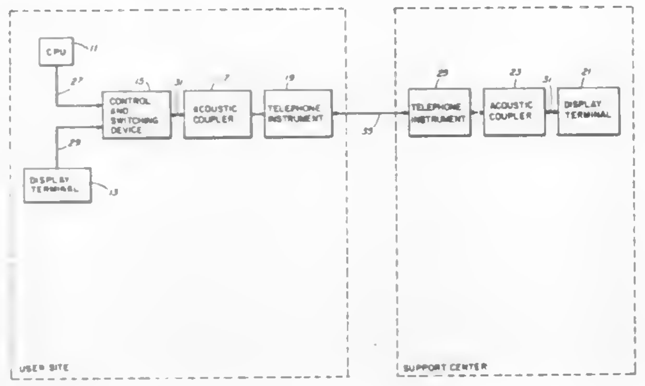
a converter connected to the up-down counter for generating a signal in response to the second clock signal, said converter having 2n output terminals from which one signal after another is supplied; and

a waveform synthesizer circuit connected to the memory circuit and the converter for supplying to the inverter main circuit some of the control signals read from the memory circuit in a predetermined order, every time the inverter main circuit generates a 180°/n portion of the output voltage waveform and in accordance with the signals supplied one after another from the output terminals of the converter.

4,356,545
APPARATUS FOR MONITORING AND/OR CONTROLLING THE OPERATIONS OF A COMPUTER FROM A REMOTE LOCATION

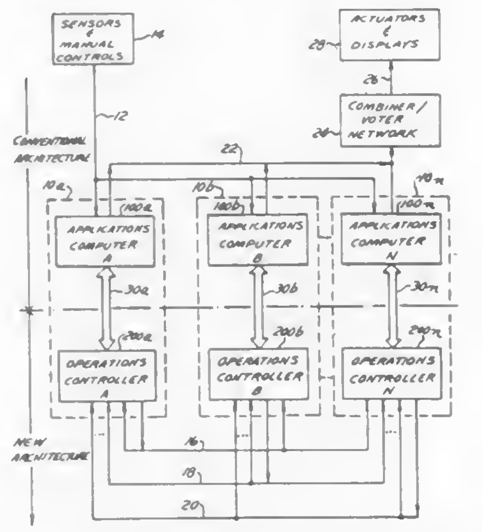
Kenneth J. West, Hopkinton, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed Aug. 2, 1979, Ser. No. 62,954
Int. Cl.^{3} G06F *3/04;* **H04M** *11/00*
U.S. Cl. 364—200 12 Claims

11. A computer system comprising:
a. a CPU at a first location,
b. a display terminal at said first location,
c. a control and switching device at said first location,
d. means connecting said CPU to said control and switching device,
e. means connecting said display terminal at said first location to said control and switching device,
f. an acoustic coupler at said first location connected to said control and switching device,
g. a telephone instrument at said first location connected to a telephone line,
h. a display terminal at a second location, and
i. means coupling said display terminal at said second location to said telephone line,
j. said control and switching device including circuitry allowing said display terminal at said first location to communicate with said CPU in the absence of a link between said acoustic coupler and said display terminal at said second location at a BAUD rate set by said display terminal at said first location and said CPU and allowing said display terminal at said second location to operate along with said display terminal at said first location at BAUD rates set by said control and switching device and limited by said acoustic coupler in an on-line mode wherein each display terminal can input to said CPU and the output from said CPU is displayed simultaneously at both of said display terminals and a conversational mode wherein said CPU is disengaged and inputs from either display terminal are displayed at both display terminals, in the presence of such a link.



4,356,546
FAULT-TOLERANT MULTI-COMPUTER SYSTEM

Arliss E. Whiteside, Royal Oak; Morris D. Freedman, Southfield; Alexander M. Rothschild, Ann Arbor, all of Mich., and Ömür Tasar, Harvard, Mass., assignors to The Bendix Corporation, Southfield, Mich.
Filed Feb. 5, 1980, Ser. No. 118,692
Int. Cl.^{3} G06F *11/18, 15/16*
U.S. Cl. 364—200 52 Claims



1. A fault-tolerant multi-computer system architecture, responsive to intercomputer messages and to inputs from external sources for executing a predetermined set of tasks to produce an output to at least one external device, comprising:

a plurality of computers for collectively executing the predetermined set of tasks in a coordinated manner to produce outputs to the at least one external device in response to the inputs from the external sources and the intercomputer messages, each of said computers having an assigned subset of the tasks which it is capable of selecting and executing in a predetermined order of priority, each task in said predetermined set of tasks being included in more than one of said assigned subset so that each task is capable of being selected and executed by more than one computer; and

a like plurality of communication links, one associated with each computer, each communication link transmitting only the intercomputer messages sent by the associated computer to all of the computers which require any message generated by the associated computer; and

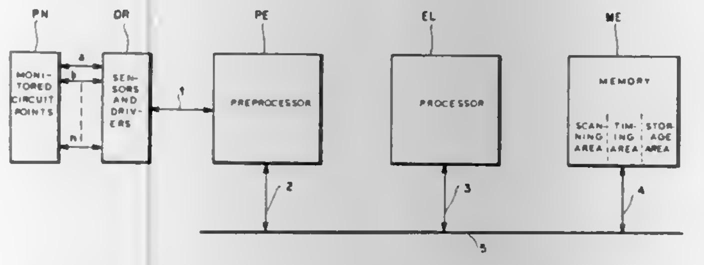
wherein each of said plurality of computers comprises:

operations controller means for controlling the operation of its own computer in coordination with like operations controllers in the other computers, each operations controller including: receiver means for receiving intercomputer messages, fault handler means for checking said intercomputer messages to detect the faulty operation of any computer in the system, and to exclude from further processing the messages received from faulty computers, scheduler means responsive to the receipt of all the data variables for the execution of at least one of its assigned tasks for selecting from its assigned subset the tasks to be executed, task communicator means responsive to the task selected by the scheduler means for assembling the data variables required for the execution of the selected task and transmitter means responsive to said fault handler means, said scheduler means and said task communicator means for sending intercomputer messages to all of the computers in the system, said messages containing an identification of the faulty computers, identification of the tasks it has selected, and the values of the data variables resulting from the execution of the selected tasks required for the execution of a subsequent task; and

applications computer means for executing the tasks selected by said scheduler means using the data assembled by said task communicator means.

4,356,547
DEVICE FOR PROCESSING TELEPHONE SIGNALS, INCLUDING A PROCESSOR AND A PREPROCESSOR SHARING A COMMON MEMORY

Valerio Barcaroli; Carlo DeMichelis; Giuseppe Giandonato, and Silvano Giorcelli, all of Turin, Italy, assignors to CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy
Continuation-in-part of Ser. No. 891,194, Mar. 29, 1978, abandoned. This application Dec. 27, 1979, Ser. No. 107,659
Claims priority, application Italy, Mar. 31, 1977, 67702 A/77
Int. Cl.^{3} G06F *15/16*
U.S. Cl. 364—200 5 Claims



1. In a telecommunication system wherein a multiplicity of circuit points are partly monitored by sensors and partly controlled by drivers, including a processor for handling incoming signals from said sensors and causing the emission of outgoing signals to said drivers,

the combination therewith of:

a preprocessor with input connections from said sensors and output connections to said drivers;

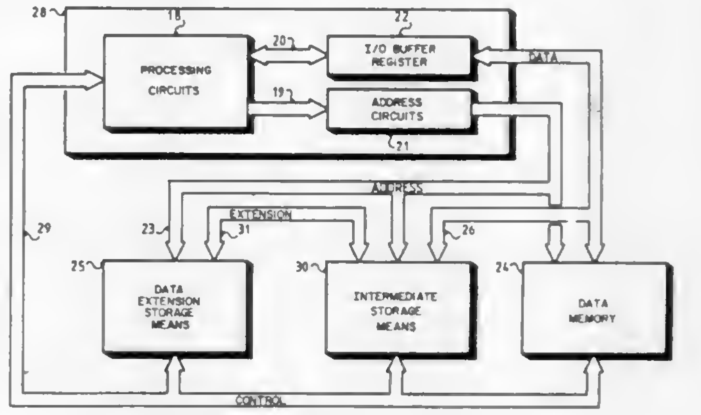
a common memory available to said processor and to said preprocessor; and

a bus interlinking said processor, said preprocessor and said common memory;

said preprocessor comprising a microprogrammer responsive to an instruction from said processor, communicated via said bus, for carrying out a sequence of operations involving a seizure of said bus by said preprocessor for the duration of said sequence, a scanning of consecutive circuit points on the basis of address information supplied by said common memory, reception of incoming signals and emission of outgoing signals relating to points being scanned, and an evaluation of said incoming signals, said preprocessor further comprising logical circuitry for performing said evaluation by an exchange of data with said common memory through said bus, said logical circuitry including a read-only memory jointly addressable by a current-state signal from a given circuit point and a previous-state signal from said common memory for supplying integration codes determining the recognition of a definite change of state to be communicated to said processor, said microprogrammer including a microprogram memory stepped by a sequencer and a logic network inserted between said microprogram memory and said sequencer for commanding the performance of lower-priority tasks after the scanning of said circuit points and prior to release of the bus by said preprocessor.

4,356,548
PROCESS AND DATA SYSTEM USING DATA EXTENSIONS

Robert J. A. Bavoux, Rueil Malmaison; Francis R. J. Lemaire, and Pierre Salkazanov, both of Plaisir, all of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France
Filed Mar. 28, 1980, Ser. No. 135,079
Claims priority, application France, Apr. 6, 1979, 79 08714
Int. Cl.^{3} G06F *13/00*
U.S. Cl. 364—200 16 Claims



1. A method of operation of a data processing system including a processor, an addressable data memory having a plurality of addresses, an addressable extension read-write memory for storing a plurality of extensions generated by said processor, and an intermediate storage means; said processor, said data memory, said extension read-write memory, and said intermediate storage means operatively interconnected by a control bus and an address bus; said processor, said data memory, and said intermediate storage means operatively interconnected by a data bus; said extension read-write memory and said intermediate storage means operatively interconnected by a extension bus; and each extension has an address within said extension read-write memory which is the same as an associated predetermined one of said addresses within said data memory, the steps comprising:

(a) storing a extension in said intermediate storage means, said extension provided to said intermediate storage means from said processor by way of said data bus;

(b) simultaneously addressing said data memory and said extension read-write memory by placing an address signal on said address bus, and

(c) writing the extension from said intermediate storge means into said extension read-write memory by way of said extension bus and at an an address determined by the address signal, while simultaneously writing an associated extended data word into said data memory at an address determined by the address signal such that said extension and said extended data word are associated by having the same address respectively within said extension read-write memory and said data memory.

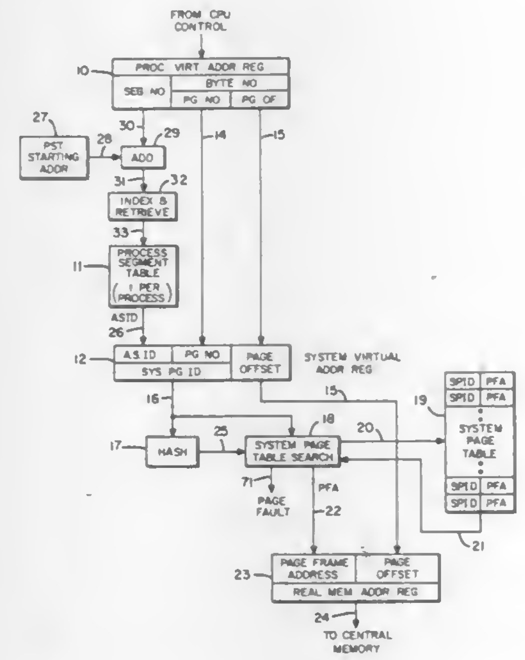
4,356,549
SYSTEM PAGE TABLE APPARATUS

Richard J. Chueh, Cardiff, Calif., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 30, 1980, Ser. No. 136,731

Int. Cl.^{3} G06F *9/36*

U.S. Cl. 364—200 **3 Claims**



1. Memory addressing apparatus for converting, responsive to a start signal, a system page identifier specifying a virtual memory page to a real memory address specifying the real memory location of the page, comprising

(a) a memory having an output data path and storing a system page table having a plurality of sequential locations having sequential indices, each location capable of storing an entry comprising a system page identifier and a real memory address, said memory supplying on the output data path responsive to receiving an index to the system page table, the contents of the table location specified by the index, said table when in use storing a plurality of entries substantially smaller in number than the total number of table locations, each said entry being stored in one of a block of a predetermined number of contiguous locations and starting with an initial index for the system page identifier and which is a predetermined mathematical function of the system page identifier;

(b) index generator means receiving the system page identifier for generating responsive thereto an output encoding the initial index as the predetermined mathematical function of the numeric value of the system page identifier, said mathematical function comprising generation of a preliminary index to an entry in the system page table, multiplication of the preliminary index by a predetermined integer, and selection of sufficient low order digits of the product to conform the size of the result to the size of the system page table indices;

(c) entry retrieval means receiving the index generator means output encoding the initial index for, responsive to the start signal, supplying sequentially the entries within the block of locations starting at the initial index received from the index generator means, each such entry being supplied responsive to one of a series of retrieval signals; and

(d) comparison means receiving the system page identifier to be converted to a real memory address, for supplying a first retrieval signal to the entry retrieval means responsive to the start signal and receiving the entry retrieved responsive thereto, and for comparing the system page identifier to be converted to the system page identifier contained in the just-received entry, and responsive to equality therebetween supplying the real memory address stored in the just-received entry as the desired real memory address, and responsive to inequality supplying another retrieval signal to the entry retrieval means.

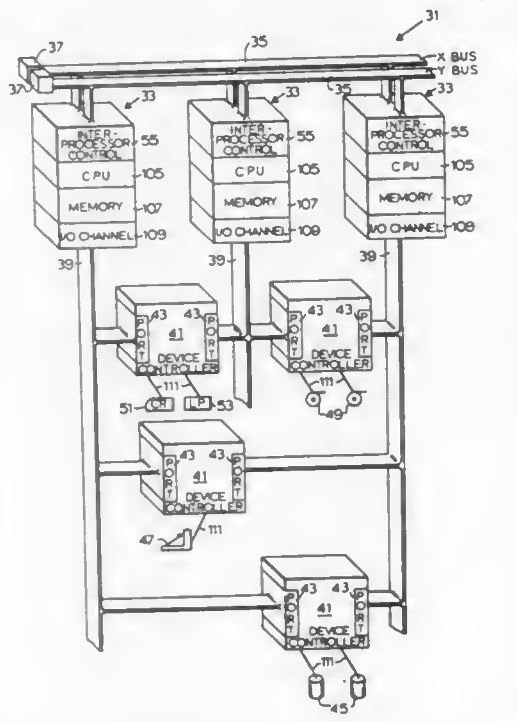
4,356,550
MULTIPROCESSOR SYSTEM

James A. Katzman, San Jose; Joel F. Bartlett, Palo Alto; Richard M. Bixler, Sunnyvale; William H. Davidow, Atherton; John A. Despotakis, Pleasanton; Peter J. Graziano; Michael D. Green, both of Los Altos; David A. Greig; Steven J. Hayashi, both of Cupertino; David R. Mackie, Ben Lomond; Dennis L. McEvoy, Scotts Valley; James G. Treybig, and Steven W. Wierenga, both of Sunnyvale, all of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Division of Ser. No. 721,043, Sep. 7, 1976, Pat. No. 4,228,496. This application May 6, 1980, Ser. No. 147,305

Int. Cl.^{3} G06F *11/20*

U.S. Cl. 364—200 **7 Claims**



1. A distributed power system for a multiprocessor system of the kind in which separate processor modules are interconnected for parallel processing, said distributed power system comprising,

a plurality of separate processor modules,

interprocessor bus means interconnecting the processor modules for signaling and data transfer between the processor modules,

a plurality of device controllers for controlling the transfer of data between a plurality of processor modules and a plurality of peripheral devices,

multiple ports in each device controller and a separate input/output bus associated with each port for connecting each device controller for access by different processor modules, and

distributed power supply means including a plurality of separate power supplies for providing continued operation of the multiprocessor system in the event of a failure of a single power supply to a part of the multiprocessor system,

said distributed supply means including a separate power supply for each processor module, a processor power supply bus connecting each processor module to its associated power supply, device controller power supply bus means connecting at least two of the separate power supplies to each device controller and switch means connecting each device controller to the device controller power supply bus means and effective in the event of the failure of one of the power supplies connected to any device controller to continue to supply power without interruption to the device controller from the other power supply connected to the device controller.

4,356,551
KNOCK DETECTING METHOD

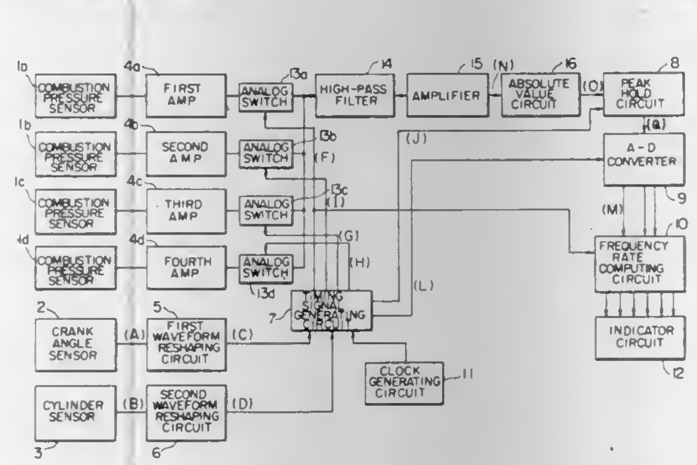
Kazuo Iwase, Okazaki; Hisasi Kawai, Toyohashi; Kunimasa Yoshimura, Susono; Toshimitsu Ito, and Yoshiyasu Ito, both of Toyota, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 4, 1980, Ser. No. 184,188

Claims priority, application Japan, Sep. 5, 1979, 54-113916

Int. Cl.^{3} F02P *5/14, 17/00*

U.S. Cl. 364—431.08 **8 Claims**



1. A knock detecting method for an internal combustion engine having a plurality of cylinders and pistons therein, comprising the steps of:

detecting vibrations produced by a combustion event in each of the cylinders of said engine to generate an analog vibration output corresponding to said vibrations;

sample-and-holding a peak value of said analog vibration output generated during a predetermined period when each of said pistons is near top dead center of each said cylinder;

converting said peak value into a digital quantity;

storing said digital quantity a predetermined number of times for each of said cylinders, producing an average from a predetermined number of stored quantities for each of said cylinders, determining a proportion of those of said stored output data of each said cylinder which are greater than said average to obtain individual-cylinder frequency rates, and producing an average value of said individual-cylinder frequency rates for the number of said cylinders to obtain an all-cylinder frequency rate; and

determining that there exists a knock when the individual-cylinder frequency rate of at least one of said cylinders is greater than a first predetermined value or when said all-cylinder frequency rate is greater than a second predetermined value and thereby generating an output.

7. A device for detecting knocking in an internal combustion engine having a plurality of cylinders, said device comprising:

means for generating a knocking signal related to the level of vibrations during a predetermined period around the top dead center of each said cylinder;

means for generating an individual-cylinder frequency signal for each of said cylinders, each said individual-cylinder frequency signal being related to the number of times said knocking signals for a corresponding one of said cylinders exceeds a first predetermined value, and generating an all-cylinder frequency signal related to the number of times all of said knocking signals exceed a second predetermined value; and

means for determining that knocking exists when at least one of said all cylinder frequency signal and said individual-cylinder frequency signals of at least one of said cylinders is greater than third and fourth predetermined values, respectively, and thereby generating an output.

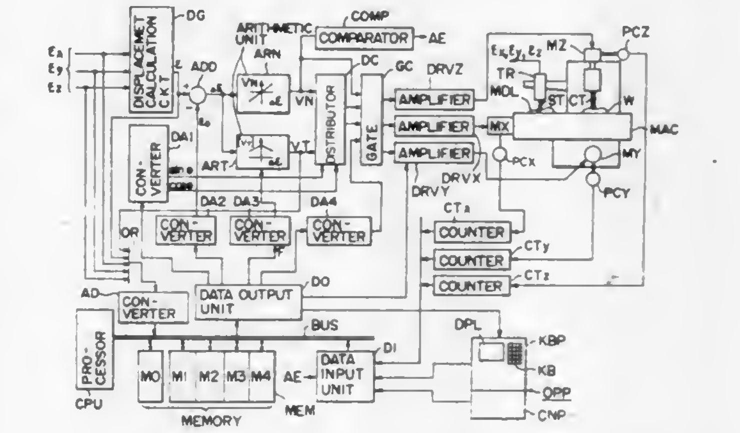
4,356,552
TRACER CONTROL EQUIPMENT

Ryoji Imazeki, and Etsuo Yamazaki, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,670

Int. Cl.^{3} G06F *15/46;* G05B *19/37*

U.S. Cl. 364—474 **16 Claims**



1. A tracer control system which is selectively operable in a plurality of trace modes for tracing a model, said system comprising:

means for calculating trace direction and trace velocity from displacement signals of a tracer head tracing the model surface during a selected tracing operation corresponding to a selected one of said trace modes;

trace mode selecting means for selecting one of said plurality of trace modes;

display means for displaying a respective set of parameters for defining said selected tracing operation for the selected trace mode; and

means for selectively setting the value of each said parameter during the display thereof.

4,356,553
METHOD FOR THE MEASURING OF ELECTRICAL POWER

Benedikt Steinle, Zug; Gernot Schneider, Baar, and Hans Nuenlist, Unterägeri, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

PCT No. PCT/CH79/00119, § 371 Date Jun. 25, 1980, § 102(e) Date Jun. 25, 1980, PCT Pub. No. WO80/01206, PCT Pub. Date Jun. 12, 1980

PCT Filed Sep. 5, 1979, Ser. No. 201,489

Claims priority, application Switzerland, Dec. 1, 1978, 12300/78

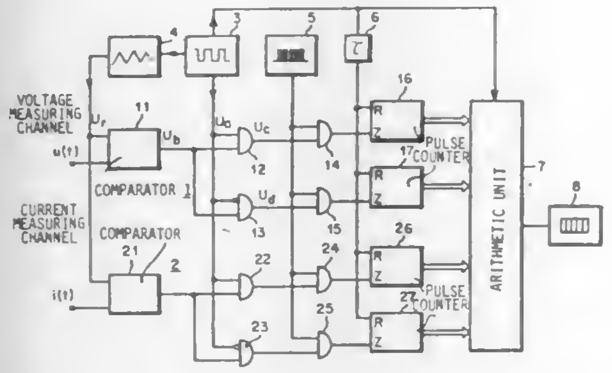
Int. Cl.^{3} G01R *21/06*

U.S. Cl. 364—483 **8 Claims**

1. In a method of measuring power delivered at an alternating voltage by an alternating current to a load, the steps comprising:

comparing the instantaneous alternating voltage and the instantaneous alternating current with a periodically varying reference signal having a relatively high frequency compared to the frequency of the alternating voltage and the alternating current, thereby obtaining a plurality of first voltage-intersection and current-intersection points during the negative-going portions of the reference signal, and a plurality of second voltage intersection and current-intersection points during the positive-going portions of the reference signal,

said voltage intersection points representing instantaneous analog measurement values for the voltage, and said current intersection points representing instantaneous analog measurement values for the current,



transforming the measured analog voltage values and the measured analog current-values into digital voltage values and digital current-values, respectively,

multiplying the digital voltage values and the digital current-values at the first intersection points with one another, so as to obtain a plurality of first instantaneous power outputs,

multiplying the digital voltage values and the digital current-values at the second intersection points with one another, so as to obtain a plurality of second instantaneous power outputs, and

continuously integrating said power outputs so as to obtain an average power output.

4,356,554

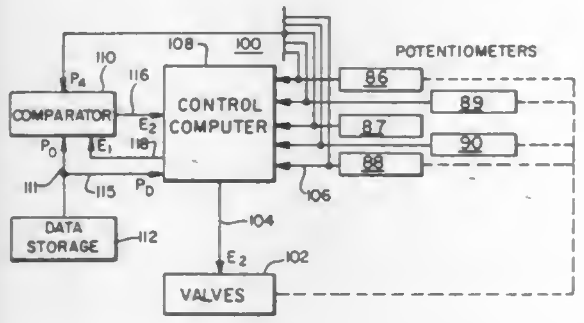
METHOD AND APPARATUS FOR COMPENSATING FOR SYSTEM ERROR IN AN INDUSTRIAL ROBOT CONTROL

Kenneth J. Susnjara, Santa Claus, and Michael N. Diamond, Grand View, both of Ind., assignors to Thermwood Corporation, Dale, Ind.

Filed Sep. 12, 1980, Ser. No. 186,636

Int. Cl.^{3} G05B *19/23*

U.S. Cl. 364—513 **8 Claims**



5. A method of controlling a robot mechanism movable about a plurality of axes and through a plurality of motions for moving an implement from point to point over a predetermined path and having means for moving the robot mechanism and means for selectively controlling said means for causing the robot mechanism to operate over a predetermined path, comprising the steps of:

storing in prescribed locations of an operating data storage means operating data for a series of movements of the robot mechanism through a predetermined sequence of motions,

sensing the positions of the robot mechanism as each prescribed motion is completed and supplying corresponding sensor output signals,

comparing on a motion by motion basis the actual positions of the robot mechanism as determined from said sensor output signals with, respectively, corresponding desired positions of said robot mechanism as determined from said operating data and producing a first error signal having a value determined by the result of the comparison,

comparing on motion by motion basis the actual positions of the robot mechanism as determined from said sensor output signals with, respectively, corresponding desired positions of said robot mechanism as determined from said operating data and with said first error signal to produce a second error signal having a value corresponding with the result of the comparison and

moving the robot mechanism through a predetermined series of motions in increments corresponding with the values of said second error signal.

4,356,555

METHOD OF RESTORING A PICTURE CELL BY ESTIMATION WITH HIGH DENSITY

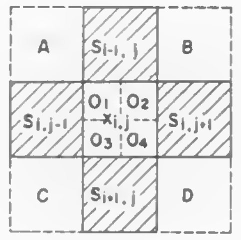
Koichi Ejiri, Chiba; Morisumi Kurose, Yokohama, and Seiji Hayakawa, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 20,054, Mar. 13, 1979, abandoned. This application Aug. 6, 1980, Ser. No. 175,703

Claims priority, application Japan, Mar. 24, 1978, 53-33843

Int. Cl.^{3} H04N *1/40*

U.S. Cl. 364—515 **3 Claims**



1. In a method of forming an image of a picture divided into plural equal square picture cells, wherein data compression is employed by sampling only selected of said cells in a checkered pattern in which each non-sampled cell is surrounded above, below and on both sides thereof by adjacent sampled picture cells, and said image is formed based on said sampled cells, the improvement comprising:

generating sampled data indicative of the light density of each of said sampled picture cells adjacent each non-sampled picture cell;

dividing each non-sampled cell into four separate sub-cells;

firstly determining how many of said sub-cells of each non-sampled cell are to be assigned a first predetermined light density and how many thereof are to be assigned a second predetermined light density based on the generated sampled light density data indicative of the light density of said adjacent sampled picture cells;

secondly determining which of said sub-cells are to be assigned said first predetermined light density and said second predetermined light density based on relative comparisons of the light density of predetermined subcombinations of the sampled data of said adjacent sampled picture cells;

generating restored data based on said steps of firstly determining and secondly determining, said restored data defining which of said sub-cells of each non-sampled picture cell have assigned thereto said first predetermined light density and which have assigned thereto said second predetermined light density; and

reproducing said image of said picture based on the sampled data indicative of the light density of said sampled picture cells and the restored data indicative of the light density of each sub-cell of each non-sampled picture cell.

4,356,556

METHOD OF DETERMINING THE BOUNDARIES OF A MEASURING PATH OF A GEAR FLANK TESTING APPARATUS AND GEAR FLANK TESTING APPARATUS FOR PERFORMANCE OF THE METHOD

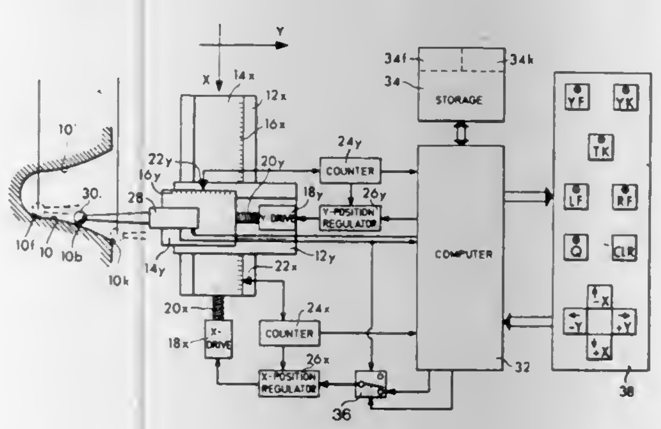
Armin Sterki, Uetikon, Switzerland, assignor to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland

Filed Sep. 18, 1980, Ser. No. 188,843

Claims priority, application Switzerland, Oct. 11, 1979, 9184/79

Int. Cl.^{3} G01B *5/20, 7/28;* **G06F** *15/46*

U.S. Cl. 364—560 **2 Claims**



2. A tooth flank-testing apparatus for determining the boundaries of a measuring path of the tooth flank-testing apparatus, comprising:

a measuring feeler;

a cross-slide arrangement at which there is arranged said measuring feeler;

said cross-slide arrangement comprising a X-slide movable in the direction of the tooth width of a test piece and a Y-slide movable in the direction of the tooth height of the test piece;

an X-drive for moving said X-slide and which comprises:
  an X-servomotor;
  an X-position transmitter;
  an X-position regulator;

a Y-drive for moving said Y-slide and which comprises:
  a Y-servomotor;
  a Y-position transmitter; and
  a Y-position regulator;

both drives being selectively manually controllable or by means of a program-controlled computer;

said computer processing, apart from signals delivered by the position transmitters, also signals delivered by the measuring feeler itself in accordance with the deflection of its measuring head and interrupting the course of the computer program when the deflection exceeds a predetermined value;

storage means operatively connected with said computer for storage of position data of a tooth addenum point and a tooth base point as boundaries of a measuring path through which moves the feeler head along random number of tooth flanks; and

change-over switch means for selectively connecting the X-position regulator with the computer or the measuring feeler.

4,356,557

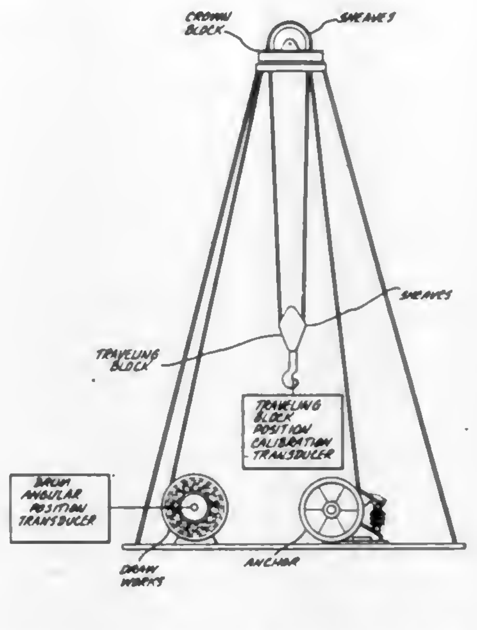
WINCH DRUM CABLE LENGTH MEASUREMENT APPARATUS

Leo A. Bell, Houston, Tex., and William H. Terbrack, Irvine, Calif., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 893,874, Apr. 6, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,334

Int. Cl.^{3} G01B *7/04;* **G06F** *15/46*

U.S. Cl. 364—562 **3 Claims**


CROWN BLOCK
SHEAVES
SHEAVES
TRAVELING BLOCK
TRAVELING BLOCK POSITION CALIBRATION TRANSDUCER
DRUM ANGULAR POSITION TRANSDUCER
DRAW WORKS
ANCHOR

1. An improved wire length measurement apparatus for converting absolute angular position data of a drum motion transducer for a drum wrapped with multiple nested layers of coplanar, substantially round and multiturn wire into an output indication of the position of a traveling block attached to the wire, wherein the output indication is accurate independent of the number of layers of wire, the drum diameter and the diameter of the wire, said apparatus comprising:

(a) summing amplifier means for converting an input signal representing the absolute angular drum position to a wrap signal representing the length (L) of wire wound onto the drum;

(b) a first layer input means for applying an input signal to said summing amplifier representing the number of turns wound onto the first of said nested layers and for setting the gain of said summing amplifier such that said wrap signal represents the length of wire wrapped onto the drum;

(c) an isolation means, connected between the output of said drum motion transducer and the input of said first layer input means, for isolating said drum motion transducer and for producing a turns signal proportional to the output signal of said drum motion transducer and representing the absolute angular position of the drum relative to its position at a given initial setting;

(d) a second layer input means connected in parallel to the first layer input means for varying the gain of said summing amplifier such that when wire has been wrapped onto the second layer, the wrap signal of said summing amplifier represents the amount of wire wrapped onto both the first and second layers;

(e) an additional layer input means for each additional layer of wire to be wrapped for the same purposes as the second layer input means;

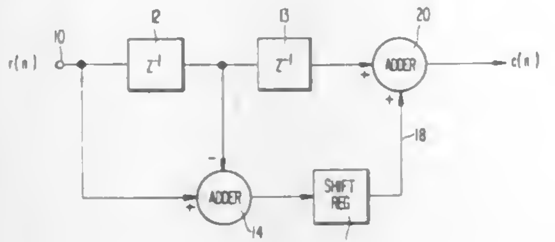
(f) a layer activation means connected to the inputs of said second and additional layer input means for activating said second and additional layer input means, thereby changing the gain of said summing amplifier, when the turns signal of said isolation means, representing the absolute angular drum position, indicates that wire is being wrapped onto the second and additional layers seriatem; and

(g) an output means connected between the output of said summing amplifier and the input of an output display for converting the wrap signal of said summing amplifier to an output signal in convenient engineering units for display.

4,356,558
OPTIMUM SECOND ORDER DIGITAL FILTER

William J. Owen, Littleton, and Robert A. Booker, Evergreen, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Dec. 20, 1979, Ser. No. 105,489
Int. Cl.^{3} G06F *15/31*
U.S. Cl. 364—724 5 Claims

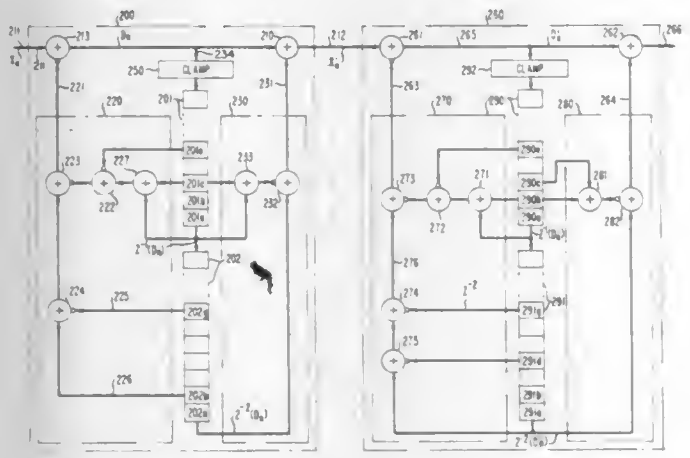


1. A second order digital filter comprising:
- a first delay element receiving an input signal r(n);
- a first summing means receiving the signal r(n) and the output of said first delay element, and producing a summed output;
- shift register means receiving the output of said first summing means and shifting the summed output a predetermined number of places;
- a second delay element coupled to said first delay element, and;
- a second summing means receiving the outputs from said shift register and said second delay element and producing a compensated output c(n), where $\nabla^2 c(n)=r(n)+k_1(r(n)-r(n-1))+k_2((r(n)-r(n-1))-(r(n-1)-r(n-2))$, wherein: k_1 and k_2 are binary scalars, r(n) is the latest input sample, r(n−1) is the prior sample, r(n−2) is the second prior sample.

4,356,559
LOGIC ARRANGEMENT FOR RECURSIVE DIGITAL FILTER

James C. Candy, Middletown, and Bruce A. Wooley, Tinton Falls, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 1, 1980, Ser. No. 174,516
Int. Cl.^{3} G06F *15/34*
U.S. Cl. 364—724 14 Claims

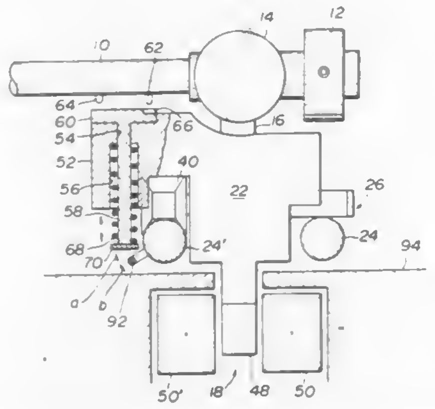


1. Apparatus for filtering an input signal comprising a series of multibit input words, each of said words including an essential portion, a sign bit, and at least L repetitions of said sign bit, said apparatus including:
- first and second serially connected delay elements (**201, 202**) each arranged to store the number of bits contained in one of said input words;
- logic means (**220, 230**) for combining selected ones of the last L bits stored in each of said delay elements in accordance with first and second predetermined relationships to generate feedback and feedforward signals, respectively,
- first means (**213**) for combining, bit by bit, said feedback signal with said input signal to yield an intermediate signal, and
- second means (**210**) for combining, bit by bit, said intermediate signal with said feedforward signal to yield the output signal of said filter,
- characterized in that said apparatus includes means (**250**) responsive to said intermediate signal for forming the input to said first delay element, said means arranged to repeat the last L predetermined bits in each word of said intermediate signal to have the same value as the sign bit of said each word.

4,356,560
LINEAR-TRACKING PICK-UP ARM DRIVE ASSEMBLY FOR AUDIO OR VIDEO DISC PLAYER

Juniti Ohnishi, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 76,702, Sep. 19, 1979, abandoned. This application May 4, 1981, Ser. No. 260,283
Claims priority, application Japan, Sep. 19, 1978, 53-115681; Sep. 19, 1978, 53-115682
Int. Cl.^{3} G11B *21/08, 3/36*
U.S. Cl. 369—221 13 Claims

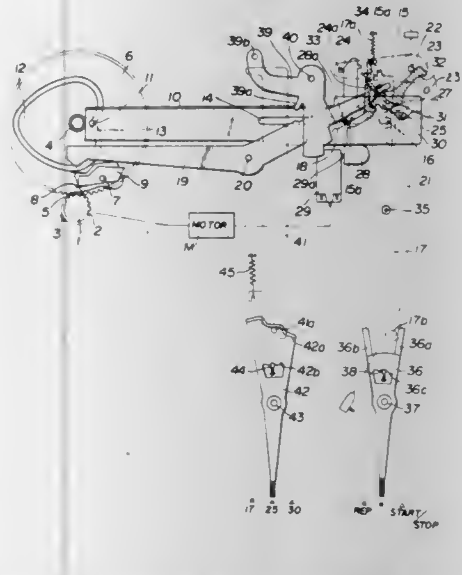


1. A linear-tracking pick-up arm drive assembly for a disc player, comprising horizontally elongated, stationary first and second guide bars spaced apart substantially in parallel from each other; a movable unit supported in weight transmitting relationship on said guide bars and movable along the guide bars, said movable unit carrying thereon a linear-tracking pick-up arm having a leading end and rotatable with respect to said movable unit about a substantially horizontal axis substantially perpendicular to the direction of elongation of said pick-up arm; electromagnetic drive means for driving said movable unit along said guide bars; and pick-up arm lifting means engageable with said pick-up arm for turning said pick-up arm upwardly about said horizontal axis with respect to said movable unit, said lifting means including a lifting member supported by said movable unit and vertically movable with respect to said movable unit and said pick-up arm, and drive means for vertically driving said lifting member, said pick-up arm having a first projection and a second projection, said projection and said second projection being spaced from one another in the direction of elongation of said pick-up arm and projecting downward toward said lifting member, said first projection being remoter from said leading end of the pick-up arm than said second projection, said lifting member being formed with an open-ended groove positioned below said first projection and adapted to capture said first projection when said lifting member is brought into engagement with said pick-up arm.

4,356,561
CONTROL APPARATUS IN AUTOMATIC AUDIO DISC PLAYER

Yuji Ikedo, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,138
Claims priority, application Japan, Mar. 27, 1979, 54-36063; Mar. 27, 1979, 54-36064; Mar. 27, 1979, 54-36065; Mar. 27, 1979, 54-39417[U]
Int. Cl.^{3} G11B *17/30, 21/02*
U.S. Cl. 369—225 13 Claims

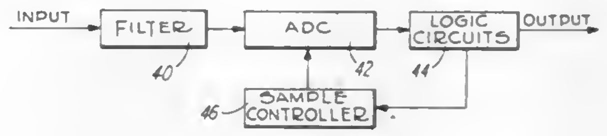


1. A control apparatus incorporated in an automatic audio disc player which includes a base, a turn table rotatably mounted on said base and a tone arm swingably mounted on said base for picking up audio signals recorded on a recording medium disposed on said turn table, the apparatus comprising a drive member so mounted on said base as to linearly move between a home position and an utmost position with respect to said base; control means connected to said drive member, for urging said drive member to move from said home position up to said utmost position and to return to said home position when it is triggered; trigger means connected to said control means, for triggering said control means when operated; a lead member fixedly connected to said tone arm and being swingable together with said tone arm; latch means mounted on said drive member, for latching said lead member on to said drive member when said drive member takes said utmost position; limit means mounted on said base and being engageable with said lead member, for limiting the extent of rotation of said lead member when said slide member exists at and near said utmost position; and cam means associated with said drive member, for raising said tone arm when said drive member exists at and near said utmost position, said control means including a switch lever loosely engaged at the central portion thereof with said drive member, a mechanically-operated switch fixedly mounted on said base and having the armature button thereof engaged with one end of said switch lever, said switch being non-conductive when said the armature button is urged, hold means connected with said tone arm, for holding the other end of said switch lever, support means connected to said trigger means, for supporting said central portion of said switch lever until it is triggered, so that said switch lever urges said the armature button of said switch, a prime mover connected to said switch to start rotation when said switch becomes conductive, and a cam arrangement connected to said drive member, for pushing said drive member from said home position to said utmost position and subsequently for retracting said drive member from said utmost position to said home position, when it is triggered.

4,356,562
METHOD AND APPARATUS FOR DEMULTIPLEXING ELECTRICAL SIGNALS

Keith G. Wright, Nepean, Canada, assignor to Control Data Canada, Ltd., Mississauga, Canada

Filed Mar. 4, 1980, Ser. No. 127,140
Claims priority, application Canada, Feb. 21, 1980, 346120
Int. Cl.^{3} H03D *3/18;* H04J *3/06;* H04L *7/04*
U.S. Cl. 370—20 32 Claims



1. A method of demultiplexing a multiplexed signal comprising components representing the result of multiplexing at least one original signal and a reference frequency having in phase and quadrature components, said method comprising the steps of:
- (a) sampling said multiplexed signal at a controllable frequency which is a multiple of said reference frequency to provide a series of samples;
- (b) rearranging the samples of said series into different series representative of said at least one original signal and the in phase and quadrature components of said frequency;
- (c) determining the phase differential between said reference and controllable frequencies by determining the d.c. content of the series which represent the in phase and quadrature components of the reference frequency; and
- (d) adjusting said controllable frequency toward synchronism with said reference frequency by an amount which is a function of the phase differential determined in step (c).

31. A bit detector for detecting and identifying the bit stream of a signal comprising a pulse code modulated sequence of data transmitted at a transmission rate Fc, said detector comprising:
- an analog-to-digital converter for detecting the voltage level of said signal at predetermined instants of time, converting the detected voltage levels into a series of electrical signals representing binary numbers "1" or "0" wherein a "1" represents a positive voltage level and a "0" represents a negative voltage level, and outputting said series of electrical signals;
- a controller for generating and providing detecting signals to said converter, said controller being adapted to generate said detecting signals at a controllable rate which is substantially equal to two times said transmission rate and having a phase control for selectively advancing or delaying said controllable rate and a magnitude control for selectively increasing or reducing the magnitude of said controllable rate; and
- electrical circuit means for analyzing said series of electrical signals in groups of five signals at intervals of two signals, with the first signal in each group representing original data, by comparing the second and fourth signals with their adjacent signals, and providing a control signal to said controller;
- said controller being responsive to said control signal for adjusting at least one of said phase and magnitude controls.

4,356,563
AUTOMATIC DIGITAL TELEPHONE EXCHANGE

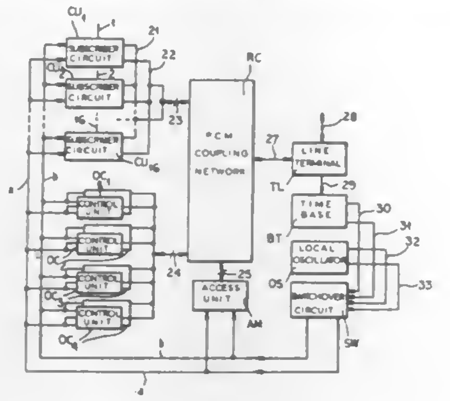
Ernesto Viale, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Continuation-in-part of Ser. No. 128,519, Mar. 10, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 275,020
Claims priority, application Italy, Mar. 15, 1979, 67544 A/79
Int. Cl.^{3} H04Q *3/54, 11/04*
U.S. Cl. 370—58 5 Claims

1. In an automatic digital telephone exchange serving a

group of associated subscriber stations divided into several subgroups, in combination:

a set of substantially identical control units assigned to each subgroup of subscriber stations and programmed to carry out different but mutually complementary operations in the establishment and termination of a telephone connection involving at least one station of the respective subgroup;



a common PCM coupling network for each set accessible to each of said control units thereof, to the subscriber stations of the respective subgroup, and to terminal means common to said group; and

an access unit for each set responsive to signals from said control units thereof for satisfying requests for connection to said coupling network, said control units communicating with one another via said coupling network under the command of said access unit.

4,356,564

DIGITAL SIGNAL TRANSMISSION SYSTEM WITH ENCODING AND DECODING SECTIONS FOR CORRECTING ERRORS BY PARITY SIGNALS TRANSMITTED WITH DIGITAL INFORMATION SIGNALS

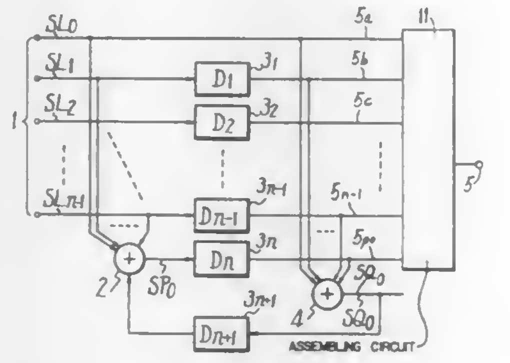
Toshitada Doi, Kanagawa; Shunsuke Furukawa, Tokyo, and Kenji Nanba, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,721

Claims priority, application Japan, Feb. 27, 1979, 54-22460

Int. Cl.^{3} G06F *11/10*

U.S. Cl. 371—40 **10 Claims**



1. In a digital transmission system in which a digital signal is transmitted in the form of digital words and in which at least first and second error correcting signals are included in the digital signal so transmitted, an encoding section comprising:

means for applying a sequence of selected ones of said words of the digital signal to a first channel and the remaining words to at least one further channel;

first adder means for adding a plurality of said words of the digital signal together with said second error correcting signal to produce said first error correcting signal;

delay means for delaying said remaining words of the digital signal by one amount of delay and for delaying said first error correcting signal by another amount of delay;

second adder means for adding at least one of the delayed words and the delayed first error correcting signal to produce said second error correcting signal;

feedback means for feeding said second error correcting signal back to said first adder means so that the latter adds said second error correcting signal together with said plurality of words of the digital signal to produce said first error correcting signal; and

output means for providing said words of the digital signal, said delayed first error correcting signal and said second error correcting signal as the output of said encoding section to be transmitted.

4,356,565

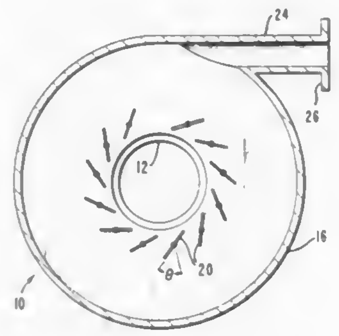
LASER BEAM TUBE WITH HELICAL GAS FLOW FOR REDUCING THERMAL BLOOMING IN THE LASER BEAM

Peter I. Shen, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 26, 1979, Ser. No. 97,286

Int. Cl.^{3} H01S *3/03*

U.S. Cl. 372—61 **6 Claims**



1. An arrangement for reducing thermal blooming in a laser beam comprising:

a tubular member;

means for causing a laser beam which is subject to thermal blooming to propagate longitudinally through said tubular member; and

means operatively associated with said tubular member for producing vortical flow of a gas having low absorption properties at the wavelength of said laser beam and for introducing the vortically flowing gas into said tubular member such that said gas is caused to flow along a helical path within said tubular member with a ratio of the tangential velocity to the axial velocity of the vortically flowing gas such that a temperature gradient of an offsetting nature to the temperature gradient due to said thermal blooming of said beam is produced.

4,356,566

SYNCHRONIZING SIGNAL DETECTING APPARATUS

Ryoichi Wada, Habikino; Takanori Seno, and Mitsuharu Tsuchiya, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

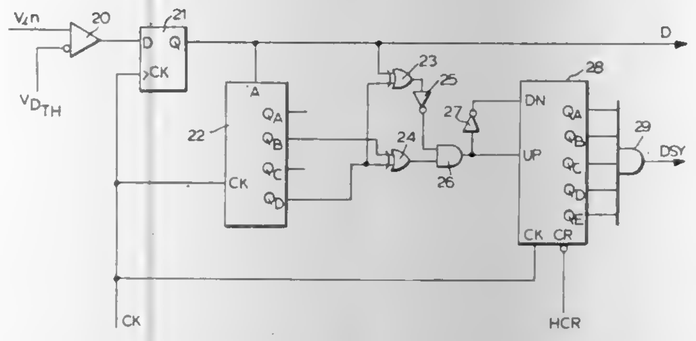
Filed Feb. 4, 1980, Ser. No. 118,220

Claims priority, application Japan, Feb. 8, 1979, 54-13593

Int. Cl.^{3} H04L *7/00*

U.S. Cl. 375—116 **5 Claims**

1. A synchronizing signal detecting circuit comprising a shift register which introduces input pulses in succession in synchronism with clock pulses, a gate circuit which detects whether the contents of said shift register corresponds to a fixed predetermined pulse pattern and which procudes a coincidence signal when the contents of said shift register corresponds to said fixed predetermined pulse pattern, and a detector circuit which is connected to said gate circuit and which detects a duration period of said coincidence signal, said duration period corresponding to the period of a fixed predetermined number of said fixed predetermined pulse patterns.



4,356,567

RADIO RECEIVER WITH BANDWIDTH SWITCHING

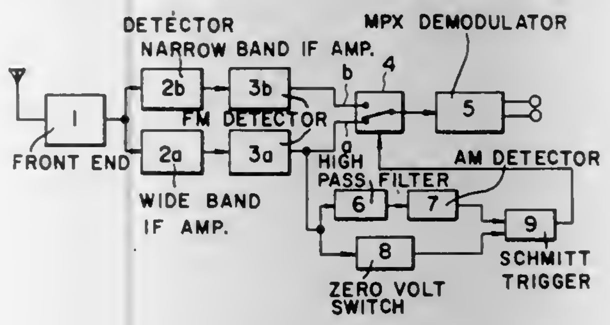
Yoichi Eguchi, and Takeshi Yokota, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,648

Claims priority, application Japan, Jun. 28, 1977, 52-76771; Jun. 28, 1977, 52-76772

Int. Cl.^{3} H04B *1/16*

U.S. Cl. 455—177 **6 Claims**



1. A radio receiver, comprising:

a first intermediate frequency amplifier having a broad band characteristic;

a first detector having a tuning frequency for detecting the output of said first intermediate frequency amplifier;

a second intermediate frequency amplifier having a narrow band characteristic;

a second detector having a tuning frequency for detecting the output of said second intermediate frequency amplifier;

an interference signal detecting means for providing an output when the magnitude of a noise component such as an interference distortion signal or a pulsating noise signal contained in a demodulation signal of said first detector exceeds a predetermined magnitude;

a zero volt switch which detects the level of a near-by interference signal present in the vicinity of the tuning frequency of said first or second detector and provide an output when the level of the near-by interference signal is at a predetermined level;

a control signal generating means for generating a control signal in response to either of the outputs of said interference signal detecting means and zero volt switch; and

switching means controlled by the presence or absence of said control signal to switch between a first position in which it passes the demodulation signal of said first detector and a second position in which it passes the demodulation signal of said second detector.

4,356,568

RECEPTIVE CONDITION AUTOMATIC SELECTION DEVICE FOR FM RECEIVER

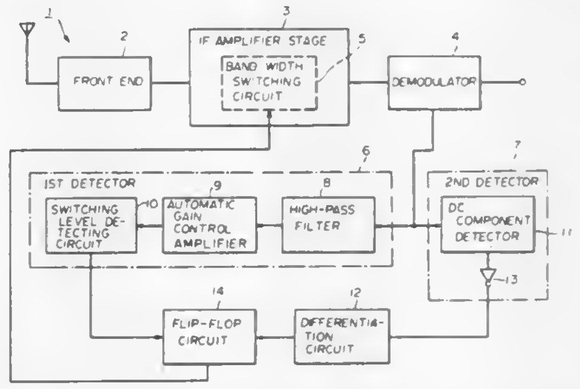
Minoru Ogita, and Naobumi Kimura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 23, 1978, Ser. No. 918,513

Claims priority, application Japan, Jul. 2, 1977, 52-87765[U]

Int. Cl.^{3} H04B *1/10, 1/16*

U.S. Cl. 455—212 **5 Claims**



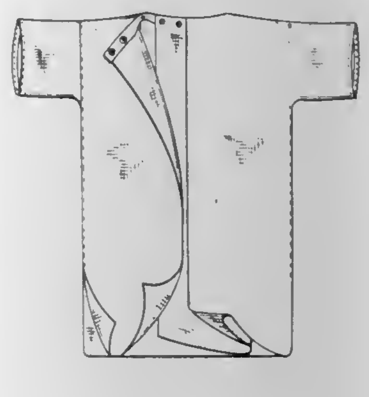
1. A reception condition selection device for an FM receiver, comprising: means for changing a signal receiving frequency band width of said receiver; a first detector for detecting a noise component in a demodulation signal from a demodulator in said receiver and producing a first signal when said noise component is higher than a first detection level; a second detector for detecting a tuning condition of said receiver and producing an output signal when the receiver is tuned; means for generating a second signal in accordance with said second detector output signal; bistable circuit means responsive to said first signal for switching said band width changing means to a signal reception of a first band width and responsive to said second signal for switching the band width changing means to a signal reception of a second band width which is broader than said first band width; and

a third detector for detecting the noise component in said demodulation signal and producing a third signal when said noise component is lower than a second detection level which is higher than said first detection level, said second signal generating means including a logical circuit producing said second signal in response to the existence of both said third signal and said second detector output signal.

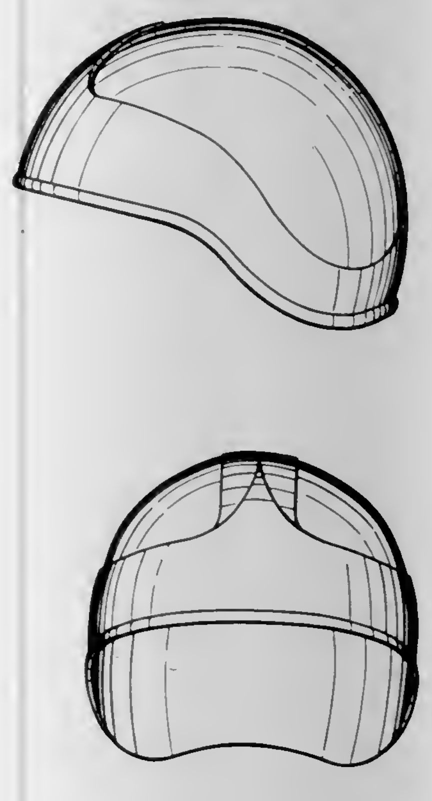
DESIGNS

OCTOBER 26, 1982

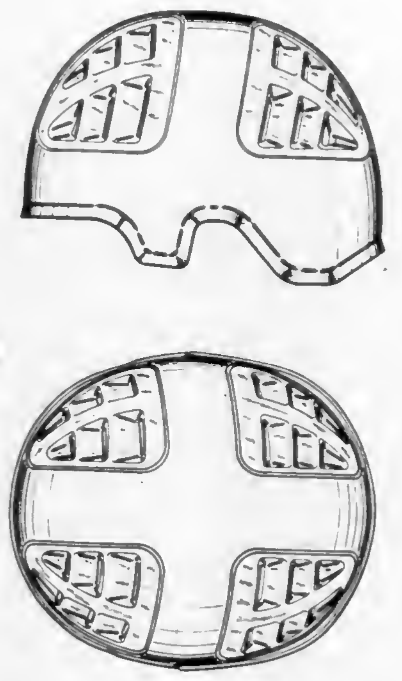
266,625
HOSPITAL PATIENT GOWN
Seymour S. Herman, New York, N.Y., assignor to Stan Herman Studio, Inc., New York, N.Y.
Filed May 1, 1981, Ser. No. 259,443
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—16



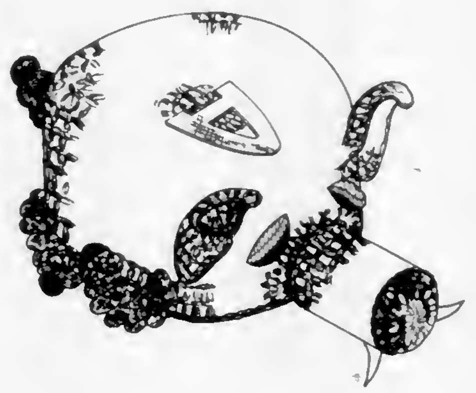
266,626
POLICE HELMET
Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Sep. 11, 1980, Ser. No. 186,283
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—231



266,627
PROTECTIVE HELMET FOR ATHLETES
Elwyn R. Gooding, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.
Filed Sep. 11, 1980, Ser. No. 186,718
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—231



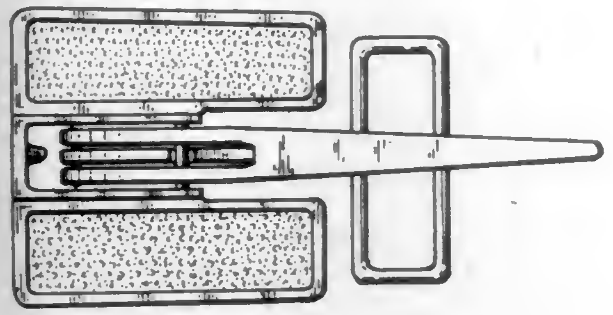
266,628
HAT OR SIMILAR ARTICLE
Dixie A. Bour, 69 Saxony Cir., Little Rock, Ark. 72209
Filed Apr. 14, 1980, Ser. No. 139,866
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—251



266,629
BUCKLE OR SIMILAR ARTICLE

Jack O. Stacy, Tulsa, Okla., assignor to Michial L. Bell, Tulsa, Okla.
Filed Aug. 25, 1980, Ser. No. 181,200
Term of patent 14 years
Int. Cl. D2—*07*

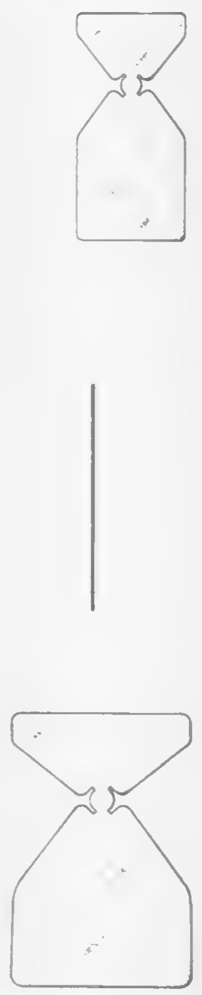
U.S. Cl. D2—444



266,630
BOW TEMPLATE

John D. O'Brien, Palmer, Mass., assignor to Wm. E. Wright Co., West Warren, Mass.
Filed Oct. 17, 1980, Ser. No. 197,783
Term of patent 14 years
Int. Cl. D3—*99*

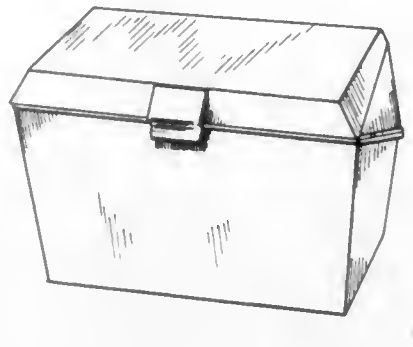
U.S. Cl. D3—26



266,631
DOCUMENT FILE

E. Bryant Crutchfield, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Oct. 31, 1980, Ser. No. 202,849
Term of patent 14 years
Int. Cl. D3—*02*

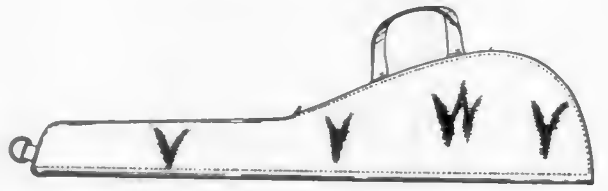
U.S. Cl. D3—30.1



266,632
CASE FOR SPINNING ROD AND ACCESSORIES

Kent A. Schroeder, 419 W. 31st St., Kearney, Nebr. 68847
Filed Nov. 12, 1980, Ser. No. 205,930
Term of patent 14 years
Int. Cl. D3—*02*

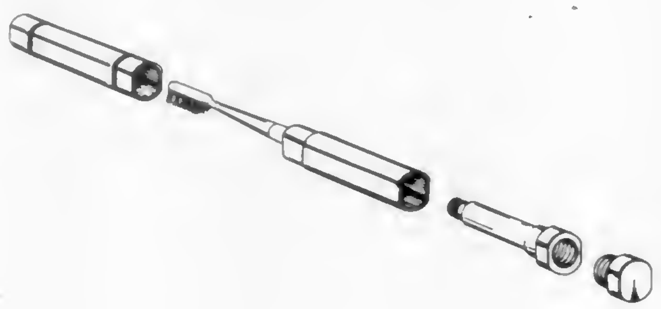
U.S. Cl. D3—38



266,633
PORTABLE DENTAL HYGIENE KIT

John Wink, Kitchener, Canada, assignor to Anja Marketing Inc., Waterloo, Canada
Filed Apr. 21, 1980, Ser. No. 141,967
Claims priority, application Canada, Jan. 8, 1980, 08-01-80-1
Term of patent 14 years
Int. Cl. D4—*02*

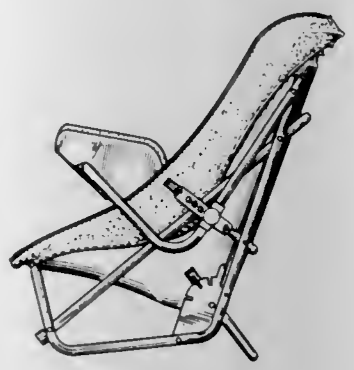
U.S. Cl. D4—18



266,634
JUVENILE SEAT

Roy E. Knoedler, and Otis J. Basey, both of Columbus, Ind., assignors to Cosco, Inc., Columbus, Ind.
Filed Oct. 28, 1980, Ser. No. 201,551
Term of patent 14 years
Int. Cl. D6—*01*

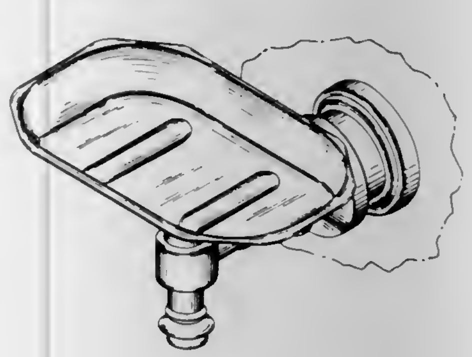
U.S. Cl. D6—9



266,635
SOAP DISH

Gary A. Fleischmann, Sheboygan, Wis., and Lawrence C. Peabody, Rindge, N.H., assignors to Kohler Co., Kohler, Wis.
Division of Ser. No. 138,836, Apr. 10, 1980, Pat. No. Des. 262,922. This application Mar. 19, 1981, Ser. No. 245,330
Term of patent 14 years
Int. Cl. D23—*02*

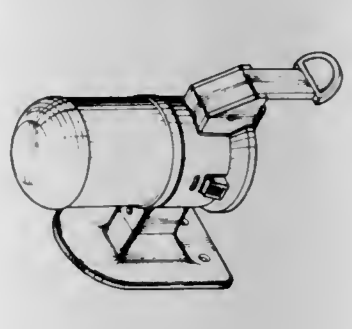
U.S. Cl. D6—90



266,636
SOAP DISPENSER

Haruo Nishimura, Osaka; Masaaki Nakaya, Toyonaka; Katsuji Nakano, Nishinomiya; Noboru Matsuda, Joyo, and Noriyuki Matsumoto, Toyonaka, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan
Filed Feb. 24, 1981, Ser. No. 237,779
Claims priority, application Japan, Nov. 6, 1980, 55-46473
Term of patent 14 years
Int. Cl. D23—*02*

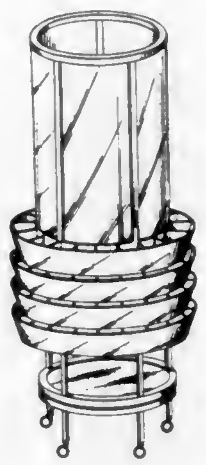
U.S. Cl. D6—95



266,637
COMBINED ADVERTISING DISPLAY STAND AND BROCHURE HOLDER

Michael J. Edwards, 21 Earle St., Cremorne, New South Wales 2090, Australia
Filed Apr. 2, 1980, Ser. No. 136,646
Claims priority, application Australia, Nov. 12, 1979, 79543
Term of patent 14 years
Int. Cl. D06—*04*

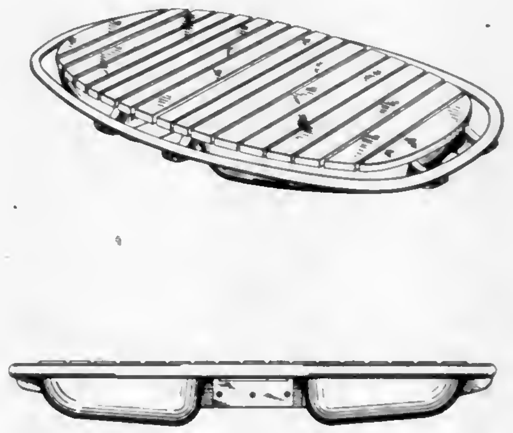
U.S. Cl. D6—146



266,638
SPA TABLE

Donald W. Doman, Janesville, and Alfred W. Elsner, Plymouth, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jul. 25, 1980, Ser. No. 172,458
Term of patent 14 years
Int. Cl. D6—*06*

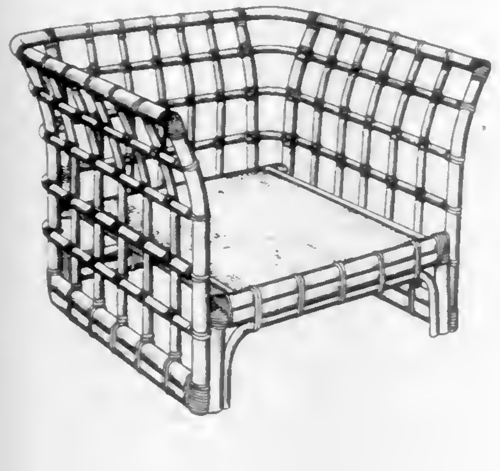
U.S. Cl. D6—177



266,639
CHAIR FRAME CONSTRUCTION

Robert K. Thorpe, Newport Beach, Calif., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Apr. 9, 1980, Ser. No. 138,800
Term of patent 14 years
Int. Cl. D6—*06*

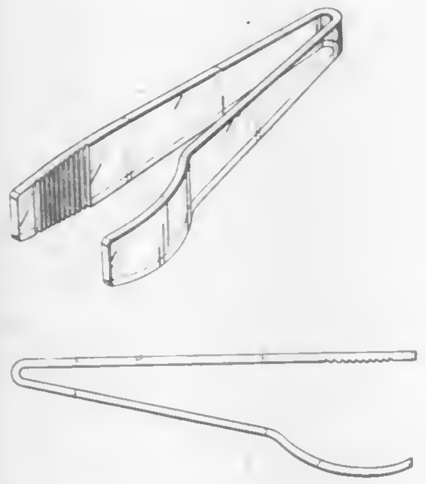
U.S. Cl. D6—191



266,640
TONGS

Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Thermo-Serv, Inc., Anoka, Minn.
Filed Oct. 8, 1980, Ser. No. 195,043
Term of patent 14 years
Int. Cl. D07—*06*

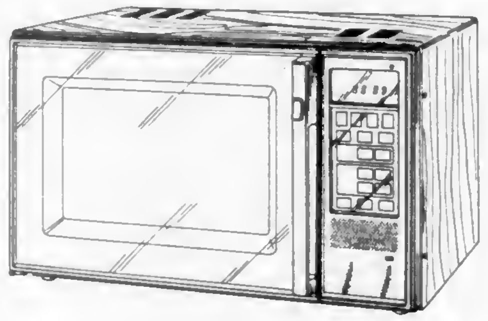
U.S. Cl. D7—105



266,641
MICRO-WAVE OVEN

Masamichi Yamamura, Osaka; Toshio Harada, and Michio Tanaka, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 18, 1980, Ser. No. 217,933
Claims priority, application Japan, Jul. 3, 1980, 55-26648
Term of patent 14 years
Int. Cl. D7—*02*

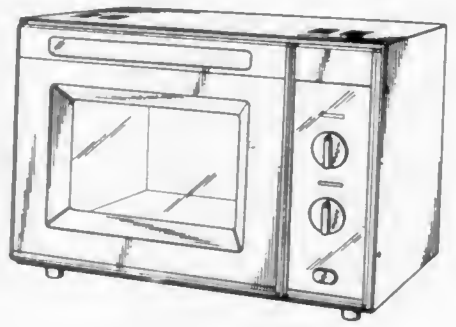
U.S. Cl. D7—128



266,642
MICROWAVE OVEN

Toshio Harada, Nara, Japan; Rolf Feil, Wasserburg, and Roland Vetter, Giengen, both of Fed. Rep. of Germany, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 2, 1981, Ser. No. 269,089
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, MR 5256
Term of patent 14 years
Int. Cl. D7—*02*

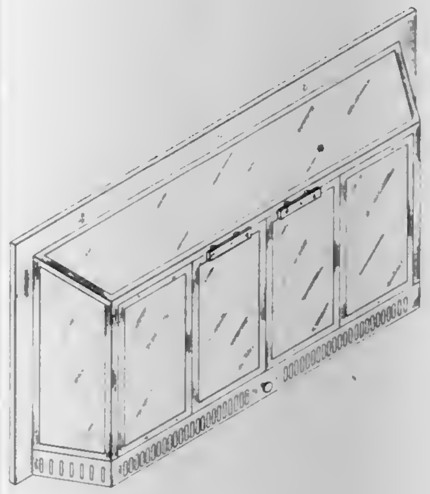
U.S. Cl. D7—128



266,643
FIRE SCREEN

Ralph E. Matthews, Decatur, Ala., assignor to Matthews Machine Co., Inc., Decatur, Ala.
Filed Apr. 23, 1979, Ser. No. 32,719
Term of patent 14 years
Int. Cl. D7—*08*

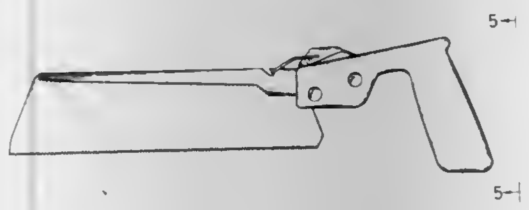
U.S. Cl. D7—208



266,644
HAND SAW

Hiroji Shimizu, Miki, Japan, assignor to Shin Nihon Kinzoku Kabushiki Kaisha, Miki, Japan
Filed Aug. 22, 1980, Ser. No. 180,497
Term of patent 14 years
Int. Cl. D8—*03*

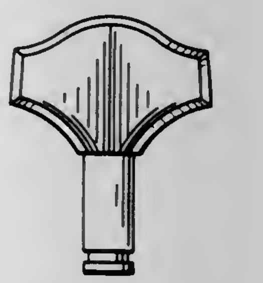
U.S. Cl. D8—95



266,645
PULL

Teresa R. B. Pittenger, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Jun. 23, 1980, Ser. No. 162,130
Term of patent 14 years
Int. Cl. D8—*06*

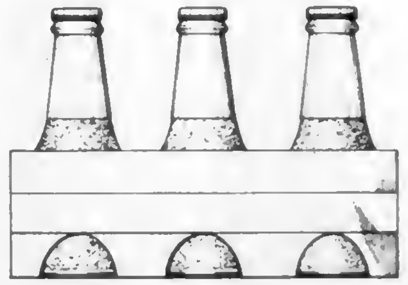
U.S. Cl. D8—307



266,646
PACKAGE OF BEVERAGE BOTTLES

Jean-Claude Beton, Marseilles, France, assignor to Compagnie Francaise des Produits Orangina, Marseilles, France
Filed Nov. 19, 1980, Ser. No. 208,172
Term of patent 14 years
Int. Cl. D9—*03*

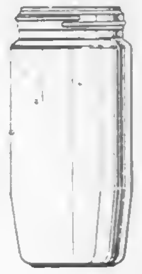
U.S. Cl. D9—337



266,647
JAR

William J. Plewes, Gormley; Alessandro Baggio, and Wolfgang Letzin, both of Toronto, all of Canada, assignors to General Foods Inc., Canada
Filed Nov. 4, 1980, Ser. No. 203,829
Claims priority, application Canada, May 6, 1980, 06-05-80-1
Term of patent 14 years
Int. Cl. D9—*03*

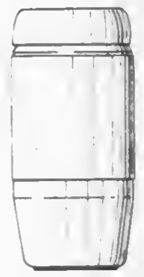
U.S. Cl. D9—349



266,648
COMBINED JAR AND LID

William J. Plewes, Gormley; Alessandro Baggio, and Wolfgang Letzin, both of Toronto, all of Canada, assignors to General Foods Inc., Canada
Filed Nov. 4, 1980, Ser. No. 203,828
Claims priority, application Canada, May 6, 1980, 06-05-80-4
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D9—353



266,649
COMBINED JAR AND LID

William J. Plewes, Gormley; Alessandro Baggio, and Wolfgang Letzin, both of Toronto, all of Canada, assignors to General Foods Inc., Canada

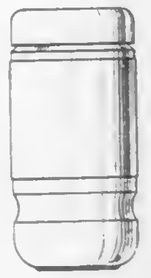
Filed Nov. 4, 1980, Ser. No. 203,917

Claims priority, application Canada, May 6, 1980, 0605-80-3

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—353



266,650
BOTTLE

Timo Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

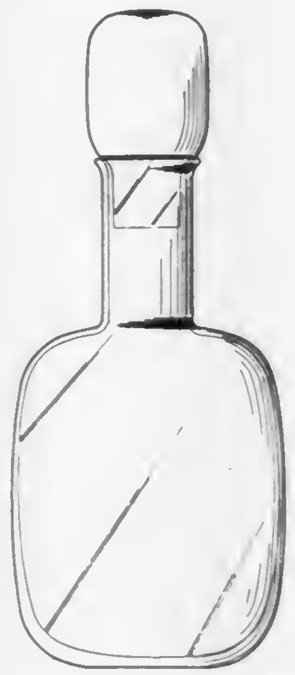
Filed Nov. 8, 1979, Ser. No. 92,489

Claims priority, application Finland, May 18, 1979, 79326

Term of patent 14 years

Int. Cl. D9—*01*

U.S. Cl. D9—354



266,651
BOX COVER

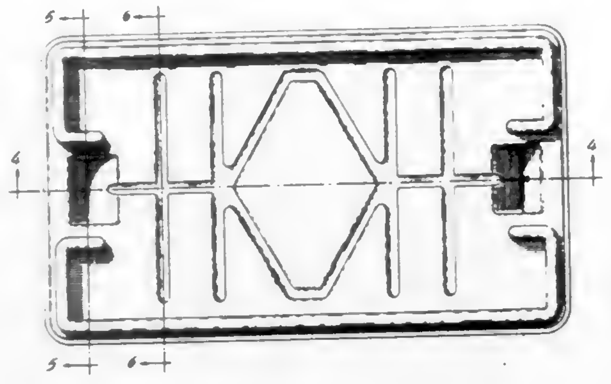
Jean-Marie Chabot, St-Damien, Canada, assignor to Les Industries Provinciales Ltee, St-Damien, Canada

Filed Nov. 4, 1980, Ser. No. 203,997

Term of patent 14 years

Int. Cl. D9—*03*

U.S. Cl. D9—435



266,652
ILLUMINATED WHISTLE

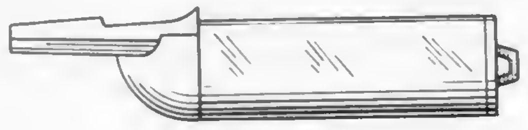
Dietmar Nagel, 147 South Rd., Chester, N.J. 07930

Filed Apr. 21, 1980, Ser. No. 142,419

Term of patent 14 years

Int. Cl. D10—*06*

U.S. Cl. D10—119



266,653
EXTENSION FOR CONE-SHAPED TRAFFIC MARKER

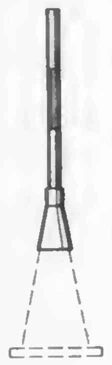
Yang-Hwi Cho, Painesville, Ohio, assignor to Park & Willow Crafts Corp., Painesville, Ohio

Filed Jan. 25, 1980, Ser. No. 115,188

Term of patent 14 years

Int. Cl. D10—*06*

U.S. Cl. D10—121



266,654
NECKLET

Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein

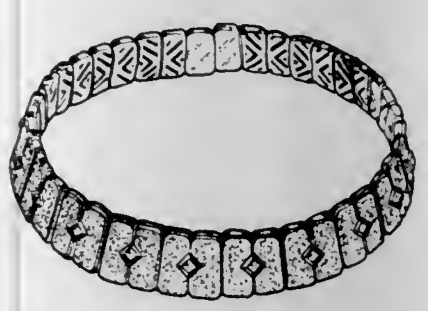
Filed Nov. 18, 1980, Ser. No. 207,988

Claims priority, application Italy, May 27, 1980, 35780/80[U]

Term of patent 14 years

Int. Cl. D11—*01*

U.S. Cl. D11—5



266,655
FIGURINE OF AN ANTEATER

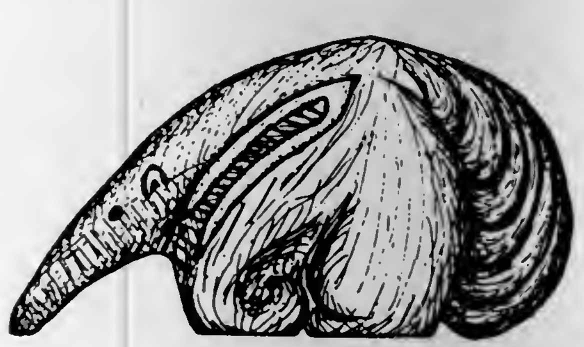
Jesus A. Carbajales Santa Eulalia, and Javier B. Carbajales Santa Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.

Filed May 15, 1978, Ser. No. 906,355

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—158



266,656
FIGURINE OF AN OTTER

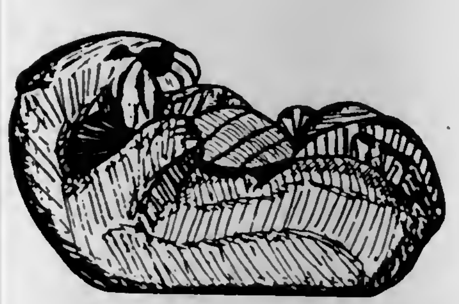
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.

Filed May 15, 1978, Ser. No. 906,356

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—158



266,657
FIGURINE OF A CAMEL

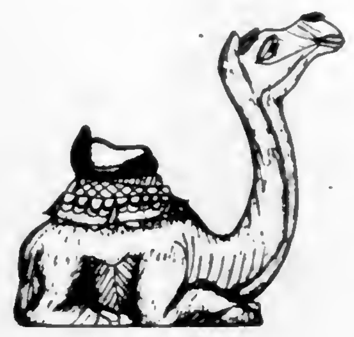
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.

Filed May 15, 1978, Ser. No. 906,358

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—158



266,658
FIGURINE OF A FOX

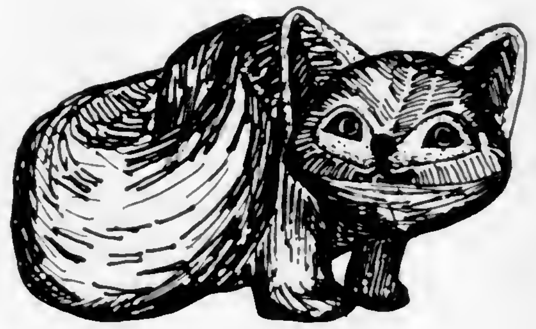
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.

Filed Dec. 15, 1978, Ser. No. 970,006

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—158



266,659
STATUETTE

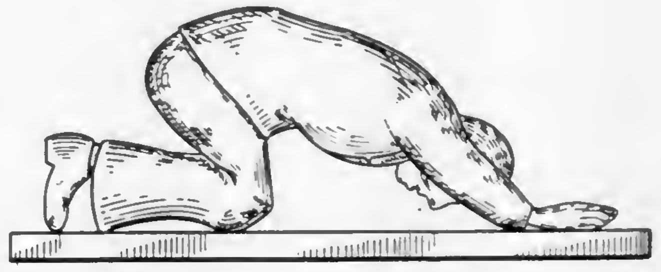
Alexander Kasack, 36 Beech St., Rutherford, N.J. 07070

Continuation-in-part of Ser. No. 811,088, Jun. 29, 1977, abandoned. This application Dec. 20, 1979, Ser. No. 105,443

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D11—160

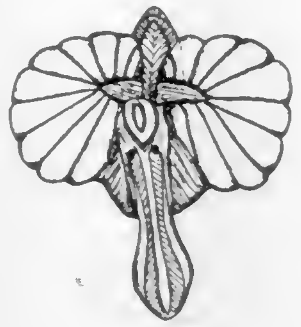


266,660
FIGURINE OF A PELICAN

Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co., Inc., Laguna Hills, Calif.

Filed May 15, 1978, Ser. No. 906,352
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—162

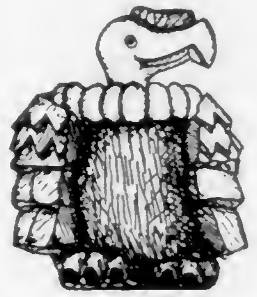


266,661
FIGURINE OF A CONDOR

Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Co. Inc., Laguna Hills, Calif.

Filed May 15, 1978, Ser. No. 906,354
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—162

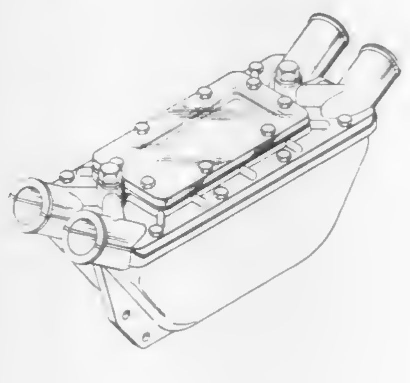


266,662
ELECTRICAL CABLE SPLICE ENCLOSURE

Kenneth W. Brownell, and Robert C. Hazenfield, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Apr. 14, 1980, Ser. No. 140,025
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D13—13

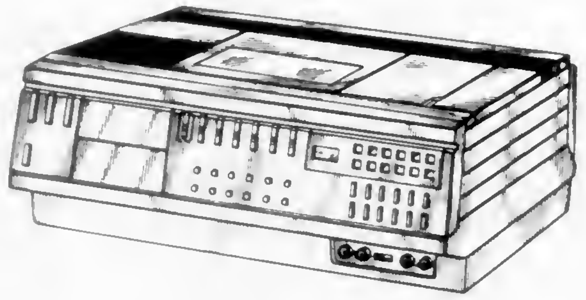


266,663
VIDEO TAPE RECORDER

Takashi Matsumoto, Yokohama, and Jun Ishii, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 20, 1980, Ser. No. 161,460
Claims priority, application Japan, Dec. 26, 1979, 54-54356
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—2

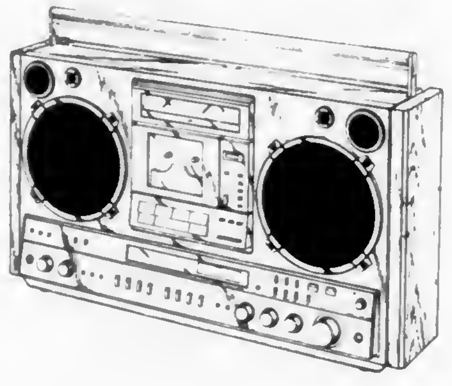


266,664
COMBINED RADIO RECEIVER AND TAPE RECORDER

Kunio Hoshino; Kazumasa Takenaka, both of Katano; Teruyuki Nishimoto; Shuhei Taguchi, both of Hirakata; Kikuo Ohta, Ikoma, and Benito Mishiro, Sasai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 30, 1980, Ser. No. 192,562
Claims priority, application Japan, Apr. 2, 1980, 55-13164
Term of patent 14 years
Int. Cl. D14—*01, 03*

U.S. Cl. D14—5

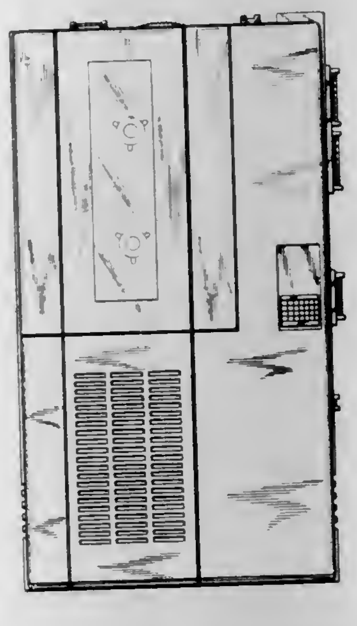


266,665
CASSETTE TAPE RECORDER OR THE LIKE

Arthur J. Pulos, Fayetteville, and Michael Cridland, Manlius, both of N.Y., assignors to Dictaphone Corporation, Rye, N.Y.

Filed Feb. 3, 1981, Ser. No. 231,422
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D14—6

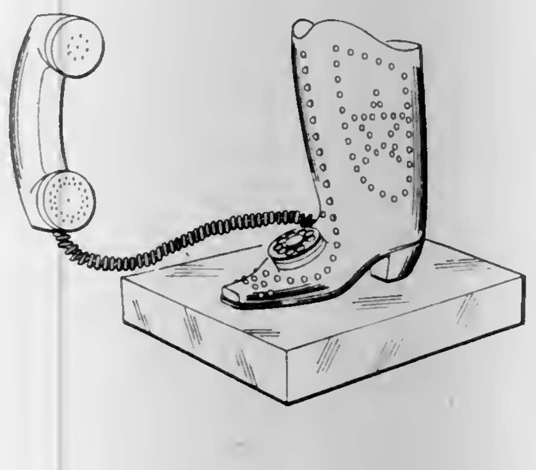


266,666
TELEPHONE

Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004

Filed Jan. 15, 1980, Ser. No. 112,307
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—53

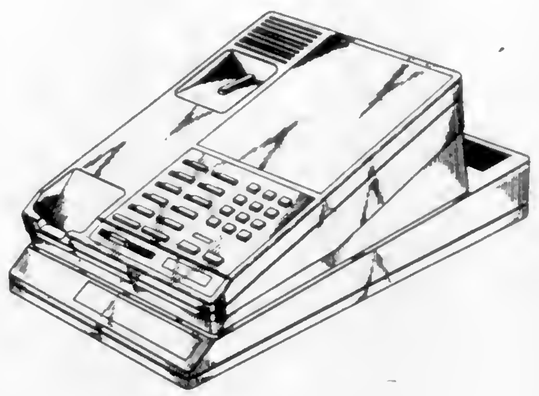


266,667
COMBINED TELEPHONE AND DATA SET BASE

James W. M. Bee, Palo Alto, Calif., assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 31, 1979, Ser. No. 89,938
Term of patent 14 years
Int. Cl. D14—*03*

U.S. Cl. D14—58

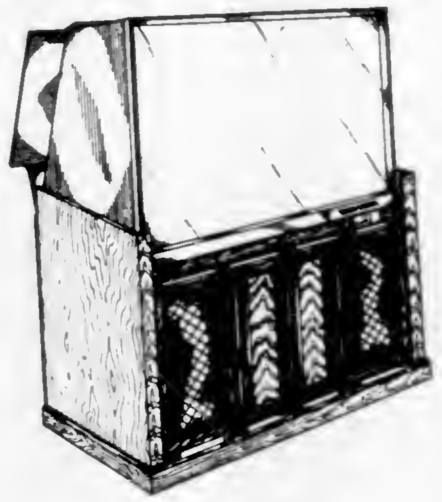


266,668
PROJECTION TELEVISION RECEIVER

Melvin H. Boldt, Glenview; David P. Chuboff, North Barrington; Clement W. Trottier, Prospect Heights, and Robert E. Slater, Vernon Hills, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 2, 1981, Ser. No. 230,980
Term of patent 14 years
Int. Cl. D14—*03*

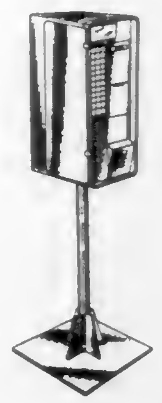
U.S. Cl. D14—79



266,669
COMBINED BILLING AND CONTROLLER TERMINAL FOR FILLING STATIONS

Masaji Sawada, and Tsutomu Yamasaki, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jun. 6, 1980, Ser. No. 157,240
Claims priority, application Japan, Dec. 14, 1979, 54/53187
Term of patent 14 years
Int. Cl. D6—*04*; D14—*02*

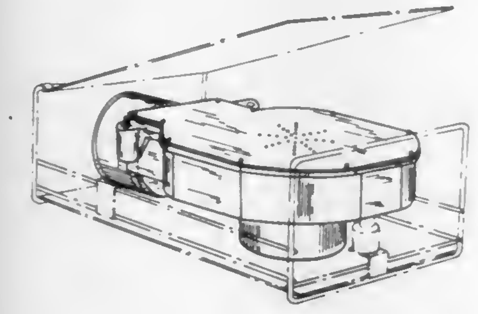
U.S. Cl. D14—102



266,670
MAGNETIC DISC DRIVE

Terence H. West, San Jose, Calif., assignor to Priam Corporation, San Jose, Calif.
Filed May 15, 1980, Ser. No. 149,973
Term of patent 14 years
Int. Cl. D14—*02*

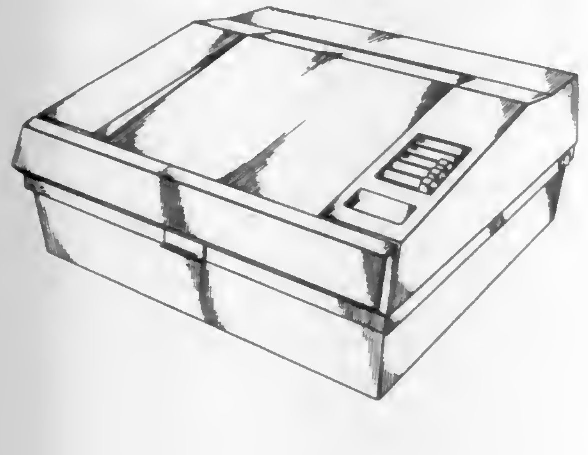
U.S. Cl. D14—109



266,671
ELECTROSTATIC PRINTER/PLOTTER

Ian Turner, Sunnyvale; Thomas A. Tacklind, San Jose; Carl J. Clement, Los Altos Hills, and Fred H. Stengel, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 11, 1980, Ser. No. 139,539
Term of patent 14 years
Int. Cl. D14—*02*

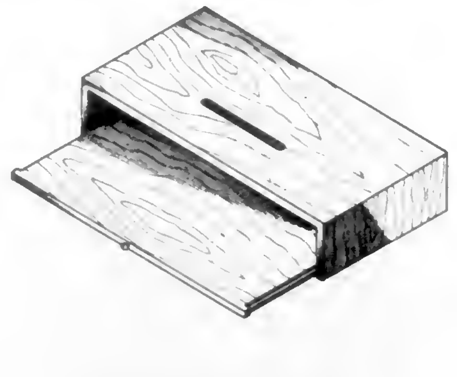
U.S. Cl. D14—111



266,672
CONSOLE FOR KEYBOARD AND DISPLAY SCREEN

Luther L. Landin, 2377 Kings Point Dr., Dunwoody, Ga. 30338
Filed Aug. 11, 1980, Ser. No. 177,056
Term of patent 14 years
Int. Cl. D14—*02*; D6—*04*

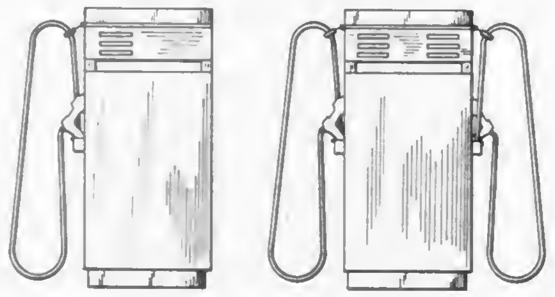
U.S. Cl. D14—114



266,673
FUEL DISPENSER

Glenn W. Monigle, Golden, and David W. Roecker, Denver, both of Colo., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 4, 1980, Ser. No. 118,376
Term of patent 14 years
Int. Cl. D15—*02*

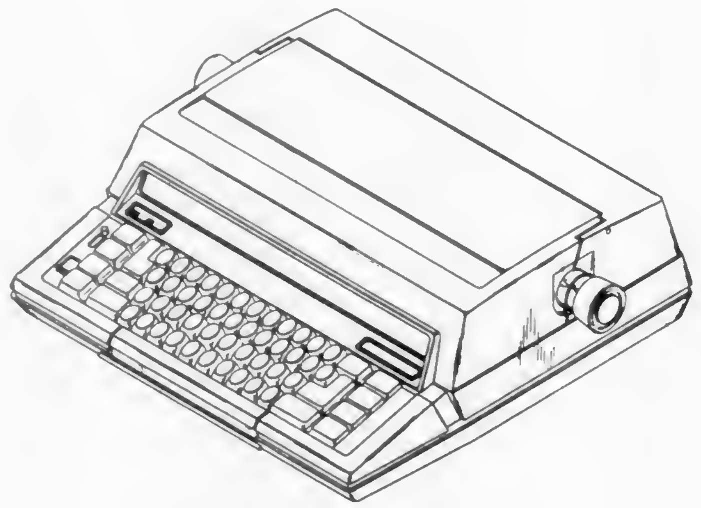
U.S. Cl. D15—9.1



266,674
TYPEWRITER

John E. Jolliffe, Manlius, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Oct. 31, 1980, Ser. No. 202,834
Term of patent 14 years
Int. Cl. D18—*01*

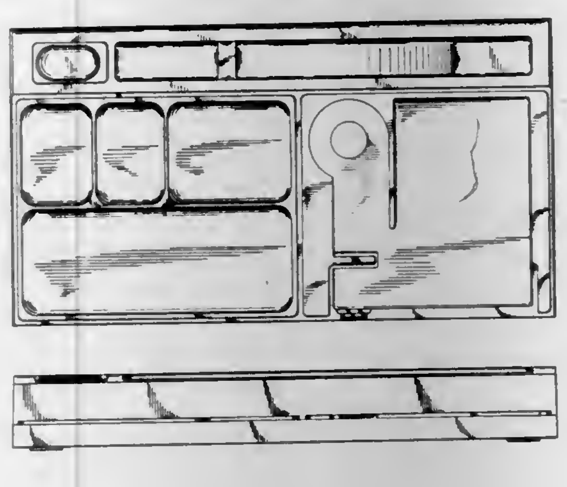
U.S. Cl. D18—1



266,675
DESK ACCESSORY SYSTEM

Marlan H. Polhemus, Chicago, and Lonnie E. Frye, Arlington Heights, both of Ill., assignors to Tenex Corporation, Elk Grove Village, Ill.
Filed Feb. 22, 1980, Ser. No. 123,672
Term of patent 14 years
Int. Cl. D19—*02*

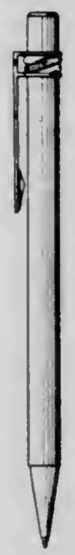
U.S. Cl. D19—22



266,676
WRITING INSTRUMENT

Pierre Bove, Villars-sur-Glane, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Nov. 28, 1979, Ser. No. 98,253
Claims priority, application Hague, May 31, 1979, 68.868/79
Term of patent 14 years
Int. Cl. D19—*06*

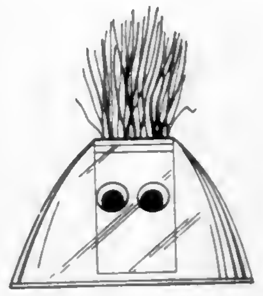
U.S. Cl. D19—50



266,677
PAPERWEIGHT

Russ Pinson, 8415 #D McKinley Ave., Tacoma, Wash. 98445
Filed Aug. 8, 1980, Ser. No. 176,557
Term of patent 14 years
Int. Cl. D19—*02*

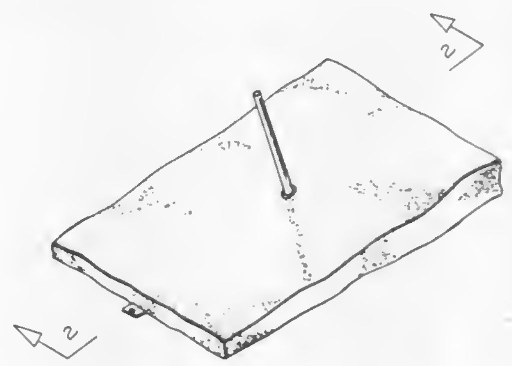
U.S. Cl. D19—97



266,678
PORTABLE HORSESHOE PITCHING TARGET

William C. Herrmann, 3 Orchard Ter., Clark, N.J. 07066
Filed Jan. 31, 1980, Ser. No. 117,052
Term of patent 14 years
Int. Cl. D21—*01*

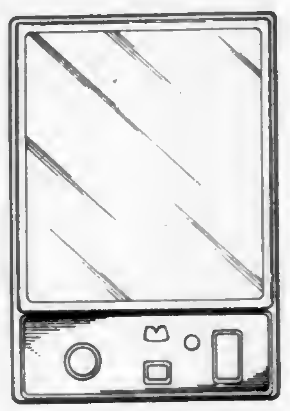
U.S. Cl. D21—4



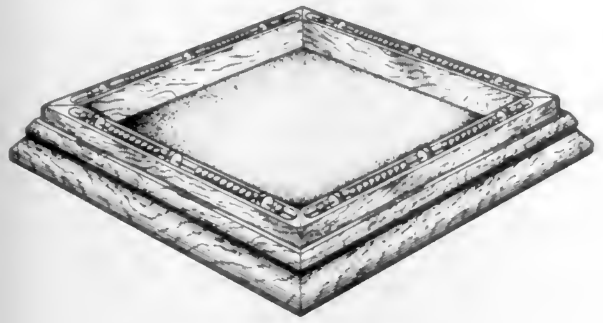
266,679
ELECTRONIC HAND-HELD ROAD RACE GAME HOUSING OR THE LIKE

Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Feb. 4, 1980, Ser. No. 117,968
Claims priority, application Japan, Dec. 24, 1979, 54-54609
Term of patent 14 years
Int. Cl. D21—*01*

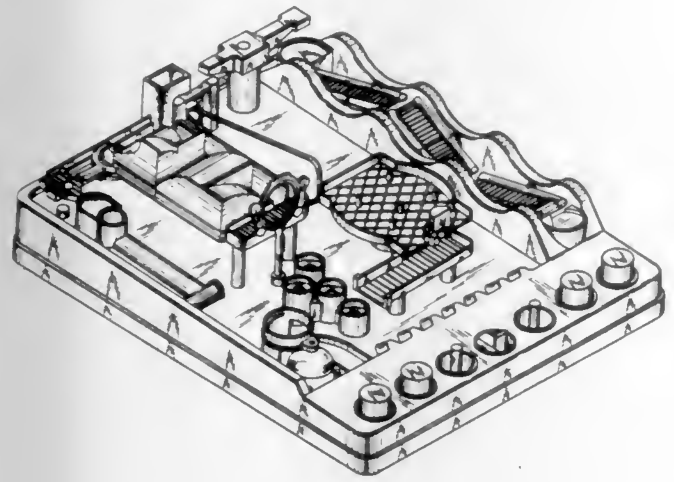
U.S. Cl. D21—13



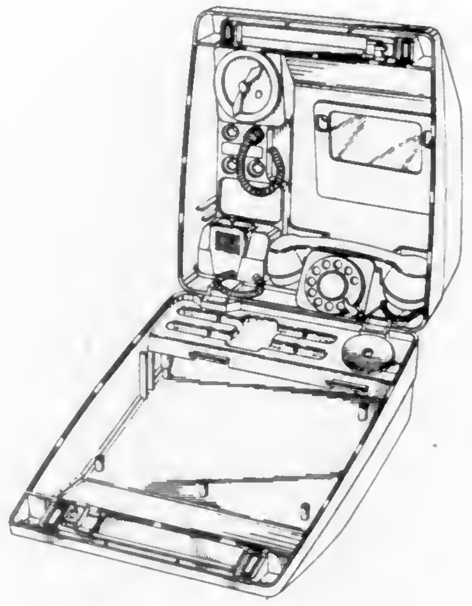
266,680
DICE GAME BOARD
David E. Compton, 3310 Gertrude Dr., Magna, Utah 84044
Filed Oct. 14, 1980, Ser. No. 196,538
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



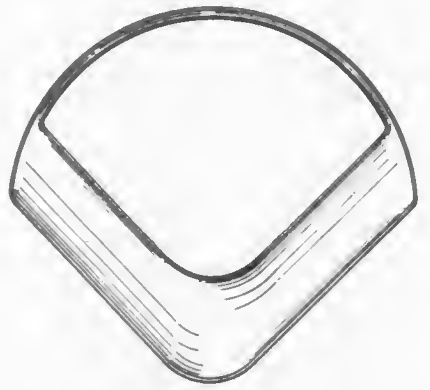
266,681
OBSTACLE GAME BOARD
Masaaki Yoshimura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 28, 1980, Ser. No. 115,632
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



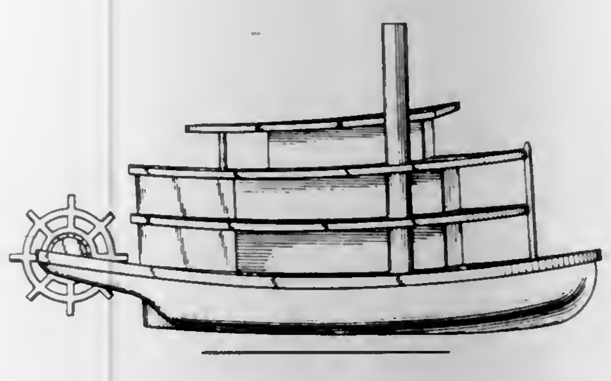
266,682
TOY ACTIVITY CASE
Geoffrey N. Airlie, Nottingham, England, assignor to Dobson Park Industries Limited, Nottingham, England
Filed May 28, 1980, Ser. No. 154,104
Claims priority, application United Kingdom, Dec. 3, 1979, 79992644
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



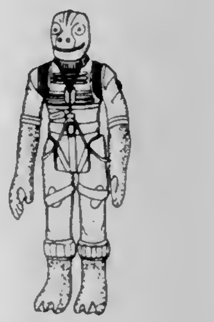
266,683
BOOMERANG
Alexander N. Zobkiw, 830 Edgefield Dr., Bowling Green, Ky. 42101
Filed Sep. 17, 1979, Ser. No. 74,651
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—82



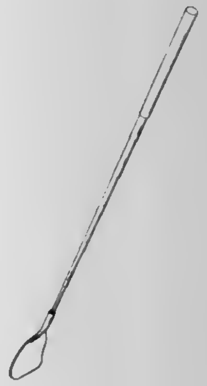
266,684
TOY PADDLE WHEEL BOAT
Charles E. Hughes, 172 W. Eugenie St., Chicago, Ill. 60614
Filed Dec. 14, 1979, Ser. No. 103,691
The portion of the term of this patent subsequent to Dec. 11, 1993, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



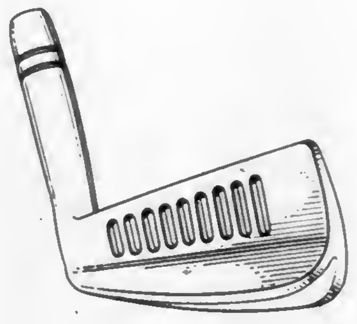
266,685
TOY FIGURE
Stuart Freeborn, Esher, England; George W. Lucas, Jr., San Anselmo, and Ralph McQuarrie, Berkeley, both of Calif., assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,595
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177



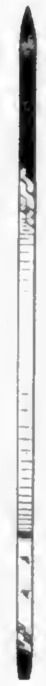
266,686
CLUB FOR A BALL AND CLUB GAME
Carl F. Dretzke, 777 Depot St., Rte. 2, Box 35, Manawa, Wis. 54949
Filed Nov. 6, 1980, Ser. No. 204,611
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—211



266,687
GOLF CLUB IRON HEAD
Samuel P. Simmons, Torrance, Calif., assignor to Sigma Diversified Sports, Inc., Torrance, Calif.
Filed Nov. 20, 1980, Ser. No. 208,562
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—220



266,688
SKI
Anton Arnsteiner, Klausen 3, 5730 Mittersill, Austria
Filed Mar. 4, 1980, Ser. No. 127,078
Claims priority, application Austria, Jul. 9, 1979, 14494
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—229



266,689

FLY SWATTER

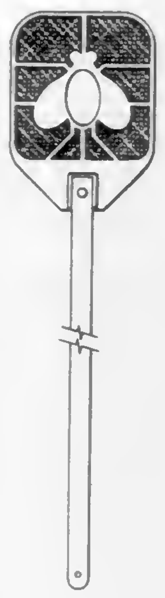
Jeffrey F. Seidel, 656 Glendalyn Ave., Spartanburg, S.C. 29302

Filed Sep. 22, 1980, Ser. No. 189,683

Term of patent 14 years

Int. Cl. D22—*06*

U.S. Cl. D22—20



266,690

STACKABLE WATERING CONTAINER

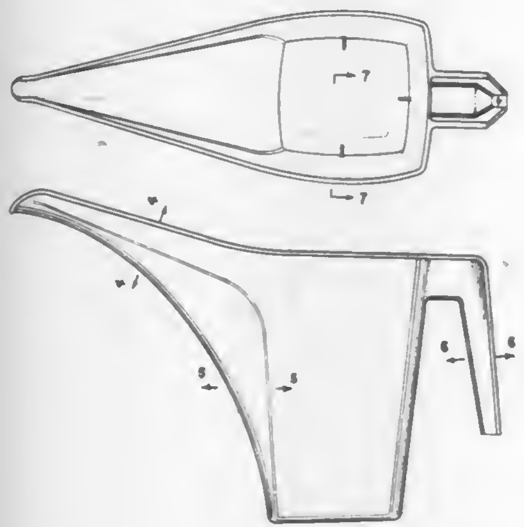
Monte L. Levin, New York, N.Y., assignor to Misco Enterprises Inc., New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,574

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—11



266,691

VALVE

Arthur J. Brunet, P.O. Box 451, 101 Pruyn Crescent, Bath, Ontario, Canada

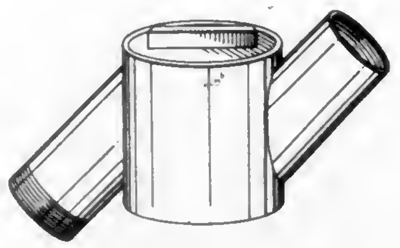
Filed Apr. 8, 1980, Ser. No. 138,446

Claims priority, application Canada, Oct. 23, 1979, 23-10-79-8

Term of patent 14 years

Int. Cl. D23—*01*

U.S. Cl. D23—19



266,692

BATHTUB

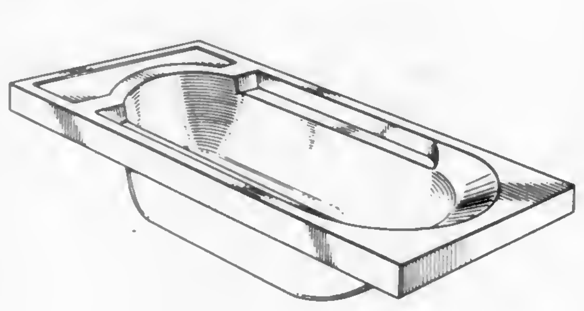
Jeffrey Harrison, Brookhouse, England, assignor to Kallista Baths, Inc., San Francisco, Calif.

Filed Nov. 20, 1980, Ser. No. 208,804

Term of patent 14 years

Int. Cl. D23—*02*

U.S. Cl. D23—55



266,693

COAL BURNING STOVE

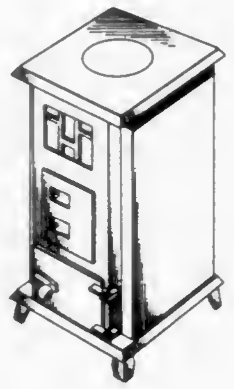
Richard Leavens, Pownal, Vt.; Arthur Evans, and William F. Fuhrmann, both of Williamstown, Mass., assignors to Mohawk Industries, Inc., Adams, Mass.

Filed Oct. 14, 1980, Ser. No. 196,325

Term of patent 14 years

Int. Cl. D23—*03*

U.S. Cl. D23—97



266,694

REAGENT STRIP

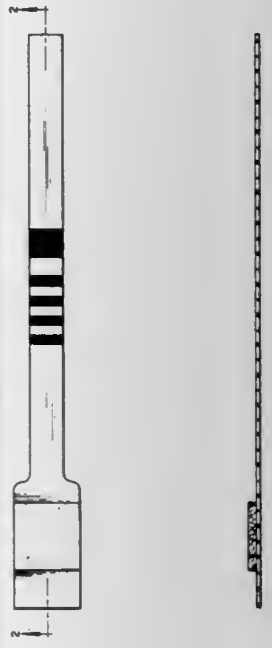
David L. Boger, and Kenneth D. Collister, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 2, 1980, Ser. No. 165,361

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—8



266,695

MOUTHPIECE FOR A SPIROMETER

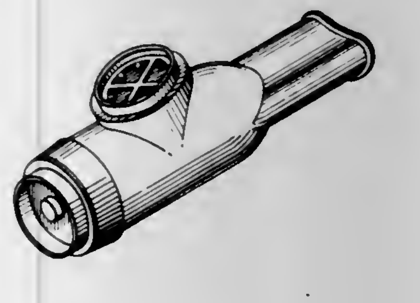
Wallace E. Trammll, 840 N. 1200 East, Provo, Utah 84601, and James R. Chidester, Rte. 1, Box 150 B, American Fork, Utah 84003

Filed Mar. 28, 1980, Ser. No. 134,982

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—17



266,696

TAXIDERMAL GLASS EYE

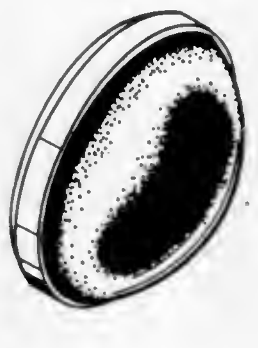
John W. Crossley, Box 121, Ottsville, Pa. 18942

Filed May 19, 1980, Ser. No. 151,441

Term of patent 14 years

Int. Cl. D24—*03*

U.S. Cl. D24—33



266,697

SWIMMING POOL AND SPA COMBINATION

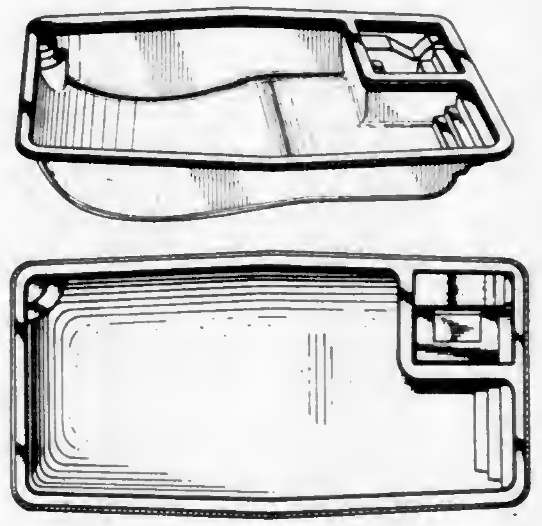
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116

Filed Nov. 19, 1979, Ser. No. 95,204

Term of patent 14 years

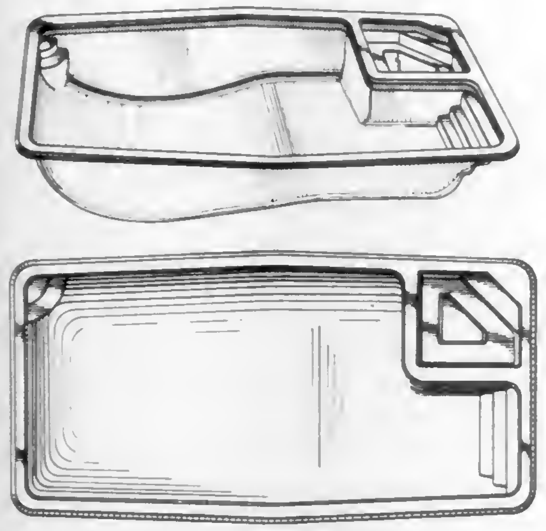
Int. Cl. D24—*01;* D23—*02;* D25—*99*

U.S. Cl. D24—38



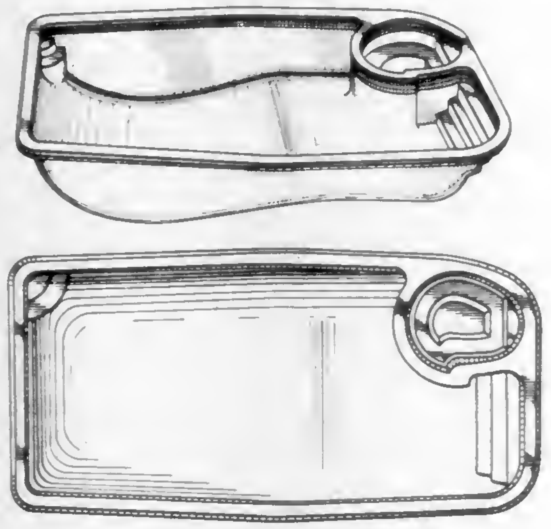
266,698
SWIMMING POOL AND SPA COMBINATION

Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116
Filed Jan. 18, 1980, Ser. No. 113,251
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



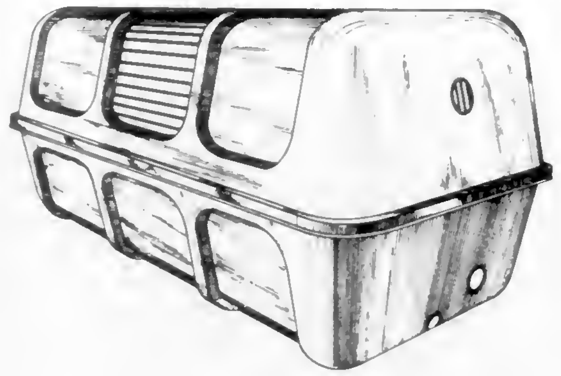
266,699
SWIMMING POOL AND SPA COMBINATION

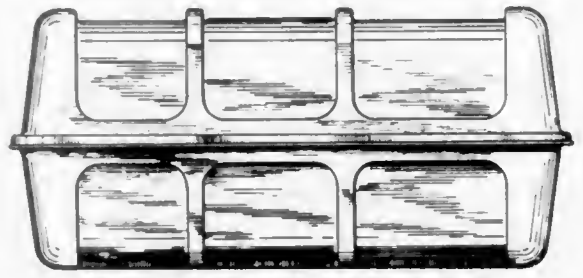
Lino Z. Topete, 1845 E. San Antonio St., San Jose, Calif. 95116
Filed Mar. 3, 1980, Ser. No. 126,329
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*02*
U.S. Cl. D24—38



266,700
ISOLATION CHAMBER

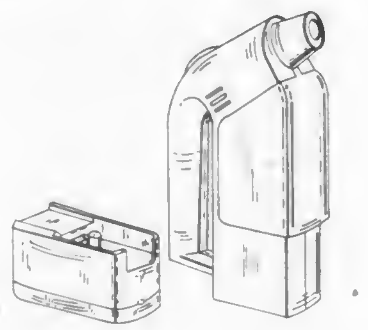
Gary R. Higgins, Lakewood, Colo., assignor to Float to Relax, Inc., Lakewood, Colo.
Filed Aug. 18, 1981, Ser. No. 293,870
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02*
U.S. Cl. D24—38





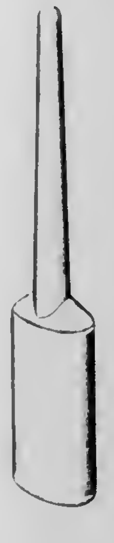
266,701
ULTRASONIC NEBULIZER

Herbert Marloth, Siegertsbrunn, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 19, 1979, Ser. No. 31,313
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 4916
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—62



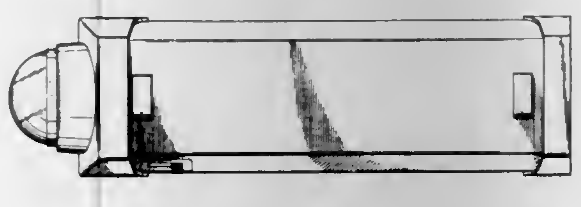
266,702
VAGINAL APPLICATOR

Pierre H. Lagny, Paris, France, assignor to Finepharm Inc., Montreal, Canada
Filed Jun. 12, 1980, Ser. No. 158,984
Claims priority, application Canada, Jan. 4, 1980, 0401805
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—63



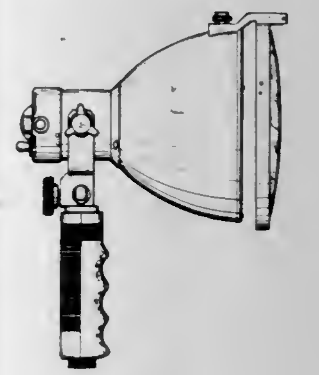
266,703
TORCH

Cheung T. Hoi, Kowloon, Hong Kong, assignor to Freezinhot Bottle Co., Ltd., Kowloon, Hong Kong
Filed Nov. 20, 1979, Ser. No. 96,196
Claims priority, application United Kingdom, May 24, 1979, 990047
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



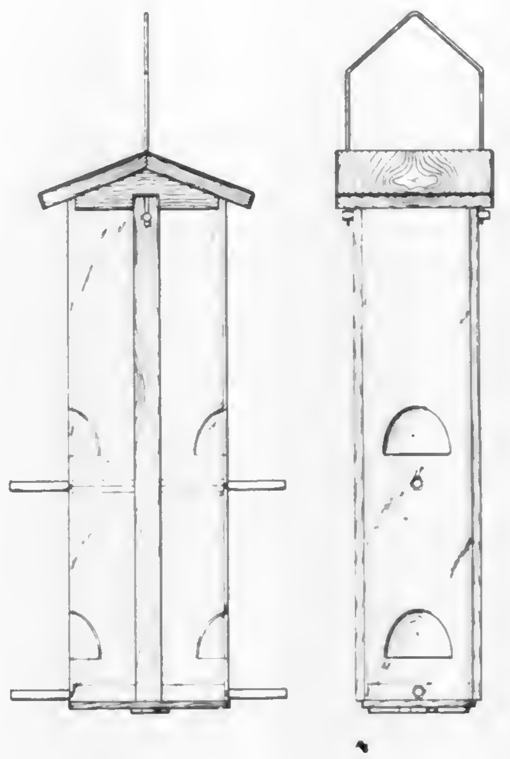
266,704
LAMP

James Frezzolini, and James J. Crawford, both of Ringwood, N.J., assignors to Frezzolini Electronics, Inc., Hawthorne, N.J.
Filed Nov. 10, 1980, Ser. No. 205,889
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—44



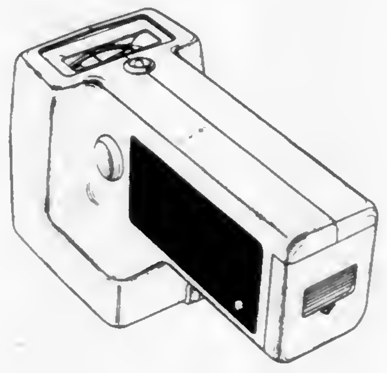
266,705
BIRD FEEDER

Robert E. Bescherer, P.O. Box 23, Bristol, R.I. 02809
Filed Sep. 9, 1980, Ser. No. 185,533
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



266,706
ELECTRONIC STATIC ELIMINATOR

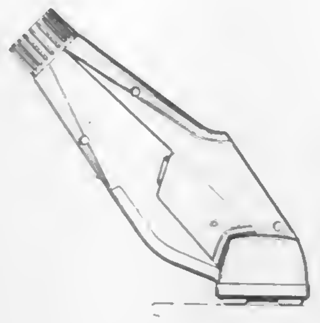
Masahiro Karaki, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 30, 1980, Ser. No. 145,088
Claims priority, application Japan, Nov. 2, 1979, 54-46215
Term of patent 14 years
Int. Cl. D7—*05;* D14—*99*
U.S. Cl. D32—01

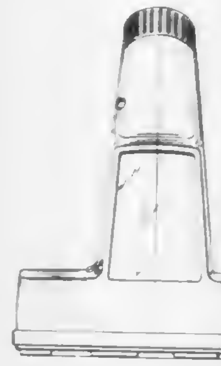


266,707
VACUUM CLEANER TOOL

Roderick F. Bunyea, Cockeysville, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 26, 1981, Ser. No. 247,828
Term of patent 14 years
Int. Cl. D15—*05*

U.S. Cl. D32—33

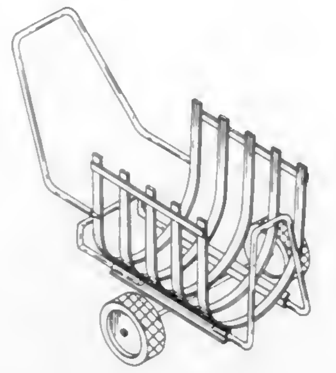




266,708
MOBILE WOOD CARRIER

Donald C. Jean, Palmer Township, Northampton County, Pa., assignor to Earl C. Clymer, Jr., Phillipsburg and Thomas J. Middleton, Branchburg, both of, N.J., a part interest to each
Filed Sep. 11, 1980, Ser. No. 186,721
Term of patent 14 years
Int. Cl. D12—*02*

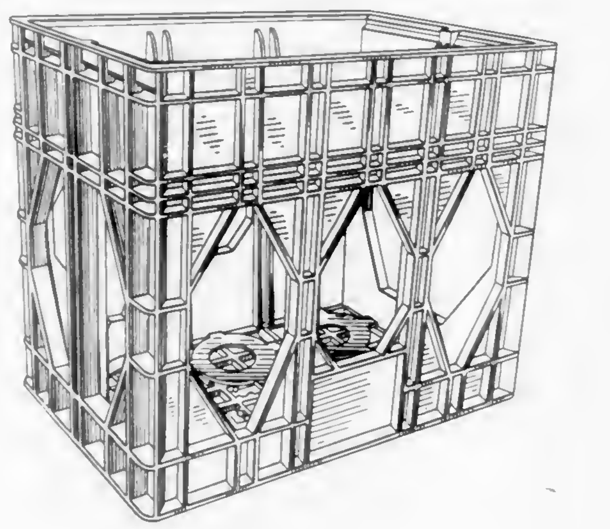
U.S. Cl. D34—24



266,709
BEVERAGE BOTTLE TRANSPORT CASE

Theodor M. Box, Brielle, N.J., assignor to Cities Service Company, Tulsa, Okla.
Filed Jul. 14, 1980, Ser. No. 168,512
Term of patent 14 years
Int. Cl. D9—*04*

U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-Betone AB: *See—*
  - Thomsen, Ove; and Ronnow, Peter, 4,356,269, Cl. 435-316.000.
- A. H. Robins Company, Inc.: *See—*
  - Bryan, Hugh D.; Carter, Judy A.; and Trimble, Donald B., 4,356,209, Cl. 426-627.000.
- A. Raymond: *See—*
  - Besson, Gilbert, 4,355,465, Cl. 30-344.000.
- AB Asea-Atom: *See—*
  - Borrman, Bo; and Engedal, Knud, 4,356,147, Cl. 376-291.000.
- AB Volvo: *See—*
  - Mattson, Erik K.; and Bertil, Hass, 4,356,373, Cl. 219-86.310.
- Abel, Edward P.; and Weissberger, Edward, to Eastman Kodak Company. Timing layers and auxiliary neutralizing layer for color transfer assemblages containing positive-working redox dye-releasers. 4,356,249, Cl. 430-215.000.
- Abercrombie, William F., Jr.; Colwell, Joey G., Jr.; and Price, Charles R., to J. M. Huber Corporation. Method of increasing the effectiveness of or the effective production rate of a process by integrated feed. 4,356,093, Cl. 210-695.000.
- Abrahamsen, Thomas J.: *See—*
  - Schmitz, Robert E.; Stearns, David T.; Stegmann, Erwin; McWhorter, Thomas E.; Geiger, Warren F.; and Abrahamsen, Thomas J., 4,355,488, Cl. 51-319.000.
- Ackerman, Kurt A.: *See—*
  - Ackerman, Roger A.; and Ackerman, Kurt A., 4,355,595, Cl. 119-14.030.
- Ackerman, Roger A.; and Ackerman, Kurt A., to Ackerman, Roger A. Central milking system with reduced stray current problems. 4,355,595, Cl. 119-14.030.
- Acoraci, Joseph H., to Bendix Corporation, The. Practical implementation of large Butler matrices. 4,356,461, Cl. 333-116.000.
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  - Romano, Paul L., 4,355,678, Cl. 160-332.000.
- Adam, Richard E. Device for lifting and loading boxes and cartons, especially from an agricultural field. 4,355,713, Cl. 198-514.000.
- Adams Hard-Facing Company, Inc.: *See—*
  - Wetmore, Halsey J., 4,355,589, Cl. 111-7.000.
- Adams, John P.: *See—*
  - Knott, Jack E., II; Koschak, Matthew S.; and Adams, John P., 4,355,721, Cl. 206-524.200.
- Adams, Steven E.: *See—*
  - Hamilton, Robert H., Jr.; and Adams, Steven E., 4,355,786, Cl. 266-62.000.
- Adomeit, Heinz-Dieter, to N.V. Klippan S.A. Fast acting automatic seat belt retractor. 4,355,772, Cl. 242-107.40A.
- Advance Transformer Company: *See—*
  - Feinberg, Albert E., 4,356,431, Cl. 315-101.000.
- Adver-Togs, Inc.: *See—*
  - Price, James E., 4,356,048, Cl. 156-220.000.
- Ady, Michael S.; Lufkin, Roger F.; and Lynch, Kevin L. Model rocket propulsion system. 4,355,577, Cl. 102-378.000.
- Aeberli, Paul: *See—*
  - Humphries, Peter; and Aeberli, Paul, 4,356,474, Cl. 340-509.000.
- Aerpat A.G.: *See—*
  - Denham, Keith; Prickett, Leslie R.; and Pallister, Lawrence R., 4,355,934, Cl. 411-38.000.
- Afanasiev, Anatoly A.: *See—*
  - Asinovsky, Erik I.; Afanasiev, Anatoly A.; and Pakhomov, Evgeny P., 4,356,527, Cl. 361-134.000.
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  - Calvert, Seymour, 4,356,009, Cl. 55-90.000.
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  - Schmitz, Robert E.; Stearns, David T.; Stegmann, Erwin; McWhorter, Thomas E.; Geiger, Warren F.; and Abrahamsen, Thomas J., 4,355,488, Cl. 51-319.000.
- Aisin Seiki Company Limited: *See—*
  - Iwasaki, Shinichiro, 4,356,438, Cl. 318-344.000.
- Aizawa, Hiroshi: *See—*
  - Ohniwa, Takehiko; Senuma, Michio; Shimada, Fumio; Saito, Syuichiro; Shigeta, Yoshihiro; and Aizawa, Hiroshi, 4,355,878, Cl. 354-234.000.
- Akao, Mutsuo; and Kawata, Tadashi, to Fuji Photo Film Co., Ltd. Wrapping material for photographic light-sensitive material. 4,356,224, Cl. 428-220.000.
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  - Nakanishi, Yoshiyuki; Akazawa, Yoji; Ikeda, Noriaki; and Suzuki, Takehiko, 4,356,112, Cl. 252-435.000.
- Akiyama, Shun-ichi: *See—*
  - Hatano, Kazunori; Nakamichi, Masanari; and Akiyama, Shun-ichi, 4,356,265, Cl. 435-119.000.
- Aktiebolaget P. E. Holmgren: *See—*
  - Holmgren, Lars; and Holmgren, Per-Martin, 4,355,477, Cl. 37-117.500.
- Akzo NV: *See—*
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  - Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, 4,356,289, Cl. 525-358.000.
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  - Gailey, J. Lynn; and Wollam, Carl A., 4,356,216, Cl. 427-286.000.
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- Alexander, James S., to International Business Machines Corporation. Acoustic hood with glare shield. 4,355,914, Cl. 400-690.100.
- Alferness, Clifton A., to Physio-Control Corporation. Multipolar electrode for body tissue. 4,355,642, Cl. 128-642.000.
- Alford, Thomas E. Wedge-shaped camping travel trailer. 4,355,834, Cl. 296-15.000.
- Alisyncro S.a.s. di Bruno & C.: *See—*
  - Bruno, Carlo L., 4,355,712, Cl. 198-460.000.
- Allied Corporation: *See—*
  - Diamond, Steven E.; Mares, Frank; Muccigrosso, Deborah A.; and Solar, Jeffrey P., 4,356,311, Cl. 549-524.000.
  - Kavesh, Sheldon; Prevorsek, Dusan C.; and Wang, Donald G., 4,356,138, Cl. 264-164.000.
  - Largman, Theodore, 4,356,282, Cl. 524-398.000.
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  - Wells, Rodney L.; Rowe, Monty L.; Yates, Samuel L.; and Muller, George R., 4,356,280, Cl. 524-148.000.
- Allis-Chalmers Corporation: *See—*
  - Day, Charles E.; and Putman, William A., 4,356,011, Cl. 55-368.000.
- Alstrin, Charles E.: *See—*
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- Altman, Robert L., to United States of America, National Aeronautics and Space Administration. Synthesis of dawsonites. 4,356,157, Cl. 423-419.00P.
- Aluminum Company of America: *See—*
  - Francis, Thomas L.; Marhanka, John E.; and Heilich, Raymond P., 4,356,271, Cl. 501-84.000.
- Amada Company, Limited: *See—*
  - Kobayashi, Morimasa; and Sakurai, Nobuo, 4,355,555, Cl. 83-62.100.
- Amari, Takaaki: *See—*
  - Imaizumi, Masao; Takezono, Tetsuya; Amari, Takaaki; and Oguchi, Yutaka, 4,356,339, Cl. 585-829.000.
- Amberg, Ralph G., to Automated Container Corporation. Composite container and method. 4,355,759, Cl. 229-5.500.
- American Can Company: *See—*
  - Knott, Jack E., II; Koschak, Matthew S.; and Adams, John P., 4,355,721, Cl. 206-524.200.
- American Cyanamid Company: *See—*
  - Loffelman, Frank F.; and Brady, Thomas E., 4,356,287, Cl. 525-204.000.
  - Szita, Jeno G.; and DiLeone, Roland R., 4,356,304, Cl. 544-196.000.
- American Filtrona Corporation: *See—*
  - Berger, Richard M., 4,355,995, Cl. 493-43.000.
- American Hardware & Paint Co., Inc.: *See—*
  - Josephson, Louis, 4,355,567, Cl. 98-121.00A.
- American Hospital Supply Corporation: *See—*
  - Hofstetter, Jack H., 4,356,012, Cl. 55-385.00C.
- AMF Incorporated: *See—*
  - Volz, Jack H., 4,356,360, Cl. 200-11.00R.
- AMP Incorporated: *See—*
  - Conrad, Lee R.; and Dowling, Edward C., Sr., 4,355,865, Cl. 350-96.230.
  - Fukukira, Kazutoyo, 4,356,358, Cl. 200-5.00A.
  - Kock, Konrad, 4,355,862, Cl. 350-96.200.
  - Kourimsky, Friedrich J. A., 4,355,853, Cl. 339-17.0LM.
- Ampex Corporation: *See—*
  - Lemoine, Maurice G.; and Pasdera, Leonard A., 4,356,518, Cl. 360-51.000.
  - Yeh, Nan-Hsiung, 4,356,523, Cl. 360-113.000.
- Andersen, Roger E., to United States of America, Air Force. Load balancer for multiple loads. 4,355,832, Cl. 294-81.00R.

Anderson Engineers, Inc.: *See—*
Anderson, Harry E.; and Heasley, Raymond E., 4,356,043, Cl. 148-9.00R.
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Anderson, James M.: *See—*
Peterson, Robert V.; Anderson, James M.; Gregonis, Donald E.; Kim, Sunj-Wan; and Feijen, Jan, 4,356,166, Cl. 424-19.000.
Andreev, Vladimir F.: *See—*
Dolzhenkov, Boris S.; Andreev, Vladimir F.; and Pimenov, Vitalii A., 4,355,789, Cl. 266-207.000.
Ankersson, Bill, to Rockwool Aktiebolaget. Method and apparatus for catching a partly fibrated mineral bloom. 4,356,017, Cl. 65-8.000.
Anthony, John; Velisek, Frank J.; and Capponi, Paul D., to Union Carbide Corporation. Melt-extruded multilayer polyethylene bag film. 4,356,221, Cl. 428-35.000.
Antoine, Jacquet M., to Societe Anonyme Francaise du Ferodo. Control device and method for an air conditioning installation of the passenger space in a motor vehicle. 4,355,752, Cl. 237-12.30B.
Antos, Ronald L.: *See—*
Herloski, Robert P.; Norton, James R.; and Antos, Ronald L., 4,355,859, Cl. 350-6.100.
Lavallee, Pierre A.; Marshall, Sidney W.; and Antos, Ronald L., 4,355,860, Cl. 350-6.800.
Aoki, Katsuhiko: *See—*
Katagi, Takashi; Urasaki, Shuji; Ebisui, Takashi; and Aoki, Katsuhiko, 4,356,494, Cl. 343-781.0CA.
Aoki, Yoshitaka: *See—*
Tanaka, Eiichiro; Yano, Kousaku; Aoki, Yoshitaka; and Fujiwara, Shinji, 4,355,866, Cl. 350-164.000.
Aoshima, Atsushi; and Murofushi, Toshiaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing unsaturated carboxylic esters. 4,356,316, Cl. 560-208.000.
Aotani, Yoshimasa; Kojima, Teruo; and Nakakita, Eiji, to Fuji Photo Film Co., Ltd. Light-sensitive compositions. 4,356,247, Cl. 430-195.000.
Arai, Fuminori: *See—*
Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,356,149, Cl. 422-56.000.
Arai, Naoki: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,356,541, Cl. 363-20.000.
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Beers, Melvin D., to General Electric Company. Devolatilized room temperature vulcanizable silicone rubber composition. 4,356,116, Cl. 524-837.000.
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Eng, Kai Y.; and Yue, On-Ching, 4,356,353, Cl. 179-15.55T.
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Bergsma, Wijtse, to U.S. Philips Corporation. Shaving apparatus. 4,355,464, Cl. 30-34.100.
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Berner, Vincent A., to Pennwalt Corporation. Amalgam carrier with unitary spring lever member. 4,355,976, Cl. 433-83.000.
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Bihl, Claudia J.; and Molloy, Michael C., to Jung Products, Inc. Adjustable arm sling with pouch. 4,355,635, Cl. 128-94.000.
Biller, Cleveland J., to United States of America, Agriculture. Intermediate support for a skyline logging system. 4,355,727, Cl. 212-121.000.
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- Bipol Ltd.: *See—*
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- Birkmeyer, William J., to PPG Industries, Inc. Reaction products of a polyglycidyl ether of a polyphenol and an amino acid and aqueous solubilized products therefrom. 4,356,277, Cl. 523-406.000.
- Bixler, Richard M.: *See—*
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- Bjorn, Thomas E.; and Kao, Mark C. C., to Stewart-Warner Corporation. Pressure sensor and regulator for airless material coating system. 4,355,761, Cl. 239-126.000.
- BL Cars Limited: *See—*
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- Black Clawson Company, The: *See—*
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- Blackmun, Wayne E.: *See—*
  - Koppelmann, Eldo K.; and Blackmun, Wayne E., 4,355,932, Cl. 408-188.000.
- Blackwell, Henry W., to Dresser Industries, Inc. Bowl and slips assembly with improved slip inserts. 4,355,443, Cl. 24-263.00D.
- Blaney, Peter G., to Zemco, Inc. Safety disengagement device for automotive speed control system. 4,355,607, Cl. 123-350.000.
- Blasbalg, Morton L. Bird feeder construction. 4,355,597, Cl. 119-51.00R.
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- Blenke, Stanley J., Sr.: *See—*
  - Blenke, Joseph F.; and Blenke, Stanley J., Sr., 4,355,508, Cl. 60-416.000.
- Bleuer, Keith T. Multiple color single gun TV picture tube. 4,356,434, Cl. 315-375.000.
- Bliss, George N.: *See—*
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- Blytas, George C.; and Diaz, Zaida, to Shell Oil Company. Sulfur process. 4,356,155, Cl. 423-226.000.
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- Boeing Company, The: *See—*
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  - Miller, Glen E., 4,356,395, Cl. 250-227.000.
- Boer, Joachim; and Beermann, Heinrich, to Kraftwerk Union Aktiengesellschaft. Apparatus for fastening an air gap winding. 4,356,419, Cl. 310-217.000.
- Boettcher, Charles E., to National Semiconductor Corporation. Method of manufacture for self-aligned floating gate memory cell. 4,355,455, Cl. 29-571.000.
- Bogner, Richard D. Disc-on-rod end-fire microwave antenna. 4,356,493, Cl. 343-702.000.
- Bohn, Helmut: *See—*
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- Bokelman, Gordon H.; and Gooden, Dewitt J., III, to Philip Morris, Incorporated. Method of curing tobacco. 4,355,648, Cl. 131-290.000.
- Boldt, Wesley H. Method of massaging meat products. 4,356,206, Cl. 426-519.000.
- Bond, James M.; and Dail, Robert P. Can press implement for canned food products. 4,355,574, Cl. 100-234.000.
- Bone, Rainer: *See—*
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- Booker, Robert A.: *See—*
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- Boon, Wyndham H.; and Sid-Ahmed, Abdel-Hadi, to Goodyear Tire & Rubber Company, The. Treated yarn, method of preparation and rubber/cord composite. 4,356,219, Cl. 427-386.000.
- Borden, Peter G.; and Saxena, Ram R., to Varian Associates, Inc. Cascade solar cell having conductive interconnects. 4,356,341, Cl. 136-249.000.
- Borg, Bernt V.: *See—*
  - Lewis, Roy D.; and Borg, Bernt V., 4,355,495, Cl. 53-579.000.
- Borg-Warner Corporation: *See—*
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  - Kountz, Kenneth J.; and Norbeck, Dean K., 4,355,948, Cl. 415-1.000.
- Borrman, Bo; and Engedal, Knud, to AB Asea-Atom. Fluid tight and thermally insulated coupling assembly. 4,356,147, Cl. 376-291.000.
- Borst, Gaylord M.; and Walsworth, Frank J., to Outboard Marine Corporation. Marine propulsion device with self-centering steering mechanism. 4,355,985, Cl. 440-51.000.
- Bos, Johannes J.: *See—*
  - Barten, Piet G. J.; and Bos, Johannes J., 4,356,436, Cl. 315-386.000.
- Boschulte, Rainer; Koehnecke, Heinrich; and Muecke, Siegfried, to Siemens Aktiengesellschaft. Device for the signal-technical secure control and monitoring of electrical loads. 4,356,485, Cl. 340-825.170.
- Bosshard, Ernst, to Sulzer Brothers Limited. Rack for storing bundles of nuclear fuel elements. 4,356,062, Cl. 376-272.000.
- Bosshard, Hans: *See—*
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- Boszormenyi, Joszef: *See—*
  - Bar, Vilmos; Boszormenyi, Joszef; Richter, Peter; Mercz, Jeno; and Rozsnyai, Tamas, 4,356,306, Cl. 546-176.000.
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- Bowman, Harold L. Automatic filter network protection, failure detection and correction system and method. 4,356,007, Cl. 55-213.000.
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- Bracker AG: *See—*
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- Brady, Michael: *See—*
  - Lim, John; Brady, Michael; and Novak, Kirk, 4,356,113, Cl. 252-455.00Z.
- Brady, Thomas E.: *See—*
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  - Wilkins, Rennie F. T., 4,355,679, Cl. 164-466.000.
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  - Itoh, Minoru; and Sasaki, Toshio, 4,355,591, Cl. 112-225.000.
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- Buckau-Walther AG: *See—*
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- Budd Company, The: *See—*
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- Burns, Carmen D., to National Semiconductor Corporation. Process for hermetically encapsulating semiconductor devices. 4,355,463, Cl. 29-827.000.
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- Burri, Peter, to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material. 4,355,823, Cl. 282-27.500.
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- Caines, Ronald S., to Dow Chemical Company, The. Uniaxially compressed vermicular expanded graphite for heat exchanging. 4,355,684, Cl. 165-154.000.
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- Calvert, Seymour, to Air Pollution Technology, Inc. Gas scrubber and related method. 4,356,009, Cl. 55-90.000.
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  - Leicht, Frederick M., 4,355,825, Cl. 285-3.000.
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  - Coffey, Clayton G.; Murray, Stephen B.; and Bayly, Donald L., 4,355,507, Cl. 60-39.500.
- Canadian Patents & Development Ltd.: *See—*
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  - Honda, Haruhisa; Toyono, Tsutomu; Nakamura, Shunji; Tanaka, Kano; and Kimura, Yoshimasa, 4,355,884, Cl. 355-14.0CH.
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- Carcia, Peter P., to Polaroid Corporation. Photographic control system for varying both flash fire aperture and exposure termination in correspondence with film speed. 4,355,873, Cl. 354-27.000.
- Cardellini, Claudio B. Loose leaf binder. 4,355,916, Cl. 402-41.000.
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- Carey, James J., to Chloride Electro Networks, Division of Chloride, Inc., N. American Operation. Metal-plastic header assembly. 4,356,344, Cl. 174-52.00S.
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- Carlier, Claude. Control and locking of pivoting needle for pneumatic pipe carriers. 4,355,930, Cl. 406-182.000.
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- Carrier Corporation: *See—*
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- Carson, James W. Production tube bending machine. 4,355,525, Cl. 72-149.000.
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- Casey, Gary L., to Bendix Corporation, The. Idle speed control valve. 4,355,606, Cl. 123-327.000.
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  - Bianchetta, Donald L., 4,355,565, Cl. 91-518.000.
  - Frantzreb, John G., Sr., 4,355,680, Cl. 164-484.000.
  - Niles, Albert B., 4,356,091, Cl. 210-354.000.
  - Parks, John H.; Alstrin, Charles E.; and King, Dennis M., 4,355,610, Cl. 123-386.000.
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  - Ruseff, Walter Z., 4,355,510, Cl. 60-452.000.
- Cavalla, John F., to John Wyeth & Brother Limited. Thiazoles. 4,356,185, Cl. 424-270.000.
- Cayley, Paul W., Jr.: *See—*
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- CBS Inc.: *See—*
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- CEM Compagnie Electro Mecanique: *See—*
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  - Faller, Rudolph A., 4,355,755, Cl. 229-2.50R.
  - Lavery, John J., 4,355,758, Cl. 229-39.00R.
  - Roccaforte, Harry I., 4,355,757, Cl. 229-33.000.
- Chappell, Christopher L., to Leigh Interests Limited. Solid waste derived fuel. 4,356,000, Cl. 44-1.00D.
- Charles Stark Draper Laboratory, Inc., The: *See—*
  - Curtiss, William P.; and Colley, William C., III, 4,356,440, Cl. 323-210.000.
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- Cherry Semiconductor Corporation: *See—*
  - Congdon, James S., 4,356,445, Cl. 324-82.000.
- Cheung, Ki C.; Unkle, Truman F.; Schwartz, Arnold A.; and Hsieh, Raymond J., to General Atomic Company. Closure hold-down system for a reactor vessel. 4,356,144, Cl. 376-203.000.
- Chever, Rene, to Fives-Cail Babcock. Bucket elevator. 4,355,714, Cl. 198-701.000.
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- Chloride Electro Networks, Division of Chloride, Inc., N. American Operation: *See—*
  - Carey, James J., 4,356,344, Cl. 174-52.00S.
- Chloride Silent Power Limited: *See—*
  - Wright, Michael L.; and Hames, Michael D., 4,356,241, Cl. 429-104.000.
- Cho, Ching-Fai: *See—*
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- Cholod, Michael S.; and Shah, Nipun M., to Rohm and Haas Company. Catalyst system for a polyethylene terephthalate polycondensation. 4,356,299, Cl. 528-279.000.
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- Chore-Time Equipment, Inc.: *See—*
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- Chorlton, Derek C., to Conveyor Manufacturing Company, Ltd. Roller conveyor permitting low pressure accumulation of articles. 4,355,715, Cl. 198-781.000.
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- Christensen, Burton G.; Ratcliffe, Ronald W.; and Salzmann, Thomas N., to Merck & Co., Inc. 3-(1-Hydroxyethyl)-4-(but-2-ene)-azetidin-2-one and derivatives. 4,356,120, Cl. 260-239.00A.
- Christensen, Gordon D.: *See—*
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  - Johansson, Francis J.; and Christenson, Thomas, 4,355,440, Cl. 24-3.00H.
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- Chupka, David E.: *See—*
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- Ciba-Geigy Corporation: *See—*
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  - Trachsler, Dieter; and Lohse, Friedrich, 4,356,121, Cl. 260-239.30R.
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- Citizen Watch Company, Limited: *See—*
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  - Bartow, Richard J., 4,355,703, Cl. 187-9.00E.
- Claypool, James L.: *See—*
  - Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,355,664, Cl. 138-110.000.
- Clements, Ronald J.: *See—*
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- CNI Incorporated: *See—*
  - Rau, David M., III, 4,355,830, Cl. 292-144.000.
- Coal Industry (Patents) Limited: *See—*
  - Cairns, Angus H.; Houston, Nicholas J.; and Stephens, Noel W. F., 4,355,895, Cl. 356-141.000.
- Cobb, Delwin E.: *See—*
  - Rodibaugh, Scott A.; and Cobb, Delwin E., 4,355,964, Cl. 418-76.000.
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- Coffee, Ronald A., to Imperial Chemical Industries PLC. Atomization of liquids. 4,356,528, Cl. 361-226.000.
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  - Hellmer, Ernest W., 4,355,967, Cl. 425-503.000.
  - Miller, Donald E., 4,355,527, Cl. 72-351.000.
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  - Wright, Keith G., 4,356,562, Cl. 370-20.000.
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  - Chorlton, Derek C., 4,355,715, Cl. 198-781.000.
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  - Schnekenburger, Emil; and Schnekenburger, Rudolf, 4,355,847, Cl. 300-11.000.
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  - Ohrberg, George E.; and O'Dair, James R., 4,355,670, Cl. 144-34.00R.
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  - Ringrose, James R.; and Dahle, Leonard G., 4,355,956, Cl. 416-132.00B.
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  - Grohn, Michael, 4,355,503, Cl. 60-602.000.
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  - Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,356,550, Cl. 364-200.000.
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- Davis, Gerald T.: *See—*
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  - Hamm, Nicholas; and Rosbak, John, 4,355,688, Cl. 172-4.000.
  - Jensen, Thomas C.; Stevens, Phillip E.; and Landry, Henry J.. Jr., 4,355,690, Cl. 172-311.000.
  - Orlandea, Nicolae V.; and Wiley, Jack C., 4,355,697, Cl. 180-261.000.
  - Wykhuis, Lloyd A.; and O'Neill, Michael J., 4,355,946, Cl. 414-707.000.
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  - Kutnyak, Thomas A.; Desai, Mahendra N.; and Berman, Roy A., 4,356,284, Cl. 524-520.000.
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  - Okubo, Shigeo, 4,355,541, Cl. 74-5.60E.
- Design Research Marketing (Proprietary) Limited: *See—*
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  - Thomas, Leslie P.; and Bliss, George N., 4,355,936, Cl. 414-118.000.
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  - Smith, Fred J., 4,356,348, Cl. 179-1.0MN.
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  - Szita, Jeno G.; and DiLeone, Roland R., 4,356,304, Cl. 544-196.000.
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  - Matsushita, Shizuo; and Togawa, Yasuhito, 4,356,076, Cl. 204-261.000.
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  - Ziegler, Hermann; and Kolb, Eugen, 4,355,845, Cl. 296-210.000.
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  - Caines, Ronald S., 4,355,684, Cl. 165-154.000.
  - Lalk, James W.; and Hamburg, Frances P., 4,356,309, Cl. 546-278.000.

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  - Lee, Yue G. L.; and Dudgeon, Charles D., 4,356,297, Cl. 528-44.000.
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  - Waller, Francis J., 4,356,318, Cl. 562-406.000.
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  - Dey, Arabinda N.; and Hamilton, Noble E., 4,356,240, Cl. 429-101.000.
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  - Lumbeck, Peter; and Exner, Hans, 4,356,162, Cl. 423-600.000.
- Dyneer Corporation: *See—*
  - Kraft, Derald H., 4,355,991, Cl. 474-110.000.
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  - Irani, Nayyir F.; and Maier, Thomas O., 4,356,250, Cl. 430-216.000.
  - Marcus, Michael A., 4,356,424, Cl. 310-357.000.
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  - Tang, Ching W., 4,356,429, Cl. 313-503.000.
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  - Light, Gerard M., 4,355,709, Cl. 192-58.00B.
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- Ehret, Thomas M., to FMC Corporation. Pipe swivel joint for ambient and cryogenic temperatures. 4,355,827, Cl. 285-98.000.
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  - Cram, Leonard A.; Jackson, Brian; and Gilday, Montague R., 4,356,488, Cl. 343-7.0PF.
- Electric Power Research Institute, Inc.: *See—*
  - Putman, Thomas H.; Gyugyi, Laszlo; and Brennen, Michael B., 4,356,441, Cl. 323-210.000.
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  - Muldoon, James F., 4,355,533, Cl. 73-23.100.
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  - Makinen, Heimo, 4,355,704, Cl. 187-29.00R.
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- Ellert, Roger H., to Scholle Corporation. Roller chute. 4,355,493, Cl. 53-113.000.
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- Endo, Nobuhiro: *See—*
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  - Borrman, Bo; and Engedal, Knud, 4,356,147, Cl. 376-291.000.
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- English Electric Valve Company Limited: *See—*
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- Erthein, Marc, to National Hanger Co., Inc. Heavy and light duty garment clamping hanger. 4,355,743, Cl. 223-96.000.
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  - Brown, Samuel J.; and Lorenz, Jerome L., 4,356,466, Cl. 335-203.000.

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F. L. Smidth & Co.: *See—*
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  Bray, David W.; David, John L.; and Ferris, Erman E., 4,356,490, Cl. 343-17.20R.
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  Ghidella, Vittorio; and Cornacchia, Felice, 4,355,841, Cl. 296-185.000.
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Francois, Bernard; and Viguie, Jean-Claude, to Commissariat a l'Energie Atomique. Process for the production of a ceramic member having inclusions of electrically conductive material flush with its surface. 4,356,135, Cl. 264-61.000.
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  Theurer, Josef, 4,355,579, Cl. 104-12.000.
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  Aotani, Yoshimasa; Kojima, Teruo; and Nakakita, Eiji, 4,356,247, Cl. 430-195.000.
  Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,356,149, Cl. 422-56.000.
  Komaki, Takao; Matsumoto, Seiji; and Ishida, Masamitsu, 4,356,398, Cl. 250-327.200.
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  Tachikawa, Hiromichi; Takahashi, Yohnosuke; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,356,255, Cl. 430-325.000.
  Tadokoro, Eiichi; Masuda, Haruo; Yamaguchi, Nobutaka; and Fujiyama, Masaaki, 4,356,232, Cl. 428-325.000.
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Fujita, Kinya. Orthodontic appliance. 4,355,975, Cl. 433-11.000.
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  - Kruder, George A., 4,356,140, Cl. 264-176.00R.
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  - Bihl, Claudia J.; and Molloy, Michael C., 4,355,635, Cl. 128-94.000.
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  - Sorimachi, Akira, 4,355,887, Cl. 355-25.000.
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  - Smith, James D. B.; and Kauffman, Robert N., 4,356,417, Cl. 310-43.000.
- Kavesh, Sheldon; Prevorsek, Dusan C.; and Wang, Donald G., to Allied Corporation. Production of high strength polyethylene filaments. 4,356,138, Cl. 264-164.000.
- Kawaguchi, Fumikazu: *See—*
  - Sugiyama, Takeshi; Shirouchi, Shoji; Onoda, Mamoru; Kawaguchi, Fumikazu; and Fujita, Isao, 4,356,027, Cl. 75-0.50R.
- Kawaguchi, Keiji: *See—*
  - Gould, Harry J.; and Kawaguchi, Keiji, 4,356,459, Cl. 333-21.00A.

Kawai, Hisasi: *See—*

Iwase, Kazuo; Kawai, Hisasi; Yoshimura, Kunimasa; Ito, Toshimitsu; and Ito, Yoshiyasu, 4,356,551, Cl. 364-431.080.

Kawamoto, Kinji: *See—*

Uya, Masaru; and Kawamoto, Kinji, 4,355,559, Cl. 84-1.030.

Kawamoto, Kiyoaki: *See—*

Tarumi, Noriyoshi; Kawamoto, Kiyoaki; Ueno, Kenji; and Sakaguchi, Hirofumi, 4,355,881, Cl. 355-3.0FU.

Kawasaki Steel Corporation: *See—*

Morishita, Hitoshi; Bada, Hajime; and Sudo, Fumio, 4,356,032, Cl. 75-52.000.

Kawasaki, Teruo: *See—*

Kogawa, Kouichi; Kawasaki, Teruo; Nomura, Hiroyuki; and Yano, Hiroshi, 4,356,470, Cl. 340-52.00F.

Kawata, Tadashi: *See—*

Akao, Mutsuo; and Kawata, Tadashi, 4,356,224, Cl. 428-220.000.

Kawaziri, Kazuhiro: *See—*

Tabei, Masatoshi; Takeda, Keiji; Kawaziri, Kazuhiro; and Higashi, Akio, 4,356,246, Cl. 430-136.000.

Kaye, Wilbur I., to Beckman Instruments, Inc. Near-simultaneous measurements at forward and back scatter angles in light scattering photometers. 4,355,897, Cl. 356-338.000.

Kayss, Manfred. Sack-filling machine. 4,355,741, Cl. 222-415.000.

Kebschull, Franz: *See—*

Feist, Wieland; and Kebschull, Franz, 4,355,901, Cl. 356-373.000.

Keiper U.S.A., Inc.: *See—*

Kluting, Bernd A.; and Zaveri, Vikram H., 4,355,846, Cl. 297-366.000.

Kelchner, Jay R., to Hilliard Corp., The. Rotary plug valve. 4,355,659, Cl. 137-625.190.

Kelkenberg, Heike; and Wolf, Elmar, to Chemische Werke Huls Aktiengesellschaft. Cyclic imides, their preparation and use. 4,356,307, Cl. 546-200.000.

Kelly, Lawrence A., to Sandoz, Inc. Liposome drug delivery systems. 4,356,167, Cl. 424-38.000.

Kemeny, George A.; and Barber, John P., to Westinghouse Electric Corp. Projectile launching system with assured current division. 4,355,561, Cl. 89-8.000.

Kemp, John E. G., to Pfizer Inc. 6-Perhaloalkylsulfonyloxy-penicillanic acids and derivatives thereof. 4,356,122, Cl. 260-245.20R.

Kenton, Joseph R., to Phillips Petroleum Company. Liquid fertilizer solution containing zinc. 4,356,021, Cl. 71-30.000.

Kenyon, Lewis W.: *See—*

Stahlhut, Leo G.; Garnett, Willard R.; and Kenyon, Lewis W., 4,356,537, Cl. 362-148.000.

Keramati, Bahram; Bray, Steven C.; and Wood, Ralph T., to General Electric Company. Drip coffeemaker having a condenser eliminating delivery of steam to the water spreader. 4,356,382, Cl. 219-297.000.

Keran, Vitie P.: *See—*

Hockin, Harry W., deceased; Bracanin, Brian F.; Clements, Ronald J.; Keran, Vitie P.; and Baker, Alan C., 4,356,031, Cl. 75-36.000.

Kercheval, John E.; and Nicoll, Harry G., to Helix Technology Corporation. Split ring seal for cryogenic refrigerator. 4,355,519, Cl. 62-6.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*

Divisek, Jiri; Schmitz, Heinrich; and Hesse, Renke, 4,356,231, Cl. 428-304.400.

Ketterer, Stanley J., to Singer Company, The. Variable bobbin thread control for lockstitch looptaker. 4,355,590, Cl. 112-184.000.

Keve, Tibor: *See—*

Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,356,305, Cl. 546-51.000.

Kezerian, Charles: *See—*

Gaughan, Edmund J.; and Kezerian, Charles, 4,356,025, Cl. 71-100.000.

Khamare, Ishwar S.: *See—*

Bruckner, Ronald L.; Khamare, Ishwar S.; Voyer, Joseph L.; Hamilton, Rodney V.; and Gheorghiu, Paul, 4,356,542, Cl. 363-26.000.

Kharchenko, Vladimir P.: *See—*

Kapitanov, Nikolai N.; Petrova, Natalya P.; Judenich, Vsevolod V.; Kharchenko, Vladimir P.; Smirnov, Boris A.; Ippolitov, Vladimir V.; and Lankina, Nadezhda M., 4,355,751, Cl. 227-19.000.

Kidde, Inc. (Presto Lock Company Division): *See—*

Bako, Lazlo, 4,355,524, Cl. 70-312.000.

Kiencke, Uwe: *See—*

Honig, Gunter; Kiencke, Uwe; and Bone, Rainer, 4,356,447, Cl. 324-169.000.

Kienle, Helmut; Schmid, Gerhard E.; Steiner, Werner; and Trippel, Gerhard, to International Business Machines Corporation. Process for fabricating a multi-layer magnetic thin film disk. 4,356,066, Cl. 204-38.00A.

Kim, Sunj-Wan: *See—*

Peterson, Robert V.; Anderson, James M.; Gregonis, Donald E.; Kim, Sunj-Wan; and Feijen, Jan, 4,356,166, Cl. 424-19.000.

Kiml, Jiri: *See—*

Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,355,705, Cl. 187-29.00R.

Kimura, Akitaka: *See—*

Soeda, Kozi; Hoshikawa, Katuyuki; and Kimura, Akitaka, 4,356,214, Cl. 427-233.000.

Kimura, Kenji: *See—*

Saitou, Sinichi; Kato, Toshikazu; Kimura, Kenji; Satoh, Ken; Shibata, Tsutomu; Watanabe, Seizo; and Ohshima, Ken, 4,355,750, Cl. 226-188.000.

Kimura, Naobumi: *See—*

Ogita, Minoru; and Kimura, Naobumi, 4,356,568, Cl. 455-212.000.

Kimura, Yoshimasa: *See—*

Honda, Haruhisa; Toyono, Tsutomu; Nakamura, Shunji; Tanaka, Kano; and Kimura, Yoshimasa, 4,355,884, Cl. 355-14.0CH.

Kimzey, Paul W.; and Super, Daniel J., to Tennant Company. Surface maintenance equipment. 4,355,435, Cl. 15-347.000.

Kincaid, William C. Fireplace boiler with air tight front and controlled draft. 4,355,625, Cl. 126-132.000.

King, Dennis M.: *See—*

Parks, John H.; Alstrin, Charles E.; and King, Dennis M., 4,355,610, Cl. 123-386.000.

King, Edward E.: *See—*

Heavin, Leonard J.; King, Edward E.; and Milliron, Dennis L., 4,356,078, Cl. 208-8.0LE.

Kinoshita, Koichi: *See—*

Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,356,245, Cl. 430-122.000.

Kirchherr, Claus: *See—*

Hertell, Siegfried; Kirchherr, Claus; Kahl, Horst; and Hoffmann, Siegfried, 4,355,655, Cl. 137-117.000.

Kirkland, David D.: *See—*

Gedaly, Jerrell M.; Sadowski, Joseph P.; Kirkland, David D.; and Sigmund, Frank J., 4,356,042, Cl. 148-1.500.

Kisovec, Adrian V., to Boeing Company, The. Wind turbine rotor speed control system. 4,355,955, Cl. 416-23.000.

Kitagawa, Kouichirou; and Kanno, Eiichi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Pressure responsive safety valve for gas burner. 4,355,970, Cl. 431-77.000.

Kitagawa, Naoto; Masaki, Kunihiko; and Watanabe, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering assembly supporting device of a motor vehicle. 4,355,820, Cl. 280-779.000.

Kitahara, Makoto: *See—*

Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; and Kitahara, Makoto, 4,356,243, Cl. 430-58.000.

Kitahira, Takashi: *See—*

Kanemitsu, Yutaka; Hagio, Takehiko; Furukawa, Mitsuhiko; Miyahara, Michito; Hara, Yoshimichi; and Kitahira, Takashi, 4,356,272, Cl. 501-87.000.

Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, to Seiko Koki Kabushiki Kaisha. Camera equipped with electronic shutter having automatic focus detecting device. 4,355,872, Cl. 354-25.000.

Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, to Fuji Photo Film Co., Ltd. Multi-layer chemical analytical materials. 4,356,149, Cl. 422-56.000.

Kitamura, Nobuaki: *See—*

Masuda, Kouji; Mizukami, Masao; and Kitamura, Nobuaki, 4,356,409, Cl. 307-264.000.

Kitanaka, Minoru: *See—*

Kobayashi, Hirokazu; and Kitanaka, Minoru, 4,356,228, Cl. 428-283.000.

Kitazawa Valve Co., Ltd.: *See—*

Kaji, Shoichi, 4,355,566, Cl. 92-13.600.

Kittelson, David B.: *See—*

Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,355,504, Cl. 60-275.000.

Kiuchi, Mitsuyuki; Mizukawa, Takumi; Kominami, Hideyuki; and Hattori, Kenji, to Matsushita Electric Industrial Company, Limited. Small load detection by comparison between input and output parameters of an induction heat cooking apparatus. 4,356,371, Cl. 219-10.770.

Klaus, Helmuth; Lause, Heinz; and Brunn, Hansjoachim, to Intertractor Viehmann GmbH & Co., Firma. Track roller for track-laying vehicles. 4,355,988, Cl. 474-91.000.

Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf. Process for the production of 1-amino-propanediol-(2,3) (I). 4,356,323, Cl. 564-475.000.

Kleemann, Axel: *See—*

Bergstein, Wolfgang; Kleemann, Axel; and Martens, Jurgen, 4,356,324, Cl. 568-17.000.

Klein, Gerald B. Method of forming a can end having a vented gate within a push-down aperture. 4,355,935, Cl. 413-17.000.

Kleinschmidt, Peter: *See—*

Reinehr, Ulrich; Hoffmann, Peter; and Kleinschmidt, Peter, 4,356,134, Cl. 264-49.000.

Klement, Ekkehard: *See—*

Ruell, Hartwig; and Klement, Ekkehard, 4,356,396, Cl. 250-227.000.

Kliman, Gerald B.: *See—*

Norton, James F.; Kliman, Gerald B.; and Tompkins, Russell E., 4,356,377, Cl. 219-121.0EH.

Kline, Richard B., II: *See—*

Neumann, Leopold; Kline, Richard B., II; and Scholz, Wolfgang, 4,356,475, Cl. 340-521.000.

Klingberg, Peter: *See—*

Franzen, Rudolf; and Klingberg, Peter, 4,356,008, Cl. 55-112.000.

Klose, Peter H.; and Ovshinsky, Herbert C., to Energy Conversion Devices, Inc. Microfiche recording system. 4,355,890, Cl. 355-54.000.

Kluting, Bernd A.; and Zaveri, Vikram H., to Keiper U.S.A., Inc. Seat back adjuster. 4,355,846, Cl. 297-366.000.

Knappe, Ortwin; and Hame, Walter. Incoming and outgoing air conveyance for dry storage with self heating radioactive materials. 4,356,146, Cl. 376-272.000.

Knepper, J. Irvine; and Sallee, Dennis C., to Petrolite Corporation. Anti-static compositions. 4,356,002, Cl. 44-62.000.

Knifton, John F., to Texaco Inc. Process for preparing propylene glycol monoalkyl ethers and alkoxyacetones. 4,356,327, Cl. 568-387.000.

Knifton, John F., to Texaco Inc. Process for preparing ethylene glycol. 4,356,332, Cl. 568-852.000.

Knott, Jack E., II; Koschak, Matthew S.; and Adams, John P., to American Can Company. Package for food products. 4,355,721, Cl. 206-524.200.

Knudsen, Hans B., to F. L. Smidth & Co. Temperature measurement by means of heat tubes. 4,355,909, Cl. 374-135.000.

Kobayashi, Hirokazu; and Kitanaka, Minoru, to Toray Industries, Inc. Fiber-reinforced moldable sheet and process for preparation thereof. 4,356,228, Cl. 428-283.000.

Kobayashi, Hisao: *See—*

Kono, Hiroya; Hasegawa, Jun; Inagaki, Mitsukane; and Kobayashi, Hisao, 4,355,959, Cl. 417-223.000.

Kobayashi, Kazuho: *See—*

Noguchi, Mikio; and Kobayashi, Kazuho, 4,356,427, Cl. 313-422.000.

Kobayashi, Masami: *See—*

Tamura, Sakae; Yoshida, Hiromi; Kotoh, Takehiko; and Kobayashi, Masami, 4,356,049, Cl. 156-220.000.

Kobayashi, Morimasa; and Sakurai, Nobuo, to Amada Company, Limited. Bandsaw blade deviation detecting apparatus for horizontal bandsaw machines. 4,355,555, Cl. 83-62.100.

Kobayashi, Toshio, to Director of National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries. Process for the separation of solute in cryohydrate and apparatus therefor. 4,355,520, Cl. 62-123.000.

Kobayashi, Yasuyuki; Nezu, Hisao; and Nishikata, Etsushi, to Nippon Seiki Kabushiki Kaisha. Odometer. 4,356,388, Cl. 235-96.000.

Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Aryl- or aralkylbenzene having two benzene rings at least one of which is substituted by at least one 3,3,3-trifluoropropyl group. 4,356,335, Cl. 570-129.000.

Kobe Steel, Limited: *See—*

Sugiyama, Takeshi; Shirouchi, Shoji; Onoda, Mamoru; Kawaguchi, Fumikazu; and Fujita, Isao, 4,356,027, Cl. 75-0.50R.

Kobori, Toshio: *See—*

Yamazaki, Keiji; and Kobori, Toshio, 4,355,875, Cl. 354-38.000.

Koch, Karl-Friedrich: *See—*

Diefendahl, Wolfgang; and Koch, Karl-Friedrich, 4,355,431, Cl. 14-27.000.

Kock, Konrad, to AMP Incorporated. Optical fibre termination. 4,355,862, Cl. 350-96.200.

Koda, Toshihide: *See—*

Tanaka, Hideharu; Ishijima, Koji; and Koda, Toshihide, 4,355,963, Cl. 418-63.000.

Kodama, Yutaka, to Ricoh Co., Ltd. Ink-jet recording device. 4,356,499, Cl. 346-75.000.

Koeberle, Jean: *See—*

Pacheco, Henri; Descours-Saint-Martino, Marie-Ange; Yavordios, Demetre; and Koeberle, Jean, 4,356,188, Cl. 424-317.000.

Koehnecke, Heinrich: *See—*

Boschulte, Rainer; Koehnecke, Heinrich; and Muecke, Siegfried, 4,356,485, Cl. 340-825.170.

Koenig, Garland C. Parachute inflation assistance device. 4,355,774, Cl. 244-145.000.

Kofod, Hans, to Nordisk Insulinlaboratorium. Therapeutically active polypeptides or acid addition salts and a process for producing such compounds. 4,356,119, Cl. 260-112.50R.

Kogawa, Kouichi; Kawasaki, Teruo; Nomura, Hiroyuki; and Yano, Hiroshi, to Nissan Motor Co., Ltd. Multifunction electronic meter for vehicle. 4,356,470, Cl. 340-52.00F.

Koguchi, Kenji, to Xerox Corporation. Transmitter for facsimile. 4,356,516, Cl. 358-288.000.

Kogure, Shigeru; Momosaki, Eishi; and Inoue, Minoru, to Kabushiki Kaisha Suwa Seikosha. Electrode for tuning fork type quartz crystal vibrator. 4,356,425, Cl. 310-370.000.

Kojima, Tamotsu: *See—*

Usui, Tugumoto; Kato, Katsunori; and Kojima, Tamotsu, 4,356,258, Cl. 430-557.000.

Kojima, Teruo: *See—*

Aotani, Yoshimasa; Kojima, Teruo; and Nakakita, Eiji, 4,356,247, Cl. 430-195.000.

Kolb, Eugen: *See—*

Ziegler, Hermann; and Kolb, Eugen, 4,355,845, Cl. 296-210.000.

Kolleas, Pete D. Chain saw bar attachment. 4,355,551, Cl. 76-78.00R.

Komaki, Takao; Matsumoto, Seiji; and Ishida, Masamitsu, to Fuji Photo Film Co., Ltd. Method of processing radiographic image. 4,356,398, Cl. 250-327.200.

Komanduri, Ranga; Lee, Minyoung; Flom, Donald G.; Thompson, Robert A.; Jones, Marshall G.; and Douglas, Robert J., to General Electric Company. Pulse laser pretreated machining. 4,356,376, Cl. 219-121.0LN.

Kominami, Hideyuki: *See—*

Kiuchi, Mitsuyuki; Mizukawa, Takumi; Kominami, Hideyuki; and Hattori, Kenji, 4,356,371, Cl. 219-10.770.

Komori Printing Machinery Co., Ltd.: *See—*

Sugiyama, Hiroyuki, 4,355,800, Cl. 271-229.000.

Kondo, Asaji: *See—*

Kitajima, Masao; Arai, Fuminori; and Kondo, Asaji, 4,356,149, Cl. 422-56.000.

Konishiroku Photo Industry Co., Ltd.: *See—*

Tarumi, Noriyoshi; Kawamoto, Kiyoaki; Ueno, Kenji; and Sakaguchi, Hirofumi, 4,355,881, Cl. 355-3.0FU.

Usui, Tugumoto; Kato, Katsunori; and Kojima, Tamotsu, 4,356,258, Cl. 430-557.000.

Kono, Hiroya; Hasegawa, Jun; Inagaki, Mitsukane; and Kobayashi, Hisao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotation sensor of a swash-plate type compressor. 4,355,959, Cl. 417-223.000.

Kopel, Jeffrey L., to Sprague Electric Company. Terminated monolithic ceramic chip capacitor. 4,356,529, Cl. 361-304.000.

Koppelmann, Eldo K.; and Blackmun, Wayne E., to Santrade Ltd. Indexable spade drill blade. 4,355,932, Cl. 408-188.000.

Kornrumpf, William P.; and Ciccone, Joseph L., to General Electric Company. Method and circuit for controlling a hybrid contactor. 4,356,525, Cl. 361-4.000.

Kortikov, Viktor S.: *See—*

Belyakov, Viktor P.; Bronshtein, Alexandr S.; and Kortikov, Viktor S., 4,356,132, Cl. 261-114.0TC.

Korzelius, Donald G., to Quaker Oats Company, The. Switch mechanism. 4,355,483, Cl. 46-232.000.

Kosa, Yasunobu, to Hitachi, Ltd. Method of fabricating a mis-type device by using a gate electrode and selectively implanted nitride layer. 4,356,041, Cl. 148-1.500.

Koschak, Matthew S.: *See—*

Knott, Jack E., II; Koschak, Matthew S.; and Adams, John P., 4,355,721, Cl. 206-524.200.

Koshugi, Junichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Spherically shaped material comprising acylated product of de-N-acetylated chitin. 4,356,236, Cl. 428-403.000.

Kostermeier, Karl-Heinz. Cutter for wood chippers. 4,355,673, Cl. 144-230.000.

Kostka, Miroslav: *See—*

Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,355,705, Cl. 187-29.00R.

Kotoh, Takehiko: *See—*

Tamura, Sakae; Yoshida, Hiromi; Kotoh, Takehiko; and Kobayashi, Masami, 4,356,049, Cl. 156-220.000.

Kough, John K.: *See—*

Martin, Otis M.; and Kough, John K., 4,355,491, Cl. 52-540.000.

Kountz, Kenneth J.; and Norbeck, Dean K., to Borg-Warner Corporation. Adjustable surge and capacity control system. 4,355,948, Cl. 415-1.000.

Kourimsky, Friedrich J. A., to AMP Incorporated. Electrical junction box. 4,355,853, Cl. 339-17.0LM.

Kraft, Derald H., to Dyneer Corporation. Arrangement for tensioning the drive belt for vehicle accessories. 4,355,991, Cl. 474-110.000.

Kraftwerk Union Aktiengesellschaft: *See—*

Boer, Joachim; and Beermann, Heinrich, 4,356,419, Cl. 310-217.000.

Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, 4,355,790, Cl. 266-252.000.

Reifenberg, Rolf, 4,355,514, Cl. 60-660.000.

Krapcho, John, to E. R. Squibb & Sons, Inc. Mercaptoacyl derivatives of 4-disubstituted prolines. 4,356,182, Cl. 424-263.000.

Kraskin, Kenneth S., to Personal Products Company. Inhibiting production of undesirable products on body surfaces and environs employing aminopolycarboxylic compounds. 4,356,190, Cl. 424-319.000.

Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, to Kraftwerk Union Aktiengesellschaft. Heat-treatment device for prolonging the life of a pressure vessel such as a reactor pressure vessel especially. 4,355,790, Cl. 266-252.000.

Kring, Helmut: *See—*

Cloos, Erwin; Schmidt, Manfred; Kring, Helmut; Schnell, Gerhard; and Thielmann, Joachim, 4,356,378, Cl. 219-124.100.

Krob, Erwin; and Weigl, Erwin, to TMC Corporation. Ski brake. 4,355,817, Cl. 280-605.000.

Kruder, George A., to HPM Corporation. Extrusion method with short cycle multichannel wave screw. 4,356,140, Cl. 264-176.00R.

Krueger, Gordon P.: *See—*

Lund, Anders E.; and Krueger, Gordon P., 4,355,754, Cl. 238-83.000.

Krumm, Paul J.: *See—*

Laughlin, Donald; and Krumm, Paul J., 4,355,643, Cl. 128-663.000.

Kubota, Hitoshi; Takahashi, Toshiyuki; and Hayashida, Yoshihiro, to Nissan Motor Company, Ltd. Reservoir for use with tandem master cylinder. 4,355,512, Cl. 60-534.000.

Kubota Ltd.: *See—*

Hirooka, Masami; and Harada, Denzaburo, 4,355,693, Cl. 180-6.480.

Kuettner, Klaus E., to Rush-Presbyterian-St. Luke's Medical Center. Anti-invasion factor containing cultures. 4,356,261, Cl. 435-68.000.

Kuhle, Engelbert: *See—*

Dickore', Karlfried; and Kuhle, Engelbert, 4,356,024, Cl. 71-93.000.

Kuki, Takakuni, to Nippon Electric Co., Ltd. Source voltage drop detecting circuit. 4,356,481, Cl. 340-636.000.

Kumadaki, Itsumaro: *See—*

Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,356,335, Cl. 570-129.000.

Kumagai, Yugo, to Hitachi Chemical Co., Ltd. Thermosetting resin composition. 4,356,285, Cl. 525-111.000.

Kumakawa, Shiro; and Kuroda, Toshimasa, to Teijin Limited. Thermoplastic synthetic filaments and process for producing the same. 4,356,234, Cl. 428-372.000.

- Kuperman, Gilbert G.; and Hann, Reuben L., to United States of America, Air Force. Color moving target simulation apparatus. 4,355,981, Cl. 434-14.000.
- Kuraray Co., Ltd.: *See—*
  - Nakao, Makoto; Nakao, Toshiko; Nagai, Fumiko; Dogen, Masako; and Tabata, Yoshitomi, 4,356,172, Cl. 424-101.000.
  - Yoshimura, Noriaki; and Tamura, Masuhiko, 4,356,333, Cl. 568-840.000.
- Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,356,335, Cl. 570-129.000.
  - Koshugi, Junichi, 4,356,236, Cl. 428-403.000.
- Kuroda, Toshimasa: *See—*
  - Kumakawa, Shiro; and Kuroda, Toshimasa, 4,356,234, Cl. 428-372.000.
- Kurokawa, Mikio: *See—*
  - Uno, Hitoshi; Kurokawa, Mikio; and Nakamura, Hideo, 4,356,186, Cl. 424-275.000.
- Kurose, Morisumi: *See—*
  - Ejiri, Koichi; Kurose, Morisumi; and Hayakawa, Seiji, 4,356,555, Cl. 364-515.000.
- Kusakabe, Takao: *See—*
  - Kagawa, Naohiko; Yamamoto, Katsumi; Sasano, Rin; Kusakabe, Takao; and Moriya, Yasuhiro, 4,356,148, Cl. 422-9.000.
- Kuschel, Frank: *See—*
  - Schubert, Herrmann; Pelzl, Gerhard; Zaschke, Horst; Demus, Dietrich; Nothni, Hans-Ulrich; and Kuschel, Frank, 4,356,103, Cl. 252-299.100.
- Kutnyak, Thomas A.; Desai, Mahendra N.; and Berman, Roy A., to Automation Industries, Inc. Thermoplastic compositions containing polyvinylidene fluoride and chlorinated polyethylene. 4,356,284, Cl. 524-520.000.
- La Barbera, Ronald S.: *See—*
  - Carron, Mark S.; La Barbera, Ronald S.; Van Brocklin, Lester P.; and Jain, Pawan K., 4,356,130, Cl. 260-989.000.
- La Bate, Micheal D. Hot metal runner system with air pollution controls. 4,355,788, Cl. 266-157.000.
- Ladin, Eli M., to Federal-Mogul Corporation. Rotatable machine assembly. 4,355,992, Cl. 474-152.000.
- Laga, Gerry T.: *See—*
  - Harnagel, Gary L.; Laga, Gerry T.; Harrison, Joseph M.; and Twaddell, Victor A., 4,355,456, Cl. 29-572.000.
- Lagoutte, Serge; and Franchet, Alain G., to Pont-A-Mousson S.A. Apparatus for producing hollow plastic bottles by thermal heating and blow mold expansion. 4,355,968, Cl. 425-526.000.
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- Matsuda, Toshio: *See—*
  - Ueno, Ryuzo; Matsuda, Toshio; Kanayama, Tatsuo; Tomiyasu, Kunihiko; Fujita, Yatsuka; and Nagata, Kiyoshi, 4,356,203, Cl. 426-266.000.
- Matsukawa, Hiroharu: *See—*
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- Matsumoto, Seiji: *See—*
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  - Noyori, Masaharu; and Fujimoto, Hiroaki, 4,356,374, Cl. 219-121.0PE.
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  - Uya, Masaru; and Kawamoto, Kinji, 4,355,559, Cl. 84-1.030.
  - Wada, Ryoichi; Seno, Takanori; and Tsuchiya, Mitsuharu, 4,356,566, Cl. 375-116.000.
  - Yamamitsu, Chojuro, 4,356,506, Cl. 358-316.000.
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- Matsushita, Shizuo; and Togawa, Yasuhito, to Director-General of Agency of Industrial Science and Technology. Apparatus for the anodic oxidation of aluminum. 4,356,076, Cl. 204-261.000.
- Matteelli, Rolando; and Ciuti, Brunello, to Snamprogetti S.p.A. Activated depollution boom. 4,356,088, Cl. 210-198.100.
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  - Buck, Gordon H.; Cayley, Paul W., Jr.; Hardwick, Martha K.; and Shoff, Daniel J., 4,355,806, Cl. 273-85.00G.
  - Sapkus, Jurgis; Lewis, J. Stephen; and Yamasaki, Toshio, 4,355,482, Cl. 46-106.000.
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  - Macovski, Albert, 4,356,399, Cl. 250-461.100.
- Mayer, Endre A., to Bendix Corporation, The. Dual solenoid vacuum modulator. 4,355,661, Cl. 137-881.000.
- Mayer, Herbert E.; and Loebach, Ernst W., to Censor Patent- Und Versuchs-Anstalt. Method for the projection printing. 4,355,892, Cl. 355-77.000.
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- Mayhew, Harry W.: *See—*
  - Rekers, Louis J.; French, Richard J.; and Mayhew, Harry W., 4,356,294, Cl. 526-100.000.
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- McCole, Thomas P., to Polaroid Corporation. Photographic product. 4,356,248, Cl. 430-209.000.
- McCoy, Ewald H., to Electrochemical Products, Inc. Alkaline plating baths and electroplating process. 4,356,067, Cl. 204-43.00Z.
- McCoy, William J., Jr. X-Ray gloves and liner. 4,355,424, Cl. 2-161.00R.
- McCullough, Robert W. Stack of cards representing dice and backgammon game. 4,355,812, Cl. 273-248.000.
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- McGovern, Terrence P.; and Schreck, Carl E., to United States of America, Agriculture. Insect repellants. 4,356,180, Cl. 424-250.000.
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- McHugh, Edward L. Protective book cover. 4,355,822, Cl. 281-34.000.

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- McMackins, Dudley E.: *See—*
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- McMahon, Richard M.: *See—*
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- McMaster, Harold A. Method and apparatus for deep bending glass sheets. 4,356,018, Cl. 65-104.000.
- McNamara, Harold J.; and Schilk, Joan A., to Shell Oil Company. Process for reducing the total sulfur content of a high CO_2-content feed gas. 4,356,161, Cl. 423-573.00R.
- McShane, James L.; Golick, Leonard R.; and Spiegelman, Stanley R., to Westinghouse Electric Corp. Sludge measuring apparatus and ultrasonic probe assembly therefor. 4,355,536, Cl. 73-633.000.
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  - Mount, Bruce E., 4,356,486, Cl. 340-870.380.
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- Menown, Hugh, to English Electric Valve Company Limited. Thyratron having anode with low work function material. 4,356,426, Cl. 313-193.000.
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  - Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Gould, Norman P., 4,356,313, Cl. 560-53.000.
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- Messier-Hispano-Bugatti (SA): *See—*
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- Metallwerk Max Brose GmbH & Co.: *See—*
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- Midland-Ross Corporation: *See—*
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  - Levesque, Paul N.; and Lavado, Neal M., 4,355,654, Cl. 137-110.000.
- Miles, John H., to Wean United, Inc. Method and apparatus for uncoiling and straightening material for processing thereof. 4,355,526, Cl. 72-164.000.
- Miles, Robert A. Rodent barrier device. 4,356,087, Cl. 210-131.000.
- Miller, Charlie D., to Carrier Corporation. Method of operating a tube extracting mechanism. 4,355,450, Cl. 29-426.500.
- Miller, David D., to Garrett Corporation, The. Life raft inflation system. 4,355,987, Cl. 441-41.000.
- Miller, Donald E., to Continental Group, Inc., The. Hold down mechanism. 4,355,527, Cl. 72-351.000.
- Miller, Franklyn D.: *See—*
  - Muller, Werner C.; and Miller, Franklyn D., 4,356,266, Cl. 435-162.000.
- Miller, Glen E., to Boeing Company, The. Digital fiber optic sensor system. 4,356,395, Cl. 250-227.000.
- Miller, James H. Apparatus for canning food. 4,355,669, Cl. 141-147.000.
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- Miller, William H.: *See—*
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- Minigrip, Inc.: *See—*
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- Minnesota Mining and Manufacturing Company: *See—*
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  - Heyer, Raymond F.; and Lovness, William R., 4,355,489, Cl. 51-400.000.
  - Lange, Roger W.; and Szecsy, Alek P., 4,356,233, Cl. 428-336.000.
  - Leichter, Louis M.; Sonnonstine, Terry J.; Stofko, John J., Jr.; and Beretta, Paolo, 4,356,244, Cl. 430-82.000.
  - Soch, Fredrich A., 4,356,273, Cl. 521-114.000.
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- Miskin, Leslie, to ITT Industries, Inc. Pulse transmission and repetition circuit. 4,356,410, Cl. 307-265.000.
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- Mitani, Haruyasu; and Mushimoto, Eiko, to Kabushiki Kaisha Morita Seisakusho. Device for displaying masticatory muscle activities. 4,355,645, Cl. 128-777.000.
- Mitani, Yoshio, to Murata Kikai Kabushiki Kaisha. Truck driving apparatus. 4,355,581, Cl. 104-166.000.
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  - Katagi, Takashi; Urasaki, Shuji; Ebisui, Takashi; and Aoki, Katsuhiko, 4,356,494, Cl. 343-781.0CA.
  - Ozaki, Minoru; Onishi, Ken; and Tanaka, Kunimaro, 4;356,517, Cl. 360-13.000.
  - Tanaka, Hideharu; Ishijima, Koji; and Koda, Toshihide, 4,355,963, Cl. 418-63.000.
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- Mitsubishi Petrochemical Company Limited: *See—*
  - Fujii, Masaki; and Goto, Shiro, 4,356,295, Cl. 526-125.000.
  - Kadowaki, Koju; Sarumaru, Kohei; and Tanaka, Yoshiaki, 4,356,114, Cl. 252-467.000.
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- Miura, Shuzi; Yoshida, Tsunemasa; Ono, Shoji; Masuho, Yasuhiko; and Sawada, Shuzo, to Teijin Limited. IgM Derivatives and process for the preparation thereof. 4,356,173, Cl. 424-101.000.
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  - Kanemitsu, Yutaka; Hagio, Takehiko; Furukawa, Mitsuhiko; Miyahara, Michito; Hara, Yoshimichi; and Kitahira, Takashi, 4,356,272, Cl. 501-87.000.
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- Mobil Oil Corporation: *See—*
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  - Gross, Benjamin, 4,356,082, Cl. 208-164.000.
  - Leavitt, Richard I., 4,356,095, Cl. 252-8.55D.
  - Schatz, Klaus W., 4,355,539, Cl. 73-863.110.
  - Young, Lewis B., 4,356,338, Cl. 585-407.000.
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  - Emanuel, Peter R.; Salman, Syed; and Mohiuddin, Gulam, 4,356,230, Cl. 428-290.000.
- Moldenhauer, David W., to Joy Manufacturing Company. Electric switch. 4,356,367, Cl. 200-298.000.
- Moll, Hans, to M.A.N. Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft. Axle suspension for the driven axle of a road vehicle. 4,355,696, Cl. 180-73.0TL.
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- Moloney, Kieron J.; and Thomas, Gerald S., to Lucas Industries Limited. Reciprocable plunger fuel injection pump. 4,355,546, Cl. 74-569.000.
- Molt, Kenneth R., to Carstab Corporation. 2,2,6,6-Tetramethyl-4-piperidyl-substituted heterocyclic ring compound and polymers containing same. 4,356,279, Cl. 524-102.000.
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  - Roffia, Paolo; Calini, Pierangelo; and Tonti, Sergio, 4,356,319, Cl. 562-414.000.
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- Mostek Corporation: *See—*
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  - Quirey, Tim A.; and D'Amico, Thomas V., 4,356,389, Cl. 235-455.000.
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- Muller, Jorg: *See—*
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  - Suganuma, Buro; Sekitani, Noboru; Hatanaka, Yasuaki; and Inoue, Yasuhiro, 4,355,770, Cl. 242-35.50A.
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- Murofushi, Toshiaki: *See—*
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- Murray, Gary J.: *See—*
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- Murray, Stephen B.: *See—*
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- Nagai, Fumiko: *See—*
  - Nakao, Makoto; Nakao, Toshiko; Nagai, Fumiko; Dogen, Masako; and Tabata, Yoshitomi, 4,356,172, Cl. 424-101.000.
- Nagashima, Nao, to Canon Kabushiki Kaisha. Image forming apparatus provided with surface potential control device. 4,355,885, Cl. 355-14.0CH.
- Nagata, Kiyoshi: *See—*
  - Ueno, Ryuzo; Matsuda, Toshio; Kanayama, Tatsuo; Tomiyasu, Kunihiko; Fujita, Yatsuka; and Nagata, Kiyoshi, 4,356,203, Cl. 426-266.000.
- Naglieri, Anthony N.; and Rizkalla, Nabil, to Halcon SD Group, Inc., The. Preparation of carboxylic acids. 4,356,320, Cl. 562-517.000.
- Nakagawa, Kiyoshi: *See—*
  - Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,355,445, Cl. 28-274.000.
- Nakagawa, Tadashi: *See—*
  - Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, 4,355,872, Cl. 354-25.000.
- Nakahara, Masao: *See—*
  - Mizuno, Ichiro; and Nakahara, Masao, 4,355,468, Cl. 33-147.00F.
- Nakajima, Toshihiko: *See—*
  - Saito, Tadashi; Nakajima, Toshihiko; and Osada, Toshio, 4,356,437, Cl. 318-254.000.
- Nakakita, Eiji: *See—*
  - Aotani, Yoshimasa; Kojima, Teruo; and Nakakita, Eiji, 4,356,247, Cl. 430-195.000.
- Nakamichi, Masanari: *See—*
  - Hatano, Kazunori; Nakamichi, Masanari; and Akiyama, Shun-ichi, 4,356,265, Cl. 435-119.000.
- Nakamura, Hideo: *See—*
  - Uno, Hitoshi; Kurokawa, Mikio; and Nakamura, Hideo, 4,356,186, Cl. 424-275.000.
- Nakamura, Nobuyuki: *See—*
  - Shibanai, Ichiro; Horikoshi, Kouki; and Nakamura, Nobuyuki, 4,356,115, Cl. 252-522.00A.
- Nakamura, Shunji: *See—*
  - Honda, Haruhisa; Toyono, Tsutomu; Nakamura, Shunji; Tanaka, Kano; and Kimura, Yoshimasa, 4,355,884, Cl. 355-14.0CH.
- Nakanishi, Yoshiyuki; Akazawa, Yoji; Ikeda, Noriaki; and Suzuki, Takehiko, to Nippon Shukubai Kagaku Kogyo Co. Ltd. Catalyst for production of phthalic anhydride. 4,356,112, Cl. 252-435.000.
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  - Nakao, Makoto; Nakao, Toshiko; Nagai, Fumiko; Dogen, Masako; and Tabata, Yoshitomi, 4,356,172, Cl. 424-101.000.
- Nakayama, Koichi, to Toko Kabushiki Kaisha. Television sound multiplex signal receiving device. 4,356,510, Cl. 358-143.000.
- Nalco Chemical Company: *See—*
  - Payne, Charles C., 4,356,107, Cl. 252-313.00S.
- Nanba, Kenji: *See—*
  - Doi, Toshitada; Furukawa, Shunsuke; and Nanba, Kenji, 4,356,564, Cl. 371-40.000.
- National Distillers & Chemical Corp.: *See—*
  - Brima, Thomas S., 4,356,310, Cl. 549-295.000.
  - Muller, Werner C.; and Miller, Franklyn D., 4,356,266, Cl. 435-162.000.
- National Hanger Co., Inc.: *See—*
  - Erthein, Marc, 4,355,743, Cl. 223-96.000.
- National Petro Chemicals Corp.: *See—*
  - Rekers, Louis J.; French, Richard J.; and Mayhew, Harry W., 4,356,294, Cl. 526-100.000.
- National Semiconductor Corporation: *See—*
  - Boettcher, Charles E., 4,355,455, Cl. 29-571.000.
  - Burns, Carmen D., 4,355,463, Cl. 29-827.000.
  - Hinds, Sally K.; Weiler, Peter M.; and Hewitt, Robert R., 4,355,719, Cl. 206-334.000.
- Naturin-Werk Becker & Co.: *See—*
  - Winkler, Bruno, 4,356,201, Cl. 426-138.000.
- NCR Corporation: *See—*
  - Bruckner, Ronald L.; Khamare, Ishwar S.; Voyer, Joseph L.; Hamilton, Rodney V.; and Gheorghiu, Paul, 4,356,542, Cl. 363-26.000.
  - Porter, Warren W., 4,355,856, Cl. 339-95.00R.
- Neckermann, Edwin F.; and Wooding, Joseph F. Insulating and filler material comprising cellulose fibers and clay, and method of making same from paper-making waste. 4,356,060, Cl. 162-181.600.
- Nelson, Kenneth L.; and FitzGerald, David, to FND Company. Electrically charged, emulsified carrier-fuel particle combustion. 4,355,969, Cl. 431-4.000.
- Nelson, Marie A. Shoe horn for handicapped persons. 4,355,745, Cl. 223-118.000.
- Nelson, Richard H., to Forward Graphics, Inc. Apparatus and method for resizing artwork. 4,355,889, Cl. 355-39.000.
- Nelson, Richard M., to Guy F. Atkinson Company. Flow-adjusted hydraulic rotary machine. 4,355,953, Cl. 415-164.000.
- Nessfield, Stanley, to Sea Containers Limited. Folding containers. 4,355,732, Cl. 220-1.500.
- Neumann, Leopold; Kline, Richard B., II; and Scholz, Wolfgang, to Siemens Aktiengesellschaft. System containing a predetermined number of monitoring devices and at least one central station. 4,356,475, Cl. 340-521.000.
- Neville, David M., Jr.; Youle, Richard J.; and Murray, Gary J., to United States of America, Health & Human Services. Chemical modifications of proteins which induce new receptor specificities and therefore elicit new effects in cells. 4,356,117, Cl. 260-112.00R.
- Nevins, James L.; and Padavano, Joseph, to Charles Stark Draper Laboratory, Inc., The. Folded remote center compliance device. 4,355,469, Cl. 33-185.00R.
- Nevyas, Herbert J.; and Traub, Alan C., to Diversitronics, Inc. Keratometer. 4,355,871, Cl. 351-13.000.
- Newton, Kevin H.: *See—*
  - Graef, Harry T.; Mercer, Scott A.; Hill, Jeffrey A.; and Newton, Kevin H., 4,355,797, Cl. 271-20.000.
- Nezu, Hisao: *See—*
  - Kobayashi, Yasuyuki; Nezu, Hisao; and Nishikata, Etsushi, 4,356,388, Cl. 235-96.000.
- Nicholson, Agnew W. Ladder. 4,355,701, Cl. 182-97.000.
- Nicoll, Harry G.: *See—*
  - Kercheval, John E.; and Nicoll, Harry G., 4,355,519, Cl. 62-6.000.
- Nieberger, Melvin: *See—*
  - Robinson, Charles E.; and Nieberger, Melvin, 4,355,605, Cl. 123-320.000.
- Nielsen, Robert P.; and La Rochelle, John H., to Shell Oil Company. Ethylene oxide process. 4,356,312, Cl. 549-534.000.
- Nienaber, Heinrich. Gas pedal movement damper. 4,356,471, Cl. 340-52.00R.
- Niiho, Masaaki: *See—*
  - Yoshimura, Norihiko; Niiho, Masaaki; Kamasako, Shoji; and Ishiai, Hideyuki, 4,356,513, Cl. 358-213.000.
- Nijhawan, Pramodh; and Duckworth, Joseph M., to Bahnson Company, The. Fumes control system duct and car arrangement. 4,356,064, Cl. 202-263.000.
- Niles, Albert B., to Caterpillar Tractor Co. Filtering and dampening apparatus. 4,356,091, Cl. 210-354.000.
- Nilsson, Lennart O. E.: *See—*
  - Dahlberg, Bengt A. G.; Holmberg, Bengt M.; and Nilsson, Lennart O. E., 4,356,383, Cl. 219-308.000.
- Nippon Carbon Co., Ltd.: *See—*
  - Ishikawa, Toshikatsu; Teranishi, Haruo; Yokoyama, Akira; Yanagi, Tetsuo; and Harada, Hirofumi, 4,356,158, Cl. 423-447.400.
- Nippon Electric Co., Ltd.: *See—*
  - Iida, Yasuo; Suzuki, Katumi; and Endo, Nobuhiro, 4,356,223, Cl. 428-156.000.
  - Kuki, Takakuni, 4,356,481, Cl. 340-636.000.
  - Morimoto, Izumi; and Sakamoto, Isao, 4,356,402, Cl. 307-19.000.
  - Oguchi, Tetsuji, 4,356,482, Cl. 340-731.000.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Iwamatsu, Masayuki, 4,356,452, Cl. 330-265.000.
  - Ogita, Minoru; and Kimura, Naobumi, 4,356,568, Cl. 455-212.000.
- Nippon Kogaku K. K.: *See—*
  - Maeda, Masaru, 4,355,894, Cl. 356-5.000.
- Nippon Oil Company, Limited: *See—*
  - Imaizumi, Masao; Takezono, Tetsuya; Amari, Takaaki; and Oguchi, Yutaka, 4,356,339, Cl. 585-829.000.
- Nippon Seiki Kabushiki Kaisha: *See—*
  - Kobayashi, Yasuyuki; Nezu, Hisao; and Nishikata, Etsushi, 4,356,388, Cl. 235-96.000.
- Nippon Shukubai Kagaku Kogyo Co. Ltd.: *See—*
  - Nakanishi, Yoshiyuki; Akazawa, Yoji; Ikeda, Noriaki; and Suzuki, Takehiko, 4,356,112, Cl. 252-435.000.
- Nippon Soken, Inc.: *See—*
  - Iwase, Kazuo; Kawai, Hisasi; Yoshimura, Kunimasa; Ito, Toshimitsu; and Ito, Yoshiyasu, 4,356,551, Cl. 364-431.080.
- Nippon Tungsten Co., Ltd.: *See—*
  - Kanemitsu, Yutaka; Hagio, Takehiko; Furukawa, Mitsuhiko; Miyahara, Michito; Hara, Yoshimichi; and Kitahira, Takashi, 4,356,272, Cl. 501-87.000.
- Nishikata, Etsushi: *See—*
  - Kobayashi, Yasuyuki; Nezu, Hisao; and Nishikata, Etsushi, 4,356,388, Cl. 235-96.000.
- Nishimura, Toshiyuki: *See—*
  - Makino, Kenya; Sakurai, Hieo; Watanabe, Masaru; and Nishimura, Toshiyuki, 4,356,160, Cl. 423-492.000.
- Nissan Motor Company, Limited: *See—*
  - Asano, Masaharu; Furuhashi, Shoji; and Tamura, Hideyuki, 4,355,615, Cl. 123-437.000.
  - Hira, Kazumi, 4,355,842, Cl. 296-199.000.
  - Hirota, Yukitsugu; Endo, Akira; and Sekine, Kenji, 4,356,489, Cl. 343-7.0VM.
  - Iizuka, Mitsuru, 4,355,836, Cl. 296-37.900.
  - Inoue, Mitsumasa, 4,355,622, Cl. 123-548.000.
  - Kogawa, Kouichi; Kawasaki, Teruo; Nomura, Hiroyuki; and Yano, Hiroshi, 4,356,470, Cl. 340-52.00F.
  - Kubota, Hitoshi; Takahashi, Toshiyuki; and Hayashida, Yoshihiro, 4,355,512, Cl. 60-534.000.
  - Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, 4,355,848, Cl. 301-37.0SS.
  - Sato, Yoshimi, 4,355,442, Cl. 24-230.0AL.
  - Shimada, Yukio, 4,355,523, Cl. 62-133.000.
  - Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,355,681, Cl. 165-16.000.
  - Shimizu, Kenzo; Fukunaga, Yukio; and Tsuda, Hiroshi, 4,355,837, Cl. 296-37.120.
  - Tamura, Hideyuki; and Ikeura, Kenji, 4,355,616, Cl. 123-440.000.
  - Watanabe, Takeaki, 4,355,753, Cl. 237-12.30A.
  - Yasuhara, Seishi, 4,355,621, Cl. 123-502.000.
- Nitz, Rolf-Eberhard: *See—*
  - Schonafinger, Karl; Beyerle, Rudi; Mogilev, Anton; Bohn, Helmut; Just, Melitta; Martorana, Piero A.; and Nitz, Rolf-Eberhard, 4,356,178, Cl. 424-248.540.
- Noguchi, Mikio; and Kobayashi, Kazuho, to Tokyo Shibaura Denki Kabushiki Kaisha. Flat display device. 4,356,427, Cl. 313-422.000.
- Noguchi, Seiji: *See—*
  - Kaji, Shigeru; and Noguchi, Seiji, 4,355,915, Cl. 401-216.000.
- Nomichi, Satoru: *See—*
  - Fukuoka, Tatsuhiko; Ichikawa, Shigeo; and Nomichi, Satoru, 4,355,529, Cl. 73-412.000.
- Nomura, Hiroyuki: *See—*
  - Kogawa, Kouichi; Kawasaki, Teruo; Nomura, Hiroyuki; and Yano, Hiroshi, 4,356,470, Cl. 340-52.00F.
- Norbeck, Dean K.: *See—*
  - Kountz, Kenneth J.; and Norbeck, Dean K., 4,355,948, Cl. 415-1.000.
- Norden Packaging Machinery Aktiebolag: *See—*
  - Lewis, Roy D.; and Borg, Bernt V., 4,355,495, Cl. 53-579.000.
- Nordisk Insulinlaboratorium: *See—*
  - Kofod, Hans, 4,356,119, Cl. 260-112.50R.
- Nordson Corporation: *See—*
  - Rood, Alvin A.; and Hastings, Donald R., 4,355,764, Cl. 239-708.000.
- Nordtool AB: *See—*
  - Hofer, Leo, 4,355,558, Cl. 83-587.000.
- Northrup, Karl A.: *See—*
  - Cole, David L.; Swistak, Gregory B.; Ryon, Randall C.; Lama, William L.; and Northrup, Karl A., 4,355,891, Cl. 355-57.000.
- Norton-Berry, Philip: *See—*
  - Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,356,133, Cl. 264-8.000.
- Norton, James F.; Kliman, Gerald B.; and Tompkins, Russell E., to General Electric Company. Cutting thin metal sheet with an electron beam. 4,356,377, Cl. 219-121.0EH.
- Norton, James R.: *See—*
  - Herloski, Robert P.; Norton, James R.; and Antos, Ronald L., 4,355,859, Cl. 350-6.100.
- Norval, Stephen V.; and Jones, Peter J. V., to Imperial Chemical Industries Limited. Method of recovering bromine from methyl bromide. 4,356,159, Cl. 423-481.000.
- Nothni, Hans-Ulrich: *See—*
  - Schubert, Herrmann; Pelzl, Gerhard; Zaschke, Horst; Demus, Dietrich; Nothni, Hans-Ulrich; and Kuschel, Frank, 4,356,103, Cl. 252-299.100.
- Novak, Kirk: *See—*
  - Lim, John; Brady, Michael; and Novak, Kirk, 4,356,113, Cl. 252-455.00Z.

- Novak, Robert L. Abrasion resistant coating. 4,356,037, Cl. 106-209.000.
- Nowy, Gunther: *See—*
  - Wiezer, Hartmut; Nowy, Gunther; and Haberlein, Harald, 4,356,308, Cl. 546-242.000.
- Noyori, Masaharu; and Fujimoto, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Electronics circuit device and method of making the same. 4,356,374, Cl. 219-121.0PE.
- Nuarc Company, Inc., The: *See—*
  - Linden, Nicholas O., 4,356,433, Cl. 315-308.000.
- Nuenlist, Hans: *See—*
  - Steinle, Benedikt; Schneider, Gernot; and Nuenlist, Hans, 4,356,553, Cl. 364-483.000.
- Nussmeier, Thomas A., to United States of America, Air Force. Interferometric distance measurement method. 4,355,899, Cl. 356-349.000.
- Nussmeier, Thomas A., to United States of America, Air Force. Self-calibrating interferometer. 4,355,900, Cl. 356-356.000.
- Nuvatec, Inc.: *See—*
  - Slavik, William H.; Carlson, William P.; and McGowan, Michael J., 4,355,984, Cl. 434-335.000.
- N.V. Klippan S.A.: *See—*
  - Adomeit, Heinz-Dieter, 4,355,772, Cl. 242-107.40A.
- Nygren, Robert: *See—*
  - Kleemann, Axel; Nygren, Robert; and Wagner, Rudolf, 4,356,323, Cl. 564-475.000.
- Oberg, Per O., to Sanera Projecting Aktiebolag. Apparatus for recovering oil or the like floating on a liquid surface such as water. 4,356,086, Cl. 210-115.000.
- O'Brien, David F.; and Tyminski, Patricia N., to Eastman Kodak Co. Photographic compositions, elements and processes using light-activatable enzymes. 4,356,256, Cl. 430-332.000.
- Occidental Research Corporation: *See—*
  - Che, Stanley C., 4,356,077, Cl. 208-8.00R.
- Oda Gosen Kogyo Kabushiki Kaisha: *See—*
  - Takai, Isao, 4,355,499, Cl. 57-205.000.
- O'Dair, James R.: *See—*
  - Ohrberg, George E.; and O'Dair, James R., 4,355,670, Cl. 144-34.00R.
- Odawara, Yoji: *See—*
  - Shimizu, Norio; Odawara, Yoji; and Masaki, Yasunori, 4,356,092, Cl. 210-611.000.
  - Shimizu, Norio; Odawara, Yoji; and Masaki, Yasunori, 4,356,268, Cl. 435-253.000.
- Oetjen, Georg-Wilhelm; and Benthin, Frank, to Dragerwerk AG. Humdifier and heater for air to be inhaled for connection to an inhalation conduit of a respirator. 4,355,636, Cl. 128-204.130.
- Ogemark, Keith F. R.: *See—*
  - Sallmen, Bengt A. L.; Sjogreen, Carl-Axel E.; Mansson, Mans O.; and Ogemark, Keith F. R., 4,356,110, Cl. 252-407.000.
- Ogita, Minoru; and Kimura, Naobumi, to Nippon Gakki Seizo Kabushiki Kaisha. Receptive condition automatic selection device for FM receiver. 4,356,568, Cl. 455-212.000.
- Oguchi, Tetsuji, to Nippon Electric Co., Ltd. Image pattern control system. 4,356,482, Cl. 340-731.000.
- Oguchi, Yutaka: *See—*
  - Imaizumi, Masao; Takezono, Tetsuya; Amari, Takaaki; and Oguchi, Yutaka, 4,356,339, Cl. 585-829.000.
- Ohashi, Toshio: *See—*
  - Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,355,681, Cl. 165-16.000.
- Ohlsson, Jarl-Erik S. I., to Texogesa S.A. Process of offset printing on sheet material with high viscosity greasy ink. 4,355,576, Cl. 101-426.000.
- Ohnishi, Juniti, to Pioneer Electronic Corporation. Linear-tracking pick-up arm drive assembly for audio or video disc player. 4,356,560, Cl. 369-221.000.
- Ohniwa, Takehiko; Senuma, Michio; Shimada, Fumio; Saito, Syuichiro; Shigeta, Yoshihiro; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Magnetic device. 4,355,878, Cl. 354-234.000.
- Ohrberg, George E.; and O'Dair, James R., to Crown Zellerbach Corporation. Forestry site preparation system. 4,355,670, Cl. 144-34.00R.
- Ohshima, Ken: *See—*
  - Saitou, Sinichi; Kato, Toshikazu; Kimura, Kenji; Satoh, Ken; Shibata, Tsutomu; Watanabe, Seizo; and Ohshima, Ken, 4,355,750, Cl. 226-188.000.
- Ohta, Shigeto: *See—*
  - Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; and Kitahara, Makoto, 4,356,243, Cl. 430-58.000.
- Oil Mop (U.K.) Limited: *See—*
  - Challener, Ronald T.; and Rolls, George H., 4,356,089, Cl. 210-242.400.
- Okada, Munehisa: *See—*
  - Furuya, Hiroshi; Okada, Munehisa; Takemura, Eiichiro; and Sato, Hideyo, 4,355,756, Cl. 229-4.500.
- Okada, Takashi, to Sony Corporation. Brightness adjusting circuit for a cathode ray tube. 4,356,508, Cl. 358-29.000.
- Okano, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Bearing of a turbomachine. 4,355,850, Cl. 308-9.000.
- Okazaki, Hiroshi: *See—*
  - Sumiyoshi, Hiroji; Suzuki, Mitsumasa; and Okazaki, Hiroshi, 4,356,515, Cl. 358-246.000.
- Okubo, Shigeo, to Design Professionals Financial Corp. Magnetic gyroscope. 4,355,541, Cl. 74-5.60E.
- Oliff, James R., to Mead Corporation, The. Wraparound article carrier with adjustable girth. 4,355,717, Cl. 206-140.000.
- Olin Corporation: *See—*
  - Wojtowicz, John A.; and Hooks, Haywood, Jr., 4,356,303, Cl. 544-192.000.
- Oliver, Frank C. Desalinization process. 4,356,015, Cl. 62-543.000.
- Olympus Optical Co., Ltd.: *See—*
  - Hattori, Shinichiro, 4,356,534, Cl. 362-32.000.
  - Maitani, Yoshihisa, 4,355,874, Cl. 354-31.000.
  - Saitou, Sinichi; Kato, Toshikazu; Kimura, Kenji; Satoh, Ken; Shibata, Tsutomu; Watanabe, Seizo; and Ohshima, Ken, 4,355,750, Cl. 226-188.000.
  - Watanabe, Seizo, 4,356,524, Cl. 360-129.000.
  - Yanagida, Tuneo, 4,356,520, Cl. 360-63.000.
- O'Mahony, John S.: *See—*
  - Kahn, Marvin L.; and O'Mahony, John S., 4,356,195, Cl. 426-51.000.
- Omron Tateisi Electronics, Co.: *See—*
  - Agatahama, Shunichi, 4,356,465, Cl. 335-128.000.
- One Design, Inc.: *See—*
  - Maloney, Timothy, 4,355,682, Cl. 165-48.00S.
- O'Neill, Brian C.: *See—*
  - Mack, Alfred; O'Neill, Brian C.; and Penzetta, Fred L., 4,355,937, Cl. 414-217.000.
- O'Neill, Michael J.: *See—*
  - Wykhuis, Lloyd A.; and O'Neill, Michael J., 4,355,946, Cl. 414-707.000.
- Onishi, Ken: *See—*
  - Ozaki, Minoru; Onishi, Ken; and Tanaka, Kunimaro, 4,356,517, Cl. 360-13.000.
- Ono, K. Ray, to Bellco Glass Inc. Stirring apparatus for cell culture. 4,355,906, Cl. 366-274.000.
- Ono, Shoji: *See—*
  - Miura, Shuzi; Yoshida, Tsunemasa; Ono, Shoji; Masuho, Yasuhiko; and Sawada, Shuzo, 4,356,173, Cl. 424-101.000.
- Ono, Takuo; Fukui, Sigeo; and Ookura, Junichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for controlling an inverter main circuit. 4,356,544, Cl. 363-132.000.
- Onoda, Mamoru: *See—*
  - Sugiyama, Takeshi; Shirouchi, Shoji; Onoda, Mamoru; Kawaguchi, Fumikazu; and Fujita, Isao, 4,356,027, Cl. 75-0.50R.
- Oohara, Mikio: *See—*
  - Tajiri, Koji; Oohara, Mikio; and Maruo, Kiyoshi, 4,355,592, Cl. 112-410.000.
- Ookubo, Takao; Baba, Yuko; and Kamihama, Kiyoshi, to Nissan Motor Co., Ltd.; and Hashimoto Forming Kogyo Co., Ltd. Wheel cover for a vehicle. 4,355,848, Cl. 301-37.0SS.
- Ookura, Junichi: *See—*
  - Ono, Takuo; Fukui, Sigeo; and Ookura, Junichi, 4,356,544, Cl. 363-132.000.
- O'Rear, Jacques G.: *See—*
  - Griffith, James R.; and O'Rear, Jacques G., 4,356,296, Cl. 526-242.000.
- Oriental Yeast Company: *See—*
  - Saito, Hiraku; Takagahara, Isamu; Suzuki, Yasuo; Fujita, Tuyosi; Fujii, Katsumi; and Horio, Takekazu, 4,356,072, Cl. 204-180.00G.
- Orlandea, Nicolae V.; and Wiley, Jack C., to Deere & Company. Vehicular steering and suspension system. 4,355,697, Cl. 180-261.000.
- Orloff, Kenneth L.: *See—*
  - United States of America, National Aeronautics and Space Administration; Orloff, Kenneth L.; and Yanagita, Haruo, 4,355,870, Cl. 350-486.000.
- Orths, Kurt; Lampic, Milan; Berger, Peter; Muller, Jorg; and Loblich, Herbert, to Verein zur Forderung der Giesserei-Industrie. Apparatus for picking up a molten test sample of metal or metal alloys and measuring the cooling curve of said sample. 4,355,907, Cl. 374-26.000.
- Osada, Toshio: *See—*
  - Saito, Tadashi; Nakajima, Toshihiko; and Osada, Toshio, 4,356,437, Cl. 318-254.000.
- Osika, Thomas F., to McGill Manufacturing Company, Inc. Auxiliary switch assembly for a power contactor. 4,356,368, Cl. 200-307.000.
- Osmond, Etienne J. R.: *See—*
  - Ferrieu, Gilbert M. M.; Osmond, Etienne J. R.; and Hetet, Yves J. F., 4,356,355, Cl. 179-18.0HB.
- Osteo AG: *See—*
  - Mittelmeier, Heinz; Moser, Heinz; and Leu, Beat, 4,355,429, Cl. 3-1.911.
- Ostrelich, Michael J., to General Electric Company. Thick film resistor force transducers and weighing scales. 4,355,692, Cl. 177-211.000.
- Ota, Akiho: *See—*
  - Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,355,728, Cl. 215-1.00C.
- Ota, Sadayasu; and Uchiya, Takeo, to Kabushiki Kaisha Morita Seisakusho. Cordless handpiece for dental treatment. 4,355,977, Cl. 433-131.000.
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  - Borst, Gaylord M.; and Walsworth, Frank J., 4,355,985, Cl. 440-51.000.
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- Plummer, William T., to Polaroid Corporation. Photographic lighting apparatus. 4,356,538, Cl. 362-217.000.
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  - Gerber, Arthur M., 4,356,257, Cl. 430-496.000.
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- Pollak, Henry M. Self-priming centrifugal pump. 4,355,950, Cl. 415-53.00R.
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- Pongrass, Robert G.; and Rutter, Christopher C. Fluid dispenser. 4,355,737, Cl. 222-81.000.
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- Post, Arnold R. Control knob with rotation limiter. 4,355,544, Cl. 74-526.000.
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- Reynolds, William R. Overcurrent-protected inverter. 4,356,543, Cl. 363-56.000.
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- Robach, Michael C., to Monsanto Company. Compound and method for inhibiting growth of spoilage organisms. 4,356,204, Cl. 426-321.000.
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  - Honig, Gunter; Kiencke, Uwe; and Bone, Rainer, 4,356,447, Cl. 324-169.000.
  - Muller, Klaus; Rieger, Franz; Maurer, Helmut; Linder, Ernst; Reber, Harald; and Dietz, Hermann, 4,355,618, Cl. 123-489.000.
  - Will, Gerhard; Stroh, Walter; and Zechnall, Martin, 4,355,550, Cl. 74-872.000.
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  - Asbill, Clarence M., III, 4,355,983, Cl. 434-219.000.
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- Robinson, Richard P., to Trod Nossel Recording Studios, Inc. Acoustic image enhancing method and apparatus. 4,356,349, Cl. 179-1.00G.
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- Rockwell International Corporation: *See—*
  - Cunningham, Vernon R., 4,356,460, Cl. 333-28.00R.
  - Quick, William H.; James, Kenneth A.; and Strahan, Virgil H., 4,355,910, Cl. 374-162.000.
  - Yao, Shi-Kay, 4,355,869, Cl. 350-358.000.
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  - Ankersson, Bill, 4,356,017, Cl. 65-8.000.
- Rode, Melvin A.; and Toelle, Alvin D., to Bendix Corporation, The. Ignition advance timing system. 4,355,613, Cl. 123-414.000.
- Rodibaugh, Scott A.; and Cobb, Delwin E., to Caterpillar Tractor Co. Gear pump having fluid deaeration capability. 4,355,964, Cl. 418-76.000.
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- Roger, Raymond, to Automobiles Peugeot; and Automobiles Citroen. Device for detecting defective combustion in an internal combustion engine. 4,355,534, Cl. 73-35.000.
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- Rogier, Edgar, to Henkel Corporation. Fatty polyhydric alcohols having a polar functional group. 4,356,128, Cl. 260-465.600.
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  - Brodnyan, John G.; De Witt, Walter G., III; Gill, Robert A.; and Stelling, Gary D., 4,356,229, Cl. 428-288.000.
  - Cholod, Michael S.; and Shah, Nipun M., 4,356,299, Cl. 528-279.000.
  - Gleim, Robert D., 4,356,301, Cl. 528-487.000.
  - Lewis, Sheldon N.; and Haggard, Richard A., 4,356,288, Cl. 525-308.000.
- Rohrer, Gene D.: *See—*
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- Rolfe, Keith O. Loading and unloading apparatus for vehicles. 4,355,942, Cl. 414-555.000.
- Rolls, George H.: *See—*
  - Challener, Ronald T.; and Rolls, George H., 4,356,089, Cl. 210-242.400.
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- Romano, Paul L., to Acoustic Standards. Acoustic strip curtain. 4,355,678, Cl. 160-332.000.
- Ronen, Ram S., to Xerox Corporation. Integrated silicon nib for an electrostatic printer. 4,356,501, Cl. 346-155.000.
- Ronnow, Peter: *See—*
  - Thomsen, Ove; and Ronnow, Peter, 4,356,269, Cl. 435-316.000.
- Rood, Alvin A.; and Hastings, Donald R., to Nordson Corporation. Low capacitance airless spray apparatus. 4,355,764, Cl. 239-708.000.
- Rosa, Umberto: *See—*
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- Rosbak, John: *See—*
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- Rosen, Jack S., to Reliable Auto Accessories, Inc. Theft deterent device for car covers. 4,355,839, Cl. 296-136.000.
- Rosenbluth, William; and Williams, Thomas A., to International Business Machines Corporation. MOSFET Convolved logic. 4,356,413, Cl. 307-443.000.
- Rosman, Irwin E., to Hi-Shear Corporation. Rivet fastener system. 4,355,531, Cl. 72-479.000.
- Ross, Donald H.: *See—*
  - Schoenkopf, Richard W.; and Ross, Donald H., 4,355,733, Cl. 221-123.000.
- Ross, Roger J., to Singer Company, The. Controlled single-operation cam mechanism. 4,355,545, Cl. 74-567.000.
- Ross, Sigmund L., to Shuffman, David K. Method and apparatus for controlling water surface activity. 4,356,094, Cl. 210-774.000.
- Rossell, John B.: *See—*
  - Devitt, Michael T.; and Rossell, John B., 4,356,197, Cl. 426-89.000.
- Rossi, John P.: *See—*
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- Rousseau, Jean-Pierre, to U.S. Philips Corporation. Control device comprising a slidable shaft with a knob. 4,355,921, Cl. 403-316.000.
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  - Zalisz, Rene; and Salles, Marie-France, 4,356,171, Cl. 424-92.000.
- Rowcliffe, David J.: *See—*
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- Rowe, Monty L.: *See—*
  - Wells, Rodney L.; Rowe, Monty L.; Yates, Samuel L.; and Muller, George R., 4,356,280, Cl. 524-148.000.
- Rowland, Bobby A.; Tate, Stanley L.; and Smith, Michael C., to Southwire Company. Method for lubricating cable in a dry curing system. 4,356,139, Cl. 264-174.000.
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- Ruby, Ernest D. Control unit for a multi-unit building. 4,355,760, Cl. 236-47.000.
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- Ruseff, Walter Z., to Caterpillar Tractor Co. Unloading means for flow-pressure compensated valve. 4,355,510, Cl. 60-452.000.
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  - Kuettner, Klaus E., 4,356,261, Cl. 435-68.000.
- Russell, Ronald R., to General Electric Company. Control circuit for resetting drawout circuit breaker UVR solenoid. 4,356,526, Cl. 361-59.000.
- Russo, John G., to Ripley Company, Inc. Fail-off photosensitive switch. 4,356,405, Cl. 307-117.000.
- Rutkowski, Edward V., Jr., to International Business Machines Corporation. Content-addressed text search apparatus for typewriters. 4,355,913, Cl. 400-63.000.
- Rutter, Christopher C.: *See—*
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- Rydeck, Joseph P. Golf club swing training device. 4,355,810, Cl. 273-186.00C.
- Rydin, Carl N. Toy railroad track switch arrangement. 4,355,776, Cl. 246-415.00A.
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Sage, Thomas L. Rotary hot dog cooker. 4,355,569, Cl. 99-427.000.
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Sczepanski, Lee. Marine direction finding system. 4,356,491, Cl. 343-113.00R.
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  Nessfield, Stanley, 4,355,732, Cl. 220-1.500.
Sebald, Richard, to Grundig E.M.V. Device for heating the front lens of a television camera. 4,355,861, Cl. 350-61.000.
Segnini, Robert: *See—*
  DiMatteo, Paul; Segnini, Robert; and Rademacher, Paul, 4,355,447, Cl. 29-26.00A.
Seidel, Joseph: *See—*
  Jackovitz, John F.; Seidel, Joseph; and Pantier, Earl A., 4,356,101, Cl. 252-182.100.
Seiko Koki Kabushiki Kaisha: *See—*
  Kitai, Kiyoshi; Nakagawa, Tadashi; and Ishida, Hiroaki, 4,355,872, Cl. 354-25.000.
Seilly, Alec H.; Mowbray, Dorian F.; Mardell, John E.; and Davison, Michael J., to Lucas Industries Limited. Fuel system for an internal combustion engine. 4,355,620, Cl. 123-499.000.
Sekine, Kenji: *See—*
  Hirota, Yukitsugu; Endo, Akira; and Sekine, Kenji, 4,356,489, Cl. 343-7.0VM.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
  Kitagawa, Kouichirou; and Kanno, Eiichi, 4,355,970, Cl. 431-77.000.
Sekitani, Noboru: *See—*
  Suganuma, Buro; Sekitani, Noboru; Hatanaka, Yasuaki; and Inoue, Yasuhiro, 4,355,770, Cl. 242-35.50A.
Selim, Harold N., to Hunt, A. H., III, a part interest. Magnetic tape position display system for a sound reproduction system. 4,356,521, Cl. 360-72.200.
Selwitz, Charles M.: *See—*
  Harrison, James J.; Sabourin, Edward T.; and Selwitz, Charles M., 4,356,325, Cl. 568-33.000.
Senior, Albert B., III. Wood splitting tool. 4,355,671, Cl. 144-193.00C.
Seno, Takanori: *See—*
  Wada, Ryoichi; Seno, Takanori; and Tsuchiya, Mitsuharu, 4,356,566, Cl. 375-116.000.
Senuma, Michio: *See—*
  Ohniwa, Takehiko; Senuma, Michio; Shimada, Fumio; Saito, Syuichiro; Shigeta, Yoshihiro; and Aizawa, Hiroshi, 4,355,878, Cl. 354-234.000.
Sewell, Robert G. S.; Pringle, John K.; Backman, Marvin E.; and Finnegan, Stephen A., to United States of America, Navy. Armor. 4,355,562, Cl. 89-36.00A.
Shafer, Peter O.; and Wolley, E. Duane, to General Electric Company. Latching transistor. 4,356,503, Cl. 357-38.000.
Shaffer, David W. Reed construction. 4,355,560, Cl. 84-383.00A.
Shaffer, John W.: *See—*
  Broadt, David R.; and Shaffer, John W., 4,355,971, Cl. 431-359.000.
Shah, Nipun M.: *See—*
  Cholod, Michael S.; and Shah, Nipun M., 4,356,299, Cl. 528-279.000.
Shanks, Bruce E., to General Electric Company. Vehicle headlamp having an integral buggy spring mounting assembly. 4,356,539, Cl. 362-273.000.
Sharpe, Louis H.: *See—*
  Lovinger, Andrew J.; and Sharpe, Louis H., 4,356,505, Cl. 357-72.000.
Shatterproof Glass Corporation: *See—*
  McKelvey, Harold E., 4,356,073, Cl. 204-192.00R.
Sheffer Collet Company: *See—*
  Beery, Jay D., 4,355,816, Cl. 279-2.00R.
Shefler, Gerald E.; and Weaver, Ralph J., III, to Ford Industries, Inc. Digital memory audio playback apparatus. 4,356,351, Cl. 179-1.00B.
Sheldon, Jerome F., to Rexnord Inc. Polymeric chain link with integral telescoping barrel. 4,355,502, Cl. 59-84.000.
Shell Oil Company: *See—*
  Blytas, George C.; and Diaz, Zaida, 4,356,155, Cl. 423-226.000.
  Drent, Eit, 4,356,126, Cl. 260-410.90R.
  McNamara, Harold J.; and Schilk, Joan A., 4,356,161, Cl. 423-573.00R.
  Nielsen, Robert P.; and La Rochelle, John H., 4,356,312, Cl. 549-534.000.
  Payne, George B.; and Soloway, Samuel B., 4,356,023, Cl. 71-88.000.
Shen, Peter I., to Hughes Aircraft Company. Laser beam tube with helical gas flow for reducing thermal blooming in the laser beam. 4,356,565, Cl. 372-61.000.
Sherman, Guy J., to Sherman Laboratories, Inc. Soft contact lens cold disinfectant solution. 4,356,100, Cl. 252-106.000.
Sherman Laboratories, Inc.: *See—*
  Sherman, Guy J., 4,356,100, Cl. 252-106.000.
Sherwood, Edward F., to Westinghouse Electric Corp. Slidable door assembly. 4,355,486, Cl. 49-409.000.
Shibanai, Ichiro; Horikoshi, Kouki; and Nakamura, Nobuyuki. Fragrant synthetic resin product and method of producing the same. 4,356,115, Cl. 252-522.00A.
Shibata, Tsutomu: *See—*
  Saitou, Sinichi; Kato, Toshikazu; Kimura, Kenji; Satoh, Ken; Shibata, Tsutomu; Watanabe, Seizo; and Ohshima, Ken, 4,355,750, Cl. 226-188.000.
Shibuya, Satoru: *See—*
  Tsubota, Naoki; and Shibuya, Satoru, 4,356,387, Cl. 235-92.0PK.
Shigeta, Yoshihiro: *See—*
  Ohniwa, Takehiko; Senuma, Michio; Shimada, Fumio; Saito, Syuichiro; Shigeta, Yoshihiro; and Aizawa, Hiroshi, 4,355,878, Cl. 354-234.000.
Shimada, Fumio: *See—*
  Ohniwa, Takehiko; Senuma, Michio; Shimada, Fumio; Saito, Syuichiro; Shigeta, Yoshihiro; and Aizawa, Hiroshi, 4,355,878, Cl. 354-234.000.
Shimada, Yukio, to Nissan Motor Company, Ltd. Automatic car-cooler clutch control apparatus. 4,355,523, Cl. 62-133.000.

Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, to Nissan Motor Co., Ltd. System for controlling a vehicle mounted air conditioner. 4,355,681, Cl. 165-16.000.
Shimajiri, Tokiji; Toyoda, Kenichi; and Yamazaki, Takahumi, to Fujitsu Fanuc Limited. Automatic tool changer of machining center. 4,355,446, Cl. 29-26.00A.
Shimizu, Hiroshi; and Watanabe, Hiroshi, to Tohoku Metal Industries, Ltd. Piezoelectric resonators of an energy-trapping type of a width extensional vibratory mode. 4,356,421, Cl. 310-320.000.
Shimizu, Kenzo; Fukunaga, Yukio; and Tsuda, Hiroshi, to Nissan Motor Co., Ltd. Glove compartment. 4,355,837, Cl. 296-37.120.
Shimizu, Norio; Odawara, Yoji; and Masaki, Yasunori, to Hitachi, Ltd. Method for treating waste water. 4,356,092, Cl. 210-611.000.
Shimizu, Norio; Odawara, Yoji; and Masaki, Yasunori, to Hitachi, Ltd. Microorganism for treating waste water. 4,356,268, Cl. 435-253.000.
Shimizu, Yoichi, to Kabushiki Kaisha Maruyama Seisakusho. Heddle frame. 4,355,667, Cl. 139-91.000.
Shinozaki, Fumiaki: *See—*
Tachikawa, Hiromichi; Takahashi, Yohnosuke; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,356,255, Cl. 430-325.000.
Takahashi, Yohnosuke; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,356,254, Cl. 430-296.000.
Shipley, Randall S.; and Lowery, Kirby, Jr., to Dow Chemical Company, The. High efficiency catalyst containing titanium and zirconium for polymerizing olefins. 4,356,111, Cl. 252-429.00B.
Shirouchi, Shoji: *See—*
Sugiyama, Takeshi; Shirouchi, Shoji; Onoda, Mamoru; Kawaguchi, Fumikazu; and Fujita, Isao, 4,356,027, Cl. 75-0.50R.
Shively, James F.: *See—*
Stone, David S.; and Shively, James F., 4,356,430, Cl. 315-4.000.
Shoff, Daniel J.: *See—*
Buck, Gordon H.; Cayley, Paul W., Jr.; Hardwick, Martha K.; and Shoff, Daniel J., 4,355,806, Cl. 273-85.00G.
Shuffman, David K.: *See—*
Ross, Sigmund L., 4,356,094, Cl. 210-774.000.
Shultz, William E. Method and apparatus for injecting viscous materials. 4,355,702, Cl. 184-1.00D.
SI Handling, Inc.: *See—*
Scheel, Russell, 4,355,580, Cl. 104-166.000.
Sid-Ahmed, Abdel-Hadi: *See—*
Boon, Wyndham H.; and Sid-Ahmed, Abdel-Hadi, 4,356,219, Cl. 427-386.000.
Siemens Aktiengesellschaft: *See—*
Aulich, Hubert; and Auracher, Franz, 4,355,863, Cl. 350-96.150.
Boschulte, Rainer; Koehnecke, Heinrich; and Muecke, Siegfried, 4,356,485, Cl. 340-825.170.
Fettweis, Alfred, 4,356,464, Cl. 333-173.000.
Guntner, Helmut; and Wittenzellner, Ernst, 4,356,414, Cl. 307-455.000.
Harbauer, Werner; and Wiessner, Edgar, 4,356,363, Cl. 200-50.00C.
Hilliges, Friedrich, 4,356,352, Cl. 179-7.10R.
Neumann, Leopold; Kline, Richard B., II; and Scholz, Wolfgang, 4,356,475, Cl. 340-521.000.
Siemens Corporation: *See—*
Ruell, Hartwig; and Klement, Ekkehard, 4,356,396, Cl. 250-227.000.
Sierra Precast, Inc.: *See—*
Scholz, Ray J.; Southern, William C.; and Wieduwilt, Leslie R., Jr., 4,355,782, Cl. 249-93.000.
Sifford, Perry P.; and Griffin, Jerry H., to United Technologies Corporation. Blade damper. 4,355,957, Cl. 416-145.000.
Sigmund, Frank J.: *See—*
Gedaly, Jerrell M.; Sadowski, Joseph P.; Kirkland, David D.; and Sigmund, Frank J., 4,356,042, Cl. 148-1.500.
Siiberg, Hemming G., to Edison International, Inc. Air operated DC switch. 4,356,365, Cl. 200-83.00J.
Silvestrini, Jesus A., to IMDEC S.R.L. Apparatus for separating the pulp from the skin of fruit such as tomatoes. 4,355,572, Cl. 99-516.000.
Simons, Kai; and Helenius, Ari, to Europaisches Laboratorium Fur. Method of preparing an immunogenic membrane protein aggregate of influenza and parainfluenza viruses and rhabdoviruses. 4,356,169, Cl. 424-89.000.
Singer Company, The: *See—*
Ketterer, Stanley J., 4,355,590, Cl. 112-184.000.
Ross, Roger J., 4,355,545, Cl. 74-567.000.
Sis-Ter S.p.A.: *See—*
Di Salvo, Francesco, 4,355,639, Cl. 128-214.00R.
Sjogreen, Carl-Axel E.: *See—*
Sallmen, Bengt A. L.; Sjogreen, Carl-Axel E.; Mansson, Mans O.; and Ogemark, Keith F. R., 4,356,110, Cl. 252-407.000.
Skerlos, Peter C.; Snopko, Paul A.; Templin, Frank C.; and Zato, Thomas J., to Zenith Radio Corporation. Microcomputer-controlled television/telephone system and method therefore. 4,356,509, Cl. 358-85.000.
Skierski, Edwin J., to USM Corporation. Pointing machine. 4,355,430, Cl. 10-9.000.
Skinner, Robert T. J., to Lucas Industries Limited. Liquid fuel pumping apparatus. 4,355,609, Cl. 123-373.000.
Slavik, William H.; Carlson, William P.; and McGowan, Michael J., to Nuvatec, Inc. Teaching device. 4,355,984, Cl. 434-335.000.
Slusser, Boyd C., to Herman Miller, Inc. Drawer interlock system. 4,355,851, Cl. 312-215.000.
Smirnov, Boris A.: *See—*
Kapitanov, Nikolai N.; Petrova, Natalya P.; Judenich, Vsevolod V.; Kharchenko, Vladimir P.; Smirnov, Boris A.; Ippolitov, Vladimir V.; and Lankina, Nadezhda M., 4,355,751, Cl. 227-19.000.
Smith, Charles P., Jr. Emergency rescue system. 4,355,699, Cl. 182-12.000.
Smith, Fred J., to Digital Products Corporation. Techniques for detecting a condition of response on a telephone line. 4,356,348, Cl. 179-1.0MN.
Smith, Jack B. Loading device for firewood. 4,355,831, Cl. 294-11.000.
Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Catechol or pyrogallol containing flexible insulating tape having low gel time. 4,356,417, Cl. 310-43.000.
Smith, Michael C.: *See—*
Rowland, Bobby A.; Tate, Stanley L.; and Smith, Michael C., 4,356,139, Cl. 264-174.000.
Smith, Robert D.; and Regazzoni, Pierre, to Scandpower, Inc. Gamma thermometer having combined thermal bridge and centering means. 4,356,061, Cl. 376-254.000.
Smith, Robert F.; and Walters, Dwight E., to R. F. Smith Corp. Method for measuring the level of hydrogen sulfide in geothermal steam. 4,355,997, Cl. 23-230.0EP.
Smith, William B., to Pipe Line Development Company, The. Pipeline plug and bypass. 4,355,656, Cl. 137-318.000.
SMT Machine Company AB: *See—*
Svensson, Rolf; and Svensson, Ingemar, 4,355,548, Cl. 74-826.000.
Smulkstys, Louis S.: *See—*
Mott, Richard C.; and Smulkstys, Louis S., 4,356,439, Cl. 318-685.000.
Snamprogetti S.p.A.: *See—*
Matteelli, Rolando; and Ciuti, Brunello, 4,356,088, Cl. 210-198.100.
Snellling, Christopher, to Xerox Corporation. Multiple function reproduction apparatus. 4,355,882, Cl. 355-3.0BE.
Snopko, Paul A.: *See—*
Skerlos, Peter C.; Snopko, Paul A.; Templin, Frank C.; and Zato, Thomas J., 4,356,509, Cl. 358-85.000.
Snowdon, Brian. Flow control device. 4,355,929, Cl. 406-125.000.
Snyder, David E., to U.S. Industries, Inc. Pilot valve with indicating lockout knob. 4,355,658, Cl. 137-557.000.
Soch, Fredrich A., to Minnesota Mining and Manufacturing Company. Fluorochemical foam stabilizer and foamed polyurethanes made therewith. 4,356,273, Cl. 521-114.000.
S.A. Benoist Girard & Cie: *See—*
Deloison, Victor; and Pottier, Gilbert, 4,355,428, Cl. 3-1.910.
Societe Anonyme Francaise du Ferodo: *See—*
Antoine, Jacquet M., 4,355,752, Cl. 237-12.30B.
Societe Francaise d'Equipements pour la Navigation Arrienne: *See—*
Chombard, Pierre A.; and Darni, Daniel, 4,355,540, Cl. 74-5.100.
Societe Nationale de l'Amiante: *See—*
Lalancette, Jean M.; and Dunnigan, Jacques, 4,356,057, Cl. 162-3.000.
Societe pour L'Etude et la Fabrication de Circuits Integres Speciaux EFCIS: *See—*
Montier, Michel, 4,356,055, Cl. 156-626.000.
Soeda, Kozi; Hoshikawa, Katuyuki; and Kimura, Akitaka, to Sumitomo Rubber Industries, Ltd. Method of forming puncture preventing layer for tire and apparatus employed therefor. 4,356,214, Cl. 427-233.000.
Solar, Jeffrey P.: *See—*
Diamond, Steven E.; Mares, Frank; Muccigrosso, Deborah A.; and Solar, Jeffrey P., 4,356,311, Cl. 549-524.000.
Solid Photography, Inc.: *See—*
DiMatteo, Paul; Segnini, Robert; and Rademacher, Paul, 4,355,447, Cl. 29-26.00A.
Soloway, Samuel B.: *See—*
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Solvay & Cie: *See—*
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Engkvist, Lars G., 4,355,476, Cl. 37-117.500.
Sonnonstine, Terry J.: *See—*
Leichter, Louis M.; Sonnonstine, Terry J.; Stofko, John J., Jr.; and Beretta, Paolo, 4,356,244, Cl. 430-82.000.
Sony Corporation: *See—*
Doi, Toshitada; Furukawa, Shunsuke; and Nanba, Kenji, 4,356,564, Cl. 371-40.000.
Okada, Takashi, 4,356,508, Cl. 358-29.000.
Sumiyoshi, Hiroji; Suzuki, Mitsumasa; and Okazaki, Hiroshi, 4,356,515, Cl. 358-246.000.
Takano, Masayuki; and Hosoi, Sadao, 4,356,522, Cl. 360-77.000.
Tsujimura, Katsuhito, 4,356,511, Cl. 358-181.000.
Soref, Richard A., to Sperry Corporation. Magnetooptic switching devices. 4,355,864, Cl. 350-96.180.
Sorimachi, Akira, to Katoh Electrical Machinery Co. Ltd. Document hold-down cover arrangement for a copy machine. 4,355,887, Cl. 355-25.000.
Sorin Biomedica S.p.A.: *See—*
Callegaro, Lanfranco; Boniolo, Antonio; Denti, Ennio; Rosa, Umberto; and Rossi, Valdano, 4,356,267, Cl. 435-179.000.
Soto, John. Shock-sensitive electrical switch. 4,356,364, Cl. 200-61.520.
Southern, William C.: *See—*
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Southwire Company: *See—*
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Spector, George: *See—*
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Speranza, George P.: *See—*
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Sperry Corporation: *See—*
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Spiegelman, Stanley R.: *See—*
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Spokane Crusher Mfg. Co.: *See—*
Warren, Kenneth D.; and Tenold, Gregory G., 4,355,769, Cl. 241-300.000.
Sprague Electric Company: *See—*
Kopel, Jeffrey L., 4,356,529, Cl. 361-304.000.
Spreading Machine Exchange, Inc.: *See—*
Costigan, Conrad A., 4,355,794, Cl. 270-31.000.
Sprengling, Gerhard R.; and Cargnel, Louis A., to Westinghouse Electric Corp. Porous encapsulating composition for electrical apparatus. 4,356,237, Cl. 428-404.000.
SRI International: *See—*
Sanjurjo, Angel; Rowcliffe, David J.; and Bartlett, Robert W., 4,356,141, Cl. 264-332.000.
Stachiw, Jerry D., to United States of America, Navy. Spherical segment insertion apparatus. 4,355,867, Cl. 350-319.000.
Stafford, Willie M., to Goodyear Tire & Rubber Company, The. Method and apparatus for treating textile cord. 4,356,212, Cl. 427-175.000.
Stagg, Charles M.; and Tribble, Ronald L., to Philips, Roxane, Inc. Chemical castration. 4,356,189, Cl. 424-317.000.
Stahlhut, Leo G.; Garnett, Willard R.; and Kenyon, Lewis W., to Emerson Electric Co. Lighting fixture retainer hook. 4,356,537, Cl. 362-148.000.
Stamicarbon, B.V.: *See—*
de Munck, Nicolaas A.; and Scholten, Joseph J. F., 4,356,125, Cl. 549-475.000.
Stamper, John R., to Baker Perkins Holdings Limited. Travelling baking oven. 4,355,972, Cl. 432-148.000.
Standard Oil Company, The: *See—*
Pesa, Frederick A.; and Graham, Anne M., 4,356,124, Cl. 260-326.5FN.
Stanley Electric Co., Ltd.: *See—*
Ikenoue, Tsuneo; Liu, Shin-yng; Umemoto, Shuichi; and Arai, Naoki, 4,356,541, Cl. 363-20.000.
Stapley, Ronald B., to Carnation Company. Animal litter. 4,355,593, Cl. 119-1.000.
Starkloff, Bernd: *See—*
Weisser, Gunter; Starkloff, Bernd; and Stoesser, Klaus, 4,355,908, Cl. 374-39.000.
Starp, Franz. Control device having an internal electric or voltage source. 4,355,876, Cl. 354-202.000.
Stauffer Chemical Company: *See—*
Carron, Mark S.; La Barbera, Ronald S.; Van Brocklin, Lester P.; and Jain, Pawan K., 4,356,130, Cl. 260-989.000.
Fancher, Llewellyn W., 4,356,022, Cl. 71-87.000.
Felix, Raymond A., 4,356,026, Cl. 71-120.000.
Gaughan, Edmund J.; and Kezerian, Charles, 4,356,025, Cl. 71-100.000.
Stearns, David T.: *See—*
Schmitz, Robert E.; Stearns, David T.; Stegmann, Erwin; McWhorter, Thomas E.; Geiger, Warren F.; and Abrahamsen, Thomas J., 4,355,488, Cl. 51-319.000.
Steckley, Dale. Livestock barn ventilation system. 4,355,568, Cl. 98-33.00A.
Steel, Margaret L.: *See—*
Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,356,133, Cl. 264-8.000.
Stegmann, Erwin: *See—*
Schmitz, Robert E.; Stearns, David T.; Stegmann, Erwin; McWhorter, Thomas E.; Geiger, Warren F.; and Abrahamsen, Thomas J., 4,355,488, Cl. 51-319.000.
Stein, Arthur A.; and Goldman, Max, to Pathology Products Ltd. Apparatus for precisely regulating the paraffin temperature in an electrically heated tissue processor. 4,356,385, Cl. 219-441.000.
Steiner, Werner: *See—*
Kienle, Helmut; Schmid, Gerhard E.; Steiner, Werner; and Trippel, Gerhard, 4,356,066, Cl. 204-38.00A.
Steinle, Benedikt; Schneider, Gernot; and Nuenlist, Hans, to LGZ Landis & Gyr Zug AG. Method for the measuring of electrical power. 4,356,553, Cl. 364-483.000.
Stelling, Gary D.: *See—*
Brodnyan, John G.; De Witt, Walter G., III; Gill, Robert A.; and Stelling, Gary D., 4,356,229, Cl. 428-288.000.
Stemmle, Denis J., to Xerox Corporation. Forward order document copying method. 4,355,880, Cl. 355-3.0SH.
Stenkvist, Sven-Einar, to ASEA Aktiebolag. DC Arc furnace having a shielded arc. 4,356,340, Cl. 373-107.000.
Stenzenberger, Horst, to Technochemie GmbH. Fiber materials preimpregnated with durומeric polyimide resins and process for their preparation. 4,356,227, Cl. 428-265.000.
Stephan, Karl. Piling structure and methods. 4,355,927, Cl. 405-233.000.
Stephens, Noel W. F.: *See—*
Cairns, Angus H.; Houston, Nicholas J.; and Stephens, Noel W. F., 4,355,895, Cl. 356-141.000.
Sterki, Armin, to Maag Gear-Wheel & Machine Co. Ltd. Method of determining the boundaries of a measuring path of a gear flank testing apparatus and gear flank testing apparatus for performance of the method. 4,356,556, Cl. 364-560.000.
Sterrett, William H.: *See—*
Brosch, Eric J.; and Sterrett, William H., 4,356,016, Cl. 65-1.000.
Sterzer, Fred, to RCA Corporation. Frequency discriminator utilizing a transferred electron device. 4,356,415, Cl. 307-522.000.
Stevens, Myron T., to Outboard Marine Corporation. Outboard motor with elevated horizontal pivot axis. 4,355,986, Cl. 440-53.000.
Stevens, Phillip E.: *See—*
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Stewart, Jimmy L., to General Battery Corporation. Open and short circuit test apparatus. 4,356,239, Cl. 429-7.000.
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Bjorn, Thomas E.; and Kao, Mark C. C., 4,355,761, Cl. 239-126.000.
Stiller, Walter: *See—*
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Stoeckli, Oscar W.; and Berry, David J., to General Foods Corporation. Aromatizing apparatus. 4,355,571, Cl. 99-485.000.
Stoesser, Klaus: *See—*
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Stofko, John J., Jr.: *See—*
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Stokker, Gerald E.: *See—*
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Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Gould, Norman P., 4,356,314, Cl. 560-53.000.
Stolpin, Roger M. Kit for assembling geodesic structure. 4,355,781, Cl. 249-64.000.
Stone, David S.; and Shively, James F., to Varian Associates, Inc. Gyrotron cavity resonator with an improved value of Q. 4,356,430, Cl. 315-4.000.
Stone & Webster Engineering Corp.: *See—*
Woebcke, Herman N.; Bhojwani, Arju H.; and Gartside, Robert J., 4,356,151, Cl. 422-145.000.
Storm, James P., Jr. Hand tool for scraping paint from paint can. 4,355,432, Cl. 15-245.000.
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Quick, William H.; James, Kenneth A.; and Strahan, Virgil H., 4,355,910, Cl. 374-162.000.
Strange, Victor E.: *See—*
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Stroh, Walter: *See—*
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Stroud, Lebern W. Alternator coil winding. 4,356,418, Cl. 310-184.000.
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Stuckenbrok, Freder; and Stuckenbrok, August. Internal combustion engine. 4,355,603, Cl. 123-18.00R.
Sudo, Fumio: *See—*
Morishita, Hitoshi; Bada, Hajime; and Sudo, Fumio, 4,356,032, Cl. 75-52.000.
Sueyoshi, Susumu, to Pioneer Electronic Corporation. Reduced noise-improved gain transistor circuit. 4,356,453, Cl. 330-277.000.
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Suganuma, Buro; Sekitani, Noboru; Hatanaka, Yasuaki; and Inoue, Yasuhiro, to Murata Kikai Kabushiki Kaisha. Cop supplying apparatus for automatic winding machine. 4,355,770, Cl. 242-35.50A.
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Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,355,728, Cl. 215-1.00C.
Sugiyama, Hiroyuki, to Komori Printing Machinery Co., Ltd. Paper feed control apparatus for use in sheet printing presses. 4,355,800, Cl. 271-229.000.
Sugiyama, Takeshi; Shirouchi, Shoji; Onoda, Mamoru; Kawaguchi, Fumikazu; and Fujita, Isao, to Kobe Steel, Limited. Iron ore pellets containing magnesium oxide. 4,356,027, Cl. 75-0.50R.
Sulzer Brothers Limited: *See—*
Bosshard, Ernst, 4,356,062, Cl. 376-272.000.
Sumitomo Chemical Company, Limited: *See—*
Saito, Kenji; and Yamachika, Hiroshi, 4,356,326, Cl. 568-322.000.
Sumitomo Rubber Industries, Ltd.: *See—*
Soeda, Kozi; Hoshikawa, Katuyuki; and Kimura, Akitaka, 4,356,214, Cl. 427-233.000.
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Sundstrand Corporation: *See—*
Fulkerson, Thomas R.; and Hawkins, Royal R., 4,355,509, Cl. 60-449.000.
Glennon, Timothy F., 4,356,408, Cl. 307-254.000.
Super, Daniel J.: *See—*
Kimzey, Paul W.; and Super, Daniel J., 4,355,435, Cl. 15-347.000.
Suschitzky, John L.: *See—*
Payling, David W.; and Suschitzky, John L., 4,356,181, Cl. 424-258.000.

- Susnjara, Kenneth J.; and Diamond, Michael N., to Thermwood Corporation. Method and apparatus for compensating for system error in an industrial robot control. 4,356,554, Cl. 364-513.000.
- Sutco, Inc.: *See—*
  - Hollier, Joseph H., Jr., 4,355,771, Cl. 242-56.00R.
- Suzuki, Katumi: *See—*
  - Iida, Yasuo; Suzuki, Katumi; and Endo, Nobuhiro, 4,356,223, Cl. 428-156.000.
- Suzuki, Mitsumasa: *See—*
  - Sumiyoshi, Hiroji; Suzuki, Mitsumasa; and Okazaki, Hiroshi, 4,356,515, Cl. 358-246.000.
- Suzuki, Naoyoshi: *See—*
  - Shimada, Yukio; Suzuki, Naoyoshi; Ohashi, Toshio; and Inoshita, Yasushi, 4,355,681, Cl. 165-16.000.
- Suzuki, Takehiko: *See—*
  - Nakanishi, Yoshiyuki; Akazawa, Yoji; Ikeda, Noriaki; and Suzuki, Takehiko, 4,356,112, Cl. 252-435.000.
- Suzuki, Yasoji; and Takada, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Flip-flop circuit. 4,356,411, Cl. 307-272.00A.
- Suzuki, Yasuo: *See—*
  - Saito, Hiraku; Takagahara, Isamu; Suzuki, Yasuo; Fujita, Tuyosi; Fujii, Katsumi; and Horio, Takekazu, 4,356,072, Cl. 204-180.00G.
- Svensson, Ingemar: *See—*
  - Svensson, Rolf; and Svensson, Ingemar, 4,355,548, Cl. 74-826.000.
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- Sweeney, Edward E.; and Magowan, Paul N., to Westlake, E. B., Jr., a part interest. Automatic control of bubble size in blown film. 4,355,966, Cl. 425-140.000.
- Sweeney, William M.; and Herbstman, Sheldon, to Texaco Inc. Method of extending hydrocarbon fuels including gasolines and fuels heavier than gasoline. 4,356,001, Cl. 44-56.000.
- Swesey, Calvin M.: *See—*
  - Church, Fredrick Z.; and Swesey, Calvin M., 4,355,553, Cl. 82-4.00R.
- Swett, H. Robert, Jr. Golf club aligner. 4,355,809, Cl. 273-183.00D.
- Swieskowski, Henry P., to United States of America, Army. Dual rate firing mechanism. 4,355,563, Cl. 89-130.000.
- Swistak, Gregory B.: *See—*
  - Cole, David L.; Swistak, Gregory B.; Ryon, Randall C.; Lama, William L.; and Northrup, Karl A., 4,355,891, Cl. 355-57.000.
- Sy, Angel, to Lummus Company, The. Purging of inerts in chlorinated hydrocarbon production. 4,356,336, Cl. 570-243.000.
- Systemation Inc.: *See—*
  - Teates, N. Grove; and Mayhall, Riley H., Jr., 4,355,496, Cl. 53-587.000.
- Szabo, Imre: *See—*
  - Szendro, Peter; Benko, Janos; and Szabo, Imre, 4,355,989, Cl. 474-94.000.
- Szabo, Lajos: *See—*
  - Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,356,305, Cl. 546-51.000.
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- Szecsy, Alek P.: *See—*
  - Lange, Roger W.; and Szecsy, Alek P., 4,356,233, Cl. 428-336.000.
- Szendro, Peter; Benko, Janos; and Szabo, Imre, to Godolloi Agrartudomanyi Egyetem. Gear unit for power-saving drive of working elements of rotary or oscillatory motion, especially of agriculatural cutter drums and peg drums. 4,355,989, Cl. 474-94.000.
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- Szita, Jeno G.; and DiLeone, Roland R., to American Cyanamid Company. Synthesis of oxyalkylated polyamino-1,3,5-triazines. 4,356,304, Cl. 544-196.000.
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  - Nakao, Makoto; Nakao, Toshiko; Nagai, Fumiko; Dogen, Masako; and Tabata, Yoshitomi, 4,356,172, Cl. 424-101.000.
- Tabei, Masatoshi; Takeda, Keiji; Kawaziri, Kazuhiro; and Higashi, Akio, to Fuji Photo Film Co., Ltd. Method of making α-silicon powder, and electrophotographic materials incorporating said powder. 4,356,246, Cl. 430-136.000.
- Tabor, Edward; and Gerety, Robert J., to United States of America, Health & Human Services. Detection of non-A, non-B hepatitis associated antigen. 4,356,164, Cl. 424-1.000.
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- Tachikawa, Hiromichi: *See—*
  - Takahashi, Yohnosuke; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,356,254, Cl. 430-296.000.
- Tadokoro, Eiichi; Masuda, Haruo; Yamaguchi, Nobutaka; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Method for producing magnetic recording medium. 4,356,232, Cl. 428-325.000.
- Taiho Kogyo Co., Ltd.: *See—*
  - Fukuoka, Tatsuhiko; Ichikawa, Shigeo; and Nomichi, Satoru, 4,355,529, Cl. 73-412.000.
- Taira, Jyoji: *See—*
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- Tajiri, Koji; Oohara, Mikio; and Maruo, Kiyoshi, to Teijin Limited. Cohesive bulky carpet yarn of a polyamide continuous multifilament and a cut pile carpet. 4,355,592, Cl. 112-410.000.
- Takada, Minoru: *See—*
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- Takagahara, Isamu: *See—*
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- Takahashi, Masaaki: *See—*
  - Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,356,335, Cl. 570-129.000.
- Takahashi, Teruo; and Ito, Rintaro. Method of coiling a wire in a tube. 4,355,459, Cl. 29-605.000.
- Takahashi, Tomoyuki: *See—*
  - Tsutsumi, Yoshio; and Takahashi, Tomoyuki, 4,355,542, Cl. 74-467.000.
- Takahashi, Toru: *See—*
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- Takahashi, Toshiyuki: *See—*
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- Takahashi, Yohnosuke; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Image-forming method using o-quinone diazide and basic carbonium dye. 4,356,254, Cl. 430-296.000.
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  - Tachikawa, Hiromichi; Takahashi, Yohnosuke; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,356,255, Cl. 430-325.000.
- Takai, Isao, to Oda Gosen Kogyo Kabushiki Kaisha. Fabrics having salt-and-pepper patterns and crimped filament yarns for producing the same. 4,355,499, Cl. 57-205.000.
- Takano, Masayuki; and Hosoi, Sadao, to Sony Corporation. Head positioning signal generating apparatus. 4,356,522, Cl. 360-77.000.
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- Takeda, Keiji: *See—*
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- Takeda, Shigekazu. Magnetic cards and method of manufacturing the same. 4,356,391, Cl. 235-493.000.
- Takematsu, Yoshiyuki, to Fuji Koeki Corporation. Electric flash device. 4,356,533, Cl. 362-17.000.
- Takemura, Eiichiro: *See—*
  - Furuya, Hiroshi; Okada, Munehisa; Takemura, Eiichiro; and Sato, Hideyo, 4,355,756, Cl. 229-4.500.
- Takezono, Tetsuya: *See—*
  - Imaizumi, Masao; Takezono, Tetsuya; Amari, Takaaki; and Oguchi, Yutaka, 4,356,339, Cl. 585-829.000.
- Tamura, Hideyuki; and Ikeura, Kenji, to Nissan Motor Company, Limited. Fuel supply control system for an internal combustion engine of an automotive vehicle. 4,355,616, Cl. 123-440.000.
- Tamura, Hideyuki: *See—*
  - Asano, Masaharu; Furuhashi, Shoji; and Tamura, Hideyuki, 4,355,615, Cl. 123-437.000.
- Tamura, Masuhiko: *See—*
  - Yoshimura, Noriaki; and Tamura, Masuhiko, 4,356,333, Cl. 568-840.000.
- Tamura, Sakae; Yoshida, Hiromi; Kotoh, Takehiko; and Kobayashi, Masami, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing an electret device. 4,356,049, Cl. 156-220.000.
- Tanaka, Eiichiro; Yano, Kousaku; Aoki, Yoshitaka; and Fujiwara, Shinji, to Matsushita Electric Industrial Co., Ltd. Stripe-color filter. 4,355,866, Cl. 350-164.000.
- Tanaka, Hideharu; Ishijima, Koji; and Koda, Toshihide, to Mitsubishi Denki Kabushiki Kaisha. Horizontal rotary compressor with oil forced by gas discharge into crankshaft bore. 4,355,963, Cl. 418-63.000.
- Tanaka, Kano: *See—*
  - Honda, Haruhisa; Toyono, Tsutomu; Nakamura, Shunji; Tanaka, Kano; and Kimura, Yoshimasa, 4,355,884, Cl. 355-14.0CH.
- Tanaka, Kunimaro: *See—*
  - Ozaki, Minoru; Onishi, Ken; and Tanaka, Kunimaro, 4,356,517, Cl. 360-13.000.
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- Tandem Computers Incorporated: *See—*
  - Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,356,550, Cl. 364-200.000.
- Tang, Ching W., to Eastman Kodak Company. Organic electroluminescent cell. 4,356,429, Cl. 313-503.000.
- Tannetics, Inc.: *See—*
  - Whorton, Robert B., III; and Crosby, Samuel C., Jr., 4,355,735, Cl. 222-80.000.
- Tarumi, Noriyoshi; Kawamoto, Kiyoaki; Ueno, Kenji; and Sakaguchi, Hirofumi, to Konishiroku Photo Industry Co., Ltd. Recording apparatus having roller type fixing device. 4,355,881, Cl. 355-3.0FU.
- Tasar, Omur: *See—*
  - Whiteside, Arliss E.; Freedman, Morris D.; Rothschild, Alexander M.; and Tasar, Omur, 4,356,546, Cl. 364-200.000.

- Tasch, Al F., Jr.; and Fu, Horng-Sen, to Texas Instruments Incorporated. Coating device with As_2-O_3-SiO_2. 4,355,454, Cl. 29-571.000.
- Tasch, Al F., Jr.: *See—*
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- Tate, Stanley L.: *See—*
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- Taunton, Raymond F. Universal plastic flange for connecting urinals to drain pipes. 4,355,828, Cl. 285-342.000.
- Taylor, Michael J.: *See—*
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- TDK Electronics Co., Ltd.: *See—*
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- Teates, N. Grove; and Mayhall, Riley H., Jr., to Systemation Inc. Wrapping machine and method. 4,355,496, Cl. 53-587.000.
- Teche, Andre: *See—*
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- Technochemie GmbH: *See—*
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- Teepak, Inc.: *See—*
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- Teijin Limited: *See—*
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  - Miura, Shuzi; Yoshida, Tsunemasa; Ono, Shoji; Masuho, Yasuhiko; and Sawada, Shuzo, 4,356,173, Cl. 424-101.000.
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- Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
  - Ferrieu, Gilbert M. M., 4,356,354, Cl. 179-16.0AA.
  - Ferrieu, Gilbert M. M.; Osmond, Etienne J. R.; and Hetet, Yves J. F., 4,356,355, Cl. 179-18.0HB.
- Teledyne Industries, Inc., Geotech Division: *See—*
  - Gudzin, Martin G., 4,356,423, Cl. 310-338.000.
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  - Berkman, Samuel; Duffy, Michael T.; and Temple, Harold E., 4,356,152, Cl. 422-248.000.
- Templin, Frank C.: *See—*
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- Tennant Company: *See—*
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- Terakura, Yukio: *See—*
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- Terbrack, William H.: *See—*
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- Tesch A.G.: *See—*
  - Tesch, Bernhard, 4,355,501, Cl. 59-82.000.
- Tesch, Bernhard, to Zwyro A.G.; and Tesch A.G. Expansion band, such as a watch band, jewelry band or the like. 4,355,501, Cl. 59-82.000.
- Tesch, Rodney C.: *See—*
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- Tesmann, Holger: *See—*
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- Tessier, Jean: *See—*
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- Texaco Inc.: *See—*
  - Cuscurida, Michael; and Speranza, George P., 4,356,330, Cl. 568-756.000.
  - Knifton, John F., 4,356,327, Cl. 568-387.000.
  - Knifton, John F., 4,356,332, Cl. 568-852.000.
  - Sweeney, William M.; and Herbstman, Sheldon, 4,356,001, Cl. 44-56.000.
- Texas Instruments Incorporated: *See—*
  - Fu, Horng-Sen; Tasch, Al F., Jr.; and Chatterjee, Pallab K., 4,356,040, Cl. 148-1.500.
  - Tasch, Al F., Jr.; and Fu, Horng-Sen, 4,355,454, Cl. 29-571.000.
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- Textile Products, Incorporated: *See—*
  - Curzio, Frederick H., 4,355,668, Cl. 139-420.00R.
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- Thermwood Corporation: *See—*
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- Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track tamper. 4,355,579, Cl. 104-12.000.
- Theurer, Josef; and Folser, Karl, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Ballast leveling apparatus and method. 4,355,687, Cl. 171-16.000.
- Thibaut, Jules: *See—*
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- Thielmann, Joachim: *See—*
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- Thomas & Betts Corporation: *See—*
  - Donaher, Charles J.; and Christensen, Gordon D., 4,356,532, Cl. 361-393.000.
- Thomas, Gerald S.: *See—*
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- Thomas, Leslie P.; and Bliss, George N., to Diamond International Corporation. Egg transfer apparatus. 4,355,936, Cl. 414-118.000.
- Thomas, Marvin C. Retractable device and method for providing traction. 4,355,451, Cl. 29-426.600.
- Thomas, Paul L., to Hewlett-Packard Company. Logarithmic attenuating circuit. 4,356,449, Cl. 328-145.000.
- Thompson, Robert A.: *See—*
  - Komanduri, Ranga; Lee, Minyoung; Flom, Donald G.; Thompson, Robert A.; Jones, Marshall G.; and Douglas, Robert J., 4,356,376, Cl. 219-121.0LN.
- Thomsen, Ove; and Ronnow, Peter, to A-Betone AB. Plant for the production of methane. 4,356,269, Cl. 435-316.000.
- Thomsen, Timothy A., to University of Iowa Research Foundation. Adjustable weight lifting holding device for leg lifting exercises. 4,355,801, Cl. 272-119.000.
- Thomson-CSF: *See—*
  - Cornette, Andre; and Rey, Georges, 4,356,056, Cl. 156-649.000.
  - Dudome, Michel, 4,356,497, Cl. 343-854.000.
  - Gonin, Roger B.; Forster, Daniel; and Picquendar, Jean E., 4,356,463, Cl. 333-165.000.
- Thornton, Arthur G. Sign construction having selectively displayable directional signals and improved mounting bracket. 4,355,479, Cl. 40-570.000.
- Thrash, Tommy: *See—*
  - Cowan, Jack C.; Thrash, Tommy; and Rayborn, Jerry R., 4,356,096, Cl. 252-8.50C.
- Tilman, Paul A., to Minigrip, Inc. Reclosable bags, apparatus and method. 4,355,494, Cl. 53-416.000.
- Timex Corporation: *See—*
  - Hsu, Ying Y., 4,356,104, Cl. 252-299.610.
- Tindall, Donald J.; and Means, Anthony R., to Upjohn Company, The. 17β-Hydroxy-17α-methyl-5α-androstano-[3,2-c]pyrazole 17-methyl ether. 4,356,175, Cl. 424-241.000.
- Tischer, Werner: *See—*
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- TMC Corporation: *See—*
  - Krob, Erwin; and Weigl, Erwin, 4,355,817, Cl. 280-605.000.
- Todd, John M., to General Foods Inc. Wrap food coating mix and method of using. 4,356,202, Cl. 426-138.000.
- Toelle, Alvin D.: *See—*
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- Togawa, Yasuhito: *See—*
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- Tohoku Metal Industries, Ltd.: *See—*
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- Tokico Kabushiki Kaisha: *See—*
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- Tokico Ltd.: *See—*
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  - Nakayama, Koichi, 4,356,510, Cl. 358-143.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
  - Hirose, Minoru, 4,355,711, Cl. 194-4.00C.
  - Masuda, Eiji, 4,356,450, Cl. 330-9.000.
  - Noguchi, Mikio; and Kobayashi, Kazuho, 4,356,427, Cl. 313-422.000.
  - Ono, Takuo; Fukui, Sigeo; and Ookura, Junichi, 4,356,544, Cl. 363-132.000.
  - Suzuki, Yasoji; and Takada, Minoru, 4,356,411, Cl. 307-272.00A.
  - Tamura, Sakae; Yoshida, Hiromi; Kotoh, Takehiko; and Kobayashi, Masami, 4,356,049, Cl. 156-220.000.
  - Yamada, Tetsuo, 4,356,502, Cl. 357-13.000.
- Tomiyasu, Kunihiko: *See—*
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- Tompkins, Russell E.: *See—*
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- Tonti, Sergio: *See—*
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- Toray Industries, Incorporated: *See—*
  - Inoue, Takehisa; and Miwa, Kishio, 4,356,331, Cl. 568-758.000.

Kobayashi, Hirokazu; and Kitanaka, Minoru, 4,356,228, Cl. 428-283.000.
Matsumoto, Tadayuki; Imaeda, Kozo; Mineo, Masatoshi; and Nakagawa, Kiyoshi, 4,355,445, Cl. 28-274.000.
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Torii Winding Machine Co., Ltd.: *See—*
Torii, Soichi, 4,355,666, Cl. 139-13.00R.
Torrenteras, Angel E.; and Torrenteras, Antonio E. Apparatus for automatically boxing cylindrical goods. 4,355,492, Cl. 53-58.000.
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Tosato, Lawrence P.; and Mullis, Clyde M., to Westinghouse Electric Corp. Electrically driven sheave. 4,355,785, Cl. 254-362.000.
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Leskovec, Edward V., 4,355,695, Cl. 180-68.500.
Wiblin, Wayne T., 4,355,947, Cl. 414-785.000.
Toyo Kogyo Co., Ltd.: *See—*
Murakami, Tetsuro, 4,355,843, Cl. 296-201.000.
Toyoda Gosei Co., Ltd.: *See—*
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Shimajiri, Tokiji; Toyoda, Kenichi; and Yamazaki, Takahumi, 4,355,446, Cl. 29-26.00A.
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Toyota Jidosha Kabushiki Kaisha: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Akira, 4,355,611, Cl. 123-396.000.
Hayashi, Kunihisa; and Moriyama, Masakazu, 4,355,614, Cl. 123-436.000.
Ikemoto, Kazuhito; Katayama, Nobuaki; Terakura, Yukio; and Sasaki, Kan, 4,355,543, Cl. 74-473.00P.
Iwase, Kazuo; Kawai, Hisasi; Yoshimura, Kunimasa; Ito, Toshimitsu; and Ito, Yoshiyasu, 4,356,551, Cl. 364-431.080.
Kitagawa, Naoto; Masaki, Kunihiko; and Watanabe, Hiroyuki, 4,355,820, Cl. 280-779.000.
Okano, Hiroshi, 4,355,850, Cl. 308-9.000.
Tozun, Orhan N., to International Microcircuits, Inc. MOS Integrated circuit structure for discretionary interconnection. 4,356,504, Cl. 357-42.000.
Trachsler, Dieter; and Lohse, Friedrich, to Ciba-Geigy Corporation. Process for the production of N-cyanolactams. 4,356,121, Cl. 260-239.30R.
Tran, Nhan V., to Marine Construction & Design Co. Flow-through oil/water separation filter. 4,356,090, Cl. 210-350.000.
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Armstrong, Andrew S.; and Sach, Martin R., 4,356,514, Cl. 358-214.000.
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Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,356,550, Cl. 364-200.000.
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Trumbull, Walter A.: *See—*
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Tsai, Yun-Ting. Refrigerator-oven complex. 4,355,521, Cl. 62-196.00B.
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Tsubota, Naoki; and Shibuya, Satoru, to Giken Trading Co., Ltd. Apparatus for counting the number of objects passing a given point. 4,356,387, Cl. 235-92.0PK.
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Tsujimura, Katsuhito, to Sony Corporation. Digital soft-edge video special effects generator. 4,356,511, Cl. 358-181.000.
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Tsutsumi, Yoshio; and Takahashi, Tomoyuki, to Kabushiki Kaisha Komatsu Seisakusho. Scavenging pump. 4,355,542, Cl. 74-467.000.
Tsuyuki, Hiroshi: *See—*
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Tyminski, Patricia N.: *See—*
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Tymkewicz, John. Surface temperature sensing device. 4,355,911, Cl. 374-165.000.
Ube Industries, Ltd.: *See—*
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Ueno, Ryuzo; Matsuda, Toshio; Kanayama, Tatsuo; Tomiyasu, Kunihiko; Fujita, Yatsuka; and Nagata, Kiyoshi, to Kabushiki Kaisha Ueno Seiyako Oyo Kenkyujo. Process for producing cured meat products having antibotulinal activity. 4,356,203, Cl. 426-266.000.
Ullrich, Manfred F., to ITT Industries, Inc. Input circuit for bucket brigade. 4,356,407, Cl. 307-221.00D.
Ulsky, Carl M., to KACA Corporation. Vehicle tire rim core remover. 4,355,556, Cl. 83-124.000.
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Union Carbide Corporation: *See—*
Anthony, John; Velisek, Frank J.; and Capponi, Paul D., 4,356,221, Cl. 428-35.000.
Chiu, Herman S.; and Watts, Keith A., 4,356,218, Cl. 427-355.000.
Union Oil Company of California: *See—*
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Blenke, Joseph F.; and Blenke, Stanley J., Sr., 4,355,508, Cl. 60-416.000.
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Snyder, David E., 4,355,658, Cl. 137-557.000.
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Agriculture: *See—*
Biller, Cleveland J., 4,355,727, Cl. 212-121.000.
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Kuperman, Gilbert G.; and Hann, Reuben L., 4,355,981, Cl. 434-14.000.
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Nussmeier, Thomas A., 4,355,900, Cl. 356-356.000.
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Army: *See—*
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Energy: *See—*
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National Aeronautics and Space Administration; administrator; with respect to an invention of:
Laue, Eric G. Cloud cover sensor. 4,355,896, Cl. 356-222.000.
Orloff, Kenneth L.; and Yanagita, Haruo. Rhomboid prism pair for rotating the plane of parallel light beams. 4,355,870, Cl. 350-486.000.
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Altman, Robert L., 4,356,157, Cl. 423-419.00P.
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Griffith, James R.; and O'Rear, Jacques G., 4,356,296, Cl. 526-242.000.
Kaloi, Cyril M., 4,356,492, Cl. 343-700.0MS.
Sewell, Robert G. S.; Pringle, John K.; Backman, Marvin E.; and Finnegan, Stephen A., 4,355,562, Cl. 89-36.00A.
Stachiw, Jerry D., 4,355,867, Cl. 350-319.000.
U.S. Philips Corporation: *See—*
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Robers, Klaas H. J., 4,356,512, Cl. 358-183.000.
Rousseau, Jean-Pierre, 4,355,921, Cl. 403-316.000.
van Laar, Jan, 4,356,468, Cl. 336-69.000.
van Maanen, Gerardus A., 4,356,422, Cl. 310-322.000.
Wittekoek, Stefan; and Fahner, Theodorus A., 4,356,392, Cl. 250-201.000.
United Technologies Corporation: *See—*
Kalmanash, Michael H., 4,356,435, Cl. 315-375.000.
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University of Iowa Research Foundation: *See—*
Laughlin, Donald; and Krumm, Paul J., 4,355,643, Cl. 128-663.000.
Thomsen, Timothy A., 4,355,801, Cl. 272-119.000.
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Tindall, Donald J.; and Means, Anthony R., 4,356,175, Cl. 424-241.000.
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Skierski, Edwin J., 4,355,430, Cl. 10-9.000.
Usui, Tugumoto; Kato, Katsunori; and Kojima, Tamotsu, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material containing yellow coupler. 4,356,258, Cl. 430-557.000.
Uya, Masaru; and Kawamoto, Kinji, to Matsushita Electric Industrial Co. Ltd. Electronic musical instrument. 4,355,559, Cl. 84-1.030.
Uzunoglu, Vasil, to Communications Satellite Corporation. Division by noninteger numbers using synchronous oscillators. 4,356,456, Cl. 331-117.00R.
Vacuumatic Limited: *See—*
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Van Brocklin, Lester P.: *See—*
Carron, Mark S.; La Barbera, Ronald S.; Van Brocklin, Lester P.; and Jain, Pawan K., 4,356,130, Cl. 260-989.000.
Vandebult, Jan. FM/AM Electronic security system. 4,356,477, Cl. 340-572.000.
vander Have, Leonard A., to Combustion Engineering, Inc. Temperature compensation for transducer components. 4,355,537, Cl. 73-708.000.
Vander Meulen, Edward F.: *See—*
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van Laar, Jan, to U.S. Philips Corporation. Transformer with magnetic screening foils. 4,356,468, Cl. 336-69.000.
van Maanen, Gerardus A., to U.S. Philips Corporation. Acoustic transducer. 4,356,422, Cl. 310-322.000.
Van Rhyn, Lucas H.: *See—*
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Van Vliet, Marius, to Design Research Marketing (Proprietary) Limited. Space frame connectors. 4,355,918, Cl. 403-170.000.
Vapor Corporation: *See—*
Reip, Raymond G., 4,355,657, Cl. 137-492.000.
Varga, Tivadar: *See—*
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Vaughan, Roger, to Imperial Group Limited. Apparatus for automatically measuring the properties of air-permeable rod-like articles. 4,355,535, Cl. 73-37.800.
Veb Arzneimittelwerk Dresden: *See—*
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Venture Chemicals, Inc.: *See—*
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Verbeek, Antonie E.; and Mattheij, Jozef M. J., to J. T. Baker Chemicals B.V. Reagent for the quantitative determination of water and its use therefor. 4,355,998, Cl. 23-230.00R.
Verdino, Heiner: *See—*
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Verein zur Forderung der Giesserei-Industrie: *See—*
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Verne, Stefan, to BICC Limited. Fully-filled telecommunication cables. 4,356,342, Cl. 174-23.00C.
Viale, Ernesto, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.P.A. Automatic digital telephone exchange. 4,356,563, Cl. 370-58.000.
Vianova Kunstharz, A.G.: *See—*
Daimer, Wolfgang; and Verdino, Heiner, 4,356,278, Cl. 523-414.000.
Honig, Helmut; Leitner, Wolfgang; and Pampouchidis, Georg, 4,356,276, Cl. 523-404.000.
Vierkotter, Peter, to Henkel Kommanditgesellschaft auf Aktien. Liquid storage container. 4,355,739, Cl. 222-134.000.
Viguie, Jean-Claude: *See—*
Francois, Bernard; and Viguie, Jean-Claude, 4,356,135, Cl. 264-61.000.
Villa, Francisco, to CGR Compania Generale de Radiologia. Film feed magazine for equipping a radiographic film changer and a film-changer equipped with said magazine. 4,355,798, Cl. 271-21.000.
Vinarub, Edmond I., to Exxon Research and Engineering Co. Solid state power switch for gas discharge lamps. 4,356,432, Cl. 315-287.000.
Vinas, Juan, to Textile Technology, Inc. Multi-purpose yarn feeding device. 4,355,747, Cl. 226-34.000.
Volz, Jack H., to AMF Incorporated. Pull-to-turn switch. 4,356,360, Cl. 200-11.00R.
Von Braun, Daun W. Containment skirt for drilling fluid. 4,355,826, Cl. 285-45.000.
Voyer, Joseph L.: *See—*
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VSI Corporation: *See—*
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W. E. Healey & Associates, Inc.: *See—*
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Wacker-Chemie GmbH: *See—*
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Wada, Ryoichi; Seno, Takanori; and Tsuchiya, Mitsuharu, to Matsushita Electric Industrial Co., Ltd. Synchronizing signal detecting apparatus. 4,356,566, Cl. 375-116.000.
Wagner, Kuno; Dahm, Manfred; and Muller, Hanns P., to Bayer Aktiengesellschaft. Aminoplast foams. 4,356,275, Cl. 521-136.000.
Wagner, Mary H. Loading device and loading method for horse trailers and the like. 4,355,594, Cl. 119-7.000.
Wagner, Rudolf: *See—*
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Waite, Frederick A.: *See—*
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Waller, Francis J., to Du Pont de Nemours, E. I., and Company. Toluic acid. 4,356,318, Cl. 562-406.000.
Wallin, Gus W.: *See—*
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Walsworth, Frank J.: *See—*
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Walter, Wolfgang: *See—*
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Walther, Ludwig: *See—*
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Ware Machine Service, Inc.: *See—*
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Wargin, Robert V.: *See—*
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Warren Automatic Tool Company: *See—*
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- Warren, Kenneth D.; and Tenold, Gregory G., to Spokane Crusher Mfg. Co. Impeller shoe assembly. 4,355,769, Cl. 241-300.000.
- Warwick Chemical Limited: *See—*
  - Hannam, Stephen J., 4,356,321, Cl. 564-144.000.
- Watanabe, Hiroshi: *See—*
  - Shimizu, Hiroshi; and Watanabe, Hiroshi, 4,356,421, Cl. 310-320.000.
- Watanabe, Hiroyuki: *See—*
  - Kitagawa, Naoto; Masaki, Kunihiko; and Watanabe, Hiroyuki, 4,355,820, Cl. 280-779.000.
- Watanabe, Katsunori: *See—*
  - Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; Ohta, Shigeto; and Kitahara, Makoto, 4,356,243, Cl. 430-58.000.
- Watanabe, Masaru: *See—*
  - Makino, Kenya; Sakurai, Hieo; Watanabe, Masaru; and Nishimura, Toshiyuki, 4,356,160, Cl. 423-492.000.
- Watanabe, Seizo, to Olympus Optical Company Ltd. Magnetic head. 4,356,524, Cl. 360-129.000.
- Watanabe, Seizo: *See—*
  - Saitou, Sinichi; Kato, Toshikazu; Kimura, Kenji; Satoh, Ken; Shibata, Tsutomu; Watanabe, Seizo; and Ohshima, Ken, 4,355,750, Cl. 226-188.000.
- Watanabe, Takeaki, to Nissan Motor Co., Ltd. Air heating system of internal combustion engine-mounted motor vehicle. 4,355,753, Cl. 237-12.30A.
- Watts, Keith A.: *See—*
  - Chiu, Herman S.; and Watts, Keith A., 4,356,218, Cl. 427-355.000.
- Watts, Ralph M., to Lowery, John W. Illuminated solar energy collector. 4,355,628, Cl. 126-427.000.
- Watts, Ronald C. Fisherman's cart. 4,355,818, Cl. 280-654.000.
- Wean United, Inc.: *See—*
  - Miles, John H., 4,355,526, Cl. 72-164.000.
- Weaver, Ralph J., III: *See—*
  - Shefler, Gerald E.; and Weaver, Ralph J., III, 4,356,351, Cl. 179-1.00B.
- Weber, Joseph; and Weber, Maria L. Record indexing system. 4,355,824, Cl. 283-21.000.
- Weber, Maria L.: *See—*
  - Weber, Joseph; and Weber, Maria L., 4,355,824, Cl. 283-21.000.
- Weber, Robert: *See—*
  - Krauss, Peter; Muller, Ewald; Porner, Horst; and Weber, Robert, 4,355,790, Cl. 266-252.000.
- Wedge, Richard. Drafting aid. 4,355,472, Cl. 33-486.000.
- Weigl, Erwin: *See—*
  - Krob, Erwin; and Weigl, Erwin, 4,355,817, Cl. 280-605.000.
- Weiler, Peter M.: *See—*
  - Hinds, Sally K.; Weiler, Peter M.; and Hewitt, Robert R., 4,355,719, Cl. 206-334.000.
- Weinlich, Jurgen; Plewan, Otto; Leugering, Hans-Joachim, deceased; by Leugering nee Wegener, Ursula M., heiress; by Leugering, Lothar, heir; by Leugering, Manfred, heir; by Bahn nee Leugering, Rita, heiress; and by Leugering, Gunter, heir, to Hoechst Aktiengesellschaft. Vinyl chloride polymer mixtures for processing as plastisols or organosols. 4,356,283, Cl. 524-504.000.
- Weischedel, Richard C., to General Electric Company. Voltage controlled non-saturating semiconductor switch and voltage converter circuit employing same. 4,356,416, Cl. 307-570.000.
- Weissberger, Edward: *See—*
  - Abel, Edward P.; and Weissberger, Edward, 4,356,249, Cl. 430-215.000.
- Weisser, Gunter; Starkloff, Bernd; and Stoesser, Klaus, to Battelle-Institut e.V. Device for measuring the mass flow and the heat flow and method for determining the mass flow. 4,355,908, Cl. 374-39.000.
- Weissman, Bernard, to Ipco Corporation. Lingual dental splint device. 4,355,979, Cl. 433-225.000.
- Welch, Richard M.: *See—*
  - Findlay, John W. A.; Butz, Robert F.; and Welch, Richard M., 4,356,165, Cl. 424-1.000.
- Welch, William A.: *See—*
  - Fickes, Scott A.; and Welch, William A., 4,355,599, Cl. 119-106.000.
- Wells, Rodney L.; Rowe, Monty L.; Yates, Samuel L.; and Muller, George R., to Allied Corporation. Additive dispersions and process for their incorporation with fiber-forming polymers. 4,356,280, Cl. 524-148.000.
- Wepner, Roy H.: *See—*
  - Hofberg, Robert; Goldstein, Bonnie D.; and Wepner, Roy H., 4,355,720, Cl. 206-460.000.
- West, Kenneth J., to Data General Corporation. Apparatus for monitoring and/or controlling the operations of a computer from a remote location. 4,356,545, Cl. 364-200.000.
- Westinghouse Electric Corp.: *See—*
  - Brown, David L.; and Miller, Victor D., Jr., 4,355,952, Cl. 415-115.000.
  - Cohen, Albert; Brown, Ralph D.; and Scott, William D., 4,355,515, Cl. 60-657.000.
  - Down, Michael G.; Heberlein, Joachim V. R.; and Meyer, Thomas N., 4,356,029, Cl. 75-0.50B.
  - Emery, Franklin T., 4,356,443, Cl. 324-51.000.
  - Feilchenfeld, Michal M., 4,356,390, Cl. 235-455.000.
  - Gainer, Gordon C.; and Luck, Russell M., 4,355,960, Cl. 417-419.000.
  - Jackovitz, John F.; Seidel, Joseph; and Pantier, Earl A., 4,356,101, Cl. 252-182.100.
  - Kemeny, George A.; and Barber, John P., 4,355,561, Cl. 89-8.000.
  - Lenderking, Bruce N.; and Garrett, Donald P., 4,356,397, Cl. 250-231.0SE.
  - McShane, James L.; Golick, Leonard R.; and Spiegelman, Stanley R., 4,355,536, Cl. 73-633.000.
  - Sherwood, Edward F., 4,355,486, Cl. 49-409.000.
  - Smith, James D. B.; and Kauffman, Robert N., 4,356,417, Cl. 310-43.000.
  - Sprengling, Gerhard R.; and Cargnel, Louis A., 4,356,237, Cl. 428-404.000.
  - Tosato, Lawrence P.; and Mullis, Clyde M., 4,355,785, Cl. 254-362.000.
- Westlake, E. B., Jr.: *See—*
  - Sweeney, Edward E.; and Magowan, Paul N., 4,355,966, Cl. 425-140.000.
- Westvaco Corporation: *See—*
  - Dilling, Peter; and Prazak, Gerald, 4,355,996, Cl. 8-561.000.
- Wetmore, Halsey J., to Adams Hard-Facing Company, Inc. Fertilizer applicator knife assembly. 4,355,589, Cl. 111-7.000.
- Wheaton Industries: *See—*
  - Germanio, Louis, 4,356,142, Cl. 264-537.000.
- White, Dwain M., to General Electric Company. Block polymers of polyphenylene oxide and aromatic polyformals. 4,356,290, Cl. 525-397.000.
- White, Eugene B., Jr., to White Machinery Corporation. Retractable wheeled vehicle. 4,355,584, Cl. 105-215.00C.
- White, Lawrence J.: *See—*
  - Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,355,664, Cl. 138-110.000.
- White Machinery Corporation: *See—*
  - White, Eugene B., Jr., 4,355,584, Cl. 105-215.00C.
- Whiteside, Arliss E.; Freedman, Morris D.; Rothschild, Alexander M.; and Tasar, Omur, to Bendix Corporation, The. Fault-tolerant multicomputer system. 4,356,546, Cl. 364-200.000.
- Whorton, Robert B., III; and Crosby, Samuel C., Jr., to Tannetics, Inc. Valving mechanism for beverage dispensing device. 4,355,735, Cl. 222-80.000.
- Wiblin, Wayne T., to Towmotor Corporation. Hook-type carriage plate with floating forks. 4,355,947, Cl. 414-785.000.
- Wicnienski, Michael F.: *See—*
  - Cobean, Richard W.; Wicnienski, Michael F.; and Feldman, Gary, 4,356,394, Cl. 250-222.00R.
- Wiedmer, Ernest: *See—*
  - Wiedmer, Walter, 4,355,730, Cl. 215-253.000.
- Wiedmer, Walter, to Wiedmer, Ernest. Screw cap with a guarantee ring for indicating the first opening of a container. 4,355,730, Cl. 215-253.000.
- Wieduwilt, Leslie R., Jr.: *See—*
  - Scholz, Ray J.; Southern, William C.; and Wieduwilt, Leslie R., Jr., 4,355,782, Cl. 249-93.000.
- Wiener, Patricia P., to Xerox Corporation. Integrated stylus array for printer operation. 4,356,347, Cl. 178-30.000.
- Wierenga, Steven W.: *See—*
  - Katzman, James A.; Bartlett, Joel F.; Bixler, Richard M.; Davidow, William H.; Despotakis, John A.; Graziano, Peter J.; Green, Michael D.; Greig, David A.; Hayashi, Steven J.; Mackie, David R.; McEvoy, Dennis L.; Treybig, James G.; and Wierenga, Steven W., 4,356,550, Cl. 364-200.000.
- Wiessner, Edgar: *See—*
  - Harbauer, Werner; and Wiessner, Edgar, 4,356,363, Cl. 200-50.00C.
- Wiezer, Hartmut; Nowy, Gunther; and Haberlein, Harald, to Hoechst Aktiengesellschaft. Process for the preparation of 2,2,6,6-tetramethylpiperidone-4. 4,356,308, Cl. 546-242.000.
- Wigand, Gerhard. Device for the destruction of microfilm and similar data carriers. 4,355,766, Cl. 241-222.000.
- Wiley, Jack C.: *See—*
  - Orlandea, Nicolae V.; and Wiley, Jack C., 4,355,697, Cl. 180-261.000.
- Wilkins, Rennie F. T., to British Aluminum Company Limited. Casting metals. 4,355,679, Cl. 164-466.000.
- Wilkinson, John R., to Bendix Corporation, The. Fast response two coil solenoid driver. 4,355,619, Cl. 123-490.000.
- Will, Gerhard; Stroh, Walter; and Zechnall, Martin, to Robert Bosch GmbH. Torque control for internal combustion engines. 4,355,550, Cl. 74-872.000.
- Willenbring, Armer J., to Pako Corporation. Film advance breakaway mechanism for slide mounter. 4,355,748, Cl. 226-67.000.
- Williams, David W.; Jordan, James L.; and Huntsinger, James E., to F. Korbel and Bros. Method and apparatus for riddling bottled wines in cases. 4,356,208, Cl. 426-592.000.
- Williams, Donald E.: *See—*
  - Elford, William J.; Williams, Donald E.; and Miller, Keith H., 4,356,045, Cl. 156-64.000.
- Williams, Louis E., Sr. Automatic golf ball teeing apparatus. 4,355,811, Cl. 273-201.000.
- Williams, Robert A. Self-locking means. 4,355,854, Cl. 339-89.00R.
- Williams, Thomas A.: *See—*
  - Rosenbluth, William; and Williams, Thomas A., 4,356,413, Cl. 307-443.000.
- Wilson, Alexander J., to Lucas Industries Limited. Hydraulically operated anti-skid braking systems for vehicles. 4,355,849, Cl. 303-116.000.
- Wilson, Harold E. Active band pass filter. 4,356,451, Cl. 330-107.000.
- Wilson, James D., to Maytag Company, The. Pump impeller. 4,355,954, Cl. 415-213.00B.
- Wilson, Reginald D. Enuresis detector and alarm. 4,356,479, Cl. 340-604.000.

- Winkler, Bruno, to Naturin-Werk Becker & Co. Edible wreath-shaped food casings, especially sausage casings. 4,356,201, Cl. 426-138.000.
- Winterton, Neil: *See—*
  - Bain, David; Martin, John E.; Saul, John H.; and Winterton, Neil, 4,356,038, Cl. 134-2.000.
- Wittekoek, Stefan; and Fahner, Theodorus A., to U.S. Philips Corporation. Optical imaging system provided with an opto-electronic detection system for determining a deviation between the image plane of the imaging system and a second plane on which an image is to be formed. 4,356,392, Cl. 250-201.000.
- Wittenzellner, Ernst: *See—*
  - Guntner, Helmut; and Wittenzellner, Ernst, 4,356,414, Cl. 307-455.000.
- Wlochowski, Jan M.: *See—*
  - Perez, Steven R.; Horton, Philip G.; and Wlochowski, Jan M., 4,355,886, Cl. 355-15.000.
- Woebcke, Herman N.; Bhojwani, Arju H.; and Gartside, Robert J., to Stone & Webster Engineering Corp. Solids quench boiler. 4,356,151, Cl. 422-145.000.
- Wojtowicz, John A.; and Hooks, Haywood, Jr., to Olin Corporation. Single step process for cyanuric acid. 4,356,303, Cl. 544-192.000.
- Wolf, David, to Scott's Liquid Gold, Inc. Container holder and actuator for aerosol cans. 4,355,740, Cl. 222-180.000.
- Wolf, Elmar: *See—*
  - Kelkenberg, Heike; and Wolf, Elmar, 4,356,307, Cl. 546-200.000.
- Wolfson, Ronald I.; and Cho, Ching-Fai. Loop-coupler commutating feed for scanning a circular array antenna. 4,356,496, Cl. 343-854.000.
- Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander A., to Alcan Aluminum Corporation. Process for producing striated surface coatings. 4,356,217, Cl. 427-286.000.
- Wollam, Carl A.: *See—*
  - Gailey, J. Lynn; and Wollam, Carl A., 4,356,216, Cl. 427-286.000.
- Wolley, E. Duane: *See—*
  - Shafer, Peter O.; and Wolley, E. Duane, 4,356,503, Cl. 357-38.000.
- Wood, Ralph T.: *See—*
  - Keramati, Bahram; Bray, Steven C.; and Wood, Ralph T., 4,356,382, Cl. 219-297.000.
- Woodhead, James L.; and Raw, Graham, to United Kingdom Atomic Energy Authority. Cerium compounds. 4,356,106, Cl. 252-313.00R.
- Wooding, Joseph F.: *See—*
  - Neckermann, Edwin F.; and Wooding, Joseph F., 4,356,060, Cl. 162-181.600.
- Woods, Lee O.; and Haag, Donald L., to General Electric Company. Method of making an electrical control. 4,355,458, Cl. 29-602.00R.
- Wooley, Bruce A.: *See—*
  - Candy, James C.; and Wooley, Bruce A., 4,356,559, Cl. 364-724.000.
- World Resources Company: *See—*
  - Halpin, Peter T.; and Zarur, George L., 4,356,030, Cl. 75-21.000.
- Wright, Keith G., to Control Data Canada, Ltd. Method and apparatus for demultiplexing electrical signals. 4,356,562, Cl. 370-20.000.
- Wright, Michael L.; and Hames, Michael D., to Chloride Silent Power Limited. Sodium sulphur cells. 4,356,241, Cl. 429-104.000.
- Wright, Norbert L.; and Hahn, Wayne L., to Teepak, Inc. Quick change drive for shirring machine control shaft. 4,355,437, Cl. 17-42.000.
- Wu, Yulin, to Phillips Petroleum Company. Low viscosity slurry and method of preparing same. 4,356,105, Cl. 252-308.000.
- Wulff, Claus: *See—*
  - Hucks, Uwe; Tresper, Erhard; and Wulff, Claus, 4,356,129, Cl. 260-973.000.
- Wulfing, Karl-Heinz; and Engelhardt, Werner, to Hacoba Textilmaschinen GmbH & Co. KG. Feeding apparatus for wet yarn. 4,355,749, Cl. 226-171.000.
- Wykhuis, Lloyd A.; and O'Neill, Michael J., to Deere & Company. Lift arm and control linkage structure for loader buckets. 4,355,946, Cl. 414-707.000.
- Wykoff, Carl L.: *See—*
  - Barnes, Charles A.; Davis, Dean E.; and Wykoff, Carl L., 4,355,698, Cl. 180-273.000.
- Wyoming Mineral Corporation: *See—*
  - Lopez, Jose G.; and Gould, Kenneth W., 4,356,154, Cl. 423-10.000.
- Xerox Corporation: *See—*
  - Cole, David L.; Swistak, Gregory B.; Ryon, Randall C.; Lama, William L.; and Northrup, Karl A., 4,355,891, Cl. 355-57.000.
  - Herloski, Robert P.; Norton, James R.; and Antos, Ronald L., 4,355,859, Cl. 350-6.100.
  - Koguchi, Kenji, 4,356,516, Cl. 358-288.000.
  - Lavallee, Pierre A.; Marshall, Sidney W.; and Antos, Ronald L., 4,355,860, Cl. 350-6.800.
  - Perez, Steven R.; Horton, Philip G.; and Wlochowski, Jan M., 4,355,886, Cl. 355-15.000.
  - Ronen, Ram S., 4,356,501, Cl. 346-155.000.
  - Snellling, Christopher, 4,355,882, Cl. 355-3.0BE.
  - Stemmle, Denis J., 4,355,880, Cl. 355-3.0SH.
  - Wiener, Patricia P., 4,356,347, Cl. 178-30.000.
- Yamachika, Hiroshi: *See—*
  - Saito, Kenji; and Yamachika, Hiroshi, 4,356,326, Cl. 568-322.000.
- Yamada, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Protection circuit for a semiconductor device. 4,356,502, Cl. 357-13.000.
- Yamaguchi, Nobutaka: *See—*
  - Tadokoro, Eiichi; Masuda, Haruo; Yamaguchi, Nobutaka; and Fujiyama, Masaaki, 4,356,232, Cl. 428-325.000.
- Yamamitsu, Chojuro, to Matsushita Electric Industrial Co. Ltd. Automatic chrominance control circuit for a color video tape recorder. 4,356,506, Cl. 358-316.000.
- Yamamoto, Katsumi: *See—*
  - Kagawa, Naohiko; Yamamoto, Katsumi; Sasano, Rin; Kusakabe, Takao; and Moriya, Yasuhiro, 4,356,148, Cl. 422-9.000.
- Yamasaki, Toshio: *See—*
  - Sapkus, Jurgis; Lewis, J. Stephen; and Yamasaki, Toshio, 4,355,482, Cl. 46-106.000.
- Yamauchi, Takashi: *See—*
  - Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,356,335, Cl. 570-129.000.
- Yamazaki, Etsuo: *See—*
  - Imazeki, Ryoji; and Yamazaki, Etsuo, 4,356,552, Cl. 364-474.000.
- Yamazaki, Hiroaki; and Hasegawa, Takao, to Carl Freudenberg, Firma. Method for the manufacture of a battery separator using tubing. 4,356,046, Cl. 156-86.000.
- Yamazaki, Keiji; and Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm control device for cameras. 4,355,875, Cl. 354-38.000.
- Yamazaki, Takahumi: *See—*
  - Shimajiri, Tokiji; Toyoda, Kenichi; and Yamazaki, Takahumi, 4,355,446, Cl. 29-26.00A.
- Yanagi, Tetsuo: *See—*
  - Ishikawa, Toshikatsu; Teranishi, Haruo; Yokoyama, Akira; Yanagi, Tetsuo; and Harada, Hirofumi, 4,356,158, Cl. 423-447.400.
- Yanagida, Tuneo, to Olympus Optical Co., Ltd. Magnetic record/reproduction apparatus of a stationary head type. 4,356,520, Cl. 360-63.000.
- Yanagita, Haruo: *See—*
  - United States of America, National Aeronautics and Space Administration; Orloff, Kenneth L.; and Yanagita, Haruo, 4,355,870, Cl. 350-486.000.
- Yano, Hiroshi: *See—*
  - Kogawa, Kouichi; Kawasaki, Teruo; Nomura, Hiroyuki; and Yano, Hiroshi, 4,356,470, Cl. 340-52.00F.
- Yano, Kousaku: *See—*
  - Tanaka, Eiichiro; Yano, Kousaku; Aoki, Yoshitaka; and Fujiwara, Shinji, 4,355,866, Cl. 350-164.000.
- Yanobu, Hideo; and Fujiwara, Kazuyuki, to Murata Kikai Kabushiki Kaisha. Pneumatic yarn guiding apparatus for double twisting machine. 4,355,500, Cl. 57-279.000.
- Yao, Shi-Kay, to Rockwell International Corporation. Self scanned optical Fourier transform arrangement. 4,355,869, Cl. 350-358.000.
- Yarrington, Robert M.: *See—*
  - Gallagher, James P.; and Yarrington, Robert M., 4,356,081, Cl. 208-139.000.
- Yasuhara, Seishi, to Nissan Motor Company, Limited. Injection advance device. 4,355,621, Cl. 123-502.000.
- Yates, Samuel L.: *See—*
  - Wells, Rodney L.; Rowe, Monty L.; Yates, Samuel L.; and Muller, George R., 4,356,280, Cl. 524-148.000.
- Yatsuhashi, Kiyomi: *See—*
  - Ozawa, Akio; Sueyoshi, Susumu; Saito, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,356,455, Cl. 330-296.000.
- Yavordios, Demetre: *See—*
  - Pacheco, Henri; Descours-Saint-Martino, Marie-Ange; Yavordios, Demetre; and Koeberle, Jean, 4,356,188, Cl. 424-317.000.
- Yeh, Nan-Hsiung, to Ampex Corporation. Narrow track magnetoresistive transducer assembly. 4,356,523, Cl. 360-113.000.
- Yellow Springs Instrument Company, Inc., The: *See—*
  - Johnson, Jay M., 4,356,074, Cl. 204-195.00P.
- Yokota, Takeshi: *See—*
  - Eguchi, Yoichi; and Yokota, Takeshi, 4,356,567, Cl. 455-177.000.
- Yokoyama, Akira: *See—*
  - Ishikawa, Toshikatsu; Teranishi, Haruo; Yokoyama, Akira; Yanagi, Tetsuo; and Harada, Hirofumi, 4,356,158, Cl. 423-447.400.
- Yoshida, Hiromi: *See—*
  - Tamura, Sakae; Yoshida, Hiromi; Kotoh, Takehiko; and Kobayashi, Masami, 4,356,049, Cl. 156-220.000.
- Yoshida Kogyo K.K.: *See—*
  - Doori, Hisashi, 4,355,461, Cl. 29-768.000.
- Yoshida, Tsunemasa: *See—*
  - Miura, Shuzi; Yoshida, Tsunemasa; Ono, Shoji; Masuho, Yasuhiko; and Sawada, Shuzo, 4,356,173, Cl. 424-101.000.
- Yoshimura, Kunimasa: *See—*
  - Iwase, Kazuo; Kawai, Hisasi; Yoshimura, Kunimasa; Ito, Toshimitsu; and Ito, Yoshiyasu, 4,356,551, Cl. 364-431.080.
- Yoshimura, Noriaki; and Tamura, Masuhiko, to Kuraray Company, Limited. Process for preparing n-octadienol. 4,356,333, Cl. 568-840.000.
- Yoshimura, Norihiko; Niiho, Masaaki; Kamasako, Shoji; and Ishiai, Hideyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. CCD Scanner with improved resolution. 4,356,513, Cl. 358-213.000.
- Yoshino Kogyosho Co. Ltd.: *See—*
  - Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, 4,355,728, Cl. 215-1.00C.
- Yoshino, Yataro; Ota, Akiho; and Sugiura, Hiroaki, to Yoshino Kogyosho Co. Ltd. Synthetic resin thin-walled bottle. 4,355,728, Cl. 215-1.00C.
- Youle, Richard J.: *See—*
  - Neville, David M., Jr.; Youle, Richard J.; and Murray, Gary J., 4,356,117, Cl. 260-112.00R.
- Young, Lewis B., to Mobil Oil Corporation. Extending catalyst life by treating with phosphorus and/or steam. 4,356,338, Cl. 585-407.000.
- Yue, On-Ching: *See—*
  - Eng, Kai Y.; and Yue, On-Ching, 4,356,353, Cl. 179-15.55T.

- Yumino, Masamichi: *See—*
  - Ozawa, Akio; Sueyoshi, Susumu; Saito, Keishi; Ishikawa, Kikuo; Yatsuhashi, Kiyomi; Ishii, Satoshi; and Yumino, Masamichi, 4,356,455, Cl. 330-296.000.
- Zahnradfabrik Friedrichshafen, AG: *See—*
  - Liebert, Karl-Heinz; and Tischer, Werner, 4,355,505, Cl. 60-384.000.
- Zalisz, Rene; and Salles, Marie-France, to Roussel Uclaf. Novel glycoproteins. 4,356,171, Cl. 424-92.000.
- Zans, William A.; and Vander Meulen, Edward F., to Missouri Portland Cement Co. Backless aeration pad for bulk cargo conveying barge or the like. 4,355,928, Cl. 406-90.000.
- Zaramella, Bruno: *See—*
  - Cardone, Michele; Grandini, Angelo; and Zaramella, Bruno, 4,356,467, Cl. 335-295.000.
- Zarur, George L.: *See—*
  - Halpin, Peter T.; and Zarur, George L., 4,356,030, Cl. 75-21.000.
- Zaschke, Horst: *See—*
  - Schubert, Herrmann; Pelzl, Gerhard; Zaschke, Horst; Demus, Dietrich; Nothni, Hans-Ulrich; and Kuschel, Frank, 4,356,103, Cl. 252-299.100.
- Zato, Thomas J.: *See—*
  - Skerlos, Peter C.; Snopko, Paul A.; Templin, Frank C.; and Zato, Thomas J., 4,356,509, Cl. 358-85.000.
- Zaveri, Vikram H.: *See—*
  - Kluting, Bernd A.; and Zaveri, Vikram H., 4,355,846, Cl. 297-366.000.
- Zechnall, Martin: *See—*
  - Will, Gerhard; Stroh, Walter; and Zechnall, Martin, 4,355,550, Cl. 74-872.000.
- Zemco, Inc.: *See—*
  - Blaney, Peter G., 4,355,607, Cl. 123-350.000.
- Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, to AKZO N.V. Polymeric N-halogenoamides on the basis of acrylamide and methacrylamide. 4,356,289, Cl. 525-358.000.
- Zenith Radio Corporation: *See—*
  - Skerlos, Peter C.; Snopko, Paul A.; Templin, Frank C.; and Zato, Thomas J., 4,356,509, Cl. 358-85.000.
- Zenkoku Nogyo Kyodo Kumiai Rengo Kai: *See—*
  - Furuya, Hiroshi; Okada, Munehisa; Takemura, Eiichiro; and Sato, Hideyo, 4,355,756, Cl. 229-4.500.
- Ziegler, Hermann; and Kolb, Eugen, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Roof for vehicles, especially motor vehicles, for agricultural purposes. 4,355,845, Cl. 296-210.000.
- Zielinski, Gloria J. Protective body suit for animals. 4,355,600, Cl. 119-143.000.
- Zielke, Rainer: *See—*
  - Zengel, Hans-Georg; Bergfeld, Manfred; and Zielke, Rainer, 4,356,289, Cl. 525-358.000.
- Zimmermann & Jansen GmbH: *See—*
  - Hannes, Heinz D.; Lothmann, Josef; and Walther, Ludwig, 4,355,787, Cl. 266-92.000.
- Zimmermann, Walter: *See—*
  - Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,355,705, Cl. 187-29.00R.
- Zip Heaters (Aust.) Pty. Limited: *See—*
  - Massey, Raymond D.; and Di Santo, Vincent, 4,355,452, Cl. 29-437.000.
- Zwyro A.G.: *See—*
  - Tesch, Bernhard, 4,355,501, Cl. 59-82.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF OCTOBER, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Brelsford, John E.: *See—*
  - Greiner, James G.; Brelsford, John E.; and Thomas, Louis R., Jr., Re. 31,063, Cl. 56-98.000.
- Chang, Henry K.; and Hausen, Wolfgang H., to International Business Machines Corporation. Apparatus and method for record reorientation following error detection in a data storage subsystem. Re. 31,069, Cl. 360-53.000.
- D'Amico, John J., to Monsanto Company. Substituted benzothiazolines and their use as plant growth regulants. Re. 31,068, Cl. 71-90.000.
- Greiner, James G.; Brelsford, John E.; and Thomas, Louis R., Jr., to Sperry Corporation. Adjustable width row crop header. Re. 31,063, Cl. 56-98.000.
- Hausen, Wolfgang H.: *See—*
  - Chang, Henry K.; and Hausen, Wolfgang H., Re. 31,069, Cl. 360-53.000.
- International Business Machines Corporation: *See—*
  - Chang, Henry K.; and Hausen, Wolfgang H., Re. 31,069, Cl. 360-53.000.
- Monsanto Company: *See—*
  - D'Amico, John J., Re. 31,068, Cl. 71-90.000.
- Roberts, Maurice P., to TRW Inc. Hydrostatic control unit. Re. 31,067, Cl. 418-61.00B.
- Shelor, Clifford D., to Westvaco Corporation. Steam distribution system. Re. 31,065, Cl. 239-120.000.
- Shriver, Joe E., to Sperry Corporation. Adjustable width row crop header. Re. 31,064, Cl. 56-98.000.
- Sperry Corporation: *See—*
  - Greiner, James G.; Brelsford, John E.; and Thomas, Louis R., Jr., Re. 31,063, Cl. 56-98.000.
  - Shriver, Joe E., Re. 31,064, Cl. 56-98.000.
- Thomas, Louis R., Jr.: *See—*
  - Greiner, James G.; Brelsford, John E.; and Thomas, Louis R., Jr., Re. 31,063, Cl. 56-98.000.
- TRW Inc.: *See—*
  - Roberts, Maurice P., Re. 31,067, Cl. 418-61.00B.
- Westvaco Corporation: *See—*
  - Shelor, Clifford D., Re. 31,065, Cl. 239-120.000.
- Whittaker, Donald G. M. Steering linkages. Re. 31,066, Cl. 280-103.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

- Ethyl Products Company: *See—*
  - McKinney, James C. B1 4,257,561. Cl. 239–58.
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- Thomas, Wesley L. Telephone. 266,666, 10-26-82, Cl. D14-53.000.
- Thorpe, Robert K., to Scott Paper Company. Chair frame construction. 266,639, 10-26-82, Cl. D6-191.000.
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  - Matsumoto, Takashi; and Ishii, Jun, 266,663, Cl. D14-2.000.
- Tomy Kogyo Co., Inc.: *See—*
  - Yoshimura, Masaaki, 266,681, Cl. D21-59.000.
- Topete, Lino Z. Swimming pool and spa combination. 266,697, 10-26-82, Cl. D24-38.000.
- Topete, Lino Z. Swimming pool and spa combination. 266,698, 10-26-82, Cl. D24-38.000.
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- Trammll, Wallace E.; and Chidester, James R. Mouthpiece for a spirometer. 266,695, 10-26-82, Cl. D24-17.000.
- Trombly, Edgar F., to Thermo-Serv, Inc. Tongs. 266,640, 10-26-82, Cl. D7-105.000.
- Trottier, Clement W.: *See—*
  - Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,668, Cl. D14-79.000.

Turner, Ian; Tacklind, Thomas A.; Clement, Carl J.; and Stengel, Fred H., to Xerox Corporation. Electrostatic printer/plotter. 266,671, 10-26-82, Cl. D14-111.000.
University of Michigan, The Regents of the: *See—*
  Gooding, Elwyn R., 266,626, Cl. D2-231.000.
  Gooding, Elwyn R., 266,627, Cl. D2-231.000.
Vetter, Roland: *See—*
  Harada, Toshio; Feil, Rolf; and Vetter, Roland, 266,642, Cl. D7-128.000.
West, Terence H., to Priam Corporation. Magnetic disc drive. 266,670, 10-26-82, Cl. D14-109.000.
Wm. E. Wright Co.: *See—*
  O'Brien, John D., 266,630, Cl. D3-26.000.
Wink, John, to Anja Marketing Inc. Portable dental hygiene kit. 266,633, 10-26-82, Cl. D4-18.000.
Xerox Corporation: *See—*
  Turner, Ian; Tacklind, Thomas A.; Clement, Carl J.; and Stengel, Fred H., 266,671, Cl. D14-111.000.
Yamamura, Masamichi; Harada, Toshio; and Tanaka, Michio, to Matsushita Electric Industrial Co., Ltd. Micro-wave oven. 266,641, 10-26-82, Cl. D7-128.000.
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Yoshimura, Masaaki, to Tomy Kogyo Co., Inc. Obstacle game board. 266,681, 10-26-82, Cl. D21-59.000.
Zenith Radio Corporation: *See—*
  Boldt, Melvin H.; Chuboff, David P.; Trottier, Clement W.; and Slater, Robert E., 266,668, Cl. D14-79.000.
Zobkiw, Alexander N. Boomerang. 266,683, 10-26-82, Cl. D21-82.000.
Zoldia Anstalt: *See—*
  Bulgari, Marina, 266,654, Cl. D11-5.000.

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Bergeson, Paul L. Green ash tree. 4,904, 10-26-82, Cl. 51.000.
Conard-Pyle Company: *See—*
  Hachmann, Johannes, 4,905, Cl. 55.000.
Duffett, William E.: *See—*
  Jessel, Walter H., Jr.; Duffett, William E.; and Mix, Marvin D., 4,908, Cl. 79.000.
Frecon, Richard S., to Stark Brothers Nurseries & Orchards Company. Spur type winter banana apple tree—Frecon cultivar. 4,901, 10-26-82, Cl. 34.000.
Hachmann, Johannes, to Conard-Pyle Company. Rhododendron plant—Hacput variety. 4,905, 10-26-82, Cl. 55.000.
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  Warriner, William A., 4,899, Cl. 14.000.
Jessel, Walter H., Jr.; Duffett, William E.; and Mix, Marvin D. Chrysanthemum plant. 4,908, 10-26-82, Cl. 79.000.
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Marsland, William P. Apple tree. 4,900, 10-26-82, Cl. 34.000.
Mix, Marvin D.: *See—*
  Jessel, Walter H., Jr.; Duffett, William E.; and Mix, Marvin D., 4,908, Cl. 79.000.
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  van der Knaap, Jacques C. M., 4,909, Cl. 79.000.
Siri, Angelo J. Miniature carnation. 4,907, 10-26-82, Cl. 70.000.
Stark Brothers Nurseries & Orchards Company: *See—*
  Frecon, Richard S., 4,901, Cl. 34.000.
Strawn, Leslie E. Miniature rose plant. 4,898, 10-26-82, Cl. 9.000.
Sun Valley Bulb Farms, Inc.: *See—*
  Kirsch, Ted T., 4,906, Cl. 68.000.
Superior Farming Company: *See—*
  Weinberger, John H., 4,902, Cl. 38.000.
  Weinberger, John H., 4,903, Cl. 43.000.
van der Knaap, Jacques C. M., to Pan-American Plant Company. Chrysanthemum named Cherry Westland. 4,909, 10-26-82, Cl. 79.000.
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 26, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	
161 R	4,355,424
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CLASS 3	
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	4,355,428
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3 H	4,355,440
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134 KB	4,355,441
230 AL	4,355,442
263 D	4,355,443
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274	4,355,445
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	4,355,447
413	4,355,448
426.2	4,355,449
426.5	4,355,450
426.6	4,355,451
437	4,355,452
460	4,355,453
571	4,355,454
	4,355,455
572	4,355,456
583	4,355,457
602 R	4,355,458
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611	4,355,460
768	4,355,461
791	4,355,462
827	4,355,463
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34.1	4,355,464
344	4,355,465
358	4,355,466
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143 L	4,355,467
147 F	4,355,468
185 R	4,355,469
270	4,355,470
422	4,355,471
486	4,355,472
CLASS 36	
11.5	4,355,473
132	4,355,474
CLASS 37	
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	4,355,477
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570	4,355,479
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22	4,355,480
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1 D	4,356,000
1 SR	4,355,999
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106	4,355,482
232	4,355,483
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409	4,355,486
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319	4,355,488
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419	4,355,490
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540	4,355,491
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416	4,355,494
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112	4,356,008
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302	4,356,010
368	4,356,011
385 C	4,356,012
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22	4,355,498
205	4,355,499
279	4,355,500
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82	4,355,501
84	4,355,502
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39.5	4,355,507
275	4,355,504
384	4,355,505
389	4,355,506
416	4,355,508
449	4,355,509
452	4,355,510
507	4,355,511
534	4,355,512
602	4,355,503
641.7	4,355,513
657	4,355,515
660	4,355,514
675	4,355,516
721	4,355,517
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6	4,355,519
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28	4,356,014
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133	4,355,523
196 B	4,355,521
340	4,355,522
543	4,356,015
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8	4,356,017
104	4,356,018
346	4,356,019
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312	4,355,524
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30	4,356,021
87	4,356,022
88	4,356,023
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93	4,356,024
100	4,356,025
120	4,356,026
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164	4,355,526
351	4,355,527
388	4,355,528
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11	4,355,532
23.1	4,355,533
35	4,355,534
37.8	4,355,535
412	4,355,529
633	4,355,536
708	4,355,537
811	4,355,538
863.11	4,355,539
CLASS 74	
5.1	4,355,540
5.6 E	4,355,541
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473 P	4,355,543
526	4,355,544
567	4,355,545
569	4,355,546
690	4,355,547
826	4,355,548
850	4,355,549
872	4,355,550
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36	4,356,031
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63	4,356,033
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460	4,355,552
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62.1	4,355,555
124	4,355,556
565	4,355,557
587	4,355,558
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446	4,355,570
485	4,355,571
516	4,355,572
CLASS 100	
121	4,355,573
234	4,355,574
245	4,355,575
CLASS 101	
426	4,355,576
CLASS 102	
378	4,355,577
CLASS 104	
1 A	4,355,578
12	4,355,579
166	4,355,580
	4,355,581
CLASS 105	
164	4,355,582
199 CB	4,355,583
215 C	4,355,584
CLASS 106	
1.12	4,356,036
209	4,356,037
CLASS 108	
153	4,355,585
CLASS 110	
229	4,355,586
293	4,355,587
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CLASS 112	
184	4,355,590
225	4,355,591
410	4,355,592
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1	4,355,593
7	4,355,594
14.03	4,355,595
18	4,355,596
51 R	4,355,597
52 A	4,355,598
106	4,355,599
143	4,355,600
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4 D	4,355,601
235 R	4,355,602
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18 R	4,355,603
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188 VA	4,355,604
320	4,355,605
327	4,355,606
350	4,355,607
364	4,355,608
373	4,355,609
386	4,355,610
396	4,355,611
414	4,355,613
436	4,355,614
437	4,355,615
440	4,355,616
453	4,355,617
489	4,355,618
490	4,355,619
499	4,355,620
502	4,355,621
548	4,355,622
585	4,355,623
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132	4,355,625
190	4,355,626
400	4,355,627
427	4,355,628
437	4,355,629
438	4,355,630
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20	4,355,631
24 R	4,355,632
25 R	4,355,633
28	4,355,634
94	4,355,635
204.13	4,355,636
206.19	4,355,637
214 F	4,355,638
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227	4,355,640
460	4,355,641
642	4,355,642
663	4,355,643
689	4,355,644
777	4,355,645
786	4,355,646
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290	4,355,648
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249	4,356,341
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13	4,355,651
15	4,355,652
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110	4,355,654
117	4,355,655
318	4,355,656
492	4,355,657
557	4,355,658
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44	4,355,663
110	4,355,664
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91	4,355,667
96	4,355,665
420 R	4,355,668
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147	4,355,669
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34 R	4,355,670
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230	4,355,673
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	4,356,041
	4,356,042
9 R	4,356,043
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2	4,356,044
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64	4,356,045
86	4,356,046
89	4,356,047
220	4,356,048
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273.3	4,356,050
459	4,356,051
498	4,356,052
499	4,356,053
517	4,356,054
626	4,356,055
649	4,356,056
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1.17	4,355,675
1.2	4,355,674
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126	4,355,677
332	4,355,678
CLASS 162	
3	4,356,057
5	4,356,058
111	4,356,059
181.6	4,356,060
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466	4,355,679
484	4,355,680
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16	4,355,681
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60	4,355,683
154	4,355,684
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313	4,355,686
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106	4,355,691
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1 GJ	4,356,350
1 MN	4,356,348
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16 AA	4,356,354
18 HB	4,356,355
175.1 R	4,356,356
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73 TL	4,355,696
261	4,355,697
273	4,355,698
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12	4,355,699
83	4,355,700
97	4,355,701
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1 D	4,355,702
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	4,355,705
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24.11	4,355,706
73.32	4,355,707
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58 B	4,355,709
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4 C	4,355,711
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460	4,355,712

514	4,355,713
701	4,355,714
781	4,355,715
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11 R	4,356,360
11 TC	4,356,359
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50 C	4,356,363
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41	4,356,063
CLASS 202	
263	4,356,064
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38 A	4,356,066
43 Z	4,356,067
98	4,356,068
146	4,356,069
158 R	4,356,070
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180 G	4,356,072
192 R	4,356,073
195 P	4,356,074
213	4,356,075
261	4,356,076
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90	4,355,716
140	4,355,717
312	4,355,718
334	4,355,719
460	4,355,720
524.2	4,355,721
575	4,355,722
599	4,355,723
CLASS 208	
8 LE	4,356,078
8 R	4,356,077
10	4,356,079
31	4,356,080
139	4,356,081
164	4,356,082
CLASS 209	
155	4,356,083
211	4,356,084
273	4,356,085
529	4,355,724
CLASS 210	
115	4,356,086
131	4,356,087
198.1	4,356,088
242.4	4,356,089
350	4,356,090
354	4,356,091
611	4,356,092
695	4,356,093
774	4,356,094
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69.5	4,355,726
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121	4,355,727
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215	4,355,729
253	4,355,730
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60 R	4,356,372
86.31	4,356,373
121 EH	4,356,377
121 LH	4,356,375
121 LN	4,356,376
121 PE	4,356,374
124.1	4,356,378
209	4,356,379
262	4,356,380
283	4,356,381
297	4,356,382
308	4,356,383
347	4,356,384
441	4,356,385
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1.5	4,355,732
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123	4,355,733
CLASS 222	
63	4,355,734
80	4,355,735
	4,355,736
81	4,355,737
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134	4,355,739
180	4,355,740
415	4,355,741
490	4,355,742
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96	4,355,743
114	4,355,744
118	4,355,745
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274	4,355,746
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34	4,355,747
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171	4,355,749
188	4,355,750
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19	4,355,751
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455	4,356,389
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83	4,355,754
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193	4,355,762
302	4,355,763
708	4,355,764
58	B1 4,257,561
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244	4,355,767
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102 R	4,355,773
145	4,355,774
158 R	4,355,775
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415 A	4,355,776
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346	4,355,777
429	4,355,778
460	4,355,779
675	4,355,780
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64	4,355,781
93	4,355,782
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201	4,356,392
214 R	4,356,393
222 R	4,356,394
227	4,356,395
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231 SE	4,356,397
327.2	4,356,398
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9	4,355,783
63	4,355,784
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8.5 C	4,356,096
8.55 D	4,356,095
33.4	4,356,097
62.51	4,356,098
90	4,356,099
106	4,356,100
182.1	4,356,101
299.1	4,356,102
	4,356,103
299.61	4,356,104
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989	4,356,130
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114 TC	4,356,132
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61	4,356,135
65	4,356,136
137	4,356,137
164	4,356,138
174	4,356,139
176 R	4,356,140
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252	4,355,790
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136	4,355,791
153	4,355,792
CLASS 269	
93	4,355,793
CLASS 270	
31	4,355,794
58	4,355,795
CLASS 271	
20	4,355,796
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21	4,355,798
151	4,355,799
229	4,355,800
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119	4,355,801
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73 J	4,355,803
84 R	4,355,804
85 G	4,355,805
	4,355,806
	4,355,814
86 R	4,355,807
169	4,355,808
183 D	4,355,809
186 C	4,355,810
201	4,355,811
248	4,355,812
411	4,355,813
CLASS 277	
143	4,355,815
CLASS 279	
2 R	4,355,816
CLASS 280	
103	Re.31,066
605	4,355,817
654	4,355,818
752	4,355,819
779	4,355,820
CLASS 281	
33	4,355,821
34	4,355,822
CLASS 282	
27.5	4,355,823
CLASS 283	
21	4,355,824
CLASS 285	
3	4,355,825
45	4,355,826
98	4,355,827
342	4,355,828
CLASS 290	
1 R	4,356,401
CLASS 292	
68	4,355,829
144	4,355,830
CLASS 294	
11	4,355,831
81 R	4,355,832
87 R	4,355,833
CLASS 296	
15	4,355,834
36	4,355,835
37.12	4,355,837
37.9	4,355,836
78.1	4,355,838
136	4,355,839
179	4,355,840
185	4,355,841
199	4,355,842
201	4,355,843
205	4,355,844
210	4,355,845
CLASS 297	
366	4,355,846
CLASS 300	
11	4,355,847
CLASS 301	
37 SS	4,355,848
CLASS 303	
116	4,355,849
CLASS 307	
19	4,356,402
60	4,356,403
115	4,356,404
117	4,356,405
118	4,356,406
221 D	4,356,407
254	4,356,408
264	4,356,409
265	4,356,410
272 A	4,356,411
304	4,356,412
443	4,356,413
455	4,356,414
522	4,356,415
570	4,356,416
CLASS 308	
9	4,355,850
CLASS 310	
43	4,356,417
184	4,356,418
217	4,356,419
239	4,356,420
320	4,356,421
322	4,356,422
338	4,356,423
357	4,356,424
370	4,356,425
CLASS 312	
215	4,355,851
CLASS 313	
193	4,356,426
422	4,356,427
485	4,356,428
503	4,356,429
CLASS 315	
4	4,356,430
101	4,356,431
287	4,356,432
308	4,356,433
375	4,356,434
	4,356,435
386	4,356,436
CLASS 318	
254	4,356,437
344	4,356,438
685	4,356,439
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210	4,356,440
	4,356,441
CLASS 324	
51	4,356,442
	4,356,443
54	4,356,444
82	4,356,445
83 R	4,356,446
169	4,356,447
244	4,356,448
CLASS 328	
145	4,356,449
CLASS 330	
9	4,356,450
107	4,356,451
265	4,356,452
277	4,356,453
294	4,356,454
296	4,356,455
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3	4,356,457
CLASS 333	
17 M	4,356,458
21 A	4,356,459
28 R	4,356,460
116	4,356,461
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165	4,356,463
173	4,356,464
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128	4,356,465
203	4,356,466
295	4,356,467
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69	4,356,468
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401	4,356,469
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17 LM	4,355,853
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94 A	4,355,855
95 R	4,355,856
177 R	4,355,857
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52 F	4,356,470
52 R	4,356,471
146.3 C	4,356,472
146.3 H	4,356,473
509	4,356,474
521	4,356,475
522	4,356,476
572	4,356,477
593	4,356,478
604	4,356,479
620	4,356,480
636	4,356,481
731	4,356,482
805	4,356,483
825.03	4,356,484
825.17	4,356,485
870.38	4,356,486
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5 W	4,356,487
7 PF	4,356,488
7 VM	4,356,489
17.2 R	4,356,490
113 R	4,356,491
700 MS	4,356,492
702	4,356,493
781 CA	4,356,494
786	4,356,495
854	4,356,496
	4,356,497
890	4,356,498
CLASS 346	
75	4,356,499
	4,356,500
155	4,356,501
CLASS 350	
3.72	4,355,858
6.1	4,355,859
6.8	4,355,860
61	4,355,861
96.15	4,355,863
96.18	4,355,864
96.2	4,355,862
96.23	4,355,865
164	4,355,866
319	4,355,867
338	4,355,868
358	4,355,869
486	4,355,870
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13	4,355,871
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25	4,355,872
27	4,355,873
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234	4,355,878
329	4,355,879
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3 FU	4,355,881
3 SH	4,355,880
8	4,355,883
14 CH	4,355,884
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15	4,355,886
25	4,355,887
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39	4,355,889
54	4,355,890
57	4,355,891
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373	4,355,901
375	4,355,902
376	4,355,904
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13	4,356,507
29	4,356,508
85	4,356,509
143	4,356,510
181	4,356,511
183	4,356,512
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246	4,356,515
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77	4,356,522
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384	4,356,531
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35	4,356,535
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474	4,356,552
483	4,356,553
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225	4,356,561
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61	4,356,565
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107	4,356,340
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26	4,355,907
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135	4,355,909
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165	4,355,911
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138	4,356,400
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690.1	4,355,914
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216	4,355,915
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41	4,355,916
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24	4,355,917
170	4,355,918
191	4,355,919
195	4,355,920
316	4,355,921
385	4,355,922
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59	4,355,923
145	4,355,924
172	4,355,925
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233	4,355,927
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19	4,355,933
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439	4,355,940
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557	4,355,943
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686	4,355,945
707	4,355,946
785	4,355,947
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111	4,355,965
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600	4,356,162
657	4,356,163
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241	4,356,175
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249	4,356,179
250	4,356,180
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267	4,356,184
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275	4,356,186
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355	4,356,218
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234	4,356,225
246	4,356,226
265	4,356,227
283	4,356,228
288	4,356,229
290	4,356,230
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325	4,356,232
336	4,356,233
372	4,356,234
379	4,356,235
403	4,356,236
404	4,356,237
461	4,356,238
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7	4,356,239
101	4,356,240
104	4,356,241
234	4,356,242
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58	4,356,243
82	4,356,244
122	4,356,245
136	4,356,246
195	4,356,247
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216	4,356,250
253	4,356,251
270	4,356,252
291	4,356,253
296	4,356,254
325	4,356,255
332	4,356,256
496	4,356,257
557	4,356,258
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4	4,355,969
77	4,355,970
359	4,355,971
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148	4,355,972
209	4,355,973
253	4,355,974
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11	4,355,975
83	4,355,976
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220	4,355,978
225	4,355,979
226	4,355,980
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219	4,355,983
335	4,355,984
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2	4,356,259
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68	4,356,261
97	4,356,262
101	4,356,263
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91	4,355,988
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504	4,356,283
520	4,356,284
837	4,356,116
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111	4,356,285
183	4,356,286
204	4,356,287
308	4,356,288
358	4,356,289
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44	4,356,297
173	4,356,298
279	4,356,299
324	4,356,300
487	4,356,301
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192	4,356,303
196	4,356,304
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51	4,356,305
176	4,356,306
200	4,356,307
242	4,356,308
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295	4,356,310
475	4,356,125
524	4,356,311
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53	4,356,313
	4,356,314
81	4,356,315
208	4,356,316
241	4,356,317
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406	4,356,318
414	4,356,319
517	4,356,320
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144	4,356,321
185	4,356,322
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33	4,356,325
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		266,627
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	444	266,629
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	30.1	266,631
	38	266,632
D4—	18	266,633
D6—	9	266,634
	90	266,635
	95	266,636
	146	266,637
	177	266,638
	191	266,639
D7—	105	266,640
	128	266,641
		266,642
	208	266,643
D8—	95	266,644
	307	266,645
D9—	337	266,646
	349	266,647
	353	266,648
		266,649
	354	266,650
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	121	266,653
D11—	5	266,654
	158	266,655
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	160	266,659
	162	266,660
		266,661
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D14—	2	266,663
	5	266,664
	6	266,665
	53	266,666
	58	266,667
	79	266,668
	102	266,669
	109	266,670
	111	266,671
	114	266,672
D15—	9.1	266,673
D18—	1	266,674
D19—	22	266,675
	50	266,676
	97	266,677
D21—	4	266,678
	13	266,679
	41	266,680
	59	266,681
		266,682
	82	266,683
	130	266,684
	177	266,685
	211	266,686
	220	266,687
	229	266,688
D22—	20	266,689
D23—	11	266,690
	19	266,691
	55	266,692
	97	266,693
D24—	8	266,694
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DESIGN PATENTS

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PLANT PATENTS

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20 : 4,900
27 : 4,904
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41 : 4,906
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